



# Verified Carbon Standard

## 2018-2020 NON-PERMANENCE RISK REPORT FOR THE RUSSAS PROJECT

# CarbonCo, LLC

Document Prepared by CarbonCo, LLC<sup>1</sup> and TerraCarbon, LLC<sup>2</sup>

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# 1 INTERNAL RISK

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Not applicable. Tree planting is not a project activity for which GHG credits will be issued.	0
b)	Ongoing enforcement is required to prevent encroachment by outside actors. The Russas Project employs forest patrols to prevent encroachment by outside actors into the Project Area.	2
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities.	2
d)	Local management partners are based in Cruzeiro do Sul less than a day's travel from the project activity. There is a project manager living on the property and a Project headquarters has been established on the property.	0
e)	Project Proponents have developed other forest carbon projects and have been working in the forest carbon arena for over 10 years. Brian McFarland of CarbonCo has developed the "Tensas River National Wildlife Refuge Afforestation Project" and the "Purus Project" under the VCS and the CCBS including managing the project design, implementation, and financing. The Project Proponents work alongside and have access to experts in carbon accounting and reporting (i.e., TerraCarbon) who have significant experience in all aspects of AFOLU project design and implementation, carbon accounting and reporting under the VCS Program. TerraCarbon has successfully validated and verified numerous projects under the VCS.	-2
f)	There is no adaptive management plan in place.	0
<b>Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]</b>		<b>2</b>
Total may be less than zero.		

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating

a-d)	Project cash flow breakeven point is 4 years or less from the current risk assessment. Details are provided in a cash flow analysis which can be found in the Project archive. <sup>1</sup> The Project has already reached the breakeven point.	0
e-h)	Project has secured 100% of funding needed to cover the total cash out before the Project reaches breakeven. Details are provided in a cash flow analysis which can be found in the project archive.	0
i)	Project has available at least 50% of the total cash out before Project reaches breakeven. Project Proponents are utilizing internal, non-restricted funds as evidenced in the Project archive.	-2
<b>Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)]</b>		<b>0</b>
Total may not be less than zero.		

Opportunity Cost		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	<p>As the majority of baseline activities over the length of the Project crediting period are subsistence-driven, an NPV analysis is not required. Net positive community impacts have been clearly demonstrated for the Russas Project in the 2013 Monitoring Report, the 2014 – 2016 Monitoring Report, and the 2017 Monitoring Report, with certification against the Climate, Community &amp; Biodiversity Standards with Gold Distinction for exceptional community benefits.</p> <p>For example, the Project provided net positive socio-economic benefits for communities in the ‘with project’ scenario from March 2011 to December 2013 by: creating awareness about the Project and the need to preserve the forests for future generations; discussions with communities and initiation of the process to formalize land tenure of communities; providing the first five agricultural courses along with delivery of seeds, graviola, and passion fruit; hiring local staff and implementation of monitoring team; expansion of Marmude’s house to serve as the initial Project headquarters. From January 2014 to December 2016 the Project provided net positive socio-economic benefits for communities in the ‘with project’ scenario including: distribution of dozens of mosquito nets, medical attention for hundreds of community members from medical personnel (including</p>	0

<sup>1</sup> See pro forma located in the project archive.

	<p>400 people being taught by the local nurse Sebastião Melo de Carvalho), distribution of dozens of dental kits to children, and additional agricultural courses. In 2017, restrooms were built, the onsite health clinic was completed, and doctor visits were facilitated.</p> <p>From 2018-2020, as a few examples, a health clinic was built in the Três Bocas community and another health clinic was built in the Tartaruga community. In response to the COVID-19 pandemic, COVID-19 prevention guidelines were shared throughout 2020, and 60 sacks of food and 1,000 masks were distributed.</p> <p>These activities would not have resulted in the 'without project' scenario.</p>	
b-d)	Not applicable.	0
e-f)	Not applicable.	0
g)	None of the Project Proponents are a non-profit organization.	0
h-i)	There is a legal contractual agreement to maintain the Project Area as forest for at least a 60 year period (i.e. greater than the length of the crediting period) from the Project's start date.	-2
<b>Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]</b>		<b>-2</b>
Total may be less than 0.		

Project Longevity		
a)	Not applicable.	0
b)	<p>There is a legal contractual agreement to maintain the project activities and maintain the Project Area as forest for at least a 60 year period from the Project's start date.</p> <p>The landowners of the property are under contractual obligations<sup>2</sup> which limit their development/use of the property, as stated below.</p> <p>"The landowner acknowledges and agrees to not execute any activity that otherwise might interfere with the [project] implementation...including but not limited to,</p> <ul style="list-style-type: none"> <li>i. Clearing forest for livestock / cattle ranches;</li> <li>ii. Clearing forest for agriculture;</li> </ul>	0

<sup>2</sup> See addendum to the Tri-Party Agreement located in the project archive.

iii. Expanding old roads or constructing new roads; iv. Expanding into new forests for infrastructure (i.e., bridges, housing, electricity, etc.); v. Expanding logging operations; [and] vi. Deforestation for new mining or mineral extraction.”	
<b>Total Project Longevity (PL)</b> May not be less than zero	<b>0</b>

Internal Risk	
<b>Total Internal Risk (PM + FV + OC + PL)</b> Total may not be less than zero.	<b>0</b>

## 2 EXTERNAL RISKS

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	The landowner, Ilderlei Souza Rodrigues Cordeiro, who is also a Project Proponent (I.S.R.C.), owns the Project Area outright (see Section 1.12 of the validated Project Design Document) and has full resource access/use rights, which are not shared with anyone. The property was geo-referenced and is in the process of being officially registered in the cadaster (Cadastro Ambiental Rural), a process which involved on the ground assessment of all property boundaries and consultations with neighboring landowners and resolution of any existing boundary disputes.	0
b-d)	Not applicable.	0
e)	Not applicable.	0
f)	There is a legal contractual agreement to maintain the Project Area as forest for at least a 60 year period (i.e. greater than the length of the crediting period) from the Project’s start date.	-2

g)	Not applicable.	0
<b>Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)]</b>		<b>0</b>
Total may not be less than zero.		

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	To the best of the Project Proponents' knowledge, all households living on the Russas property directly adjacent to the Project Area were consulted. Afterwards, a high-level survey by the Ministry of Health for the Municipality of Cruzeiro do Sul suggested there may be more households than previously thought. After learning about the possibility of more households, a local CAR specialist was hired from approximately July 2017 to December 2017 to visit all the communities throughout the Project and consult them about receiving title from the Project.	0
b)	To their knowledge, the Project Proponents have contacted all families reliant on the Project Area.	0
c)	The Russas Project has been validated and previously verified to the Climate, Community & Biodiversity Standards. Social and economic well-being impacts for the local communities include building restrooms, improving the schools and health clinics, offering free agricultural extension courses, and facilitating the distribution of generators.	-5
<b>Total Community Engagement (CE) [where applicable, (a + b + c)]</b>		<b>-5</b>
Total may be less than zero.		

Political Risk		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a-e)	The average governance score for 2015 through 2019 is -0.18, or between the governance score of -0.32 to less than 0.19. Details of the calculation are provided in Table 1, below.	2
f)	Acre, Brazil is participating in the Governors' Climate and Forest Taskforce. Further, Brazil has an established Designated National	-2

Authority under the CDM and has at least one registered CDM Afforestation/Reforestation project. <sup>3</sup>	
<b>Total Political (PC) [as applicable ((a, b, c, d or e) + f)]</b>	<b>0</b>
Total may not be less than zero.	

Political risk was evaluated using the latest World Bank index data.

Table 1. Calculation of Brazil's average governance score.

Governance Indicator	2015	2016	2017	2018	2019	Overall Mean
Voice and Accountability	0.46	0.45	0.45	0.4	0.34	
Political stability	-0.33	-0.38	-0.41	-0.39	-0.55	
Govt effectiveness	-0.18	-0.17	-0.29	-0.45	-0.19	
Regulatory quality	-0.19	-0.21	-0.11	-0.32	-0.18	
Rule of law	-0.15	-0.16	-0.28	-0.25	-0.18	
Control of corruption	-0.4	-0.38	-0.53	-0.4	-0.33	
Mean	-0.13	-0.14	-0.20	-0.24	-0.18	<b>-0.18</b>

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

### 3 NATURAL RISKS

Natural Risk (Fire)
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<sup>3</sup> Project 2569: Reforestation as Renewable Source of Wood Supplies for Industrial Use in Brazil (<http://cdm.unfccc.int/Projects/DB/TUEV-SUED1242052712.92/view>).  
 Project 3887: AES Tietê Afforestation/Reforestation Project in the State of São Paulo, Brazil (<http://cdm.unfccc.int/Projects/DB/SGS-UKL1280399804.71/view>).

Significance	<p>Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event): Most of the Project Area is un-fragmented forest, with few areas of bordering pasture/non-forest. Most forest fires that occur in the region are anthropogenic, and thus sources of fire outbreaks in the Project Area are limited. In a study<sup>4</sup> of fires in the Amazon, Cochrane and Laurance documented a relationship between fire incidence and distance from forest edge, with decreasing fire return intervals with increasing distance from edge.</p> <p>They also found that effects of forest fires depend on the extent and condition of fuel sources. In general, drought conditions need to be present prior to the initiation of rainforest fires. While initial fires can have a significant effect on the smaller diameter (&lt;40 cm dbh) trees, it is only with subsequent burns, that significant losses (mortality of up to 40% of trees) of forest biomass can be expected<sup>5</sup>. Despite fire induced tree mortality, tree mortality itself is unlikely to result in the loss of substantial biomass due to incomplete combustion of live aboveground biomass. Biomass is merely transferred from the live biomass to dead biomass pool, which is also accounted for in this Project.</p> <p>Further as fire is unlikely to affect the whole Project Area, the significance of any single fire event is likely to be minor and result in less than 25% loss in carbon stocks in the Project Area.</p> <p>The Cochrane and Laurance study<sup>6</sup> mentioned above, calculated a fire return intervals in another part of the Amazon as 10 to 15 years. While the agents of deforestation (and fire) are similar between region of the study (Para) and the project region (Acre), deforestation rates and likely incidences of fire are greater in Para.</p> <p>Despite the background rate of wildfire being greater than 10 years, analysis on Moderate Resolution Imaging Spectroradiometer (MODIS) active fire data<sup>7</sup> indicated a number of hot spots in the Project Area during the 2017 monitoring period due to the use of fire to clear land. The fire return interval has therefore been assessed as less than every 10 years.</p> <p>Fires that do occur are unlikely to affect significant portions of the project area as the fires are limited to areas where vegetation has been cut, dried, and intentionally set on fire. The significance of any single fire</p>
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<sup>4</sup>Cochrane M.A. & Laurance W.F., 2002. Fire as a large-scale edge effect in Amazonian forests, *Journal Of Tropical Ecology*, 18:311-325.

<sup>5</sup>Cochrane M.A., Alencar A., Schulze M.D., Souza C.M., Nepstad D.C., Lefebvre P. & Davidson E.A., 1999. Positive feedbacks in the fire dynamic of closed canopy tropical forests, *Science*, 284(5421):1832-1835.

Cochrane M.A. & Schulze M.D., 1999. Fire as a recurrent event in tropical forests of the eastern Amazon: Effects on forest structure, biomass, and species composition, *Biotropica*, 31(1):2-16.

<sup>6</sup> Cochrane M.A. & Laurance W.F., 2002. Fire as a large-scale edge effect in Amazonian forests, *Journal of Tropical Ecology*, 18:311-325.

<sup>7</sup> Available at <https://firms.modaps.eosdis.nasa.gov/download/>

	event is insignificant as less than 5% of carbon stocks are likely to be lost in a fire. In fact, since the Project's start only intentional fires have occurred in the Project Area.
Likelihood	Less than every 10 years
Score (LS)	2
Mitigation	None

#### Natural Risk (Pest and Disease Outbreaks)

Significance	<p>Insignificant: The forests of the Project Area have a high diversity of tree species, with over 150 tree species &gt;10 cm dbh<sup>8</sup>, and like other diverse tropical forests, are not known to be subject to catastrophic disturbance by insect pests or forest diseases.</p> <p>Forest pests and diseases as a source of risk are more relevant in temperate forests or plantations, with low species diversity and consequently susceptible to extensive damage due to pest and disease outbreaks, which tend to be concentrated on single host species.</p> <p>Further, there is no history of catastrophic forest disturbance due to forest pests or diseases in the region.</p>
Likelihood	Once every 100 years or more. Risk is not applicable to the Project Area.
Score (LS)	0
Mitigation	None

#### Natural Risk (Extreme Weather)

Significance	<p>Insignificant (&lt;5% loss of carbon stocks): While extreme weather events in the region include drought, flooding, and disturbance by wind, this analysis is limited to disturbance by wind as this is the only disturbance which has a direct effect on carbon stocks. As flooding within the project region is common, high water levels in the forest do not lead to a reduction in the forest carbon stocks. Drought does not have a direct effect on existing forest carbon stocks, but instead can increase the severity of forest fires and hence is covered above in the section on fire risk.</p>
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<sup>8</sup> For more information see the results of the "Forest biomass carbon inventory for the Russas and Valparaiso Properties, Acre State, Brazil" in the project database.

	In relation to disturbance by wind, the recurrence intervals for large blow down disturbances in the western Amazon have been estimated at 27,000 years. <sup>9</sup> In addition, large scale blow down occurrences are clustered to the northeast of Acre, in an area just west of Manaus. <sup>10</sup>
Likelihood	Once every 100 years or more.
Score (LS)	0
Mitigation	None

Natural Risk (Geologic Risk)	
Significance	Minor: Neither volcanoes nor active tectonic fault lines are present within the project area, as validated in the Project Design Document. Landslides are not likely to occur within the Project Area because the Project Area is relatively level (less than 5% slope) terrain.
Likelihood	Once every 100 years or more.
Score (LS)	0
Mitigation	None

Natural risk is quantified by assessing both the significance (i.e. the damage that the project would be sustained if the event occurred, expressed as an estimated percentage of average carbon stocks in the Project Area that would be lost in a single event) and likelihood (i.e., the historical average number of times the event has occurred in the Project Area over the last 100 years) of the four primary types of natural risk, including the risk of fire, pest and disease, extreme weather, and geologic hazards. The significance of the risk of all natural disturbances has been assessed as “Minor” or “Insignificant” as none of the risks should they occur would lead to a loss of greater than 25% of the carbon stocks in the Project Area in the case of fire or greater than 5% in the case of pest and disease, extreme weather and geologic risk. The occurrence of any natural risk is unlikely to affect 50% of the Project Area. Where a natural risk does occur, it is unlikely to remove >50% of the carbon stocks in the Project Area. While it is possible for trees to be killed due to natural risks such as fire or flooding, the majority of biomass within the live biomass carbon pool would simply be transferred to the dead biomass carbon pool, also accounted for in this Project and therefore not a loss of carbon.

<sup>9</sup> Espírito-Santo, F.D.B.; Keller, M.; Braswell, B.; Nelson, B.W.; Frohling, S.; Vicente, G. 2010. Storm intensity and old-growth forest disturbances in the Amazon region. *Geophysical Research Letters*. 37, L11403, doi:10.1029/2010GL043146.

<sup>10</sup> Espírito-Santo, F.D.B.; Gloor, M.; Keller, M.; et al. 2014. Size and frequency of natural forest disturbances and the Amazon forest carbon balance. *Nature Communications*, doi: 10.1038/ncomms4434.

It is at times difficult to quantify the likelihood of natural risks when these risks occur infrequently. By definition likelihood is the historical average number of times an event has occurred over the last 100 years. Another term often used when referring to the likelihood of natural risk is the return interval. The return interval is common in literature pertaining to fire and flooding (e.g., the 100 year flood). While the likelihood or return interval would also be useful for assessing pest and disease as well as geologic risk, a key feature when calculating the likelihood or return interval is that an event has occurred enough times in enough places such that there is sufficient data to calculate the return interval. A review of the literature revealed little data to support a return interval for the project area for either pest and disease or geologic risk. For this reason, we have assigned each risk a return interval of “once every 100 years or more.”

Score for each natural risk applicable to the project (Determined by $(LS \times M)$ )	
Fire (F)	2
Pest and Disease Outbreaks (PD)	0
Extreme Weather (W)	0
Geological Risk (G)	0
Other natural risk (ON)	0
<b>Total Natural Risk (as applicable, <math>F + PD + W + G + ON</math>)</b>	<b>2</b>

## 4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

### 4.1 Overall Risk Rating

The overall risk rating calculated using the VCS AFOLU Non-Permanence Risk Tool is calculated below.

Risk Category	Rating
Internal Risk	0
External Risk	0

Natural Risk	2
<b>Overall Risk Rating (a + b + c)</b>	<b>2</b>

The Russas Project will employ a non-permanence risk deduction of 10%, the minimum allowable risk deduction.

## 4.2 Calculation of Total VCUs

Total VCUs including deductions to be deposited in the AFOLU pooled buffer account, are detailed in Section 6.4 of the Monitoring Report.