



INTEGRATED PROJECT FOR REFORESTATION AND AGROFORESTRY ON DEGRADED LANDS IN NICARAGUA



Document Prepared by RINA Services S.p.A.

Project Title	<i>Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua</i>
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Summary:

RINA, commissioned by MLR Forestal has performed joint validation and verification of the project activity “Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua”, against VCS Version 04 and all applicable requirements therein, for the proposed monitoring period.

The project plans to reforest a total area of 4,204 Ha until 2030, mainly in the Municipality of Siuna and to a minor extent in Bonanza and within the limits of the buffer zone of BOSAWAS Biosphere Reserve (RBB) in Nicaragua. Since 2016, 677 Ha of mainly teak (*Tectona Grandis*) and to a lesser extent Cocoa agroforestry system (*Theobroma Cacao*) have been realised until 2020.

The CDM afforestation and reforestation Large-scale Methodology: AR-ACM0003 “Afforestation and reforestation of lands except wetlands, version 02.0” and corresponding tools are applied to quantify the GHG removals achieved in this project.

The MLR Forestal has requested RINA to perform the joint validation and 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 sample plots, 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.

In total 14 Clarification Request, 04 Corrective Action Request and 00 Forward Action Request were raised. The CARs/CLs have been successfully closed and more information of the same is provided in Appendix-B.

After successful validation/verification, RINA confirms that the project complies with all the requirements of the Verified Carbon Standard, having generated 15, 912 tCO₂ equivalents net emission reductions during the present reporting period, after discounting 10% for buffer.

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1 INTRODUCTION

1.1 Objective

RINA has been commissioned by MLR Forestal de Nicaragua S.A. to perform an independent validation/verification of its VCS project, “Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua”. 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 version 04.0, 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 Version 4.0 standard 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 v4.0. 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	Leiroz	Andrea	Brazil
Technical Expert -Trainee	Limagoes	Gustavo	Brazil
ITRP	Principe	Geisa	Brazil
Technical Expert (ITR)	Singh	Vinay	India

1.4 Summary Description of the Project

Project Proponent	MLR Forestal de Nicaragua s.a.
Title of the project activity	Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua

Baseline and monitoring methodology	AR-ACM0003 "Afforestation and reforestation of lands except wetlands, version 02.0 dated 04/10/2013
Location of the project activity	The proposed project is implemented in the districts of Siuna and Bonanza in Northeast Nicaragua. Bonanza is located at approximately 14°01'N 84°35' Wand Siuna at approximately 13°44'N 84°46'W /39/.
Brief description of the project	The project plans to reforest a total area of 4204 Ha until 2030, mainly in the Municipality of Siuna and to a minor extent in Bonanza and within the limits of the buffer zone of BOSAWAS Biosphere Reserve (RBB) in Nicaragua. Since 2016, 677 Ha of mainly teak (<i>Tectona Grandis</i>) and to a lesser extent Cocoa agroforestry system (<i>Theobroma Cacao</i>) have been realised until 2020. The main purpose of the project is to restore degraded lands with a commercial timber species and high productive Cacao cultures. The land areas reforested are established on former degraded pasture lands. These lands have suffered deforestation and soil degradation due to land-use change process, mainly because of the extensive traditional cattle grazing, subsistence farming and to a smaller extent subsistence mining activity.
Projects crediting period	01/07/2016 to 31/06/2056
Project's verification period	01/07/2016 to 01/03/2021

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)
- The resolution of outstanding issues and the issuance of the final joint Validation & Verification report.

The following sections outline each step in more detail.

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. The verification plan also took the sampling plan into account. More information on the same is provided in the final report.

2.2 Document Review

The joint PD and MR, version 03 of 31/05/2021 /01/, in particular the applicability of the methodology, the baseline determination, emission reduction calculations provided in the form of a spreadsheet (Calculation file - updated.xlsx) /02/, non-permanence risk report, version 02 of 31/05/2021 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 verification.

/01/	Form International B.V: VCS Joint Project Description & monitoring report for the project activity “Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua”, version 2.0 of 24/03/2021 and version 3.0 of 31/05/2021
/02/	Form International B.V: Emission Reduction spread sheets (ER-sheet.xlsx) version 01 submitted on 24/03/2021 and ER sheet, version 02 submitted on 31/05/2021
/03/	Form International B.V: Non permanence risk report, version 1.0 of 24/03/2021 and version 02 of 31/05/2021
/04/	VCS: VCS Program Guide, VCS Version 4.0 of 19/09/2019
/05/	VCS: VCS Standard, VCS Version 4.0 of 19/09/2019
/06/	VCS: VCS-Risk-Report-Calculation-Tool-v4.0.xls
/07/	CDM Executive Board: Approved large scale CDM methodology AR-ACM0003, Version 2.0 “Afforestation and reforestation of lands except wetlands”, dated 04/10/2013.
/08/	CDM Executive Board: Demonstration of eligibility of lands for A/R CDM project activities, version 02.0, dated 04/10/2013
/10/	CDM Executive Board: Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (version 04.2), dated 24/07/2015
/11/	CDM Executive Board: Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities” (version 03.1), dated 24/07/2015
/12/	CDM Executive Board: Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity” (version 02.0), dated 04/10/2013
/13/	CDM Executive Board: Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity’ (version 04.0.0, dated 25/11/2011
/14/	CDM Executive Board: Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities», version 01.1.0 of 15/04/2011
/15/	CDM Executive Board: Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities, version 01 of 19/10/2007

/16/	CDM Executive Board: Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities, Version 01 of 02/08/2008
/15/	MLR Forestal: Carbon credit projection - Financing
/16/	MLR Forestal: Cash flow sheet
/17/	Inter-American Development Bank:Dr. Ronnie de Camino Velozo: Sector Diagnosis, forestry in Nicaragua mobilizing the forest sector and attract investments, dated 02/03/2018
/18/	Land Titles: 1. MLRFOR-BO-3187 (GA-72) - Inscrita-EP No42 CV HEMCO-MLR – land title number 42 dated 19/03/2013. 2. MLRFOR-BO-1650 (GA-86) - Inscrita-EP No44 CV HEMCO-MLR – land title number 44 dated 19/03/2013. 3. MLRFOR-BO-3404 (GA-87) - Inscrita-EP No45 CV HEMCO-MLR – land title number 45 dated 19/03/2013. 4. El Chingo (GA-108) - EP No46 CV de Bien Inmueble.GA – 108 - Bonanza – land title number 46 dated 19/03/2013. 5. MLRFOR-SIU-3185 (GA-88) - GA -88 -MLRFOR-SIU-3185 - EP N° 47 CV HEMCO – MLR – land title number 47 dated 19/03/2013. 6. MLRFOR-SIU-3528 (GA-90) - EP N° 48 CV de Bien Inmueble. HEMCO – MLR – land title number 48 dated 19/03/2013. 7. MLRFOR-SIU-3183 (GA-95) - EP N° 52 CV de Bien Inmueble. GA – 95 – land title number 52 dated 19/03/2013. 8. MLRFOR-SIU-2693 (GA-102) - EP N° 54 CV de Bien Inmueble. GA – 102 – land title number 54 dated 19/03/2013. 9. MLRFOR-SIU-4003 (GA-91) – GA – 91 - EP N° 49 CV de Bien Inmueble. HEMCO – MLR – land title number 49 dated 19/03/2013. 10. MLRFOR-SIU-3184 (GA-93) – GA – 93 EP N° 50 CV de Bien Inmueble. HEMCO – MLR – land title number 50 dated 19/03/2013. 11. MLRFOR-SIU-3529 (GA-94) – GA – 94 EP N° 51 CV HEMCO – MLR – land title number 51 dated 19/03/2013. 12. MLRFOR-SIU-3468 (GA-100) – GA – 100 EP N° 53 CV de Bien Inmueble. HEMCO – MLR – land title number 53 dated 19/03/2013. 13. MLRFOR-SIU-3456 (GA-103) – GA – 103 EP N° 55 CV de Bien Inmueble. HEMCO – MLR – land title number 55 dated 19/03/2013. 14. GA-104 (Esperanza Hernandez) – EP N° 56 CV de Bien Inmueble. HEMCO – MLR (Esperanza Hernandez) – land title number 56 dated 19/03/2013. 15. MLRFOR-SIU-3899 (GA-105) – GA – 105 EP N° 57 CV de Bien Inmueble. HEMCO – MLR – land title number 57 dated 19/03/2013. 16. MLRFOR-SIU-3900 (Hnos Vargas) GA-106,107 –EP N° 529 CV de Bien Inmueble Rustico. Hnos Vargas – MLR – land title number 529 dated 08/06/2013. 17. MLRFOR-SIU-3937 (GA-121) – GA – 121 EP N° 1 CV de Bien Inmueble. HEMCO – MLR (La viuda) – land title number 1 dated 12/01/2016. 18. GA-138 - EP N° 51 CV de Bien Inmueble. Medardo Gutierrez, José Rodríguez - HEMCO. Inscrita – land title number 51 dated 05/07/2012. 19. MLRFOR-SIU-3917 – EP N° 77 CV José Medina – MLR.300 Mz. – land title number 77 dated 22/07/2014. 20. MLRFOR-SIU-3900 (Hnos Vargas) GA-106,107 –EP N° 529 CV de Bien Inmueble Rústico. Hnos Vargas – MLR – land title number 529 dated 08/06/2013. 21. MLRFOR-SIU-4031 (Apolonio y Celia Artola) – EP N° 42 CV de Bien Inmueble. Apolonio Ortega, Selia Arteta- MLR – land title number 42 dated 29/06/2016. 22. Onilda Reyes Rocha – EP N° 4 CV de Bien Inmueble. MLR – Onilda Reyes – land title number 4 dated 20/12/2017.

23. GA-120 MLRFOR SIU 1523 – EP N° 4 CV de Bien Inmueble. GA – 120. Inscrita – land title number 4 dated 12/01/2016.

24. MLRFOR-SIU-3901 (GA-131) – GA- 131 - EP N° 2 CV José Medina-MLR – land title number 2 dated 29/06/2016.

25. MLRFOR-SIU-4069 (GA-132) – EP N° 63 CV Bien Inmueble. HEMCO MLR – land title number 63 dated 19/03/2013.

26. GA-134 MLR FOR SIU 4118 (Filimon Molina) – EP N° 65 CV Bien Inmueble. HEMCO MLR. GA 134 – land title number 65 dated 19/03/2013.

27. MLRFOR-SIU-3902 (GA-133) – GA-133 EP N° 64 CV de Bien Inmueble. HEMCO - MLR – land title number 64 dated 19/03/2013.

28. MLRFOR-SIU-3896 (GA-135) – GA-135 EP N° 3 CV de Bien Inmueble. José Medina - MLR – land title number 3 dated 12/01/2016.

29. MLRFOR-SIU-4008 (GA-147) –EP N° 69 CV de Bien Inmueble. GA - 147 – land title number 69 dated 19/03/2013.

30. MLRFOR-SIU-1878 (GA-151) –EP N° 70 CV de Bien Inmueble. HEMCO - MLR (Jairo Sanchez Remanente) – land title number 70 dated 19/03/2013.

31. MLRFOR-SIU-3995(José Santos - Haydalina) – EP N° 146 Traspaso y Compra Venta de Prop.Inmueble Rural. José santos Flores, Haydalina Arteta - MLR – land title number 146 dated 23/06/2015.

32. GA-139 – EP N° 63 CV de Bien Inmueble. Leonor Hernandez, Carlos Suarez – MLR – land title number 63 dated 02/10/2017.

33. GA - 152 Marcelino Flores – EP N° 38 Desmembración y CV de Bien Inmueble. Marcelino Flores – MLR – land title number 38 dated 15/11/2017.

34. GA -152 Francisco Duarte, Aracely flores - EP N° 37 CV de Bien Inmueble. Araceli Flores, Fco Duarte – MLR – land title number 37 dated 15/11/2017.

35. GA - 152 Geronimo Flores - EP N° 36 CV de Bien Inmueble. Geronimo Flores. Inscrita – land title number 36 dated 15/11/2017.

36. GA - 152 Patricia Flores - EP N° 40 CV de Bien Inmueble. Patricia Flores – MLR – land title number 40 dated 15/11/2017.

37. GA-152 Martiniano, Maximo y Concepción Flores – EP N° 39 Desmembración y CV de Bien Inmueble. MLR - Martiniano Flores.Inscrita – land title number 39 dated 15/11/2017.

38. Juan Manuel Raudez Álvarez (550 Mzs) - EP N° 4 CV Juan Manuel Raudez - MLR (550Mzs) – land title number 4 dated 03/02/2015.

39. MLRFOR-SIU- 3852 (Juan Manuel Raudez (100 Mzs.) - EP N° 8 CV de Bien Inmueble. Juan Raudez – MLR – land title number 8 dated 14/03/2016.

40. Ivania Bucardo y José Antonio Rodríguez (Pedro Ivan Suarez . Vendedor) - EP N° 10 PV de Inmueble. Pedro Ivan Suarez – MLR – land title number 10 dated 20/02/2014.

41. Juan Francisco Balladares (Cruz Gonzales) - EP N° 218 Desmembración y Compra Venta de Propiedad Inmueble Rural – land title number 218 dated 10/10/2015.

42. MLRFOR-SIU-4056 (Ramiro Artola) - EP N° 132 Traspaso y Venta de Propiedad Inmueble Rural. Ramiro Artola – MLR – land title number 132 dated 23/10/2014.

43. MLRFOR-SIU-4080 Fam. Rugama Cantillano - Inscrita - EP N° 219 Desmembración y CV de Propiedad Inmueble Rural Fam Rugama - MLR. – land title number 219 dated 10/10/2015.

44. Feliciano Gutierrez - EPN° 78 CV . Feliciano Gutierrez. Inscrita – land title number 78 dated 22/07/2014.

45. Lazaro Rosales - EP N° 20 CV de Bien Inmueble. Lazaro Rosales – MLR – land title number 20 dated 24/04/2018.

46. MLRFOR-SIU-4046 (Esperanza Robleto) - EP N° 55 CV Bien Inmueble. Esperanza Robleto – MLR – land title number 55 dated 21/11/2016.

47. MLRFOR-SIU-4045 (Bayardo Robleto) - EP N° 5 CV de Bien Inmueble. Bayardo Robleto – MLR – land title number 5 dated 09/02/2017.

	48. Luis Alberto Siles - EP N° 4 Desmembración y Compra Venta de Bien Inmueble. Luis Siles - MLR. Inscrita – land title number 4 dated 18/01/2019. 49. MLRFOR-SIU- 4184 Felipe Centeno - EP N° 27 CV de Bien Inmueble. Felipe Soza - MLR. Inscrita – land title number 27 dated 12/06/2019. 50. MLRFOR-SIU-4342 – EP N° 54 Desmembración y CV de Bien Inmueble. Eulalio Benavidez – MLR.40mz – land title number 54 dated 06/09/2019. 51. MLRFOR-SIU-4382 – EP N° 55 Desmembración y CV de Bien Inmueble. Eulalio Benavidez – MLR (6mz) – land title number 55 dated 06/09/2019. 52. MLRFOR-SIU-4550 – EP N° 10 Desmembración y CV de Bien Inmueble. Familia Benavidez Baller – MLR – 2 – land title number 10 dated 17/03/2020. 53. MLRFOR-SIU-4552 – EP N° 18 Desmembración y Compraventa de Bien Inmueble. Omar Benavidez – MLR (147 Mz) – land title number 18 dated 23/06/2020. 54. MLRFOR-SIU-4551 – EP N° 11 Desmembración y CV de Bien Inmueble. Rugama Cantillano – MLR (2 Mz) – land title number 11 dated 20/03/2020. 55. MLRFOR-SIU-4551 – EP N° 12 Desmembración y CV de Bien Inmueble. Rugama Cantillano – MLR (0.5 Mz) – land title number 12 dated 20/03/2020. 56. Marlene Martinez - EP N° 22 Desmembración y Venta de Bien Inmueble. Marlene Martinez – MLR – land title number 22 dated 04/09/2020. 57. MLRFOR-SIU-4650 – EP N° 24 Desmembración y CV de Bien Inmueble. Eulalio Benavidez – MLR (5 Mz) – land title number 24 dated 02/10/2020
/19/	MLR Forestal: AL -PR01: Procedure for the acquisition of land, version 01 of 17/06/2020
/20/	MLR Forestal: AL -PR-02: Procedure for the attention of community complaints and suggestions, dated version 01 of 10/06/2020 MLR Forestal: AS PR-02: Procedure for the attention of community complaints and suggestions, version 01 of 10/06/2020
/21/	MLR Forestal: Stakeholder Participation plan, dated 10/06/2020
/22/	Technological Foundation of the Technological Institute of Costa Rica (FUNDATEC):Final report audit valuation of the Biological Asset of MLR Forestal de Nicaragua S.A, dated 03/2020
/23/	MLR Forestal: Geographical Registration of plantation MLR Forestal De Nicaragua, S.A.
/24/	MLR Forestal Plantation certificates and forestry initiative approvals https://bodega.mlr.com.ni/d/fdcca21496/ , last accessed on 08/04/2021
/25/	GFA Certification: FSC certification no: GFA-FM/COC-002333, issued on 04/03/2018 and valid until 03/03/2023
/26/	MLR Forestal: Training records (procedures on data collection – forest inventory- 03/03/2020, 09/11/2020)
/27/	MLR Forestal: PPM Inventory and installation procedures Manual for Teak plantations dated 20/08/2016
/28/	MLR Forestal S.A: CVs of the management team (A.soza, Adela Rodriguez, Sergio Dayan, L. Lopez, M.Lazo)
/29/	MLR Forestal: Stakeholder complaint register from 27/01/2020
/30/	MLR Forestal : Emergency Plan MLR Forestal De Nicaragua, S.A, dated 02/08/2020
/31/	MLR Forestal: Screenshots of MLR Forestal website and Facebook on public consultation.
/32/	MLR Forestal: Cacao productivity forecast, sampling manual, dated 18/09/2019
/33/	Daniel J. Redoa, H. Ricardo Graub, T. Mitchell Aidea, and Matthew L. Clark: Asymmetric forest transition driven by the interaction of socioeconomic development and environmental heterogeneity in Central America dated 12/02/2012
/34/	MLR Forestal: Information about the accumulated operations from 11/2016

/35/	PWC : Audited financial statement FY-2016, dated 08/03/2017
/36/	José Javier Zeledón Chavarría: Analysis of land use and change of coverage in productive units of MLR Forestal de Nicaragua S.A. and surroundings in the municipality of Siuna.
/37/	MLR Forestal: GIS formats of LU/LC maps.
/38/	MLR Forestal: Shape files of plantations from 2016 to 2020. Shape files of teak plantation each year. Shape files of excluded areas from the project boundary.
/39/	Google earth : Geo-coordinates of Siuna and Bonanza
/40/	MLR Forestal: GIS formats of the land parcels of the project area Siuna and Bonanza.
/41/	MLR Forestal: General Plantations Management Plan of MLR Forestal de Nicaragua S.A , dated 04/2018
/42/	MLR Forestal: Biodiversity Management Plan, Version 01 of 18/08/2020
/43/	MARENA: http://www.marena.gob.ni/Enderedd/ , last accessed on 20/05/2021
/44/	Forest Carbon Partnership Facility: https://www.forestcarbonpartnership.org/country/nicaragua , last accessed on 20/05/2021
/45/	IMF, "World Economic Outlook (WEO) data base 2016: https://www.imf.org/en/Publications/SPROLLs/world-economic-outlook-databases#sort=%40imfdate%20descending , English language , last accessed on 13/04/2021
/46/	Ministry of Labour: Authorization of the Technical-Organizational Regulation No. 176-2018, year 2018.
/47/	Gold Standard : https://registry.goldstandard.org/projects?q=&page=1 , last accessed on 20/05/2021
/48/	CDM: https://cdm.unfccc.int/Projects/projsearch.html , last accessed on 20/05/2021
/49/	Forestal Javier Chamorro Moro project elaborated by Tecnología y Desarrollo Ambiental: Evaluation of environmental and social impacts (EIA), 08/2019
/50/	MLR Forestal: Development plan of the Environmental Social and Health and Safety Management System (SGAS), dated 10/2019
/51/	MLR Forestal: Sustainable Development Report , dated 09/2020
/52/	MLR Forestal: Evidences of stakeholders consultation carried out on 18/12/2020 and also email communication different government agencies to comments on the project. MLR Forestal: Public consultation report of the integrated project of reforestation and agroforestry in degraded lands of Nicaragua for carbon sequestration dated 03/01/2021
/53/	FSC Audit reports for the year 2016 to 2020
/54/	RINA: Stakeholder interview sheet
/55/	MLR Forestal: Land Use Change Analysis Report for Siuna and Bonanza Estate, 10/2020
/56/	MLR Forestal: Project for the establishment, management and sustainable use of forest plantations on the Caribbean coast of Nicaragua, RAAN, Initiative Forestal, 2013
/57/	Ministry of the Environment and Natural Resources , MARENA :Management plant BOSAWAS Biosphere Reserve PM-RBB, Managua 2003
/58/	Produccion-de-cacao-avanza .url

	Link: https://www.el19digital.com/articulos/ver/titulo:65582-produccion-de-cacao-avanza , last accessed on 14/06/2021
/59/	Crece-la-exportacion-del-cacao-nicaraguense-en-el-2019-se-reportan-nuevas-inversiones .url, last accessed on 14/06/2021
/60/	United Nations Research Institute for Social Development (UNRISD) "Mining and Resource Mobilization for Social Development, 09/2015
/61/	K.L. Montoya Chavarria, « Socio-environmental impact of artisanal mining in the Municipality of Siuna, Autonomous Region of the Northern Atlantic of Nicaragua, 2005-2006.
/62/	FUNIDES, "Plantaciones Forestales Comerciales en Nicaragua, Incentivos, barreras y oportunidades," FUNIDES, 2017.
/63/	News article - en-10-anos-nicaragua-podria-acabar-con-sus-bosques .url, last accessed on 14/06/2021
/64/	Johnson, James M., Bonilla, Julio C., Aguero Castillo, Liana : Manual of operation and production of the Cacaotero, dated 10/09/2008
/65/	Human Development Index http://hdr.undp.org/en/content/human-development-index-hdi , English language, last accessed on 13/04/2021
/66/	University of Birmingham, Department of Economics :Microfinance and credit access in the agricultural sector of Nicaragua, 2015
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105	MLR: Community census data, 2019 – identification of community Leader
106	MLR: Collobration agreement
107	MLR: minutes of election as delegate of community complaints

2.3 Interviews

The key personnel interviewed, and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	06/04/2021, 07/04/2021 & 09/04/2021	Sergio Dayan Rios (CEO)	MLR Forestal	VCS consideration, funding of the project, Commercial operation 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 and QA/QC procedures.
/b/	06/04/2021, 07/04/2021 & 09/04/2021	Luis Antonio López Urbina (ESMS Director)	MLR Forestal	Social Environmental Impact Assessment, sustainability development, community involvement,

				Stakeholder identification, stakeholder consultation and ongoing communication with stakeholders.
/c/	06/04/2021, 07/04/2021 & 09/04/2021	C. Domke (General Manager)	MLR Forestal	Standard Operating Procedures, teak monitoring protocol, cacao +teak monitoring protocol, training to the field staff, sample plot selection and measurement procedures, data recording and data archiving, virtual inspection of plots.
/d/	06/04/2021, 07/04/2021 & 09/04/2021	Yasmil Lagos (Head monitoring department)	MLR Forestal	
/e/	06/04/2021, 07/04/2021 & 09/04/2021	Juan Pablo Quiroz (Head of operations)	MLR Forestal	
/f/	07/04/2021	Gustavo Andino (Forestry Consultant)	MLR Forestal	Virtual inspection of plots
/g/	06/04/2021, 07/04/2021 & 09/04/2021	Adela Rodríguez (Head Legal Department)	MLR Forestal	Land titles, Laws and policies, necessary approvals and permits from different authorities.
/h/	07/04/2021	Francisco Acuna Olivas (Community Leader)	Bethel Community	Stakeholder consultation, Grievance mechanism, Socio Environmental impacts, CSR activities, trainings, employment, land disputes.
/i/	07/04/2021	Lucio Otillo Zeledon Castro (Community Leader)	Union Labu Community	
/j/	27/09/2021	Jose Cloniente - Community Member	Union Labu Community	
/k/	27/09/2021	Marivel Rodriguez	Alo Sanmiguel Community	
/l/	27/09/2021	Genarao Perez .J	Alo Sanmiguel Community	
/m/	06/04/2021, 07/04/2021 & 09/04/2021	Sicco Stortelder (Forestry Consultant)	Form International B.V	Baseline, Data storage and Archiving procedures, Site Preparation Activities, Baseline stratification, Sample plot calculation, Emission Reduction calculations, risk assessments and calculations, additionality, start date , crediting period and non-permanence risk report.
/n/	07/04/2021 & 09/04/2021	Andries Polinder (Forestry Consultant)	Form International B.V	

Please note that the VVB interviewed two stakeholders from Bethel Community and Union Labu community, who are the community leaders representing the entire community. Both the communities are close to the project location Siuna. Thus, the VVB is of the opinion that

interviews with the two stakeholders (Community Leaders) was acceptable to understand the benefits to stakeholders due to the project activity.

It is to be further noted that the stakeholders from the project location Bonanza were not interviewed because of the internet issues and the Covid pandemic limited the interactions with the community because of contagion risks. The same was accepted by VVB because the plantation activities of Bonanza area are only 4.2 % of the total area, moreover the same is not accounted in the current verification.

The VVB interacted with three more stakeholders from the Union Labu Community and Alo Sanmiguel Community on 27/09/2021. Details of them are provided in the above table. 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. In fact, they are very glad that such a project is implemented because of which the Project owner does lot of community welfare activities like building roads, infrastructure, employment generation, health and supply of medicines and necessary PPEs during COVID. It was also informed that the proposed project is implemented in degraded lands and such projects can benefit both environment as well as communities. It was also confirmed that the communities received training from MLR on environmental education.

It was further confirmed that to address the grievances, MLR has provided a complaint box in each community, and it is the community representatives responsibility to make sure that the complaints are forwarded to MLR. MLR has assigned a dedicated person to handle the grievances. The complaints are resolved in maximum 15 to 30 days time. Apart from the complaint box, the community members can also call or directly go to project office and register a complaint. No complaints received in the proposed monitoring period.

Details on the selection of stakeholders (community leaders) interviewed by VVB are provided below:

MLR has carried out a census house by house of all the communities in 2019 /105/, and in this census community leaders were identified. MLR has prepared the list of stakeholders along with the community leaders, which is the same list that is also used in FSC certification /104/. Note that the list is updated as and when the leaders are changed. RINA team confirmed the same by checking the MLR list of stakeholders and collaboration agreements /106/. It is noted that from the 15 leaders identified, 5 of them were interviewed by the validation/verification team. Moreover, out of the 5 stakeholders interviewed, 2 of them have been elected also by their community to be the grievance system representative /107/. RINA checked the election and signatures document and confirmed the same. Thus, the validation/verification team is of the opinion that the stakeholders interviewed represent the entire community.

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 /103. 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 clause 4.1.2 of VCS Standard Version 4.0, 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, raw data sheets 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, selection of sample plots, SOPs in place for measurement and silviculture operations, field measurement data, interviewed key personnel of the plant to crosscheck the procedure adopted in field measurements, crosschecks between field data and ER sheets. The values used in the ER calculations were confirmed by means of checking the videos of sample plots provided by the client. Also, checked the quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters.

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. To guarantee transparency any findings raised during the audit are incorporated in the Appendix A to this report. A corrective action request (CAR) is raised 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 Version 4.0 standard have not been met.*
- There is a risk that the 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 Version 4.0 standard have been met.

The No. of CARs/CLs raised by RINA are the following

CAR:04, CL: 14 and FAR: 01

2.5.1 Forward Action Requests

The following FAR has been requested in this validation/verification.

FAR 1

Based on the VERRA review process, the VVB is requested to interview a larger proportion of stakeholders in the next verification. If by the next verification Verra has not provided more specific guidance on community sampling, and the CDM guidance is not appropriate, it is expected that the VVB will consult Verra regarding appropriate sample sizes i.e. proportion of stakeholders to be interviewed.

FAR 2

The PP is requested to calculate the long- term average at the project level or according to whatever guidance is available at the time of next verification.

3 VALIDATION FINDINGS

3.1 Project Details

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

The proposed A/R project aims to reforest and rehabilitate a total area of 4,204 ha until 2030. From 2016 until 2020, an area of 677 hectare has been planted with pure teak (*Tectona Grandis*) /38/. The lands reforested are degraded pasture lands /36//37/ and MLRs purpose is to restore these degraded lands with a commercial timber species and high productive Cacao culture.

Technologies and measures implemented. The proposed project activity is implemented by MLR Forestal , the project proponent and the project owner. The project aims in reforestation of degraded land, which would continue to remain degraded. As discussed above the total area of the project has an extension of 4,204 ha . The project is a grouped project and mainly located in the Municipality of Siuna (4034.4 ha) and Municipality of Bonanza (169.70 ha) /39/ /40/. The main species used in the project's forest plantations is Teak (*Tectona Grandis*). The project also involves the establishment and maintenance of agroforestry plantations on degraded and deforested lands. These plantations consist of mixture of Teak (*Tectona Grandis*) and Cacao (*Theobroma Cacao*) where cacao beans are regularly harvested, and an additional revenue stream is generated from the teak. Teak plantations of MLR Forestal are managed as even-aged stands with a rotation cycle of 20 year and four intermediate thinning's /41/.

Apart from the above the project also aims to identify remnant forest and these areas were categorized as protection areas to restore natural functioning of the areas. The same was confirmed from the MLR's Protection area & Biodiversity management plan /42/ and the land use map /36/.

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 ARR AFOLU project category as explained

above. B) The project area, where the proposed A/R project is implemented, a jurisdictional REDD+ Program is under development. The same was confirmed from the MARENA website <http://www.marena.gob.ni/Enderedd/> /43/ and the Forest Carbon partnership website <https://www.forestcarbonpartnership.org/country/nicaragua> /44/ c) The project activity is implemented by MLR, 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. As confirmed by the PP during the remote audit and from the land use cover map /36/, the plantations are implemented on land, highly degraded by extensive cattle raising. E) The activities implemented do not drain or degrade hydrological function to generate GHG credits. The area is not a wet land area.

Project proponent and other entities involved in the project

As per the information available in the PD /1/, the project proponent and the owner of the project is MLR Forestal de Nicaragua S.A. Also confirmed from land titles /18/. As per the audit observations and interviews with the representatives of MLR, it is confirmed that MLR is capable to conduct the project activity and oversee the project implementation due to relevant experience and skills in forest management. The other entities involved in the project is Form International B.V, who is the consultant supporting MLR in project development.

Ownership:

As discussed, the project owner is MLR Forestal de Nicaragua S.A. The Lands are owned by MLR. The same was checked from the land titles /18/. The validation team crosschecked the área of the land parcels from the GIS formats of the shape files /37/ 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.

Project start date:

The start date of the Project is 01/07/2016, which is the earliest date, when the PP started the land preparation and planting activities. The same was checked with the MLR's operation report /34/ and also confirmed from the third party audited (PWC) financial statements /35/. The starting date is defined as the date on which the project began generating GHG emission removals as defined by the VCS AFOLU requirements.

Project crediting period:

The projects crediting period is established as 40 years from 01/07/2016 to 31/06/2056. The project lifetime is 40 year 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.

Project scale and estimated GHG emission reductions or removals:

Project scale is selected as "Project" at estimated average annual emission reductions of 26,167tCO₂e less than the 300,000 tCO₂e per year, which indicates a "Project" as per VCS Standard.

Project location:

The Project sites are located in the district of Siuna and Bonanza in Northeast Nicaragua, and the sites are therefore called Siuna and Bonanza, respectively. Bonanza is located at

approximately 14°01'N 84°35'W and Siuna at approximately 13°44'N 84°46'W. The same was checked with the google earth and confirmed /39/.

Conditions prior to project initiation:

The planted areas were previously occupied by degraded pasturelands, where extensive cattle farming was practiced. The proposed project activity will generate GHG emission reductions by changing the use of land from extensive cattle ranching to sustainable forest production systems which will increase the forest cover in the project region thus generating a typical landscape formed by biological and productive areas that produce financial, social and environmental benefits. More details are stated in §3.3.4 of this report.

Project compliance with applicable laws, statutes and other regulatory frameworks:

The PD /1/ provides an extensive list of all laws, statutes and regulatory frameworks in Nicaragua applicable to the forestry sector. The relevant laws are the following:

Forestry sector law, Act 462, Decree 73-2003 /45/ : As per the law, the establishment, maintenance, thinning and exploitation of plantations do not require any permit. However, they must be registered with National Forestry Institute (INAFOR) and all plantations must have a registration certificate. The auditing team crosschecked the same with and confirmed that MLR, Forestal is registered in INAFOR /24/.

Apart from the above the company has also obtained various permits from environmental authorizations and ministry of Labour /46/.

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 /47/ /48/.

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. This is confirmed by interacting with the project owner.

Additional information relevant to the project. Leakage management for AFOLU projects

The project activity did not expect any displacement of agricultural activities in the project area before its implementation. As confirmed in the PD section 4.3 , it is very unlikely that displacement has resulted in leakage emissions, as former land-owners have either moved to historically degraded areas, or had negative impact on forest cover in the neighbouring sites during the 2003-2010 time interval. Detailed information on the same is provided in section 3.3.6.

Commercially sensitive information:

No commercially sensitive information are excluded in the public version of the PD.

Sustainable development contributions:

The project activity generates GHG removals by foregoing the reforestation of degraded lands, which would remain degraded. The project also generates social and environmental co-benefits as the increase of local workforce employed in the project area, improves soil characteristics, conservation of the biodiversity. It was further confirmed that the laborers from the communities will receive trainings that develop skills in field and management operations. Additionally, smallholder farmers are also supported with trainings on cacao best management practices, the use of best genetical material and MLR provides assistance to farmers on cacao certification.

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

PP has confirmed that other than the proposed VCS project there is no other form of GHG-related environmental credit generated by the proposed project activity.

3.3 Safeguards

3.3.1 No Net Harm

It was checked that PP has conducted Social Environmental Impact Assessment SEIA conducted by Tecnología y Desarrollo Ambiental in August 2019 /49/. Potential negative environmental and socio-economic impacts as well as steps taken to mitigate them are discussed in section 2.1 of the joint PD & MR. It is understood that the project is not expected to generate negative impacts on the environment and community, since the mitigation measures are in place and the same will be followed. It is checked that the PP has developed documented procedures like protection area and biodiversity management plan /42/, social and environmental management plan /50/ annual operational plan sustainable development /51/, procedure for land acquisition and stakeholder participation plan /19/ /21/ to make sure the mitigation measures are in place.

Apart from the above, the project will also follow Forest Management Certification under the FSC /25/ /96/ principles, which further confirms the project's compliance with environmental as well social criteria.

3.3.2 Local Stakeholder Consultation

As per the audit observations and interaction with the stakeholder's it was confirmed that physical stakeholder consultation was carried out on 18/12/2020 at the community level and due to COVID pandemic feedbacks were also invited from various organizations via email, which also included Government organizations like INAFOR, MARENA, DIGAM and SERENA, Environmental organizations, NGOs and Certification scheme owners /52/.

Apart from the above, the project owner also shared the public consultation link of VERRA in the company's website for feedback and also email id of the company was provided for receiving

inputs from stakeholders. The project related information was also published in facebook for comments. Noted that the project did not receive any negative comments either in physical meeting, via email, companies email id nor in the social media /31/. The same is also made transparent in the PD & MR. As per the interactions with the PP and the documents checked, it was confirmed that the PP has developed a documented procedure “community complaint mechanism (AS-PR-02), which allows the communities and institutions to provide their complaints or grievances /20/. It is checked that the complaints provided by stakeholders is recorded in the complaint register. Complaints received from 27/01/2020 and action taken by PP to close the same were checked and accepted /29/. Since the “Procedure for the attention of community complaints and suggestion” was prepared only in 2020, for the period 2016 to 2020, the stakeholder feedback or complaints were checked with FSC audit reports for the period, 2016 to 2020 /53/, which confirms that the project has not received any comments from the stakeholders. It was further confirmed from the Social and Environmental impact assessment study performed by TECDEA, 2019 /49/ that the stakeholder do not have any negative feedback.

It is to be also noted that the RINA team interviewed the villagers during the audit and they are of the positive opinion and do not have any concerns with regard to the project /54/.

3.3.3 Environmental Impact

As discussed in the project description, the proposed project is reforestation and restoration of degraded lands by means of commercial plantation and plantation of indigenous species. Thus, the environmental impacts are very minimal and in fact, the project will lead to positive impacts like low income families in the area will get more opportunities to increase their income, new employment opportunities, knowledge in silviculture, infrastructure development and change in lifestyle of local villagers. The same was confirmed from the Social Environmental Impact Assessment SEIA conducted by Tecnología y Desarrollo Ambiental in August 2019 /49/. The project does not foresee any negative impacts and as discussed in 3.3.1, the PP has developed documented procedures like protection area and biodiversity management plan /42/, social and environmental management plan /50/ annual operational plan sustainable development /51/, procedure for land acquisition and stakeholder participation plan /19/ /21 to make sure the mitigation measures are in place.

It is to be also noted that the project is also certified for FSC /25//96/. The FSC audit reports were also checked by the VVB. The validation/verification team confirms that the FSC standard is strong in environmental and socio- economic impacts and the project is in compliance with environmental criteria's.

3.3.4 Public Comments

The project was submitted for public commenting from 07/12/2020 to 06/01/2021. The same was checked from the VERRA website. Noted that the project has not received any public comments.

3.3.5 AFOLU-Specific Safeguards

Identification of Local stakeholder is the responsibility of the project owner. The PP has developed documented procedure “stakeholder Participation Plan (GDS-PL-03) /21/ for

identification of local stakeholders. As discussed in the PD&MR, the activities implemented by PP to mitigate risks to local stakeholders due to project implementation were evaluated as part of the SEAI study and FSC certification /25/ /96/.

During the audit, it was confirmed that all the activities, the current and the /18/ future projects will be implemented in the lands owned by MLR, thus not affecting the stakeholders property rights. It is also checked that MLR has developed its own Environmental and Social Management System (ESMS) to manage the entire organizational structure, composed of all the company's employees and specific human resources, for both sites (Siuna and Bonanza). It has also identified 5 social axes in which it focuses its social and community programme, namely:

1. Quality education
2. Socio-economic development
3. Environmental training
4. Emergency assistance
5. Sports
6. Recreation.

Process to ensure ongoing communication and consultation, including grievance redress procedure to resolve any conflicts that may arise between the project proponent and local stakeholders has been discussed in section 3.3.2 above. This is also explained in detail in section 2.5. The validation/verification team concludes that the project proponent has taken the appropriate measures to ensure that the project has not created negative impacts on local stakeholders or mitigated such impacts where necessary.

3.4 Application of Methodology

3.4.1 Title and Reference

The proposed project uses the following methodology and tools. The validation team confirms that the project uses appropriate methodology and associated tools, valid at the time validation.

Approved large scale CDM methodology AR-ACM0003, Version 2.0 "Afforestation and reforestation of lands except wetlands", dated 04/10/2013 /07/

The latest version of the following methodological tools will also be used in this project activity:

- Demonstration of eligibility of lands for A/R CDM project activities, version 02.0, dated 04/10/2013 /08/
- Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities" (version 04.2), dated 24/07/2015 /10/
- Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities" (version 03.1), dated 24/07/2015 /11/
- Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity" (version 02.0), dated 04/10/2013/12/

- *Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity'* (version 04.0.0, dated 25/11/2011/13/
- *Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities», version 01.1.0 of 15/04/2011 /14/*
- *Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities, version 01 of 19/10/2007/15/*
- *Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities, Version 01 of 02/08/2008 /16/*

3.4.2 Applicability

The proposed project activity meets the criteria defined in the baseline methodology as it ensures that:

- (a) The land subject to the project activity does not fall in wetland category as confirmed through Land use cover maps /36//55/.
- (b) Soil disturbance attributable to the project activity does not cover more than 10% of area in each of the following types of land, when these lands are included within the project boundary: (i) land containing organic soils. As per the soil analysis the soil within the project boundary is not an organic soil, the average organic matter, the same was confirmed [from the Social and Environmental impact assessment study performed by TECDEA, 2019 /49/](#) and the soil analysis report /41 /49/. (ii) Land which, in the baseline, is subjected to land use and management practices receives inputs listed in appendices 1 and 2 of this methodology. As confirmed by the PP during the audit and from the project land use cover map /55/ the plantations are made on degraded pastureland where cattle ranching activities were practiced without receiving inputs listed in the applied methodology. The same was also confirmed from the "General Management Plan- Plantations of MLR Forestal de Nicaragua S.A, 2018 /41/.

A project activity applying this methodology shall also comply with the applicability conditions of the tools contained within the methodology and applied by the project activity as following:

Methodological tool	Assessment
Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities, version 01 of 19/10/2007..	The methodological tool is applicable since the forestation activity within the project boundary does not lead to violation of any applicable law as demonstrated in the Additionality section of this report; in addition, the project is a not a small -scale project.
Estimation of non-CO2 GHG emissions resulting from burning of biomass	The methodological tool is not applicable since no biomass burning is attributable to the project activity.

attributable to an A/R CDM project activity, version 04.0.0. of 25/11/2011 .	
Estimation of carbon stock and change in carbon stocks in dead wood and litter in A/R CDM project activities, version 03.1 of 24/07/2015.	The methodological tool is applicable to the project activity. However, the PP is not claiming change in the carbon stock in dead wood and litter. The same is also discussed in the Quantification of GHG emission reductions and removals section of this report.
Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities, version 04.2 of 24/07/2015.	The methodological tool is applicable to the project activity and the estimation of change in carbon stocks of trees and shrubs is discussed in the Quantification of GHG emission reductions and removals section of this report.
Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity, version 02.0.	The methodological tool is not applicable since the project activity does not cause displacement of pre-project agricultural activities. As confirmed by the PP during the audit and the land use map, the plantations are made on degraded pasturelands due to extensive traditional cattle grazing, subsistence farming and to a smaller extent subsistence mining activity
CDM A/R Methodological Tool: Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities, version 01.1.0.	The methodological tool is applicable since the project activity does not fall in wetland category as confirmed through the land use maps; the soil within the project boundary is not an organic soil; the litter remain on site and the soil disturbance is in accordance with soil conservation practices.

RINA, hereby, confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the project, which complies with all the applicability conditions therein, and the selected version is valid at the time of the validation & verification commencement. It is also confirmed that the methodology and the methodological tools are correctly applied by comparing it with the actual text of the applicable versions.

3.4.3 Project Boundary

The project boundary is defined as the project area, which has an extension of 4,204 ha located in the districts of Siuna and Bonanza (of private farms) in Northeast Nicaragua. The following table present the carbon pool considered within the project boundary:

Source/Gas	Included	Justification
Above-ground biomass- CO ₂	Yes	Baseline: is a major carbon pool and the same has been accounted in baseline calculations. Project area, as per the on-site observation. Project: it is the major carbon pool, and it is expected to increase due to the implementation of the project.
Below-ground-biomass- CO ₂	Yes	
Soil organic carbon- CO ₂	Yes	Baseline: the implementation of the project does not expect to decrease this pool. Project: carbon stock increases due to implementation of the project.
Dead wood and litter- CO ₂	Yes	Baseline: the implementation of the project does not expect to decrease this pool. Project: carbon stock increases due to implementation of the project. However, the same is neglected in the proposed project.
Burning of woody biomass- CO ₂	No	No burning of woody biomass is used for site preparation, which is part of forest management.

The CO₂ emissions due to burning of woody biomass are not accounted since no burning biomass is attributable to the project activity neither during the implementation nor for the purpose of site preparation. It is also confirmed that the emissions due to displacement of pre-project agricultural activities is insignificant.

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 CDM AR-ACM003, Version 3.0 .

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.

3.4.4 Baseline Scenario

The procedure for determination of the baseline scenario in the project activity was applied using the methodological tool Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities .

Step 0 – preliminary screening based on the starting date of the A/R project activity.

The starting date of the A/R VCS project is 01/07/2016 /34/, which is after 31/12/1999. It is checked that the incentives from the sale of carbon credits was seriously considered in the decision to proceed with the project activity, which was cross checked from the documents “Project for the establishment, management and sustainable use of forest plantations on the Caribbean coast of Nicaragua, RAAN, Initiative Forestal, 2013” /56/. It was further confirmed that the project proponent is aware of the carbon revenues, since the client has registered a CDM project from renewable energy sector (CDM ref: 9903) /102/. The start date of the project is 01/07/2016, which is the earliest date of land preparation and planting activities. The date was checked with MLRs operations report /34/. Hence the validation team concludes that the project participant was aware of VCS much before the start of the project activity and VCS credits were seriously considered in the decision to implement the project activity.

STEP 1: Identification of alternative land use scenarios to the proposed A/R VCS project activity.

Sub-step 1a: Identify credible alternative land use scenarios to the proposed CDM project activity

The following alternative land use scenarios have been identified as the plausible land use scenarios for the proposed ARR VCS project;

1. Continuation of the pre-project land use: it was checked that the land in the pre project scenario is predominantly classified as pasture land, used for low-productive, extensive cattle grazing. The pasture land is characterized by unmanaged grassland, which are degrading because of the grazing activities, which was confirmed from the “general plantation of MLR Forestal de Nicaragua S.A , dated 04/2018 /41/. It was further checked that the process of deforestation and forest degradation is often due to the agriculture frontier, the geographical boundary between forest ecosystems and agricultural land-use Traditional cacao plantation, which was confirmed from the MARENA :Management plant BOSAWAS Biosphere Reserve PM-RBB, Managua 2003/57/. Analysis of land use and change of coverage in productive units of MLR Forestal de Nicaragua S.A. and surroundings in the municipality of Siuna carried out by José Javier Zeledón Chavarría (thirdparty) /36/ also confirms that the landuse ratio of 26.66% as forest and 73.33% agriculture land . The 73.33% is composed of pasture lands and tacotales, of which 71.6% is classified as pasture lands and 28.4% as tacotales. Thus, the current land use would be a plausible alternative land use scenario in the baseline.

2. *Traditional Cacao plantation: it is checked that In the Caribbean North, ten Cacao cooperatives are active; one of those is located in the Siuna municipality, namely Cooperativa Campesina Copesiuna, of which 163 small producers are part. In 2018, the total area under production by the producers was 700 ‘manzanas’, equal to 490 hectares /58/. At national level, 11,100 hectares of cacao are planted, of which 7,200 are productive /59/. There is a greater focus in recent years on cacao production as alternative income. The organization Cacao RAAN works with a number of cooperatives in the region focused on cacao and chocolate production. Thus, the scenario could be a likely plausible baseline scenario.*
3. *Subsistence mining: it is been checked that the relationship between the government and the mining companies characterized the country’s mining activities. Mining concessions were made in the Mining Triangle , which comprised the municipalities of Siuna, Roaita and Boananza, in the North Atlantic Autonomous region of Nicaragua. The mining sector has become one of the top exporting sectors of the economy. As of 2015, 12.37 % of Nicaragua’s territory is under mining concessions whilst an additional 4.43% of its territory is currently being solicited (Ministry of Energy and Mines 2014) , which was confirmed from the working paper 2015-9 “Mining and Resource Mobilization for Social Development: The case of Nicaragua prepared by United Nations Research Institute for Social Development (UNRISD) /60/. It was further noted that the artisanal mining is an important activity by the local population in the region, and known as ‘güirisería’. This mining activity is realized by individuals or small local mining cooperations, and by the application of mercury for the extraction of gold, which falls within the protection areas of the project /61/.*
4. *Conventional commercial reforestation plantation without VCS certification: The Forest Conservation, Promotion and Development Act No. 462, was approved in 2003 with the purpose of establishing legal regime for conservation and sustainable development of the sector. The main purpose is to encourage the development of the forest sector, promoting the elaboration of activities of adequate management of forest resources and achieving the reversal of the deforestation process suffered by the country. The act ensured financial incentives for enterprises that invest in reforestation or the establishment of plantation. These financial incentives initially lead to the attraction of foreign investors in forestry plantation /62/. However, the establishment of forest plantations as an economic activity requires significant investment and has long payback periods. In addition to the technological requirements for the preparation of land, the management needs of plantations are high. Furthermore, the audit team confirmed that this scenario is not mandated by any law, statute or other regulatory framework, as confirmed through interviews with representatives of MLR.*

Sub-step 1b. Consistency of credible alternative land use scenarios with enforced mandatory applicable laws and regulations.

All the above discussed alternatives are in compliance with the “The BOSAWAS Management plan/57/ and the Forest Conservation, Promotion and Development Act No. 462 /45/.

The audit team confirms that there are no other realistic plausible alternative land use scenarios besides these as confirmed through document review and interviews.

Step 2: Barrier Analysis

Sub-step 2a. Identification of barriers that would prevent the implementation of at least one alternative land use scenarios.

Land Use Scenario	Barriers
Continuation of the pre-project land use	The land use scenario is not restricted by any barriers, which is also one of the prevailing practices in the region /57/ /49/ /63/.
Traditional Cacao plantation	The land use scenarios are prevented by the following barriers: Ecological Barrier: The cattle compact soils are not ideal for the Cacao cultivation. Since the soil may lead to reduced crop establishment, poor rainfall infiltration and lower crop yields and high investment is required to improve the soils nutrient levels /64/, which is followed by poverty as a barrier since the 73% of the inhabitants in the North Caribbean Coast Autonomous Region (RACCN) are living in the rural areas, whose per capita income is very low as per the Human Development Report (UNDP, 2019) /65/ and access to credit has always been a barrier, since the commercial banks rarely accept land titles, houses or farming activities as guarantee /66/. This was also confirmed from the email communication from the Nicaraguan Bank /67/. It is further noticed that the overall production area at national and regional level is still very low, with only 7,200 ha of productive cacao areas nationwide, and taking place at small scale /64/ due to lack of knowledge and skills among the rural population, which may also cause wide spread of fungal disease (The Frosty Pod Disease) FPD /68/ /69/. Thus, poorly managed plantation can lead to crop failure. It is further checked that farmers need to wait for 3- 5 years period to realize revenues from the Cacao plantation, which is not a feasible alternative, when food crops provide the returns on the same year.
Subsistence Mining	The nationalization of the mining sector was propelled by two main concerns: 1) the degradation of mining communities was seen as the result of exploitive labour practices and human rights abuses by foreign companies and 2) non -renewable natural resources were regarded as a national “sacred” asset that had to be preserved and defended. Labour security is one of the main barriers in mining since it is labour intensive, since months pass to find small pieces of gold or silver, which does not cover miners cost and thus prefer secure forms of income. /61/. It is also checked that many mines in the Siuna-Rosita-Bonanza triangle have already been exploited /70/. The overexploitation of minerals in these areas result in less profitability and not a viable alternative. It is also seen that many families who who were dedicated to subsistence mining in the past have left this activity for health reasons. The application of mercury in mining has led to many health issues like impact on the nervous system, brains,

	lungs and kidneys. Also, suffer from muscle tremors, and deterioration of the motoric system. The above-mentioned barriers don't make subsistence making a viable land use scenario.
Conventional commercial reforestation plantation without VCS certification	Investment Barrier: Establishment of forest plantations as an economic activity requires significant investment and has long payback periods, which is one of the reasons why the commercial banks are reluctant to grant loan, which was also confirmed from the email communication from the Nicaraguan Bank /67/. The countries risk premium of 6.3%/71/and high interest rates from the banks /72/ do not allow small- medium company to access bank loan, because of the long production cycle, this represents a barrier to invest in forestry sector. Due to the unfavourable peculiarity of the forestry sector (high concentration of costs in the first years of production, long wait for economic returns due the long production cycle) public capital from domestic and/or international capital markets are not available. The PP has also tried to demonstrate institutional barriers, informality barrier and distance to ports barrier, which was checked with the documents /73/ /74/ /75/ respectively and also confirmed by interacting with the stakeholders.

Sub-step 2b. Elimination of land use scenarios that are prevented by the identified barriers

As discussed in sub step-2a, Land use scenarios B, C and D are excluded from further demonstration since the same are excluded based on the barrier demonstrated above.

Outcome of Sub-step 2b: The land use types that are not prevented by any barriers are as follows.
Alternative 1: Continuation of the pre-project land use which is the degraded and abandoned lands.

Sub-step 2c. Determination of baseline scenario (if allowed by the barrier analysis)

The steps involved in the decision tree has been followed in the VCS-PD, which results to baseline scenario: Continuation of the pre-project land use which is the degraded and abandoned lands.
The Decision Tree allows continuing with Step 4: Common practice analysis.

Step 4: Common Practice analysis:

It is checked that the MLR is the only company in the proposed region implementing this scale of reforestation activity /62/. As discussed above the reforestation sector passes through a strong reduction in investment and hectares established with only 450 ha of newly established plantations at national and a part of that being realized by MLR /76/. Thus commercial reforestation is not a common practice in the project region.

Conclusion:

RINA is able to confirm that the approved baseline methodology has been correctly applied to identify a complete list of realistic and credible baseline land use, and the identified baseline land-use most reasonably represents what would occur in the absence of the proposed project activity.

All the assumptions and data used by the PP are listed in the PD including the supporting documents. All documentation relevant for establishing the baseline land-use are correctly quoted and interpreted in the PD. Assumptions and data used in the identification of the baseline land-use are justified appropriately supported by evidence and can be deemed reasonable. Relevant national policies and circumstances are considered and listed in the PD.

RINA can confirm that it is sufficiently demonstrated that the project is not a likely baseline scenario; all data, rationales, assumptions, justification and documentation provided by the PP to support demonstration of additionality are credible and reliable. By assessing the evidence, RINA considers the reasoning for the proposed project additionality demonstration is credible and reasonable, i.e., the proposed project has the ability to reduce anthropogenic GHG removals by sinks that would have occurred in the absence of the registered VCS project activity.

3.4.5 Additionality

Please refer section 3.4.4.

3.4.6 Quantification of GHG Emission Reductions and Removals

Procedures for quantifying the baseline emissions from unplanned deforestation were conducted in accordance with the methodology “AR-ACM0003: Afforestation and reforestation of lands except wetlands”, Version 02.0. The validation team performed an intensive quantification review of all input data, parameters, formulas, calculations, conversions, statistics and resulting uncertainties and output data to ensure consistency with the VCS documentation, methodology modules, and the PD. Further, the validation team reproduced calculations for selected samples to ensure accuracy of the results. Conversion factors, formulas, and calculations were provided by project proponents in spreadsheet format to ensure all formulas were accessible for review. The validation team recalculated subsets of the analysis to confirm correctness. Project proponents also provided a step-by-step overview of select calculations to ensure the validation team understood the approach and could confirm its consistency with the methodologies and PD. Where applicable, references for analysis methods or default values were checked against relevant scientific literature for best practice.

Baseline Emissions

Based on the drone imagery and vegetation sampling, the following baseline strata have been identified. It was checked that 71.6% is classified as pasture lands and 28.4% as tacotales. The same was confirmed from the analysis of geographic registries provided by MLR /23/.

Stratum 1: Pastureland.

Stratum 2: Tacotales (abandoned pastureland).

Stratum 3: Remnant Forest.

Stratum 4: Cacao with remnant indigenous trees.

Since the strata consisted of trees and/or shrubs, the initial carbon stock of the trees and shrubs under the baseline scenario was estimated using the following tools:

- AR-TOOL14, Chapter 8. Estimating carbon stock in trees at a point in time
- AR-TOOL14, Chapter 11. Estimating carbon stock in shrubs at a point of time

The baseline net GHG removals are therefore determined as:

$$\Delta C_{BSL,t} = \Delta C_{TREE_BSL,t} + \Delta C_{SHRUB_BSL,t} \quad (\text{Eq.1 AR-ACM0003})$$

$$\Delta C_{TREE_BSL,t} = C_{TREE_BSL,t2} - C_{TREE_BSL,t1} \quad (\text{Eq.1 AR-TOOL14})$$

$$\Delta C_{SHRUB_BSL,t} = C_{SHRUB_BSL,t2} - C_{SHRUB_BSL,t1} \quad (\text{Eq.24 AR-TOOL14})$$

Baseline Carbon stock stratum 1: Pasture Land

The only carbon pool in this stratum is the carbon stock in remnant trees.

$$C_{TREE_BSL} = C_{TREE_BSL_1} + C_{TREE_BSL_2}$$

Land preparation a portion of the remnant trees is conserved ($C_{TREE_BSL_1}$) and part of the trees is removed ($C_{TREE_BSL_2}$).

It is checked that for the estimation of baseline carbon stock, the number of preserved trees and trees felled for land preparation were inventoried for both pastureland and tacotales. The same was checked from ER sheets, which has got the complete inventory data while land preparation /02/. The above-ground biomass (AGB) of the trees was estimated using allometric equations /71/ taken from publicly available literatures /77/ /78/. Noted that in species specific equations were used.

Following the methodological tool total biomass in trees (b_{TREE}) is estimated as follows:

$$b_{TREE} = f(BA) \times (1 + R_j) \quad (\text{Eq.7 Appendix 1 AR-TOOL14})$$

where $f(BA)$ is the above-ground tree biomass per hectare, and R_j is the root-shoot ratio for tree species j . The root-shoot ratio is calculated as prescribed by the methodological tool, as follows:

$$R_j = \frac{e^{(-1.085 + 0.9256 \cdot \ln b)}}{b}$$

where b is the above-ground biomass of the tree.

The carbon stock in the individual trees (C_{TREE}) is estimated using the following equation:

$$C_{TREE} = \frac{44}{12} \times CF_{TREE} \times b_{TREE} \quad (\text{Eq.12 AR-TOOL14})$$

where CF_{TREE} is the default value of 0.47 for carbon fraction of tree biomass as specified in the methodological tool. With the carbon stock in the individual trees for the inventoried area, the carbon stock in trees per hectare is calculated.

The tree inventory clearly states if the tree is preserved or removed while land preparation. Based on this classification, the carbon stock of preserved trees and removed trees was estimated following the methodology described above using the inventory data for pastureland.

$$C_{TREE_BSL_1} - \text{Remnant protected trees} - 0.6 \text{ t CO}_2\text{e ha}^{-1}$$

$$C_{TREE_BSL_2} - \text{Trees felled as part of land preparation} - 15.1 \text{ t CO}_2\text{e ha}^{-1}$$

Since the remnant indigenous trees are protected and excluded from further estimation of project net GHG removals by sinks. The baseline carbon stock in trees are conservatively estimated as 0 and the same is as per methodological tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities". The auditing team accepted the same, since conditions under para 11 of AR-TOOL -14 is justified. The same is discussed in detail in section 4.1.1 of the PD.

Baseline Carbon stock stratum 2: Tacotales

The carbon stock in this stratum, $C_{BSL} = C_{TREE_BSL} + C_{SHRUB_BSL}$ is estimated using the same approach as stratum 1.

Carbon stock in shrubs : since the biomass in shrubs is smaller than the biomass in trees. Crown cover of shrubs (CC_{SHRUB}) is estimated using remote sensing analysis (drone imagery) /79/.

Total shrub biomass per hectare (b_{SHRUB}) is estimated using the following equation:

$$b_{SHRUB} = BDR_{SF} \times b_{FOREST} \times CC_{SHRUB} \quad (\text{Eq. 27 AR-TOOL14})$$

Where BDR_{SF} is the ratio between shrub biomass per hectare in land having a shrub crown cover of 1.0 and the default above-ground biomass content per hectare in forest. Following the methodology, a default value of 0.1 is used. b_{FOREST} is the default above-ground biomass content in forest in the region or country, and has a default value of 161 ton ha^{-1} /80/. CC_{SHRUB} is the crown cover of shrub in the stratum, and is estimated using remote sensing analysis.

The total carbon stock in shrubs per hectare (C_{SHRUB}) is estimated as follows:

$$C_{SHRUB} = \frac{44}{12} \times CF_S \times (1 + R_S) \times \sum A_{SHRUB} \times b_{SHRUB} \quad (\text{Eq.26 AR-TOOL14})$$

where CF_S is the carbon fraction in shrub biomass, with a default value of 0.47 as per the methodological tool. R_S is the root-shoot ratio for shrubs with a default value of 0.4 as per the methodological tool. A_{SHRUB} is the area of the stratum in hectares.

$C_{TREE_BSL_1}$ - Remnant protected trees – 2.5 t $CO_2e\ ha^{-1}$

$C_{TREE_BSL_2}$ - Trees felled as part of land preparation- 37.9 t $CO_2e\ ha^{-1}$

$C_{SHRUB_BSL_1}$ - Shrubs that are removed as part of land preparation- 34.5 t $CO_2e\ ha^{-1}$

Baseline Carbon stock stratum 3: remnant forest

Carbon stock in trees in the baseline of mixed degraded forest is calculated based on the sample plots. H and DBH of each tree from the sample plots were recorded, which was checked from the ER spread sheets and confirmed. The total biomass of the trees were estimated based on the allometric equations discussed above.

$$b_{TREE_BSL_3} = \frac{B_{TREE_BSL_3}}{A_{PLOT}} \quad (\text{Eq.1 Appendix 1 AR-TOOL14})$$

where $B_{TREE_BSL_3}$ is total tree biomass in the plot, and A_{PLOT} is the plot size. The carbon stock in trees per hectare ($C_{TREE_BSL_3}$) is calculated as follows:

$$C_{TREE_BSL_3} = \frac{44}{12} \times CF_{TREE} \times b_{TREE_BSL_3} \quad (\text{Eq. 12 AR-TOOL14})$$

where CF_{TREE} is the carbon fraction in wood. The precision of the baseline carbon stock is estimated following equation of the CDM tool.

$$u_C = \frac{t_{VAL} \times \sqrt{\sum_{i=1}^M w_i^2 \times \frac{s_i^2}{n_i}}}{b_{TREE}} \quad (\text{Eq. 15 AR-TOOL14})$$

Carbon stock in shrub is calculated using the same as the approach discussed in stratum2 tacotale.

$C_{TREE_BSL_2}$ - Trees in remnant forest- 325.5 t $CO_2e\ ha^{-1}$

$C_{SHRUB_BSL_1}$ - Shrubs in remnant forest- 11.7 t $CO_2e\ ha^{-1}$

Baseline Carbon stock stratum 4: Cacao

$C_{TREE_BSL_1}$ - Remnant trees- 1.2 t $CO_2e\ ha^{-1}$

$C_{SHRUB_BSL_3}$ - Shrubs (Cacao)- 33.8 t $CO_2e\ ha^{-1}$

As elaborated above, the change in carbon stock in remnant indigenous trees is accounted as zero since the trees are protected and excluded from further estimation of project net GHG removals by sink.

As discussed in section 4.1 of the PD&MR, for the teak and agroforestry areas the change in carbon stock in remnant indigenous trees in the monitoring period is accounted as zero since the trees are protected and excluded from further estimation of project net GHG removals by sink. For the protection areas the project intervention is the accumulation of biomass compared to the baseline. These areas are actively managed as protection area since 2020 /02/ and change of baseline emissions is not relevant as the change of biomass is due to the project intervention.

Therefore, $\Delta C_{TREE_BSL,t} = 0$ and because of the exclusion of carbon stock changes in dead wood, litter and soil organic carbon, and shrubs hardly present in the area, $\Delta C_{BSL,t} = 0$.

Actual net GHG removal by sinks

Actual net GHG removals by sinks ($\Delta C_{ACTUAL,t}$)

The actual net GHG removals equal the carbon stock increase in the relevant carbon pools minus the GHG emissions within the project boundary.

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t} \quad (\text{Eq. 2 AR-ACM0003})$$

$GHG_{E,t}$: No emissions from fires have been considered in the ex-ante calculation as no burning is used to clear the land for planting. This was confirmed during the site visit no burning occurs as part of the site preparation within the project boundary and no burning occurs as part of the forest management. Thus, as per the methodological tool “Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity” is not applicable to the proposed project activity.

$$\Delta C_{P,t} = \Delta C_{TREE_PROJ,t} + \Delta C_{SHRUB_PROJ,t} + \Delta C_{DW_PROJ,t} + \Delta C_{LI_PROJ,t} + \Delta SOC_{AL,t}$$

The change in tree biomass and the associated uncertainty are estimated using the following equations:

$$\Delta C_{TREE_PROJ,t} = C_{TREE,t_2} - C_{TREE,t_1} \quad (\text{Eq. 1 AR-TOOL14})$$

$$u_{\Delta C} = \frac{\sqrt{(u_1 \times C_{TREE,t_1})^2 + (u_2 \times C_{TREE,t_2})^2}}{|\Delta C_{TREE}|} \quad (\text{Eq. 2 AR-TOOL14})$$

As the project activity is implemented in areas with either baseline stratum 1 ‘pasture land’ or baseline stratum 2 ‘tacotales’, a weighted average of the carbon stocks in trees is used following the baseline area distribution. The tree biomass cleared during land preparation is deducted from the baseline carbon stock and the increment of the planted trees added.

As discussed above the change in carbon stock for remnant indigenous trees was conservatively estimated as zero.

Total tree volume of individual trees is estimated using the total tree volume equation from Fallas for clones /81/, as in the project area only clonal material is planted. According to the methodological tool the amount of tree biomass ($B_{TREE,l,teak}$) of an individual tree l is estimated using the following equation:

$$B_{TREE,l,teak} = V_{TREE,l,teak} \times D_{TEAK} \times BEF_{TEAK} \quad (\text{Eq. 5 AR-TOOL14 – Appendix 1})$$

The BEF-value, is taken from the peer reviewed scientific literature /82/, includes roots, and therefore the proportion of the total biomass that accounts for trunk biomass (65.28%) provides for a BEF-value of 1.53 that includes R_{TEAK} .

VCUs teak

VCUs can now be calculated for teak. VCUs are only generated until the long-term average is reached.

$$\Delta C_{AR-VCS,t_{TEAK}} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \quad (\text{Eq. 5 AR-ACM0003})$$

$\Delta C_{SHRUB_PROJ,t}$: the change in shrub biomass is calculated by estimating the biomass at the beginning and end of each verification period. The tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” is used to determine changes in shrub carbon stock. For the older teak with cacao plantations the baseline carbon stock in cacao (shrubs) is not removed with tree planting, but is maintained and managed as cacao. Any positive carbon stock enhancement through e.g. improved management is conservatively excluded.

Therefore, $C_{SHRUB} = C_{SHRUB_BSL_3}$

For new teak with cacao plantations the carbon stock in cacao ($C_{SHRUB_BSL_3}$) is zero at start of the project activity, but the baseline carbon stock in shrubs ($C_{SHRUB_BSL_1}$) is removed at the start of the project activity and the carbon stock of the planted cacao (C_{SHRUB_CACAO}) added.

Therefore: $C_{SHRUB} = C_{SHRUB_CACAO} - C_{SHRUB_BSL_1}$

The biomass in cacao is estimated using the following equation:

$$b_{SHRUB,i} = BDR_{SF} \times b_{FOREST} \times CC_{SHRUB,i} \quad (\text{Eq. 27 AR-TOOL 14})$$

The total carbon stock in cacao (C_{SHRUB}) is estimated as follows:

$$C_{SHRUB} = \frac{44}{12} \times CF_S \times (1 + R_S) \times \sum_i A_{SHRUB,i} \times b_{SHRUB,i} \quad (\text{Eq. 26 AR-TOOL 14})$$

VCUs Mixture teak with cacao

VCUs can now be calculated for the mixture of teak and cacao. VCUs are only generated until the long-term average is reached.

$$\Delta C_{AR-VCS,t_{CACAO}} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \quad (\text{Eq. 5 AR-ACM0003})$$

Carbon stock in indigenous tree biomass (C_{TREE})

The ex-ante calculations are based on the above-ground biomass (AGB) model for tropical moist forest in the Americas /83/, as the ecological zone is classified as tropical moist deciduous forest/84/. This model has the following form:

$$AGB = -127.2 + 77.16 \ln(x)$$

where x is stand age in years. Carbon fraction and root-to-shoot ratio were derived from IPCC /80/.. For the root-to-shoot ratio an average value was chosen for moist deciduous forest with >125 ton DW ha⁻¹ aboveground and <125 ton DW ha⁻¹ aboveground, since this forest will change gradually from lower than 125 ton ha⁻¹ to more than that. Since the protection areas have 3 different baseline scenario's. The baseline carbon stocks are plotted on the curve to determine the corresponding estimated age and expected carbon sequestration /02/.

VCUs protection area

VCUs can now be calculated for the protection areas. As no harvesting is done in the protection areas, the calculation of a long-term average is not applicable.

$$\Delta C_{AR-VCS,t_{PROTECTION}} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \quad (\text{Eq. 5 AR-ACM0003})$$

Estimating change in Soil Organic Carbon

SOC is estimated using the CDM “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”/14/. It is checked that the SOC is only calculated to stratum 1 and stratum 2 of baseline. It is checked that the protection areas, where remnant forest patches occur are excluded from this calculation, which is appropriate and conservative.

The initial SOC stock at the start of the project is estimated as follows:

$$SOC_{INITIAL,i} = SOC_{REF,i} * f_{LU,i} * f_{MG,i} * f_{IN,i} \quad (\text{Eq. 1 AR-TOOL-16})$$

Since the entire project is classified as a tropical moist region /84/ and the soils found are Ultisols and Alfisols. The Soc reference values for these were referred from the methodological tool. The auditing team checked the justification of the values used in the ER calculations and details of the same provided in 4.2.2.1 of the joint PD&MR, which is accepted.

To estimate the rate of change in SOC for the project areas, a weighted average is applied for the Siuna area according to the soil type distribution percentages mentioned above. The rate of change in SOC found for the Bonanza and Siuna areas are 0.71 and 0.76 t C ha⁻¹ yr⁻¹ respectively, which corresponds with 2.77 and 2.59 t CO₂e ha⁻¹ yr⁻¹ respectively /02/.

$\Delta SOC_{AL,t}$ represents the fixed amount of annual carbon storage. Multiplying the number of years and hectares with the $\Delta SOC_{AL,t}$ results in the amount soil organic carbon change (ΔSOC). The same is as per the tool. RINA team crosschecked the same from ER spread sheet and confirmed to be appropriate.

Long-term average

In the teak plantation rotational harvesting is done, and a long-term average calculation is carried out over two rotation periods. The long-term average includes at least one rotation period, which is 20 years for teak. The LTA is therefore calculated over 40 years. All teak plantation strata will generate VCUs until the long-term average is reached. This long-term average is calculated following VCS requirement 3.2.21. Following this equation, the long-term average is reached around year 11 after planting and year 13 for strata with mixture Teak with Cacao .

$$LA = \frac{\sum_{t=0}^n PE_t - BE_t}{n}$$

A detailed overview of calculation of long-term average of Teak calculations are shown in table 14 and 15 of the VCS-PD&MR. This is further elaborated separately for the two areas (Siuna and Bonanza) proposed in the project. It is also checked that the LTA is calculated for Teak Cacao mixtures (both old Cacao and new Cacao). The team checked the tables 16, 17, 18, 19, 20 and 21 in the updated PD&MR. The same is as per the ER spread sheets, sheets” EA_Teak“ and “EA_Teak in Cacao”. Table 21 shows the annual emission reductions per strata (tCO₂eq.) per hectare. It is to be noted that for each establishment year, the respective yearly emission reduction is subsequently multiplied by the number of hectares being planted in both the proposed project areas in Siuna and Bonanza. The validation team confirms that the LTA is calculated as per the requirements of VCS Standard v4.0 of 3.2.21 . Please note that the nature of table no.s (14, 15, 16, 17, 18 and 19) referred in the PD&MR is different from the table provided in VCS guidance: AFOLU Guidance: Example for Calculating the Long-Term Average Carbon Stock for ARR Projects with Harvesting, dated 08/03/2011 because the carbon sequestration in the proposed project comprises of various strata (teak plantation, mixture teak

with cacao plantation and protection area) of different establishment years and area of plantation.

Leakage:

According to the applied methodology, leakage has to be estimated due to the displacement of agricultural activities as per the provision of the methodological tool Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity. The project does not expect any displacement of agricultural activities and any harvesting activity thus the leakage is accounted as 0. The validation verification team checked the Social and Environmental Impact Study /49/, which confirmed that the pre-project landowner have moved to moved to economically developed zones, urban center and zones of Matagaipa which were already deforested zones and the zones od Matagaipa has not shown signification deforestation from 2005-2015 /85/. It was also checked that some of the landowners migrated to nearby Siuna area, where from the satellite imagery analysis it was confirmed that the forest cover increase from 37.61 to 42.51% /36/.

Based on the above, it is justified that the displacement of pre-project agricultural activities has not lead to decrease in the carbon stock in the areas that received the displaced activity.

The calculation of the emission reductions has been ensured by the validation team based on the CER calculation sheet, version02 /02/. The emission reductions estimation can be replicated using the data and parameter values provided in the PD and supporting file submitted for registration. The data sources mentioned have been verified by RINA team. RINA team confirms that the estimates provided in the PD version 3.0 /01/ are reasonable and the project participant has correctly applied the methodology and referenced tools to calculate baseline emissions, project emissions, leakage and net GHG emission reductions; the calculations are complete and transparent, and the data accuracy has been verified.

3.4.7 Methodology Deviations

No methodology deviations applied to the proposed A/R project activity.

3.4.8 Monitoring Plan

The monitoring plan is in accordance with the applied methodology and methodological tools; the monitoring plan will give opportunity for real measurement of achieved GHG removals by sinks. RINA has checked all the parameters presented in the monitoring plan against the requirements of the methodology and methodological tool; no deviations relevant to the project activity have been found in the plan. RINA confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure the GHG removals by sinks achieved by resulting from the proposed project activity can be reported ex-post and verified.

Parameters determined ex-ante. The ex-ante parameters that are mentioned in the applied methodology and methodological tool are included in the PD and are provided in compliance with the methodology and methodological tools itself:

Data/parameter	Unit	Value applied	Assessment
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ρ – Wood density	t d.m./m ³	Refer to the ER spread sheet	The average wood density per species is referred from ICRAF, “Tree Functional Attributes and Ecological Database – Wood density /86/ and S. Brown, “Estimating biomass and biomass change of tropical forests: a primer /87/
CF_{TREE} – Carbon Fraction in dry matter for indigenous trees CF_S – Carbon fraction of shrub biomass	tC (t d.m.) ⁻¹	0.47	Default value is sourced from the methodological tool for the estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2) /10/
BDR_{SF} – Ratio shrub biomass and default above-ground biomass in forest	-	0.1	Default value is sourced from the methodological tool for the estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2) /10/
b_{FOREST} –Above-ground biomass content in forest	t d.m. ha ⁻¹	161	Default value is sourced from IPCC /80/
RS_{IND} – Root-shoot ratio for indigenous forest	-	1.22	Default value is sourced from IPCC /80/
R_S – Root-shoot ratio for shrubs	-	0.4	Default value is sourced from the methodological tool for the estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (Version 04.2) /10/
D_{TEAK} – Teak wood density	T d.m. m ⁻³	0.55	Default value is sourced from IPCC /80/
BEF_{TEAK} – Biomass Expansion Factor (BEF) teak	-	1.53	M. Kraenzel, A. Castillo, T. Moore and C. Potvin, “Carbon storage of harvest-age Teak plantations, Panama,” Forest

			Ecology and Management /82/
CF_{TEAK} - Carbon fraction of teak biomass	-	0.495	Same as above /82/
$V_{TREE,l,teak}$ - Equation to calculate total volume of the trunk from DBH and height	m^3	$(VTcc = - 0,0068*(dap) + 0,0010*(dap))$	Total tree volume of individual trees is estimated using the total tree volume equation from Fallas for clones /81/.
$SOC_{REF,I}$ Reference soil organic carbon stock	$t\ C\ ha^{-1}$	47 $t\ C\ ha^{-1}$ for Ultisols 65 $t\ C\ ha^{-1}$ for Alfisols	Default value is sourced from methodological tool for estimation of change in soil organic carbon stocks /14/ since Ultisols are a Low Activity Clay soil type. Alfisols are a High Activity Clay soil type. The climate region is a tropical moist region /84/
$f_{LU,I}$ Land use factor	Dimensionless	1	Default value is sourced from methodological tool for estimation of change in soil organic carbon stocks /14/ as the project area is characterized as abandoned pastureland.
$F_{MG,I}$ Management factor	Dimensionless	0.70	Default value is sourced from methodological tool for estimation of change in soil organic carbon stocks /14/ assigned to land identifies as degraded lands as the project area.
$F_{IN,I}$ Input Factor	Dimensionless	1	Default value is sourced from methodological tool for estimation of change in soil organic carbon stocks /14/ assigned to pastureland without input of fertilizers as the project area.

Parameters determined ex-post

<i>Data/parameter</i>	<i>Frequency and measurement method</i>
<i>A_{PLOT} – Total area of sample plot in ha</i>	As per the procedure, the project aims to sample 2% of the stratum area for teak and teak in cacao, and 0.5% for protection areas. For cacao monitoring 1 sample plot of 72m² is used for every 2.5 ha. For the proposed monitoring period 4.15 ha was monitored in sample plots in the teak plantations, and 1.9 ha in sample plots in the protection areas. The same is accepted by RINA /27/ /88/. The measuring instrument used is GPS and measuring tapes.
<i>H – Total height of trees</i>	The sample plots are monitored annually done for Teak and Cacao and at least every monitoring event for the protection areas /02/. It is checked that manual hypsometer is used measuring the same, which is as per the SOPs adopted by MLR /27/ /88/..
<i>DBH diameter at Brest Height of the trees</i> <i>cm</i>	The sample plots are monitored annually done for Teak and Cacao and at least every monitoring event for the protection areas. Diameter of the tree at 1.3 m height is measured using measuring tape /02/.
<i>CC_{SHRUB} – The crown cover refers to the percentage of live or dead cover that the cacao plants have in the sampled area.</i>	The sample plots are monitored annually done for Teak and Cacao and at least every monitoring event for the protection areas /02/

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.

3.5 Non-Permanence Risk Analysis

The proposed project ‘Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua 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.

14. Internal Risk

Risk Factor	Validation Findings	Risk Rating
1. Project Management (PM)		
	- The species planted is Teak (<i>Tectona Grandis</i>) and teak is not native to the project region.. However, it has been checked that species has proven to grow in the ecological zones, where the project is located. The same has been checked with Chaves, 1991 , Bolanos Taleno, 2001 and R. de Camino, 2002 /89/. - it is checked that the MLR management has appointed trained security team to survey and monitor the project area. It is also checked that the security team also have the accreditation of national police /26/ /34/ /49/. - The management team comprises of staff with significant experience in the plantation field. The same was confirmed during interaction with the PP and also from the reviewing the CVs of the management staff /28/. - Management team maintains continuous presence over the project site. They have one office in Suina and one in Managua. It is checked from the google map that the travel time to the project site is less than a day. - Management team doesn't have experience in AFOLU project design and implementation, carbon accounting and reporting. However, the PP has appointed Form international, who is competent to do the same. - PP has developed yearly operational plan /41/ along with FSC certification to ensure well-functioning and maintenance of the system/25/.	-2

Risk Factor	Validation Findings	Risk Rating
2. Financial Viability (FV)		
	- The project cash flow break even point , where the annual income consistently exceeds annual outgoing occurs in year 4. 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 /16/. - It is checked that the PP has secured 100% of the funds before reaching the breakeven point, is secured. The calculations are explicit in the spreadsheets /15/.	0

Risk Factor	Validation Findings	Risk Rating
3. Opportunity Cost (OC)		
	- The only alternative scenario is the pre-project land use, which involves the extensive traditional cattle grazing and continuation of degradation of forest. Since the baseline activities and credible land use scenario are subsistence-driven, no NPV calculation of alternative land use is provided. Instead, net positive community benefits of PP's sustainable forest management activities are elaborated in the non-permanence risk report. The benefits to the near communities was discussed and confirmed with the local villagers and also from the TECDEA, 2019 /49/. - The PP is not a non-profit organization. - The project is not protected by a legally binding commitment to continue management practices that protect credit carbon stocks. Is no legally binding commitment to	0

Risk Factor	Validation Findings	Risk Rating
4. Project Longevity (PL)		
	The PP defined the maximum project longevity is 100 years . The long-term commitment is further demonstrated through the certification of the plantations under the Forest Stewardship Council (FSC) standard /25/ /96/.	0
	Total Project Longevity (PL) May not be less than zero.	0

2. External Risk

Risk Factor	Validation Findings	Risk Rating
1. Land Tenure and Resource Access/Impacts (LT)		
a)	The Audit team has checked the ownership and right of use documents. MLR owns all the plantation lands and is the owner and has the user right, which was checked and confirmed from the land titles /18/.	0
b)	Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent holds a lease or concession)	N/A

c)	<i>There are no disputes as the ownership is clear. Therefore, the likelihood of any dispute is very low.</i>	0
d)	<i>As assessed above, there are no disputes over access/use rights in the project area.</i>	0
e)	<i>WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts</i>	N/A
f)	<i>As discussed above the project area is not part of a legally binding commitment to continue management practices</i>	0
g)	<i>This has not been argued.</i>	0
	<i>Total Land Tenure (LT) [as applicable, ((a or b) + c + d + e + f + g)] Total may not be less than zero.</i>	0

Risk Factor	Validation Findings	Risk Rating
2. Community engagement (CE)		
a)	<i>It is checked that there are no households living within the project area.</i>	0
b)	<i>It is been checked that thought there are inhabitants living at 2.5 km, who have been consulted and also interviewed during the audit, the threshold of households relying on the project area is not 20%.. Therefore, this risk is not applicable in this case./90/</i>	0
c)	<i>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 /21/ /52//54//49/. Hence the mitigation score of -5 is confirmed.</i>	-5
	<i>Total Community Engagement (CE) [where applicable, (a + b + c)] Total may be less than zero.</i>	-5

Risk Factor	Validation Findings	Risk Rating
3. Political Risk (PC)		
a)	<i>The audit team confirmed that the 5 year mean governance score for Nicaragua across the six governance indicators of World Bank Institute's Worldwide Governance Indicators is -0.73 /91/. Therefore, agrees that the political risk is 4.</i>	4
b)		
c)		
d)		
e)		
f)	<i>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 country is participating in the CCBA/CARE REDD+ Social and Environmental Standards Initiative c) The jurisdiction in which the project is located is participating in the Governors' Climate and Forest Taskforce d) The country has an established national FSC or PEFC standards body</i>	-2

	e) The country has an established DNA under the CDM and has at least one registered CDM A/R project The country of Nicaragua received REDD+ Readiness funding from the FCPF (FCPF, 2018) /43//44/.	
	Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.	2

2. Natural Risk

Risk Factor	Validation Findings	Risk Rating
F	The fire risk in the project location is considered to be lower due to the rainfall pattern /41/ The plantation (Teak) is relatively high resistance to fire damage even if fire remain the greatest risk for plantation. Fire management is employed to reduce fire risk focusing on fuel load reduction, fire breaks, establishment and training of a fire squad and awareness raising on the risk of fire for local people . PP has emergency preparedness plan in place /30/ and there is no incidence of the fire reported in the proposed monitoring period. Considering the rainfall patterns, historic fire incidence and mitigation matters, likelihood of fires is small, and was put at 25 to less than 50 years. Mitigation : 0.25	1
PD	The plantation (Teak and indigenous) is not very susceptible to pests and disease; the PP reduces the risk of potential infections keeping a healthy nutrient balance and preventing damage /41/. No fire events occurred in the project boundary during the monitoring period. The environmental & social monitoring report /49/ confirms that no pests and disease were found in the plantation. The company applies Integrated Pest Management to reduce risk of pests. It allows the use of organic products and actions that rule out the application of chemicals on some farms owned by the company. In the case of leaf-cutter ants, which feed on teak leaves, the company has been applying neem (Azadirachta indica) to combat the ants with organically herbicides /41/ Mitigation : 0.25	1

W	It is checked that in 2020 two major hurricanes crossed the RACCN region 10 days apart, leading to partial damage to the plantation /92/ /93/. Though the potential hurricane impacts are significant , the rating was qualified as minor between 5% to 25% loss of carbon stocks. Thus not rated as Major. Referring to scientific data and publications, it is likely that the region may affect from cyclones and other extreme weather conditions. Consequently, a likelihood of every 25 to 50 years is confirmed for all extreme weather events. Hence a mitigation factor of 0.50 is reasonable.	2
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G	Geological risk.	N/A
ON	Other natural risk.	N/A
	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	0.00
b) External Risk	0.00
c) Natural Risk	1.50
Overall Risk Rating (a + b + c)	1.50

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

Baseline Emissions:

The change in carbon stock in remnant indigenous trees is accounted as zero since the trees are protected and excluded from further estimation of project net GHG removals by sink. The same is as per the justification provided in section 3.4.6 above. It was further checked that the trees felled for the land preparation covers 620 ha, which is recorded and available to crosscheck in the ER sheet, which resulted in a weighed estimated of 21.6 t CO_{2e} ha⁻¹ being removed (including shrubs) and 1.2 t CO_{2e} ha⁻¹ remaining for pastureland and tacotales.

To determine the carbon stocks of the remnant forest areas at the start of the project activity, 39 sample plots of 500 m² were laid out in this stratum. Tree height, tree diameter at breast height (DBH) and tree species were recorded, among other parameters. The same was checked from the ER sheets and the images/videos provided by the client /94/. More details on the calculation are discussed in section 3.4.6.

Project Emissions

The project consists of three different reforestation types. The long-term average is to be calculated following the AFOLU requirements 4.5.5 when harvesting is applied. Clear felling is only done in the teak plantation and the teak within the cacao areas. Since AFOLU requires all emissions such as leakage and all carbon pools to be included, the project is first stratified per reforestation typology and then for plant year. For each reforestation typology the methodology AR-ACM0003 version 02.0 is followed.

The estimated net GHG emission removals (t CO₂-e) per year are calculated as:

$$\Delta C_{AR-VCS,t} = \Delta C_{AR-VCS,t_TEAK} + \Delta C_{AR-VCS,t_CACAO} + \Delta C_{AR-VCS,t_PROTECTION}$$

It was checked and confirmed that the measurements of planting activity starts only after 2 years, which is also as per the SOP of MLR /41/. The teak with cacao in the project area started its plantation in 2019, and the protection areas under management started in 2020. Thus, the monitoring period of project emissions from teak are only relevant, which started plantation in the year 2016, 2017 and 2018. The validation/verification team checked the same from the ER spread sheets /02/ and confirms the same to be appropriate.

Estimating change in carbon stock in tree and shrub biomass

The change in tree biomass is estimated using the following equation:

$$\Delta C_{TREE_PROJ} = C_{TREE,t2} - C_{TREE,t1} \quad (\text{Eq. 1 AR-TOOL14})$$

The tree biomass in the first year is the same as the baseline biomass in indigenous trees at the start of the project activity, which are the remnant indigenous trees ($C_{TREE_BSL_1}$) and the trees that are felled with land preparation ($C_{TREE_BSL_2}$). The tree biomass cleared ($C_{TREE_BSL_2}$) and shrub biomass cleared ($C_{SHRUB_BSL_1}$) is deducted from the baseline carbon stock and the increment of the planted teak trees (C_{TREE_TEAK}) added. Since the change in remnant indigenous trees is accounted as zero, as discussed above the following applies.

$$\Delta C_{TREE_PROJ} = C_{TREE_TEAK} - C_{TREE_BSL_2} - C_{SHRUB_BSL_1}$$

The total tree biomass in teak (C_{TREE_TEAK}) is estimated based on field measurements in Permanent Sample Plots as elaborated in the monitoring plan. The no. of sample plots identified for Teak plantation until 2018 is 83. The number of plots is defined in the reference 'K. Prodecure manual for inventory and installation of PSPs (Manual de Procedimientos para Inventario e Instalación de PPM) /27/. It is indicated that 2% of all commercially planted areas are covered under the PSPs. This is 500m² PSP for every 2.5 ha, and this is distributed proportionally per forest stand. As per the audit observations, the area affected by hurricane was removed from the project area and thus the no of PSPs came down to 83 from 162 and thereby reduction in the overall % of remaining PSP plots for the 2016-2018 stands to 1.7%, which is lower than original 2%, which further leads to low uncertainty intervals for the actual monitoring data period, of 5.9%, which is still less than 10%.

Determination of the sample and acceptability of data

During the remote audit, RINA performed sample of 83 samples selected by PP for teak plots. RINA team reviewed 15 teak sample plots by means of images and videos of measuring the trees DBH and H, including the geo-coordinates of the PSPs. The 15 sample plots are selected based on G.5.3.12 of IAF Guidance on the Application of ISO/IEC Guide 66, where square root of total sample plots is applied, which results to 13. The no. of plots rechecked by RINA team is 15, which is conservative. The plots visited were covered in such a way that it covers all the strata considered in the proposed project activity. As per the audit observations, it was confirmed that the raw data sheets of field measurements were part of the ER sheet. The same was checked and confirmed from the ER sheets. It is to be also noted that the field measurements were also cross checked by the external audit (Audit valuation of the Biological Asset of MLR Forestal de Nicaragua S.A.) by Technological Foundation of the Technological Institute of Costa Rica (FUNDATEC) report dated 03/2020 for which the site visit was performed on 10/12/2019, which covers the inventory until 2019 /02/. It is checked that one of the objectives of this audit was to verify in the field the quality

of the forest inventory information through sampling (height, diameter and quality). Thus, since an onsite visit was not performed by RINA team, the team also relied on the values of field measurement and data provided in the external audit report to cross check the details of sample plots, geo co-ordinates and field measurements and the same was found to be acceptable. The same approach was also followed for the sample plots of protection area. The no. of PSPs are 39 and the sample selected by RINA team was 7. Measurement details provided by the client in the form of videos and images were cross checked with the data sheets provided in the ER sheets and accepted.

Based on the mean biomass of the plots per stratum, as well as the associated variance, the mean carbon stock in teak (C_{TREE_TEAK}) within the teak biomass estimation strata and the associated uncertainty (u_C) are estimated following the methodology as described in section 4.2.2. The mean biomass per hectare is 41.70 t in the measured teak strata (2016-2018) and the associated uncertainty is 5.9%. Since the uncertainty in tree biomass is less than 10%, there is no need to make C_{TREE} conservative by applying an uncertainty discount, which is as per the AR-Tool- 14 and accepted by RINA.

It is checked from the ER spread sheets that the trees that were affected due to hurricane were remeasured and the trees which were damaged were excluded from the biomass calculation, which is conservative and PSPs which were completely damaged, those were removed from the ER calculations. Shape files of the same checked and accepted /38/.

Project Activity	Area	Plant year	Area (ha)	$C_{TREE,t1}$ (t CO _{2e})	$C_{TREE,t2}$ (t CO _{2e})	ΔC_{TREE} (t CO _{2e})
I. Teak	Siuna	2016	93.6	2940	14297	11358
I. Teak	Siuna	2017	85.0	2669	7957	5288
I. Teak	Siuna	2018	69.1	2170	64	-2106
Sum			247.70	7,778	22,318	14,540

Estimating change in Soil Organic Carbon

SOC is estimated using the CDM “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”/14/. For more information on how is it calculated, please refer to section 3.4.6.

Project Activity	Area	Plant year	Years	$\Delta SOC_{AL,t}$ (t CO _{2e} ha ⁻¹ yr ⁻¹)	Area (ha)	ΔSOC (t CO _{2e})
I. Teak	Siuna	2016	4	2.77	93.6	1038.1
I. Teak	Siuna	2017	3	2.77	85.0	707.0
I. Teak	Siuna	2018	2	2.77	69.1	383.1
I. Teak	Siuna	2019	1	2.77	264.0	731.9
I. Teak	Siuna	2020	0	2.77	165.2	0.0

II. Teak with cacao	Bonanza	2020	0	2.59	80.9	0.0
II. Teak with cacao	Siuna	2019	1	2.77	101.2	280.5
III. Protection	Bonanza	2020	0	2.59	46.7	0.0
III. Protection	Siuna	2020	0	2.77	718.3	0.0

$$14\,540 (\Delta C_{TREE}) + 3\,140 (\Delta SOC) = 17\,680 \text{ ton CO}_2\text{e} (\Delta C_{P,t}).$$

$$\text{Since } GHG_{E,t} = 0, \Delta C_{ACTUAL,t} = \Delta C_{P,t}$$

Leakage:

According to the applied methodology /07/ leakage has to be estimated due to the displacement of agricultural activities as per the provision of the methodological tool Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity. The project does not expect any displacement of agricultural activities and any harvesting activity thus the leakage is accounted as 0. For more information on the same please refer to section 3.4.6

Net GHG emissions reductions and removals : According the applied methodology, the net anthropogenic GHG removals by sinks are calculated as follows:

$$\Delta C_{AR-VCS,t} = \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t$$

$$\Delta C_{BSL,t} = 0, LK_t = 0$$

$$\Delta C_{ACTUAL,t} = 17\,680 \text{ ton CO}_2\text{e}$$

PP has provided a spread sheet (Calculation file – updated.xlsx), /02/ ‘. As per the estimation, the total GHG emission reductions and removals from the project for the current monitoring period (01/06/2016 to 01/03/2021) is 17,680 tCO₂e and after 10% buffer pool allocation i.e. 1,768 tCO₂e the same results to 15,912 tCO₂e. RINA audit team has verified these calculations and confirms that the values given are conservative and are devoid of any material discrepancies.

In conclusion, RINA confirms that the input data used for calculating the Net anthropogenic GHG removals by sinks, procedures used for calculation and the results are complete and transparent. Further, audit team confirms that net anthropogenic GHG removals by sinks have been quantified correctly in accordance with the project description and applied methodology. No uncertainties result associated with the calculation of net anthropogenic GHG removals by sinks

4.2 Quality of Evidence to Determine GHG Emission Reductions and Removals

The actual GHG removals were calculated by applying standard operation procedures in measuring the PSPs. Sampling is done through circular permanent sample plots (PPM), which are distributed along the teak forest plantations every 200 meters with an area of 500 square meters each. This results in a 2% sampling density. Per plot the GPS coordinates are recorded, the center of the plot

is marked and the individual trees are marked with sequential numbers. Monitoring of the teak plantation starts at an age of 2 years. Procedures for PSP monitoring in the agroforestry system of teak with cacao are the same as for Teak plantations. In addition to measurement of teak in this stratum also the shrub cover is measured. This is done using specific sample plots for cacao, where 1 plot is used for every 2.5ha /27/. For protection areas a minimum sampling density of 0.5% is applied for the protection area, and per plot the GPS coordinates are coordinates. All trees with a DBH ≥ 10 cm are measured following the regular monitoring protocol, although where known the tree species is also recorded. To estimate shrubs the plot is divided into 4 quadrants and per quadrant the shrub cover is visually estimated. Based on the obtained shrub cover per quadrant the average total shrub cover for the plot is calculated. The protection areas are monitored at least before every verification event. It is checked that for protection area an uncertainty level of 30% was achieved thus and 75% uncertainty discount was applied, which is as per the appendix-2 of the AR-TOOL-14.

Monitoring field members were trained before the monitoring event. The team receives annual training by the head of Monitoring, Measurement and Cartography /88/. The procedure document used for trainings is the PPM Inventory and Installation Procedures Manual. The implementation of the inventory techniques is part of the training sessions. For measuring the diameter at breast height, the monitoring field staff use measuring tapes. Apart from the tape, other equipment are used in the measuring activities such as clinometers and GPS. RINA has verified that field staff along with the monitoring supervisor implemented the monitoring plan as it is established in the PD, also could evidence from the virtual inspection that that key workers are fully involved in monitoring events (training, measuring, archiving, reporting, quality control, etc).

QA/QC procedures are considered strict at identifying, reviewing, and handling inconsistencies found. Roles and responsibilities are clearly identified in the monitoring report and QA/QC procedures. MLR will be responsible for the centralized documentation of all project planning and implementation, monitoring and data recording and storage. Quality assurance (QA) and quality check (QC) procedures implemented follow IPCC good practice guidance for LULUCF, which was checked from the monitoring protocol and accepted /80/. The use of these procedures monitored to ensure that net anthropogenic GHG removals by sinks are measured and monitored precisely, and are credible, verifiable, and transparent. It is further checked that the measurements and inventories also undergo an external verification /22/ /95/.

5 VALIDATION AND VERIFICATION CONCLUSION

RINA has performed the validation and the verification of the A/R Grouped project “Integrated Project for Reforestation and Agroforestry on Degraded lands in Nicaragua 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 Nicaragua and covers 4,204 hectares.

The validation and verification process was 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 01/07/2016 to 01/03/2021 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 15,912 tonnes CO₂e as reported in the Joint project description and monitoring report Monitoring Report for the reporting period from 01/07/2016 to 01/03/2021

Verification period: 01-07-2016 to 01-03-2021

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
01/07/2016 to 01/03/2021	0	17680	0	17680	1768	15912
Total	0	17680	0	17680	1768	15912

APPENDIX A : <ABBREVIATIONS>

<i>Abbreviations</i>	<i>Full texts</i>
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
MARENA	Ministry of the Environment and Natural Resources
MLR	MLR Forestal de Nicaragua
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
SEIA	Social and Environmental Impact Assessment
SS(s)	Sectoral Scope(s)
TA(s)	Technical Area(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVB	Validation and Verification Body

WS	<i>Validation and Verification Standard</i>
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APPENDIX B : CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUEST

Table 1. CL from this validation/verification

CL ID	01	Section no.	1.1	Date: 14/04/2021
Description of CL				
1. As per the ER sheet, the total area planted until 2030 is 2823 Ha. However, as per the PD &MR section 1.1 and 1.11 it is 2,742 Ha. Same is with the areas planted until 2020. PP to also clarify on why the area summary is not consistent with the plantations carried out in Siuna and Bonanza. 2. The project description is not transparent on the areas covered under Bonanza. 3. The project description is not transparent on the central GHG information system and controls associated with the project and its monitoring 4. The project description states deforestation rates and threats in the region are high, both Bonanza and Siuna are considered deforestation hotspots at national. Provide evidence for the same.				
Project participant response				Date: 02/06/2021
1. The total area with commercial plantations until 2030 has been revised and updated and is 2,567 ha; the same is reflected in the ER sheet (Cell B13 + B16 +B34 in tab Areas). The description on the figures of the area is revised and updated, and more detail on area size is given in tables in section 1.7 and section 1.11. 2. Bonanza area is included in the project description. 3. The project description includes an explanation on the fact that MLR Forestal controls and owns all group instances and has a centralized management and monitoring system in place for the whole grouped project. 4. Additional explanation and references provided in the project description.				
Documentation provided by project participant				
Updated PD.				
DOE assessment				Date: 14/06/2021
1. PDD and ER sheets have been consistent. The total area, excluded area, area excluded due to hurricanes, areas excluded due to pre-plantation have been discussed in detail in section 1.7 of the joint VCSPD & MR and the same has been found consistent throughout the MR. 2. The project description has been made transparent on the area covered under Bonanza. The same is accepted. 3. The project description has been made transparent on the centralized management and monitoring system. 4. The high rates of deforestation in the region was checked in the website https://www.globalforestwatch.org/dashboards/country/NIC/ and confirm to the same as what is mentioned in the PD. Also, references to document 1, 2 and 3. Based on the above justifications , CL01 is Closed.				

CL ID	02	Section no.	1.4	Date: 14/04/2021
Description of CL				

PP to clarify the following: Eligibility criteria discussed in the PD is not transparent on the following 1. Meet the applicability conditions set out in the methodology applied to the project. 2. Use the technologies or measures specified in the project description. 3. Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area 4. Have a start date that is the same as or later than the grouped project start date. 5. Though the eligibility criteria states project activity shall be on degraded lands. However, it is not transparent on the tool or the evidence as per the tool to be used in demonstrating the land eligibility. 6. What would be the evidence used to justify the project would not be on organic and or drained soils.	
Project participant response	Date: 02/06/2021
The eligibility criteria were complemented following the 6 points described; for each eligibility criteria it is indicated what needs to be demonstrated and how. The land eligibility is touched upon in CAR 2.	
Documentation provided by project participant	
Updated PD	
DOE assessment	Date: 14/06/2021
Additional eligibility criteria's with justification on inclusion has been updated in section 1.4 of the revised PD. The same has been checked by the auditing team and accepted. CLO2 is closed.	

CL ID	03	Section no.	1.7	Date: 14/04/2021
Description of CL				
1. It is checked that the project comprises of 57 land titles in total. However, it is not clear on how the 57 titles is linked to the 13 farms (4,859.32 Ha) at Siuna and 3 farms (269.56 ha) at Bonanza, discussed in section 1.7 of the PD. Moreover, as per the PD, the 57 land titles cover an area of 5,147.83 ha. However, the 16 farms in total result to an area of 5,128.88 ha and the project area results to 4,460 ha. PP to clarify the inconsistency and make the same transparent in the PD. Further as per the land use change analysis summary report, the land coverage area of Siuna is 4857.11ha.				
2. During the discussions with PP, it was understood that, when the project owner bought the land, there was an existing teak plantation, which is excluded from the project area. The details of the same is not transparent in the PD.				
3. PP is also requested to provide the GIS files of the land titles.				
Project participant response.				Date: 02/06/2021

1. The figures are updated and a complete list of titles and areas is included.

The properties are based in 2 districts, Siuna, which consists of 13 farms and 54 titles (4,869.97) and Bonanza (269.58 ha), consisting of 4 titles and 2 farms, totaling 5,139.55 hectares in the total project area. It is also shown to what extent the area falls under the project area.

The area used in the land use change study was based on a previous set of GIS data files; the recent GIS data set included an update to include the complete land title surface. In this previous GIS dataset, some rivers and roads had been excluded. This has led to a minor change (+12.86 hectares in the update GIS dataset), but does not affect the results of the land use change report.

2. This is now made visible in the same chapter, 1.7.
3. This is shared.

Documentation provided by project participant

Updated PD

Shape files of the land titles.

DOE assessment

Date: 14/06/2021

1&2. The land titles checked and the same was also checked against the GIS file and found to be consistent.
2. The exclusion of pre-project teak plantations updated in the PD and the same was also checked against the shape files .
CL03 is closed.

CL ID	04	Section no.	1.8	Date: 14/04/2021
Description of CL				
As per the PD, the project start date is 01/07/2016, which is the earliest date of land preparation and planting activities. The date was checked with MLRs operations report. However, PP is requested to support the same with the financial statements.				
Project participant response.				Date: 02/06/2021
Shared are the audited financial statements of 2016. Additionally, a reference is made towards the rainfall in Nicaragua in 2016, which started late, and the reasons why MLR Forestal also started this activity in July 2016.				
Documentation provided by project participant				
Financial statements 2016				
Updated PD				
DOE assessment				Date: 14/06/2021
The starting date of the A/R VCS project is 01/07/2016, which is after 31/12/1999. It is checked that the incentives from the sale of carbon credits was seriously considered in the decision to proceed with the project activity, which was cross checked from the documents "Project for the establishment, management and sustainable use of forest plantations on the Caribbean coast of Nicaragua, RAAN, Initiative Forestal, 2013. RINA checked the financial statements. However, it is noted that the financial states confirms only the year of operational expenses as 2016. Based on the above justification CL04 is closed.				

CL ID	05	Section no.	1.11	Date: 14/04/2021
Description of CL				

1. PP is requested to provide the reference document [5] justifying that the company has put sustainability goals in the area of carbon capture, promotion of fauna through established corridors, the promotion of formal employment opportunities, equal opportunities to women and the contribution to the fight against deforestation and forest degradation.

2. Project activity is not transparent on the technology or measures employed especially the different stages of silviculture operations (species selection, planation in years and areas covered, density, site preparation, fertilization, weed control, shaping, pruning, thinning and harvesting and Risk management).

3. The description is further not transparent on how the various organizations, communities and other entities are involved.

4. As per the discussions had during the remote audit, the reforestation type (mix of Teak plantations with Cacao), the area is initially planted with Acacia species followed by cacao and teak. When the teak plants grow to a certain height, the Acacia is removed and used as a charcoal. However, the same is not transparent in the PD and also clarify on how this is accounted in the ER calculations.

Project participant response.

Date: 02/06/2021

1. The phrasing has been adjusted in the text. Although all indicated areas are covered in company's policies, not for all topics specific goals have been set. Reference documents are shared with auditor (references 7,8,9 (new numbering)), including all aforementioned sustainability areas.

2. Included in the section is a description of the different silvicultural field management measures being employed by the company for both teak and teak within cacao.

3. A description is provided of how organizations and communities are involved.

4. This is now explained under 1.11.2

Documentation provided by project participant

Updated PD

References

DOE assessment

Date: 14/06/2021

1. The auditing team confirms that the PP (MLR) is committed to carbon capture, promotion of fauna , promotion of employment opportunities and equal opportunities to women through this project. The same was checked with the document 1. Development plan of the environmental, social and health and safety management system (SGAS), 10/2019, 2. Annual operating plan of the Management System 2020 (5).xlsx and 3. Project for the establishment, management and sustainable use of forest plantations on the Caribbean coast of Nicaragua, RAAN, Initiative Forestal, 2013.

2. Table 4 with "Teak field management measures and table 5 with "Teak within Cacao field management measures has been included in the revised PD.

3. It is checked that only local communities are involved in the project. More description on the same is included in the revised PD. The same was also confirmed by interviewing the local villagers during the audit. Further confirmed by the document "Annual operating plan of the Management System 2020".

4. PP has confirmed that the planting of Acacia Mangium was only restricted to one farm in 2020, which is undertaken as a pilot case. It was further confirmed that the carbon sequestered due to the project activity is the one that is emitted due to burning. Hence the emissions due to burning of Acacia is neglected. The same has been accepted by the auditing team.

Based on the above justification CL05 is closed.

CL ID	06	Section no.	1.12	Date: 14/04/2021
Description of CL				
PP is requested to provide land use land cover maps of both the areas (Siuna & Bonanza) in GIS formats.				
Project participant response.				Date: 02/06/2021
The shape files are shared with the auditor.				
Documentation provided by project participant				
Shape files of the land use cover maps.				
DOE assessment				Date: dd/mm/yyyy
GIS formats of the LU/LC maps provided for areas Siuna and Bonanza.				
CL06 is closed.				

CL ID	07	Section no.	1.17	Date: 14/04/2021
Description of CL				
1. Section 1.17 is not transparent on how the project contributes to achieving any nationally stated sustainable development priorities, including any provisions for monitoring and reporting same. 2. As per the information provided in section "further information", in 11/2020 the plantation areas were damaged by two hurricanes. As per the ER sheets, the measurements were taken in October, November and December 2020. PP to clarify on how the damaged plantation was accounted in ER calculations. As per the discussion had during the audit, the areas which were badly affected has been removed from the current verification. PP is requested to provide shape files or kml files of the excluded areas. PP is further requested to provide the updated long term management plan.				
Project participant response.				Date: 02/06/2021
1. Contribution to achieving nationally stated sustainable development priorities and provisions for monitoring and reporting same are now included in this section. 2. The measurements of the ER-sheet are pre-hurricane, but the hurricane damage determination was obtained post-hurricane, in the week of 23-30 November 2020. This is the data in column N ('Afectado huracan') showing whether a certain tree was affected or not by the hurricane. Those trees affected by the hurricane are too damaged and were put at 0 height and 0 diameter at breast height (DBH), so not contributing to the GHS emission removal figures. Both the ER sheet and included shape files now only include areas part of the project. The shape files are also shared with the auditor, and show the areas affected by the hurricane which were excluded from the 2016-2020 areas. We have included the updated long term management planning.				
Documentation provided by project participant				
Updated PD ER sheet Shape files Updated long term management planning				

DOE assessment	Date: 14/06/2021
1. section 1.17 of the PD has revised. It is made clear that there is no requirement, which states that SDG needs to be monitored and reported. 2. It is checked from the ER spread sheets that the trees that were affected due to hurricane were remeasured and the trees which were damaged were excluded from the biomass calculation, which is conservative and PSPs which were completely damaged, those were removed from the ER calculations. Shape files of the same checked and accepted. Revised long-term management plan checked. Based on the above justifications CL07 is closed.	

CL ID	08	Section no.	2	Date: 14/04/2021
Description of CL				
1. As per the discussions had during the audit, the PP has conducted Social Environmental Impact Assessment SEIA conducted by Tecnología y Desarrollo Ambiental in August 2019. However, section 2.1 of the PD is not transparent on any potential negative environmental and socio-economic impacts and the steps taken to mitigate them. PP is requested to provide the Environmental and Social Management plan and MLR forestal forestry initiative 2013 [35]. 2. Provide English translations of figure 14 and 15 of the PD.				
Project participant response.				Date: 02/06/2021
1. The potential negative environmental and socio-economic impacts and mitigation tools are now included in section 2. The concerned references have been shared, and additionally the Annual Operational Plan of the Sustainable Development Plan (7. Plan Operativo Anual del Sistema de Gestión 2020). 2. English translations replaced the original Spanish versions in the updated PD.				
Documentation provided by project participant				
Updated PD				
Reference 7 - B. Plan de Gestión Ambiental y Social (36)				
DOE assessment				Date: 14/06/2021
1. Detailed discussions on the potential Environmental and socio-economic impacts along with the mitigation measures and the management plans in place is discussed in section 2.1 of the updated PD, which is accepted. 2. The community complaint system procedure of figure 14 and booklet to inform community figure 15 has been translate to English. Based on the above justification CL08 is closed.				

CL ID	09	Section no.	2	Date: 14/04/2021
Description of CL				
On 18/12/2020 community level consultation was carried out. However, it is not clear if the meeting has resulted in comments. Please make the same transparent in the PD. Complaints provided by stakeholders is recorded in the complaint register. PP has provided the complaints received from 27/01/2020. Noted that complaints were received, and PP has taken further actions to close the same. However, the same is not transparent in the PD. Further, PP is requested to provide the complaints received for the current MP, the one provided by PP is from 27/01/2020.				

Project participant response.	Date: 02/06/2021
In section 2.2 it has been made clear that community meeting has not resulted in comments. Reference is made to a report by MLR in the section. In section 2.5 a paragraph is included on the complaint register and the handling of those, including a reference to the complaint register. For the period 2016-2019, stakeholder consultants have been realized; further explanation has been given in the section, with additional references.	
Documentation provided by project participant	
Report on community stakeholder meeting for VCS project. Complaint register 2020 Updated PD. Additional references included in section 2.5.	
DOE assessment	Date: 14/06/2021
1. Noted that the stakeholder consultation carried out on 18/12/2020, did not result in any negative comments. The same was confirmed by checking the stakeholder consultation report and also by interviewing the stakeholders. The same has also been made transparent in the revised PD. 2. complaint received and further actions taken by the PP is explained in the PD. It was checked that the "Procedure for the attention of community complaints and suggestion" was prepared only in 2020, for the period 2016 to 2020, the stakeholder feedback or complaints were checked with FSC audit reports for the period, 2016 to 2020, which confirms that the project has not received any comments from the stakeholders. It was further confirmed from the Social and Environmental impact assessment study performed by TECDEA, 2019 that the stakeholder do not have any negative feedback. Based on the above justification CL09 is closed.	

CL ID	10	Section no.	3.4	Date: 14/04/2021
Description of CL				
PP has provided the reference document “MLR Forestal: MLR Geographical Registry”[39], MLR forestall, 2020. However, to confirm the same pp is requested to provide the shape files.				
Project participant response.				Date: 02/06/2021
The shape files are shared with the auditor. These are in line with the figures in the report and the updated version of the MLR Geographical Registry (shared as well).				
Documentation provided by project participant				
Shape file with the previous use of the area (‘uso anterior’).				
Updated Geographic registry file.				
DOE assessment				Date: 14/06/2021
The shared MLR geographical registry and updated Land extents in the PDD are consistent and satisfactory. CL 10 is closed.				

CL ID	11	Section no.	3.5	Date: 14/04/2021
Description of CL				

Additionality:

A. STEP 0. Preliminary screening based on the starting date of the A/R project activity

PP is requested to provide the reference document [42] and demonstrate with evidence that planned sale of VERs was seriously considered to proceed with the project activity.

B. Sub-step 1a. Identify credible alternative land use scenarios to the proposed CDM project activity

1. Land use scenario A: PP is requested to provide the reference documents [44] and [45]

2. Land use scenario B: PP is requested to provide the reference documents [47], [48], [49], [50], [51], [52] and [53].

3. Land use scenario C: PP is requested to provide evidence to justify the first para "Bonanza is an historic mining area. The first mining activities date back to 1890, but it was until the 1950's that economic mining activity took a boost. The road connecting these cities, was constructed in 1953 by transnational mining cooperation for the purpose of transporting mining equipment, staff and the shipping of mining products. Eight million ounces of gold have been produced in the mining triangle (Siuna-Rosita-Bonanza) up to date".

4. Land use scenario D: provide evidence to justify "Investments in forest plantation (without CER sales) are generally seen as unattractive due to the long period of investment required and subsequent return periods for most investors (approximately 15-25 years), even despite financial tax incentives provided by the government. Investors or banks are usually not willing to invest such a large amount of time before cash-flow becomes positive".

C. Sub-step 2a. Identification of barriers that would prevent the implementation of at least one alternative land use scenarios

1. Land use scenario B:

Poverty barrier: PP is requested to provide reference document [57].

Justify with evidence to support the statement demonstrated in credit access barrier.

Over exploitation barrier: justify the statement with evidence.

2. Land use scenario D:

Investment Barrier: provide reference docs [62].

Institutional Barrier: justify the same by means of risk related to changes in government policies or laws; - Lack of enforcement of land-use-related legislation.

Distance to port barrier: provide evidence to justify the same.

D. Under Sub-step 2 b , PP is requested to correct the barriers limiting scenario against the land use scenario D "Conventional commercial reforestation plantation without VCS certification ".

E. Step-4: common practice analysis: PP is requested to provide an analysis to which extent similar forestation activities to the one proposed as the A/R VCS project activity have been implemented previously or are currently underway. Similar forestation activities are defined as that which are of similar scale, take place in a comparable environment, inter alia, with respect to the regulatory framework and are undertaken in the relevant geographical area. If forestation activities similar to the proposed A/R CDM project activity are identified, then compare the proposed project activity to the other similar forestation activities and assess whether there are essential distinctions between them.

Project participant response.

Date: 02/06/2021

A. Reference 42 (equal to reference 35 (original numbering)) was shared, and another reference recent provided in the PD. B. 1 & 2: references were shared. B. 3. PD is updated with an additional reference and reference is also shared. B. 4. This is further demonstrated with an email conversation, mentioned in the PD and shared as a reference. C. 1. Reference is shared. Further evidence provided in PD and reference on credit access barrier and overexploitation barrier. C. 2. Reference 62 is shared. Further evidence and references provided on institutional barrier, and distance to port barrier. D. The barrier table has been corrected. E. Further information and references are provided comparing other forestry companies with MLR's operations, and why MLR's operation is distinctive.	
Documentation provided by project participant	
Updated PD.	
Requested references.	
DOE assessment	Date: 14/06/2021
A. Reference document 42 is provided. It is checked that the incentives from the sale of carbon credits was seriously considered in the decision to proceed with the project activity, which was cross checked from the documents "Project for the establishment, management and sustainable use of forest plantations on the Caribbean coast of Nicaragua, RAAN, Initiative Forestal, 2013" B 1&2. All the references requested are provided by PP. 3. References provided for justification of Land use scenario C. 4. Reference to justify investment barrier for land use scenario D has been provided. The same also confirmed from the rejection email communication from the Bank. C 1&2. Evidences provided in the revised PD. Same was checked and accepted. D. Barrier table provide has been revised in the updated PD. E. Common practice analysis : It is checked that the MLR is the only company in the proposed region implementing this scale of reforestation activity. Common practice analysis has been updated. Based on the above justification, CL 11 is closed.	

CL ID	12	Section no.	4	Date: 14/04/2021
Description of CL				

1. During the discussion, it was informed that the remnant indigenous trees are protected and mapped and the same needs to be reported to the authorities every year. PP is requested to provide evidence for the same.

2. As per the ER sheets provided the sample plots identified for the protection area plots is 39 and the areas of Teak plantation until 2018 is 162. PP is requested to provide the methodology and calculation sheet used in calculating the no. of plots. PP is further requested to justify the allocation of sample plots to the strata identified.

3. ER sheets:

a. sheet EA_Teak and EA_Teak in Cacao, provide the reference for the values used in Vtree and clarify how the projections were estimated.

b. EP_Teak: provide the reference for the volume equation used in calculating Vtree.

4. PP is requested to provide videos and pictures of permanent teak sample plots Buenos Aires -1081 PPM04 , Waylawas -2161 -PPM05, Mutiwas -5381 -PPM03, Mutiwas -5493-PPM01, Aló -6132 - PPM06 , San Miguel -6211- PPM24, Santa Fé - 7012 -PPM01, Tadazna -9131-PPM06. PP is also requested to provide the videos and images of the following protection area plots as per the ER sheets provided.

1	Alo	1	6511
2	Bethel	1	8521
3	La Bu	1	6531
4	Matiz	2	3541
5	Mutiwas	6	5302
6	Waspado	6	4363
7	Waylawas	3	2511

5. The validation team checked the shapefiles provided by the PP, excluding the areas , which are not part of the project activity and noted the following:

As per the Shapefile:

Row Labels	Extent ha
Protection area	1456.761
Teak	860.039
Teak with cacao	308.610
Grand Total	2625.411

However, as per the PD and the ER sheet, the total area is 2315.8 ha.

6. The total plantation activity from 2016 until 2020 with areas of exclusion as per the shape files provided is the following:

Row Labels	Extent Ha
2016	268.193
2017	130.644
2018	2.865
2019	287.729
2020	493.630
Protection area	1,456.834
Grand Total	2,639.896

The above-mentioned values are not as per the values provided in the ER sheet and PD. PP is requested to clarify the same.

Project participant response.

Date: 02/06/2021

1. As mentioned in communication with the auditor, the reporting of the native trees is only realized at the moment of registration of the plantation at INAFOR. The remnant indigenous trees that are protected and mapped can be observed in the 2018 Management plan, section 7.4.2 (reference 13, previous numbering).
2. As communicated the number of PSPs (PPM in Spanish) for this MP has been updated to 83 for the teak plots; the number of protection area PSPs have remained equal. The number of plots is defined in the reference 'K. Prodecure manual for inventory and installation of PSPs (Manual de Procedimientos para Inventario e Instalación de PPM)' earlier shared. In section 2.2, it is indicated that 2% of all commercially planted areas are covered under the PSPs. This is equal to one plot per 2.5 ha, and this is distributed proportionally per forest stand. In section 3.2.2., it is shown how the PSPs are located in a grid. It must be noted that due to the exclusion of PSP areas due to the hurricane exclusion, the overall % of remaining PSP plots for the 2016-2018 stands (actual monitoring period) is slightly lower, at 1.7% (hurricane-excluded areas were containing slightly more PSPs than non-excluded areas). Uncertainty level is however at 5.9%, well within the threshold of 10% (see Section 6.3).
3. Total tree volume of individual trees is estimated using the total tree volume equation from Fallas for clones [89], page 47 ($VTcc = -0,0068*(dap) + 0,0010*(dap)$), as in the project area only clonal material is planted. This reference is included in the report section 4.2.2.1.
Tree volume is calculated per tree for all PSPs. After that, the average per planting year is used for extrapolation of tree volumes and related carbon volume.
4. Videos and images were taken of solicited Protection area sites. As for the teak plots, we have selected 5 additional PSPs for videos ourselves, from a variety of establishment years and farms (realizing own selection agreed with auditor, as PSP list was updated). As explained to the auditor, certain selected PSPS fell into areas affected by the hurricane, and should have been removed from the ER sheet. The ER sheet is now updated with only the correct PSPs included. This also result in adjustments in the GHS emission reduction figure.
- 5 (1). The correct totals per land use area are demonstrated in section 1.11. These also correspond with the ER sheet.
- 5 (2). These figures are also updated, and ER sheet, Shape file and PD figures now match.

Documentation provided by project participant

Updated PD
ER sheet
References
Shape files
Videos

DOE assessment	Date: 14/06/2021
1. Noted that the remnant indigenous trees are protected, mapped and reported in the document MLR's 2018 Management plan. 2. To determine the carbon stocks of the remnant forest areas at the start of the project activity, 39 sample plots of 500 m² were laid out in this stratum. Tree height, tree diameter at breast height (DBH) and tree species were recorded, among other parameters, to confirm the RINA cross checked the same with 7 sample plots and confirmed. The no. of sample plots identified for Teak plantation until 2018 is 83. The number of plots is defined in the reference 'K. Prodecure manual for inventory and installation of PSPs (Manual de Procedimientos para Inventario e Instalación de PPM). It is indicated that 2% of all commercially planted areas are covered under the PSPs. This is 500m² PSP for every 2.5 ha, and this is distributed proportionally per forest stand. As per the audit observations, the area affected by hurricane was removed from the project area and thus the no of PSPs came down to 83 from 162 and thereby reduction in the overall % of remaining PSP plots for the 2016-2018 stands to 1.7%, which is lower than original 2%, which further leads to low uncertainty intervals for the actual monitoring data period, of 5.9%, which is still less than 10%. RINA team reviewed 10 teak sample plots by means of images and videos of measuring the trees DBH and H, including the geo-coordinates of the PSPs. The 10 sample plots are selected based on G.5.3.12 of IAF Guidance on the Application of ISO/IEC Guide 66, where square root of total sample plots is applied, which results to 10. 3. a.Values and projections used for Vtree used in EA_Teak and EA_Teak in Cacao has been provided. b. Volume equations used in calculating Vtree is taken from Fallas ($VTcc = -0,0068*(dap) + 0,0010*(dap)$). 4. Pictures and videos of 10 sample plots from teak plantation and 7 sample plots from protection areas provided by the PP. Same was checked and accepted. 5. 61&2. The revised plantation areas excluded areas crosschecked with the shapefiles provided by PP and the same has been accepted. PP has updated the revised areas in the PD along with areas of plantation each year. Same checked from the shapefiles and accepted. Based on the above justification, CL 12 is closed.	

CL ID	13	Section no.	5	Date: 14/04/2021
Description of CL				
1. Section 5.1 of the PD refers to appendix-1 : calculation file ,However there is no calculation file provided in appendix-1. 2. Section 5.1 of the data and parameters available at validation is not transparent on the parameters 1. Carbon fraction teak :0.495, provide the reference for the same and 2. R:S ratio mixed tropical rainforest:1.220. 3. Aplot: value applied is not transparent on the strata and the no. of plots selected in the MP. Also, the calculation method is not clear. Clarify the same.				
Project participant response.				Date: 02/06/2021
1. Reference to calculation file adjusted in Appendix 1. 2. These references are now included in Section 5.1. Methodology of Aplot is described in section 5.3 and explained in further detail.				

Documentation provided by project participant	
Reference 76 was shared with the auditor. Updated PD	
DOE assessment	Date: 14/06/2021
1. Appendix 1 of the PD has been revised. The ER sheet has been provided to the auditing team. 2. 1&2. Details of Carbon fraction teak and R:S ration mixed tropic forest has now been included under parameters available at validation 3. Aplot: sample plots details and there calculation has been transparent in the revised PD. Based on the above justification CL 13 is closed.	

CL ID	14	Section no.	3.5	Date: 14/04/2021
Description of CL				
1. Community engagement: Justify with evidence that less than 20% of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted. As per the discussions had with the stakeholders and the project owner, there are local villagers who are dependent on the project area.				
Project participant response.				Date: 02/06/2021
Evidence has been provided on the fact that less than 20% of the inhabitants has been consulted, as an urban center lies within the 20km project boundary.				
Documentation provided by project participant				
Updated Non-Permanence Risk Report. Additional reference.				
DOE assessment				Date: 14/06/2021
Information updated in the risk report and the same was checked with the evidence and accepted. CL 14 is closed.				

Table 2.CAR from this validation/verification

CAR ID	01	Section no.	3.2	Date: 14/04/2021
Description of CAR				
Though section 3.2 of the PD justifies each applicability condition of the methodology, the applicability conditions of the associated tools are not transparent.				
Project participant response.				Date: 02/06/2021
Applicability of the concerned tools is now demonstrated in the text. One tool earlier included was removed, because it was not used (Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity).				
Documentation provided by project participant				
Updated PD				
DOE assessment				Date: 14/06/2021
Justification on all the applicability conditions as per the methodology along with the applicability conditions of the associated tools has been justified. CAR 1 is closed.				

CAR	02	Section no.	4	Date: 14/04/2021
Description of CAR				

Based on the drone imagery and vegetation sampling, 4 baseline carbon stock strata are identified. 1. Pasture Land 2. Tacotalé 3. Remnant forest 4. Cocoa with remnant indigenous trees. As per the A/R methodological tool : Demonstration of eligibility of lands for A/R CDM project activities (https://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-19-v1.pdf), PP is requested to demonstrate that the (i) vegetation on the land is below the forest threshold values applicable to the host party (ii) the young natural stands and plantations on the land, if existing at the start of the project activity, are not expected to reach or exceed the forest threshold values applicable to the host Party; (iii) The land is not a part of forest area that is temporarily unstocked as a result of human intervention (e.g. harvesting) or natural causes, and the land is not expected to revert to forest. As per the Host party (Nicaragua) the minimum selected values for A/R project activities include A single minimum tree crown cover value between 10 and 30 per cent :20 A single minimum land area value between 0,05 and 1 hectare: 1 A single minimum tree height value between 2 and 5 metres: 4	
Project participant response.	Date: 02/06/2021
The tool to which is referred (AR-AM-Tool 19) is a tool that is not part of the project's methodology. Although the project uses CDM tools such as AR-AM-Tool 14 (for estimation of carbon stocks), the mentioned CDM tool is not mandatory for use, and is furthermore referred to as a tool for 'an afforestation and reforestation (A/R) clean development mechanism (CDM) project activity', while this project is not a CDM project. The fact that this tool is not mandatory for use in VCS A/R projects further becomes clear because no reference is made in the VCS Standard towards applicability of the tool, and numerous other VCS verified A/R projects do not apply the referred A/R CDM project activities tool, including the following projects: https://registry.terra.org/app/projectDetail/VCS/2079 https://registry.terra.org/app/projectDetail/VCS/2083	
Documentation provided by project participant	
-	
DOE assessment	Date: 14/06/2021
The val/verification team accepts the justification provided by the PP. Since the VCS requirements supersedes the CDM guidelines , the justification provided by PP is accepted. CAR 2 is closed.	

CAR ID	03	Section no.	5.3	Date: 14/04/2021
Description of CAR				
Section 5.3 of the PD is not transparent on the training procedures and calibration methods. Section 5.3 of the PD not transparent on the implementation of sampling approaches, including target precision levels, sample sizes, whether the required confidence level or precision has been met.				
Project participant response.				Date: 02/06/2021
Training procedures and the topic of calibration methods are now included in this section. Sampling approaches, and sample sizes were included in different parts of the document, but has been further explained in section 5.3. Also included are confidence levels and precision levels.				
Documentation provided by project participant				
Updated PD.				

DOE assessment	Date: 14/06/2021
1. Training requirements and calibration methods are updated in the revised PD. 2. Implementation of sampling approaches, including target precision levels, sample sizes, required confidence level or precision has been discussed in section 5.3 of the PD. The same was also checked with the MLRs SOP and confirmed to be carried out as per the Sop. CAR 03 is closed.	

CAR ID	04	Section no.	6.5	Date: 14/04/2021
Description of CAR				
Section 6.5 of the PD&MR is not transparent on the verification period in dd-month-yyyy. The same is also not transparent in the ER spread sheet.				
Project participant response.				Date: 02/06/2021
This is now updated in the project document (Section 6.3 and Section 6.5), as well as in the ER-sheet (sheet EP_Total).				
Documentation provided by project participant				
Updated PD ER sheet				
DOE assessment				Date: 14/06/2021
Section 6.5 of the PD& MR and other sections of the PD&MR has been updated with the proposed monitoring period. ER sheet has also been updated. CAR04 is closed.				

Table 3.FAR from this validation/verification

FAR ID	01	Section no.	2.5	Date: 25/11/2021
Description of FAR				
Based on the VERRA review process, the VVB is requested to interview a larger proportion of stakeholders in the next verification. If by the next verification Verra has not provided more specific guidance on community sampling, and the CDM guidance is not appropriate, it is expected that the VVB will consult Verra regarding appropriate sample sizes i.e. proportion of stakeholders to be interviewed.				
Project participant response				Date: dd/mm/yyyy
Documentation provided by project participant				
DOE assessment	Date: dd/mm/yyyy			

FAR ID	02	Section no.	2.5	Date: 29/04/2022
Description of FAR				
The PP is requested to calculate the long- term average at the project level or according to whatever guidance is available at the time of next verification.				

<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 Valoroso



*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

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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-benefit CCB to carry out Validation and Verification of co-benefit CCB projects



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 Saittoni

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



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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

GHG_QUAL_CERT_EN_07_16 Voluntary(Certificate)

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:

Vinay SINGH

è qualificato come:
 is qualified as:

TEC, VAL, VER

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

1.2, 14.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Renewables	1
14.1	Forestry	14

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	09/09/2020	First issue

Il Resp. CEINS
 Head of CEINS



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

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

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GB Foundation	per condurre la Validazione e la Verifica di Progetti GB to carry out Validation and Verification of GB Projects
Ecologica Institute	per condurre la Validazione e la Verifica di rapporti SGS to carry out Validation and Verification of SGS 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-benefit CCB to carry out Validation and Verification of co-benefit CCB projects



**CERTIFICATO DI QUALIFICA
QUALIFICATION CERTIFICATE**

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

Andrea LEIROZ

è qualificato come¹:
is qualified as:

TEC, VAL, VER, TEC

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
5.1	Chemical industry	5
13.1	Solid waste and wastewater	13
13.2	Manure	13

in accordo alle istruzioni dell'unità Sostenibilità & Cambiamenti Climatici.
in accordance with the instructions of the Sustainability & Climate Change Unit.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	17/09/2019	First issue with new template (this certificate is linked to CDM qualification)

Il Resp. CCPLS
Head of CCPLS
Laura SEVERINO



¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS4GG: Gold Standard For Global Goals
SCS: SocialCarbon Standard
JI: Joint Implementation

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RINA Services S.p.A. is accredited by the UNFCCC, 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 GS Foundation, to carry out Validation and Verification of GS4GG Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports

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