



**Verified Carbon
Standard**

NON-PERMANENCE RISK REPORT



Document Prepared by Carbonext

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Project Title	UNITOR REDD+ Project
Version	1
Date of Issue	17/08/2022
Project ID	2508
Monitoring Period	01-Aug-2021 to 31-Jul-2022
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INTERNAL RISK

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Not applicable: the project does not involve plantations.	0
b)	Not applicable: GHG credits have not previously been issued.	0
c)	Not applicable, as the Management team does include individuals with significant experience in all skills necessary to successfully undertake all project activities. The Management Team who carries out the technical aspects of the Project Activity is composed by the Project Proponent's team. The technical management is performed by Carbonext. The team is composed by the following personnel: The Management Team: Proponent's Board: Elcio Moço, José Luis and Ricardo Stoppe. Guilherme Neto: General Technical Coordination. Forest Engineer graduated in 1999. Sinomar Prissinoti: Field management. Agricultural technician with 15 years of experience managing forest management activities in the region. Veridiana Moço: Field administrative/financial manager. Graduated in Environmental Management, she has 2.5 experience in the projects of the business group. Henrique Moço: Logistics and execution manager, with 11 years of experience. Odair de Oliveira: coordination support, with more than 10 years of experience in supporting forest management projects. Technical Management Team: Janaina Dallan MBA – Carbon markets specialist. Working in the coordination of projects related to sustainability strategy and projects to the Clean Development Mechanism. Part of the UNFCCC Registration and Issuance Team as an Expert. Has a bachelor's degree in Forestry Engineering and a Master's in business of the environment. Carbon markets specialist based in São Paulo working specifically in the carbon credit development department being responsible of managing the Brazilian projects and participating as a reviewer of projects in other countries, was part of the international Carbon Assets Team of Ecofys.	0

	Working with Carbon Market issues since 2002 when she worked with the Center for Advanced Studies on Applied Economics at the University of São Paulo while participating in two projects directed by the Ministry of the Environment. Ms. Dallan later managed CDM projects and Carbon market activities at the company Golder Associates São Paulo and provided support to other Golder offices throughout Latin American countries and North America. She has also worked as a Carbon Markets consultant for an Energy company being responsible for the implementation of the CDM department including staff training, project advisor and staff coordination. Luiz Fernando de Moura – Forestry Engineer, M.Sc. and Ph.D. in Wood technology by the Université Laval (Quebec, Canada). He is responsible to coordinate the technical group at Carbonext, working with projects for the Carbon Markets including Forestry projects. Dr. de Moura had participation in the preparation of “Energia Verde Carbonization Project - Mitigation of Methane Emissions in the Charcoal Production of Grupo Queiroz Galvão, Maranhão, Brazil”, registered on March 21, 2011. Dr. de Moura has also participation as project designer in Florestal Santa Maria REDD Project, Fortaleza Ituxi REDD project, Unitor REDD Project, Evergreen REDD Project and others. The technical team involves other components, presented at item 4.3 of the MR. Based on the team’s expertise, the Project Proponent and Project Developers are well qualified and confident to claim that the project generates climate, community and biodiversity benefits.	
d)	The Management Team maintains a presence in the country and is located less than a day of travel from the project site, considering all parcels or polygons in the project area. Evidence for this is presented in the “Project Management - Item d - Travel Time to Project Area” Word document for audit.	0
e)	Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs, as described in item c) above.	-2
f)	Mitigation: Unitor’s Adaptive Management Plan is in place, presented in the document “Monitoring plan of Forest Integrity – PMIF” made available for audit. Previous Unitor’s Plan “Proced_Unitor_Control e Patrimonial e Combate a Incendio” was updated by “Monitoring plan of Forest Integrity – PMIF”.	-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)	This is not the case for the present project.	0
b)	This is not the case for the present project.	0
c)	This is not the case for the present project.	0
d)	The project cash flow breakeven point was found to be less than 4 years from the current risk assessment, by financial analysis. As shown in the “Financial viability Unitor SFMP” spreadsheet (elaborated for MR1), which has been made available to auditors, the amount of R\$ 13,818,703.73 was considered to achieve breakeven point. Carbon credits price was taken from OPIS Global Carbon Offsets Report (March 2022) and rounded down to U\$ 10,00 for conservative purpose. During MR1, 1,734,791 carbon credits were issued. So, converting this amount would result in R\$ 91,267,354.51, achieving its breakeven less than 4 years.	0
e)	This is not the case for the present project.	0
f)	This is not the case for the present project.	0
g)	This is not the case for the present project.	0
h)	Breakeven point has already been achieved. So, there is no need for securing a fund.	0
i)	Mitigation: The project was found to have available callable financial resources of at least 50% of total cash out before project reaches breakeven, which sum was defined in financial analysis (see “Financial viability Unitor SFMP” spreadsheet) as R\$ 6,909,351.87. Evidence of this was made available at audit.	-2
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)]		0
Total may not be less than zero.		

Opportunity Cost

Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	This is not the case for the present project.	0
b)	This is not the case for the present project.	0
c)	This is not the case for the present project.	0
d)	This is not the case for the present project.	0
e)	This is not the case for the present project.	0
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity The NPV from project activities was found to be 307% more profitable than that of the cattle farming scenario once Project's NPV was R\$ 248,611,265.00 and BAU's NPV was R\$ 81,009,180.00 (see "NPRR_MR2_Unitor" spreadsheet). As specified by the non-permanence risk tool, the present analysis took "into consideration a conservative estimate of revenue from GHG credit sales and other project revenue streams".	-4
g)	This is not the case for the present project	0
h)	Mitigation: yes, the project area is protected by a legally binding commitment, specifically, the contract between the project developer (Carbonext) and the project proprietors, which was made available at audit. The latter requires the conservation of forest land on the entire REDD Project Area, over the length of the project crediting period, protecting carbon stocks within it.	-2
i)	This is not the case for the present project.	0
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)] Total may be less than 0.		-6

Project Longevity		
a)	This is not the case for the present project	0
b)	The project has a legal agreement or requirement to continue the management practice, and the project longevity is 30 years, as discussed in point h) above.	15

	Furthermore, as demonstrated in the PD, the project proponents hold sustainable timber Operations Licenses approved by the State of Amazonas. These licenses allow the landowner to harvest wood logs. This constitutes a legal agreement to continue the management practice over 30 years, as the logging cycle occurs in this time period. Additionally, the Legal Reserve (LR) (at least 80% of the property) is registered in property deeds at the Real Estate Registry Office: its location is publicly known. Brazilian Forest Code determines that, once allocated, LRs may not be changed even in cases of real estate transfer, land dismembering or area rectification. According to the tool the calculation is then = 30 - (project longevity/2), resulting in 15 in this case.	
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.	5	

EXTERNAL RISKS

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	Yes, the ownership and resource access/use rights are held by same entities, as evidenced by the land-use and land ownership documents evidenced at audit under the categories "Property rights certificates"; "Forest management plans"; and "Licenses to harvest and to conduct rural activities".	0
b)	This is not the case for the present project.	0

c)	There are no disputes over land tenure or ownership in the project area, as evidenced at audit under the categories “Property rights certificates” and “Licenses to harvest and to conduct rural activities”. Furthermore, of the 44 community members personally interviewed as part of the public consultation, residents of both within and surrounding the project area, none of them responded that they knew of any conflicts regarding land tenure or ownership, relating to the project area. Evidence for this was presented at audit under “Community Engagement” spreadsheet.	0
d)	There are no disputes regarding access/ land use rights. Relying on the same evidence as c) above, we prove that this is not the case through the evidence provided under “Property rights certificates” and “Licenses to harvest and to conduct rural activities”. Also, the 44 community members interviewed in person reported no disputes regarding access and land use rights when questioned during the public consultation, as displayed in the questionnaires under the category “Local stakeholder consultation and supporting evidence”.	0
e)	This is not the case for the present project.	0
f)	Mitigation: yes, the project area is protected by legally binding commitment to continue management practices that protect carbon stocks over the length of the project crediting period. As discussed in section h) of the Opportunity Cost section above, the contract between Carbonext and the project proprietors, requires the conservation of forest land on the entire REDD Project Area, over the length of the project crediting period. The contract was made available at audit.	-2
g)	This is not the case for the present project.	0
Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.		-2

Community Engagement		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	No, it is not the case that less than 50 percent of households living within the project area who are reliant on the project area, have been consulted.	0

	As evidenced under the category “Community Engagement” during the audit, 26 residents from within the project area were interviewed as part of the project’s community consultation process, of a reported total number of 35 residents, therefore being an estimated 74.3%.	
b)	No, it is not the case that 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. Evidence was again provided under the “Local stakeholder consultation and supporting evidence” category during the audit. Of the total residents in the surrounding 20 km of the project area, 31 were interviewed. In order to determine the total residents living within the 20 km radius who are reliant on the project area, the applied methodology was as follows: A 20 km perimeter was drawn around the project area utilizing GIS software, minus the urban areas resulting in an 8.091,70 km² area; The general population density of Lábrea was assessed from IBGE sources¹: 0.55 inhabitants/ km²; In order to measure the rural population density, the 2010 IBGE municipal census² was the most up-to-date source available. At 35.8% of total population density, the resulting rural population density was calculated to be: 0.197inhabitants/ km²; This resulted in a gross total of 1,593.26 estimated inhabitants within a 20 km radius of the project area; From this number, the child population was omitted from the analysis, according to the 2010 census demographics: 984.5 estimated inhabitants; From the total adult population inside the buffer, it was calculated the percentage of people that work with activities related to forest, such as agriculture, livestock, forestry production, fisheries and aquaculture. Data from IBGE stated that in Lábrea, 7693 people fall into this category, representing 45.1% of the rural population. This percentage was applied to the 984 inhabitants inside the buffer, resulting in 444 people. During the public consultation, 5% of the people interviewed reported that they use the project area. Thus, of the total 444 people, 20 are estimated to depend on the project area.	0

¹ IBGE (2017) (accessed 01/08/22): <https://cidades.ibge.gov.br/brasil/am/labrea/panorama>

² IBGE (2010) (accessed 07/07/21): <https://biblioteca.ibge.gov.br/visualizacao/livros/liv49230.pdf> pg. 108.

	During the consultation, 31 people from inside the buffer where interviews. Thus, with the estimated proportion of the total being: 153.7b%. The complete calculation was presented at audit.	
c)	Mitigation: Yes, the project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area. The activities and indicators that will be implemented and monitored are described in sections 1.1 and 5.3 of the PD. For this period, the positive impacts of the project were: - Training of community fire brigades: The second training and form fire brigade team was carried out in July 2022 in Ramal do Boi. The training was carried out for 13 men and 6 women (19 in total). - Training on Sustainable Cattle Raising: On the 23rd and 27th of July 2022 a training was carried out with community, in Ramal do Boi and Ramal da Mocca respectively, with the objective of qualifying labour that finds little opportunity to work in the region and ends up taking part in illegal settlements and land occupation. The training took place over two days, at Santa Maria and São Roque farms, with the participation of 17 men and 8 women (25 in total), and 14 men and 13 women (27 in total), respectively. - Advice on nutritional and health aspects: In July 2022 a lecture was carried out with community in Ramal do Boi about issues, such as transmissible diseases, healthy eating, hygiene habits, etc. The purpose is to improve the quality of life and access to basic health information. The training took place over two days, on the Santa Maria and São Roque farms, with the participation of 13 men and 6 women (19 in total) and 14 men and 13 women (27 in total), respectively. - Creation of job positions: 11 forest monitors and auxiliar are already hired. In total, 25 people hired during this monitoring period.	-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)	This is not the case for the present project.	0
b)	This is not the case for the present project.	0
c)	A governance score was calculated from the mean of Governance Scores across the six indicators of the World Bank Institute's Worldwide Governance Indicators (WGI)³ listed below: • Voice and Accountability • Political Stability and Absence of Violence/Terrorism • Government Effectiveness • Regulatory Quality • Rule of Law • Control of Corruption Furthermore, the score was averaged over the most recent five years of available data (2020 – 2021). Therefore, the governance score is -0.203 The spreadsheet (WGI_Score) with the rationale for the calculation is available for checking.	2
d)	This is not the case for the present project.	0
e)	This is not the case for the present project.	0
f)	Mitigation: Yes, Brazil is implementing REDD+ Readiness or other activities set out in the AFOLU Non-Permanence Tool, including: a) The country is receiving REDD+ Readiness funding from the FCPF, UN-REDD or other bilateral or multilateral donors b) The country is participating in the CCBA/CARE REDD+ Social and Environmental Standards Initiative c) The jurisdiction in which the project is located is participating in the Governors' Climate and Forest Taskforce d) The country has an established national FSC or PEFC standards body e) The country has an established DNA under the CDM and has at least one registered CDM A/R project	-2
Total Political (PC) [as applicable ((a, b, c, d or e) + f)]		0

³ World Bank Institute Worldwide Governance Indicators, available at: <https://info.worldbank.org/governance/wgi/>

Total may not be less than zero.

External Risk

Total External Risk (LT + CE + PC)

0

Total may not be less than zero.

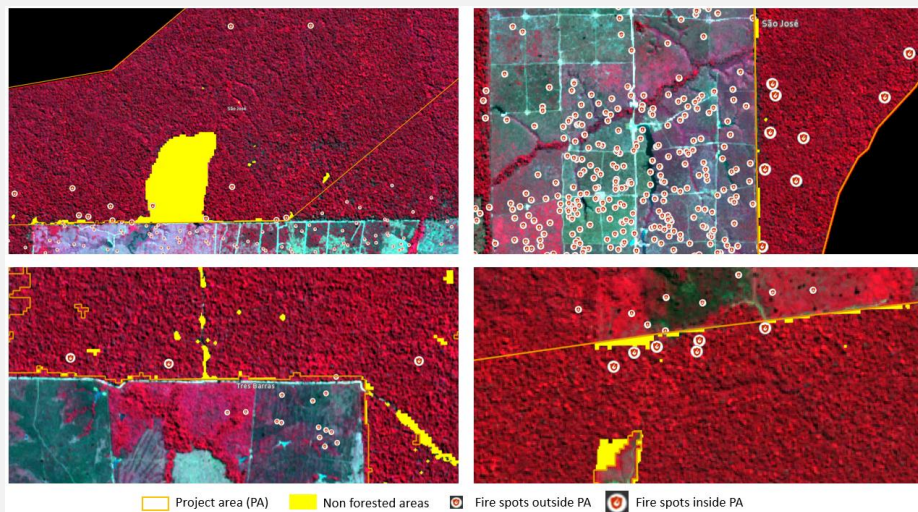
NATURAL RISKS

Natural Risk (Fire – “F”)

Significance

The CPTEC/INPE database⁴ was used to assess the likelihood of forest fire occurrence in the region for the 01/08/2022 - 31/07/2022 period. Over the period 224 heat points were detected (evidence provided at audit). For this reason, the frequency component of the LS was defined as “less than every ten years”.

Detected heat points over the 01/08/2021 - 31/07/2022 period are presented below:



Over the MR period 327.1 ha of deforestation within the PA occurred, as described in section 5.2 Project Emissions. The significance score was calculated based on the conservative assumption that 100% of project emissions were linked to fire. The deforestation

⁴ Source: <http://queimadas.dgi.inpe.br/queimadas/bdqueimadas#exportar> (last visited on 04/08/2022).

	Significance score (LS=2) is explained by the following calculation: - Monitoring period (Mp) = 1 year - Def. inside Project Area (Dpa): 327.1 ha - Project area (Pa): 99,035.22 ha - $Dpa / Pa = 0.33\%$ for 1 year. Thus, considering for this monitoring period, the significance was less than 5%. Even when considering an annual frequency for the event, for 10 years, the significance is still less than 5%, resulting in 3%. On the other hand, the loss in carbon stocks associated with these heat points over the period was classed as insignificant: none of the detected heat points was associated with loss of over 5% loss of carbon stocks, as evidenced during audit.
Likelihood	The likelihood of fire in the project area is approximately annual: less than every 10 years.
Score (LS)	Risk rating = $LS\ 2 \times M\ 0,5 = 1$
Mitigation	Unitor's Monitoring Plan of Forest Integrity (PMIF)⁵ is in place, having the aim of preventing and reducing risks of fire and related trespassing. It involves fire brigade training and the implementation of a fire brigade. During this monitoring period, fire brigade training took place. In addition, the MonitoraCarbon system was implemented in order to identify abnormalities in the project area, including fire events. M=0.5

Natural Risk (Pest and Disease outbreaks – “PD”)	
Significance	This risk is not applicable to the project area, please see justification below.
Likelihood	There is no record of Pest or Disease outbreaks in the area, since the area is a natural forest in a state of equilibrium, where it is understood to have virtually zero pest or disease outbreaks. In healthy and stable forests, disturbances by insect pests and diseases are an integral part of the forest ecosystem (van Lierop et al, 2015) ⁶ .

⁵ Document made available at audit

⁶ Pieter van Lierop, Erik Lindquist, Shiroma Sathyapala, Gianluca Franceschini, Global forest area disturbance from fire, insect pests, diseases and severe weather events, Forest Ecology and Management, Volume 352, 2015, Pages 78-88, ISSN 0378-1127, <https://doi.org/10.1016/j.foreco.2015.06.010>.

	Regarding disease and pest outbreaks in tropical humid forests, due to the high species diversity and resilience, these ecosystems have a strong capacity to adapt and react to any specific single pathogen, insect, or pest (in general terms) that could develop cause widespread damage to vegetation, with consequent carbon loss. There is no scientific evidence on this sort of outbreak in highly diverse tropical humid forests vegetation in the Amazon, which would be different in monoculture tropical plantations. The study carried out by Van Lierop analyzed data from the FRA 2015, in which 115 countries were asked to report on specific types of pests, diseases and weather disturbances as well as on the species or forest type affected. In the study, only 3,05% of the total forest area of all regions were affected by insect pests, being that of this total, 0,039% occurred in the South American region. In additional, diseases affected a relatively small extent of forests in all geographic regions of the globe. The forests of the project area have a high diversity of tree species, with over 275 tree species >15 cm dbh³, and like other diverse tropical forests, are not known to be subject to catastrophic disturbance by insect pests or forest diseases. Further, there is no history of catastrophic forest disturbance due to forest pests or diseases in the project region. Thus, it can be concluded that the risk of pests and diseases for the project area is practically non-existent.
Score (LS)	LS = 0 (Risk rating: 0 x 1 = 0)
Mitigation	None (1).

Natural Risk (Extreme Weather– “W”)	
Significance	According to the IPCC Sixth Assessment Report⁷, the Amazon Forest was highly impacted by the unprecedented droughts and higher temperatures observed in 1998, 2005, 2010 and 2015/2016, attributed partly to climate change. This resulted in high tree mortality rates and basin-wide reductions in forest productivity (high confidence). The combined affect of anthropogenic land use change and climate change increases the vulnerabilities of terrestrial ecosystems to extreme climate events and fires (medium confidence). The Amazon rainforest is one of the most biodiverse regions in the world, and its progressive deforestation may result in abrupt and profound

⁷ https://www.ipcc.ch/report/ar6/wg2/downloads/outreach/IPCC_AR6_WGII_FactSheet_CentralSouthAmerica.pdf (last visit on: 7/28/2022)

changes in the regional climate and intensification of extreme climate events. Nobre et al (2009)⁸, predicted a nearly 60% rainfall reduction and a 2°C increase in the near surface air temperature over the Amazon based on a scenario of Amazonian deforestation incorporating ocean-atmosphere coupling.

According to Lewis et al. (2011)⁹: “The 2005 and 2010 droughts both coincided with higher-than-normal tropical North Atlantic Sea Surface temperatures (SST), which have been linked to the 2005 Amazon drought and are suspected in the 2010 drought. The 2010 drought also coincided with a La Niña event, associated with cooler than normal sea surface temperatures in the equatorial Pacific.

While La Niña events are generally associated with wetter than normal weather over the northern parts of the Amazon Basin, including some areas impacted by the 2010 drought, it has also been associated with drying over much of the southern half of the basin. It seems likely that the 2010 drought was influenced by both Pacific and Atlantic SSTs. Furthermore, both droughts are consistent with climate modelling that projects drying of the Amazon, although researchers concede that significant uncertainty still remains in these linkages”.

However, Erfanian et al. (2017)¹⁰ showed that the ecohydrological consequences from the 2016 drought were more rigorous and extensive than the 2005 and 2010 droughts. They advised that warmer-than-usual SSTs in the Tropical Pacific and Tropical Atlantic were not able to explain the severity of the 2016 drought, and sharp out that land cover change through deforestation and human-induced warming may have strongly influenced it. Furthermore, the drought of 2016 also shortened forest net primary productivity and elevated canopy tree mortality, by that altering both the short- and the long-term net forest carbon balance (Leitold et al., 2018)¹¹.

Still about the recent drought of 2015–2016 in Amazonia, Anderson et al. (2018)¹² estimated that 46% of the Brazilian Amazon biome was under serious to extreme drought, compared with 16% and 8% for the 2010 and 2005 droughts, respectively. They propose that forests in the twenty-first century are enhancing further vulnerable to droughts, with larger areas intensively and negatively answering to water dearth in the region.

⁸ Nobre, P., Malagutti, M., Urbano, D. F., Almeida, R. A. Fde & Giarolla, E. Amazon deforestation and climate change in a coupled model simulation. *J. Clim.* 22, 5686–5697 (2009).

⁹ Lewis, S., Brando, P., Phillips, O., Heijden, G. Nepstad, D.; The Amazon Drought 2010, *Science*, ISSN 0036-8075 (pressed) 1095-9203 (online), Volume 331. 2011

¹⁰ Erfanian, A., Wang, G., and Fomenko, L. (2017). Unprecedented drought over tropical South America in 2016: Significantly under-predicted by tropical SST. *Sci. Rep.* 7:5811. doi: 10.1038/s41598-017-05373-2

¹¹ Leitold, V., Morton, D. C., Longo, M., Dos-Santos, M. N., Keller, M., and Scaranello, M. (2018). El Nino drought increased canopy turnover in Amazon forests. *New Phytol.* 219, 959–971. doi: 10.1111/nph.15110

¹² Anderson, L. O., Ribeiro Neto, G., Cunha, A. P., Fonseca, M. G., Mendes de Moura, Y., Dalagnol, R., et al. (2018). Vulnerability of Amazonian forests to repeated droughts. *Philos. Trans. R. Soc. B* 373:20170411. doi: 10.1098/rstb.2017.0411

	Although the above statements indicate that extreme events will be more frequent in the region, Esquivel-Muelbert <i>et al.</i> (2018)¹³ showed that the Amazon biome is in fact undergoing an average drying trend (-1.1 mm/year), however, the change in the Amazonian tree flora will not occur at the same pace and will be slower, much as a function of community resilience. Insignificant (less than 5% loss of carbon stocks) or transient (full recovery of lost carbon stocks expected within 10 years of any event)
Likelihood	The likelihood of Extreme Weather is under every ten years, in accordance with the academic sources above.
Score (LS)	LS = 2 (Risk rating: 2 x 1 = 2)
Mitigation	None (1).

Natural Risk (Geological Risk – “G”)	
Significance	Not applicable to the project area, see explanation below.
Likelihood	The level of seismic activity in Brazil is classified as low, and it has been calculated that the average recurrences are: less than 2 seismic events of over 4 mb magnitude every year, one seismic event of over 5.0 mb magnitude every six years, and one seismic event of 6.0 magnitude every 45 years. Despite the very low recurrence, seismic events of magnitudes up to 7.6 mb are possible, and in that case, their recurrence interval in Brazil is of around 885 years (LOPES et al, 2011)¹⁴. It can be said that it is impossible for an earthquake of magnitude greater than 8 to occur in Brazil. This type of event usually occurs at the converging boundaries of lithospheric plates, as in Japan and Chile (LOPES et al, 2011). Richter scale of earthquake magnitude ¹⁵

¹³ Esquivel-Muelbert A, Baker TR, Dexter KG, et al. Compositional response of Amazon forests to climate change. *Glob Change Biol.* 2018;00:1–18
All bibliography can be found in the folder “Audit PD & MR\Bibliography\NPRR”

¹⁴ <https://www.revistas.usp.br/revusp/article/download/34854/37592/40850> (last visit on: 8/02/2022)

¹⁵ <https://www.britannica.com/science/earthquake-geology/Earthquake-magnitude> (last visit on: 8/02/2022)

	magnitude level	category	effects
	less than 1.0 to 2.9	micro	generally not felt by people, though recorded on local instruments
	3.0–3.9	minor	felt by many people; no damage
	4.0–4.9	light	felt by all; minor breakage of objects
	5.0–5.9	moderate	some damage to weak structures
	6.0–6.9	strong	moderate damage in populated areas
	7.0–7.9	major	serious damage over large areas; loss of life
	8.0 and higher	great	severe destruction and loss of life over large areas
	The highest earthquake recorded in Brazil (6.6 degrees Richter) occurred in 1955 in the State of Mato Grosso, in the region of the Juará and Porto dos Gauchos municipalities (over 1,500 km from the project area), but there are no records of considerable damage caused by it (TOMINAGA et al. 2009)¹⁶. The risks of carbon losses related to geological phenomena are more prone to occur in steeply sloped landscapes, which is not the case in the project area (predominantly flat landscape). In steeply sloping areas, biomass loss can occur through earthquake-induced landslides. Even in these cases, previous studies (ALLEN et al. 1999)¹⁷ show that much of an earthquake's immediate impact is low intensity damage to forests. It is also important to observe that landslides are not likely to occur within the project area because project sites are uniformly level (less than 5% slope) in these flat plain areas. Thus, the earthquake intensity and frequency in Brazil and general geologic risks are not likely to produce significant losses of forest biomass. In this context, there are strong reasons to reject the possibility of any significant vegetation damage caused by earthquakes in the project region.		
Score (LS)	LS = 0 (Risk rating: 0 x 1 = 0)		
Mitigation	None (1).		

¹⁶ Tominaga, Lídia Keiko, Jair Santoro, and Rosangela Amaral. "Desastres naturais." São Paulo: Ed. Instituto Geológico (2009).

¹⁷ [https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/0012-9658\(1999\)080\[0708:IDBAET\]2.0.CO;2](https://esajournals.onlinelibrary.wiley.com/doi/abs/10.1890/0012-9658(1999)080[0708:IDBAET]2.0.CO;2) (last visit on: 7/28/2022)

Other natural risk (ON1 – ON3): No further risk factors to the project were identified.

Score for each natural risk applicable to the project (Determined by (LS × M))	
Fire (F)	1.00
Pest and Disease Outbreaks (PD)	0.00
Extreme Weather (W)	2.00
Geological Risk (G)	0.00
Other natural risk (ON)	0.00
Total Natural Risk (as applicable, F + PD + W + G + ON)	3.00

OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

Overall Risk Rating

Risk Category	Rating
Internal Risk	5.00
External Risk	0.00
Natural Risk	3.00
Overall Risk Rating (a + b + c)	10

Calculation of Total VCUs

Total Risk Assessment	
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Net change in the project's carbon stocks	629,738
TOTAL NUMBER OF CREDITS TO BE DEPOSITED IN THE AFOLU POOLED BUFFER ACCOUNT	58,845

APPENDIX

APPENDIX 1: CALCULATION OF TOTAL VCUS

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation	VCUs eligible for issuance
2021	507,228	232,112	275,116	25,580	249,537
2022	600,288	245,666	354,622	33,265	321,357
Total	1,107,517	477,778	629,738	58,845	570,894