NON-PERMANENCE RISK REPORT ECOMAPUÁ AMAZON REDD PROJECT

Document Prepared by Sustainable Carbon – Projetos Ambientais Ltda.

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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.*	Not applicable
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.* Yes, the area is vulnerable to invasion by residents within and surrounding the area, and there have been recorded trespasses into the area for the purpose of illegal wood collection. This is reinforced by the fact that the 99 families who are defined as residents in the project area[1], are indeed within or immediately adjacent the project area, and are the main agents of deforestation acting in the present REDD project.	2
c)	*Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (ie, any area of required experience is not covered by at least one individual with at least 5 years experience in the area).* The work of the Instituto Ecológica (IE) is included here on the basis that Stefano Merlin, co-founder and CEO of Sustainable Carbon, co-founded the IE NGO in 1998, in the state of Tocantins Brazil. IE's experience with developing forest projects dates back to 1998 with ten projects and contracts. To give two examples: the reforestation project located at the INCRA project called Assentamento Manchete, in Tocantins state, of which the project document was published on 25/08/2008; and the conservation, regeneration and agroforestry systems projects on the Ilha do Bananal, consisting of two phases from 1998 - 2003 and 2000 - 2002, details of which can be found at the following web address: <http://www.ecologica.org.br/images/stories/ecologica/pdf/Florestal.pdf>, and in peer-reviewed scientific journals[2]. In addition, the Sustainable Carbon team under the leadership of Marcelo Haddad, Technical Coordinator of Sustainable Carbon, has developed more than 20 carbon project PDDs, including 19 VCS PDs, over five and a half years, details of which can be found on Mr. Haddad's CV:	0

[1] Fundação de Amparo e Desenvolvimento da Pesquisa (FADESP) (2002), 'Comunidades Agroextrativistas do Rio Mapuá – Breves/PA, Diagnóstico Socio-Econômico".
[2] Boyd et al., "Exploring socioeconomic impacts of forest based mitigation projects: Lessons from Brazil and Bolivia" environmental science & policy 10 (2007) pp. 419 – 433.

	<http://buscatextual.cnpq.br/buscatextual/visualizacv.do?id=K4491762P1>. Two forestry projects were developed: "Genesis Forest Project: Reducing Greenhouse Gas Emissions from Deforestation and Degradation in the State of Tocantins, Brazil"; and "Genesis Forest Project: Reforestation of Brazilian Savannah with Native Species in the State of Tocantins, Brazil". The details of both can be found here: <http://www.climate-standards.org/projects/index.html>.	
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.* Two representatives of the communities within the project area are charged with supervising and reporting any events – such as unpermitted degradation or resource-use – which occur within two properties, to the management, which consists of Lap Chan, general administrator of the property. Their names and properties of responsibility are as follows: Aloízio, Fazenda Bom Jesus; and Manduca, Fazenda Vila Amélia. The representatives call Mr Chan weekly and in return they receive financial help although they are not officially contracted. Mr Chan's permanent location is the city of São Paulo, which is a day and a half's journey from the most inaccessible points of the project. For this reason 2 buffer points are applied to the present section.	2
e)	***Mitigation:*** *Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.* Sustainable Carbon as project proponent has seen 45 projects, in 74 locations, through validation to date. 42 of these projects can be found on the Markit Registry, the web link follows: <http://mer.markit.com/br-reg/public/index.jsp?q=sustainable%20carbon&s=cp>. This makes Sustainable Carbon one of the most prolific carbon project developers in Latin America, and a pioneer of the sector.	-2
f)	***Mitigation****: Adaptive management plan in place.* The Ecomapuá Amazon REDD Project is now applying SOCIALCARBON® Standards for forest projects, which include, as the relevant tool specifies, "processes for monitoring progress and documenting lessons learned or corrections that may be needed". Therefore the relevant mitigation score was applied here. This methodology is an innovative concept developed by the Ecológica Institute to measure the contribution of carbon projects to sustainability. The SOCIALCARBON® Methodology is based on six main indicators: Biodiversity; Natural; Financial; Human; Social and Carbon Resources, and aims to deliver high-integrity benefits in each. The present project also has an action plan in place, which was produced by the	-2

	Project Proponent, Sustainable Carbon, in order to improve the buffer rating. The Action Plan was divided into sections corresponding to 6 of the risk categories in the VCS AFOLU Non-Permanence Risk Tool, v3.2, specifically: Project Management; Financial Viability; Opportunity Cost; Project Longevity; Land Tenure and Resource Access/Impacts; and Community Engagement. The actions relating to each risk type were classed as high, medium or low priority, and five high-priority actions were identified to diminish the buffer. This action plan will be applied following each of the verifications in order to improve the buffer and SOCIALCARBON® score.	
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] Total may be less than zero.		**0**

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.* Calculations of cash flow breakeven point revealed that it would be attained in 12 years.	3
b)	*Project cash flow breakeven point is greater than 7 and up to 10 years from the current risk assessment*	Not applicable
c)	*Project cash flow breakeven point greater than 4 and up to 7 years from the current risk assessment*	Not applicable
d)	*Project cash flow breakeven point is 4 years or less 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* The project currently does not have available callable financial resources to cover the total cash out before the project reaches breakeven, therefore 3 was applied as the risk rating here.	3
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 80% or more of funding needed to cover the total cash out before the project reaches breakeven*	Not applicable
i)	***Mitigation**: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven* As mentioned in h) above, the project currently has no callable financial	0

	resources.	
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero.		**6**

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 to100% more than from project activities* An analysis of agents and drivers of deforestation revealed that during the first monitoring period (01-January-2003 to 31-December-2012), the primary economic activities where the project areas are located continued to be extraction of timber and non-timber forest products (NTFPs), specifically palm heart. However, the timber production in the project reference region during the analyzed period decreased more than 50%. Similarly, palm-heart production reduced around 35% over the observed period. This also shows that the participation of the timber production in the total income of the municipalities within the project region significantly decreased comparing to the historical reference period. It is important to note that subsistence agriculture is an important component of the baseline deforestation dynamic within the project area[3] and the project is investing into social projects including a technical school and tree-nursery[4], as well as applying SOCIALCARBON® standard to quantify and improve social and biodiversity aspects of the project. Furthermore, Ecomapuá Ltda. is investing in environmental education in the leakage management area, benefitting some families living within the project area. This is part of the IAS/UFRA Fome Zero project[5], which will benefit from reinvestment of carbon credits from the present REDD project. There are plans to expand this program to more families living within the project area in the future. The NPV for the most profitable alternative, which is timber production, was estimated through an IMAZON study[6] of the Lower Amazon River estuary area,	6

[3] Fundação de Amparo e Desenvolvimento da Pesquisa (FADESP) (2002), 'Comunidades Agroextrativistas do Rio Mapuá – Breves/PA, Diagnóstico Socio-Econômico".
[4] Sustainable Carbon, V-C-S Project Description (2013), 'ECOMAPUÁ AMAZON REDD PROJECT GHG EMISSION REDUCTIONS FROM AVOIDED UNPLANNED DEFORESTATION'.
[5] Universidade Federal Rural da Amazônia (UFRA), Instituto Amazônia Sustentável (IAS), Petrobrás (2007), "Projeto piloto de geração de renda e alimento através de produção agrícola familiar e manejo florestal sustentável em comunidades ribeirinhas carentes no rio Mapuá – Relatório Final"
[6] Barros, Uhl (1997) - Padrões, problemas e potencial da extração madeireira ao longo do Rio Amazonas e do seu estuário

	however the timber prices were updated according to the Brazilian Institute of Geography and Statistics[7] regarding the municipalities in the project region. Based on this data, the NPV from timber production would be around US$ 6.7 million over the crediting period, while the NPV of the Ecomapuá Amazon REDD Project (carbon credits revenues) would be around US$ 3.7 million, both scenarios at a 10% discount rate. Carbon credit prices were assumed to be around US$ 2.3/tCO2e, which is based on Sustainable Carbon conservative assumption on the current carbon market situation. It is important to note that this price is 60% lower than those verified in the State of Forest Carbon Markets 2014[8]. Therefore, this analysis suggests that the NPV from the most profitable alternative land use activity is expected to be around 78% higher than from project activities. Therefore, 6 was applied at risk rating due to opportunity cost. This analysis can be considered conservative because the social-environmental benefits from forest conservation have not been quantified.	
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*	Not applicable
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* Ecomapuá Conservação Ltda. is not a non-profit organization.	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* The project is not protected by any legally binding commitment to continue management practices.	0
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* The project is not protected by any legally binding commitment to continue management practices.	0
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]		**6**

[7] Instituto Brasileiro de Geografia e Estatística (IBGE). Available at: <http://cidades.ibge.gov.br/xtras/uf.php?lang=&coduf=15&search=para>. Last visited on 09/01/2015.
[8] Available at: <http://www.forest-trends.org/vcm2013.php>. Last visit on: 09/01/2015.

Total may not be less than 0.	

Project Longevity		
a)	*Without legal agreement or requirement to continue the management practice* (= 24 – (30/5))	18
b)	*With legal agreement or requirement to continue the management practice*	Not applicable
Total Project Longevity (PL) May not be less than zero		**18**

Internal Risk	
Total Internal Risk (PM + FV + OC + PL) Total may not be less than zero.	**0 + 6 + 6 + 18 = 30**

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)* Yes, both ownership and resource access/ use rights are held by Ecomapuá Ltda.	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* Within the Ecomapuá Amazon REDD Project area, there is a large concentration of residents, totalling some 99 families as described in point d), below. They are well-established, having a long history of extracting forest products, such as rubber and palm heart, which historically was accompanied by an expectation of land tenure, a practice known as extractivism. In the FADESP (Fundação de Amparo e Desenvolvimento da Pesquisa) 2002 study of the extractivist communities of the Rio Mapuá, residents within the project area report a difficulty in subsistence through the legal means of agriculture, açaí berry collection and fishing. This poverty is partly a consequence of the prohibition of harvesting timber and palm-heart, which came into effect after Ecomapuá Conservação Ltda., formerly Santana Madeireira Ltda, acquired the area some two years prior to the project start date.	0

<table>
<tr><td></td><td>The complexity of the issue is a function of the long-established inter-relation between unofficial land tenure and extractivist practices.
However, given that the residents' claim to land does not involve any property titles or documents on their part, and that no residents have been evicted from the property and benefit from projects described in section g) below, the heart of the issue is here deemed to be use of resources, rather than land tenure.
In a separate issue, in 2005 the Brazilian Government issued a decree to acquire two of the properties, Fazenda Brasiliera and São Domingos, in order to use them as extractivist reserves, a kind of protected area. Although the property owner, Lap Chan, was willing to sell the properties, the payment to acquire them was never received, and after 5 years the decree expired. In this regard, it is not considered that there is a current land dispute.</td><td></td></tr>
<tr><td>d)</td><td>There exist disputes over access/use rights (or overlapping rights)

Within the project area, extraction of non-timber forest products (NTFPs) as well as timber is carried out by the residents. As diagnosed by the FADESP 2002 report, products extracted include timber, rubber, açaí and palm heart, as well as hunting and fishing.
The extraction of timber and palm heart is not officially licensed, and as such there exists a dispute about access rights in the properties.</td><td>5</td></tr>
<tr><td>e)</td><td>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.</td><td>Not applicable</td></tr>
<tr><td>f)</td><td>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

There is no legally binding contract to continue the management of the area.</td><td>0</td></tr>
<tr><td>g)</td><td>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

As described in the aforementioned 2002 FADESP study, 99 families lived in the project area at the time of project start date in 2002, of which 38 were interviewed.
<table>
<tr><th>Property name</th><th>Number of families</th><th>Number of families interviewed</th></tr>
<tr><td>Fazenda Brasileiro</td><td>04</td><td>04</td></tr>
<tr><td>Comunidade Bom Jesus</td><td>17</td><td>14</td></tr>
<tr><td>São Domingos</td><td>07</td><td>0</td></tr>
<tr><td>Fazenda Lago do Jacaré</td><td>50</td><td>0</td></tr>
<tr><td>Comunidade Vila</td><td>21</td><td>20</td></tr>
</table></td><td>-2</td></tr>
</table>

	Amélia		

Table 1. Number of families living in the project area in 2002

The objective of the project presented in the FADESP report was to retake control of coordinating production activities in the communities, via a sustainable development program which was implemented by the ITCPES / UFPA team in conjunction with Nova Amafrutas fruit company, as of April 2002.

Two seminars were held, on the 6th April 2002 and 3rd/ 4th May 2002, in the Breves House of Culture, which some 50 and 200 people attended, respectively, including 40 residents of the area. This, particularly, helped to clarify Ecomapuá's good intentions to the residents.

Beyond the actions described above, a sustainable family agriculture project called "Projeto Fome Zero" was implemented by the Instituto Amazônia Sustentável (IAS) NGO in conjunction with UFRA and Petrobrás, starting in 2005 and continuing in the two subsequent years. One of the project's main aims is to resolve access/use rights relating to natural resources disputes by implementing, as described in the the Fome Zero project's mission statement, a viable and replicable model of capacity building for family agriculture, through improvement of infrastructure and techniques relating to sustainable forest use, in order to create permanent and temporary jobs for the local community.

As previously mentioned, the project also applies SOCIALCARBON® standard which use six indicators to monitor social, environmental and other aspects of the project, and track their progress across time. This will provide, for example, the incentive for the sustainable practices of the Fome Zero project to continue across time, and destructive use of NTFPs and timber to diminish.

Furthermore, the project proponent organized a stakeholder consultation in Breves municipality on 07/02/2013, held in the Environmental Agency of Breves Municipality (SEMMA), to which the communities within and surrounding the project area were invited, and community representatives attended. Information leaflets, a presentation and a question and answer session took place, which will allow for the project to improve upon issues affecting the community.

Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.	**3**

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*	0

	on the project area, have been consulted It is assumed for the calculations involving project area communities below, that 100% of households in the project area are reliant on the latter for subsistence, as they are agro-extractivist peoples[12,13]. Consultations with representatives of four out of five communities within the project area have been carried out. The FADESP (2002)[14] socio-economic study which took place in the project area, aimed to consult 100% of project area families. However, in fact the Lago do Jacaré and São Domingos communities (see table 1) residents chose not to participate, nonetheless, their opinion was sought and their concerns were noted in the report. Furthermore, as stated above, a stakeholder consultation was held, which community representatives attended. This session allowed the real issues affecting the communities to be raised, and addressed across the project lifetime, further strengthening community communication and project quality. In addition to this direct consultation with the households, the Mayor, Deputy Mayor and his secretariat were consulted between April and September 2002[15], these individuals are the legal representatives of the population of Breves municipality, where approximately 60% of the project area is located. Therefore it is concluded that over 50% of households living within the project area, who are reliant on the project area have been consulted.	
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* As above, it is assumed for the calculations involving reference area communities that 100% of households are reliant on land for subsistence, however it is known that agricultural activities involve little mobility, so households living outside the project area[16] will tend to be reliant on areas outside the project area. Consultations with the surrounding community have been carried out, specifically through the "Fome Zero 2003" program, however this is estimated not to amount to 20% of total households within 20km of the project area. However, as described, the Mayor, Deputy Mayor and his secretariat were consulted in 2002[17], and these individuals are the legal representatives of the population of Breves, where 47% of the reference area is located. Therefore it is	0

[12] Fundação de Amparo e Desenvolvimento da Pesquisa (FADESP) (2002), 'Comunidades Agroextrativistas do Rio Mapuá – Breves/PA, Diagnóstico Socio-Econômico".
[13] HERRERA, J. A. (2003), "Dinâmica e desenvolvimento da agricultura familiar: o caso de Vila Amélia – Breves, PA. Dissertação de mestrado. Universidade Federal do Pará."
[14] Fundação de Amparo e Desenvolvimento da Pesquisa (FADESP) (2002), 'Comunidades Agroextrativistas do Rio Mapuá – Breves/PA, Diagnóstico Socio-Econômico".
[15] Fundação de Amparo e Desenvolvimento da Pesquisa (FADESP) (2002), 'Comunidades Agroextrativistas do Rio Mapuá – Breves/PA, Diagnóstico Socio-Econômico".
[16] Interview: D. Meneses (23.11.12), who work in The Chico Mendes Institute of Biodiversity Conservation (ICMBio) executing programs that involves research, protection, preservation and conservation of biodiversity, as well as exercising the power of environmental police for the protection of Brazilian Conservation Areas.
[17] Fundação de Amparo e Desenvolvimento da Pesquisa (FADESP) (2002), 'Comunidades Agroextrativistas do Rio Mapuá – Breves/PA, Diagnóstico Socio-Econômico".

	concluded that over 20% of the households reliant on the project area within 20km of the latter have been consulted. In addition, as previously stated, communities were consulted during the February 2013 meeting in the Environmental Agency of Breves Municipality (SEMMA). Importantly, the president of the Amorema Association (Associação Amorema) attended, who is the representative of all the Mapuá River communities.	
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* A proportion of funds from the sale of carbon credits will be used for socially and environmentally beneficial programs run by the NGO working in the project area: the Insituto Amazônia Sustentável. Specifically, the "Fome Zero" project will be able to resume its activities in the area, which ceased running in 2006[18]. Activities are wide-ranging, including commercial seed and oil production, as well as aviculture and pisciculture. The mission statement of the Fome Zero projects is: to develop a viable and replicable model of capacity building for family agriculture, through improvement of infrastructure and techniques relating to sustainable forest use, in order to create permanent and temporary jobs for the local community. Besides forest conservation, the present project aims to improve and quantify its social and environmental benefits through application of the SOCIALCARBON® Methodology, which is being carried out during this monitoring period. This methodology is an innovative concept developed by the Ecológica Institute to measure the contribution of carbon projects to sustainability. The SOCIALCARBON® Methodology is based on six main indicators: Biodiversity; Natural; Financial; Human; Social and Carbon Resources.	-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*	Not applicable
c)	*Governance score of -0.32 to less than 0.19* Mean of The 6 World Bank Institute Worldwide Governance Indicators for Brazil	2

[18] Instituto Amazônia Sustentável (IAS), Universidade Federal Rural da Amazônia (2006), "Projeto piloto de geração de renda e alimento através de produção agrícola familiar e manejo florestal sustentável em comunidades ribeirinhas carentes no Rio Mapuá"

	between 2008 – 2012, as described in the AFOLU non-permanence Tool: 0.048	
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**: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.* The jurisdiction in which the project is located, that is, Pará, Brazil, is participating in the Governors' Climate and Forest Taskforce (GCF).	-2
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.		**0**

External Risk	
Total External Risk (LT + CE + PC) Total may not be less than zero.	**3 - 5 + 0 = 0**

3 NATURAL RISKS

Natural Risk (eg, Fire, Pest and Disease outbreaks, Extreme Weather)	
Significance	**Fire** – the significance of fire risk was estimated through an interview with a project area supervisor[19], who has been resident in the Bom Jesus community for 56 years. One fire was reported, which occurred in the Lago do Jacaré property in 2010. The specific damage caused by this fire was unknown, so a conservative estimate of 5% of Lago do Jacaré property was determined to have been damaged. This equates to 2.53% of the project area carbon stocks, making fire significance = 0. **Pest and Disease Outbreaks** – There is no record of any pest and disease outbreak in the project areas of the Ecomapuá Amazon REDD Project, the only areas reported to have any such problems were plantations[20]. The significance of the PD category, is therefore = 0. **Extreme Weather** – the significance of extreme weather was determined using a search of the Brazilian National Institute of Meteorology[21]. Wind records during the historical reference period (1992 – 2002) show that the categories of tropical storm or hurricane were never reached. Therefore, 0% of the project area was affected by extreme weather and significance was determined as 0.

[19] Interview: Mr Aloísio (27.11.12), community resident in the project area.
[20] Interview: Mr Aloísio (27.11.12), community resident in the project area.
[21] INMET: http://www.inmet.gov.br/portal/index.php?r=home/page&page=rede_estacoes_conv_graf

	Geological Risks – no geological events damaging the project site were reported in the interview[22] or in source searches, therefore the G category significance = 0. **Other Natural Risk** – no other sources of natural risk were identified in interview or literature sources. Therefore ON category significance = 0.
Likelihood	**Fire** – INPE sources[23] report that Marajó Island is a minimal fire risk area. Furthermore, only one fire was reported which occurred in 2010 in the Lago do Jacaré community[24]. Given the time that the informant has been resident at the property, a conservative estimate of 2 fires affecting the project area in 100 years was used. Given the significance estimate described above, this places F category likelihood at 0. **Pest And Disease Outbreaks** – As described above, there are no recorded instances of pest and disease outbreaks within the project area in 100 years. Therefore PD category likelihood = 0. **Extreme Weather** – the likelihood of extreme weather was determined using a search of the Brazilian National Institute of Meteorology (Breves Station) wind records during the historical reference period (1978 – 2012). During this period, the wind speed has never exceeded 5 m/s, which is significantly below the wind speed for the categories of tropical storm or hurricane[25]. Therefore, W category likelihood = 0. **Geological Risk** – as well as the absence of any report of geological incidents, described above, the Global Seismic Hazard map[26] places Marajó Island in the lowest category of risk. Therefore G category likelihood = 0. **Other Natural Risk** – no other sources of natural risk were identified in interview or literature sources. Therefore ON category likelihood = 0.
Score (LS)	Fire (F) – 0 Pest and Disease Outbreaks (PD) – 0 Extreme Weather (W) – 0 Geological Risk (G) – 0 Other natural risk (ON) – 0
Mitigation	None

[22] Interview: Mr Aloísio (27.11.12), community resident in the project area.
[23] http://www.inpe.br/queimadas/abasFogo.php
[24] Interview: Mr Aloísio (27.11.12), community resident in the project area.
[25] National Weather Service (USA): weather categories determined using Saffir-Simpson Hurricane Wind Scale: http://www.nhc.noaa.gov/aboutsshws.php

[26] Global Seismic Hazard Assessment Program (GSHAP): http://www.seismo.ethz.ch/static/GSHAP/.

Score for each natural risk applicable to the project (Determined by (LS × M)	
Fire (F)	(0 x 1) = 0
Pest and Disease Outbreaks (PD)	(0 x 1) = 0
Extreme Weather (W)	(0 x 1) = 0
Geological Risk (G)	(0 x 1) = 0
Other natural risk (ON)	(0 x 1) = 0
Total Natural Risk (as applicable, F + PD + W + G + ON)	**0 + 0 + 0 + 0 + 0 = 0**

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
a) Internal Risk	30
b) External Risk	0
c) Natural Risk	0
Overall Risk Rating (a + b + c)	**30**

4.2 Calculation of Total VCUs

Project year	Ex post net anthropogenic GHG emission reductions (tCO_2e)	Ex post buffer credits (tCO_2e)	
	Annual	Annual	Cumulative
2003	575,175	172,553	172,553
2004	103,533	31,060	203,612
2005	133,485	40,046	243,658
2006	221,378	66,413	310,071
2007	198,289	59,487	369,558
2008	11,866	3,560	373,118
2009	150,649	45,195	418,313
2010	192,427	57,728	476,041
2011	89,240	26,772	502,813
2012	393,013	117,904	620,717
TOTAL	**2,069,055**	**620,717**	-