



ABC NORTE REDD PROJECT



Document Prepared by RINA Services S.p.A.

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Summary:

RINA, commissioned by ABC Agropecuária Brasil Norte S.A. - Produção e Exportação has performed joint validation and verification of the project activity “ABC Norte REDD Project”, against VCS Version 04 and all applicable requirements therein, for the proposed monitoring period.

The primary objective of the ABC Norte REDD Project is to avoid the unplanned deforestation (AUD) of the 140,432.27 ha project area, consisting of 100% Amazon rainforest. The project area is located within a private property named “Fazenda Pacajá”, which is located between the municipalities of Portel and Bagre, in the State of Pará, Northeast Amazon. Apart from conservation, the project proponent has decided to maintain the Sustainable Forest Management Plan (SFMP) in Fazenda Pacajá by investing in a certified reduced impact logging SFMP by signing a contract with Madeireira J&Y. In addition, the company has also decided to focus more on Environmental education and other social activities that benefit the local community, as well as improving the control of deforestation. Carbon credits revenues are an important income source for making such activities feasible. The SOCIALCARBON® Standard is being applied to assess and monitor the project's contribution to sustainability using six key indicators: Biodiversity; Nature; Financial; Human; Social and Carbon Resources, thus improving the social and environmental conditions in the project region.

The purpose and Scope of Validation/Verification: The validation scope is to review the VCS-PD against the VCS criteria which refer to VCS Version 4.1 standard and all the GHG program requirements. The verification is to have an independent review ex post determination by a VVB (Validation and Verification Body) of the monitored GHG removals by sink that have occurred as a result of the implementation of the project activity during a defined monitoring period.

The present REDD project is expected to avoid predicted 82,994.27 ha of deforestation, equating to 26,454,119 tCO₂e in emissions reductions over the 30-year project lifetime (13-September-2017 to 12-September-2047), including buffer (RF), leakage (DLF) and project efficiency (EI) reductions.

The VCS REDD project applies VCS methodology VM0015: Methodology for Avoided Unplanned Deforestation, version 1.1 and corresponding tools are applied to quantify the GHG removals achieved in this project.

The ABC Agropecuária Brasil Norte S.A has requested RINA to perform the joint validation and the 1st verification audit, for which a joint Project Description & Monitoring Report, a Non-Permanence-Risk Report and supporting documents were provided. RINA, acting as an independent third party, has assessed the documents and evidence provided, and performed desk assessment and virtual assessment, which included a desk review, virtual inspection of project site, interviews with stakeholders, interviews with the top management of PP and interviews with the technical and field staff of the project activity. RINA team verified the information contained and the emissions reductions and/or removals claimed in the Project Implementation Report, calculated in compliance with the requirements of the Verified Carbon Standard (VCS) and the requirements of the methodology applied.

Any uncertainties associated with the validation/verification: carbon stocks per hectare of initial forest classes including existing in the project area and leakage belt, uncertainties at confidence interval of 90%, and final values after discounts for uncertainties were considered in the ER calculations, which is as per the

uncertainty assessment requirements of the methodology. The estimation of the total uncertainty of the REDD Project Activity was conducted in compliance with the VCS methodology by quantifying the uncertainty for the projection of baseline rate of deforestation as well as the estimation of stocks in carbon pools.

In total 10 Clarification Request, 02 Corrective Action Request and 03 Forward Action Request were raised. After successful validation/verification, RINA confirms that the project complies with all the requirements of the Verified Carbon Standard, having generated 463,076 tCO₂ equivalents net emission reductions during the present reporting period (13/09/2017 to 31/12/2020), and after discounting 10% for buffer resulting to 421,510 tCO₂e.

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1 INTRODUCTION

1.1 Objective

RINA has been commissioned by ABC Agropecuária Brasil Norte S.A. - Produção e Exportação to perform an independent validation/verification of its VCS REDD project, “ABC REDD Project”. The objective of the Validation and Verification is to have an independent evaluation of a project activity by a VVB against the requirements of the VCS standard, version 04.1, on the basis of the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant VCS requirements, VCS Program Guide, Registration & Issuance Process, Validation & Verification Manual, methodology & tools and host Party criteria are validated in order to confirm the correctness of the application of the approved baseline methodologies for the determination of the baseline and estimation of the emission reductions for the applicable crediting period.

The reported GHG emission reductions for the given monitoring period must undergo independent third- party verification and certification of emission reductions as the basis for issuance of Voluntary Emission Reductions (VERs/VCUs).

The objectives of this verification exercise are, by review of objective evidence, to establish that:

- The project activity has been implemented and operated as per the project description (PD) and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place.
- Monitoring report and other supporting documents are complete.
- The data is recorded and stored as per the monitoring methodology and approved monitoring plan.
- To confirm that the monitoring system is implemented and fully functional to generate Voluntary Emission Reductions (VERs/VCUs) without any double counting, and
- To establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The validation scope is to review the VCS-PD against the VCS criteria which refer to VCS Standard, Version 4.1 and all the GHG program requirements. Validation is not meant to provide any consultancy towards the project participants.

The verification scope is:

- to verify that actual monitoring systems and procedures are in compliance with the monitoring systems and procedures described in the monitoring plan;
- to evaluate the GHG emission reduction data and express a conclusion with a reasonable level of assurance about whether the reported GHG emission reduction data is free from material misstatement.
- to verify that reported GHG emission data is sufficiently supported by evidence.

The project is assessed against the of VCS program guide v 4.0, VCS standard v4.1. RINA has, based on the recommendations in the latest version of VCS Validation and Verification Manual v 3.2, and employed a rule-based approach (as criteria) in the verification, focusing on the identification of significant reporting rules and the reliability of project monitoring.

The joint Validation & Verification is not meant to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the joint Project Description and Monitoring Report.

1.3 Level of Assurance

The final joint validation/verification report before being submitted to the client were subjected to an independent internal technical review to confirm that all verification activities had been completed according to the pertinent RINA's instructions, with reasonable level of assurance.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for VCS validation and verification.

The verification team and the technical reviewers consist of the following personnel.

Role	Last Name	First Name	Country
Team Leader and Technical Expert	Menon	Rekha	India
Validator/Verifier and Local Expert	Goes	Gustavo	Brazil
ITRP Technical Expert	C. Beck	Talita	Brazil

1.4 Summary Description of the Project

Project Proponent	Abc Agropecuária Brasil Norte S.A. - Produção E Exportação
Title of the project activity	ABC Norte REDD Project
Baseline and monitoring methodology	VM0015: Methodology for Avoided Unplanned Deforestation, version 1.1
Location of the project activity	The ABC Norte REDD project is located in a private property named "Fazenda Pacajá" covered almost in its totality by native vegetation, totaling 145,680.7882 ha., which is situated between the

	municipality of Portel and Bagre, in the State of Pará, Northeast Amazon.
Brief description of the project	The primary objective of the ABC Norte REDD Project is to avoid the unplanned deforestation (AUD) of the 140,432.27 ha project area, consisting of 100% Amazon rainforest. The project area is located within a private property named “Fazenda Pacajá”, which is located between the municipalities of Portel and Bagre, in the State of Pará, Northeast Amazon. Apart from conservation, the project proponent has decided to maintain the Sustainable Forest Management Plan (SFMP) in Fazenda Pacajá by investing in a certified reduced impact logging SFMP by signing a contract with Madeireira J&Y. In addition, the company has also decided to focus more on Environmental education and other social activities that benefit the local community, as well as improving the control of deforestation. Carbon credits revenues are an important income source for making such activities feasible. The SOCIALCARBON® Standard is being applied to assess and monitor the project's contribution to sustainability using six key indicators: Biodiversity; Nature; Financial; Human; Social and Carbon Resources, thus improving the social and environmental conditions in the project region.
Projects crediting period	13/09/2017 to 12/09/2047
Projects monitoring period	13/09/2017 to 31/12/2020

2 VALIDATION AND VERIFICATION PROCESS

2.1 Method and Criteria

Validation and Verification is conducted using RINA procedures in line with the requirements specified in the VCS Standards and applying standard auditing techniques. The Validation/verification consisted of the following three phases:

- Document review.
- Follow-up actions -Remote audits including interviews and site assessments using satellite imagery, GIS, shape files of PA, RR, LB, videos and pictures of the site.
- The resolution of outstanding issues and the issuance of the final joint Validation & Verification report.

The following sections outline each step in more detail.

The verification and sampling plan methodology was based on VCS guidance documents and ISO 14064-3. Estimation of the average carbon stock for “Dense lowland tropical rainforest” was based on the forest inventory. Based on inventory information, a total of 21 plots were measured across the single identified strata – Dense lowland tropical rainforest. The sample design was a simple random sample with each plot has dimension of 50 x 50 m (0.25 hectares), randomly distributed. The validation team could not visit the site due to COVID pandemic. However, the assessment team assessed the performance of the inventory practices and checked that the value used by the PP was conservative compared to the values referred in the literature. More information is provided in section 3.4.6.

The team performed a remote audit during which it examined the data processing, quality controls and carbon modelling. This was to determine the correctness of the assumptions that the PD provided on the project eligibility criteria in relation to Methodology, as well as the project’s ability to implement the project design over the duration of the project crediting period.

Sampling and data testing activities were planned to address any risk where the likelihood of a material discrepancy not being detected by the audit team was judged to be unacceptably high. No sampling plan was used as part of the validation/verification.

2.2 Document Review

The joint PD and MR, version 05 of 20/01/2023 /01/, in particular the applicability of the methodology, the baseline determination, emission reduction calculations provided in the form of a spreadsheet ex-ante VCS PD Calculation_ABC Norte REDD Project_v05.xlsx) /2/, and ex-post ER emission spreadsheet (VCS MR Calculation ABC Norte REDD+ Project_period 01_13 09 17_31 12 2020_v04.xlsx) /3/, investment analysis sheet (Cashflow CO2_ABC Norte_v02.xlsx) /65/. non-permanence risk report, version 01 of 17/08/2021 and the documents listed in the table below, were reviewed during the offsite – audit.

The following table lists the documentation that was reviewed during the Validation/Verification.

/1/	Ecologica Assessoria Ltda: Joint Project Description and Monitoring Report, version 02 of 24/11/2021, version 03 of 17/08/2022 , version 04 of 20/12/2022 and version 05 of 20/01/2023
/2/	Ecologica Assessoria Ltda: ER spread sheets (VCS PD Calculation_ABC Norte REDD Project_v02.xlsx) version 02 of 24/11/2021, (VCS PD Calculation_ABC Norte REDD Project_v03.xlsx) version 03 of 17/08/2022, (VCS PD Calculation_ABC Norte REDD Project_v04.xlsx) version 04 of 20/12/2022 and (VCS PD Calculation_ABC Norte REDD Project_v04.xlsx) version 05 of 20/01/2023
/3/	Ecologica Assessoria Ltda: Expost ER spread sheets (CS MR Calculation ABC Norte REDD+ Project_period 01_14 09 17_31 12 2020_v02.xlsx) version 02 of 09/08/2021 and ER

	spread sheets (CS MR Calculation ABC Norte REDD+ Project_period 01_14 09 17_31 12 2020_v03.xlsx) version 03 of 20/12/2022 and and ER spread sheets (CS MR Calculation ABC Norte REDD+ Project_period 01_14 09 17_31 12 2020_v03.xlsx) version 04 of 20/01/2023.
/4/	Ecologica Assessoria Ltda: Non permanence risk report, version 02 of 24/11/2021.
/5/	VCS: VCS Program Guide, VCS Version 4.0 of 19/09/2019, version 4.1 of 20/01/2022
/6/	VCS: VCS Standard, VCS Version 4.0 of 19/09/2019, version 4.1 of 22/04/2021 and 4.3 of 22/06/2022.
/7/	VCS: VCS-Risk-Report-Calculation-Tool-v4.0.xls
/8/	VCS: Approved VCS methodology VM0015 “methodology for avoided unplanned deforestation, version 1.1 of 03/12/2012
/9/	VCS: VT0001”Tool for the demonstration and assessment of additionality in VCS Agriculture, Forestry and Other Land use (AFOLU) project activities, v3.0
/10/	Forest and deforestation shape files for RR, LB from 2010 to 2020
	CAR
/11/	CAR: Property Statement, 2018
	CCIR
/12/	CCIR: Fazenda Pacaja Area 01, 2020
/13/	CCIR: Fazenda Pacaja Area 02, 2020
/14/	CCIR: Fazenda Pacaja, 2020
/15/	CCIR Fazenda Pacaja Lote 25 Setor A
/16/	CCIR: Fazenda Pacaja L-28
	Contract
/17/	Contract between ABC Agropecuária Brasil Norte and EcologicaPrivate :Partnership Instrument for the Development of , Verified Emissions Reduction Generation Project dated 27/11/2020
	Environmental Monitoring Report
/18/	Aflora Engenharia: Pacaja Farm - Environmental Monitoring Report, 2020.
	License
/19/	Government Of The State Of Pará: Rural Activity License, 2017
	Fauna Report
/20/	Up Bio: Fauna Monitoring Report - Abc Norte - 1st Campaign, 2020.
/21/	Up Bio: Fauna Monitoring Report - Abc Norte – 2nd Campaign, 2020.
	Team Experience
/22/	Luciana Di Paula Assunção Pereira Cv
/23/	Rogério Melo Cv
/24/	Cinthya Jaqueline Gomes Ramos Cv
/25/	Pamela Thais Figueira Bahia Cv
/26/	Maicon Silva Farias Cv
	Sysflor
/27/	Sysflor Invoice, 04/19/2019
/28/	Sysflor Invoice, 20/05/2021
	Land Titles
/29/	Land Titles N° 1.665, 1.666, 1.689 and 1.693.
/30/	Land Titles N° 1.709, 1.711, 1.712, 1.713, 1.588, 1.622, 1.655, 1.667, 1.668, 1.669, 1.671, 1.672, 1.673, 1.674, 1.675, 1.674, 1.675, 1.676, 1.677, 1.678, 1.679, 1.680, 1.681, 1.682, 1.683, 1.684, 1.685, 1.687, 1.688, 1.690, 1.691, 1.692, 1.694, 1.695, 1.697, 1.698, 1.699, 1.700, 1.701, 1.708, 1.710, 1.717, 1.718, 1.719, 1.721, 1.722, 1.723, 5.907, 5.908, 5.909, 5.910, 5.911, 5.912, 5.913, 5.914, 5.915, 5.916, 5.917 and 1.686.
/31/	Land Title N° 1587
/32/	Land Title N° 1588, 1622, 1655, 1626, 1641, 1637, 1644, 1647, 1648 and 1652.
	Socioenvironmental Report

/33/	Up Bio: Socioeconomic Diagnosis, Municipality Of Portel-Pa And The Pacajá River Region, Abc Norte, 2020
/34/	Up Bio: Activity Execution Report - Program Of Social And Environmental Responsibility - Fazenda Abc Norte, 2020
	Sustainable Forest Management Plan (Pmfs)
/35/	ABC Norte: Abc Norte Safety Formalization Procedure, 2019
/36/	Species List Spreadsheet
/37/	Monitoring Permanent Plots
/38/	Sample Plots Spreadsheet
/39/	ABC Norte: Forest Inventory, 2021
/40/	J&Y: Sustainable Forest Management Plan - Pacajá Farm, 2019
/41/	Forest Management Road Shapefiles
	Apu 14
/42/	SEMAS (Secretary of State for Environment and Sustainability): Authorization For Forest Exploitation, 08/11/2016
/43/	Summary Of Explored And Unexplored Volume By Species Spreadsheet
/44/	Inspection Report, 2018
	Apu 15
/45/	Cikel Florestal: Annual Operating Plan - Apu 15, 2016
/46/	J&Y Florestal: Post-Exploratory Activity Report, 2019
/47/	J&Y Florestal: Summary Of Explored And Unexplored Volume By Species Spreadsheet
	Apu 16
/48/	J&Y Florestal: Annual Operating Plan - Apu 16, 2019
/49/	Partial Report Of Post-Exploratory Activities - Apu 16, 2019
/50/	J&Y Florestal: Summary Of Explored And Unexplored Volume By Species Spreadsheet
/51/	Apu 16 Post-Exploration Data Spreadsheet
	Apu 17
/52/	J&Y Florestal: Annual Operating Plan - Apu 17, 2020
/53/	J&Y Florestal: Partial Report Of Post-Exploratory Activities - Apu 17, 2020
/54/	SEMAS (Secretary of State for Environment and Sustainability): Authorization For Forest Exploitation, 03/18/2020
/55/	Apu 17 Post-Exploration Data Spreadsheet (PÓS-EXPLORATÓRIO - UPA 17-PARCIAL.xlsx)
	Training
/56/	ABC Norte: Attendance List - Weekly Occupational Safety Dialogue, 29/07/2020
/57/	ABC Norte: Participant List - Fire Brigade Training Including First Aid, 01/07/2020
/58/	ABC Norte: Attendance List - Breast Cancer Prevention Reunion, 02/10/2020
/59/	ABC Norte: Photos And Videos Of Training.
	Georeferencing
/60/	INCRA: Descriptive Memorial Of Areas With Geographic Coordinates, 2021
/61/	INCRA: Areas Plan, 2020
	Local Stakeholders Consultation
/62/	Local Stakeholder Consultation Report, 2021
/63/	Receipt Notifications Of Letters Sent To Stakeholders, 2020
/64/	Recorded Meeting: Local Stakeholder Consultation, 13/07/2021
/65/	Ecologica Assessoria Ltda: ABC NORTE Cashflow (Cashflow: CO2_ABC Norte_v02.xlsx)
/66/	ABC Agropecuária Brasil Norte S/A: Financial Statements 2015, 2016 and 2017.
/67/	SEMAS (Secretary of State for Environment and Sustainability): Technical Report, 2020.
/68/	FRM Brasil: Systematic Sample Survey Report, 2016.
/69/	ABC Agropecuária Brasil Norte S/A: Control of Costs 2017-2021 (ABC Norte_Control of costs 2017-2021.xlsx)

/70/	ABC Agropecuária Brasil Norte S/A: 2022 Budget (2022_ABC Norte_Orcamento 2022-Silvicultura_Desp-Adm_v3.xlsx)
/71/	SEMAS (Secretary of State for Environment and Sustainability): Authorization for Forestry Exploration, 21/11/2019.
/72/	ABC Agropecuária Brasil Norte S/A: Fire Management Plan, 2019
/73/	ABC Agropecuária Brasil Norte S/A: Cikel Contract Rescission, 2017.
/74/	ABC Agropecuária Brasil Norte S/A and Madeireira J&Y Ltda – ME: Rural lease agreement for the extraction of Forest Products through a sustainable forest management plan, 2017.
/75/	Social Carbon: Social Carbon Report 13-September-2017 to 31-December-2020, Version 01, 2020.
/76/	Recorded Meeting: Local Stakeholder Consultation, 06/10/2021
/77/	Sysflor: CERFLOR Certificate, 2020
/78/	ABC Norte/Algar: Email exchanges between the project owner and the carbon consultant, 2017 – 2020.
/79/	Biofilica: Economic Feasibility Report of Fazenda Pacajá, 2017.
/80/	ABC Agropecuária Brasil Norte S/A: Socioenvironmental Report 2017-2019.
/81/	SEMAS (Secretary of State for Environment and Sustainability): Authorization To Use Forest Raw Material, 2021
/82/	ABC Agropecuária Brasil Norte S/A: Board decision 07/03/20017.
/83/	Contract between ABC Agropecuária Brasil Norte and AMPLA Consultoria e Projetos Socioambientais Ltda :Contract for services dated 01/03/2018
	Mapping data
/84/	Project boundary – Reference Region, Leakage Belt and Project Area shapefiles and kml files
/85/	Property Limits (Fazenda Pacajá) shapefiles
/86/	Mapbiomas: LU/LC shapefile 2007- 2017
/87/	IBGE: Vegetation types shapefile, 2019
/88/	IBGE: Roads and Urban Areas shapefile, 2019
/89/	ANA: Hydrography shapefile, 2020.
/90/	Modelling resulting maps 2018-2047.
/91/	Fick, S.E. and R.J. Hijmans, 2017. WorldClim 2: new 1km spatial resolution climate surfaces for global land areas. International Journal of Climatology 37 (12):Precipitation shapefile, 2020
/92/	SRTM: Elevation and Slope shapefiles, 2014.
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/115 /	INMET. National Institute of Meteorology Platform.
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/121 /	Remade: Brazilian and exotic woods: http://www.remade.com.br/madeiras-exoticas/1/madeiras-brasileiras-e-exoticas , last accessed on 12 January 2022.
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/139 /	Brasil Law nº. 12.651, of 25 May 2012: Forest Code.
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/141 /	Brasil Decree nº. 10.088 of 05 November 2019.
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/144 /	Secretary Of State For The Environment And Sustainability Of Pará: Normative Instruction nº 05, of 10 September 2015.
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/146 /	COLPINI, Chirle et al. : Determination of volume, form factor and percentage of bark of individual trees in an open rain forest in northwestern Mato Grosso.
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/148	SIVAM (Surveillance for Amazon forest) Reference: https://www.terra-brasilis.org.br/ecotecadigital/pdf/manual-tecnico-da-vegetacao-brasileira.pdf
/149 /	IPE, Instituto de Pesquisas Ecologicas : RR_algar_50_set2017 and RR_algar_superclass2020

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/155 /	Grupo Executivo do Estado do Pará para o Plano Marajó (GEPLAM) (2007), “Plano De Desenvolvimento Territorial Sustentável Do Arquipélago Do Marajó”.
/156 /	ZANUNCIO JUNIOR, José Salazar et al Agroecological pest management: Alternatives for a sustainable agriculture - 2018
/157 /	Brazilian Civilian code: < http://www.planalto.gov.br/ccivil_03/leis/2002/110406compilada.htm , last accessed on 17/08/2022
/158 /	RINA: ABC Norte REDD project, Social Carbon report, dated, version 1.1Aa, dated 15/02/2022
/159 /	SEMA-PA Apprehension report dated 01/02/2019
/160 /	Exploration and valuation in round of 10 forest species in the low Amazon, Para State between 2006-2016 - Ana Kaira Cant. da Concei, .dria Giselle dos Santos Lira, Luana Marise Rocha de Sousa, Mayra Piloni Maestri, Marina Gabriela Cardoso de Aquino
/161 /	Confidence intervals, Prof. Adriano Mendonça Souza, Department of Statistics , dated 02/09/2008
/162 /	Muggeo VMR. Segmented: an R package to fit regression models with broken-line relationships. RNews. 2008; 8:20–5
/163 /	Sâmia Nunes, Luis Oliveira Jr, João Siqueira, Douglas C Morton and Carlos M Souza Jr: Unmasking secondary vegetation dynamics in the Brazilian Amazon, 06/03/2020
/164 /	Pereira, izaura cristina nunes: biomass stock and forest carbon in landscape units in the amazon: an analysis from the methodological approach. Federal univeristy of parã, belêm, 2013
/164 /	ABC Norte: Analysis Real X Projection Deforestation Abc Norte

2.3 Interviews

	Date	Name and Role	Organization	Topic
/a/	17/09/2021, 20/09/2021 & 21/09/2021	Luciana Di Paula	Abc Agropecuária Brasil Norte S.A. - Produção E Exportação	VCS consideration, funding of the project, start date of the project Land tenure rights, Pre-project conditions, project implementation status and financial viability of the project, baseline and additionality, forest management plan/conservation plan and QA/QC procedures.
/b/	17/09/2021, 20/09/2021 & 21/09/2021	Rogério Teixeira	Abc Agropecuária Brasil Norte S.A. - Produção E Exportação	Land titles, Laws and policies, necessary approvals and permits from different authorities. Social Environmental Impact Assessment, sustainability development, community involvement, Stakeholder identification, stakeholder consultation and ongoing communication with stakeholders. Conservation plan and vigilance mechanism in place and stakeholder grievance.
/c/	17/09/2021, 20/09/2021 & 21/09/2021	Marcelo Haddad – Technical Director	Ecológica Assessoria Ltda	Spatial and temporal boundaries, Reference region, Project Area, Leakage Belt, leakage management areas, LU/LC analysis, agents and drivers of deforestation, emission reduction calculations ex-ante and ex-post, forest inventory, measurement procedures, data recording and data archiving, actual deforestation, and non-permanence risk report.
/d/	17/09/2021, 20/09/2021 & 21/09/2021	Lyara (Technical Analyst)	Ecológica Assessoria Ltda	
/e/	21/09/2021	Carolina Pendl – Technical Analyst	Epógica Assessoria Ltda	Non-Permanence risk report and related evidence/references.
/f/	20/09/2021	Alexandre Uezu (Remote Sensing & GIS expert)	IPE, Instituto de Pesquisas Ecológicas	Remote sensing imagery, shape files of RR, PA, Leakage belt and leakage

/g/	20/09/2021	Henrique Shirai (Remote Sensing & GIS expert)	IPE, Instituto de Pesquisas Ecologicas	management area, LU/LC classes, forest cover benchmarks, accuracy assessment of maps, maps on spatial drivers of deforestation, projection of future deforestation, factor maps, deforestation risk maps and mapping location of future deforestation.
/h/	25/09/2021	Lucilene (Community Leader)	Divino Espirito Santo - Community	Stakeholder interviews, stakeholder consultation carried out by PP, on -going methods of communication, grievance mechanism, capacity building, trainings, land disputes, illegal logging, indigenous communities, sources of livelihood, complaints and benefits to stakeholders.
/i/	06/10/2021	Sebastiao Araujo - Farmer	Nossa Senhora da Carmo - Community	
/j/	06/10/2021	Maria Ines- House wife	Sao Sebastiao - Community	
/k/	06/10/2021	Olivio Farias Marinho- Watch Man	Monte Siao - Community	
/l/	06/10/2021	Raimunda Oliveira - Farmer	Cristo Salvador - Community	

Please note that VVB interviewed 5 stakeholders from 5 different communities Cristo Salvador, Divino Espírito Santo, Nossa Senhora do Carmo, São Sebastião do Cipoal and Monte Siao - Community. These are the 5 communities, which are living within 20 km of the project boundary outside the project area. The interview process was carried out remotely using MS-teams. During the interviews, the VVB raised questions on the general livelihood scenario of the communities, land type (private/Govt.), where the communities are settled, participation in the meetings conducted by project owner, information on the proposed project, indigenous communities living close to project areas, benefits from the projects, current or past land disputes, relocation of human settlements because of the project, training and community welfare activities carried out by project owner, employments generation, grievance mechanism and the time taken to resolve the complaints. During the interaction, the stakeholders did not have any negative comments on the project.

Apart from interacting the stakeholders, the VVB was also part of the online stakeholder consultation conducted by PP, which was held on 13/07/2021. As discussed in the PD, several stakeholders like Uppio Soluções Ambientais, Sustainable Carbon, Instituto Ecológica Palmas, Chico Mendes Institute for Biodiversity Conservation (ICMBio) and National Institute of Colonization and Agrarian Reform (INCRA) attended the meeting. Everyone had a positive opinion on the project. The clarifications raised by the stakeholders were well answered by the PP and there was no negative feedback on the project.

2.4 Site Inspections

The auditing team could not visit the site due to COVID-19 pandemic and subsequent travel restrictions. The VVB could not postpone the site visit due the prevailing uncertainty in travel restrictions and the deadline for completion of the project as per the VCS standard requirements

and signed contract between the VVB and the PP. Additionally, it is noted that there is no mandatory VCS Program requirement that mentions that a site visit must be conducted (even for forestry projects). However, to make sure that the VVB complies with the VCS Standard Version 4.1, all the information provided in the joint PD & MR and ER spread sheets was verified during the desk-review phase. In addition, the VVB also checked the documents against credible sources and interviews with concerned stakeholders. The VVB carried out the audit by other means of standard auditing techniques, which included video conference calls, videos of the site, videos of the project site, remote sensing imagery, publicly available documents and interviews via MS team. The same is as per the VCS- COVID travel guidance (<https://verra.org/covid-19-travel-guidance/>).

During the desk assessment of the project, the auditing team assessed the implementation and operation of the proposed project activity, project area, reference region area and the leakage belt area, baseline, additionality. The same was crosschecked by interviewing the stakeholders. Independent check of baseline deforestation was carried out by the authorized sites from the Brazilian Government.

2.5 Resolution of Findings

The objective of this phase of the validation and verification is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the project description. In order to ensure transparency, a validation protocol was customized for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria.

The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a VCS project is expected to meet.
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The objective of this phase of the verification was to resolve any outstanding issues that needed be clarified prior to RINA's positive conclusion on the monitoring report and the project design.

A corrective action request (CAR) is issued if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The VCS requirements have not been met.
- There is a risk that emission reductions cannot be monitored or calculated.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.

02 CARs, 10 CLs and 03 FARs were raised and have been adequately addressed by the project participant (refer to Appendix 2).

2.5.1 Forward Action Requests

The following FARs has been raised in the current validation/verification report.

FAR 01

According to the SOCIALCARBON methodology, the project will allocate part of the revenues from the sale of carbon credits to social investments. As this is the first MR, it has not yet been defined how these investments will be carried out. The VVB is requested to check the same in the next verification.

FAR 02

The project proponent shall use IPCC AR5' GWP values in the subsequent monitoring events, including recalculation of the baseline using these values. The same needs to be checked by the VVB in the next verification.

FAR 03

Since no site visit was carried out in the current validation/verification, it is mandatory that the VVB carries out site visit in the next verification, which should also include a larger proportion of stakeholders to be interviewed.

3 VALIDATION FINDINGS

3.1 Project Details

Project type, technologies and measures implemented, and eligibility of the project

The primary objective of the ABC Norte REDD Project is to avoid the unplanned deforestation (AUD) of the 140,432.27-ha project area, consisting of 100% Amazon rainforest, within a private property of "Fazenda Pacajá located in the municipalities of Portel and Bagre, in the State of Pará, Northeast Amazon /29/ /30/ /31/ /32/. During the audit it was checked that the project owner, also the project participant leased the area to a forestry company (Cikel) for SFMP (Sustainable Forest Management Plan) from 1999 to 2017 /73/. However, during this tenure the project participant noticed negative cashflow /66/, illegal logging activities happening by both inside and outside agents /67/ /68/. On 13/09/2017, the project proponent continued to maintain the Sustainable Forest Management Plan (SFMP) in Fazenda Pacajá by signing a new contract with Madeireira J&Y with more emphasis on conservation measures and carrying out SFMP in a more sustainable manner /74/. The project proponent also terminated the contract with Cikel /73/.

Apart from the SFMP, the project also aims in establishing conservation activities planned by the project owner, with the expansion of social activities to local communities and enhanced surveillance in the project area. Carbon credits revenues are an important income source for making such activities feasible. It is to be also noted that the project is also applying for Social Carbon Standard /75/ and all the above-mentioned measures will be monitored throughout the

crediting period /02/. Based on evidence collected during the audit, this type of management constitutes a modification from the baseline scenario expected to result in GHG emissions reductions or removals. Evidence includes interviews with project proponents and community members /76/; examination of data collected by remote sensing /84/ /85/ /86/ /87/ and first-hand field observation.

According to the VCS Standard the project can be considered eligible under VCS, since it meets the following criteria: a) the project activity falls into the AFOLU project category as explained above. B) The project area, where the proposed REDD project is implemented, no jurisdictional REDD+ Program is developed, though a jurisdictional REDD+ strategy is under development . c) The project activity is implemented by ABC Norte, who is also the owner of the land. The role and responsibilities are clearly described in the PD /1/ and in the following assessment. d) The activities implemented do not convert native ecosystem. The project area only contains native forested land for a minimum of 10 years before the project start date, which was confirmed from the satellite images /84/ /85/ /86/ /87/. e) The activities implemented do not drain or degrade hydrological function to generate GHG credits. The area is not a wet land area /40/. f) The non-permanence risk report was analysed in accordance with the latest available AFOLU Non-Permanence Risk Tool, version 04 /4/ /7/.

It is to be also noted that the proposed project consist of Wooded Capinarama, Lowland Dense Ombrophilous Forest, Dense Ombrophilous Forest and Alluvial Dense Ombrophilous Forest /1/. Remote sensing /86//87/ imagery was provided to confirm that all areas within the project area constitute forest according to the definition applied in Brazil (as per FAO definition of forest) /103/.

Project proponent and other entities involved in the project

As per the information available in the PD /1/, the primary project proponent and the owner of the project is ABC Agropecuária Brasil Norte S.A. - Produção e Exportação. Also confirmed from land titles and ownership documents -CCIR (Certificate of Registration of Rural Propert), INCRA, Conservation Unit and land titles Matricula /12/ /13/ /14/ 15/ /16/. As per the audit observations and interviews with the representatives of ABC Norte, it is confirmed that ABC Norte is capable to conduct the project activity and oversee the project implementation due to relevant experience and competency in forest management /22//23//24//25//26/.

The other Project Proponent involved in the project is Ecológica Assessoria Ltda, also a Project developer (VCS consultant) and Project conceiver /17/ . Ecológica Assessoria Ltda was RINA's main point of contact throughout the project assessment. As per the audit observations, Ecologica has registered similar REDD projects in the past with VERRA /120/ and they have an excellent and competent team who are well versed with REDD and methodology requirements of VERRA.

The other entities involved in the project are Sustainable Carbon Projetos Ambientais LTDA, as Carbon credits trader and Registry Manager and Uezu Planejamento Ambiental S/S LTDA supporting the Project with GIS and Remote Sensing Anlaysis.

Ownership

As discussed, the project owner is NRD. The Lands are owned by ABC Agropecuária Brasil Norte S.A. - Produção e Exportação. The same was checked from the land titles and ownership documents -CCIR (Certificate of Registration of Rural Propert), INCRA , Conservation Unit and land titles Matrícula /29/ to /32/. The validation team crosschecked the área of the land parcels from the GIS formats of the shape files /85/ and confirmed the same. Thus, the auditing team confirms that the Project área is under the control of the Project owner with respect to Project implementation, management and monitoring. /74//40//60//61/ and as per the Brazilian law/157/ , the owner of the land has all the rights on the resources generated on the land. Thus, it is the landowner, who has the legal rights on the emission reductions that the project will generate. It was further checked that ABC Agropecuária Brasil Norte S.A. - Produção e Exportação has signed contract with Ecologica for the development of Verified Emissions Reduction Generation Project dated 27/11/2020, wherein also the percentage share of carbon credits between both the entities are defined /17/. The same was checked by the VVB and accepted.

Project start date

The start date of the Project is 13/09/2017 /74/, which is the contract between Madeireira J&Y and ABC Norte to lease of its farm for the purposes of carrying out the SFMP in a more sustainable manner with emphasis on conservation measures and surveillance mechanisms. The start date was further confirmed by the chronology of implementation activities performed by the Project proponent /17/ /79/ /75/ /40//80/. The team further confirms that the start date defined meets the requirements of the definition provided by VERRA.

Project crediting period

The project's crediting period is established as 30 years from 13/09/2017 to 12/09/2047. The project lifetime is 30 years and the same is the GHG accounting period. It is assumed that both the accounting period and the project lifetime begin on the project start date. During the audit it was noted that the contract with J&Y for SFMP is only for 5 years /74/, however, the Proponent has ensured continued conservation measures and SFMP by appointing an internal team of forest engineers, besides to already having all the monitoring control and verification of compliance with the SFMP /40/. The 30 year project crediting period is in full compliance with the requirements of Section 3.8.3 of the VCS Standard, as it falls between the 20 year minimum and 100 maximum for AFOLU projects.

Project scale and estimated GHG emission reductions or removals

Based on the definitions described in section 3.9.1 of the VCS standard version 4.1 /6/, the project is categorized as a large project, as it has an estimated average annual GHG emissions reduction of 1,003,969 tCO₂e, which is greater than 300,000 tonnes of CO₂e per year. Thus, comply with the requirements of section 3.9.1 of the VCS Standard, v 4.1.

Project location

The Proposed ABC Norte REDD project is located in a private property named "Fazenda Pacajá, which is situated between the municipality of Portel and Bagre, in the State of Pará, Northeast Amazon. The initial total area considered for the project is 145,680 ha , where in non-forest area (like planned roads and non-forest vegetation or rock formations) of 5,247,73 ha has been excluded. Thus, resulting to a project area of 140,432.27 ha. The validation team checked the same against the KML files /84/ and found to be consistent. The full contour coordinates of the

project area are provided in Appendix-1 of the joint PD and MR. The same was checked with the google earth and confirmed to accurate /125/. The project boundaries were checked through GIS analysis using the shapefiles /84/ /85/. Further to this, the area of each property was checked through the National Institute of Colonisation and Agrarian Reform (INCRA) maps /11/ /12/ /13/ /14/ /15/ /16/ and also the land titles /29/ to /32/. The validation team confirms that the description of the project location complies with the requirements of clause 3.10 of the VCS Standard v4.1.

Conditions prior to project initiation

Remote sensing imagery /84/ /86/ was provided to confirm that all areas within the project area have been forest for a minimum of ten years. Thus, confirming that the project was not initiated to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.

In addition to contributing to the long-term conservation of the region, this project also functions to establish a barrier against the advancement of the Brazilian Arc of Deforestation, creating a Northeast Amazon biodiversity corridor in vulnerable region. The project aims to combine REDD and SFMP activities, which will promote forest conservation combined with alternative income generation from sustainable practices, associated with a greater surveillance against deforestation agents. The project region is classified as Tropical Forest climate type – according to the Köppen climate classification /118/. The present and prior environmental conditions of the project area, including as appropriate information on the climate, hydrology, topography, relevant historic conditions, soils, vegetation and ecosystems have been discussed in section 1.13 of the PD, which was further crosschecked with the evidence /115/ /126/ /127/ /128/ and confirms to be appropriate.

Project compliance with applicable laws, statutes and other regulatory frameworks

RINA team was able to confirm that the project complies with all applicable laws, statutes and other regulatory frameworks. Evidence to this effect includes a review of all pertinent legislation identified in the VCS PD and of compliance with the same, then confirmed through interviews with project personnel and other relevant stakeholders /76/. A list of the most pertinent legislature identified by the project proponents is as follows:

Relevant Law and/or Regulatory Framework	Description	Project Compliance
Brazilian Forest Code (Law N° 12.651, 25/05/2012) /139/	As per the Forest Code all rural estates located in forest zones should have: a. Permanent preservation area: protected areas covered or not by native vegetation, with the environmental function of preserving water resources,	RINA can confirm, through its review of the legal land tenure and titles documentation /29/ to /32/, that all of the project properties are in accordance to the documents of CAR, CCIR and INCRA.

	landscape, geological stability, biodiversity, gene flow of plants and animals, protecting the soil and ensuring the well-being of human populations b. Legal Reserve (LR): an area located within a rural property or possession which is required to be segregated, as well as the permanent preservation area, for the sustainable use of natural resources, conservation and rehabilitation of ecological processes, biodiversity conservation and shelter, and protection of native flora and fauna. In the Brazilian Legal Amazon /51/, eighty percent (80%) of a rural property should be preserved as LR.	
Decree No. 10,088, of 5/11/2019 /141/	The decree aims to create a binding international instrument dealing specifically with the rights of culturally traditional people.	The proposed project area does not have indigenous areas. The same was also confirmed during the site visit by interviewing the stakeholders. The land is private property owned by ABC Norte.
Decree No. 6,040, of 7/02/2007 /142/	Institutes the National Policy for the Sustainable Development of Traditional Peoples and Communities.	As discussed above the land is a private property, owned by ABC Norte and one the objective of the project owner is community welfare and improving environmental and social conditions of the region.
Federal Decree No. 10,144/2019 of 28/11/2019 /143/	National Commission for Reducing Emissions of Greenhouse Gases from Deforestation and Forest Degradation, Conservation of	The proposed project complies with the Decree.

	Forest Carbon Stocks, Sustainable Management of Forests and Increase of Forest Carbon Stocks - REDD+	
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The team confirms that there are no enforced mandatory applicable laws and regulations that prohibit the proposed REDD and the same in compliance with the Law no 12.651 -25/05/2012 New Brazilian Forest code /139/.

Participation under other GHG programs

The proposed project activity is not registered or seeking registration under other GHG program(s); moreover, there is no evidence of the project's rejection from any other GHG programs as per the GS and CDM project data base /119/ /120/.

Other forms of credit

Net GHG removals generated by the project activity will not be used for compliance with emissions trading programs and other binding limits. The project does not receive other forms of environmental credits. This is confirmed by interacting with the project owner.

Additional information relevant to the project

Leakage management for AFOLU projects

The project is not a grouped project. The project establishes leakage management areas as required by the selected methodology. Under VM0015 /8/, these consist of non-forest areas that are located outside the project boundary. The leakage management areas were confirmed by examination of remote sensing imagery provided by the project proponent /84/ /88/. The project describes leakage prevention and leakage quantification techniques measures in detail in sections 4.3 and 6.4 of the joint PD and MR/1/.

Commercially sensitive information

No commercially sensitive information is excluded in the public version of the joint PD & MR.

Sustainable development contributions

The main aim of the project is not only conserving 140,432.27 ha of the project area, the other important objective of the programme is to contribute positively to sustainable development of the project area and aligns itself with a number of the Sustainable Development Goals (SDGs) including goals 1, 4, 8, 12, 13 and 15 /102/. Though the project contributes to multiple sustainable developmental co-benefits like quality education, skill enhancement by trainings, including technical and vocational skills, for employment, decent jobs and entrepreneurship etc. The same was checked and confirmed during the site visit by interviewing the stakeholders. The PP has confirmed to monitor the SDG indicators as part of the Social Carbon Standard /75/. In summary, the audit team concludes that the project's sustainable development contributions as written in the PD are accurate, complete, and provide an understanding of how the project will contribute to sustainable development goals. The project has provisions to monitor and report the SDGs via Social Carbon report /158/. PP has further confirmed to monitor the same via CCB Standard from the next monitoring period. The same was checked and confirmed by the VVB.

RINA was able to verify all the documented evidence listed above during the validation process and can confirm that data and considerations are complete and accurate. Moreover, RINA confirms that the description of the proposed project activity, as contained in the PD /1/ sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the project.

3.2 Participation under Other GHG Programs

The project is not participating in any other GHG program. This is verified through interviews with project proponents during the onsite visit and internet research of VCS and CDM databases /119//120/.

3.3 Safeguards

3.3.1 No Net Harm

The potential negative environmental and socio-economic impacts identified by the project proponent as well as the positive ones have been identified in the Social Carbon Report and are shown in the table below. All mitigation actions to such impacts are discussed in the Social Carbon Report /75/.

Main social, economic, and environmental impacts of the ABC Norte REDD Project.

Activity	Aspect	Impact	Effect		Comments/ Observation
			Benefi cial	Adver se	
REDD: Carbon credit project	Environment al - Conservation of Amazon Rainforest	Greenhouse Gas Emissions Reductions	X		Monitored by the Carbon resource: - Project performance Monitored by the Natural resource: - Quality control
REDD: Carbon credit project	Environment al - Conservation of Amazon Rainforest	Monitoring and supervision to avoid deforestation of forest within the project area.	X		Monitored by the Biodiversity resource: - Impact on remaining flora Monitored by the Natural resource: - Quality control

REDD: Carbon credit project	Social - Conservation of Amazon Rainforest	Conflict management with communities in the project area, due to banning of timber product extraction.		X	Monitored by the Carbon resource: - Stakeholder consultation Monitored by the Human resource: - Conflict management
REDD: Carbon credit project	Social/Econo mic - Empowerme nt	Increased independenc e of the communities in the project area.	X		Monitored by the Social resource: - Associations and cooperatives - Expansion of community activities - Women inclusion Monitored by the Human resource: - Community education and training Monitored by the Financial resource: - Alternative income sources Monitored by the Natural resource: - Social and environmental investments Monitored by the Biodiversity resource: - Non timber forest products (NTFPs)

REDD: Carbon credit project	Social/economic - Application of the Social Carbon methodology	Encouragement and investment in social, economic and environmental aspects in the project region.	X	Monitored by the Social resource: - Expansion of community activities Monitored by the Human resource: - Community education and training Monitored by the Financial resource: - Carbon credit benefits Monitored by the Natural resource: - Social and environmental investments Monitored by the Carbon resource: - Project performance
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As discussed in the above table, the only negative impact socio-economic impact is the “Conflict management with communities in the project area, due to banning of timber product extraction” for which the project proponent has taken appropriate measures to mitigate the same by arranging stakeholder consultation and conflict management methods /158/. The same was also cross verified during the interviews with the stakeholders and accepted by the VVB team.

In addition to the above mentioned risks non- permanence of carbon is also identified as another risk, which is addressed in the buffer reduction as part of the VCS requirements. The above mentioned aspects and impacts would be monitored at each monitoring as part of the Social Carbon Standard.

3.3.2 Local Stakeholder Consultation

It was noticed that due to the COVID Pandemic, the PP has conducted the stakeholder’s consultation in 2 phases 1. Online and 2. in physical.

Online meeting was conducted on 13/07/2021, at 4 pm (Brasília time zone) on a Virtual Conference Platform. The online meeting was conducted to stakeholders located in urban areas and mostly government agencies. The validation team checked the copies of email and invitation letters sent to the government agencies /63/. The online meeting was participated by Upbio Soluções Ambientais, Sustainable Carbon, Instituto Ecológica Palmas, Chico Mendes Institute for Biodiversity Conservation (ICMBio) and National Institute of Colonization and Agrarian Reform (INCRA). Noted that the Stakeholders did not have any negative comments on the project. The same was confirmed from the meeting recordings /64/ /76/.

The physical meeting with nearby communities close to the project area and reference area took place from 25 to 27/06/2021 /62/. Since a proper physical meeting with all the communities not possible due to COVID restrictions, the PP had to visit each community through social environmental programme /34/. The minutes of the meeting are summarized in section 2.2 of the joint PD/MR. The same was also checked with the meeting recordings. The validation team further cross checked the same by interviewing the stakeholders, noted that the stakeholders are of the positive opinion and do not have any concerns about the project /76/.

As per the interactions with the PP and the stakeholders, the PP has established a permanent channel to interact with the stakeholders. The stakeholders have access to phone and email ids of the concerned personnel from both ABC Norte and Ecologica Assesoria, in case of any comments or any feedback. The PP confirmed that the complaints received from the stakeholders will be recorded and documented and necessary actions would be taken on the same. No complaints received in the proposed monitoring period /62//64//76/. Apart from this, communities also have contact with the Social Responsibility Program team through message app, besides the monthly visits held by the program, where in the grievances can be communicated to the proponent.

3.3.3 Environmental Impact

No EIA is required for a SFMP /40/ in Brazil. After the SFMP is produced by the project owner, it is approved by IBAMA (the national environmental agency). The annual operational plans are then produced /45//48//52/ by the project owners and sent to IBAMA too. The regulators then issue the authorisation for harvest /42//54/ for the parcel of land which that annual operational plan is related to.

Expected environmental impacts are described in detail in section 2.3 of the joint PD. The project does not appear to have a negative environmental impact as compared to the baseline, as evidenced by the project activities designed to prevent future deforestation through securing land tenure, preventing the encroachment of unauthorized deforestation agents, and promote the development of sustainable incomes in local communities

3.3.4 Public Comments

The project was submitted for public commenting from 30/07/2021 to 29/08/2021. The same was checked from the VERRA website. Noted that the project has not received any public comments

3.3.5 AFOLU-Specific Safeguards

As per section 3.17.10 of VCS standard version 4.1, AFOLU projects that do not impact local stakeholders, projects are not required to meet the requirements set out in Sections 3.17.11–3.17.18 of the VCS standard. RINA team confirms that the proposed project activity do not impact local stakeholders, which is discussed in detail along evidence crosschecked in section 3.3.2 above. However, the requirements of section 3.17.11 to 3.17.18 are detailed below.

Requirements	Steps taken by the audit team to assess the element
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Local Stakeholder Identification and Background	Through interviews with project personnel and the remote consultation videos with local government stakeholders, NGOs and communities, the audit team confirmed that the process of stakeholder identification as indicated in section 2.2 of the PD and the social diagnosis of the project zone as referred in the social carbon report /75/ have been accurately represented.
Risks to Local Stakeholders	The project proponent has provided risk mitigation matrix of local stakeholders in section 2.5 of the joint PD and MR. The audit team verified the aspects/impacts and the measures in places. It is confirmed that the aspects/impacts will be monitored at every verification, which is part of social carbon report /75/.
Respect for Local Stakeholder Resources	The audit team verified documentation demonstrating that a process for identification of risks to local stakeholder resources has been established /75/. The audit team confirmed via interviews with PP and document review that the project proponent has full legal ownership over the project area /29/ to /32/ and therefore the project will not impact local stakeholders' property rights, thus precluding the need for the free, prior, and informed consent. The audit team confirmed via interviews that ABC Norte has a stable relation with the communities, with activities in the region dating back to 1979. In 2017 the company took over the management of the area and the SMFP, also initiating social actions with the communities, with the Social and Environmental Responsibility Program /34/. Although there are 13 communities identified in the region, service is currently provided in only 5 of them, due to difficulties in transportation and communication with the other communities. With the carbon project revenue, the program is expected to reach all communities. The same was also confirmed from the budget plan crosschecked with the cashflow sheet /65/.
Communication and Consultation	The proposed project also applies for Social Carbon standard and as part of the standard requirements, the proponent intends to conduct meeting with stakeholders every monitoring period /75/. The meetings of the same would be documented and complaints

	received would be handled as per the priority requirements.
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3.4 Application of Methodology

3.4.1 Title and Reference

The methodology and tools applied are as follows: The approved VCS Methodology for Avoided Unplanned Deforestation VM0015 of Version 1.1, 3.12.2012 /8/, Sectoral Scope 14 has been applied.

The methodology and tools and the specific versions of them applied by the project, were valid at the time of validation.

3.4.2 Applicability

Table 8 in the PD and MR addresses the applicability conditions of the methodology. Based on evidence observed during the audit, these conditions have been satisfied. Evidence includes interviews with project proponents, local community members, supplemental data (including remotely sensed images, and supplemental documentation as described below.

Applicability Condition	RINA Assessment
Baseline activities may include planned or unplanned logging for timber, fuel-wood collection, charcoal production, agricultural and grazing activities as long as the category is unplanned deforestation according to the most recent VCS AFOLU requirements.	The main baseline land use scenarios for unplanned deforestation activities are cattle ranching for producing beef cattle, unplanned logging for timber both legal and illegal, which are mainly attracted due to infrastructure expansion like roads, highway construction and water ways, which are also one of the causes for increasing unplanned deforestation. For the proposed project activity, the scenario prior to the proposed project was also SFMP, leased by the project owner to the third party (Cikel). However, during this period, the project proponent noticed increase deforestation due to external and internal agents. The same was checked with remote sensing imageries /84/ to /91/. Project meets the requirement. Further, the Environmental Agency of the State of Pará found around 100 ha of illegal deforestation during the period 2009 to 2016 /67/ and 1,135 ha of illegal logging areas, harvested beyond the legal limits /68/, including an operation of an illegal sawmill within the project boundary. It was also checked that around 2 thousand ha of area was deforested illegally in Fazenda Pacaja

	area in the reference period from 2007 to 2017, thus concluding unplanned deforestation in the baseline.
Project activities may include one or a combination of the eligible categories defined in the description of the scope of the methodology (Table 1 and Figure 2).	The project falls in category B: Avoided deforestation with logging by means of SFMP. Degradation is not considered in baseline or the project scenario.
The project area can include different types of forest, such as, but not limited to, old growth forest, degraded forest, secondary forests, planted forests and agro-forestry systems meeting the definition of “forest”.	The proposed project consist of Wooded Capinarama, Lowland Dense Ombrophilous Forest, Dense Ombrophilous Forest and Alluvial Dense Ombrophilous Forest /1/. Remote sensing /86//87/ imagery was provided to confirm that all areas within the project area constitute forest according to the definition applied in Brazil (as per FAO definition of forest) /103/.
At project commencement, the project area shall include only land qualifying as “forest” for a minimum of 10 years prior to the project start date.	Remote sensing imagery /84//86/ was provided to confirm that all areas within the project area have been forest for a minimum of ten years.
The project area can include forested wetlands (such as bottomland forests, floodplain forests, mangrove forests) as long as they do not grow on peat. Peat shall be defined as organic soils with at least 65% organic matter and a minimum thickness of 50 cm. If the project area includes forested wetlands growing on peat (e.g. peat swamp forests), this methodology is not applicable.	The project proponent has stated that the project area does not include forested wetlands. No forested wetlands were observed during the remote assessment, nor from review of the satellite imagery /86/. The same was also confirmed from the IBGE-Soil maps /40/ and LU/LC maps /86/.

The proposed project meet also meets the following applicability condition of the tool “Tool for the demonstration and assessment of additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) project activities, Version 3.0 of 01/02/2012 /09/.

Applicability Condition	RINA Assessment
AFOLU activities the same or similar to the proposed project activity on the land within the proposed project boundary performed with or without being registered as the VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced.	The proposed REDD project does not lead to violation of any applicable law even if the law is not enforced. The project is in compliance with the forest code (Law N° 12.651, 25/05/2012) /139/.

The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario . Project proponent(s) proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity.	Stepwise approach has been used in justifying the determination of the most plausible baseline scenario. The same has been discussed in more detail in section 3.5 of the joint PD&MR /01/.
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RINA team confirms that the project meets all the applicability criteria of the methodology and associated tools.

3.4.3 Project Boundary

Spatial Boundaries

As per the methodology the project consists of different project related areas. These include:

- Project Area (PA): 140,432.27 ha
- Reference Region (RR): 976,850.1 ha
- Leakage Belt (LB): 81.217,32 ha
- Leakage Management Areas: 299.03 ha,

The boundary delineation and area size are based on the assessment of satellite images in line with the methodology requirements and described in detail in the in the PD and supporting documents as discussed below:

The audit team went through the boundary delineation shape files (GIS format data) /84/ and recalculated the extents in the UTM coordinate system and verified each project activity boundaries such as PA, RR, LB and Leakage Management Area. The boundaries as presented in the GIS files and the PD are adequately documented and the area size correctly determined.

Project Area:

The project area is located within a private property named “Fazenda Pacajá”, which is located between the municipalities of Portel and Bagre, in the State of Pará, Northeast Amazon. The Project area overlayed and checked with MAPBIOMAS and confirmed it does not have any polygon classified as Hydrology in the mapbiomas. /86/ Further, based on the mapbiomas, classification ensuring the presence of forest cover. Further, it is confirmed by crosschecking the ownership boundaries /85/ to ensure the project area is within the ownership of project proponent.

Reference Area:

The RR was delimited by, hydrographic basins within an area of more than 22 million hectares around the PA, from the drainage network produced by the SRTM digital elevation model /92/. For each one of these basins the average values of altitude, taken from SRTM /92/, slope, calculated with the “Slope” tool of the ArcGis, and precipitation, from WorldClim /91/, were determined. The percentages of different types of vegetation, obtained from Project SIVAM /148/ too.

According to the Methodology for projects above 100,000 ha, the reference region should be about 5-7 times larger than the project area. In this case it is 6.956 times larger than Project Area and hence accepted by the validation team.

The project area and reference region must have the similarities. The methodology specifies four types of landscape configuration and ecological condition in that at least three must be satisfied as per the Methodology requirement.

Three vegetation types were found to be present in the project instance area: Wooded Campinarana, Dense Alluvial Tropical Rainforest, and Dense Lowland Tropical Rainforest. /148/, /87/. However, only one 1 forest stratum was considered, as the Project Area is composed of 99% Dense Lowland Tropical Rainforest. In the reference region, these Phyto physiognomies occupy 97,75%, which is more than the methodology requirement of 90%.

The altitude in the project area ranges from 16 to 79 meters which is extracted from SRTM data /92/ and these values are within 85.46% of the variation in the reference region, this is not complied the methodology requirement. However, very close.

As per the methodology requirement the average slope of at least 90% of the project area shall be within $\pm 10\%$ of the average slope of at least 90% of the rest of the reference region. In the average slope in the project area is 4.19%, while in the reference region it is 4.65%. The slope is calculated and verified using the SRTM data/92/. Thus, meeting the methodology requirements.

Further, the methodology requires, The average annual rainfall in at least 90% of the project area shall be within $\pm 10\%$ of the average annual rainfall of at least 90% of the rest of the reference region. The annual precipitation in the project area is, on average, 2,562.43 millimetres per year, while in the rest of the reference region it is 2,503.86 mm. /91/ Hence, meeting the requirements of the methodology.

Based on the above it is confirmed that out of the 4,3 has been meeting the requirements as mentioned in the methodology.

The audit team also confirms that socio-economic and cultural conditions as well as agents and drivers of deforestation provided in the PD /01/. The presented census and relevant economic data crosschecked and confirmed /154/. It is presented according to the requirement by VM0015.

Leakage Belt:

For defining the boundary of Leakage belt, Methodology proposes two options, in the proposed project the PP has adopted the Opportunity Cost method because the main deforestation driver is cattle ranching. The Cattle ranching production is direct correlation with the transportation cost. Hence, the distance between production and market point will determine the deforestation. Therefore, the selection is acceptable.

The audit team validated that the variables used in the formula were credible and verifiable. The distances from each pixel in the RR to the nearest town, where cattle can be commercialised were calculated using available tools in ArcMap (Euclidean Distance to estimate distances till the road, and Coast Distance to estimate distance on the road to the main nearest town). The distances were

summed up by the software R and a raster map of the added distances was generated and is shown in figure 29 of the PD v4.0.

To produce the map of costs of transportation (fig. 30 of the PD v4.0), the last part of the formula 1 of the methodology ($TDv \cdot TCv$) was entered in the “Raster Calculator” of the ArcMap. The file raster of distances estimated was transformed to a file of values, transformed to Km.

The next step was to input the rest of the data needed to complete equation 1 of the methodology into the “Raster Calculator” to generate the potential profitability map (or opportunity cost map) shown in figure 31 of the PD v4.0.

Taking into account the profitability shown in figure 31 of the PD v4.0 and a radius of 10Km around the project area, the consultants determined the area of the leakage belt shown in figure 32 of the PD v4.0 /1/. This is because it was assumed that this 10Km radius would reflect leakage due to the actions of the project near the project area.

The PDD and annexes have solid evidence to proof the spatial distribution of potential future expansions /147/. Further PP has considered adjacent viable areas to the project area, according to the opportunity cost analysis within a 10km radius, where deforestation could occur directly due to the project's activity. The reference for 10 km radius was checked with “Domino” effect may increase deforestation rates in Southern Roraima State /104/.

Leakage Management Area:

The leakage management area was defined as the area of a radius of 1 kilometer around the communities of Caminheiros do Bem, Nossa Senhora do Carmo, Candiru, Cipoal and Divino Espírito Santo, figure 33 of the PD v4 /1/. Since the same is not a forested area, it is accepted as per the methodology requirements.

Temporal boundaries

Temporal boundaries are defined in compliance with the methodology applied.

- Starting date and end date of the historical reference period: The historical reference period was defined as the year 2007 until 2017; accordingly, remote sensing imagery of the RR was acquired for the years 2007 and 2017. Further, the historical Landcover changes extracted from mapbiomas. (Mapbiomas : Brazilian Annual Land Use and Land Cover Mapping Project)/86/.
- Starting date of the project-crediting period of the project activity: The project crediting period of the ABC Norte REDD project commenced on 14th September 2017. More information on the same is provided in section 3.1 of the report.

Boundaries on emissions sources and carbon pools are presented in the following tables. These boundaries have been validated by review of the selected methodology, by documentation supplied by the project proponent, and by audit observations. It is RINA's opinion that the selected boundaries are consistent with the requirements of the VCS standard and selected methodology and appropriately justified.

The project's selected carbon pools are defined as follows:

Carbon Pool	Included/Excluded	Justification
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Above Ground Biomass	Tree: Included	Carbon stock change in this pool is always significant. Since the same is as per the requirement of the methodology, it is accepted by the VVB.
	Non- tree: Excluded	The VVB confirms that none of the categories have final land cover of perennial crop. For more information, please refer to section 3.4.4 of the report.
Below Ground Biomass	Included	Stock change in this pool is significant and included as recommended by the methodology.
Dead wood	Excluded	It is envisaged that in the baseline the dead wood is not removed or used for any other purpose and is left to decay and left to burn in the baseline. Thus, exclusion of dead wood is conservative and the same was accepted by the VVB.
Harvested wood products	Excluded	Stock change in the pool is not considered to be conservative. Since the carbon stock in this carbon pool is higher in project scenario than the baseline, exclusion of this pool is acceptable.
Litter	Excluded	Allowed by methodology and recommended when significant. Conservatively excluded. The exclusion of litter is conservative as the baseline validated is cattle ranching. For more details of the validation of the baseline see section 3.4.4. of this report.
Soil Organic Carbon	Excluded	Not to be measured when forest is converted to pastures in the baseline scenario according to VCS VM0015 methodology /8/. The justification included in the PD is as per the requirements of the methodology.

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The project's selected emissions sources are defined as follows:

Sources		Gas	Included/Excluded	Justification
Base line	Biomass Burning	CO ₂	Excluded	Excluded as recommended by the applied methodology.
		CH ₄	Included	Fires are the main technology as it is common practice to burn the forest in order to prepare the land for pastures in the project's region . The same is included as non-CO ₂ emissions from biomass burning in the baseline scenario, according to the methodology.
		N ₂ O	Included	Fires are the main technology as it is common practice to burn the forest in order to prepare the land for pastures in the project's region. The same is included as non-CO ₂ emissions from biomass burning in the baseline scenario, according to the methodology.
	Livestock emissions	CO ₂	Excluded	Excluded as insignificant by the methodology.
		CH ₄	Excluded	Conservatively excluded – expected to be greater under the baseline scenario as compared to the project scenario. There will be no livestock introduced in leakage

				management areas. More information is provided below.
		N ₂ O	Excluded	Conservatively excluded – expected to be greater under the baseline scenario as compared to the project scenario. There will be no livestock introduced in leakage management areas. More information is provided below.
Project emissions	Biomass burning	CO ₂	Excluded	No biomass burning increase is predicted to occur in the project scenario compared to the baseline case. Thus, considered insignificant.
		CH ₄	Included	Included as non-CO ₂ emissions from biomass burning in the project scenario, according to the methodology.
		N ₂ O	Included	Included as non-CO ₂ emissions from biomass burning in the project scenario, The same is according to the methodology.
	Livestock emissions	CO ₂	Excluded	Not a significant source as no livestock or agriculture increase is predicted to occur in the project scenario compared to the baseline case. Thus, considered insignificant.
		CH ₄	Excluded	Not a significant source as no livestock or agriculture increase is predicted to occur in

				the project scenario compared to the baseline case. Thus , considered insignificant.
		N ₂ O	Excluded	Not a significant source as no livestock or agriculture increase is predicted to occur in the project scenario compared to the baseline case. Thus , considered insignificant.

It is checked that logging in the baseline scenario occurred by both means i.e. planned and unplanned. However, since both the activities targeted commercial valuable species without following the sustainable forest management rules. It would be difficult to state HWP for planned and unplanned activities. The same was confirmed from the comparison of the SEMA-PA apprehension report 01/02/2019 /159/ and also the post exploratory report of the management plan from ABC Norte prior to the start of the project confirms that 90% of the harvested volume carried out by baseline planned activities are composed by the same species illegally logged in the baseline /39/. This was further checked with the exploration and valuation in round of 10 forest species in the low Amazon, Para State between 2006-2016 /160/, which concludes that the final use as wood products of both scenarios is the same, i.e., medium to long-lived wood products. It is to be also noted that as per the methodology VM0007, it is conservative to assume that 100% of the carbon stock in wood products in the baseline scenario is long-lived. Moreover, as per the forest inventory /39/ reports, it is observed that wood harvested by illegal loggers during the baseline would be of 17 m³/ha and in the project scenario following the requirements of sustainable forest management plan the logging volume is 30 m³/ha, which confirms that the amount timber harvested in baseline scenario is lower than project scenario. Therefore, harvested wood products were not included in the baseline case, as removal of timber is not associated with significantly more carbon stored in long-term wood products in the baseline case compared to the project scenario. A significance assessment was made to confirm that this carbon pool is not significant, according to the “Tool for testing significance of GHG emissions in A/R CDM project activities”, in accordance with VM0015 methodology. The description of this assessment was included in section 3.3 of the Joint PD/MR and the VVB team crosschecked the same ER spread sheets confirms that the sum of decreases in carbon pools and increases in emissions represents less than 5% of the total decrease in carbon pools and increase in emissions and less than 5% of net anthropogenic removals by sinks. Thus, the justification provided by PP was accepted. It is to be noted that the harvested wood products from the project scenario have been excluded and there by resulting in conservative estimations. Since the carbon stock in this carbon pool is higher in project scenario than the baseline, exclusion of this pool from project scenario is accepted by the validation/verification team.

The validation of the project activity did not reveal other greenhouse gas emissions or removals occurring within the proposed project activity boundary as a result of the implementation of the proposed project activity which are expected to contribute more than 5% of total decreases in carbon pools and increases in emissions, or more than 5% of net anthropogenic removals by sinks, which are not addressed by VM0015 /25/. By checking the information and the audit observations, RINA can confirm that the appropriate carbon pools have been considered and the description in the PD /1/ is accurate and complete, and also the selected carbon pool are justified for the proposed project activity.

By assessing the documentation provided by the PPs as well as the observations made and interviews, held onsite the audit team concludes that the boundary and selected sources, sinks and reservoirs are justified for the project.

3.4.4 Baseline Scenario

The project has applied VCS Tool VT0001 /9/ to demonstrate additionality, also including the selection of baseline scenario. Section 3.5 of the PD /1/ includes the details of the project proponent's application of the tool. The application included the identification of alternative scenarios, documentation of baseline determination, and comparison of the potential baseline scenarios against applicable laws, investment analysis, and a common practice analysis.

In line with the methodology, the PD /1/ has identified that the most likely land use scenario is the continuation and proliferation forest encroachment by pioneer activities, eventually leading to an expansion of deforestation. In this scenario, deforestation would be initiated by increased access to the forest by expansion of unofficial roads constructed by illegal selective loggers, followed by land clearing to support activities such as cattle ranching by agents who are facilitated by the access resulting from the loggers' actions.

In order to demonstrate additionality the project uses the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities (Version 3.0) /9/. As a first check, the audit team made sure that the project complied with the applicability conditions in order to use the aforementioned tool. These applicability conditions are as follows:

- a) AFOLU activities the same or similar to the proposed project activity on the land within the proposed project boundary performed with or without being registered as the VCS AFOLU project shall not lead to violation of any applicable law even if the law is not enforced /139/;
- b) The use of this tool to determine additionality requires the baseline methodology to provide for a stepwise approach justifying the determination of the most plausible baseline scenario. Project proponent(s) proposing new baseline methodologies shall ensure consistency between the determination of a baseline scenario and the determination of additionality of a project activity /1/.

RINA can confirm that no similar project, without being registered as a VCS AFOLU project, will lead to violation of any applicable law, even if not enforced. This was further confirmed through interviews conducted with project stakeholders and project personnel during on-site inspection, as well as through an analysis of all applicable laws similar to the one conducted in section 3.1 of this report. A stepwise approach is used in justifying the determination of the most plausible baseline scenario. It was thus determined that the applicability conditions for the employment of the pertinent additionality tool were met. This was further justified in section 3.4.5 of the report.

The tool next requires the project proponents to carry out the following four steps to determine if their project is additional:

- a) STEP 1. Identification of alternative land use scenarios to the AFOLU project activity;
- b) STEP 2. Investment analysis to determine that the proposed project activity is not the most economically or financially attractive of the identified land use scenarios; or
- c) STEP 3. Barriers analysis; and
- d) STEP 4. Common practice analysis.

In line with the methodology and the aforementioned tool, the VCS PD has identified two alternative land use scenarios.

1. Continuation of the existing land-use scenario. This scenario involves the implementation of a sustainable forest management plan within the project boundaries, without involving additional social/environmental activities and forest conservation measures. Despite the contribution to forest preservation and carbon stock maintenance, SFMP areas are subject to unplanned deforestation and loss of carbon stock due to external agents. These scenarios include forest encroachment by pioneer activities followed by deforestation to implement pastures, timber extraction by the landowner.
2. Implementation of SFMP along with REDD implementation activities without registration as a REDD project.
3. Cattle ranching: a plausible scenario since cattle is one of Brazil's main economic activities. Furthermore, it is one of the core activities of the holding company, named Algar Group. Thus, the experience of the group along with the most economical scenario /65/ makes cattle ranching the most plausible baseline scenario.

All the above mentioned scenarios are in compliance with the applicable laws and regulations. It is checked that scenario 1 and 2 both are in compliance with sustainable forest management plan is regulated in Brazil by the laws No. 12,651, decree No. 5,9752 /140/, in addition to para legislation, with law no. 6, 4623 and normative instructions IN 05/144/ and no. 001/2014 /145/.

Further information is detailed in section 3.4.5 below.

3.4.5 Additionality

The project has applied VCS Tool VT0001 /9/ to demonstrate additionality. Section 3.5 of the PD /1/ includes the details of the project proponent's application of the tool. The application included the identification of alternative scenarios, documentation of baseline determination, and comparison of the potential baseline scenarios against applicable laws, investment analysis, and a common practice analysis. The additionality assessment concluded that the project is additional. Evidence reviewed in the course of the validation of this assessment included /65/ /69/ /70/ /129/ /130/ /131/ /132/ /133/ /134/ /135/ /136/

During the audit it was noticed that the start date of the project is 13/09/2017, which when the project owner signed the SFMP contract with J&Y /74/. The project was publicly listed on VERRA website for comments only on 30/07/2021. Since there was a delay for approximately 4 years from the start date, the validation team also checked the PPs prior VCS consideration along with the real and continuing actions taken to by the PP to secure VCS status for the project in parallel with its implementation. The VVB checked the following evidences and confirms that PP was serious in considering the REDD revenues before the start of the project.

1. REDD feasibility assessment carried out by carbon consultant, Biofilica, dated 23/01/2017 /79/.
2. Board minutes confirming the decision of implementing the REDD project along with SFMP, dated 07/03/2017 /82/.

3. Hiring of a social environmental consultancy for conducting a better approach with the surrounding communities regarding the SFMP, dated 01/03/2018 /83/.
4. Email exchanges between the project owner and the carbon consultant on finalizing the contract for REDD project dated 30/08/2017 to 30/10/2020 /78/.
5. REDD development contract signed with VCS consultant on 27/11/2020 /17/.
6. Project PD publicly available for comments on 30/07/2021 /120/.

Step 1: Identification of alternative land use scenarios to the AFOLU project activity: Explained in more detail in section 3.4.4 above.

Step 2. Investment analysis

Since the project generates financial benefits other than VCU via sale of timber harvesting, the PP has applied investment comparison analysis to demonstrate additionality.

Appropriateness of selection of investment comparison analysis: Since the proposed baseline scenario leaves the project proponent no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and the use of an investment comparison analysis is justified. Where an alternative requires investment anyhow and baseline emissions are based on that alternative, the only means of determining that the project activity is less financially attractive than at least one alternative is to conduct an investment comparison analysis. Thus, the VVB confirms that the selection of investment comparison analysis of the proposed project is appropriate.

NPV has been selected as the financial indicator most suitable for the project type and decision making context.

An investment comparison analysis was carried out for all the three scenarios discussed above. The below table provides the main parameters used for the investment comparisons analysis.

Parameter	Scenario		
	Scenario I (in Brazilian Reais)	Scenario II (in Brazilian Reais)	Scenario III (in Brazilian Reais)
TOTAL REVENUES	R\$ 240,516,952.05	R\$ 240,516,952.05	R\$ 840,378,043.64
Timber	R\$ 240,516,952.05	R\$ 240,516,952.05	R\$ 251,856,329.51
Other (cattle ranching)	R\$ 0.00	R\$ 0.00	R\$ 588,521,714.14
TOTAL EXPENSES	-R\$ 123,944,247.66	-R\$ 177,747,920	-R\$ 236,988,138.12
SFMP costs	-R\$ 123,944,247.66	-R\$ 123,944,247.66	R\$ 0.00
Forest conservation and socio environmental activities	R\$ 0.00	-R\$ 53,803,672.87	R\$ 0.00
Other (cattle ranching)	R\$ 0.00	R\$ 0.00	-R\$ 236,988,138.12

The validation team checked that the above mentioned cost discussed for scenario I is mainly related to the cost incurred towards sustainable forest management and revenue from sale of timber, scenario II is the same as scenario I. However, it includes further cost on additional expenses incurred on forest conservation measures. Scenario III expenses are related to the implementation of the livestock infrastructure, including animal purchase and clearing of the forest area. Revenues include not only animal selling, but also the sale of commercial wood removed during the clearing of the area. The validation team checked the investment analysis sheet “Cashflow CO2_ABC Norte_v02” /65/. Noted that the PP has provided the break down the cost incurred in SFMP cost, which is again based on the actual cost incurred from 2017 to 2020 and based on estimated values from there on. The team checked the detailed break of the SFMP cost, which includes operation and consultancy cost, SFMP development cost, employees cost, administrative cost, which is found to be reasonable and accepted. The cost was checked against ABC Norte_Control of costs 2017-2021 spreadsheet, according to invoices from the 2017-2021 period /69/. This also included summing costs of the categories “ASSESSORIA, AUDITORIA E CONSULTORIA” and “SOMAR CONSULTORIA and payroll sheet /69/. Net revenue from sales of products and goods was checked against the agreement between ABC Norte and J&Y /74/. Noticed that the cost related to SFMP is similar in scenario II, except for the additional cost incurred towards REDD implementation, which is accepted by the VVB. The cost included monitoring activities, social activities, CERFLOR certification and auditing and administrative cost, which was checked against ABC Norte_Control of costs 2017-2021 spreadsheet, according to invoices from the 2017-2021 period /69/ and 2022 budget sheet /70/. Scenario III (cattle ranching) input values were checked against similar projects Boa Fe and Agrocortex SFMP reports /111/, EMBRAPA for Para (2017) /108/. Agromove (2019) /109/, annual inflation (IPCA) /107/, Young (2007) apud Anualpec (2007) /105/, IDESAM (2014) /106/, Arantes (2016) /110/.

It is concluded that NPV is the highest in the case of scenario -III, leaving cattle ranching as the most profitable land-use scenario, which is also the most prevalent scenario. The validation team concluded that the input values and assumptions in the PP's evaluation are valid and appropriately represents the economic situation of the project at the time investment decision. They have been consistently and correctly applied in the financial calculations.

Sensitivity analysis: for scenario I and II were carried out based on two variables cost of SFM activities and cost for forest conservation measures and social and environmental activities required by the REDD Project. Revenues from SFMP will remain the same since the project owner has an agreement with J&Y /74/. Moreover, scenario II is not more feasible than scenario I because of the added forest conservation cost and it is unlikely that the cost will come down in the coming years considering the inflation rate. In Scenario III case, the sensitivity analysis shows that even with a variation of 10% in the arroba value and production costs, cattle ranching would still be more economically feasible than the project activity. The same is the case with timber sale.

Step 3, the barriers analysis, was not applicable to the project because the additionality tool /9/ allows for the application of either STEP 2 or STEP 3 and does not require that both be applied.

Lastly, as part of the common practice analysis, the project proponent provided a list of other similar projects (SFMP). As per the information provided by Pará Department of Environment /138/. There are 1241 companies registered for SFMP in the state of Para, wherein 44 are located in the municipality of Portel and Bagre and two of them have an area of more than 50,000 ha and they don't have CERFLOR or FSC certifications. It was further checked that 117 companies with CERFLOR/PEFC certification were identified throughout Brazil with valid and active certificates, 18 of which in the same category as Fazenda Pacajá/138/ and of the two other areas with certified native productive forest, it was noted that one of them develops a REDD Project and not included

in the common practice analysis. Thus, only one area has a similar project activity, located in Amapá State. The said management area is in a public forest under a Forest Concession Contract, where the government allows the use of the forest resources in state, municipal and union public forests. In addition, the proposed project area is 140,432.27 ha, while the Amapá area is 67,434,7874 ha, less than half of the proposed area.

Thus, the VVB is of the opinion that the proposed project is not common practice in the area. RINA concurs with the project proponent's assertion that the project is not common practice. In conclusion, RINA verified that the project proponents have employed the correct use of the VCS Tool for the Demonstration and Assessment of Additionality in VCS Agriculture, Forestry and Other Land Use (AFOLU) Project Activities /9/, that they have followed all of its respective steps correctly, and that thus the project can be considered to be additional.

3.4.6 Quantification of GHG Emission Reductions and Removals

RINA team assessed the calculations of baseline emissions, project emissions, leakage and the expected net GHG reductions and removals by sinks. Corresponding calculations were carried out based on calculation spreadsheets /2/ /3/. Correctness of calculations can be confirmed as they were replicated by the audit team using the information provided. The values and estimates presented in the PD are considered reasonable based on the documentation reviewed, further references and the result of the interviews during the audit. Based on the information reviewed it can also be confirmed that the sources used are correctly quoted and interpreted in the PD. All assumptions and data indicated in the PD and all relevant sources were checked and confirmed. Detailed information on the verification of parameters used in the equations is presented in section 4 of the PD.

In essence, the methodology was correctly applied following the requirements. All values in the PD are considered reasonable in the context of the proposed VCS project activity. Data sources are quoted correctly. Hence, the calculation of baseline stocks and removals, leakage and the expected net anthropogenic GHG removals by sinks are considered correct.

Analysis of historical land-use and land-cover change

To determine land use and land cover (LU/LC) change prior to project initiation, remote sensing, GIS, Dinamic Ego and R analysis were carried out. During the audit, the mapping consultants of the PP informed that the raster images with land use classes used to determine land use change during the reference period were downloaded from MapBiomass /86/. The collection 4.1 of raster images from MapBiomass was used together with MapBiomass land use classification. The PP shared the downloaded raster files and converted shapefiles with audit team/86/.

The Mapbiomas is renowned monitoring system for all biomes in Amazon region. It, is a collaborative effort of renowned tech companies, Non-Governmental organizations and research institutions. As per the Mapbiomas Documentations its accuracy confidence is above 95%. /151/ However, the PP carried out the Image classification, accuracy assessment. The results are presented in the Table 21. According to the methodology the minimum overall accuracy should be 90%. Hence, this case can be acceptable.

Please note that the MapBiomass dataset uses 30-meter resolution Landsat imagery, and thus complies with the resolution requirements of the methodology. Furthermore, the audit team confirms that MapBiomass is a multi-institutional initiative of the Greenhouse Gases Emissions

Estimation System promoted by the Climate Observatory, and a renowned deforestation watchdog of all biomes in Brazil/151/ and thus accepted.

The audit team then checked the values of deforestation per year, calculated from the MapBiomass, against the values presented in table19 of the PD /1/ and confirmed the values are correct.

To validate the accuracy of the maps used, the PP constructed a confusion matrix. A total of 300 random points were randomly created with ArcGIS and drawn over the reference region, 100 in each of the classes (forest, hydrography and deforestation). As a reference, high resolution Landsat images were used, in which the land use was visually determined at the points drawn. The audit team has checked some of the points during the audit and also the percentage accuracy reported in table 21 of the PD /1/ and they were all above 80% accuracy.

Table 6 of the PD has been revised now to table 16. The LU/LC classes identified are Forest, no forest and Hydrography. Fuel wood and Charcoal production is not applicable in this case and the only parameter is logging. The carbon density is not expected to undergo significant changes due to degradation in the baseline case which was confirmed from the significance test. The validation team confirms that the carbon stock change due to logging activities in the baseline case is considered insignificant and therefore, trend in carbon stock could be deemed as constant is acceptable

The forest class has not been further stratified into different forest strata. This was now clarified in the PD. Only 1 forest stratum was considered, as the Project Area is composed of 99% Dense Lowland Tropical Rainforest. Thus, the accuracy assessment of LU/LC change map was conducted for the MapBiomass classification, which identifies forest, non-forest vegetation, anthropic uses (categorized as deforestation in our analysis) and water (lakes and rivers). The Joint PD & MR and calculation spreadsheet were updated. The PP tried to stratify the forest class to further strata using was stratified using the IBGE (IBGE (Brazilian Institute of Geography and Statistics), was used to check the vegetation types) map, which provides all vegetation types of the country. However, the accuracy assessment of each forest type was not possible since a ground truthing was not carried out. Thus, the PD is not revised only one type of forest since the project areas comprises of 99% of dense lowland tropical rainforest. It is further checked that the PP has used weighted average carbon stocks in the ER calculations, which is conservative and the same has been accepted.

The LU/LC classes has been updated to be consistent. The accuracy of the classes has been provided in the updated table 21. More information on accuracy assessment of each LU/LC identified is provided in section 4.1 - Definition of classes of land-use and land-cover (LU/LC) and the same has been accepted.

Analysis of agents, drivers and underlying causes of deforestation and their likely future development.

In the section 4.1 of the PD /1/ the project proponent has well described the baseline Scenario and has also demonstrated the information as per the requirements of the methodology. The audit team confirms that the agents, drivers and events leading to deforestation is consistent with the understanding and practical knowledge of the audit team regarding the project area.

It is very important, at this point, to remember that the reference period is stipulated by the applied methodology to be no longer than 10-15 years in the past and the end date as close as possible to the project start date, in this case September 2017.

Identification of agents of deforestation: PP identified that the main agents of deforestation during the reference period, between 2007 and 2017, are cattle ranching, mainly producing beef cattle; and timber harvesters, acting both legally and illegally. /152/to /153/. Cross checking the statistical data and land cover change the pattern can be logically acceptable by the audit team.

Identification of deforestation drivers:

The methodology classified the deforestation drivers in two categories.

- a. Driver variables explaining the quantity (hectares) of deforestation: The population growth and Prices of timber logs and livestock per arroba are the one which, directly drive the deforestation quantity. The logical argument with the support of statistics make sense on the assumption. /154/
- b. Driver variables explaining the location of deforestation: PP identified four drivers of deforestation, Distance from deforested areas, Roads, highways, access roads and navigable rivers, Extreme poverty, and Presence of protected areas. The audit team confirms the assumptions while cross checking the evidence and statistics. /154//155/

Baseline emissions:

Projection of future deforestation

With the data of the land use change,/86/ obtained according to explanation in step 3 deforestation rates for each year were calculated and a regression curve found and fed into R. The deforestation rates measured in the reference region revealed a clear trend of increase of the deforestation rate along the years and thus the selected baseline approach is the time function approach.

The appropriation of the Time function approach is well documented in the PDD /01/

“Time function approach: With this approach, the rate of baseline deforestation is estimated by extrapolating the historical trend observed within the reference region (or its strata) as a function of time using either linear regression, logistic regression, or any other statistically sound regression technique /08/. This approach requires multiple deforestation measurements during the past 10-15 years”

Thus, the methodology states that any regression analysis is accepted. In this project case, the Piecewise linear regression was applied. This analysis is widely recognized and used among mathematical functions. The R package used for this analysis is described in a article, which has been cited by more than 1000 scientific articles. /162/. The regression analysis to evaluate the deforestation rate trend was conducted in the software R (R Core Team 2021). For piece wise regression the client has opted the package “segmented” (Muggeo, 2017), using the function “segmented” to estimate the break-point, which was estimated with value 2013.75 (standard error of 0.793, Figure 01). And the probability that the estimated difference-in-slope parameter does differ significantly from zero was calculated using the function “pscore.test” and the result was a p-value of 0.0266. The analysis of the application of the piecewise regression is detailed in section 4.1 - Selection of Baseline Approach.

The section Agents, Drivers and Underlying Causes of Deforestation was updated, evidencing that there is a conclusive and clear increase trend in the deforestation, including analysis of the use of the Piecewise model. This is detailed in section 4.1. of the revised PD.

From the analysis of the agents, drivers and underlying causes of deforestation for the ABC Norte REDD project during the historical reference period, provides more detailed information about the increasing trends of deforestation and the most likely future deforestation trend after 2018. The team further checked the analysis of the Piecewise model and the comparison between the

Piecewise and Historical Average approaches with the real deforestation between 2017-2021, which was also checked from the sheet “Analysis Real x Projection deforestation ABC Norte /164/. It is to be noted that when comparing the real deforestation with different projection approaches (Piecewise x historical average) for the 2017-2021 period, the Piecewise projection is 14% lower than the real scenario, and the historical average is 47% lower. Thus, historical average approach would not be the most appropriate for this project, as it is far from the real scenario of an increasing deforestation rate after 2017 within the reference region. Based on the analysis of agents, drivers and underlying causes of deforestation, and also on the analysis of the best regression technique, the lower boundary of the 95% CI calculated through the Piecewise model, which is currently used by the project activity, has shown a very close relationship to reality and therefore is the most appropriate and conservative model to project the baseline scenario. The justification and various other evidence provided by PP to justify the selection of time function approach has been accepted by the validation team.

The equation applied in the analysis was:

$$F(x) = \{1.3827 - 0.00068424x, \text{ for } x < 7.3436 \quad - 3.4381 + 0.00170730x, \text{ for } x > 7.3436$$

The coefficient of determination of this model was 0.9242 and the value of $p = 0.00372$, showing a good fit of the data to the predictive model.

Preparation of factor maps

To find out where deforestation would occur the factor maps were prepared with ArcGIS from road, Indigenous land, settlements, rivers, urban areas, altitude, and slope maps. The source of each of these maps are in Table 25 of the PD /1/ and were checked by the audit team/147/.

Preparation of risk maps for deforestation

With these base maps they were able to generate scores with the program Dinamica Ego, /150/ the weight of evidence coefficient of each of the maps compared to land use change. The weights of evidence are shown in tables 26 to 33 of the PD /1/.

Selection of the most accurate deforestation risk map

The ones which seemed to better correlate with deforested areas were then used in a similarity index test which compared projections of deforestation maps with the real map of deforestation of 2017. The results of the similarity index using different factor maps are in Figure 68 of the PD /1/ and showed that the best model was the number 10 which had an average similarity of 0.4258.

Once the comparison with the similarity index was carried out, the audit was presented with the similarity analysis of the growing window. In this the projection for 2017 of the chosen model (number 10) was compared to the real values of deforestation for 2017 images. According to PDv4, the value of acceptance for this test is 50%, this was crosschecked with the reference cited in the PD, Barni 2009 /152/. Also, according to PD v4 this value of 53% was reached at a 9x9 window. This is a statistical test run by the Dinamica Ego and it is therefore in conformity with page 54 of the methodology VM0015.

According to the methodology section 4.2.3, “The best fit must be assessed using appropriate statistical techniques. Most peer reviewed modelling tools, such as Geomod, Idrisi Taiga, Land Use Change Modeler, and Dinamica Ego, include in the software package appropriate assessment techniques, which can be used under this methodology.” In the Project case, the exponential decay function was used to calculate the similarity between real and projected scenarios, which is a method indicated in the Dinamica Ego software. This is acceptable according to the methodology. Because according to the section 4.2.3 of the methodology, it’s says can be used any cited tools, or technique can be used for the assessment.

According to the analysis in Dinamica Ego for land use change modelling, all pixels should present multiple characteristics that can make them more or less prone to land use changes, which means that one pixel can be part of a settlement and, at the same time, of a protect area of sustainable use. Firstly, Dinamica calculates the weight of evidence for each variable alone, quantifying whether one class is more prone of deforestation than the other. For example, generally areas close to roads presents higher rates of deforestation (higher weight of evidence) than areas distant from roads. Then, Dinamica sum up the weights of evidence for all the selected variables. Therefore, if one pixel is inside a settlement and also inside a protected area of sustainable use, it may receive a higher weight of evidence because it is in a settlement and receive a lower weight of evidence because it will be influenced by the fact that it is also a protected area. And when we sum up the weights of evidence, one variable will balance with the other, and maybe one variable will neutralize the effect of the other. Thus, an area that is inside of a settlement only, but not of a protected area, should present a higher pressure, and a higher risk to change, which is applicable with all the selected variables, including the large rivers (that are navigable) and the other rivers in general, which include the smaller rivers. It is to be also noted that as per figure 70 of the PD, the two variable consider in the model are settlements and distance to Roads and the other variables like protected area and rivers were not considered and thus no double counting in the model.

Mapping the locations of future deforestation

The risk map chosen, and the equation were fed into Dinamica Ego. These then generate the future maps of deforestation for the years of 2018 to 2047 in the RR showed in figure 74 - 84 of the PD v4 /1/.

Calculation of Baseline Emissions:

The baseline emissions are calculated as the carbon emissions from the total deforestation in the RR, PA and LKB that would be released in the absence of the project activity. In section 4.1 of the VCS-PD /1/ baseline emissions for the project area are calculated in accordance with equations bellow:

$$\Delta CBSLPA_t = \Delta CabBSLPA_{icl,t} + \Delta CbbBSLPA_{icl,t}$$

Where,

$\Delta CBSLPA_t$	Total baseline carbon stock changes in the project area at year t ; tCO ₂ e
$\Delta CabBSLPA_{icl,t}$	Total baseline carbon stock change for the above-ground biomass pool in the project area for initial forest class at year t ; tCO ₂ e
$\Delta CbbBSLPA_{icl,t}$	Total baseline carbon stock change for the below-ground biomass pool in the project area for initial forest class at year t ; tCO ₂ e

$$\Delta CabBSLPA_{icl,t} = ABSLPA_{icl,t} \times \Delta Cab_{icl}$$

Where,

$\Delta CabBSLPA_{icl,t}$	Total baseline carbon stock change for the above-ground biomass pool in the project area for initial forest class at year t ; tCO ₂ e
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$ABSLPA_{icl,t}$	Area of initial forest class <i>icl</i> deforested at time <i>t</i> within the project area in the baseline case; ha
ΔCab_{icl}	Average carbon stock change factor per hectare in the above-ground biomass carbon pool of initial forest class <i>icl</i> ; tCO ₂ e ha ⁻¹

$$\Delta CbbBSLPA_{icl,t} = ABSLPA_{icl,t} \times \Delta Cbb_{icl}$$

Where,

$\Delta CbbBSLPA_{icl,t}$	Total baseline carbon stock change for the below-ground biomass pool in the project area for initial forest class at year <i>t</i> ; tCO ₂ e
$ABSLPA_{icl,t}$	Area of initial forest class <i>icl</i> deforested at time <i>t</i> within the project area in the baseline case; ha
ΔCbb_{icl}	Average carbon stock change factor per hectare in the below-ground biomass carbon pool of category <i>icl</i> ; tCO ₂ e ha ⁻¹

Average biomass stock per hectare in the above-ground biomass pool of initial forest class is discussed as below:

Dense lowland tropical rainforest above and below ground biomass is referred from Local forest inventory in Fazenda Pacajá (2021) /39/. The values obtained were compared with the studies of Fearnside et al. (2013) /95/, Barni et al. (2016) /94/, Ministry of Science, Technology and Innovation (2015) /100/ and Higuchi (2015) /93/. The values adopted by local forest inventory were found to be conservative and the same has been used in calculations. Dense alluvial tropical rainforest, Wooded Campinarana and Grassy -Woody Campinarana is based on the study from Nogueira 2015 /99/. Dense Sunmontane Tropical Rainforest refers to Higuchi 2015 /93/. Note that in some forest types the published data was taken rather than the local inventory since the values chosen are more conservative and the same was accepted by the VVB. As per the methodology requirements. The values are reassessed every 10 years or when data is more than 10 years old, whichever occurs first.

As discussed above only 1 forest stratum was considered. the Dense Lowland Tropical Rainforest is the main forest type present within the project area, with around 99% of the total forest cover. In addition, the mean carbon stock within the project area calculated through weighed average with other forest classes showed a similarity of around 99.96% to the Dense Lowland Tropical Rainforest carbon stocks. Thus, due to the high representativeness of this forest type within the project area, and the very high similarity in terms of carbon stocks in relation to the mean, the forest class was not stratified, i.e., the "Forest" class includes just one stratum due to the low difference in average carbon stocks within the project area.

In order to be conservative, the weighted average carbon stocks are used instead of the value for dense lowland tropical rainforest.as the Project Area is composed of 99% Dense Lowland Tropical Rainforest and the PP has used weighted average carbon stocks in the ER calculations, which is conservative and the same has been accepted.

To transform biomass to carbon dioxide equivalent, the IPCC default values of 0.5 for Biomass to Carbon and 44/12 from Carbon to CO₂ were used /101/. In addition, average values for the below-

ground biomass were taken from the applied methodology VM0015 v1.1, which estimates a root-to-shoot ratio of 0.24 for tropical rainforest having above ground biomass values above 125 tons/ha. The audit team reviewed all spreadsheets, and equations used to calculate the carbon stock of each stratum and its associated uncertainty. The project used allometric equations and root to shoot ratios selected from the literature/ forest inventory that are appropriate to the project area.

The biomass was estimated through a local forest inventory considering only the merchantable or commercial volume, i.e., the main tree trunk. For estimating carbon stocks, all the above-ground biomass including twigs, branches and even leaves needs to be estimated. To convert merchantable tree volume into total biomass, biomass expansion factor (BEF) is used.

Furthermore, the equation for estimating the aboveground merchantable volume of trees was obtained from Colpini et al. (2009) /146/, according to:

$$\ln(\text{Volume}) = -9.1892 + 1.9693 \times \ln(\text{DBH}) + 0.837 \times \ln(\text{Height})$$

Where:

DBH: Diameter at Breast Height

H: Height

This equation has been derived using DBH based on datasets that comprise more than 30 trees (i.e. 91 trees). This equation was based on statistically significant regression and has an R^2 that is higher than 0.8 (i.e. $R^2 = 0.966$). The allometric equation has been obtained for individuals with DBH ranging from 15 cm to 135 cm. Considering that Colpini's Schumacher-Hall model was derived from a data set of more than 30 sample trees, and the value of coefficient of determination (R^2) obtained was not less than 0.85

The BEF was used to convert the merchantable volume obtained from the local forest inventory to total aboveground tree biomass. Sample plots selection, area selected, the measurement procedures adopted and how the equations were derived from DBH data sets are further explained in section 4.1 of the PD&MR, which was further crosschecked with monitoring permanent plots /37/, sample plots spread sheets /38/ and forest inventory /39/. The validation/verification team confirms that the same is as per the requirements of the methodology.

Also in accordance with the methodology, carbon stock change factors for initial forest classes (icl) used method 1. That is, for the above-ground biomass 100% release of the carbon stock in the same year deforestation occurred, and for below ground biomass 10% of the initial carbon stock released in each year starting from the year of deforestation (10 years decay in total).

For post forest classes both below and above ground assumed that 100% of the long term (20 years) average carbon stock of 46.58tCO₂/ha

were regenerated in 10 years starting the year which followed deforestation. Is calculated based on the analysis of the Reference Region land use, and considering the weighted average for the average carbon stock. The average classification of post-deforestation land-uses within the reference region during the historical reference period was conducted through MapBiomass. In order to determine in which land uses the deforested areas were converted during the historical reference period within the reference region, the MapBiomass mapping (<https://mapbiomas.org/>) was used. Initially, all areas deforested during this period, within the reference region, were

identified and then overlapped with the 2017 land use map, obtained from MapBiomass. As MapBiomass has a large number of classes, the main classes were grouped to: Secondary Forest Formation, Pasturelands, Urban Areas, River, Lake and Ocean, Agriculture. Based on these maps integration, the percentages of each class established in the deforested areas during the historical reference period could be quantified for the reference region.

- the average carbon stocks of pasturelands, agriculture and other land uses were taken from the National GHG Emissions Communication of Brazil to the UNFCCC (2019) /96/

- Secondary Forest, average carbon stocks in the state of Pará as per Pereira, Izaura Cristina Nunes: Biomass stock and forest carbon in landscape units in the Amazon: an analysis from the methodological approach. Federal University of Pará, Belém, 2013 /164/. Below ground biomass was estimated using root shoot ratio as per the methodology requirements. Thus resulting to an average value of 22.8 tC/ha.

Therefore, resulting to Weighted average of post-deforestation carbon stocks 12.70 tC/ha.

Uncertainty Assessment:

It is checked that for the dense tropical rainforest, dense lowland tropical forest at 95% confidence interval, the uncertainty level achieved was less than 10% of the average carbon stock value. For dense alluvial tropical rainforest and wooded campinarana, the confidence interval was found to be 68.27%. This was further converted to confidence interval of 90% by multiplying the standard deviation by the value of 1.64 as per confidence intervals, Prof. Adriano Mendonça Souza, Department of Statistics, dated 02/09/2008 /161/. It is further checked that carbon stocks per hectare of initial forest classes icl existing in the project area and leakage belt, uncertainties at confidence interval of 90%, and final values after discounts for uncertainties were considered in the ER calculations, which is as per the uncertainty assessment requirements of the methodology. It is also important to note that the local forest inventory conducted for the dense lowland tropical rainforest has a lower uncertainty 7.67% when compared to the literature values for other forest types within the project area. Therefore, using the value for dense lowland tropical rainforest is more accurate. Furthermore, using the weighted average carbon stocks within the project area is more conservative.

Baseline Non-CO₂ emissions from forest fires

As per the discussions in the baseline scenario and the evidence checked /112/ /113/ slash and burn deforestation to clear is carried out in the area, which is one of the main causes of deforestation and common practice in the project area. Thus, baseline emissions due to biomass burning is one of the important emission sources considered in the project boundary and only non-CO₂ emissions from forest fires are considered.

$$EBB_{tot,icl,t} = EBB_{N_2O,icl,t} + EBB_{CH_4,icl,t}$$

Where,

$EBB_{tot,icl,t}$	Total GHG emission from biomass burning in forest class icl at year t; tCO _{2e} /ha
$EBB_{N_2O,icl,t}$	N ₂ O emission from biomass burning in forest class icl at year t; tCO _{2e} /ha
$EBB_{CH_4,icl,t}$	CH ₄ emission from biomass burning in forest class icl at year t; tCO _{2e} /ha

$$EBB_{N_2O,icl,t} = EBB_{CO_2,icl,t} * 12/44 * NCR * ER_{N_2O} * 44/28 * GWP_{N_2O}$$

Where,

EBBCO _{2icl,t}	Per hectare CO ₂ emission from biomass burning in slash and burn in forest class icl at year t; tCO ₂ e/ha
NCR	Nitrogen to Carbon Ratio (IPCC default value = 0.01); dimensionless
ER _{N2O}	Emission ratio for N ₂ O (IPCC default value = 0.007)
GWP _{N2O}	Global Warming Potential for N ₂ O (IPCC default value)

$$EBBCH_{4icl,t} = EBBCO_{2icl,t} * 12/44 * ER_{CH4} * 16/12 * GWP_{CH4}$$

Where,	
EBBCO _{2icl,t}	Per hectare CO ₂ emission from biomass burning in slash and burn in forest class icl at year t; tCO ₂ e/ha
ER _{CH4}	Emission ratio for CH ₄ (IPCC default value = 0.012)
GWP _{CH4}	Global Warming Potential for CH ₄ (IPCC default value)

$$EBBCO_{2icl,t} = F_{burnt_{icl}} * \sum_{p=1}^P (C_{p,icl,t} * P_{burnt_{p,icl}} * CE_{p,icl})$$

Where,	
EBBCO _{2icl,t}	Per hectare CO ₂ emission from biomass burning in the forest class icl at year t; tCO ₂ e/ha
F _{burnt_{icl}}	Proportion of forest area burned during the historical reference period in the forest class icl; %
C _{p,icl,t}	Average carbon stock per hectare in the carbon pool p burnt in the forest class icl at year t; tCO ₂ e/ha
P _{burnt_{p,icl}}	Average proportion of mass burnt in the carbon pool p in the forest class icl; %
CE _{p,icl}	Average combustion efficiency of the carbon pool p in the forest class icl; dimensionless (IPCC default of 0.5)
p	Carbon pool that could burn, above-ground biomass

The F_{burnt} analysis was carried out on the municipality of portel and Bagre, since majority of the project area and reference region is located in the same municipality it was accepted. Noted that the data previous to 2014 was not available. Thus, Hot spots were considered during the period from 2014 to 2017 /112/. For the assessed years, the fire risk predicted for the day of detection of the outbreak was considered, contemplating only outbreaks with a fire risk of >= 0.5 as, according to INPE's methodology /112/, fire risk higher than 0.4 is considered as medium to critical (=1). By overlapping these fire outbreaks with the deforestation mapping of the same time period, it was possible to verify the tendency of fire outbreaks being directly related to areas with recent and/or consolidated deforestation. This was further cross verified by the proximity of deforestation detection dates by satellite and the close or overlapping heat spots. Thus, it can be concluded that these outbreaks are mainly due open pastures/crops. It was checked from the maps that there was an overlap of 89.44% of the pixels analysed during the reference period in the municipality of Portel and Bagre, where majority of the project area is located /85/. For P_{burnt}, a value of 78% is considered, which is average of 72% to 84% from the Brazilian Amazon in Cerrado biome. Since no other values were available, the same was accepted by RINA team.

The total actual non-CO₂ emissions from forest fire at year t in the project area at the baseline scenario (EBBBSLPA_t) were calculated as follows.

$$EBBBSLPA_t = ABSLPA_{icl,t} * EBBtot_{icl,t}$$

Where,	
EBBBSLPA _t	Total actual non-CO ₂ emissions from forest fire at year t in the project area in the baseline scenario; tCO ₂ e/ha

ABSLPA _{icl,t}	Annual area of deforestation of initial forest classes <i>icl</i> in the project area at year <i>t</i> ; ha
EBBtot _{icl,t}	Total GHG emission from biomass burning in forest class <i>icl</i> at year <i>t</i> ; tCO ₂ e/ha

Project Emissions:

ABC Norte has a sustainable forest management plan (SFMP) to harvest wood /40/ which is authorised by the Secretary of State for Environment and Sustainability (SEMAS) /71/ certified by the CERFLOR /77/. This type of economic activity enables the harvesting of an economically feasible volume of forest products allowing the regeneration of the natural stock in accordance with the growth and recovery rates of the biome.

According to the methodology VM0015 v1.1 /8/, two types of project emissions in the project area which are part of the SFMP, must be accounted for: planned activities and unplanned deforestation. Planned activities in turn are of two types, planned deforestation (i.e. infrastructure like roads and trails used for the SFMP) and planned logging (amount of wood harvested for commercialisation in the SFMP).

The ex -ante estimated carbon stock decrease due to planned deforestation in the project area was calculated using the following equation:

$$\Delta CPDdPA_t = \sum_{icl=1}^n (APDPA_{icl,t} \times \Delta Ct_{toticl})$$

Where,

$\Delta CPDdPA_t$	Total decrease in carbon stock due to planned deforestation at year <i>t</i> in the project area; tCO ₂ e
$APDPA_{icl,t}$	Areas of planned deforestation in forest class <i>icl</i> at year <i>t</i> in the project area; ha
ΔCt_{toticl}	Average carbon stock of all accounted carbon pools in forest class <i>icl</i> at time <i>t</i> ; tCO ₂ e/ha

GHG emissions from logging activities include the volume of harvested timber plus the logging damage factor, as follows.

$$\Delta CLd_{icl} = (HI_{icl,t} + LDF) \times D_m \times CF \times 44 / 12$$

Where,

$\Delta CLd_{icl,t}$	Average carbon stock decrease due to logging activities in forest class <i>icl</i> at time <i>t</i> ; tCO ₂ e/ha
$HI_{icl,t}$	Harvesting intensity of timber in forest class <i>icl</i> at year <i>t</i> in the project area due to planned logging activities (i.e., sustainable forest management plan); m ³ /ha
LDF	Logging damage factor; m ³ /m ³
D_m	Mean wood density; g/cm ³

CF	Default value of carbon fraction in biomass; tC t ⁻¹ d.m.
44/12	Ratio of molecular weight of CO ₂ to carbon; dimensionless

It is checked that the MR already takes into account as planned deforestation the roads and decks constructions, which represent around 16% of the total damage. Therefore, the LDF is $2.4 * (1 - 0,159) = 2.0174 / 114/$.

As discussed in carbon pools harvested wood products are not accounted as a carbon pool, thus, $\Delta C_{wpt} = 0$, which is conservative. Thus, the ex-ante estimated carbon stock decrease due to planned logging activities in the project area is calculated using the following equation:

$$\Delta CPLdPA_t = (APLPA_{icl,t} \times \Delta CLd_{icl,t}) - (APLPA_{icl,t}) \times \Delta C_{wpt}$$

Where,

$\Delta CPLdPA_t$	Total decrease in carbon stock due to planned logging activities at year t in the project area; tCO ₂ e
$APLPA_{icl,t}$	Areas of planned logging activities in forest class icl at year t in the project area; ha
$\Delta CLd_{icl,t}$	Average carbon stock decrease due to logging activities in forest class icl at time t; tCO ₂ e/ha
ΔC_{wpt}	Average carbon stock per hectare in the harvested wood products carbon pool at time t; tCO ₂ e/ha

According to VCS AFOLU Requirements, fossil fuel emissions from transport and machinery use in REDD project activities can be considered *de minimis*.

No production of fuel wood or charcoal is noted within the project area under the project scenario. Due to the management plan, no carbon stock increase due to planned activities was considered. No planned protection of secondary/degraded forests without harvest are expected to occur within the project area under the project scenario. Thus, carbon stock increase due to growth without harvest or will not be monitored. However, if any of these activities is implemented in the future, a measurement of the carbon stock changes will be carried out. According to the applied methodology, if the project activity generates a significant change in carbon stocks due to these activities, the carbon stock change shall be measured ex post. However, if the decrease is not significant, it shall not be accounted, and ex post monitoring is not required. This justification provided by the PP is acceptable.

To estimate unplanned deforestation the PP followed the formula in the methodology VM0015 v1.1 /8/:

$$\Delta CUDdPA_t = \Delta CBSLPA_t \times (1 - EI)$$

Where:

$\Delta CUDdPA_t$	Total ex ante actual carbon stock change due to unavoidable unplanned deforestation at year t in the project area; tCO ₂ e
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$\Delta CBSLPA_t$	Total baseline carbon stock change in the project area at year t ; tCO ₂ e
EI	<i>Ex ante</i> estimated Effectiveness Index; %
t	1, 2, 3 ... T , a year of the proposed project crediting period; dimensionless

The Effectiveness Index (EI) considered in the PD /1/ is 94.53%, which is based on the similar REDD validated/verified projects from Brazil /120/, which is applied to the ex-ante estimate of net carbon stock change in the project area under the project scenario.

Project Non-CO₂ emissions from forest fires

Is calculated by multiplying the baseline emissions by the factor $(1 - EI)$, as follows.

$$EBBPSPA_t = EBBBSPA_t * (1 - EI)$$

Where,

$EBBPSPA_t$	Total <i>ex ante</i> actual non-CO ₂ emissions from forest fire due to unavoids unplanned deforestation at at year t in the project area; tCO ₂ e/ha
$EBBBSPA_t$	Total non-CO ₂ emissions from forest fire at year t in the project area; tCO ₂ e
EI	<i>Ex ante</i> estimated Effectiveness Index; %
t	1, 2, 3 ... t , a year of the proposed project crediting period; dimensionless

It assumed that all unplanned deforestation within the project area will involve fire and all above ground biomass will be burnt. The same concept was also assumed in the calculations of baseline emissions. Thus, accepted by RINA team.

Leakage Emissions:

According to the applied methodology, the following two sources of leakage are considered:

- Decrease in carbon stocks and increase in GHG emissions associated with leakage prevention measures; this emission source is considered to be insignificant. Ex-post monitoring for the same is required only in case the reduction in carbon stocks and/or an increase in GHG emissions occur compared to the baseline case. The projected carbon stocks shall be estimated in the leakage management area under the baseline case and project scenario.

The following activities could cause decrease in carbon stocks or increase in GHG emissions.

- Carbon stock changes due to activities implemented in leakage management areas.
- Methane (CH₄) and nitrous oxide (N₂O) emissions from livestock intensification (involving a change in the animal diet and/or animal numbers).

$$\Delta CLPMLK_t = \Delta CBSLLK_t - \Delta CPSLK_t$$

Where,

$\Delta CLPMLK_t$	Carbon stock decrease due to leakage prevention measures at year t ; tCO ₂ e
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ΔCBSLLK_t	Annual carbon stock changes in leakage management areas in the baseline case at year t ; tCO_2e
ΔCPSLK_t	Annual carbon stock change in leakage management areas in the project case; tCO_2e

According to the planned interventions carried out by ABC Norte REDD Project in the baseline case, no decrease in carbon stocks due to activities implemented in the leakage management area were identified, thus $\Delta\text{CBSLLK} = 0$. However, during the current monitoring period, there were carbon stock changes within the leakage management area due to deforestation of regenerated forests. Therefore, the *ex post* carbon stock change in leakage management areas in the project case (ΔCPSLK_t) was calculated as follows.

$$\Delta\text{CPSLK}_t = \text{APSLK}_{\text{fcl},t} * \Delta\text{Ctot}_{\text{cl}}$$

The net sum of carbon stock changes within the leakage management area during the current monitoring period is less than zero, i.e., leakage prevention measures are causing carbon stock decrease and therefore, are included as leakage emissions.

Methane (CH_4) and nitrous oxide (N_2O) emissions from livestock intensification in the leakage management areas are calculated as follows:

$$\text{EgLK}_t = \text{ECH}_4\text{ferm}_t + \text{ECH}_4\text{man}_t + \text{EN}_2\text{Oman}_t$$

Where,

EgLK_t	Emissions from grazing animals in leakage management areas at year t ; $\text{tCO}_2\text{e}/\text{year}$
$\text{ECH}_4\text{ferm}_t$	CH_4 emissions from enteric fermentation in leakage management areas at year t ; $\text{tCO}_2\text{e}/\text{year}$
ECH_4man_t	CH_4 emissions from manure management in leakage management areas year t ; $\text{tCO}_2\text{e}/\text{year}$
EN_2Oman_t	N_2O emissions from manure management in leakage management areas at year t ; $\text{tCO}_2\text{e}/\text{year}$
t	1, 2, 3, ... T years of the project crediting period; dimensionless

leakage prevention measures carried out by the present project during the current monitoring period did not include agricultural intensification, fertilization, fodder production and/or other measures to enhance cropland and grazing land areas. As the project will not involve grazing animals or crop plantations in the leakage management area, actions to avoid leakage involves containing the displacement leakage risk. Thus, the main plan for mitigating leakage is to involve the community in monitoring and inspecting deforestation, training, alternative income generation and other actions described in the Social Carbon and Conservation Plan. Therefore, emissions from grazing animals in leakage management areas (EgLK_t), equals to zero.

$$\text{ELPMLK}_t = \text{EgLK}_t + \Delta\text{CLPMLK}_t$$

Where,

ELPMLK_t	Annual total increase in GHG emissions due to leakage prevention measures at year t ; tCO_2e
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Ex-post decrease in carbon stocks and increase in GHG emissions associated with activity displacement leakage: Is calculated by multiplying the estimated baseline carbon stock changes for the project area by a “Displacement Leakage Factor” (DLF) representing the percent of deforestation expected to be displaced outside the project boundary. It is calculated as follows:

$$\Delta CADLK_t = \Delta CBSLPA_t * DLF$$

Where,

$\Delta CADLK_t$ Total decrease in carbon stocks due to displaced deforestation at year t; tCO_{2e}

DLF Displacement leakage factor; %

DLF was adopted as 15% .The same is accepted as per the point 1) of para 3.14.13 of VCS Standard v4.3, where the applied methodology requires the quantification of activity-shifting leakage, projects may apply the optional default activity-shifting leakage deduction of 15 percent to the gross GHG emission reductions and/or removals.

It is also verified that ex ante emissions from forest fires due to activity displacement leakage was calculated by multiplying baseline forest fire emissions in the project area by the same DLF used to estimate the decrease in carbon stocks, as follows.

$$EADLK_t = EBBBSPA_t * DLF$$

Where,

$EADLK_t$ Total ex ante estimated increase in GHG emissions due to displaced forest fires; tCO_{2e}

$EBBBSPA_t$ Total non-CO₂ emissions from forest fire at year t in the project area; tCO_{2e}

DLF Displacement leakage factor; %

t 1, 2, 3 ... t, a year of the proposed project crediting period; dimensionless

No increase in GHG emissions within the leakage belt happened, thus non-CO₂ emissions from biomass burning in the leakage belt were not associated with the project activity.

Net GHG emission reductions or removals

According to VCS: VM0015 Methodology for Avoided Unplanned Deforestation v1.1, the emission reductions are the baseline and leakage emissions subtracting project emissions and is calculated as follows:

$$\Delta REDD_t = (\Delta CBSLPA_t + EBBBSLPA_t) - (\Delta CPSPA_t + EBBPSPA_t) - (\Delta CLK_t + ELK_t) \quad (19)$$

Where:

$\Delta REDD_t$ Ex ante estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t; tCO_{2e}

$\Delta CBSLPA_t$ Sum of baseline carbon stock changes in the project area at year t; tCO_{2e}

$EBBBSLPA_t$	Sum of baseline emissions from biomass burning in the project area at year t ; tCO ₂ e
$\Delta CPSPA_t$	Sum of <i>ex ante</i> estimated actual carbon stock changes in the project area at year t ; tCO ₂ e Note: If $\Delta CPSPA_t$ represents a net increase in carbon stocks, a negative sign before the absolute value of $\Delta CPSPA_t$ shall be used. If $\Delta CPSPA_t$ represents a net decrease, the positive sign shall be used.
$EBBPSPA_t$	Sum of (<i>ex ante</i> estimated) actual emissions from biomass burning in the project area at year t ; tCO ₂ e
ΔCLK_t	Sum of <i>ex ante</i> estimated leakage net carbon stock changes at year t ; tCO ₂ e Note: If the cumulative sum of ΔCLK_t within a fixed baseline period is > 0 , ΔCLK_t shall be set to zero.
ELK_t	Sum of <i>ex post</i> estimated leakage emissions at year t ; tCO ₂ e
t	1, 2, 3 ... T , a year of the proposed project crediting period; dimensionless.

The number of Verified Carbon Units (VCUs) to be generated through the proposed AUD project activity at year t is calculated as follows:

$$VCU_t = \Delta REDD_t - VBC_t$$

$$VBC_t = (\Delta CBSLPA_t - \Delta CPSPA_t) \times RF_t$$

Where:

VCU_t Number of Verified Carbon Units that can be traded at time t ; tCO₂e

Note: If $VCU_t < 0$ no credits (VCUs) will be awarded to the proponents of the AUD project activity.

$\Delta REDD_t$	<i>Ex post</i> estimated net anthropogenic greenhouse gas emission reduction attributable to the AUD project activity at year t ; tCO ₂ e
VBC_t	Number of Buffer Credits deposited in the VCS Buffer at time t ; tCO ₂ e
$\Delta CBSLPA_t$	Sum of baseline carbon stock changes in the project area at year t ; tCO ₂ e
$\Delta CPSPA_t$	Sum of <i>ex post</i> carbon stock changes in the project area at year t ; tCO ₂ e ha ⁻¹
RF_t	Risk factor used to calculate VCS buffer credits; %
t	1, 2, 3 ... T , a year of the proposed project crediting period; dimensionless.

The RF_t was estimated using the most recent version of the VCS-approved AFOLU Non-Permanence Risk Tool and the resulting value of RF_t for the present REDD project during the current monitoring period was 10%.

The estimates on the expected anthropogenic removals which are likely to be achieved by the envisioned forest conservation under the project scenario are in compliance with the applied VCS methodology and with the respective VCS requirements.

Data and parameter applied for the calculation of biomass are listed in the PD, the data and respective sources were reviewed by the audit team and found in compliance with requirements of the methodology.

Changes in carbon stocks of tree and non-tree biomass, non-CO₂ emissions due to biomass burning, leakage emissions equations and formulas were correctly applied and the stepwise approach was followed as per applied methodology.

The estimation of the total uncertainty of the REDD Project Activity was conducted in compliance with the VCS module by quantifying the uncertainty for the projection of baseline rate of deforestation as well as the estimation of stocks in carbon pools.

Over the first fixed baseline period of 30 years, total net anthropogenic removals of 30,138,794 tCO₂-e are expected. The calculations of the net anthropogenic GHG removals were carried out in an Excel spreadsheet /2/ /3/. All calculations are in compliance with the applied VCS methodology and its corresponding tools. The steps of the calculations are fully traceable and adequate for the project conditions and considered correct by RINA team:

- All assumptions and data used by the project participants are listed in the PD, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PD;
- All values used in the PD are considered reasonable in the context of the proposed VCS project activity;
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter value provided in the PD.

3.4.7 Methodology Deviations

No methodology deviations applied to the proposed REDD project activity.

3.4.8 Monitoring Plan

The monitoring plan is presented in section 5 of the joint PD& MR. All of the required data and Parameters relevant to the validation as of the date of this report and verification are available and provided in section 5.3 of the PD. All of the monitoring equipment and procedures specified in the monitoring plan are applicable and eligible per VCS requirements and the requirements of the methodology.

Parameters available at the time of validation:

Data/parameter	Unit	Value applied	Assessment
BEF – Biomass Expansion actor	Dimensionless	1.66	Is referred from Brown, S., A. J. R. Gillespie, and A. E. Lugo, 1989 /97/. The same is used in conversion of merchantable volume to total aboveground tree biomass. The same is accepted since the biomass volume was estimated through a local forest inventory considering only the merchantable or commercial volume, i.e., the main tree trunk.
CF - Default value of carbon fraction in biomass	tC/tdm	0.5	IPCC 2003. Good practice guidance for land use, land-use change and forestry /101/
C _{totfcl} - Average carbon stock per hectare in anthropic areas in equilibrium of post-deforestation class fcl in tCO ₂ e/ha	tCO ₂ e/ha	46.58	Is calculated based on the analysis of the Reference Region land use, and considering the weighted average for the average carbon stock. The average classification of post-deforestation land-uses within the reference region during the historical reference period was conducted through MapBiomass. - the average carbon stocks of pasturelands, agriculture and other land uses were taken from the National GHG Emissions Communication of Brazil to the UNFCCC (2019) /96/ - Secondary Forest, average carbon stocks in the state of Para as per Pereira, Izaura Cristina Nunes: Biomass stock and forest carbon in landscape units in the Amazon: an analysis from the methodological approach. Federal Univeristy of Parã, Belèm, 2013 /164/.Below ground biomass was estimated using root shoot ratio as per the methodology requirements. Thus resulting to an average value of 22.8 tC/ha. Therefore, resulting to Weighted average of post-deforestation carbon stocks 12.70 tC/ha.

El - <i>Ex ante</i> estimated effectiveness index	%	94.53	Estimated based on verified reports of similar REDD projects validated/verified in Brazil /120/.
DLF - Displacement Leakage Factor	%	15%	The same is accepted as per the point 1) of para 3.14.13 of VCS Standard v4.3, where the applied methodology requires the quantification of activity-shifting leakage, projects may apply the optional default activity-shifting leakage deduction of 15 percent to the gross GHG emission reductions and/or removals.
Dm - Mean wood density	g/cm ³	0.701	The values is referred from Nogueira(2008) /98/. The value was obtained from the Brazilian Amazon, where the project region is located. The value for the Lowland Dense Tropical Rainforest, comprising 99% of the project area.
ΔCBSLLK_t - Annual carbon stock changes in leakage management areas in the baseline case at year t	tCO ₂ e	0	The leakage prevention measures proposed by the present project do not include decrease in carbon stocks due to activities implemented in the leakage management area /75/.
EBBSLPA _t - baseline non-CO ₂ emissions from forest fire at year t in the project area	tCO ₂ e	63,904.59	Slash and burn deforestation to clear is carried out in the area, which is one of the main causes of deforestation and common practice in the project area. The default values for NCR, ER _{N2O} , ER _{CH4} , GWP _{N2O} , GWP _{CH4} and CE _{p,icl} are taken as per IPCC /101/.
Fburnt- Proportion of forest area burned during the historical reference period in the forest class icl	%	89.94	Overlapping these fire outbreaks with the deforestation mapping for the period 2014 to 2017, it was possible to verify the tendency of fire outbreaks being directly related to areas with recent and/or consolidated deforestation. The data on heat spot and deforestation is sourced from INPE /112/ and TerraBrasilis /113/. The data on fire risk classification from 2007 to 2014 was not available. Thus the same was not accounted and the same is accepted by the validation team.
Pburnt - Average proportion of mass burnt in the carbon pool p in the forest class icl	%	78	For Pburnt, a value of 78% is considered, which is average of 72% to 84% from the Brazilian Amazon in Cerrado biome /117/.
LDF - Logging damage factor	m ³ /m ³ of harvested timber	2.0174	Is referred from Feldpausch et al. (2005) /114/ The mean Coarse woody debris returned to the soil as necromass following logging and damage in: (1) tree

			felling gap formation (trees killed by tree-fall), (2) residual canopy from the felled tree, (3) road, (4) deck construction (whole trees plowed to the ground) and (5) skid maneuvering during logging, is about 6.9 Mg C/ha. According to section 4.3 from same study, this represents 2.4 times the carbon taken off site in logs. However, the MR already takes into account as planned deforestation the roads and decks constructions, which represent around 16% of the total damage. Therefore, the LDF is $2.4 * (1 - 0,159) = 2.0174$. The validation team checked the ER spread sheets /2/ /3/ and the same is found to be consistent and acceptable.
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Parameters determined Ex-post

The monitoring parameters presented in section 5.2 of the joint PD & MR complies with the requirement of the applied methodology. The assessment team checked the parameters presented in the monitoring plan against the requirements of the methodology and corresponding tools. For the monitoring of carbon stock changes, the requirements and parameter listed as per methodology were followed. The relevant parameters that need to be monitored are listed in the PD as required by the methodology and corresponding modules.

Data and parameters monitored specific to the monitoring period

Data/parameter	Value					Frequency, measurement method and assessment
ab _{icl} - Average biomass stock per hectare in the above-ground biomass pool of initial forest class icl in Mg/ha	Vegetation	Reference Region	Project Area	Leakage Belt		Dense lowland tropical rainforest above and below ground biomass is referred from Local forest inventory in Fazenda Pacajá (2021) /39/. The values obtained were compared with the studies of Fearnside et al. (2013) /95/, Barni et al. (2016) /94/, Ministry of Science, Technology and Innovation (2015) /100/ and Higuchi (2015) /93/. The values adopted by local forest inventory were found to conservative and the same has been used in calculations.
	Dense lowland Tropical Rainforest	316.35	316.22	316.22		
bb _{icl} - Average biomass stock per hectare in the below-ground biomass pool of initial forest class icl in Mg/ha	Vegetation	Reference Region	Project Area	Leakage Belt		Average values for the below-ground biomass were taken from the applied methodology VM0015 v1.1. A root-to-shoot ratio of 0.24 for tropical rainforest having above ground biomass values above 125 tons/ha, and 0.20 for values below 125 tons/ha has been considered, which is as per the methodology requirements.
	Dense lowland Tropical Rainforest	75.92	75.89	75.89		

ACPA _t - Annual area within the Project Area affected by catastrophic events at year t in ha.	0			Monitored and recorded by means of Remote Sensing and GIS at the each catastrophic event. Also checked through multiple sources like INMET /115/, Periodic reports of area supervisor and INPE /116/. No such events noted in the monitoring period.
ABSLK _t - Annual area of deforestation within the leakage belt at year t in ha.	Year	Forest	Cumulative	Monitored and recorded annually. Verification team checked the analysis of satellite images and shape files of the area deforested /86/.
	2017	100.23	100.23	
	2018	332.58	432.81	
	2019	315.30	748.11	
	2020	222.91	971.02	
	Total	971.02		
ABSLPA _t - Annual area of deforestation in the project area at year t in ha.	Year	Forest	Cumulative	Monitored and recorded annually. Verification team checked the analysis of satellite images and shape files of the area deforested /86/.
	2017	48.14	48.14	
	2018	159.72	207.86	
	2019	256.14	464.00	
	2020	109.74	573.73	
	Total	573.73	-	
ABSLRR _t - Annual area of deforestation in the reference region at year t in ha.	Year	Forest	Cumulative	Monitored and recorded annually. Verification team checked the analysis of satellite images and shape files of the area deforested /86/.
	2017	3,614.09	3,614.09	
	2018	11,992.19	15,606.28	
	2019	10,408.78	26,015.06	
	2020	5,126.42	31,141.48	
	Total	31,141	-	
APDPA _{icl,t} - Areas of planned deforestation in forest class icl at year t in the project area in ha	Year	Forest		Checked against the GIS, remote sensing data and SFMP audited reports /44//46//49//53/.
	2017	0.00		
	2018	0.00		

	2019	111.82		
	2020	58.73		
	Total	170.54		
APLPA _{icl,t} – Areas of planned logging activities in forest class icl at year t in the project area in ha.	Year	Forest		SFMP audited reports /44//46//49//53/. There is an increase in this value due to change in the SFMP area revision to 121.632.37 ha. The same was crosschecked from the SEMA licence , issued on 26/11/2019.
	2017	3,494.44		
	2018	3,494.44		
	2019	7,114.12		
	2020	3,556.27		
	Total	17,659.27		
AUDPA _{icl,t} – Areas of unplanned deforestation in forest class icl at year t in the project area in ha	Year	Forest		Monitored and recorded annually. Verification team checked the analysis of satellite images and shape files of the area deforested /86/.
	2017	48.14		
	2018	159.72		
	2019	144.32		
	2020	51.01		
	Total	403.19		
APFPA _{icl,t} – Areas of planned fuel-wood collection and charcoal production activities in forest class icl at year t in the project area in ha	0			No production of fuel wood or charcoal production activities noticed in the monitoring period and the same was confirmed from the Authorization for the Use of Forest Raw Material document /80/
ΔCADLK _t - Total decrease in carbon stocks due to displaced deforestation at year t in tCO _{2e}	0			No deforestation activity noted in the leakage belt area. The same was confirmed from GIS and remote sensing data.
ΔCPAdPA _t - Total decrease in carbon stock due to all planned activities at year t in the project area in tCO _{2e} .	Year	Forest		Decrease in carbon stock due to planned deforestation noted in the monitored period. The same was confirmed from GIS, remote sensing data and SFMP audited reports /44//46//49//53/.
	2017	51,224.16		
	2018	113,158.82		

	2019	356,387.11			
	2020	212,192.09			
	Total	732,962.18			
ΔCPSLK_t - Total annual carbon stock change in leakage management areas in the project case at year t in tCO ₂ e	Year	ΔCPSLK_t		Monitored and recorded annually. Verification team checked the analysis of satellite images /86/	
	2017	2.83			
	2018	40.58			
	2019	68.25			
	2020	72.20			
	Total	183.87			
ΔCUDdPA_t - Total actual carbon stock change due to unavoided unplanned deforestation at year t in the project area in tCO ₂ e	Year	ΔCUDdPA_t		Monitored and recorded annually. Verification team checked the analysis of satellite images and shape files of the area deforested /86/.	
	2017	34,603.76			
	2018	114,821.58			
	2019	103,748.03			
	2020	36,669.81			
	Total	289,843.18			
EBBBSLPA_t Sum of (or total) baseline non-CO ₂ emissions from forest fire at year t in the project area	Year	EBBBSLPA_t		Monitored and recorded annually. Remote sensing data, GIS and Supervisor reports are used to records the forest fires /112//113/.	
	2017	3,469			
	2018	11,510			
	2019	19,599			
	2020	22,486			
	Total	57,064			
EBBPSPA_t - Sum of (or total) of actual non-CO ₂ emissions from forest fire at year t in the project area in tCO ₂ e.	Year	EBBPSPA_t		Monitored and recorded annually. Remote sensing data, GIS and Supervisor reports are used to records the forest fires /112//113/.	
	2017	1,148.99			
	2018	3,812.55			
	2019	3,444.86			
	2020	1,217.59			
	Total	9,624.00			
$\text{EBBtot}_{\text{icl},t}$ - Total GHG emission from biomass burning in forest class icl at year t in tCO ₂ e/ha	Initial Forest Class		$\text{EBBtot}_{\text{icl}} \text{ tCO}_2\text{e/ha}$		This parameter is calculated according to requirements and default values established by the VM0015 v1.1 methodology. Overlapping these fire outbreaks with the deforestation mapping of the same time period, it was possible to verify the tendency of fire outbreaks being directly related to areas with recent and/or consolidated deforestation. The data on heat spot and deforestation is sourced from INPE /112/ and TerraBrasilis /113/. For Pburnt, a value of 78% is considered, which is average of 72%
	IDcl	Name	Baseline case	Project case	
	1	Dense lowland Tropical Rainforest	23.87	23.87	

		to 84% from the Brazilian Amazon in Cerrado biome /117/.
EgLK _t - Emissions from grazing animals in leakage management areas at year t in tCO ₂ e.	0	No grazing activities recorded in the proposed monitoring period. The same was confirmed by interviewing the stakeholders /76/.
EADLK _t Total ex post increase in GHG emissions due to displaced forest fires at year t in tCO ₂ e	0	Monitoring and recording frequency is annual. No displaced forest fires noted in the leakage belt for the proposed monitoring period /112//113/.
Hlicl,t - Harvesting intensity of timber in forest class icl at year t in the project area due to planned logging activities in m ³ /ha	11.11	SFMP audited reports /44//46//49//53/.
RF _t - Risk factor used to calculate VCS buffer credits in %	10	Non permanence report checked with respective evidence for each section . The score for the proposed monitoring period is appropriate. More information on the same is provided in section 3.5

Based on inventory information referred from Fazenda Pacajá in 2021 /39/, a total of 21 permanent sample plots were measured across the single identified strata – Dense lowland Tropical Rainforest. Comprising a total sample area of 5.25 ha, involving the measurement of 2,345 individuals. The sampling size is estimated by using a desired level of accuracy (10% of sampling error at 90% confidence level), and by allocating the estimated sample size proportionally to the area of each class. RINA checked the sampling, dates of inventories, allometric equations, sources to select them, defined values to parameters such as ratio below/ground biomass and reproduced the calculation provided by PP. It is checked that the error level (E%) for the estimates achieved was 7.67%, which is less than 10%. No inconsistencies were found. Spreadsheet calculations documents were also provided to RINA. The validation team crosschecked the forest inventory with the appendix-III “methods to estimate carbon stocks” referred in the PD/MR and the same is found to be appropriate and accepted.

RINA confirms that the list of parameters is complete and that the values assumed for ex-ante calculations will lead to precise or at least conservative estimations.

The monitoring procedures as defined in the PD and policies used for oversight and accountability of monitoring activities discussed in the PD were reviewed by the audit team on paper and through interviews with the relevant personnel /76/; this information together with a physical inspection allows the audit team to confirm that the proposed monitoring plan is feasible within the project

design /1/. RINA team concludes that the PP is able to implement the monitoring plan to report verifiable ex-post GHG net anthropogenic removals.

3.5 Non-Permanence Risk Analysis

The proposed project ‘ABC Norte REDD Project’ utilized the “AFOLU Non-permanence risk tool” to assess the risk according to internal risk, external risk, natural risk, and mitigation measures for minimizing risk. At all levels, the audit team evaluated the rationale, appropriateness, and justifications of risk ratings chosen by project proponent. The findings and conclusion regarding the non-permanence risk analysis undertaken for the project are summarized below for each risk category and factor. Unless noted otherwise, the audit team agrees with the conclusion stated in the non-permanence risk report.

The findings of the audit team regarding the risk scores applied for each factor are as follows.

Internal Risk

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
1. Project Management (PM)		
a.	The proposed project is a conservation project and no plantation activities are carried out in the project area. The same is as per the description provided in the PD. Thus condition /a/ is not applicable and risk score is justified.	0 Risk rating is appropriate.
b.	It is checked that no GHG credits have been issued previously. Further no ongoing enforcement is required to prevent encroachment by outside actors to protect more than 50% of carbon stocks. Noted that in the proposed monitoring period, there was an unplanned deforestation in the project area, which results to 0.30% of the total project areas. Thus not applicable. Risk score is justified.	0 risk rating is appropriate.
c.	The ABC Norte management has appointed on-site management team of 15 people. The on-site management team is further supervised by management team of 5 staff, where one of them is Executive Forestry Manager, one is expert in ESG (Environment , Social and Governance), 2 with forest engineering as the education background and one expert in environmental management. The auditing team went through the CVs of the team and confirms that the team has very good knowledge and experience on the local invaders, project area and Forestry aspects /22/ /23/ /24/ /25/ /26/. The validation team confirms that the project personnel have the necessary skills to implement and successfully carry out the management activities.	0 risk rating is appropriate.

d.	The project owner has a project site office with access to the project areas. It is checked that the time to access the farthest location of the project area takes only 4 hours by car and 2 hours by boat, which was confirmed by the GPS coordinates. The same was confirmed during the interviews with the project representatives /76/.	0 risk rating is appropriate.
e.	Management team doesn't have experience in AFOLU project design and implementation, carbon accounting and reporting. However, the PP has appointed Ecologica Asesoría, who is competent to do the same /17/. Ecological Asesoría has registered several REDD projects, which was checked from the VERRA website. https://registry.verra.org/app/search/VCS/Registered .	0 risk rating is appropriate.
f.	The proposed project also applies for Social Carbon Standard /75/, which includes, processes for monitoring progress and documenting lessons learned or corrections that may be needed". At the end of each monitoring period, an action plan will be carried out for improvements in the next period. Apart from the above the PP has SFRMP to harvest wood /40/, fire management plan /72/. Therefore, the relevant mitigation score was applied here.	-2

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
2. Financial Viability (FV)		
a	-	Not Applicable
b.	-	Not Applicable
c	-	Not Applicable

d	The validation team checked the ABC NORTE Cash flow sheet /65/, which was further crosschecked with audited financial statements of 2015, 2016 and 2017 /66/ and confirms that the project cash flow breakeven point is 4 years from the current risk assessment. The audit team discussed key details with the PP regarding the cash in and cash out used to create the cash flow in which it is demonstrated where the breakeven point is reached /69/ /70/.	0 Risk rating is appropriate.
e	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.	3 Risk rating is appropriate.
f	-	Not Applicable
g	-	Not Applicable
H	-	Not Applicable
I	-	Not Applicable
	Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)	3

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
3. Opportunity Cost (OC)		
a.	- The only alternative scenario, which is the most economical is the livestock production. It is checked from the cashflow sheet that livestock production has a higher NPV of 257% than the proposed project scenario. It was further checked that the carbon revenues from the proposed project activity is significant to maintain the operations, maintenance and socio- economic activities of the project /65/ /66/ /69/ /70/.	8 Risk rating is appropriate.
b.	-	Not Applicable

c.	-	Not Applicable
d	-	Not Applicable
e	-	Not Applicable
f	-	Not Applicable
g	- The PP is a non- profit organization.	Not Applicable
h	The project is protected by legally binding commitment to continue management practices that protect carbon stocks for the entire crediting period. It is checked that ABC Norte has received permissions to manage forest resources based on a Sustainable Forest Management Plan that was made available to SEMAS, the Environmental Agency responsible for licensing these activities in the Project region for 35 years, which is until 2054/19/.	-2 Risk rating is appropriate.
	Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)]	6

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
4. Project Longevity (PL)		
a.	-	Not Applicable.
b	As discussed above the proposed project 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 for 35 years and to continue the management practices, which represents a total 72-year management period, i.e., at least until 2089.	-6 Risk rating is appropriate.
	Total Project Longevity (PL) May not be less than zero.	0

2. External Risk

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
1. Land Tenure and Resource Access/Impacts (LT)		
a)	The Audit team has checked the ownership and right of use documents. ABC Agropecuária Brasil Norte S.A. - Produção e Exportação owns the conservation project also the owner of the land, who has the user right, which was checked and confirmed from the land titles /29/ /30/ /31/ and /32/. Ownership and resource access/use rights are not held by different entity(s).	0 Risk rating is appropriate.
b)	-	Not Applicable.
c)	It is checked that there are 3 dispute occurrences being assessed. State Government Agroextractive Settlement Project (PEAEX), due to a georeferencing error by the State /138/, as well as by other 2 private property owners. The total size of the areas under dispute is of 836.67 ha, which represents 0.6% of the project area, which is lesser than 5%. As confirmed above the ownership was confirmed from the ownership and land title documents. The state of Pará and the environmental entities have confirmed the same, which was crosschecked from the approval document for SFMP /42/ /54/	0 Risk rating is appropriate.
d)	As assessed above, there are no disputes over access/use rights in the project area.	0 Risk rating is appropriate.
e)	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	Not Applicable
f)	As discussed above the project is protected by legally binding commitment to continue management practices that protect carbon stocks.	-2 Risk rating is appropriate
g)	The proposed project also applies for Social Carbon Standard /75/. which uses six indicators to monitor social, environmental and other aspects of the project, and track their progress across time. At the end of each monitoring period, an action plan will be carried out for improvements in the next period. Therefore, the relevant mitigation score was applied here.	-2 Risk rating is appropriate

	Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.	0
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Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
2. Community engagement (CE)		
a)	It is checked that there is one community living within the project area, the community called Caminhos do Bem. There are no households living within the project area also confirmed from the map- location of communities around the project area /85/ and socio-economic assessment reports /33/ /34/ /80/. During the interviews with stakeholders /76/, it was understood that more than 50% of the households living within the project area were consulted. The same was also confirmed by the list of participants /62/, video recordings of the meeting /64/.	0 Risk rating is appropriate.
b)	It has been checked that there are 5 communities living close to the project area and all the 5 communities were consulted. It was further checked that more than 20% of the households living within the project area were consulted. The same was also confirmed by the list of participants /62/, video recordings of the meeting /64/.	0 Risk rating is appropriate.
c)	As assessed above through the evidence the audit team confirmed that 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 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 same was also confirmed by interviewing the stakeholders /76/, reports from 2017 to 2019 /80/ the expenses evidence and the budget plan for the other 7 communities. In total 13 communities.	-5 Risk rating is appropriate.
	Total Community Engagement (CE) [where applicable, (a + b + c)] Total may be less than zero.	-5

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
3. Political Risk (PC)		
a)	-	Not Applicable
b)	-	Not Applicable
c)	The audit team confirmed that the 5 year (2015 to 2019) mean governance score for Brazil across the six governance indicators of World Bank Institute's Worldwide Governance Indicators is -0.18 /117/. Therefore, agrees that the political risk is 2.	2 Risk rating is appropriate.

d	-	Not Applicable
e	-	Not Applicable
f)	The audit team checked the following a) The country is receiving REDD+ Readiness funding from the FCPF, UN-REDD or other bilateral or multilateral donors b) The jurisdiction in which the project is located is participating in the Governors' Climate and Forest Taskforce c) The country has an established national FSC or PEFC standards body d) The country has an established DNA under the CDM and has at least one registered CDM A/R project.	-2 Risk rating is appropriate.
	Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.	0

2. Natural Risk

Risk Factor	Assessment of rationale, assumption and justification	Appropriateness of Risk Rating
F	The analysis was based on data from the Brazilian National Institute of Space Research, INPE /113/ , with satellite images (from PRODES) and records of possible fire outbreaks. Between 2014 and 2017, only 162 heat spots were identified within the project area, 12 of them were considered minimum risk, 39 of them were considered low risk, 58 as medium risk, 35 high risk and 18 as critical risk. These 4 last occurrences were considered high risk in order to be conservative, as INPE's database. During the monitored period (13-September-2017 to 31-December-2020), 36 heat spots were identified within the project area. From the detailed 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. Considering the fire out breaks in the last 5 years, the likelihood of fires was put to less than 10 years. Mitigation : 0.25. Fire management plan in place /72/.	2.00 Risk rating is appropriate.
PD	It is checked that the pests and diseases do not increase their population, as the environment does not favor the expansion of these agents, which was	0 Risk rating is appropriate.

	confirmed from the study “Alternatives for a sustainable agriculture – 2018” /156/. The same was also confirmed from the community members. No incidents 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. Thus , a likelihood of once every 50 to less than 100 years is being considered. Mitigation : 1.00	
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W	The significance of blow-down winds was determined using a search of the BDMEP (Meteorological Database for Research and Education) platform, created by the INMET (Meteorological National Institute) /115/. In the database of Breves Station, from 2007 to 2017, the wind speed has never exceeded 2.13 m/s, which is significantly below the wind speed for the categories of tropical storm or hurricane/124/. Referring to scientific data and publications, it is unlikely that the region may affect from extreme weather conditions. Consequently, a likelihood of every 10 to 25 years is confirmed for all extreme weather events. During the proposed monitoring period , the wind speed has never exceeded 1.94 m/s /115/ Hence a mitigation factor of 1.00 is reasonable.	1 Risk rating is appropriate.
G	Geological risk: No geological events damaging the project site were reported by the landowner. Furthermore, as per the Brazilian’s geological service (CPRM) /128/, does not indicate the project area as high and very high geological risk, with the geological risk of the municipality concentrated in the urban area. No events noticed in the monitoring period. Thus , a likelihood of once every 50 to less than 100 years is being considered. Hence a mitigation factor of 1.00 is reasonable.	0 Risk rating is appropriate.
ON	Other natural risk.	Not Applicable.
	Total Natural Risk (as applicable, F + PD + W + G + ON)	1.50

The overall non-permanence risk rating that was determined for the project, using below Table is 1.50.

Risk Category	Rating
a) Internal Risk	7.00

b) External Risk	0.00
c) Natural Risk	1.50
Overall Risk Rating (a + b + c)	10.00

In accordance with the VCS Non-Permanence Risk Tool, the overall score shall be rounded up to the nearest whole percentage, and the minimum risk rating shall be 10, regardless of the risk rating calculated. Therefore, 10% is the overall risk rating for this project.

In summary, the overall risk rating that was determined for the project, in accordance with the VCS Non-Permanence Risk Tool, is 10%. The audit team has concluded that the above risk rating is in conformance with the VCS rules.

4 VERIFICATION FINDINGS

4.1 Accuracy of GHG Emission Reduction and Removal Calculations

- Forest benchmark maps of the reference region, project area, and leakage belt and factor maps were derived from GIS files and remote sensing imagery prepared by the project developer /1/. RINA validated and verified these maps by comparison with the imagery they were digitized from. These maps were used to derive the parameters related to the quantity of land use and Land cover change observed.
- Annual area of baseline deforestation in the reference region, project region, and leakage belt at year t; (parameters ABSLRR, ABSLPA, ABSLLK) RINA reviewed remote sensing data /86/ to confirm that classification had been carried out appropriately. Inputs to spatial models /86/ and resulting maps /85//90/ were reviewed to ensure that modelling was carried as described by the methodology. Land title documents /29/ to /32/ were reviewed to ensure that the project area was appropriately represented in GIS models. Spreadsheets implementing methodology equations /2/ /3/ were reviewed to check for computational errors.
- Carbon stocks in forest class in the project area (Parameters Ctotic, Cpl) and allometric equations were validated based on the published and reliable studies /96/ /100/, reviewing spreadsheet calculations made by the project proponents ; and reviewing technical literature describing the allometric equations applied /1/.
- Parameters CF, Dj , ERCH4, GWPCH4 were taken from the IPCC good practice guidance. RINA team cross checked this document /101/ to ensure the correct values had been applied.
- The parameters Fburnt and Pburnt were derived from the INPE and Terrabrasilis /112/ /113/. RINA checked the calculations used to derive these parameters.
- The parameters DLF (based on the default value as per the VCS standard) and EI are ex-ante assumption made by the project developer, which are based on the similar projects validated and verified in the country, Brazil /120/.

Measurement frequency and assessment of each data/parameter is also discussed in detail in section 3.4.8.

The equations/formulas used in the baseline emissions, project emissions and leakage emission calculations are detailed in section 3.4.6.

The PP submitted emission reduction calculations and other supporting calculations in excel sheets. The excel sheets are clear, un-protected and easily viewable. The calculation in the excel sheet is verified and found be correct. The methods and formulae set out in the project description for calculating baseline emissions, project emissions and leakage are correctly followed in the monitoring report and ER calculation sheet. All the values are provided in the MR and ER calculation sheet are cross verified with its sources and confirmed no manual transposition errors between data sets have occurred. Also the consistency of values within MR is checked and found to be satisfactory. Hence verification team conclude that the GHG emission reductions and removals have been quantified correctly in accordance with the project description and applied methodology.

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

RINA has performed the validation and the verification of the REDD project “ABC Norte REDD Project” and has verified that the project is in compliance with the Verified Carbon Standard version 4.1 and VCS Validation and Verification Manual v 3.2. The project is located in Brazil and avoid the unplanned deforestation (AUD) of a subsection of the 140,432.27 ha project area.

The validation and verification process were performed on the basis of all issues and criteria of VCS. The conclusions of this report show that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation and verification.

The verification assessment covered the monitoring period from 13/09/2017 to 31/12/2020 and verified that calculated emission reductions and/or removals were achieved during the monitoring period with a reasonable level of assurance.

RINA is able to issue a positive verification opinion for the 421,510 tonnes CO₂e as reported in the Joint project description and monitoring report Monitoring Report for the reporting period from 13/09/2017 to 31/12/2020

Verification period: 13/09/2017 to 31/12/2020

Verified GHG emission reductions and removals in the above verification period:

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

5 VALIDATION AND VERIFICATION CONCLUSION

RINA has performed the validation and the verification of the REDD project “ABC Norte REDD Project” and has verified that the project is in compliance with the Verified Carbon Standard version 04 and VCS Validation and Verification Manual v 3.2. The project is located in Brazil and avoid the unplanned deforestation (AUD) of a subsection of the 140,432.27 ha project area.

The validation and verification process were performed on the basis of all issues and criteria of VCS. The conclusions of this report show that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation and verification. The VVB confirms that the project has been implemented in accordance with the project description.

The verification assessment covered the monitoring period from 13/09/2017 to 31/12/2020 and verified that calculated emission reductions and/or removals were achieved during the monitoring period with a reasonable level of assurance.

RINA is able to issue a positive verification opinion for the 421,510 tonnes CO₂e as reported in the Joint project description and monitoring report Monitoring Report for the reporting period from 13/09/2017 to 31/12/2020

Verification period: 13/09/2017 to 31/12/2020

Verified GHG emission reductions and removals in the above verification period:

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

13/09/2017 to 31/12/2017	89,738	86,977	3	2,759	44	2,714
01/01/2018 to 31/12/2018	299,039	231,793	41	67,205	5,951	61,254
01/01/2019 to 31/12/2019	512,528	463,580	68	48,879	3,272	45,606
01/01/2020 to 31/12/2020	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

APPENDIX 1: < ABBREVIATIONS >

Abbreviations	Full texts
ARR	Afforestation, Reforestation, Revegetation
BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	Modalities and Procedures CDM
CER(s)	Certified Emission Reduction(s)
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
ER	Emission Reductions
ESMS	Environmental and Social Management System
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emission
PP(s)	Project Participant(s)
PPA	Power Purchase Agreement
Ref.	Document Reference
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation and Verification Body
VVS	Validation and Verification Standard

APPENDIX 2 : CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUEST

Table 1.CL from this validation/verification

CL ID	01	Section no.	3.1	Date: : 11/10/2021
Description of CL				

1. As per the project proponent ABC Agropecuária Brasil Norte SA Produção e Exportação, leased the area to a forestry company that carried out the sustainable forest management activities during almost 20 years. Later the contract was terminated on 14/09/2017 due to recurrent negative balance and increasing deforestation pressure from external agents. PP is requested to justify the same with evidence.
2. It is also checked that the PP has signed new contract with J&Y for SFMP on 13/09/2017. PP is requested to clarify on what is difference between the new contract and the existing contract . How the new contract supports the REDD activities as per the VERRA and methodology requirements. Justify the same with the contracts conditions.
3. Main objectives of the project and the measures implemented in the monitoring period 14/09/2017 to 31/12/2020 is not transparent in the project description . Support the same with evidence.
4. PP is requested to provide all the necessary approvals, after terminating the contract with Cikel.
5. Provide copy of the contract signed with the mapping company and also the monthly reports from them.
6. As per the discussions during the audit , there was illegal logging happening , when the company leased the contract of SFMP with Cikel. Provide evidence for the same.
7. The project is located in the State of Pará, in priority areas within the agricultural expansion frontier region. However, the same is not correct. Kindly revise the same.
8. Provide evidence of CERFLOR certification ,the latest certificates.
9. Ecológica Assessoria Ltda is also one of the PP. However, the table used to provide the project proponents information is for other entities.
10. The start date of the project activity is 14/09/2017. PP is requested to clarify on how the project start date is as per the clause 3.7 of the VCS standard, version 4.1. PP is further requested to justify the prior VCS consideration and provide chronology of events towards the REDD implementation from the start date of the project activity, as it was noted that the start date of the project activity was in 2017 and the contract with the VCS consultant was signed only in 12/2020.
11. It is further checked that the contract with contract between ABC Norte and Madeireira J&Y is only for 5 years. However, the crediting period of the project is for 30 years. How is it ensured that similar practice/measures will be followed through out the crediting period.
12. As discussed above the project proponent has signed a lease contract with Madeireira J&Y for SFMP. PP to clarify that the company J&Y does not have any share in the carbon revenues generated by the proposed project. Justify the same with evidence.
13. As per the section 1.11 of the PD&MR, there are 13 communities in and around the proposed project area and currently the project is serving only 5 communities and as per the discussions had during the audit, the other communities will also be served at a future date. PP is requested to provide the management plan/budget allocated to these communities.

14. As per the section 1.11 of the PD&MR, conservation activities include increased monitoring to prevent invasion of illegal deforestation by outside agents and banning of unplanned logging and other unpermitted degradation within the project area. PP is requested to provide the conservation strategy/conservation management plan developed by the PP.

15. Provide evidence of the normative instructions for the maximum exploitation limit.

16. As per the discussions under SFMP, silvicultural interventions will be carried out in the residual forest (see item Silvicultural System) will allow the return to the area in a shorter time period. Provide the supporting documents to confirm the same.

17. Section 1.14 of compliance with laws , statutes and other regulatory framework is not transparent on the different approval and clearance required for such project at local level and federal level. PP is requested to clarify the requirements of environmental permits, harvest permits required for such projects. Provide evidence for the same.

18. Section 1.16 “emission trading programs and other bunding limits”, instead of stating not applicable. Indicate whether the project reduces GHG emissions from activities that are included in an emissions trading program or any other mechanism that includes GHG allowance trading, and include details about any such programs or mechanisms.

19. Under sustainable development, PP is referring to NDCs from Brazil. However, PP is requested provided sustainable development indicators as prescribed by the host country and clarify if the proposed project includes any provisions for monitoring and reporting the same.

Project participant response

Date: 24/11/2021

1. Evidence on the negative financial statement, with declaration of accumulated loss, were sent.
 2. The contract with J&Y has clauses with greater restrictions on the tenant's activities, in addition to specifications regarding the reduction of social and environmental impacts. In addition, it includes several mechanisms for monitoring management activities, such as dependence on external auditing, need to present activity reports, restriction on annual exploitation, etc. ABC Norte's internal team monitors all management activities to verify that the requirements are being met. This explanation and further details were included in section 1.8 - Project Start Date of version 02 of the PD.
 3. Information on activities implemented since 2017 were better described on section 1.11 Description of Project Activity in version 2 of the PD. Environmental and social reports were sent as evidence.
 4. The Rural Activity License (LAR – Licença de Atividade Rural) updated to Madeireira J&Y, of 2017/2018, was sent. This document demonstrates the approval of the tenant's change and authorizes the company to conduct the forest activity in Fazenda Pacajá.
 5. Monitoring reports from 2017-2020 period were sent as evidence. This report was initially developed internally, by ABC Norte's team, and in 2019, was developed with Aflora. The company that conducted the Sustainable Forest Management Plan development. Evidence of the experience and competency of ABC Norte's team was sent as evidence.
 6. Reports were forwarded to VVB. showing evidence of deforestation in the area and lack of monitoring by the previous company. These reports were issued in internal audits of the management plan carried out during the company's period of operation at Fazenda Pacajá, in addition to a technical report by the state secretariat, which pointed out signs of deforestation, in addition to the permitted exploitation.
 7. The sentence has been corrected in version 2 of the PD. The region is located in priority areas of conservation and biological importance, according to the 2018's classification of the Brazilian Ministry of Environment.
 8. CERFLOR certificate was sent as evidence.
 9. The table was updated to the correct version.
 10. For further details, a table with the timeline of actions carried out by ABC Norte related to the carbon project was included in section 1.11 of version 2 of the PD. The start date of the project was changed to 13/09/2017, as this is the date of signature of the contract with the new tenant, and this contract contains several clauses that require the conservation of vegetation, implementation of a sustainable management plan with certification and internal and external audits, and a minimum contribution to the development of social programs with the surrounding communities. As shown in the timeline and new evidence sent, although the contract with Ecológica and the completion of the project validation only took place in 2021, the carbon project was considered by ABC Norte since 2017. However, the project was not validated in 2017 as it was necessary to take some actions to prepare the area for the development of the carbon project (update of the land titles, conduction of social and environmental studies, among others), as detailed in the feasibility report provided by other project developer company in 2017.
 11. The contract with J&Y was made on a reduced time basis to avoid inconveniences such as those that occurred with the last lessee. If there are no problems, the contract will be renewed. Anyway, ABC Norte has assembled a team of engineers and forest technicians both to monitor the activities carried out by J&Y, and to be able to assume the sustainable management plan in case of breach of contract with the tenant. The forestry activity is ABC Norte's main niche, and therefore, they sought to ensure that activities can continue internally if there is any kind of problem with third parties.
 12. J&Y's contract has as exclusive agreement subject matter the forest management – wood harvesting – in the Forest Management Area within Fazenda Pacajá. The tenant has the right to use the forest asset, not the soil or subsoil, and it doesn't have any ownership rights of the area. Thus, only logs originating from the sustainable forest management plan may be explored by the lessee. The contract also expressly excludes the tenant from trading credits arising from the avoided carbon emission in natural forests and other environmental services related to the Forest.
 13. The 13 communities are now included in the Leakage Management Area. Therefore, all activities expansion planning will also include the 8 communities that are not yet served by the Social Responsibility Program. Currently, 5 communities are supported by the program, due to difficulties of transport, budget and communication. It is expected that with the carbon credits revenue all the other communities will be achieved. This was better explained at the PD and it is a perspective stated at the Social Carbon Report Point 0:
- 4) Social Resource:

- Develop a cycle of lectures and training aimed at the female audience, with themes on gender inequality, domestic violence, and encouraging actions that develop professional activities to generate income.

Human Resource:

- Implementation of an Occurrence Registration Form, to monitor and inform the Vila ABC's health center about the facts reported by the riverside communities.
- Construction of a library at Vila ABC, and classes for adults

Financial Resource:

- Develop more than one income-generating activity (production system) with each community

Natural Resource:

- Offer sports-oriented activities, especially for children in the communities

Biodiversity Resource:

- Expand training related to the management of non-timber forest products

Carbon Resource:

- Conduct a local stakeholder consultation and maintain regular contact with the communities regarding the carbon project

To ensure the evolution of the socio-environmental scenario in the region, the SocialCarbon Standard requires that at least 50% of the actions suggested in Point 0 are implemented, under the risk of losing the Standard.

The monitoring period for SocialCarbon shall be the same as the monitoring period for the Carbon Accounting Standard (VCS). The listed prospects were not included in the PD as their monitoring is carried out together with the monitoring report and may undergo changes that shall be justified at each verification, which should be updated at each point/monitoring period, in order to reflect the region's sustainable development goals.

ABC Norte carried out a budget survey for the expansion of the social responsibility program to the 13 communities surrounding the project area, sent as evidence. This budget can be considered as part of the necessary investment to be made by ABC Norte, in addition to the costs of logistics, food and supplies for the activities. The carbon project will be essential for the company to achieve this goal.

14. In addition to the activities developed by the Social Responsibility Program, which seeks the independence of the communities from forest deforestation, ABC Norte has internal security procedures in case an unplanned deforestation is reported. This procedure is detailed in section 5.3 – Monitoring Plan (subtopic Security Procedures). A copy of the internal informative was also sent as evidence.
15. According to Normative Instruction 05, of 2015 – “For the purposes of this Normative Instruction, the following are considered: XV – cutting intensity: the maximum total of 30m³ per hectare of the volume of trees of the selected species for cutting, in each production unit area (UPA), as established by current legislation, estimated through volumetric equations provided for in the SFMP and based on the 100% Forest Inventory data calculated for each UT.”
16. Although the management plan comments on the possibility of reducing the cycle with silviculture techniques, according to the literature cited, there is no planning or activity being carried out for this purpose in the management of ABC Norte. The approved cycle for the company's management is 30 years, and any change must be approved by the responsible environmental agencies.
17. Applicable laws related to the forest management were included with further details in section 1.14 of PD version 2.
18. The project does not participate in any other GHG emission reduction trading program or other binding limits. This was updated in section 1.16 of PD version 2.
19. The project's contribution to Brazil's priority objectives was further explained in section 1.17, as well as details on monitoring and reporting on national progress..

Documentation provided by project participant

1. ABC NORTE – Financial Statement 2015/2016/2017.pdf
2. Cikel rescission.pdf
Contract comparison.xlsx
J&Y Contract 2017.pdf
3. Monitoring Reports Folder (Internal monitoring reports, Environmental Reports and Social Reports)
4. AUTEF n° 273705-2021.pdf
LAR 2018 Madeira J&Y.pdf
5. Check Item 3 folder – Monitoring Reports – Environmental Reports, CVs.zip
6. TechnicalReportPOA 18 DIGEO.pdf, FRMBrazil_ASSESSMENT OF SUSTAINABLE FOREST MANAGEMENT PRACTICES.pdf, 20170331Monitoring of Exploration and Anthropism.pdf, 20160928 Monitoring of Exploration and Anthropism 01.09 a 16.09.16.pdf, Final sample survey report.pdf
8. CERFLOR certificate_2.pdf
10. Alternative use and carbon report.pdf
11. CVs.zip
12. Contract J&Y_aditivo.pdf
14. Security Procedures.pdf
15. IN052015.pdf

1. The VVB checked the financial statement 2015/2016/2017 and confirms that the balance is negative and there was also deforestation activity noted in this period.
2. Contract with J&Y checked and confirms that contract has additional points regarding the reduction of social and environmental impacts, including more emphasis on monitoring activities, also including surveillance checks from the team from ABC Norte.
3. A table with the actions taken by ABC Norte, following the action plan developed by the other carbon developer was included in the PD. Evidence of the contact between the companies throughout 2017 and 2021 was also provided. The same was checked and accepted by the validation team.
4. The Rural Activity License (dated 2018) and Authorization for Forest Exploitation (dated 2021) was provided with Madeira J&Y as holder.
5. Competency of ABC Norte's internal team checked with the CVs provided. Noted that the team has expertise in forest sector.
6. Evidence of deforestation checked and noted that the same was in addition to the permitted exploitation.
7. Sentence corrected in the revised version and closed.
8. CERFLOR certificate checked. The certificate was also checked on the PEFC website (<https://www.pefc.org/find-certified/details?cbResetParam=1&CID=C-LH7M6W&LID=&EID=E-WNVCKG>) and the same was accepted.
9. PPs information is updated in the format as per the requirements of VERRA.
10. The project start date is revised to 13/09/2017, that is the date when the PP has signed a contract for SFMP with J&Y. RINA checked prior VCS consideration and real and continuing actions undertaken by PP to secure the VCS status was checked with the email exchanges between PP and Carbon consultant and also the board minutes. The chronology of events has been explained in detail in the revised PD.
11. PP has confirmed and it is also checked that ABC Norte has an internal team of forest experts with relevant experience in forest conservation measures and social activities. Thus, it can be confirmed that project can be continued for the whole of crediting period selected by the PP.
12. Justification provided by PP is accepted.
13. Budget allocated to all the 13 communities was checked against cashflow sheet provided by the PP, The same was checked and accepted.
14. conservation strategy has been discussed in detail in section 5.3. which also checked against the internal informative (security and procedures). Thus accepted.
15. Normative Instruction 05 of 2015 checked and accepted.
16. Justification provided by the PP is accepted.
17. Relevant laws related to the forest management has been discussed in section 1.14 of the PD. The same has been checked and accepted by RINA team.
18. The project does not participate in any other trading program or other binding limits. The same has been updated in the revised PD&MR.
19. The project contribution to Brazil's priority objectives and monitoring and reporting of the same has been discussed in detail in section 1.17 of the PD.

Based on the above justification CL 01 is closed.

CL ID	02	Section no.	3.3.1	Date: : 11/10/2021
Description of CL				
The validation/verification team understands that the project is also applying for Social Carbon Standard, which identify and discuss the potential negative environmental and socio-economic impacts identified by the project proponent. PP to provide copy of the social carbon report to confirm the same.				
Project participant response				Date: 24/11/2021
Social Carbon Report is being validated/verified along the Joint PD. Version 01 of the report was sent as evidence, and the final version will be sent as well, as soon as it is approved by the audit team.				
Documentation provided by project participant				
SCR_ABCNorteREDDProject_Point0_v1.pdf				
DOE assessment				Date: 27/12/2021
The PP has provided the draft version of Social Carbon report. Noted that the same can be finalised only after successful closure of the VCS validation/verification. Thus the same was accepted by RINA team.				
CL 02 is closed.				

CL ID	03	Section no.	3.3.2	Date: : 11/10/2021
Description of CL				
The project started with the intention of VCS revenues, in such a case, why is the stakeholder consultation conducted so late in 2021, which doesn't even cover the monitoring period (from 2017 to 2020) claimed by the PP.				
PP is further requested to summarize the minutes of the both the meetings carried out remotely on 13/07/2021 as well physical meeting from 25 to 27/06/2021. Also, clarify how due account of all and any input received during the consultation has been taken. Include details on any updates to the project design or justify why updates are not appropriate				
As per section 2.2, Local stakeholder consultation, a permanent communication channel with local stakeholders was created in order to receive any comments or suggestions regarding the present REDD project. However, not transparent on what is the communication channel and how the comments will be recorded and addressed. PP is further requested to provide evidence of the complaints received for the monitoring period from 2017 to 2020.				
PP is further requested to clarify the benefits sharing mechanism and supporting evidence for the same.				
What are the procedures related to resolve eventual conflicts with stakeholders.				
Project participant response				Date: 24/11/2021

1. Although the first Local Stakeholder Consultation regarding the validation process and the carbon project was held in 2021, one of the main activities carried out by ABC Norte since 2017, related to the development of the REDD project, was the reconciliation with the communities, and carrying out diagnoses, both for the evaluation of suggestions and comments on the conduct of the management plan, social management and illegal activities in the surroundings of Fazenda Pacajá, as well as to understand the needs and needs of the families. Thus, it can be considered that consultations were carried out with stakeholders, as visits and diagnoses were carried out over the period, to communicate and open the company's social planning for public consultation. This information is further explained in section Project Start Date in PD version 2.2.
2. Further details regarding the consultations were included in section 2.2 of the PD version 2. The minute of the online consultation was sent, in addition to the Community consultation report. No comments on the project design were made, so no updates were necessary. This is stated now in section 2.2 and 2.4
3. During the consultations the Ecologica and ABC Norte contact was provided (phone, e-mail and address). Thus, the channel is available for any comment, suggestion or critics. These will be registered and forwarded to the responsible part. In addition, the communities also have contact with the Social Responsibility Program team through message app, besides the Monthly visits held by the program. The folder distributed during the visit and slides presented at the online consultation, both containing the grievance contact, were sent as evidence. During the research for the socio-environmental diagnosis, and the visits of the social responsibility program, any needs, complaints, and grievances were recorded. The first report of 2017 stands out, as it is when the first contact with the communities was carried out after the change of tenant. The socio-environmental reports present all the information regarding the communities' concerns.
4. According to the SOCIALCARBON methodology, the project will allocate part of the revenues from the sale of carbon credits to social investments. As this is the first MR, it has not yet been defined how these investments will be carried out. In addition, the company already has part of its revenue allocated to the social program, as described in the additionality cashflow. ABC Norte carried out a budget survey for the expansion of the social responsibility program to the 13 communities surrounding the project area, sent as evidence. This budget can be considered as part of the necessary investment to be made by ABC Norte, in addition to the costs of logistics, food and supplies for the activities.
5. ABC Norte has as standard procedure the conversation and dialogue to solve problems, in addition to acting as an agent of social change by investing in programs and alternatives to mitigate conflicts and illegal actions. Thus, in addition to the Social Responsibility Program activities, ABC has a procedure informative presented to employees. This procedure is detailed in section Monitoring Plan of the PD, and the informative was sent as evidence.

Documentation provided by project participant

1. Please check report sent on CL01 - Item 10 - Alternative use and carbon report.pdf
2. 13 07 2021 Online Stakeholders Consultation_ABC Norte Project.pdf
ABC Norte REDD Project - Local Stakeholder Consultation Report - June_2021.pdf
3. Folder LSC - Algar.pdf
Algar_LSC_v.02.pdf
5. Please check document sent on CL01 - Item 14 - Security Procedures.pdf

DOE assessment	Date: 27/12/2021
1. The validation team confirms that though the stakeholder consultation as part of VCS requirements was carried out in 2021. However, there was a continuous interaction of the project owner with the stakeholders from the beginning on 2017. The consultations were carried out to evaluate suggestions and comments on the conduct of management plan, social management and illegal activities in the Fazenda Pacaja region , as well as to understand the needs of the families in the communities . The stakeholder visits were crosschecked with the economic feasibility report , 2017 and the same is acceptable. 2. Minutes of the meeting for both the meetings 13/07/2021 and 25 to 27/06/2021 has been discussed in the PD. It was also clarified that there were no adverse comments and due which there was a change in the project design. 3. Section 2.2 of the local stakeholder consultation has been updated with ongoing method of communication , the same was checked by interviewing the stakeholders. Social reports from 2017 to 2020 provides the complaints and and needs of the communities. Noted that there is no negative comments. 4. As per the social carbon report, part of the revenues from the sale of carbon credit will be allocated to the social activities for the in and around the 13 communities, which will be crosscheck durin each verification of the social carbon report. However, now the same was checked with budget plan and accepted. 5. Checked against the Social Responsibility program activities and security procedures. Based on the above justification CL03 is closed. However, FAR 1 is raised.	

CL ID	04	Section no.	3.3.5	Date: : 11/10/2021
Description of CL				
1. Section 2.5 of the AFOLU Specific safeguards, it states ABC Norte is the legal owner of the project area, however, has an agreement with the communities to maintain the current use of land, as long as they commit to forest preservation and leave no environmental liabilities. PP is requested to provide the copy of agreement, ABC Norte having with the communities. 2. It also states that if the project implements any reforestation project with non-native species over native species in the future, the possible risks and adverse effects of exotic species will be justified and explained to communities. PP is requested to clarify on how this would be monitored and reported.				
Project participant response				Date: 24/11/2021
1. The agreement was made verbally, and there is no official documentation related to this issue. This agreement is held with the activities of the Social Responsibility program, that acts both as a communication and monitoring method, with monthly visits, and as an alternative income source, establishing a healthy relation between the company and the communities. This is further detailed in section 2 of the PD version 2. 2. The company does not have any plans to use exotic species in the reforestation of degraded areas, and there is no future planning. If necessary, the communities will be informed during the Monthly visits of the social program and a new stakeholder consultation, if necessary.				
Documentation provided by project participant				

DOE assessment	Date: 27/12/2021
1. Justification provided by PP is accepted. Section 2.5 of the PD has been revised as per the explanation provided by the PP above. 2. The PP has confirmed that there is no plans to use the exotic species and the possible risks and the adverse effects of the risks would be communicated to the stakeholders during monthly visits to the communities as part of social program. Based on the above justification CL04 is closed.	

CL ID	05	Section no.	3.2	Date: : 11/10/2021
Description of CL				
Applicability conditions. a. condition a: As per the description of the project activity in section 1.11 of the PD, the “Fazenda Pacajá” was acquired in 1979, starting the process of opening and occupation. From 1982 to 1999 the Sustainable Forest Management Plan (SFMP) took place, being leased to Cikel from 1999 to 2017. In 2014, Algar incorporated ABC Norte, and in 2017, Cikel ceased to be responsible for the Management Plan. It is very clear that the baseline activities in the proposed project for a long time was SFMP. PP to clarify how the proposed project complies with the condition a of the methodology. b. condition c: Evidence to justify the proposed project area meets the definition of forest as defined by the host country. c. condition e: Evidence to confirm the project area region is formed by soil types yellow latosol and hapoid gleysol. d. Justification on applicability conditions of the tool used like VT0001 is not transparent.				
Project participant response				Date: 24/11/2021
a) Applicability table was corrected. The primary land uses in the baseline scenario are: cattle ranching, mainly for producing beef cattle; and timber harvesters, acting both legally and illegally. Thus, the project is to avoid unplanned deforestation, according to the most recent VCS AFOLU requirements. b) The Project area is formed by phytophysionomies according to Brazilian forest classification, and is in compliance with the forest definition as per Brazilian Forest System. This information was updated in the table. c) Soil map was included in the table, according to the Sustainable Forest Management Plan. d) VT0001 applicability conditions were included in the table.				
Documentation provided by project participant				

DOE assessment	Date: 27/12/2021
a. For the proposed project activity, the scenario prior to the proposed project was also SFMP, leased by the project owner to the third party (Cikel). However, during this period, the project proponent noticed increase deforestation due to external and internal agents. The same was checked with remote sensing imageries . Project meets the requirement. Further, the Environmental Agency of the State of Pará found around 100 ha of illegal deforestation during the period 2009 to 2016 and 1,135 ha of illegal logging areas , harvested beyond the legal limits , including an operation of an illegal sawmill within the project boundary. It was also checked that around 2 thousand ha of area was deforested illegally in Fazenda Pacaja area in the reference period from 2007 to 2017, thus concluding unplanned deforestation in the baseline. b. Revised justification on forest definition provided and the same is accepted. c. Soil map and sustainable forest management plan confirms that the project is on peat land. d. Internal applicability conditions of VT0001 is provided in the revised PD&MR. Based on the above mentioned justifications, CL05 is closed.	

CL ID	06	Section no.	3.4.3	Date: 11/10/2021
Description of CL				
Project Boundary 1. Justification of table 2 “criteria determining the applicability of existing baseline is not transparent in the PD & MR. 2. As per the socio-economic and cultural conditions, it is confirmed that the areas surrounding the Fazenda Pacajá are not public or part of any protected area, such as project area. These conditions also comply with Land Use and Land Tenure items, once the conditions of the project area are found elsewhere in the reference region. PP is requested to justify the same evidence. 3. a. Leakage management Plan: PP to clarify on what are the different activities implemented to reduce the risk of activity displacement leakage. b. As per the methodology the boundary of such areas must be defined according to existing management plans or other plans related to the proposed AUD project activity. Such plans shall be made available to the VCS Validation/Verification Body (VVB) at the time of validation. c. Leakage management plan also states that the project promotes benefit sharing . PP to clarify on the benefits sharing in place and provide the agreements in place. 4. Though the PP has provided good resolution maps as an evidence. However, the maps provided in the PD are of low resolution. Kindly update the same. 5. Though figure 42, there is an increase in deforestation and cattle herd, the same is not the case with figure 43 in bagre . Noted a gradual decrease in deforestation, though there was an increase in cattle herd. 6. Human development Index figure 45 is not transparent on the latest data. It is also said that , the average monthly income of the inhabitants of these cities is around 2.3 basic wage (around 2,155 reais in 2017), however, only 7.2% of the population has formal jobs, making the population socio-economically vulnerable. Provide evidence for the same. 7. Driver variables explaining the location of deforestation is not transparent on markets, industrial facilities and slope. 8. For each identified underlying cause describe the project measures that will be implemented to address them, if applicable.				
Project participant response				Date: 24/11/2021

1. Table 2 of the methodology is not applicable as no sub-national or national baseline is available, and the country or subnational region has not been divided in spatial units for which deforestation baselines will be developed. Thus, a baseline was developed for the Reference Region, considering criteria defined in the methodology.
2. Evidence of areas surrounding Project Area was included in section Project Boundary of PD version 2
3.
 - a) Leakage Management Plan was better described, including activities implemented during the monitoring period.
 - b) The leakage management area was defined according to the location of the 5 communities currently supported by the Social Responsibility Program, in addition to other 8 communities that were identified by ABC Norte in the surroundings of the project area. As reported in the Social Carbon and throughout the PD, it is expected that, with the revenues of the carbon credit sale, it will be possible to achieve all the communities in the Reference Region. This is the perspective established by ABC Norte and the social consultancy company.
 - c) Leakage Management Plan was better described in subsection "Leakage Management Plan", section 3.3, including how the benefit share is developed.
4. Maps were updated to a higher resolution and translated.
5. Despite presenting different characteristics, it is possible to see the cattle herd increase in Bagre. The relation between cattle and deforestation is not as evident as in Portel, because Bagre is a less representative commercial center when compared to Portel. Most of the Project Area is located within Portel (90%, as described in section 3.3), and this is also the main city in the region. Thus, the deforestation and livestock dynamic of Portel was considered as it is more representative and economically important to the region, and for having a greater impact on the activities of the communities surrounding the project area.
6. HDI image was updated to locate Portel and Bagre in the map. The reference was sent in PDF. The last HDI data by municipality available in Brazil is from 2010, as there was no 2020 census due to the pandemic. Official human development data available for 2017 are only at national level, according to image and source (<http://www.atlasbrasil.org.br/>):

Territorialidades	IDHM Censo	IDHM PNAD	IDHM PNAD	IDHM PNAD	IDHM PNAD	IDHM PNAD	IDHM PNAD
	2010	2012	2013	2014	2015	2016	2017
Brasil	0,727	-	-	-	-	0,726	0,728
Bagre (PA)	0,471	-	-	-	-	-	-
Portel (PA)	0,483	-	-	-	-	-	-

Exibindo 10 resultados de 311 a 320

Elaboração: Atlas do Desenvolvimento Humano no Brasil - PNAD Brasil, Ipex e FIP, 2020.

Fonte: Atlas do IDH e de regiões administrativas, conforme especificados nos resultados disponíveis aqui.

5)

7. Proximity to industrial facilities was not analysed as a factor map because spatial information about the location of these companies is not available. For the mapping, it would be necessary not only the location of these in the reference region, but also the variation in the number of establishments during the historical period. The same problem occurs to distance to markets, although the "distance to urban areas" factor map could be used to analyse the impact of the residents regarding deforestation throughout the period.
8. Mitigation actions related to each driver were updated in PD version 2, section 3.4 (subsection Underlying Causes of Deforestation). According to the definition of the section in the methodology, the agents' characteristics and decisions are themselves determined by broader forces, the underlying causes of deforestation, such as: Land-use policies and their enforcement; Population pressure; Poverty and wealth; War and other types of conflicts; Property regime. In Brazil, the political scenario is crucial to define agents and drivers of deforestation, since both environmental protection measures and the definition of prices for products such as wood and meat, social actions and public policies are directly influenced by the characteristics of the current government. Despite the country's strong environmental legislation, it is common to see attempts to extinguish restrictions in anti-environmentalist governments. It is important to

highlight that agribusiness has a large participation in Brazilian politics, with the so-called ruralist parliamentary front represented in the Three Powers provided for in the Brazilian constitution (executive, legislative and judiciary). Proof of this is that, from 2016 onwards, as described in the PD, governments with liberal characteristics expanded the flexibility of laws and credits to violators, in addition to reducing inspection and the presence of policing in the biomes, offering privileges to large influential producers in the business world in exchange for support and political favors. According to PRODES, in 2016, deforestation in the Amazon was 7,989 km²(http://www.inpe.br/noticias/noticia.php?Cod_Noticia=4344). This value is the highest since 2008, when deforestation reached 12,911 km². Likewise, the government's position is also essential in determining the prices of important Brazilian commodities (cattle, timber and soy prices), and the relationship between these drivers and deforestation in the Amazon is widely studied. At the same time, the government itself is responsible for enforcing environmental legislation and fines, to regulate illegal deforestation and control land use. An important example is that between 2010 and 2012, even with products such as soy and meat on the rise, deforestation decreased after barring rural credit to environmental criminals (<https://www.bbc.com/portuguese/brasil-49683787>). Social vulnerability is also a clear reflection of government actions and public policies to reduce social inequality, which is a driver directly influenced by the political scenario. In this way, the entire analysis of the underlying causes was carried out by the political scenario, since this is a great dictator of trends for drivers and agents of deforestation in the Brazilian environment. The initiative to carry out voluntary conservation projects, such as REDD, is a form of local mitigation, which changes regional conditions, and depending on the project's success, can create better living conditions for communities, creating independence from illegal deforestation to generate income, and giving new meaning to the relationship between the population and the forest.

6)

Documentation provided by project participant

DOE assessment

Date: 27/12/2021

1. Justification provided by the PP is acceptable.
2. justification updated in the revised PD.
3. Leakage management in section 3.3 of the revised PD has been updated.
4. It is checked that the resolution of the maps provided in the PD has been updated with good resolution.
5. Justification provided by PP is accepted.
6. Human development data available for 2017 at national level has been updated in the PD. The same was cross checked with the website <http://www.atlasbrasil.org.br/>.
7. The validation team accepts the justification provided by the PP.
8. For each identified underlying cause the project measures has been implemented to address and the same has been updated in the revised PD.

Based on the above CL 06 is closed.

CL ID	07	Section no.	3.2	Date: : 11/10/2021
Description of CL				

Additionality:

Section 3.5 of Additionality:

1.Substep 1 a: The alternative land use scenarios identified for the project are: 1.The continuation of the current (pre-project) land use scenario. This scenario involves the implementation of a sustainable forest management plan within the project boundaries of the proposed VCS REDD project. however without carrying out additional social and environmental activities, as well as activities to reduce unplanned deforestation. 2. Implementation of a sustainable forest management plan, combined with the implementation of additional activities: In this scenario, the Project activity would be carried out on the land within the project boundary, nevertheless performed without being registered as the VCS REDD project. However, the selection of baseline scenario discussed in sub step 1 C is not the one identified in step 1. PP is requested to clarify the inconsistency, when the existing baseline was SFMP.

2.Sub-step 2 : Investment comparison analysis: As per section 3.4 and sub-step 1c, the baseline scenario is agriculture and livestock production and timber harvesting. However, the same is not referred in investment comparison analysis. PP is further requested to provide reference of all the input values used in the calculation and also justify that these input values were available at the time of decision making.

3. Common Practice analysis : As discussed during the audit, PP is requested to provide the similar projects and the essential distinctions of the proposed project with other projects in tabular format along with the evidence.

Project participant response

Date: 24/11/2021

1. The selection of baseline scenario was updated to be consistent with the scenarios listed on previous steps.
2. Cattle Ranching was included as Scenario III, and the cashflow and investment analysis were updated.
3. Common Practice analysis was updated.

Documentation provided by project participant

Cashflow CO2_ABC Norte_v02.xlsx

ABC Norte_Control of costs 2017-2020.xlsx

DOE assessment

Date: 27/12/2021

1. Cattle ranching is included as one of the alternative scenario and the PP has selected the same as the baseline since it is the most prevailing practices in the area and more economical compared to the pre-existing scenario (SFMP).

2. Investment comparison analysis is updated to include all the plausible scenarios. Noted that cattle ranching is the most economical and financially attractive scenario. The input values are justified. The same was checked with the cashflow sheet and accepted.

3. Common practice analysis has been updated with similar projects and essential distinctions in the project, which is checked and accepted.

Based on the above justification, CL 07 is closed.

CL ID	08	Section no.	3.4.6	Date: : 11/10/2021
Description of CL				

Emission Reductions

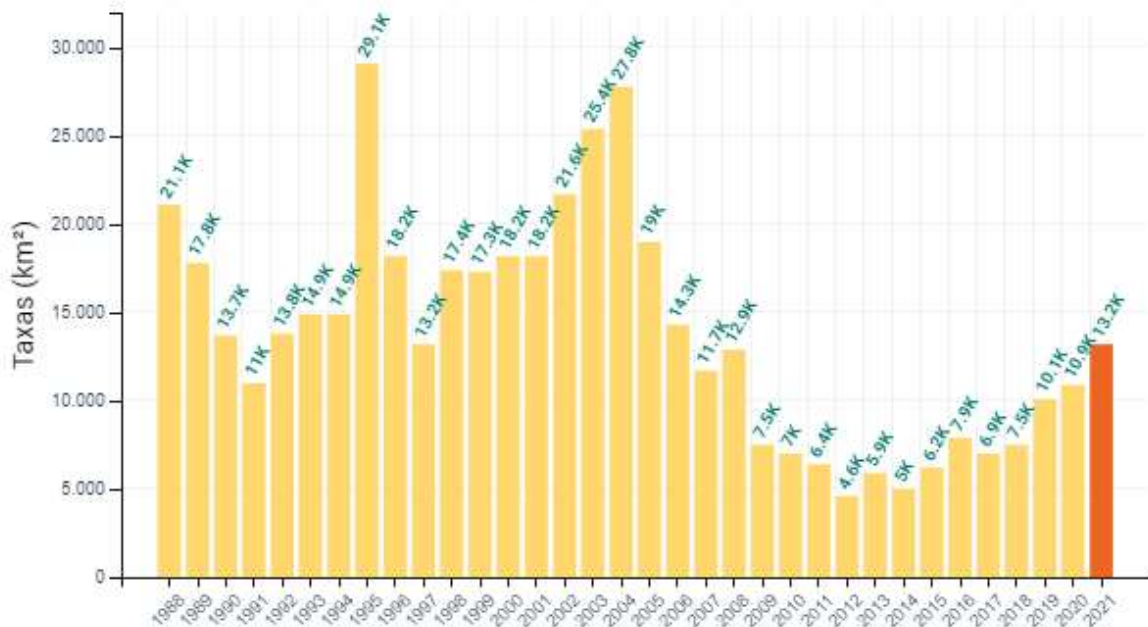
1. As per the sheet "table 8 RR project" the average annual deforestation rate within the reference region(2007-2016) 0.55% and the average annual deforestation rate within the reference region (2007-2047) is 2.27%, which is very high compared to historic reference period. PP to justify the same. Also clarify on how the recent regulations/laws or activities initiated by the government to reduce deforestation is accounted in the emission reduction calculations.
2. ER sheet shall clearly distinguish the estimated and historical values specific to 2017 , since the start date of the project is from 14/09/2017.
3. It is also checked that a published FREL is available for Amazon. Clarify the deforestation rate selected by the PP is conservative or close to the FREL value.
4. The average deforestation rate selected in the project is not the same the reports provided by IPE.
5. Dense alluvial tropical rainforest should be added to the calculations of planned logging activities because this typology is part of sustainable forest management.
6. Evidence to support wood products have medium long life.
7. MR- ER calculations: table 28-ex-post: biomass burning is not included for each forest class. Also justify on why is this calculated for planned deforestation.
8. Table 25a-Ex-post: UPA-15,16 correct the no. decks and minor correction in the secondary roads of UPA-1.
9. justification on the calculation of estimating the carbon stock increase due to vegetation regeneration .
10. Provide evidence justifying that there is no livestock practice in the leakage area.
11. Carbon stock reference for the decrease in the carbon stock in leakage management areas.
12. Justification for the values used in Fburnt and Pburnt as per the methodology requirements VM0015.
13. Apu 17 Post-Exploration Data Spreadsheet :The spreadsheet is not clear as to the volue explored and the values do not match with the MR spreadsheet.

Project participant response

Date: 24/11/2021

1. During 2007 to 2017, the mean annual deforestation rate was 0.61%. However, by the end of that period, between 2015 and 2016, it is possible to note that the rate was already showing an increasing tendency, to approximately 1.10%/year. From 2017 to 2024, the predicted average annual deforestation rate is 1.32%, i.e., close to the historical rate at the end of the baseline period. As explained in section 3.4, a conservative trendline model was adopted, and, in addition, it should be noted that the project baseline will be reassessed in 2027. Government actions were not considered conservatively in the projection, due to the increase in deforestation from 2017 onwards:

Taxas de desmatamento - Amazônia Legal - Estados



7)

- 8) Since the federal governments, from 2016 onwards, have been more economically liberal, and ideologically conservative, their actions end up loosening and minimizing actions against illegal deforestation and environmental protection. Considering the current government, which, as soon as elected, tried to extinguish the environment ministry, soften stages of environmental licensing, extinguish conservation units and that publicly used the 2020 pandemic to "pass the cattle", that is, make the deforestation of protected areas easier for cattle raising and favoring large producers, the deforestation rate considered for the projection is conservative. According to the reports sent, indicating illegal deforestation actions in the area even with the forest management plan, it is concluded that despite being a form of monitoring, the presence of people in the forest for management is no guarantee of minimizing unplanned deforestation .

2. The year of 2017 was distinguished in 2 rows in the PD spreadsheet.
3. According to Brazil's submission of a Forest Reference Emission Level (FREL) for reducing emissions from deforestation in the Amazonia biome for REDD+ results-based payments under the UNFCCC from 2016 to 2020, which was issued in 2018, this document provides guidance to the Brazilian government regarding the REDD+ submissions to the United Nations Framework Convention on Climate Change (UNFCCC). It is important to note that this document underlines that the submission of FREL is exclusively for the purpose of obtaining and receiving payments for REDD+ actions, pursuant to decisions 13/CP.19, paragraph 2, and 14/CP.19, paragraphs 7 and 8.
- 9) The subnational FREL for the Amazonia biome comprises an area of approximately 419,700,000 ha and corresponds to 49.29% of the Brazilian territory. It is important to note the size of the analyzed territory, which is larger than many countries. For instance, it would be the 7th largest country in the world, larger

than European Union or India. Therefore, a unique FREL value for this enormous territory does not correspond to the deforestation dynamics faced by some project activities located in deforestation borders, namely in the Brazilian Arc of Deforestation, where the pressure from cattle ranching, agriculture and timber logging is much more intense.

- 10) Therefore, in order to clarify this issue on whether using FREL for voluntary carbon projects, the Ministry of the Environment of Brazil (MMA) instituted the Forests+ (Floresta+) Program. According to the program's implementation phases (<https://www.gov.br/mma/pt-br/assuntos/servicosambientais/florestamais/TNForestsmaisCarbonImplementation.pdf>), the Government concluded that the voluntary carbon market (such as the present project activity) falls within the Forests+ Program. In addition, this same document (pages 2 and 3) defined that the REDD+ initiative under the UNFCCC is a different approach, establishing that the FREL should only be used under the UNFCCC scheme instead of the voluntary carbon market. Later, this document also clarifies in the page 4 the difference between REDD+ and Forests+ Carbon, as outlined below.
- 11) - The concepts of REDD+ and Forests+ Carbon, in both the national and international scenarios, are independent and separate programs:
- 12) a) The REDD+ scheme and the correspondent use of FREL are intended to provide public policy financing for climate change under the UNFCCC based on the reduction of deforestation and degradation results, while;
- 13) b) The Forests+ Carbon, in which the present project activity is contemplated, is a voluntary carbon credit market for native forests based on payment for environmental services that results in the increase and/or maintenance of carbon stocks in native forests.
- 14) In the future, there will probably be an integration between both approaches (named as Third Phase - Regulation), however nowadays (year 2021) we are in the First Phase: the Government has just recognized the voluntary carbon projects and the next step will be the registration of such projects into a National Platform.
- 15) Furthermore, another important issued clarified by the Forests+ Program, according to the Law 518/2020 (<https://www.in.gov.br/en/web/dou/-/portaria-n-518-de-29-de-setembro-de-2020-280524591>), paragraph 2, Art. 2, was: The voluntary carbon market for reducing emissions from deforestation and forest degradation, recognized by Resolution CONAREDD+ n° 03, of July 22, 2020, will not entail any obligation regarding the accounting, adjustment or registration in the national inventory of emissions by the Federal Government, thus allowing the voluntary market to establish its own rules and parameters, without any establishment of responsibility or correlation with the commitments assumed by the Brazilian government. Therefore, the use of FREL is not applicable for the voluntary carbon markets.
- 16) Furthermore, according to VCS requirements v 4.1, section 3.2.2, where projects are located within a jurisdiction covered by a jurisdictional REDD+ program, project proponents shall follow the requirements in this document and the requirements related to nested projects. It is important to note that neither Brazil nor the State of Pará have an approved Jurisdictional REDD+ Program. In addition, according to the applied methodology VM0015 v1.1, where no sub-national or national baseline is available, a baseline must be developed for a reference region encompassing the project area, the leakage belt and any other geographic area that is relevant to determine the baseline of the project area, observing the deforestation dynamic during the 10-15 year period preceding the start date of the AUD project activity.

17) The Brazilian FREL for the Amazon Biome was developed considering the historical period between 1996-2015, establishing a linear deforestation projection based on the historical average during this period. This time period is different from what is required by the methodology. Furthermore, the project start date was in 2017, two years later than the end year from the FREL. Furthermore, the FREL does not consider the underlying causes of deforestation, such as the recent socioenvironmental setbacks promoted by the Government, which led to a constant increase in deforestation since 2012. The most recent data was released in November 2021, where more than 13 thousand km² have been deforested in the last year, the highest value since 2006. It is important to note that the main affected areas by agents and drivers of deforestation are located close to the Brazilian Arc of Deforestation, where the project is located. Therefore, the average deforestation rate and deforestation dynamics in the project region is higher than the average for the whole Amazon Biome.

18) Therefore, the project activity is consistent with the requirements from VCS (as no jurisdiction REDD+ Program exists), from the Brazilian Government (as the FREL shall not be used for projects in the voluntary carbon markets, according to the Brazilian Forests+ Program), and from the applied methodology (baseline was developed for a reference region observing the agents and drivers of deforestation 10 years prior to the project start date).

4. Average deforestation rate was corrected to 0.61%
5. Dense alluvial tropical rainforest was included in forest management calculations.
6. A list of references used for wood information was sent.
7. Calculation for each vegetation ID was provided. There is no biomass burning in the forest management, as per SFMP and thus, it is not applicable for planned deforestation. Biomass burning was only considered for unplanned deforestation. The MR spreadsheet was corrected.
8. APU information was corrected in the spreadsheet.
9. Carbon stock increase due to regeneration was excluded from calculations, to be conservative.
10. As it can be checked in the social economical report developed by ABC Norte, cattle ranching is not a significant activity developed by the communities surrounding the Project Area. The main activities held by the communities is agriculture, fishing and hunting.
11. The reference was updated – Carbon stock increase was calculated according to Brazilian National GHG Inventory (2016). According to information available at page 295: Increment for Secondary Vegetation with Agricultural Use (Vegetação secundária com histórico de agricultura), which was defined as 4.73 tC/ha for all Brazilian biomes. Available at: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/publicacoes/comunicacoes-nacionais-do-brasil-a-unfccc/arquivos/3tcn_volume_3.pdf
12. Pburnt and Fburnt calculations were reviewed and updated in PD and MR spreadsheets and parameters tables.
13. APU 17 information was corrected in the spreadsheets.

Documentation provided by project participant

6. Referencewood.docx
7. Fburnt_abc.xlsx
Fburnt.zip
Pburnt_ABC Norte.xlsx

DOE assessment	Date: 27/12/2021
1. table 8RR project , the average annual deforestation rate from 2007 – 2016 has been revised in the ER sheet and further justifications provided by the PP is accepted. 2. 2017 was separated in to two rows. One before the start date of the project and the other one after the start date of the project. 3. From the evidence provided by the PP, the Ministry of the Environment of Brazil has confirmed the private projects under Forest + carbon program and the REDD+ initiatives under the UNFCCC program. The technical note 379/2021 - MMA from the Ministry of the Environment of Brazil, also confirms that both the programs are different and the PP has provided a detailed justification on the same and thus, accepted. 4. Revised ER sheets checked and noted that the deforestation rates has been updated. 5. Dense alluvial tropical rainforest is now included in forest management calculations. 6. Evidence to support wood products has medium long life checked and closed. 7. ER sheets has been updated including the biomass burning for each forest class. Biomass burning is not applicable for planned deforestation and thus the same is revised now in the ER spread sheets. 8. APU information corrected in the ER spread sheets . Checked and accepted the same. 9. Carbon stock increase due to vegetation regeneration has been excluded from the calculations and the same is accepted as it is conservative. 10. Checked the socio economic reports and the validation team confirms the justification provided by the PP. 11. it is checked that the change in the carbon stock is calculated according to Brazilian National GHG Inventory (2016). Increment for Secondary Vegetation with Agricultural Use is defined as 4.73 tC/ha for all Brazilian biomes. 12. Justification for the values used in Fburnt and Pburnt as per the requirements of methodology has been provided. 13. Apu 17 Post-Exploration Data Spreadsheet: The values explored, and the MR-ER spread sheets are matching. Based on the above justification CLO8 is closed. FAR 2 The project proponent shall use IPCC AR5' GWP values in the subsequent monitoring events, including recalculation of the baseline using these values. The same needs to be checked by the VVB in the next verification.	

CL ID	09	Section no.	3.4.8	Date: : 11/10/2021
Description of CL				

Section 5.1 of the PD

1. Default parameters related to biomass burning, wood products (volumetric efficiency co-efficient) is not transparent.
- 2.a. Mean wood density: PP is requested to use English language in the source of data.
- b. In the justification of choice of data only is Lowland Dense Tropical Rainforest in the State of Pará (Table 3 of the referred study), the main forest type within the project area, and the only one that is logged through SFMP. However, as per the discussion 1% of Dense Alluvial tropical rainforest is also included in the plan.

Section 5.2 of the PD.

1. Similar please check the values used for $APDPA_{ic,t}$, $APLPA_{ic,t}$
2. Provide internal audit reports of the SFMP.
3. Provide QA/QC internal procedures required by the SFMP and forest certification.
4. Pls correct the sources of $APFPA_{ic,t}$.
5. Correct the values for $\Delta CADLK_t$, since a deforestation activity was noted in the monitoring period.
6. PP to clarify on how the value considered for LTF_w is conservative.
7. Please provide evidence of the employment and infrastructure activities, ensuring food security for the local community, allowing the use of the private area for subsistence planting or food aid for families (donation of basic food baskets, construction of ecological stoves, among others as discussed in section 5.3 of the PD).

Project participant response

Date: 24/11/2021

Section 5.1

1. EBBBSLPA, F_{burnt} and P_{burnt} parameters are now available at section 5.1 of PD version 2.
2. a) Although data source is in Portuguese, methodology and justification of choice of data are provided in English at the table, in addition to the updated value.
b) Dense Alluvial Tropical Rainforest was included in calculation and data reference.

Section 5.2

1. $APDPA$ and $APLPA$ parameters were updated according to PD spreadsheet
2. Internal reports of the SFMP were sent
3. Forest certification and internal reports were sent.
4. Data source for $APFPA$ is the Authorization for the Use of Forest Raw Material document. This was updated, and the document was sent.
5. According to the methodology, activity displacement leakage is calculated as the difference between the ex ante and the ex post assessment. The real deforestation within the LK was lower than estimated ex ante in the baseline scenario, thus, $CADLK_t$ parameter was accounted as 0.
6. The lower the LTF value, the smaller the amount of wood products that can be considered as permanent, that is, that can last for more than 100 years. Therefore, setting the value to zero, it is assumed that no product can last more than 100 years and thus, it reduces the value of the harvested wood products carbon pool, and consequently, reduces the generation of VCU's. Thus, it is the most conservative scenario.
7. Infrastructure and employment activities and investments may be crosschecked with additionality cashflow. Section 5.3 of the PD presents some activities that may be held by ABC Norte to provide benefit sharing to the communities. There weren't any activities related to donation of basic food baskets and construction of ecological stoves, and this was corrected in the PD to clarify. However, ABC Norte allows the use of Fazenda Pacajá to the collection of NTFPs, and develops activities that offer alternative income sources.

Documentation provided by project participant

DOE assessment	Date: 27/12/2021
5.1 1. EBBBSLPA, Fburnt and Pburnt parameters has been made transparent in the revised pd&MR. 2. a. the source for mean wood density is updated with English language. b. Dense Alluvial Tropical Rainforest has been included in calculation and data reference in the updated PD&MR. 5.2 1. The values used for APDPAicl,t , APLPAicl,t has been updated. The same was checked with the ER sheets and found to be consistent. 2. Internal audit reports for SFMP provided. 3. QA/QC reports checked and accepted. 4. The source for APFPAicl,t. has been updated to “authorization for the use of forest raw material document” in the revised PD. 5. The values of $\Delta CADLkt$ has been updated as per the ER sheet. 6. Justification provided by PP on the selection of LTF value is accepted, since the same is conservative. 7. The social activities reports present that activities with nuts and other NTFP collected were held with the communities. Further noted that the information which was no related has been removed from the PD. The PP has a budget plan on the benefit sharing , which was checked from the cashflow sheet. Based on the above justification CL09 is closed.	

CL ID	10	Section no.	3.5	Date: : 11/10/2021
Description of CL				
Non- Permanence Risk Report				
1. Financial viability : the project has secured funding less than 15%. Justify the same. 2. Opportunity cost to be revised based on the other land use scenarios. Accordingly NPV also needs to be revised. 3. Social and Economic well-being reports not provided for 2017, 18 and 19. 4. Fire risk: Analysed only for 2017 data . Include for the whole monitoring period. Also provide the fire management plan.				
Project participant response				Date: 24/11/2021
1. 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 adopted (less than 15%). 2. The opportunity cost risk factor has been revised taking other land use scenarios into consideration. NPV has also been revised, as requested. 3. The reports are being sent as evidence, as requested. 4. The fire risk factor has been revised considering all years of the monitored period (2017-2020). ABC Norte monthly issues the Relatório De Monitoramento Ambiental (Environmental Monitoring Report), where hot spots are identified, based on data collected from INPE's “bdqueimadas” program. As evidence of how this monitoring is carried out, reports referring to years 2018, 2019 and 2020 are being sent, as requested. The fire management plan is also being sent along with evidence of the forest fire prevention training that was performed with ABC Norte’s management team.				
Documentation provided by project participant				

2. Evidence can be located on folder CL10 > 2. Opportunity cost	
3. Evidence can be located on folder CL10 > 3. Socio-environmental responsibility program reports	
4. Evidence can be located on folder CL10 > 4. Fire risk factor	
DOE assessment	Date: 27/12/2021
1. The justification provided by the PP is accepted. The same was checked with the cashflow sheet and found to be appropriate.	
2. land use scenarios and the related NPVs has been updated.	
3. Social reports from 2017 to 2019 checked and accepted.	
4. The fire risk is now analysed for the whole monitoring period from 2017 to 2020. The PP has supported the same with fire management plan and forest fire prevention training records.	
Based on the above justification CL 10 is closed.	

Table 2. CAR from this validation/verification

CAR ID	01	Section no.	3.1	Date: 11/10/2021
Description of CAR				
1. The VCS – Joint PD&MR is not as per the requirements of VERRA template version 04. For example the first table of the PD&MR, no email on the first page and the contents page. The references to the footnotes are not transparent. Pls check the formatting and numbering subheading throughout the PD&MR.				
2. As per the requirements of VERRA, the projects planning to use VM0015 shall inform VERRA by emailing to secretariat@verra.org. PP is requested to provide evidence of the same.				
Project participant response				Date: 24/11/2021
1. The VCS Joint PD was updated to comply with VCS template.				
2. An email to VERRA was sent on 22/10/2021, with VVB included as cc.				
Documentation provided by project participant				
DOE assessment				Date: 27/12/2021
1. The formatting, numbering and sub-heading of the revised joint PD/MR is updated as per the VERRA template requirements of VCS v04.				
2. Yes, the PP has sent the email to VERRA and copy of the same was also included to the VVB team.				
CAR 01 is closed.				

CAR ID	02	Section no.	3.1	Date: 11/10/2021
Description of CAR				
1. Describe the conditions existing prior to project initiation and demonstrate that the project has not been implemented to generate GHG emissions for the purpose of their subsequent reduction, removal or destruction.				
2. For AFOLU projects, include the present and prior environmental conditions of the project area, including as appropriate information on the climate, hydrology, topography, relevant historic conditions, soils, vegetation and ecosystems.				
3. PP is requested to provide the documents for the reference referred in section 1.13 of the PD.				

Project participant response	Date: 24/11/2021
1. A description of conditions prior to the project start date was included in the PD. Before the PSD, ABC Norte conducted a SFMP with another company, and no activities from this period was accounted in the project. 2. Environmental conditions from 2007 to 2017 were included, when applicable, in section 1.13. 3. References were updated in section 1.13. Fauna images were taken from Fauna Monitoring Report developed annually by ABC Norte.	
Documentation provided by project participant	
DOE assessment	Date: 27/12/2021
1. prior project scenario has been explained in the updated pd. The same was crosschecked and confirmed during interview and objective evidence submitted by the PP. 2. The present and prior environmental conditions of the project area, including as appropriate information on the climate, hydrology, topography, relevant historic conditions, soils, vegetation and ecosystems has been updated in section 1.13 of the revised PD. 3. Reference provided in section 1.13 of the revised PD has been updated. The same was checked and accepted. CAR 02 is closed.	

Table 3. FAR from this validation/verification

FAR ID	01	Section no.	3.3.2	Date: 27/12/2021
Description of FAR				
According to the SOCIALCARBON methodology, the project will allocate part of the revenues from the sale of carbon credits to social investments. As this is the first MR, it has not yet been defined how these investments will be carried out. The VVB is requested to check the same in the next verification.				
Project participant response				Date: dd/mm/yyyy
Documentation provided by project participant				
DOE assessment				Date: dd/mm/yyyy

FAR ID	02	Section no.	3.4.6	Date: 19/08/2022
Description of FAR				
The project proponent shall use IPCC AR5' GWP values in the subsequent monitoring events, including recalculation of the baseline using these values. The same needs to be checked by the VVB in the next verification.				
Project participant response				Date: dd/mm/yyyy
Documentation provided by project participant				
DOE assessment				Date: dd/mm/yyyy

FAR ID	03	Section no.	2.4	Date: 19/08/2022
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<i>Description of FAR</i>	
Since no site visit was carried out in the current validation/verification, it is mandatory that the VVB carries out site visit in the next verification, which should also include a larger proportion of stakeholders to be interviewed.	
<i>Project participant response</i>	<i>Date: dd/mm/yyyy</i>
<i>Documentation provided by project participant</i>	
<i>DOE assessment</i>	<i>Date: dd/mm/yyyy</i>



CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Rekha Menon

è qualificato come:
is qualified as:

TEC, VAL, VER, TL, ITRP

per le seguenti aree tecniche:
for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13
13.2	Manure	13
14.1	Afforestation and reforestation	14

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)

Responsabile di schema
Scheme Leader
Rita Valeroso



*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SCS Social Carbon Standard, VCS Verified Carbon Standard.

TEC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FIN EXP: Financial Expert; ITRP: Independent technical reviewer

RINA Services S.p.A. è accreditato/recognized by

UNPCOC	quali Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects
VCSA	per condurre la Validazione e la Verifica di Progetti VCS to carry out Validation and Verification of VCS Projects
GS Foundation	per condurre la Validazione e la Verifica di Progetti GS to carry out Validation and Verification of GS Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SCS to carry out Validation and Verification of SCS Reports
American Carbon Registry ACR	per condurre la Validazione e la Verifica di Progetti ACR to carry out Validation and Verification of ACR projects
The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefici CCB to carry out Validation and Verification of co-benefits CCB projects



CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Gustavo GOES LIMA

è qualificato come:
is qualified as:

TL¹ – VAL – VER – TEC – REG-EXP²

nello schema:
for the scheme:

CDM – JI – VCS – SCS – CCB – UER – ISO14064-2

per le seguenti aree tecniche:
for the following technical areas:

14.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
14.1	Afforestation and reforestation	14

in accordo alle istruzioni dell'Unità responsabile (OU) per sostenibilità & cambiamenti climatici.
in accordance with the instructions of the responsible unit (OU) for the sustainability & climate change.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	26/05/2021	First Issue
3	11/05/2022	Updated with VAL-VER for CDM and JI

Il Resp. OU
Head of OU



Legend

VAL:	Validator	CDM:	Clean Development Mechanism
VER:	Verifier	VCS:	Verified Carbon Standard
TEC:	Technical Expert	GS4GG:	Gold Standard for Global Goals
TL:	Team Leader	SCS:	Social Carbon Standard
FIN-EXP:	Financial Expert	JI:	Joint Implementation
REG-EXP:	Regional Expert	ISO14064-2:	International standard 14064 part 2
ITR:	Independent Reviewer	UER:	Upstream Emission Reduction
DET:	Determiner	CCB:	The Climate, Community & Biodiversity Alliance

Notes

- 1 – Not for CDM and JI
2 – In the following countries: Brazil, France

RINA Services S.p.A. è accreditata da UNIFCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da ISO Foundation, per condurre la Validazione e la Verifica di Progetti GGG, da Ecologia Institute, per condurre la Validazione e la Verifica di Progetti SCS.
RINA Services S.p.A. is accredited by the UNIFCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the ISO Foundation, to carry out Validation and Verification of GGG Projects and by the Ecologia Institute, to carry out Validation and Verification of SCS Reports.

GHG_QUAL_CERT_EN(06-2021)

Page 1 of 1



CERTIFICATO DI QUALIFICA PER GLI SCHEMI VOLONTARI*
QUALIFICATION CERTIFICATE FOR VOLUNTARY SCHEMES*

Si attesta che il sig./sig.ra:
 We declare that Mr/Mrs/Ms:

Geisa Maria Principe Branco Sabettoni

è qualificato come:
 is qualified as:

TEC, VAL, VER, TL, ITRP

per le seguenti aree tecniche:
 for the following technical areas:

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal energy generation	1
1.2	Renewables	1
13.1	Solid waste and wastewater	13

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19/07/2016	First issue with new template (this certificate is linked to CDM qualification)

Responsabile di schema
 Scheme Leader
 Rita Valoroso



*SCHEMI VOLONTARI/ VOLUNTARY SCHEMES: ACR American Carbon Registry, CCB The Climate, Community & Biodiversity Alliance, GS Gold Standard, JI Joint Implementation, SGS Social Carbon Standard, VCS Verified Carbon Standard.

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The Climate, Community & Biodiversity Alliance CCB	per condurre la Validazione e la Verifica di Progetti co-benefit CCB to carry out Validation and Verification of co-benefit CCB projects