

VERIFICATION REPORT TITLE

REFORESTATION OF DEGRADED FOREST RESERVES IN GHANA



Document Prepared By RINA **SERVICES SPA**

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Summary:

- **A brief description of the verification and the project.**

The project aims at reforestation of degraded forest reserves in Ghana, under grouped project. The first project instance is realized in Asubima Forest Reserve and included in the grouped project in 2013, the second project instance is realized in Afrensu Brohuma Forest Reserve and included in the grouped project in 2018, while the third project instance is realized in Tain II Forest reserve and included in the grouped project within the actual verification. The project activity comprises of CO₂ sequestration in teak trees plantations and indigenous tree species, natural forest restoration in riparian buffer zones and harvesting of high quality timber.

- **The purpose and scope of verification.**

The report summarizes the findings of the verification of the project, performed based on VCS criteria, VCS AFOLY criteria and CDM methodology, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The objective of the verification is to have an independent review ex-post determination by a Designated Operational Entity (DOE) of the monitored GHG removals by sink that have occurred as a result of the VCS registered project during a defined monitoring period. Certification is the written assurance by the DOE, during specific period, the project activity achieved the net GHG removals by sink as verified.

The scope of the verification is to verify that:

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

Verification shall ensure that the reported GHG removals by sink are complete and accurate in accordance with applicable VCS and VCS AFOLU criteria in order to be certified.

- **The monitoring period:** 02/04/2018 to 30/06/2019

- **The method and criteria used for verification.**

Verification is conducted using RINA procedures in line with the requirements specified in VCS Validation and Verification Manual, latest version available, relevant decision of the VCS Board and applying auditing techniques. RINA assesses and determines that the implementation and operation of the project activity, and steps taken to report GHG removals by sink comply with the VCS and VCS AFOLU criteria and relevant guidance provided by the Board. The verification assessment involved a document review of the relevant documentation and the on-site visit. Verification does not mean to provide any consultancy towards the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improved of the monitoring.

- **The number of findings raised during verification.**

No findings have been raised during the actual verification.

- **Any uncertainties associated with the verification.**

The project activity complies with all the verification criteria has no restrictions or uncertainties with respect to the compliance of the project with the VCS verification criteria.

- **Summary of the verification conclusion**

FORM Ghana Ltd has commissioned RINA to carry out the verification and certification of GHG removals by sink reported for the registered project activity "Reforestation of degraded Forest Reserves in Ghana", VCS project ID 987 for the monitoring period 02/04/2018 to 30/06/2019. The project was validated by SCS Global Services (validation report No. VCS_FORM-Ghana_FINALValidation Report version 1.0 of 17/01/2013) and it was registered on 07/03/2013. The GHG removals by sink were calculated on the basis of the approved methodology AR-ACM0003 Afforestation and reforestation of lands except wetlands, version 02.0, and the monitoring plan included in registered PDD version 1.0 of 14/01/2013 and updated PDD version 1 of 19/07/2019.

In conclusion, it is RINA's opinion that the project activity "Reforestation of degraded Forest Reserves in Ghana", as described in the Monitoring Report (MR) version 1.0 of 19/07/2019, meets all relevant requirements for VCS and VCS AFOLU activities and correctly applied the baseline and monitoring methodology AR-ACM0003 Afforestation and reforestation of lands except wetlands, version 2.0. Hence RINA is able to certify that the GHG removals by sink from the project during the monitoring period from 02/04/2018 to 30/06/2019 amount to 153,206 tCO₂e, the total number of 137,885 GHG credits are eligible to be issued as VCUs considering 15,321GHG credits to be deposited into the AFOLU pooled buffer account.

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1 INTRODUCTION

1.1 Objective

The summarizes the findings of the verification of the project, performed based on VCS and VCS AFOLU criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The objective of the verification is to have an independent review ex-post determination by a Designated Operational Entity (DOE) of the monitored GHG removals by sink that have occurred as a result of the registered VCS project activity during a defined monitored period. Certification is the written assurance by the DOE that, during a specific period, a proposed VCS project activity achieved the net GHG removals by sink as verified.

The objective of the verification is to verify:

- the extent to which methods and procedures, including monitoring procedures, have been implemented in accordance with the validated project description. This includes ensuring conformance with the monitoring plan;
- the extent to which GHG emission reductions and removals reported in the monitoring report are materially accurate.

1.2 Scope and Criteria

Verification shall ensure that the reported GHG removals by sink are complete and accurate, according ISO14064-3 standard, the following principles are applied to ensure that the GHG related information is true and fair account: relevance, completeness, consistency, accuracy, transparency and conservativeness.

The scope of verification takes into account the physical boundaries (project sites) and the temporal boundaries of the project activity (length of the monitoring period) and includes at least:

- Organizational boundaries of the GHG project and its baseline scenarios;
- Physical infrastructure, activities, technologies and processes of the organization of GHG project;
- GHG sources, sinks and/or reservoirs;
- Types of GHGs;
- Period.

To ensure conformance of the project with the VCS rules, the assessment is performed against the most recent version of the following criteria:

- VCS Program Guide
- VCS Standard
- VCS AFOLU Requirements
- VCS Non-Permanence Risk Tool
- Applicable methodology

1.3 Level of Assurance

In order to detect errors, omissions and misstatements in emission removal being claimed by project participants in the monitoring report, the materiality have been applied by RINA.

- (a) In planning the verification RINA is able to understand the environment in which the project activity operated, the sources of the project emissions and leakage within the project boundary, the monitoring activities, the equipment used to monitor or measured activity data, the origin and the application of data used to calculate the emissions, data flow, the internal quality control systems and the overall organization with respect to monitoring and reporting.
- (b) A verification plan and intensive sampling has been designed to minimize risks that a material discrepancy would not be detected. The field data of the monitored parameters are verified according the sampling described in the following sections. The use of spreadsheets shows the adequate controls related to data updates, version tracking, traceability and security.
- (c) During the verification, any individual or aggregate errors, omission or misstatement identified, which resulted in discrepancies have been considered material and requested to be corrected.

RINA confirms that the claimed emission reductions are free from material errors, omissions or misstatements with a reasonable level of assurance, and proceeded with the verification defined in the verification plan.

1.4 Summary Description of the Project

The project aims at reforestation of degraded forest reserves in Ghana, under grouped project. The first project instance is realized in Asubima Forest Reserve and included in the grouped project in 2013, the second project instance is realized in Afrensu Brohuma Forest Reserve and in included in the grouped project in 2018, while the third project instance is realized in Tain II Forest reserve and included in the grouped project within the actual verification. The project activity comprises of CO₂ sequestration in teak trees plantations and indigenous tree species, natural forest restoration in riparian buffer zones and harvesting of high quality timber. Currently the project boundary covers 10,712 ha (3,214 ha from the first 2 instances and 7,498 ha from the last instance) of both teak and indigenous forest. The project activity falls into the sectoral scope 14 Agriculture, Forestry and Other Land Uses (AFOLU).

FORM Ghana Ltd who is responsible for plantation establishment and maintenance as terrain preparation, plant propagation, thinning, pruning, weeding, clear cutting, security and fire

management implements the project activity. The plantations in Akumadan and in Afrensu Brohuma are certified according the principles and criteria of Forest Stewardship Council (FSC) since January 2010 /17/, while in Tain II is not certified but still applying the same sustainability standard; the certificate demonstrates the commitment and adherence of FORM Ghana to the highest sustainability standards of both social, environmental and biodiversity aspects and the same high operational standards are implemented for the VCS project activity. Other entities are involved in the project: Form International B.V. (management support and technical assistance for developing and managing the VCS certification/monitoring), Sustainable Forestry Investment B.V. (SFI) (owner and shareholder of FORM Ghana Ltd but with no active role in the VCS project implementation).

The monitoring is carried out according the approved methodology AR-ACM0003 version 02.0 /16/.

The project crediting period is fixed in 40 years starting from 01/03/2008 and ending on 01/03/2048. This monitoring period covers the period from 02/04/2018 to 30/06/2019 that is subsequent to the previous one as per the verification report /5/, and 153,206 tCO₂e emission removals have been generated.

2 VERIFICATION PROCESS

Verification process and validation process of new project activity instance into the grouped project is described in the following sections.

2.1 Method and Criteria

Verification/Validation is conducted using RINA procedures in line with the requirements specified in the VCS Validation and Verification Manual, latest version available, ISO14064-3 standard and applying standard auditing techniques. RINA assesses and determines that the implementation and operation of the project activity, and steps taken to report GHG removals by sink comply with the VCS criteria. The process involved a document review of relevant documentation and on site visit. Verification/Validation 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 monitoring.

2.2 Document Review

The monitoring report version 1.0 of 19/07/2019 /1/, the GHG removals by sink calculation provided in the form of a spreadsheet (VCS Calculations Form Ghana 19072019 CONFIDENTIAL.xlsm) /3/, were assessed as part of the verification. In addition, the PD version 1 of 19/07/2019 /2/, in particular new instance compliance was reviewed.

The following documents were reviewed or referenced to ensure conformance of the project to the VCS rules and methodology applied:

No.	Author – Title – References to the document
1	Form International B.V.: Monitoring Report – version 1.0 of 19/07/2019
2	Form International B.V.: Project Design “Reforestation of Degraded Forest Reserves in Ghana”, version 1 of 19/07/2019.
3	Form International B.V.: GHG removals spreadsheet calculation: VCS Calculations Form Ghana 19072019 CONFIDENTIAL.xlsm – of 29/07/2019
4	Form International B.V.: Non-Permanence Risk Report – version 1.0 of 19/07/2019
5	RINA Services Spa: Verification Report 2018DG2MD monitoring period 02/08/2012 to 01/04/2018, version 1.0Aa of 09/07/2018
6	SCS GLOBAL SERVICES: Validation Report – version 1.0 of 17/01/2013
7	FORM GHANA Ltd: PSP Monitoring – Field Sheet sample for monitoring campaign of 02/2019 to 03/2019 (Strata 2008, 2010, 2011, 2012) Akumadan/Afrensu Brohuma

8	FORM GHANA Ltd: PSP Monitoring – Field Sheet sample for monitoring campaign of 03/2018 (Strata 2009) Akumadan/Afrensu Brohuma
9	FORM INTERNATIONAL: Forest Management Pan Asubima and Afrensu Brohuma Forest Reserves, version 5 of 27/11/2017
10	FORM INTERNATIONAL: Forest Management Plan Tain Tributaries Block II Forest Reserve, version 3 of 23/05/2016.
11	IUCN Forest Conservation Programme: Forest Protection in Ghana
12	VCS Standard version 3.7 of 21/06/2017
13	VCS Validation and Verification Manual version 3.2 of 19/10/2016
14	VCS Agriculture, Forestry and Other Land Use (AFOLU) Requirements version 3.6 of 21/03/2018
15	VCS AFOLU Non-Permanence Risk Tool version 3.3 of 19/10/2016
16	CDM EB: AR-ACM0003 Afforestation and reforestation of lands except wetlands, version 02.0 of 04/10/2013.
17	FSC Certificate CU-FM COC-811445 – expire date 18/01/2020
18	CDM EB: Methodological tool Estimations of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity – version 02.0.
19	CDM EB: Methodological tool Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities – version 04.2
20	Form International B.V: Project Design “Reforestation of Degraded Forest Reserves in Ghana”, version 1.0 of 14/01/2013
21	CDM EB: A/R Methodological tool Combine tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities, version 01 of 19/10/2007
22	CDM EB: A/R Methodological tool for estimation of change in soil organic carbon stock due to the implementation of A/R project activities, version 01.1.10
23	FORM GHANA Ltd Training certificates on PSP monitoring (11-12/02/2019): Stephen BOATENG, Samuel BAAH, John BANOEIDIBA, Ernest BAMUOH, Comfort ACHIAA.
24	FORM GHANA Ltd: PSP Monitoring – Field Sheet sample for monitoring campaign 2019 Tain II

25	FORM GHANA Ltd: First Annual Stakeholder meeting report and attendance list, of July 2019 in Akumadan/Afrensu Brohuma
26	Alder, D., 2019. Growth Model Review for Teak Plantations in Ghana, Oxford, United Kingdom: Denis Alder Consulting.
27	FORM GHANA Ltd: PSP data quality control 2019 Berekum
28	FORM GHANA Ltd: PSP data quality control 2018 Berekum, Akumadan, Afrensu
29	FORM GHANA Ltd: FSC Internal audit Berekum of 25/04/2019
30	Benefit sharing agreement for public-private partnership commercial forest plantation development between the Forestry Commission and FORM GHANA Ltd, signed on 14/05/2013.
31	Land lease for accessing degraded forest reserve lands for public-private partnership for forest plantation development between Forestry Commission and Form Ghana Ltd, signed on 14/05/2013.
32	FORM INTERNATIONAL: Social and Environmental Impact Assessment Form Ghana reforestation project in Tain Tributaries Block II Forest Reserve, version 3 of 24/02/2015.
33	FORM INTERNATIONAL: Environmental & Social Monitoring report Q4 2018 Tain II Plantation, version 1 of 09/01/2019.
34	Form GHANA Ltd.: Protocol 13 Monitoring (last revision of 29/09/2016)
35	Worldwide Governance Indicators 2017 – Daniel Kaufmann and Aart Krayy http://info.worldbank.org/governance/wgi/#home
36	The REDD desk – REDD in Ghana http://theredddesk.org/countries/ghana
37	Form GHANA Ltd.: Protocol 7 Grievance Redress Mechanism
38	Form GHANA Ltd.: Protocol 28 Community Development Plan
39	Form GHANA Ltd: Protocol 6 Stakeholder Engagement Plan

2.3 Interviews

During the period from 15/09/2019 to 19/09/2019, the on-site inspection is carried out and the following personnel associated with the project proponent and implementing partner were interviewed:

Interviewee	Date	Subject
Andries POLINDER Form International B.V. Forestry Consultant – VCS monitoring responsible	15/09/2019 to 19/09/2019	History and background of the project; operational management structure; project starting date and start date of the crediting period; actual implementation and operation of the project activity; QA/QC procedures; records and storage data; ER calculation; field measurements.
Abu FUSEINI Form Ghana Ltd - Forester Tain II	16/09/2019 17/09/2019	Field measurements; record data.
William KOTZE' Form Ghana Ltd - Forest Manager Tain II		
Alexandre AMEKO Form Ghana Ltd - Monitoring Officer Tain II		
Olivier BOTNEY Form Ghana Ltd - GIS Officer Tain II		
Field Measurement Team Tain II		
Francis BILSON-OGOE Form Ghana Ltd Commission Relation Manager Tain II		Community involvement.
Forestry Commission Sunyani District	16/09/2019	Forest management plan.
Representatives from Koakta Community (Tain II)	17/09/2019	Project benefits.
Matthew ESSUMAN Form Ghana Ltd - Plantation Manager Akumadan/Afrensu Brohuma	17/09/2019 18/09/2019 19/09/2019	Field measurements; record data.
Ransferd NKUAH Form Ghana Ltd – Monitoring Responsible Akumadan/Afrensu Brohuma		
Field Measurement Team Akumadan/Afrensu Brohuma	18/09/2019	
Representatives from Nsukuruaa Community (Akumadan/Afrensu Brohuma)	18/09/2019	Project benefits.
Forestry Commission Offinso District	19/09/2019	Forest management plan.

2.4 Site Inspections

The on-site inspection took place from 15/09/2019 to 19/09/2019 at the project area site to assess the conditions described in the Project Design and Monitoring Report. The objective of the on-site inspections performed were to:

- Ensure that the geographic area of the project, as reported in the PD and the accompanying KML file, is in conformance with Section 3.10.1 of the VCS Standard;
- Select samples of data from on-the-ground measurements for verification in order to meet reasonable level of assurance and to meet the materiality requirements of the projects as required by Section 5.1.3 of the VCS Standard;
- Perform a risk based review of the project area to ensure that the project is in conformance with the eligibility requirements of the VCS rules and the applicability conditions of the methodology;
- Observe the PP's field inventory crews collecting and recording data in order to assess whether data collection techniques conform to the monitoring plan and related documentation and to evaluate data quality control systems.

A verification plan and intensive sampling has been designed to minimize risks that a material discrepancy would not be detected.

As described in the following step, Asubima, Afrensu Brohuma and Tain II areas have been visited checking the forest establishment, forest management, observing the measurement approach and re-measuring a sample of plots with the support of the PPs team.

Based on the PD /0/, Monitoring Report /0/, GHG removal spreadsheet calculation /0/, the Permanent Sampling Plot (PSP) is calculated to be 1,063 plots, of which 964 in teak plantation in the 9 strata (2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019; and 25 in indigenous area in the 6 strata (2010, 2011, 2012, 2013, 2014, 2015). For the indigenous species, due to high mortality rate in the first three years of plantation, 2008, 2009 and 2010 are merged to one stratum. Due the homogeneity in the teak plantation, the verification team selected random samples of PSP from the forestry inventory avoiding strata and plots verified in the previous monitoring period /0/. The sample size was determined using its own professional judgement: 22 sampling plots were selected to re-measure the tree data on the field, and sample of 34 plots to cross check the data from the field measurement sheets to the GHG removal calculation spreadsheet. The sample covers strata under the project activity, three areas (Asubima, Afrensu Brohuma Forest Reserve and Tain II), and two species (teak and indigenous). No sample for strata 2017, 2018 and 2019 is taken since the monitoring starts after the third year from the planting time. About indigenous species, only a few PSPs that were not assessed during 2018 audit were under monitoring in 2019 so sample was very small and remaining PSPs were assessed through field datasheets cross-checking. In each plot a sample of three trees was measured. Data measured per all PSPs were found compliant with measurements recorded during last monitoring carried out by Form Ghana in February-March 2019 and, for planting year 2009, during last monitoring done in March 2018 (theses data were excluded from 2018 audit since data were available after monitoring report writing).

The following plots are re-measured on the field:

Area	Strata	Species	Plot ID	Notes
Tain II	2013	Teak	Block B39, plot n° 2	
	2013	Teak	Block B57, plot n° 35	
	2014	Teak	Block B16, plot n° 125	
	2014	Teak	Block B15, plot n° 132	
	2014	Indigenous	Block B11, plot n° 584	Mahogany <i>Khaya anthoteca</i>
	2014	Indigenous	Block B13, plot n° 588	Mahogany
	2015	Teak	Block A80, plot n° 397	
	2015	Teak	Block A53, plot n° 464	
	2015	Indigenous	Block A68, plot n° 631	
	2016	Teak	Block A30, plot n° 663	
	2016	Teak	Block A29, plot n° 643	Ofram <i>Terminalia superba</i>
Asubima	2008	Teak	Block 2, plot n° 1	
	2008	Teak	Block 2, plot n° 5	
	2009	Teak	Block 6, plot n° 20	
	2009	Teak	Block 6, plot n° 27	
	2010	Teak	Block 13, plot n° 139	
	2010	Teak	Block 16, plot n° 157	
Afrensu Brohuma	2011	Teak	Block 22, plot n° 188	
	2011	Teak	Block 24, plot n° 197	
	2011	Indigenous	Block 24, plot n° 292	
	2012	Teak	Block 40, plot n° 500	
	2012	Teak	Block 42, plot n° 523	

The measurement taken at field was cross-checked with the measurement taken by the PP during the monitoring campaign did not show errors.

The following PSP, the data collected on the field by the project team and recorded using the field measurement sheets /7/ /8/ /24/ are cross-checked with the calculation spreadsheet /3/:

Area	Strata	Species	Plot ID	Notes
Tain II	2013	Teak	Block B14, plot n° 13	
	2013	Teak	Block B59, plot n° 47	
	2013	Teak	Block B62, plot n° 73	
	2014	Teak	Block B20, plot n° 103	
	2014	Teak	Block B35, plot n° 163	
	2014	Teak	Block B33, plot n° 184	
	2014	Indigenous	Block B14, plot n° 607	Ofram
	2014	Indigenous	Block B14, plot n° 612	Ofram
	2015	Teak	Block A43, plot n° 514	
	2015	Teak	Block A84, plot n° 369	
	2015	Teak	Block A74, plot n° 417	
	2015	Indigenous	Block A78, plot n° 623	Mahogany
	2015	Indigenous	Block A78, plot n° 628	<i>Albizia Albizia ferruginea</i>
	2016	Teak	Block A30, plot n° 673	
	2016	Teak	Block A29, plot n° 659	
Asubima	2008	Teak	Block 3A, plot n° 173	
	2008	Teak	Block 2, plot n° 9	
	2008	Teak	Block 3A, plot n° 175	
	2009	Teak	Block 8, plot n° 183	
	2009	Teak	Block 8, plot n° 296	
	2009	Teak	Block 8, plot n° 70	
	2010	Teak	Block 12, plot n° 649	
	2010	Teak	Block 14, plot n° 150	
	2010	Teak	Block 18, plot n° 83	
	2010	Teak	Block 19, plot n° 109	
Afrensu Brohuma	2011	Teak	Block 22, plot n° 190	
	2011	Teak	Block 23, plot n° 198	
	2011	Teak	Block 27, plot n° 205	
	2011	Indigenous	Block B, plot n° 290	
	2011	Indigenous	Block B, plot n° 291	
	2011	Indigenous	Block B, plot n° 294	
	2012	Teak	Block 41, plot n° 504	
	2012	Teak	Block 42, plot n° 525	
	2012	Teak	Block 45, plot n° 629	

No deviation in the measurement and calculation is observed, therefore RINA confirms the acceptability of the data for each record in the PPs' sampler records.

2.5 Resolution of Findings

Any potential or actual material discrepancies identified during the verification process are solved through the issuance of findings. The types of findings issued are the following:

- 1) CAR (Corrective Action Requests) is raised if one of the following occurs: (i) non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient; (ii) mistakes have been made in applying assumptions, data or calculations of emission reductions that will impair the estimate emission reductions; (iii) issues in a FAR during validation to be verified during verification have not been resolved by the PP.
- 2) CL (Clarification Request) is raised if information is insufficient or not clear enough to determine whether the applicable VCS requirements have been met.
- 3) FAR (Forward Action Request) is raised during verification for actions in the monitoring and reporting require attention and/or adjustment for the next monitoring period.

During the verification, no findings are raised.

2.5.1 Forward Action Requests

No remaining Forward Action Requests from previous verification /5/.

2.6 Eligibility for Validation Activities

NA.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

NA.

3.2 Methodology Deviations

NA.

3.3 Project Description Deviations

Project description deviation is applied to the project with regard to reforestation type, yield determination of teak, and tree volume equation teak.

Reforestation types. According the registered PD /2/ three different reforestation types were set up: teak plantation, indigenous tree plantation and degraded buffer zone. In the new project instance, as noticed during the on-site visit, a new commercial species (*Gmelina arborea*) is planted on a small scale.

Yield determination of teak. According the yield model developed by the PP and adopted during the previous verification, and the new PSP measurements (PSP from Tain II – new instance) the yield model is updated accordingly. The approach ensure a more accurate determination of the teak yield.

Tree volume equation teak. New tree volume equation for teak was applied. A model developed by Form International based on data recorded in these years, which better represents local conditions, derived it. An external review of the model was carried out by a third party /26/ in accordance with §4.1.6 of the VCS Standard. The new tree volume equation teak is accepted being appropriate and more conservative than using data from literature that could be affected by different specific-site parameters.

Based on the above assessment, it is RINA's opinion that the project description deviations applied to the project are valid. The deviations do not affect the applicability of the methodology, and the appropriateness of the baseline scenario.

3.4 Grouped Project

During this monitoring period, the Tain II Forest Reserve is being added as new project activity instance into the Form Ghana grouped project as per the registered PD /20/. The project eligibility criteria is reported in the registered PD that has been validated in accordance with the VCS requirements /12/. The new instance meets the following eligibility criteria:

- **All new instance shall be within Ghana.** Tain II Forest Reserve is located in Berekum District, in the Brong Ahafo Region, Ghana. It covers a total area of 51,000 ha and approximately 14,500 ha is the area allocated to Form Ghana for commercial plantation /32/ /31/.
- **Project activity shall be on degraded lands.** The degraded forest reserves are of major concern to the Government of Ghana, because about 94% is in a deplorable condition as a result of unsustainable harvesting, encroachment of illegal farmers and devastating wildfires. The reserve has been declared degraded by the Forestry Commission and no longer able to supply timber and other forest products and services for the forestry sector and the local communities /32/. The status of degraded land is also confirmed through the IUCN mapping /11/ where is shown the very poor condition of the area.
- **Project activity shall not be an organic and/or drained soils.** Most soils in the area are neutral to strongly acidic. Organic matter and nutrients are highest in the surface soil and their concentration rapidly decreases with depth /32/. Therefore no organic soil or drained are within the project boundary.
- **Project area shall not be a wetland.** As observed during the field visit there are no wetlands within the project boundary.
- **Litter shall remain in site.** Based on the Forest Management Plan /10/ the dead wood, yearly shedding of leaves and crown biomass resulting from thinning and felling are left in the plantation for decomposition to maintain and enhance soil fertility.
- **Ploughing, ripping, scarification is subject to restrictions.** Ploughing is the initial activity for preparing the land before planting and is not repeated within a period of 20 years, which is the rotation cycle for teak. Rotation is the time from planting to final harvest /32 /.
- **The project shall apply one or more of the project activities and reforestation types.** As observed during the field visit the reforestation types in Tain II area are the same of Asubima and Afrensu Brohuma areas and it includes teak plantation (82.2%), indigenous teak plantation (11.2%) and buffer vegetation (1.9%). In the new project instance, as noticed during the on-site visit, a new commercial species (*Gmelina arborea*) is planted on a small scale (0.4%). The forest is managed according the Forest Management Plan /10/ and the GHG removals are monitored according the monitoring plan in the revised PDD /2/ and the applied monitoring methodology /16/.

- **The project shall be additional following the applicable CDM Tool.** The additionality is demonstrated applying the methodological combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities /21/. The applicability conditions expected by the tool are met: (i) the project area does not lead to the violation of any applicable law. The project is approved by the National Forestry Commission /31/, confirmed also during the interview with representatives of the Forestry Commission. Moreover, even if the project is not yet certified under FSC, the PP applies the same requirements applied in the certified projects (Asubima and Afrensu-Brohuma) which mandatory requires the compliance with applicable laws. (ii) The project is not a small scale project: it expects more than 16,000 tons CO₂ per year as GHG removals by sink. Tain II Forest Reserve, as observed during the field visit, is very similar to Afrensu-Brohuma and Asubima forest and it shows the same environmental and social conditions for which the additionality was already validated and approved /5/ /6/ and the assumptions made at that time are still valid and confirmed during the interview with PPs. The identified credible alternative land use scenario are: (a) continuation of the pre-project land use (mosaic of illegal subsistence farming and grassland with scattered trees and patches of degraded forests); (b) commercial reforestation/plantation without VCS certification; (c) modified Taungya system (MTS) and community forest management; (d) sustainable commercial reforestation without VCS certification. All of them are consistent with enforced mandatory applicable laws and regulations in Ghana. Scenario (b), (c) and (d) are prevented by barriers of social and financial nature; therefore the credible baseline scenario is the continuation of the pre-project land use. The land lease agreement with the National Forestry Commission was signed on 2013 /31/. It is confirmed that the methodology requirements are met, complete set of baseline alternatives have been identified and justified relevant for the project, conservativeness principle is applied to select the scenario that will result in the fewest GHG emission removals.
- **The project shall have the identified baseline scenario.** As discussed in the previous paragraph, the credible baseline scenario is identified as the continuation of the pre-project land use use (mosaic of illegal subsistence farming and grassland with scattered trees and patches of degraded forests).
- **A non-permanence risk buffer assessment shall be performed for each new project area and applied for buffer determination.** Please refer to section 4.4 of this report.
- **Leakage shall be assessed for each new project area following the applicable CDM tool.** Leakage is defined as any increase in GHG emissions that occurs outside the project boundary and the type of leakage considered for the project activity, in accordance with §4.6 of the VCS AFOLU requirements /14/ is the “activity-shifting leakage occurs when the actual agent of deforestation and/or forest or wetland degradation moves to an area outside of the project boundary and continues its deforestation or degradation activities elsewhere”. During the field visit and interviews with Koakta Community members it was confirmed that the farmers are involved in a system of intercropping and they have legalised access to land around the planted trees and people moving outside the project areas is limited. Therefore leakage are not accounted.

- **PP shall have the right of use for each new project area.** A land lease for accessing degrading forest reserve lands for forest plantation development was signed between the PP and National Forestry Commission on 2013 /31/ and at the same time was also signed the benefit sharing agreement between the PP, the National Forestry Commission and Berekum Traditional Council to guarantee the access of land /30/.
- **Shall be managed according the same sustainability principles as described in the PD.** The project activity is managed according the forest management plan /10/ that is in compliance with the principles described in the PD /20/ /2/. Even if the project is not yet certified, it is also managed in accordance to FSC standard for forestry management.

The new project instance added in this verification period is compliant with the eligibility criteria set out in the PD, the evidences provided are complete and accurate and confirmed by the mean of the field visit. It is RINA opinion that the inclusion of the new project activity instance is valid.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The registered project activity aims the reforestation of 29,500 ha in degraded forest reserves in Ghana as Grouped project. Currently the following are realized /3/:

Forest Reserve	Year	Teak (ha)	Indigenous (ha)	Buffer restoration (ha)	Old teak (ha)	Gmelina (ha)
Asubima	2008	148,2				
Asubima	2009	512,6				
Asubima	2010	612,5	43,8	159,3		
Afrensu Brohuma	2011	844,3	28,5	104,2	6,7	
Afrensu Brohuma	2012	688,4	80,4	47,4	23,5	
Tain II	2013	581,7	19,1		0,6	
Tain II	2014	1886,5	194,7		0,4	
Tain II	2015	1036,6	63,2	8,9	4,5	
Tain II	2016	87,4		15,2	0,1	
Tain II	2017	505,0	63,2	19,7	40,8	
Tain II	2018	1598,6	242,5	64,0	0,1	5,0
Tain II	2019	873,9	315,9	47,1		25,0

The reserves are located in the dry semi-deciduous forest zone and the terrain is covered with a very open canopy alternating with sandy-rock patches. Four different reforestation types have been identified: teak plantation, indigenous plantation, gmelina plantation and buffer restoration. Project implementation consist in the following strata: 2008, 2009, 2010 in Asubima Forest Reserve; 2011, 2012 in Asubima Forest Reserve; 2013, 2014, 2015, 2016 in Tain II Forest Reserve /3/. Strata of 2017, 2018, 2019 are not considered under this monitoring period, since the monitoring starts after the third planting year. Section 3.3 of this report describes the project description deviations occurred during the actual monitoring period.

It is confirmed:

- GHG removals generated are not included in an emission trading program or any other mechanism that includes GHG allowance trading;

- The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification;
- The project participated or been rejected under any other under any other GHG programs since validation or previous verification;
- The project contributes to sustainable development. The project offers long-term employment to local people and provides alternative income for farming, making communities less dependent on their crop yield. Other benefits to the local socio-economic situation are improvements to the road network and improved knowledge regarding fire combating and other safety regulations /32/.

By mean of the field-visit, RINA has assessed that all physical features of the project description specified in the PD /20/ are in place and confirms that the implementation and operation, including the monitoring of the project activity has been conducted in accordance with the description contained in the PD(s).

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

As described in section 3.2 of this report no methodology deviations are applied.

RINA was able to understand the environment in which the project activity operated, the sources of GHG removals within the project boundary, the monitoring activities, the equipment used to monitor or measured the activity data, the origin and application of data used to calculate the GHG removals, data flow, the internal quality control system and the overall organization with respect to monitoring and reporting. After the field measurement the data are transferred into the computer and checked by different people and then submitted to project manager for further cross-checking /3/.

Data and parameters fixed ex-ante as listed in the monitoring report /1/ have been cross-checked and reviewed as applicable against the PD and monitoring plan /2/, the applied methodology /16/ and other relevant VCS documentation. The following list shows the default values used in this verification for GHG removals calculation:

Data/Parameter	Description	Value
f_{IND}	Form factor indigenous trees. Conversion factor of DBH and height cylinder into total aboveground tree volume	0.6
D_{IND}	Average wood density for indigenous forest	kg m ⁻³ 458
R_{mix}	Root to shoot ratio for mixed tropical broadleaf species. Conversion factor of above-ground biomass to the above and below ground biomass	1.22
CF_{IND}	Carbon fraction indigenous trees. Amount of carbon in dry matter	0.49
	Form factor remnant teak	0.36
BEF_{TEAK}	Biomass expansion factor teak. Conversion factor of trunk biomass to total above and below-ground tree biomass	1.53
D_{TEAK}	Teak wood density. Density to determine dry weight	ton m ⁻³ 0.55
CF_{TEAK}	Carbon fraction Teak. Fraction of carbon in dried teak	0.495
D_{YORK}	York wood density. Density of <i>Broussonetia</i>	ton m ⁻³ 506
D_{CASSIA}	Cassia wood density. Density of <i>Cassia siamea</i>	ton m ⁻³ 640
$D_{GMELINA}$	Gmelina wood density	ton m ⁻³ 0.45
$BEF_{GMELINA}$	Biomass expansion factor Gmelina	1.15
$SOC_{REF,i}$	Soil organic carbon stock	ton C ha ⁻¹ 41
$f_{LU,i}$	SOC stock change factor for land use	0.70
$F_{MG,i}$	SOC stock change factor for management regime	1.12
$F_{IN,i}$	SOC stock change factor for input of organic matter	0.935

RINA confirms that the parameters listed above are fixed ex-ante and used for baseline and project emissions calculation in accordance with the applied methodology and methodological tools and they are the same used at the validation stage.

Data and parameters monitored. The following list shows the monitored parameters during the actual monitoring period, with monitoring frequency as annually, and used for GHG removals calculation. During the field visit, the PPs monitoring team demonstrated the way of measuring the trees and collecting the necessary data according the monitoring plan. The trees that are included in the area are painted using chalk to put a number in each tree; DBH is measured using the measuring tape and Suunto inclinometer to measure the tree height. While trees are measured, the field data sheet is filled writing per each numbered tree the species name, the diameter, the height and also the tree condition (e.g. if it is dead/almost dead, if it is a coppice, if it is suitable for thinning, etc). The field inventory practices were adequate and in conformance with the monitoring plan and represent little risk of material discrepancy.

Data/parameter	Description	Assessment
f_{TEAK}	Conversion factor of cylinder measured from DBH and height to trunk volume	Depending on age between 0,66 and 0,34. The following formula based on measurement taken on the field, is used to determine the form factor per teak plant year: $\ln(V) = b_1 + b_2 \ln(d) + b_3 \ln(h)$ Where: $b_1 = 9.605$ $b_2 = 1.955$ $b_3 = 0.799$
$A_{PLOT,i}$	Total area of sample plots.	Total area of sample plots (ha) is measured annually according the approach described in the validated PD /2/. The cumulative sample plot area is at least 1% of the stratum area. Each plot is established to be 0.08 ha, depending on the soil inclination and shape of the plot /2/, and the determination has been done using GIS and GPS in the field.
H	Total height of trees	Depending on age, it accounts between 0,15 to 22 meters /2/
DBH	Diameter of the trees at 1.3 m height	Depending on age, it accounts between 0 to 52.7 cm /2/
	Area of the tree biomass stratum.	The area is identifies by teak, indigenous, gmelina and buffer restoration as per the following table /2/.

RINA confirms that:

- The validated monitoring plan has been properly implemented and followed by the PPs;
- The responsibilities and authorities for monitoring and reporting are in accordance with the responsibilities and authorities sated in the validated monitoring plan;
- Quality assurance and quality control procedures have been applied in accordance with the validated monitoring plan;
- The monitoring has been carried out in accordance with the validated monitoring plan.

Calculation GHG removals by sinks. According the applied methodology /16/ the carbon stock changes in dead wood and litter is excluded for accounting of carbon stock; shrubs biomass is neglected since the presence in the project area. For accounting the baseline GHG removals the same baseline is considered for the three forest reserves: the tree biomass is reduced due to cutting of trees and passing of bush fire /6/ /5/; moreover due to the change in carbon stock in tress in the project strata is conservatively estimated to zero since: no harvest has occurred in the stratum since the previous verification /9/ /10/; the stratum are not affected by any disturbance that would decrease the carbon stock in trees /29/; the tree crown cover in the stratum are not decreases since the previous verification, the PP is not allowed without obtaining the appropriate permit by Forestry Commission. Therefore, based on the above assumptions the baseline GHG removals account to 0 /3/. The project is stratifies based on planting year, and four different reforestation type are in place: teak plantation, indigenous plantation, gmelina plantation and buffer vegetation. The total change in selected carbon pools in teak strata and indigenous strata is the change in tree biomass and soil organic carbon where:

$$\Delta C_{P,t} = \Delta C_{TREE} + \Delta C_{SOC}$$

The **change in carbon stock** in tree biomass (teak and indigenous) is calculated according the methodological tool /00/ by estimating the biomass of each plant year during the period between two points of times. According the PP's monitoring protocol /34/ the monitoring starts 3 years after planting when trees have a size where a DBH can be measured; therefore, the planting years from 2017 to 2019 are not measured for the monitoring purpose. The total tree biomass is calculated based on field measurement in permanent sampling plots by summing the biomass of all individual tree measured in each sample plot. The associated uncertainty in teak strata is less than 10% (8.2%), therefore there is no need to apply uncertainty discount; while the associated uncertainty in indigenous strata is 28.9%, according the methodological tool /19/ the uncertainty discount of 75% is applied. The change in tree biomass in teak strata account to 134,556 tCO_{2e}, and in indigenous strata account to 1,308 tCO_{2e}.

The change in **soil organic carbon** is calculated according the methodological tool /22/ as shown in the registered and revised PD /2/ /20/ and it is fixed for the first 20 years after plantation establishment. The change in soil organic carbon in teak strata account to 16,251 tCO_{2e} and indigenous strata to 1,091 tCO_{2e}.

The total change in selected carbon pools is calculated as following:

$$\begin{aligned} \Delta C_{P,t} &= \Delta C_{TREE} + \Delta C_{SOC} \\ 150,807 \text{ tCO}_2\text{e} + 2,399 \text{ tCO}_2\text{e} &= 153,206 \text{ tCO}_2\text{e} \end{aligned}$$

Applying conservative approach, the buffer vegetation is not included in the GHG removals calculation. According the applied methodology leakage due to displacement of agricultural activities account to 0. Baseline net GHG removals are estimated according the applied methodology and methodological tool. The change in biomass is conservatively estimated as zero since the following conditions are met in the strata:

- (a) No harvest has occurred in the stratum since the previous verification as confirmed by the PP during the field visit, applying the procedure part of the forest management plan /9/ /10/;
- (b) The stratum was not affected by any disturbance that would decrease the carbon stock in trees as confirmed by PSP monitoring reports /7/ /8/ /24/;
- (c) Inventory data demonstrates that the tree crown cover in the stratum has not decreased since the previous verification.

The net GHG removals are calculated according the following formula:

$$\begin{aligned} \Delta C_{AR-VCS,t} &= \Delta C_{ACTUAL,t} - \Delta C_{BSL,t} - LK_t \\ 153,206 \text{ tCO}_2\text{e} - 0 - 0 &= 153,206 \text{ tCO}_2\text{e} \end{aligned}$$

As per the non-permanence risk report /00/, discussed in section 4.4 of this report, the risk rating is 10%, therefore 15,321 tCO_{2e} must be deposited into the AFOLU buffer account, and 137,885 tCO_{2e} are eligible as VCUs.

RINA confirms that:

- All data and parameters were monitored in accordance with the validated monitoring plan /20/;
- The values reported in the monitoring report /1/ were verified against the data presented in the GHG removals calculation spreadsheet /2/;
- The calculation of the GHG removals have been carried out in accordance with the formulae and method described in the validated monitoring plan /20/ and applied methodology /16/;
- IPCC default values and other reference values have been correctly applied in the calculation in accordance to the validated PD /20/.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

As described in the previous section the calculation of the net GHG removals have been carried out in accordance with formulae and method described in the validated monitoring plan /20/ and applied methodology /16/. Monitoring team with specific task and responsibilities is involved in the monitoring of the plantations to ensure the correct implementation of PSP measurements, clear and correct recording on field sheets maintenance and completeness of equipment, taking correct field measurements, data analysis and reporting and quality assurance of PSP monitoring. The monitoring team was observed during the field visit taking the field measurements and reporting the field sheets. Before the monitoring campaign the monitoring team is trained /23/.

The monitoring equipment are: (a) GPS for the determination of geographical coordination of plot location and project boundaries; (b) fibreglass tape for the determination of sample plot area; (c) calliper for the determination of DHB; (d) measurement stick together with a fibreglass for the determination of height of species; (e) clinometer for the determination of slope of sample plot area.

RINA confirms:

- The reliability of the evidences, and sources and nature of the evidence for the determination of GHG removals;
- The information flow from data generation and aggregation, to recording, calculation and final transportation into the monitoring report are adequate to the nature of the project monitoring;
- That the monitoring equipment used are not equipment subjected to calibration and by the field visit there is the evidence of the right use of the GPS and the all other manual equipment.

4.4 Non-Permanence Risk Analysis

In accordance with the VCS AFOLU requirements /15/ the project's non-permanence risk report /4/ is assessed, considering the internal risks, the external risks and the natural risks. The overall non-permanence risk rating accounts to 5.50 which is below the minimum risk stated by the VCS AFOLU requirements which is set up at 10. Following the assumptions assessed for arriving to the overall risk rating.

1 INTERNAL RISK		
Total Internal Risk		3
Project Management		
Risk factor Assessment		Risk rating
a)	Teak is known to grow well in the area and it is not native /00/, several teak plantations were observed during the field visit. As confirmed by the PP during the interviews the survival rate of teak after three years is for approximately 70%. The rating claim is reasonable.	0
b)	The project area of Asubima and Afrensu-Brohuma is certified under FSC Standard /17/ for forest management which expects several measures to prevent encroachment by outside actors. Tain II is not yet certified under FSC but the same forest management operation is applied. During the field visit was observed a security team surveying the area boundaries and interior. The rating claim is reasonable.	2
c)	The management team is highly experienced confirmed through interview with the project team. The rating claim is reasonable.	0
d)	The dedicated full time management staff are less than 1 day from the site. The management team is located in Sunyani in Berekum District which is far from Tain II about 1 hour and from Asubima and Afrensu-Brohuma 3 hours. The rating claim is reasonable.	0
e)	The risk report does not claim mitigation credit for AFOLU expertise.	0
f)	A forest management plan /9/ /10/ is in place describing the policy and long term planning for the management of the company and indicates what has been achieved so far. The management plan describes the management system of the PP includes forest management objectives, the organization and responsibilities, the risk management (prevention of illegal activities, fire management and control of pests), the social plan, the environmental management and the monitoring activities. The rating claim is reasonable.	-2
Total Project Management		0

Financial Viability		
Risk factor Assessment		Risk rating
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment	NA
b)	Project cash flow breakeven point is greater than 7 and up to 10 years from the current risk assessment.	NA
c)	As declared by the PP the project cash flow breakeven point is expected to be in 2023 and the cash flow out includes project implementation costs and costs associated with GHG credit generation. The rating claim is reasonable.	1
d)	Project cash flow breakeven point is 4 years or less from the current risk assessment	NA
e)	Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	NA
f)	Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven	NA
g)	Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven	NA
h)	As declared by the PP the project has secured 100% of the funding needed to cover the total cash out before the project reaches break even. The rating claim is reasonable.	0
i)	Please refer to (h)	-2
Total Financial Viability		0

Opportunity cost		
Risk factor Assessment		Risk rating
a)	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated	NA
b)	NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities	NA
c)	NPV from the most profitable alternative land use activity is expected to be between 20% and up to 50% more than from project activities	NA
d)	As per the additionality demonstration, the continuation of the pre-project land use, mosaic of illegal subsistence farming and grassland with scattered trees and patches of degraded forest is the baseline scenario /6/ /20/. According the social and environmental impact assessment the project would bring positive environmental and social benefits to the area. From the environmental point of view it likely to result in increased biodiversity and increased conservation value of the project area, while from the social sustainability the project offers long-term employment to local people, providing alternative income for farming, making communities less dependent on their crop yields. A benefit sharing agreement for forest plantation development is also signed between the PP, the Forestry commission and the representative of the district traditional council /30/. Globally, as it is also confirmed during the interview with local people, the project has a positive effect on the pressure on natural forests and on sustainable development. The rating claim is reasonable.	0
e)	NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity	NA
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	NA
g)	Mitigation: Project proponent is a non-profit organization	NA
h)	The PP signed with the Forestry Commission a land lease for access to degraded forest reserve lands for developing commercial plantation /27/ /26/ valid for 50 years. The rating claim is reasonable.	-2
i)	Mitigation: Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years	NA
Total Opportunity Cost		-2

Project longevity		
Risk factor Assessment		Risk rating
a)	Without legal agreement or requirement to continue the management practice	NA
b)	The project longevity is set up at 50 years according the agreement signed with the Forestry Commission a land lease for access to degraded forest reserve lands for developing commercial plantation /31/ valid for 50 years. The rating claim is reasonable.	5
Total Project longevity		5

2 EXTERNAL RISK		
Total External Risk		0
Land tenure and resource access/impacts		
Risk factor Assessment		Risk rating
a)	Ownership and resource access/use rights are held by same entity(s)	NA
b)	Land is owned by traditional land owners, governed by the Ghana Government. The agreement signed with the Forestry Commission a land lease allow the PP for access to degraded forest reserve lands for developing commercial plantation /31/ valid for 50 years. The rating claim is reasonable.	2
c)	No disputes exist over land tenure rights, confirmed by the interview with PP and local communities during the field visit. The rating claim is reasonable.	0
d)	No disputes exist over access/use rights, confirmed by the interview with PP and local communities during the field visit. The rating claim is reasonable.	0
e)	WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts.	NA
f)	Project area is protected by legally binding commitment through the agreement signed with the Forestry Commission a land lease for access to degraded forest reserve lands for developing commercial plantation /31/ valid for 50 years. The rating claim is reasonable.	-2
g)	No disputes exist over land tenure rights, confirmed by the interview with PP and local communities during the field visit. The rating claim is reasonable.	0
Total Land Tenure		0

Community Engagement		
Risk factor Assessment		Risk rating
a)	As per the social and environmental impact assessment /32/ no people were living in the project area and they are not living in the project anymore as observed during the field visit. The claim is reasonable.	0
b)	Less than 20 percent of households living within 20 km of the project boundary outside the project area, and who are reliant on the project area, have been consulted, confirmed during the field visit. The claim is	0
c)	According the social and environmental impact assessment /32/ the project would bring positive environmental and social benefits to the area. From the environmental point of view it likely to result in increased biodiversity and increased conservation value of the project area, while from the social sustainability the project offers long-term employment to local people, providing alternative income for farming, making communities less dependent on their crop yields. A benefit sharing agreement for forest plantation development is also signed between the PP, the Forestry commission and the representative of the district traditional council /30/. Globally, as it is also confirmed during the interview with local people, the project has a positive effect on the pressure on natural forests and on sustainable development. The rating claim is reasonable.	-5
Total Community Engagement		-5

Political risk		
Risk factor Assessment		Risk rating
a)	Governance score of less than -0.79	NA
b)	Governance score of -0.79 to less than -0.32	NA
c)	As per Worldwide Governance Indicators 2017 published by World Bank /35/ the governance score is calculated as 0.033.	2
d)	Governance score of 0.19 to less than 0.82	NA
e)	Governance score of 0.82 or higher	NA
f)	REDD+ and other initiatives within the forestry sector have been identified as key aspects to address environmental degradation in Ghana /36/.	-2
Total Community Engagement		0

Risk factor Assessment		Risk rating
a)	Fire (F) The plantation (Teak and indigenous) 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 /10/. During the field visit were observed the existence of fire tower and recovery of rain water. Score 2 is reasonable applied. (Rating risk 0.50)	0.5
b)	Pest and diseases outbreaks (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 /10/. No fire events occurred in the project boundary during the monitoring period. The environmental & social monitoring report /33/ confirms that no pests and disease were found in the plantation. Score 2 is reasonable applied. (Rating risk 1)	1
c)	Extreme weather (W) Less than of 5% of the carbon stock could be affected by extreme weather as heavy winds combined by heavy rainfall. The PP apply thinning regime which takes stability of the stands into accounts. Score 2 is reasonable applied. (Rating risk 1)	1
d)	Geological risk (G)	NA
e)	Other natural risk (ON)	NA

In conclusion, the non-permanence risk rating determined by the PP is in accordance with the VCS AFOLU requirements and the risk rating of 10% is applied to calculate the AFOLU pooled buffer account, which accounts to 15,321 tCO₂e deducted from the total GHG removals.

5 SAFEGUARDS

5.1 No Net Harm

The social and environmental impact assessment of Asubima Forest Reserves was conducted in 2007 and assessed at the time of project validation /6/, while for Afrensu-Brohuma was conducted on 2012 /5/ and for Thain II on 2015 /32/. The assessment concluded that the project would bring positive environmental and social benefits to the area. From the environmental point of view it likely to result in increased biodiversity and increased conservation value of the project area, while from the social sustainability the project offers long-term employment to local people, providing alternative income for farming, making communities less dependent on their crop yields. Globally, as it is also confirmed during the interview with local people, the project has positive effect on the pressure of natural forests and sustainable development.

5.2 Local Stakeholder Consultation

A stakeholder committee is established and regulated in accordance with internal PP's procedures for grievance mechanism /37/, community development plan /38/ and stakeholder engagement plan /39/. Moreover during the interview with the local people it is confirmed their involvement. Therefore, the PP has adequate instruments take into account the stakeholder's demands and complaints and giving them appropriate response.

6 VERIFICATION CONCLUSION

RINA Services Spa (RINA) has performed the verification of the GHG removals by sinks reported for the grouped project *Reforestation of degraded Forest Reserves in Ghana*, for the period 02/04/2018 to 30/06/2019 with regard to the relevant requirements for VCS and VCS AFOLU project activities.

The project participant is responsible for:

- For the preparation of GHG removals data and reported GHG removals by sinks from project on the basis set out in the monitoring plan contained in the validated PD version 1.0 of 04/10/2013 and updated PD version 1 of 19/07/2019.
- The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG removals by sinks of the project.

Based on the documented evidence and corroborated by an on-site assessment RINA can confirm that:

- The project complies with the verification criteria for projects and their GHG emission removals set out in VCS Version 3;
- The project has been implemented and operated in accordance with the project description and subsequently validated variations;
- The new instance added complies with the eligibility criteria stated for the inclusion of new instance in the grouped project;
- The monitoring report version 1.0 of 19/07/2019 and other supporting documents provided are complete and verifiable in accordance with the applicable VCS and VCS AFOLU requirements;
- The monitoring is in place as per the applied baseline and monitoring methodology;
- The monitoring complies with the monitoring plan in the validated and updated PD;
- The monitoring plan in the validated and updated PD is as per the applied baseline and monitoring methodology.

It is RINA's opinion that the GHG removals by sinks stated in the monitoring report version 1.0 of 19/07/2019 are fairly stated. The GHG removals by sinks were calculated correctly based on the approved monitoring methodology and the monitoring plan contained in the validated and updated PD. Hence, RINA is able to certify the following GHG removals:

Verification period: from 02/04/2018 to 30/06/2019

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)
2018/2019	153,206	0	0	153,206
10% AFOLU pooled buffer account				15,321
Total	153,206	0	0	137,885

APPENDIX

NA



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

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

Rita Valoroso

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
3.1	Energy demand	3
13.1	Solid waste and wastewater	13
14.1	Forestry	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)
1	11/10/2019	Update qualification in TA 14.1

Responsabile CEINS
 Head of CEINS
 Laura Severino

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

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

RINA Services S.p.A. è accreditato/recognizato da
 RINA Services S.p.A. is accredited/recognized by

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

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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:

Daria Maso

è qualificato come:
 is qualified as:

TEC, FIN-EXP

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
14.1	Afforestation and reforestation	14
15.1	Agriculture	15

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	26/01/2017	First issue
1	03/05/2017	Update qualification as financial expert

Responsabile di schema
 Scheme Leader

Laura Severino

*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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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:

Talita Carvalho Beck

è qualificato come:
 is qualified as:

TEC, VAL, VER, TL
LOCAL EXPERT

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
14.1	Forestry	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)
1	14/08/2017	Update qualification in TA 14.1 and Local expert

Responsabile di schema
 Scheme Leader
 Laura Severino

*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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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:

Champak Buragohain

è qualificato come:
 is qualified as:

TEC, VAL, VER, TL, ITR, Local Expert

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	Thermal Energy Generation	1
1.2	Renewables	1
2.1	Electricity distribution	2
13.1	Solid waste and wastewater	13
13.2	Manure	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)
2	10/10/2019	Qualification update as TEC in TA 1.1

Responsabile di schema
 Scheme Manager
 Giovanni D'Angelo

*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.

TGC: Technical expert; VAL: Validator; VER: Verifier; TL: Team leader; FN 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
Ecologia 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

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