



**Verified Carbon
Standard**

NON-PERMANENCE RISK REPORT

ABC NORTE REDD PROJECT



An **Algar** Company



Ecológica

Document Prepared by Ecológica Assessoria Ltda.

Project Title	ABC Norte REDD Project
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Monitoring Period	VCS-PD – 1 st Baseline Period VCS-MR – Point 1 (13-September-2017 to 31-December-2020)
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1 INTERNAL RISK

Project Management		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	<i>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.</i> Not applicable.	0
b)	<i>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.</i> No, the Project Area has had 403.19 ha of unplanned deforestation during the monitored period, representing around 0.30% of the total project area. Also, the deforestation projection shows that 14,945.23 hectares could be deforested within this first baseline period (next 10 years), representing only 10.64% of the total project area, it is possible to conclude that much less than 50% of the carbon stocks are considered susceptible to encroachment by outside actors and, therefore, need active protection. An assessment was performed by the project proponent, where they concluded that the most vulnerable areas are related to the presence of roads, selective logging and clear cutting around the project area's boundaries. In this analysis, only 7,399.29 ha have been considered to be vulnerable to encroachment, which is equivalent to 5.30% of the project area. It is important to note that the project proponent and their monitoring team have no knowledge of any past or present encroachment within the project area. The area is protected with guardhouses located at strategic points, which are easily accessible to the site, in these guardhouses employees are trained to inspect, monitor and control the entrance and exit of people. There is also monthly monitoring using satellite images, in order to identify if there is any interference in the area of forest management, if the interference is confirmed, a formal complaint is filed in the municipality of Portel followed by complaints to Brazilian environmental agencies. The risks that may occur are treated according to the significance of the threat they might offer to the area. At first, they are identified, then taken to the supervisor responsible for determining how to proceed in the face of that kind of risk, so then a corrective and/or protective measure can be applied to that specific registered case. In order to monitor this process, a	0

	record of that specific risk occurrence is prepared, describing the actions that will be taken to address the matter. Correction and/or prevention actions for risks taken towards these matters are recorded in order to be available for future management teams to access, as well as the current management team.	
c)	<i>Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years' experience in the area).</i> The on-site management team is composed by around 15 people. In addition to the experience of working in other sustainable forest management projects, the team has been improving over these 4 years, having the expertise to solve many situations that might occur within the project area. Hereupon, the management team has been carrying out the organization of employees' tasks, training qualified teams, hiring professionals and outsourced companies to aid the monitoring process, maintaining the FSC CERFLOR certification seal, seeking to monitor all activities that occur within the SFMP, among other management activities of the project. The management team is supervised by 5 people, Luciana, Rogério, Cinthya, Pamela and Maicon. Luciana Di Paula Assunção Pereira has a master's degree in Natural Resources Management and Local Development in the Amazon (UFPA); Graduated in Forestry Engineering from Universidade Federal Rural da Amazônia (2007), and Geography Degree and Bachelor's Degree from Universidade Federal do Pará (2008) . She currently works as an Executive Forestry Manager at the ALGAR group, prior to her professional performance as the Forestry Management Manager at FRM Brasil, a subsidiary of FRM France. Among the activities developed by her, there are: - Contract manager; - Management and monitoring of Forest Planning activities (Planning and Execution of Forest Crop); - Analysis, reporting and monitoring of monthly results of the company's cells, prospecting alternatives to maintain sustained profitability; - Conducting with the other managers the economic analysis necessary for the Forestry Division and in particular for the replacement and/or purchase of materials and equipment necessary for the different activities on the work fronts; - Support the Unit's Strategic Planning, assisting in decision making regarding possible expansion of the forestry business; - Construction of new business towers; - Ensuring adequate and timely information for the decision-making process with a focus on directing the company towards its goals.	0

Previously, she worked as a Forestry Engineer (technician) at the Environmental Department of the State of Pará, and she has experience in Geography teaching and researching, working mainly on the following topics: Forest Concession, Forest Management, Space, Gentrification, Public Policies, Sustainability, ESG, and Continuing Education.

Rogério Melo has nearly 20 years of experience in the agribusiness segment. Consolidated the concept of "Compliance Platform", integrating the Environment, Compliance and Legal areas under the same management. In the last 2 years, he added the areas of "Strategy" and "ESG - Environmental, Social and Governance" to his scope of work. In 2021, he became one of the ambassadors of "Conscious Capitalism" in Brazil.

Strategically employs views on ESG and law as competitive differentials for structuring more profitable businesses, contributing to the improvement of companies' risk and opportunity management. He is recognized for working intensely in the development of people under his leadership.

Worked on agricultural, industrial and forestry projects in various regions of the country (BA, GO, MT, MA, MS, MG and PA). He has expertise in complex negotiations, large M&A operations, conflicts of interest with stakeholders, traditional communities and quilombolas. Led several ESG-related structuring processes, such as: preparation of materiality matrices, gap analysis, due diligence, environmental education programs, management of large environmental liabilities, reverse logistics, structuring of thematic commissions, crisis committees, grassroots commitments self-regulatory.

Cinthy Jaqueline Gomes Ramos holds a postgraduate degree in Work Safety Engineering from Estácio de Sá (2019) and a degree in Forestry Engineering from UEPA (2017). She works as Forestry Supervisor, has worked as an Environmental Analyst at a consulting level, was an intern at the Brazilian Agricultural Research Corporation – EMBRAPA, and was a CNPq and FAPESP scholarship holder.

Pamela Thais Figueira Bahia has a bachelor's degree in Forestry Engineering from the Federal Rural University of Amazônia (UFRA). She was an intern with a scholarship in the Tutorial Education Program - PET (Forestry) on this same institution, in which she developed teaching, research and extension activities aimed at professional improvement. She was a trainee at Florestal Resources Manejo Brasil Consultoria e Assessoria Ltda. (FRM BRASIL), and developed volunteer work at the Agricultural Practices Center, where she participated on research in the area of Agroforestry Systems, with an emphasis on Agroforestry Backyards. In 2020, began a master's degree in Family Farming and Sustainable Development at INEAF/UFGA. Since 2018, she has been working in companies in the forestry consulting sector, with an emphasis on the Sustainable Forest Management and Forest Certification area.

Maicon Silva Farias is a Technologist in Environmental Management by Faculdade Ideal (2011), a Master in the Post-Graduate Program in

	Management of Natural Resources and Local Development in the Amazon - NUMA/UFGA (2014), is currently graduating in Agronomy, at the Universidade Federal Rural da Amazônia. He has participated in the academic mobility project AguaSocial (Cooperation project between UFGA and the European Union). Was an intern at the Protected Areas Board - DIAP/SEMA (2010-2011). He is also part of the Cartography team at BelemGPS Company. Acted as a consultant for cartographic services for Anthropological Reports of Quilombola Communities in Amapá and Maranhão. Maicon received a scholarship from the Pará Institute for Economic, Social and Environmental Development - IDESP, to work on the Environmental Quality Indicators of the Municipalities of Pará and Observatório de Belo Monte projects. He works mainly with the following segments: Remote Sensing, Cartography, Geoprocessing and Environmental Management.	
d)	<i>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.</i> The management team maintains a presence near the project site, with access to the project area by land and river. The time to access the farthest location of the project area is of 4 hours by car, and 2 hours by boat (average of 70 km).	0
e)	Mitigation: <i>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</i> Not applicable.	0
f)	Mitigation: <i>Adaptive management plan in place.</i> The ABC Norte REDD Project applies the SOCIALCARBON® Standard, which includes, as the relevant tool specifies, “processes for monitoring progress and documenting lessons learned or corrections that may be needed”. At the end of each monitoring period, an action plan is carried out for improvements in the next period. 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 to each resource. A set of indicators has been developed as part of the efforts from the Project Proponents to	-2

	properly measure the impacts and cobenefits resulting from the ABC Norte REDD Project, which are available on the SOCIALCARBON website ¹ .	
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)]		-2
Total may be less than zero.		

Financial Viability		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	<i>Project cash flow breakeven point is greater than 10 years from the current risk assessment</i> Not applicable.	0
b)	<i>Project cash flow breakeven point is greater than 7 and up to 10 years from the current risk assessment</i> Not applicable.	0
c)	<i>Project cash flow breakeven point greater than 4 and up to 7 years from the current risk assessment</i> Not applicable.	0
d)	<i>Project cash flow breakeven point is 4 years or less from the current risk assessment</i> Calculations show that the project cash flow breakeven point is less than 4 years from the current risk assessment.	0
e)	<i>Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven</i> The project currently does not have available callable financial resources to cover the total cash out before the project reaches breakeven, therefore the most conservative score was applied at this risk rating. as the risk rating here.	3
f)	<i>Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven</i> Not applicable.	0
g)	<i>Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven</i>	0

¹ SOCIALCARBON indicators are available at: <<http://www.socialcarbon.org/documents/>>.

	Not applicable.	
h)	<i>Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven</i> Not applicable.	0
i)	Mitigation: <i>Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven</i> Not applicable.	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)	<i>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</i> As described on the VCS-Joint-PD-MR, the most likely alternative scenario is considered to be livestock production, as it is the most profitable one. The livestock production scenario has a higher NPV (374% higher than the REDD project scenario), as demonstrated in the cashflow spreadsheet. Carbon credits will compose a significant income to the project activity to maintain its conservation operations and socio-economic benefits.	8
b)	<i>NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities</i> Not applicable.	0
c)	<i>NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities</i> Not applicable.	0
d)	<i>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</i> Not applicable.	0

e)	<i>NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity</i> Not applicable.	0
f)	<i>NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity</i> Not applicable.	0
g)	Mitigation: <i>Project proponent is a non-profit organization</i> Not applicable.	0
h)	Mitigation: <i>Project is protected by legally binding commitment (see Section 0) to continue management practices that protect the credited carbon stocks over the length of the project crediting period</i> The project is protected by legally binding commitment to continue management practices that protect carbon stocks, and they do cover the entire crediting period. ABC Norte has received permissions to manage forest resources based on a Sustainable Forest Management Plan that was made available to IBAMA, the Environmental Agency responsible for licensing these activities in the Project region. At the beginning of the project, in 2017, the project area was already with a management plan implemented, which got renewed in 2019, extending the sustainable forest management for more 35 years, i.e. management practices should be maintained until 2054. However, the ABC Norte, will certainly renew the SFMP after the end of the 35-year cycle. It is important to note that ABC Norte is allowed (and has the intention) to request the renewal of the sustainable forest management plan for more 35 years once this first period is over.	-2
i)	Mitigation: <i>Project is protected by legally binding commitment (see Section 0) to continue management practices that protect the credited carbon stocks over at least 100 years</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.		6

Project Longevity		
a)	<i>Without legal agreement or requirement to continue the management practice</i> Not applicable.	0
b)	<i>With legal agreement or requirement to continue the management practice</i> ABC Agropecuária Brasil Norte S.A. - Produção e Exportação, on behalf of its CEO Luiz Alberto Garcia, hereby states that the company has the main objective of promoting the sustainable development and the reduction of deforestation of the Amazon biome through SYS-FM/CERFLOR-0015 and PEFC/28-22-40-certified sustainable forest management activities and generation of carbon credits through forest and biodiversity conservation. Furthermore, Luis Alberto has had as a personal commitment even before the carbon project was set to happen, even though the area was giving him several losses and he had no resources to do so, prior to 2017, he still did not give it away or clear cut the area. A way the project owner found of maintaining the possibility of conservation of the project area was to hire a new management team and to implement the carbon project. ABC Norte's former sustainable forest management plan extended for the first 2 years of the carbon project, ending its cycle on 2019, and being renewed for more 35 years. This 2019 renewal of the SFMP has brought good results to ABC Norte and, added to their socio-environmental program and the carbon project, it has placed Fazenda Pacajá again as an valuable branch of the Algar group, and in this way, ABC Norte intends to maintain the commitment and renew the management plan once the current one is over. As their commitment, ABC Norte confirms to certainly renew the sustainable forest management plan for another 35-year forest management period and to continue the management practices, which represents a total 72-year management period, i.e., at least until 2089.	-6
Total Project Longevity (PL) May not be less than zero		0

Internal Risk	
Total Internal Risk (PM + FV + OC + PL)	$(-2) + 3 + 6 + 0 = 7$
Total may not be less than zero.	

2 EXTERNAL RISKS

Land Tenure and Resource Access/Impacts		
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating
a)	<i>Ownership and resource access/use rights are held by same entity(s)</i> Yes, both ownership and resource access/use rights are held by the same entity, ABC Agropecuária Brasil Norte S.A. - Produção e Exportação. The property of Fazenda Pacajá is privately owned, its title encompassing full control of the land in perpetuity. Moreover, the ownership and land tenure of these properties are recognized by the State of Pará, provided that the use of the areas attends to the requirements established by the Brazilian Environmental Agency (IBAMA) regarding the sustainable use of these areas and the continuation of management practices.	0
b)	<i>Ownership and resource access/use rights are held by different entity(s) (e.g., land is government owned and the project proponent holds a lease or concession)</i> Not applicable.	0
c)	<i>In more than 5% of the project area, there exist disputes over land tenure or ownership</i> There are 3 dispute occurrences being assessed. State Government Agroextractive Settlement Project (PEAEX), due to a georeferencing error by the State, as well as by other 2 private property owners. The total size of the areas under dispute is of 836.67 ha, representing 0.6% of the project area, which is lesser than 5%. Furthermore, as mentioned above in point a), the ownership and resource access/use rights are held by ABC Agropecuária Brasil Norte S.A. - Produção e Exportação. The State of Pará and the environmental entities have recognized the ownership and land tenure of the project's property to ABC Norte REDD Project's proponent.	0

d)	<i>There exist disputes over access/use rights (or overlapping rights)</i> Within the project area, there are no disputes regarding access rights, use of land and associated resources in the project's property. Moreover, the resource rights and land tenure of the property are recognized by the State of Pará and the environmental entities, provided that the utilization of the area attends to the requirements established by the Brazilian Environmental Agency (IBAMA) regarding the sustainable use of these areas and the continuation of management practices.	0
e)	<i>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</i> Not applicable.	0
f)	Mitigation: <i>Project area is protected by legally binding commitment (e.g., a conservation easement or protected area) to continue management practices that protect carbon stocks over the length of the project crediting period</i> The project is protected by legally binding commitment to continue management practices that protect carbon stocks and it will be certainly renewed, as described on item (h) of Opportunity Cost and (b) of Project Longevity.	-2
g)	Mitigation: <i>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</i> ABC Norte seeks to maintain a good relationship with the local communities, implementing sustainable practices such as the <i>Responsabilidade Socioambiental</i> program, described on item (c) of Community Engagement. The project also applies the SOCIALCARBON® Standard, which uses six indicators to monitor social, environmental and other aspects of the project, and track their progress across time. This will, for an example, encourage the continuation and improvement of sustainable practices, or a better implementation of socio-environmental activities within the leakage management area. Therefore, it is expected that these practices will avoid the risk of disputes over land tenure, ownership, or access/use rights.	-2
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)	<i>Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted</i> There is only one community living within the project area and reliant on it, which is called <i>Monte Sião (Santa Terezinha)</i>. In this community there are around 14 households, estimating 70 people total. The community leaders have been consulted. For more information about the Local Stakeholder Consultation, please check the VCS-PD, section 2.2.	0
b)	<i>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</i> There are 5 communities within 20 km of the project boundary outside the project area: 1. Cristo Salvador: 5 households, around 25 people; 2. Divino Espírito Santo: 30 households, around 150 people; 3. Nossa Senhora do Carmo: 15 households, around 75 people; 4. São Sebastião do Cipoal: 35 households, around 175 people. All 5 communities' leaders have been consulted. For more information about the Local Stakeholder Consultation, please check the VCS-PD, section 2.2.	0
c)	Mitigation: <i>The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area</i> The <i>Responsabilidade Socioambiental</i> project is aimed at serving the communities within and surrounding the project area, and currently accompanies 5 communities: <i>Cristo Salvador, Divino Espírito Santo, Nossa Senhora do Carmo, São Sebastião do Cipoal and Caminheiros do Bem</i>. The communities receive monthly visits to carry out projects such as the implementation of fish-farming and poultry farming, construction of a forest nursery for the production of fruit seedlings to be implemented in agroforestry systems, workshops on producing cookies, tapioca flour, soaps, among other things. The project has been	-5

	modifying and helping social, environmental and economic aspects of the communities served. Besides forest conservation, the present project aims to improve and quantify its social and environmental benefits through application of the SOCIALCARBON® Methodology. 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. The SOCIALCARBON® Standard will help to demonstrate social and environmental benefits beyond GHG emissions reductions or removals.	
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.										0																																																																																																												
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c)	Governance score of -0.32 to less than 0.19 The mean of Brazil's Governance Scores across the six indicators of the World Bank Institute's Worldwide Governance Indicators (WGI), averaged over the most recent five years of available data (between 2015 and 2019) ² was equal to -0.18. Please, see the table below:										2																																																																																																												
<table><tr><th colspan="2">Voice and Accountability</th><th colspan="2">Political Stability and Absence of Violence/Terrorism</th><th colspan="2">Government Effectiveness</th><th colspan="2">Regulatory Quality</th><th colspan="2">Rule of Law</th><th colspan="2">Control of Corruption</th></tr><tr><th>Year</th><th>Rank</th><th>Year</th><th>Rank</th><th>Year</th><th>Rank</th><th>Year</th><th>Rank</th><th>Year</th><th>Rank</th><th>Year</th><th>Rank</th></tr><tr><td>2015</td><td>0.46</td><td>2015</td><td>-0.33</td><td>2015</td><td>-0.18</td><td>2015</td><td>-0.19</td><td>2015</td><td>-0.15</td><td>2015</td><td>-0.18</td></tr><tr><td>2016</td><td>0.45</td><td>2016</td><td>-0.38</td><td>2016</td><td>-0.17</td><td>2016</td><td>-0.21</td><td>2016</td><td>-0.16</td><td>2016</td><td>-0.18</td></tr><tr><td>2017</td><td>0.45</td><td>2017</td><td>-0.42</td><td>2017</td><td>-0.29</td><td>2017</td><td>-0.11</td><td>2017</td><td>-0.28</td><td>2017</td><td>-0.18</td></tr><tr><td>2018</td><td>0.40</td><td>2018</td><td>-0.39</td><td>2018</td><td>-0.45</td><td>2018</td><td>-0.32</td><td>2018</td><td>-0.25</td><td>2018</td><td>-0.18</td></tr><tr><td>2019</td><td>0.34</td><td>2019</td><td>-0.55</td><td>2019</td><td>-0.19</td><td>2019</td><td>-0.18</td><td>2019</td><td>-0.18</td><td>2019</td><td>-0.18</td></tr><tr><td>Mean</td><td>0.42</td><td>Mean</td><td>-0.41</td><td>Mean</td><td>-0.26</td><td>Mean</td><td>-0.20</td><td>Mean</td><td>-0.20</td><td>Mean</td><td>-0.18</td></tr><tr><td>Mean</td><td colspan="11">-0.18</td></tr></table>												Voice and Accountability		Political Stability and Absence of Violence/Terrorism		Government Effectiveness		Regulatory Quality		Rule of Law		Control of Corruption		Year	Rank	Year	Rank	Year	Rank	Year	Rank	Year	Rank	Year	Rank	2015	0.46	2015	-0.33	2015	-0.18	2015	-0.19	2015	-0.15	2015	-0.18	2016	0.45	2016	-0.38	2016	-0.17	2016	-0.21	2016	-0.16	2016	-0.18	2017	0.45	2017	-0.42	2017	-0.29	2017	-0.11	2017	-0.28	2017	-0.18	2018	0.40	2018	-0.39	2018	-0.45	2018	-0.32	2018	-0.25	2018	-0.18	2019	0.34	2019	-0.55	2019	-0.19	2019	-0.18	2019	-0.18	2019	-0.18	Mean	0.42	Mean	-0.41	Mean	-0.26	Mean	-0.20	Mean	-0.20	Mean	-0.18	Mean	-0.18										
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² Available at: <<https://info.worldbank.org/governance/wgi/Home/Reports>>. Last visit on: August 2021.

d)	Governance score of 0.19 to less than 0.82 Not applicable.	0
e)	Governance score of 0.82 or higher Not applicable.	0
f)	Mitigation: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3. The Project Area is located in the State of Pará. The State/jurisdiction is participating in the Governors' Climate and Forest Taskforce (GCF) ³	-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.	0 + (-5) + 0 = 0

3 NATURAL RISKS

Natural Risk (Fire)	
Significance	<i>Insignificant</i> The baseline analysis was based on data from the Brazilian National Institute of Space Research, INPE⁴, with satellite images (from PRODES) and records of possible fire outbreaks. These satellite images show heat spots that might or might not have developed into fire outbreaks, and the program applies possibility scores on these heat spots to evaluate their actual fire risk⁵. Between 2014 and early 2017, 162 heat spots were identified within the project area, 12 of them were considered minimum risk, 39 as low risk, 58 medium risk, 35 high risk and 18 as critical risk.

³ Available at: <<https://www.gcftf.org/who-we-are/member-states/>>. Last visit on: August 2021.

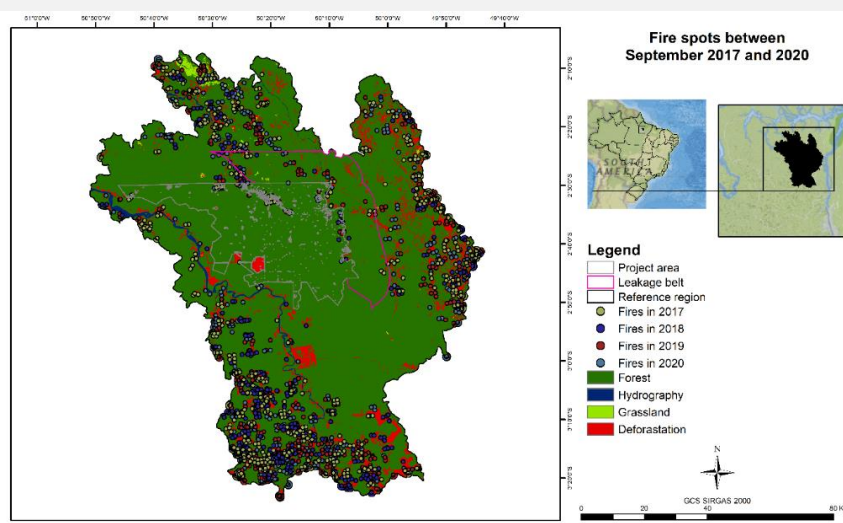
⁴ Available at <<https://queimadas.dgi.inpe.br/queimadas/bdqueimadas#exportar-dados>> Last visit on: August 2021.

⁵ Fire risk calculation methodology: <http://queimadas.cptec.inpe.br/~rqueimadas/documentos/RiscoFogo_Sucinto.pdf>, fire risk scores at page 23. Last visit on: August 2021.

The monitoring period analysis was carried out by the outsourced GIS team, which prepared the study to determine the baseline and deforestation dynamics of the ABC Norte REDD Project⁶.

During the monitored period (13 September-2017 to 31-December-2020), 36 fire spots were identified within the project area's boundaries⁷. For each fire outbreak located within the area or at a distance of less than 100 m from its border, the surroundings were assessed, within a radius of 100 m, to verify whether the outbreaks were associated with increased deforestation. Therefore, for each year (2017 – starting on September, 2018, 2019 and 2020) the proportions of deforestation occurring in the analyzed year compared to deforestation in previous years were quantified within the radius. This analysis helps us to understand if the outbreaks are occurred in areas that have already been deforested, if they occurred in forest areas that did not generate additional deforestation, or if they occurred in areas that were deforested due to the burning.

From this analysis, it was verified that most of the outbreaks detected occurred in areas that had already been deforested or in areas that did not generate forest loss (as seen on the figure below). And only a few fires caused forest loss.



Furthermore, no fire outbreaks have been reported by the by the executive forestry manager, Luciana Di Paula Assunção Pereira, neither by ABC Norte's management team, categorizing these occurrences as

6 Source: Estudo para a determinação da linha de base e dinâmica de desmatamento do projeto ABC Norte REDD Project. Available at section: Monitoramento do impacto das queimadas (Monitoring fire impact), pages 95-98.

7 To assess the fire impact, data from INPE's Queimadas monitoring program was used (same program used to assess the baseline fire risk). This program uses nine satellites with optical sensors that operate in the thermal-mid range of 4um. The information is processed in the Image Generation Division – DGI and in the Satellite and Environmental Systems Division – DAS. Two types of images are used: the satellites with polar orbit (AVHRR/3 of NOAA-18, NOAA-19 and METOP-B, MODIS of NASA TERRA and AQUA and VIIRS of NPP-Suomi and NOAA-20), and images from geostationary satellites (GOES-16 and MSG-3). More than 200 images are processed per day, with at least two sets of polar-orbiting satellite images being generated per day, and four geostationary images per hour.

	<i>Insignificant</i> , taking into consideration that they would probably have been noticed if they represented over 5% of forest degradation/deforestation.
Likelihood	<i>Less than every 10 years</i> As mentioned above, there have been critical heat spots that could evolve to fire outbreaks in the 4 years prior to the project start date and during the current monitored period.
Score (LS)	2.00
Mitigation	0.25 The management team performs monthly monitoring of the heat spots detected by INPE's program, allowing them to identify the spots that are most susceptible to fire outbreaks in order to send a team to assess their possible occurrence and take the appropriate measures to contain the possible fire outbreak, if necessary.

Natural Risk (Pest and Disease outbreaks)	
Significance	<i>No Loss</i> There was no record of any pest and disease outbreak in the project areas of the ABC Norte REDD Project, therefore, no loss. The project area is covered by 100% Amazon Rainforest; therefore, this system in equilibrium reduces the significance of pest and disease outbreaks. In such environments, plants live in harmony with pests and diseases. The plants are well adapted to the place they are living in, there are sufficient quantity and quality of nutrients in the soil, with good humidity conditions, incidence of light and the presence of natural predators and biological pest and disease controllers. Thus, pests and diseases do not increase their population, as the environment does not favor the expansion of these agents⁸.
Likelihood	<i>Every 50 to less than 100 years</i> There was no record of any pest and disease outbreak in the project area of the ABC Norte REDD Project for the past decades, however, in order to be conservative, a likelihood of once every 50 to less than 100 years is being considered.
Score (LS)	0.00

⁸ ZANUNCIO JUNIOR, José Salazar *et al.* Manejo Agroecológico de Pragas: alternativas para uma agricultura sustentável. **Revista Científica Intellecto**, Venda Nova do Imigrante, v. 3, n. 3, p. 18-34, 2018. Available at <<https://biblioteca.incaper.es.gov.br/digital/bitstream/123456789/3582/1/Manejo-agroecologico-de-pragas-v3-n3-2018.pdf>>. Last visit on: August 2021.

Mitigation	1.00 No measures are taken for addressing this matter.
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Natural Risk (Extreme Weather)	
Significance	<i>Insignificant</i> The significance of blow-down winds was determined using a search of the BDMEP (Meteorological Database for Research and Education) platform⁹, created by the INMET (Meteorological National Institute)¹⁰. In the database of Breves Station, the nearest to the project area, from 2007 to 2017, the average maximum wind speed has never exceeded 2.13 m/s, which is significantly below the wind speed for the categories of tropical storm or hurricane¹¹. During the monitored period (13/09/2017 to 31/12/2020), the average maximum wind speed has never exceeded 1.94 m/s, which is also significantly below the wind speed for the categories of tropical storm or hurricane.
Likelihood	<i>Every 10 to less than 25 years</i> No extreme weather events damaging the project area were reported by the management team. The likelihood of blow-down winds was determined using a search of the BDMEP platform wind records from 2007 to 2017, and from 2017 to 2020. In continental equatorial regions of the Amazon, hurricane damage does not occur. However, Espírito-Santo et al. (2010)¹² used Landsat images of the Brazilian Amazon to detect large natural gaps (>30 ha) with fan-shape forms (blowdowns), probably caused by high-velocity wet downburst winds. Blow-down occurrence frequency and the associated disturbance area are usually greater where severe storms occurred more frequently. Nevertheless, the conclusion of this study shows that the recurrence interval for blowdowns in the western Amazon region is around 90,000 years, based on the occurrence of new blowdowns and the assumption of a constant disturbance rate for the western region.

⁹ Available at: <<https://bdmep.inmet.gov.br/#>> Last visited on: August 2021.

¹⁰ Available at: < <http://www.inmet.gov.br/portal/index.php?r=home2/index>> Last visited on: August 2021.

¹¹ National Weather Service (USA): weather categories determined using Saffir-Simpson Hurricane Wind Scale: <<http://www.nhc.noaa.gov/aboutsshws.php>>. Last visited on: August 2021.

¹² Espírito-Santo et al. (2010). Storm intensity and old-growth forest disturbances in the Amazon region, Geophysical Research Letter, Volume 37, L11403. Available at: <<http://onlinelibrary.wiley.com/doi/10.1029/2010GL043146/pdf>>. Last visit on: August 2021.

Score (LS)	1.00
Mitigation	1.00 No measures are taken for addressing this matter.

Natural Risk (Geological Risk)	
Significance	<i>No Loss</i> No geological events damaging the project site were reported by the project's management team. Furthermore, the Brazilian entity responsible for geological services and for risk and disaster prevention, CPRM¹³, developed a list of 821 priority municipalities for risk management¹⁴, regarding their high and very high geological risk. Neither municipalities of Portel or Bagre were included on this list, consequently neither the project area, indicating the area is not of geological concern.
Likelihood	<i>Every 50 to less than 100 years</i> The project area is located in a stable geological area with no faults. No geological events damaging the project site were reported in the interview. In addition, the altitude of the project area ranges from 16 to 79 m, and slope between 4.18 e 5.11 %, characterizing a flat region with low chances of mass movement and landslide. Generally, land slide events may occur in areas with slopes above 20°-25°, when forested lands begin to be subject of landslides¹⁵. Therefore, there is a minimal risk of landslides within the project area. In addition, such event has never happened according to the project owner and his management team.
Score (LS)	0
Mitigation	1.00 No measures are taken for addressing this matter.

¹³ Available at: <<http://www.cprm.gov.br/>> Last visited on: August 2021.

¹⁴ Available at: < https://www.gov.br/mdr/pt-br/assuntos/emendasparlamentares/PUBL_relatorios_004_821_municipios_prioritarios.pdf> Last visited on: August 2021.

¹⁵ Ministérios das Cidades. Capacitação em Mapeamento e Gerenciamento de Risco. Available at: <<http://www.defesacivil.mg.gov.br/images/documentos/Defesa%20Civil/manuais/mapeamento/mapeamento-grafica.pdf>>. Last visit on: August 2021.

Natural Risk – Other Natural Risk	
Significance	Not applicable.
Likelihood	<i>Risk is not applicable to the project area</i>
Score (LS)	0
Mitigation	Not applicable.

Score for each natural risk applicable to the project (Determined by $LS \times M$)	
Fire (F)	$2 \times 0.25 = 0.50$
Pest and Disease Outbreaks (PD)	$0 \times 1.00 = 0.00$
Extreme Weather (W)	$1 \times 1.00 = 1.00$
Geological Risk (G)	$0 \times 1.00 = 0.00$
Other natural risk (ON)	$0 \times 1.00 = 0.00$
Total Natural Risk (as applicable, $F + PD + W + G + ON$)	1.50

4 OVERALL NON-PERMANENCE RISK RATING AND BUFFER DETERMINATION

4.1 Overall Risk Rating

Risk Category	Rating
Internal Risk	7.00
External Risk	0.00
Natural Risk	1.50
Overall Risk Rating (a + b + c)	10

4.2 Calculation of Total VCUs

VCS-PD - 1st Baseline Period

Year	Estimated baseline emissions or removals (tCO ₂ e)	Estimated project emissions or removals (tCO ₂ e)	Estimated leakage emissions (tCO ₂ e)	Ex ante buffer credits (tCO ₂ e)	Estimated net GHG emission reductions or removals (tCO ₂ e)
2017	89,738	126,751	13,461	0	0
2018	299,039	483,108	44,856	0	0
2019	512,528	494,789	76,879	0	0
2020	594,385	499,267	89,158	7,386	0
2021	676,908	503,782	101,536	14,916	0
2022	860,843	513,845	129,127	31,665	0
2023	1,021,114	522,614	153,167	46,272	201,977
2024	1,118,079	527,919	167,712	55,134	367,313
2025	1,314,785	538,681	197,218	73,065	505,820
2026	1,500,268	548,829	225,040	89,985	636,413
2027	1,675,104	558,395	251,266	105,939	759,504
2028	1,772,789	563,739	265,918	114,875	828,256
2029	1,957,112	573,824	293,567	131,678	958,043
2030	2,003,248	576,348	300,487	135,933	990,480
2031	2,117,651	582,607	317,648	146,389	1,071,007
2032	2,245,128	589,581	336,769	158,025	1,160,752
2033	2,335,645	594,534	350,347	166,303	1,224,461
2034	2,354,735	595,578	353,210	168,090	1,237,856
2035	2,435,072	599,973	365,261	175,432	1,294,406
2036	2,479,145	602,385	371,872	179,473	1,325,415
2037	2,486,988	602,814	373,048	180,216	1,330,910
2038	2,503,967	603,743	375,595	181,787	1,342,842
2039	2,474,837	602,149	371,226	179,157	1,322,305
2040	2,459,940	601,334	368,991	177,822	1,311,793
2041	2,572,491	607,492	385,874	188,060	1,391,065
2042	2,444,607	600,495	366,691	176,448	1,300,972
2043	2,403,632	598,253	360,545	172,724	1,272,110
2044	2,394,521	597,755	359,178	171,896	1,265,692
2045	2,421,856	599,250	363,278	174,374	1,284,953
2046	2,345,827	595,091	351,874	167,459	1,231,403
2047	1,607,780	414,048	241,199	114,161	838,371
Total	55,479,763	17,018,972	8,321,997	3,684,665	26,454,119

VCS-MR - Point 1 (13/09/2017 to 31/12/2020)

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)	Buffer pool allocation	VCUs eligible for issuance
2017	89,738	86,977	3	2,759	44	2,714
2018	299,039	231,793	41	67,205	5,951	61,254
2019	512,528	463,580	68	48,879	3,272	45,606
2020	594,385	250,079	72	344,233	32,296	311,936
Total	1,495,690	1,032,429	184	463,076	41,564	421,510
Total number of monitoring years	3.3	3.3	3.3	3.3	3.3	3.3
Average annual ERs	452,676	312,468	56	140,152	12,579	127,571