



**Verified Carbon
Standard**

CONSERVATION & RESTORATION OF THE MANGROVE ECOSYSTEM IN THE GAMBIA THROUGH THE REDD+ MECHANISM



Document Prepared by KBS Certification Services Ltd

Project Title	Conservation & Restoration of the mangrove ecosystem in the Gambia through the REDD+ Mechanism
Version	3.1
Report ID	VCS.22.VAL.087

Report Title	Conservation & Restoration of the mangrove ecosystem in the Gambia through the REDD+ Mechanism
Client	Ørsted (lstch@orsted.com and + 45 99 55 27 32) with support from Department of Parks and Wildlife Management Gambia (DPWM), Sahel Wetlands Concern (SWC), Kombo Foni Forestry Association (KOMFFORA) and West African Bird Study Association (WABSA)
Date of Issue	03/01/2025
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Summary:

The proposed grouped project activity titled "Conservation & Restoration of the Mangrove Ecosystem in the Gambia through the REDD+ Mechanism" is initiated by the Government of Gambia with support from Ørsted Nature Based Solutions (Ørsted). The project will ensure the long-term sustainability and maintenance of mangrove restoration and avoid degrading operations through the certification and selling of carbon credits. The main project proponent and project owner is the Government of Gambia represented through the Ministry of Environment, Climate Change and Natural Resources. The Department of Parks and Wildlife Management (DPWM) is responsible for project implementation with support from the three Gambian NGO's; Sahel Wetlands Concern (SWC), West African Bird Study Association (WABSA) and Kombo Foni Forestry Association (KOMFFORA). Ørsted Nature Based Solutions (Ørsted) is also involved as project proponent which is responsible for the development of the VCS project documentation and processes.

The aim of this grouped project is to generate greenhouse gas emission removals and reductions through mangrove restoration (removal credits) (henceforth considered to include mangrove reforestation, mangrove afforestation and hydrological restoration) and avoided degradation, including wetland restoration and conservation activities (reduction credits). In the first project activity instance PAI #1 covering only 235.46 Ha of mangrove restoration which is responsible of emission reduction. This grouped project applies approved VM0007 REDD+ Methodology Framework (REDD+ MF) version 1.6 for the implementation of this project.

Ørsted Nature Based Solutions (Ørsted) has requested KBS Certification Services Ltd to perform validation of this VCS grouped project activity. KBS acting as an independent third party, through document review, on-site visit, subsequent background investigation, follow-up interviews with PP obtained sufficient evidence to evaluate the validation criteria and to determine that the project is properly implemented with the requirements of the VCS Standard Version 4.4 and the applied methodology.

A risk-based approach has been followed to perform this validation. In the course of this validation 20 Clarification Requests (CLs) and 12 Corrective Action Requests (CARs) were raised and successfully closed. 4 Forward Action Request (FAR) was raised during the course of validation.

KBS carried out a final validation report and with reasonable level of assurance that the project complies with all the validation criteria for VCS. The assessment team has no restrictions or uncertainties with respect to the compliance of the project with the validation criteria. Hence, the audit team concludes that the calculation of the baseline and project emission reductions is carried out in a transparent and conservative manner, so that the restoration project activities are estimated to have an average annual amount of emission reductions (ER's) of 109997(round down value for conservativeness), tCO_{2e} assuming that 10,000 hectares will be restored over four years and accounting for 30 years. The first project activity instance covering 235.46 ha of mangrove restoration is expected to generate approximately 2790(round down value for conservativeness) ERs on average/year over a 30-year period.

To conclude, KBS confirms that the project meets the criteria and requirements of VCS Standard Version 4.4.

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1 INTRODUCTION

1.1 Objective

The Government of Gambia of Ministry of Environment, Climate change and Natural resources along with the Department of Parks and Wildlife Management (DPWM) with the help of three Gambian NGO's; Sahel Wetlands Concern (SWC), West African Bird Study Association (WABSA) and Kombo Foni Forestry Association (KOMFFORA) implement the project in Gambia. Ørsted Nature Based Solutions (Ørsted) is a project proponent which is responsible for the development of VCS project documentation and process. they have requested KBS Certification Services Ltd. to undertake VCS validation of the project activity: "Conservation and Restoration of the Mangrove ecosystem in the Gambia through the REDD+ Mechanism", with regard to the relevant VCS requirements of VCS Standard version 4.4^{1/}; to attain real, measurable, additional and permanent emission reductions.

The purpose of validation is to ensure a thorough, independent assessment of the project description (PD), in particular the project's description eligibility, ownership, crediting period and details regarding its compliance with the law statutes and other regulatory frameworks.

- The requirements of VCS Program Guide Version 4.3/2/
- The requirements of VCS Standard Version 4.4/1/
- The requirements of the VCS and CDM Approved methodologies, VM0007 REDD+ Methodology Framework (REDD-MF), v1.6/3/ and AR-ACM0003, Ver. 2 – "Methodology for Afforestation and reforestation of land except wetlands"/4/ Respectively.
- To assess the project's compliance with other relevant rules, including the project country (Gambia) legislation and
- Other relevant rules are validated in order to confirm that the project description as documented is sound and reasonable and meet the stated requirements and identified criteria.
- The validation is seen as necessary to provide assurance about the quality of the project and its intended generation of emission reductions over the Grouped project's crediting period without any double counting.

For the validation, the VCS projects must undergo an independent third-party validation and certification of estimated emission reductions as the basis for issuance of Voluntary Emission Reductions (VERs).

1.2 Scope and Criteria

The scope of validation is defined as an independent and objective review of the Project Description Document, where methodological deviations and the project's compliance in section 1 (i.e., Project Details) is reviewed against the requirements of VCS Standard. KBS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of Emission Reductions. The items covered in the validation are described below:

- VCS Criteria
- VCS Project Description/5/
- Background investigation and follow up interviews.
- Draft validation reporting with CARs & CLs, if any
- Final validation reporting

The validation is based on the information made available to KBS and on the contract conditions. The validation is not meant to provide any consulting to the project proponent. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project description. The work carried out by KBS is free from any conflict of *interest*.

1.3 Reasonableness of Assumptions

The validation report is based on VCS-PD/6/, supporting documents made available at the time of validation and information collected through performing interviews. Based on the process and procedures conducted, KBS states whether the information in the PD:

- Is materially correct and is a fair representation of the actual project details, and
- Is prepared in accordance with VCS requirements and the applied methodology for information pertaining to description, methodological deviations and reporting.

The validation work is carried out as per this requirement and the validation opinion is assured provided the credibility of all above. Details are presented in the Validation statement in section 4 below.

1.4 Summary Description of the Project

The proposed grouped project is the “Conservation & Restoration of the mangrove ecosystem in the Gambia through the REDD+ Mechanism” The project area covers the entire mangrove and potential mangrove landscape (both intact mangrove areas, degraded mangrove areas and degraded wetland areas environmentally suitable for mangrove planting) of The Gambia. The proposed project is not located within a jurisdictional REDD+ program.

The project has applied approved Verra methodology: VM0007 REDD+ Methodology Framework (REDD+ MF), version 1.6. under sectoral scope 14 – Agriculture, Forestry and Other Land Uses (AFOLU). The Government of Gambia represented through the Ministry of Environment, Climate Change and Natural Resources. The Department of Parks and Wildlife Management (DPWM) is responsible for project implementation with support from the three Gambian NGO’s; Sahel Wetlands Concern (SWC), West African Bird Study Association (WABSA) and Kombo Foni Forestry Association (KOMFFORA) & The Ørsted Nature Based Solutions (Ørsted) is also a project proponent and is responsible for the development of the VCS project documentation and processes.

The grouped project boundary covers all mangrove regions of The Gambia. For the first project instance PAI#1 is reducing GHG emissions by planting *Rhizophora mangle*. at a density of approximately 10,000 propagules per hectare, resulting in an estimated annual amount of emission reductions (ER's) of 2790(round down value for conservativeness) ERs & restoration of grouped project activities are estimated to have an average annual amount of emission reductions (ER's) of 109997(round down value for conservativeness , assuming that 10,000 hectares will be restored over four years and accounting for 30 years.

The start date of the project activity (i.e., ARR+RWE activities in PAI#1) is 09th of April 2022/7/ as this is the date when earliest action done by PP for first project activity instance (ARR+RWE)¹ which led to the generation of GHG emission reductions or removals. i.e. the first canal excavation was being performed for hydrological restoration. This date is confirmed by validation team by reviewing the supportive evidence i.e., the receipts covering the payments for the community members who performed the digging work. On these receipts, the date of the work is mentioned.

The project crediting period is the same as the assessment period and is from April 09th 2022 to April 9th, 2052, with an initial lifetime of 30 years. However, as mentioned by the PP in the VCUPA, between the two project proponents, the possibility of extending the crediting period to 100 years in total has been agreed.

2 VALIDATION PROCESS

2.1 Method and Criteria

This grouped project applies approved VM0007 REDD+ Methodology Framework (REDD+ MF), categorized under sectoral scope 14 “Agriculture, Forestry and Land Use.”. The validation consisted of the following phases:

- Completeness check and desk review of the Project Description
- Interview with project representatives and issuance of findings.
- Resolution of findings followed by preparation of the final validation report and opinion.

KBS follows a risk-based validation approach, wherein a desk review of the project documentation is undertaken, which is followed by a on site assessment by the members of assessment team and assessment teams confirms that the stated figures in the VCS PD are verifiable and reliable evidence.

Timeline of Validation:

Site Visit	22/03/2023 to 24/03/2023 ²
(Draft) Reporting	10/04/2023 (findings issued to PP)
(Final) Reporting	03/01/2025

2.2 Document Review

As a first step, the validation team has reviewed the initial PD/5/ (hereinafter referred to as initial PD) and additional background documents submitted by the project participant. The subsequent step involved the identification of corrective action requests and clarification requests (CAR's and CL's) which are presented in Appendix 2 of this report. As a result of these findings, PP has submitted the final PD/6/ addressing the issues. A complete list of all documents and records reviewed is attached in Appendix 1

¹ The start date of future PAIs will be evidence in the same manner through documenting receipts of the first activities of that instance. All start dates of new instances will be the same and/or later than the start date of the grouped project

²Initially 20/03/2023 to 23/03/2023, due to visa issues, the onsite visit was completed from 22/03/2023 – 24/03/2023.

of this report. The project has been listed in the VERRA (<https://registry.terra.org/app/projectDetail/VCS/3223>).

2.3 Interviews

KBS has conducted on-site inspection to confirm all physical features of the project activity proposed in the VCS PD are in place. An on-site assessment was conducted on 22/03/2023 to 24/03/2023. Interviews were undertaken with relevant stakeholders in the host country, Gambia, as well as personnel with knowledge of the project design and implementation. A list of interviewees, and the main topics discussed with each person can be found in appendix 5.

SI No.	Name and village	Date	Subject	Team member
01.	Mr.Mamoda L Kassama Director, DPWM	22/03/2023 24/03/2023	➤ Project Design ➤ Project Implementation status, Management ➤ Roles and responsibility	Dr.D.Siddaramu TL and Local expert
02	Mr. Morten Pedersen, Co-ordinator, Orsted	22/03/2023	➤ Project Design ➤ Project Implementation status, Management ➤ Roles and responsibility	
03	Mr. Kawsu Jammeh, Project Manager, DPWM	22/03/2023 24/03/2023	➤ Project Design ➤ Project Implementation status	
04	Ms.Laerke Chrintz, Proponent, Orsted	22/03/2023 24/03/2023	➤ Baseline Scenario ➤ Management, Monitoring, documentation, and reporting system	
05	Mr.Fagimba Camubu, Co-ordinator, WABSA	22/03/2023 24/03/2023	➤ Roles and responsibility	
06	Ms.Rose Davis, Accountant, SWC	22/03/2023 24/03/2023	➤ Daily Operations	
07	Mr.Yahya L Badie, Co-ordinator, Komffora	22/03/2023 24/03/2023	➤ Stakeholder meetings, Grievances mechanism	
08	All the other local community leaders and members interviewed are attached at Appendix 5	22/03/2023 24/03/2023	➤ Start date of project ➤ Communication for the stake holder meeting ➤ Contract signed with Orsted ➤ Contract term and conditions	

³ Initially 20/03/2023 to 23/03/2023, due to visa issues, the onsite visit was completed from 22/03/2023 – 24/03/2023.

			➤ Any GHG benefit sharing ➤ Risk related to the project activity ➤ Worker rights regulation ➤ Safety manages by the project developer ➤ Grievance mechanism ➤ Community employment and engagement ➤ Effect of project to the community ➤ Knowledge of SDG goals ➤ Community benefits from the project activity.	
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2.4 Site Visits

Site visit was undertaken to gather evidence to determine conformance with the VCS Program rules, guidance provided in the VCS Validation and Verification Manual and methodology assessments under the VCS Program. An on-site assessment was conducted on 22/03/2023 to 24/03/2023⁴. All the proposed project sites were visited, hence no sampling was done. As per para 4.1.9, a visit to project areas were conducted to assess the project description applicability of the methodology, additionality, the appropriateness of the baseline scenario and for any methodological deviation. Individual stakeholders and stakeholder groups were interviewed.

SI No.	Activity performed on-site	Site location	Date	Team member
1.	➤ General information about the project. ➤ Chronology of Events/ Implementation cycle of the project activity. ➤ Barriers faced/overcome in the processes (additionality) ➤ Local Stakeholder consultation processes ➤ Legal/ Statutory Clearances and Agreements Signed ➤ Baseline determination ➤ Application of appropriate Methodology	Gambia	22/03/2023 to 24/03/2023	Dr.D.Siddaramu

⁴ Initially 20/03/2023 to 23/03/2023, due to visa issues, the onsite visit was completed from 22/03/2023 – 24/03/2023.

	➤ Validation of the values of ex-ante determined parameters. ➤ Review of the Monitoring plan. ➤ Validation of Stakeholder Consultation by interviewing the stakeholders. ➤ Validation of Sustainable Development Monitoring Plan and mitigation measures. ➤ Validation of Non-Performance Risk Report			
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2.5 Resolution of Findings

KBS applies the risk-based approach aimed at focusing on high-risk issues to the validation results whilst not omitting any part of the mandatory processes. All the project related documents submitted by PP were assessed against the most recent version of the VCS Standard and Program document. 12 CARs, 20 CLs and 04 FAR were raised during validation and submitted to PP, which were addressed either by providing to the audit team the requested information or by making the appropriate corrections. Updated versions of the documentation were submitted by the PP and the audit team reassessed them against the guidance documentation. This process was repeated iteratively until all CL and CAR were fully resolved.

All findings (CARs, CLs and FAR) issued by the KBS audit team in the course of validation process have been closed. All findings issued and the inputs for their closure, are described in Appendix 2 of this report.

The webhosted PD was revised addressing the CARs & CLs issued by KBS. After reviewing the revised and resubmitted latest PD resolving the CARs & CLs raised and outstanding concerns, KBS issues this final validation report and opinion.

2.5.1 Forward Action Requests

FAR 01 was raised during the validation.

3 VALIDATION FINDINGS

3.1 Project Details

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

The proposed grouped project activity is classified under sectoral scope 14 “Afforestation & reforestation” as per Appendix 1 of the VCS Standard. The main aim of this project to produce greenhouse gas emission removals and reductions through mangrove restoration and avoided degradation, including wetland restoration and conservation activities. The grouped project boundary covers all mangrove regions of The Gambia. Within this grouped project’s first project activity instance (PAI#1), the project area is characterized as degraded mangrove areas, and project activities entails hydrological engineering in a

smaller part of the area and restoration of approximately 235.46 ha mangrove in the area around Bintang Bolon. According to the applicable methodology VM0007 v1.6, the CDM combined tool T-ADD should be applied for the determination of the most plausible baseline scenario for each of the included categories. In this project the module is applied to the project activity category of RWE+ARR. So according to tool T-ADD There were two baseline scenarios determined for the project area PAI#1 i.e.,

Baseline scenario-1: Continuation of the pre-project land-use, remaining as degraded wetlands and
Baseline scenario 2: Reforestation of the land within the boundaries of the project activities performed without being registered as a VCS project activity.

The start date of proposed grouped project activity is 09/04/2022 as it was an earliest action done by PP for first project instance i.e. PAI#1(ARR+RWE) which led to the generation of GHG emission reductions or removals. The restoration project activities are estimated to have an average annual amount of emission reductions (ER's) /8/ of 109997(round down value for conservativeness), assuming that 10,000 hectares will be restored over four years and accounting for 30 years. The first project activity instance covering 235.46 ha of mangrove restoration is expected to generate approximately 2790 (round down value for conservativeness) ERs on average/year over a 30-year period.

The validation team has checked all the above-mentioned details and confirms that all the information provided are accurate.

Project design, including eligibility criteria for grouped projects.

The proposed project is grouped project the eligibility criteria for group project is follows:

As the proposed project activity is a grouped project, any instance implemented after validation must comply with section 3.6.16 & 3.6.17 of the VCS standard 4.4. Therefore, a set of eligibility criteria is defined for project activity category combination. As the first project instance PAI#1 covered in the PD consists of only one combined project activity category of ARR+RWE therefore one set of eligibility criteria is defined in the PD.

As per VCS Standard, grouped projects shall include one or more sets of eligibility criteria for the inclusion of new project activity instances. At least one set of eligibility criteria for the inclusion of new project activity instances shall be provided for each combination of project activity and geographic area specified in the project description. PP clearly demonstrated in the VCS PD that the project activity instance and new project activity instances comply with the set of eligibility criteria provided in the VCS Standard. which follows:

Eligibility criteria of the combined project activity category ARR+RWE

Eligibility Criteria (ARR+RWE)	Justification provided by PP	VVB assessment
Meet the applicability conditions set out in the methodology applied to the project.	Meet the applicability conditions set out in the VM0007 Methodology version 1.6.	Validation team confirms that the combined project activity (ARR+RWE) compiles all the applicability criteria of the methodology VM0007 REDD+ METHODOLOGY version 1.6.

		hence this applicability criterion is met.
Use the technologies or measures specified in the project description.	Use technologies or measures like those specified in this PD for the first instance and apply them in the same manner. New instances will consist of mangrove restoration and, when deemed necessary, alteration of hydrology to restore the natural hydrology of the area.	Validation team confirms that for PAI#1 consist of mangrove restoration and when deemed necessary, alteration of hydrology to restore the natural hydrology of the area.
Are subject to the baseline scenario determined in the project description for the specified project activity and geographic area.	Be subject to the baseline scenario determined in section 3.4 of this PD, covering the project activity ARR+RWE within the geographical boundaries of this grouped project.	The implemented project activity (ARR+RWE) is within the geographical boundary of group project which is validated by the validation team based on the geodetics coordinates excel sheet & provided KML file hence this applicability criterion is met.
Have characteristics with respect to additionality that are consistent with the initial instances for the specified project activity and geographic area.	Have characteristics with respect to additionality that are consistent with that of the first instance, as described in section 3.5 “ <i>additionality</i> ”.	Yes, validation team confirms that project activity has the characteristics with respect to additionality and are consistent with that of the first instance, as described in section 3.5 “ <i>additionality</i> ”.

Criteria for inclusion of new project activities:

As per 3.6.17 of VCS standard v.4.4, PP has stated following inclusion criteria required for inclusion of new project activity for the grouped project

Criteria for inclusion of all new project activities	VVB assessment
Occur within the designated geographic area of this grouped project	The project activity will be confined to the geographic area of Gambia. PP has justified that the new project activity will eventually include the constrained area of Gambia, which can be validated using GPS and drone group surveys. Hence as per paragraph 3.6.17(1) applicability criteria were found to be met
Comply with at least one complete set of eligibility criteria for the inclusion of new project activity instances. Partial compliance with multiple sets of eligibility criteria is insufficient.	The project proponent has justified this criterion will be assessed based on the sufficient evidence provided.
Be included in the monitoring report with sufficient technical, financial, geographic and other relevant information to demonstrate	PP has stated that this criterion will be monitored during each project activity inclusion based on the GPS, drone, and satellite imagery as well as

compliance with the applicable set of eligibility criteria and enable sampling by the validation/verification body	relevant receipt and other financial documentation provided for each activity.
Be included in an updated project description, with updated project location information, which shall be validated at the time of verification against the applicable set of eligibility criteria	The project description will be update with project location information which will be validate based on the combination of GPS, drone, and satellite imagery as well as relevant receipt and other financial documentation for new project activity at the time of verification.
Have evidence of project ownership, in respect of each project activity instance, held by the project proponent from the respective start date of each project activity instance	Project participant has justified that for each project activity instance, the ownership of the project will be validated with receipt of consultation and partnership agreements with community landowners.
Have a start date that is the same as or later than the grouped project start date	For the proposed grouped project including the first project instance PAI#1 i.e. RWE+ARR. Hence PP has chosen the start date of a project is 09/04/2022, which is the first action done by PP for this project activity. Hence, the start date of future project instance will be the same or later than the proposed project activity. The validation team confirmed the same during on-site interview with CME. Hence as per paragraph 3.6.17 (6) this criterion is found to be met.
Be eligible for crediting from the start date of the instance through to the end of the project crediting period only	PP has justified that every future instance added in the proposed grouped project activity have crediting period till the end of the project crediting period.
Only eligible for crediting from the start of the verification period in which they were added to the grouped project	The future instances will be adding in the proposed grouped project is crediting period start from the start of the verification period.
Not be or have been enrolled in another VCS project	Every PAI adds in the future will be not part of the other VCS project.
Adhere to the clustering and capacity limit requirements for multiple project activity instances set out in Section 3.6.8 and 3.6.9 in the VCS standard 4.4	PP must provide the KML file for each new future instance to validate this criterion.
Have maximum 5% crown cover and no forest coverage over at least the last 10 years. Lack of historical forest present is determined through appliance of satellite imagery in the form of Landsat and/or Sentinel, while crown cover percentage is determined through drone imagery or VHR satellite imagery	This criterion will be assessed with the satellite imagery in Landsat and/or Sentinel, while crown cover percentage is determined through drone imagery or VHR satellite imagery.

Consult with respective community landowners and sign contract of participation	This criterion will be validated based on the. Documented receipt of consultation and partnership agreements with community landowners.
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The validation team has raised FAR 02 to ensure the eligibility criteria to be assessed as per registered PDD in subsequent project activity PAI's inclusion.

Project proponent and other entities involved in the project.

The project is set up in such that the Gambia Mangrove REDD+ Project is a registered nonprofit group in The Gambia consisting of The Department of Parks and Wildlife Management (DPWM), Sahel Wetlands Concern, Kombo Foni Forestry Association, and West African Birds Study Association (the three NGOs are also known as the consortium). The DPWM represents The Gambia Mangrove REDD+ Project as well as the Project Proponents. According to VCS Standard v4.4, Section 3.7.1, evidence establishing project ownership can include legal agreements with the land rights owner. Gambia Mangrove REDD+ Project led by DPWM have made agreements with each participating community (customary landowners of land planted in this project) specifying the agreement to participate in the project and to protect the planted mangroves for at least 100 years. This agreement is administered by the project and signed by the Village Chief (representing the village). Agreements will be made with any new participating villages for all future instances. These agreements between the Project Proponent and each participating community are legally recognized by The Gambian government.

Landownership: Landownership rights belong to the villages through their customary rights as dictated by the Lands (Provinces) Act of 1990 and 1995. This ownership will not be transferred or affected by the project activities. The land ownership is cross verified with the land documents and also confirmed with the landowners during the site visit.

Project ownership: As described above, DPWM is representing the project ownership and leads the project implementation and maintenance of the project activities. The project implementation and maintenance ownership is verified through the legal agreement

These agreements were cross verified and confirmed with the signed authorities, local expert and confirm that they are incline with the regulations of the country.

Additionally, the Government of The Gambia, represented by represented by DPWM of The Ministry of Environment, Climate Change and Natural Resources has the overall responsibility of overseeing and coordinating the development and implementation of policies and programs relevant to the environment, climate change, and natural resources management in the Gambia.

Validation team has verified the VCUPA/9/ and accepted Ørsted as PP for this proposed group project.

Ownership

As discussed above, VCUPA has been signed between The Government of Gambia and Ørsted covering the selling of all Carbon Credits generated by the project to Ørsted over the entire project crediting period. all funding required for the implementation of project is arranged by Ørsted. The same has been confirmed from the VCUPA agreement submitted by the PP to validation team.

Project start date

The first project instance (PAI#1) included in the proposed grouped project activity is the combined category of RWE (Restoration of Wetlands Ecosystems) and ARR (Afforestation, Reforestation, and Revegetation). The project start date of the RWE project activity is 09/04/2022 ^{/7/} which is the date when the excavation work for the site preparation has begun, for an improved flow of tidal water from the adjacent river and into the project area. Whereas for ARR project activity start date is 05/08/2022/20/ which is the date when first mangrove plantation was performed for reforestation and revegetation into the project degraded land. As the RWE project activity start date is the earliest action done by PP which led to the generation of GHG emission reductions or removals are implemented. Hence it is considered as the start date of project activity. The validation team checked the supportive document receipt submitted by PP and confirmed that the start date of project is the earliest date of first project activity instance (ARR+RWE) PAI#1 as per paragraph 3.8 of VCS standard v.4.4. The start date of future PAIs will be the same and/or later than the start date of the grouped project and will be evidence in the same manner through documenting receipts of the first activities, regardless of if ARR or RWE and considering whichever comes first, of that instance.

Finding: The start date of the project defined in section 1.5 of the PD is not in line with the start date as defined in VCS Program Definitions^{/10/} hence CL 01 was raised & closed successfully with the resolution and documentary evidence provided by the PP.

Project crediting period

The crediting period of the grouped project is from 09th of April 2022 to 09th of April 2052 with an initial lifetime of 30 years. However, the provided supporting document, namely the VCUPA agreement between the two project proponents, has agreed to extend the crediting period to a total of 100 years.

In this regard KBS validation team can confirm that PP have developed credible and robust plan for managing and implementing the project over the crediting period in compliance with Section 3.9.4 of the VCS Standard version 4.4.

Project scale and estimated GHG emission reductions or removals

The validation team confirms that the project activity falls under the category 1 'Projects' as per para 3.10.1 of the VCS standard version 4.4, as it does not have the potential to reduce GHG emission more than 300,000 tCO_{2e}/year.

The estimated available annual average and the total CO_{2e} emission reduction by the project activity PAI#1 over the crediting period of 30 years are expected to be 83,711.4 tCO_{2e} and annually 2790.4 tCO_{2e} and estimated available annual average and the total CO_{2e} emission reduction by the grouped project will be 3,299,213.0 tCO_{2e} for entire crediting period and 109,997.1 tCO_{2e} annually.

Project location

The grouped project geographic boundary corresponds to all intact, degraded and deforested wetland areas within the mangrove regions of The Gambia. The exact location and the total planted area of the project activity PAI#1 is given in following table.

Region	Rural community	Total planted area for each community (Ha)
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West Coast Region (WCR)	Joreng	56.40
Lower river Region (LRR))	Keneba	75.10
	Kantong Kunda	51.09
	Bajana	22.51
	Jiffarong	30.36

A KML file^{11/} with the geodetic coordinates of the grouped project boundary has been verified by the validation team.

Finding: CAR 05 was raised for this section and closed successfully.

Conditions prior to project initiation

Regarding conditions prior to the project initiation, the revised PD describes in a complete way the climate, hydrology, topography, current & historic land use land cover, soils for the areas involved in the project. During the desk assessment it was verified by the Remote sensing data and according to this supportive the conditions prior to the project initiation was characterized as degraded wetland areas (ARR and RWE project activities) or intact mangrove (AUDD or AD project activities). For PAI#1 specifically, the pre-project ecosystem type was classified as degraded mangrove areas that are practically bare land with only few scattered mangrove trees of primarily the genus *Avicennia* within it.

Finding: CL 05 was raised for this section

Project compliance with applicable laws, statutes and other regulatory frameworks

The validation team by its document review and site assessment interview confirms that the project activity is in compliance with all the applicable laws, statutes and other regulatory frameworks of the Host Country, Gambia. The legislation applicable to the project activity are as follows:

1. The Biodiversity Act 2003/12/
2. The Forest Act (1998) /13/
3. The National Environment Act 1994/14/

Additionally, a list of environmental policies and frameworks were also compliance with this grouped project activity. According to the information provided and assessed during the audit process, the project fulfils with laws mentioned in the PD as it could be verified during the desk review and the on-site assessment. Thus, KBS deems that project complies with applicable laws, statues, and other regulatory frameworks.

Finding: CAR 06 was raised for this section

Participation under other GHG programme

The proposed project 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.

Other forms of credit and supply chain (Scope 3) emissions:

Not applicable as this project does not impact emissions associated with a good or service, hence it was not applicable.

The following sustainable development benefits are envisaged from the project activity.

SI No.	SDG Target	SDG INDICATOR	Current Project Contributions	VVB Assessment
1	13	Goal 13 - Climate Action 13.0 - Take urgent action to combat climate change and its impacts	The project contributes to climate action by enhancing the carbon stocks of the mangrove ecosystem. The project enhances carbon stocks by restoring the degraded mangrove ecosystem mainly through the planting native mangrove trees.	The project is a grouped project activity restoring the degraded mangrove forest, in turn the project is contributing to emission reduction through restoration & reforestation activity hence this goal will be achieved under climate action.
2	14	Goal 14 - Life below water 14.2 - Sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive ocean.	Mangrove habitats, the project is simultaneously restoring the below-water biodiversity dependent on and/or benefitting from the mangrove ecosystem. Amongst many things, the mangrove habitat acts as spawning, nursing, and living grounds for an abundance of species of fish, mollusks, crabs and other mangrove dependent underwater species of the area.	The project is a grouped project activity restoring the degraded mangrove forest, as detailed in PD, by discussion with PP and local communities we can confirm that mangrove habitat acts as spawning, nursing, and living grounds for an abundance of species of fish, mollusks, crabs and other mangrove dependent underwater species of the area.
3	15	Goal 15 - Life on land 15.2 - Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	By restoring the mangrove habitats, the project is simultaneously restoring biodiversity above water dependent on and/or benefitting from the mangrove ecosystem. The mangrove habitat supports an abundance of species of birds, mollusks, fungi, insects and lizards amongst many.	The project is a grouped project activity restoring the degraded mangrove forest, as detailed in PD, by discussion with PP and local communities we can confirm that the project is simultaneously restoring biodiversity above water dependent on and/or benefitting from the

		15.3 - Combat desertification, restore degraded land and soil, including land affected by desertification, drought, and floods, and strive to achieve a land degradation-neutral world		mangrove ecosystem. The mangrove habitat supports an abundance of species of birds, mollusks, fungi, insects and lizards amongst many.
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- Additional information relevant to the project, including:

Leakage management for AFOLU projects:

There is no leakage that occurred due to the hydrological restoration and reforestation activity. The validation team validated the same based on the supportive evidence provided (i.e. satellite imagery) and same has been confirmed during the site assessment. Hence this section is not applicable.

Commercially sensitive information:

There is no commercially sensitive information excluded from the PD. Hence this section is NA.

Eligibility Criteria

The project is a grouped project and according to VCS standards; PP has defined eligibility criteria and current project activity was assessed against the same for grouped project activity.

Any instance implemented after validation must comply with section 3.5.15 of the VCS standard 4.4. Therefore, a set of eligibility criteria is defined for each project activity category combination. As the project instance covered in the PD is PAI #1 Which is consisting only one combined project activity category of ARR+RWE, hence only one set of eligibility criteria defined in the proposed project activity

Based on the documentation provided, the documentation reviewed during the onsite visit as well as the interviews conducted in the field, KBS Certification Ltd. confirms that the description in the project description is accurate, complete, and provides an understanding of the nature of the project.

Findings: CL 16 was Raised & closed.

The validation team was able to verify all the documents submitted, the team confirms that data and considerations are complete and accurate. Further, KBS confirms that the description of the proposed grouped project activity is accurate, complete, and provides an understanding of the nature of the project., i.e., the VCS-PD is complete and accurate, as it provides a clear understanding of the project type to the reader.

3.2 Safeguards

3.2.1 No Net Harm

proposed grouped project is mangrove restoration and reforestation. PP has provided remote sensing data from pre-planting of the project was implemented, indicating that the land was substantially degraded before to project began. After implementation of this project the degraded mangrove area will restore which result to increase the ecological productivity of mangrove area. Hence the project has a positive environmental impact. Also, PP has indicated the socioeconomic impact of project activity which provide the job opportunity to local community residing nearby areas. A document that can be validated by reviewing payment receipts supplied to community people to undertake the plantation activity.

Validation team confirms that the project activity does not lead to any net harm in regard to environmental and socio-economic impacts. The above mentioned was further confirmed by interviewing the field staff, community members remote sensing analysis document and receipt of payment issued to the community members for plantation.

Finding: CL 03 was raised & closed.

3.2.2 Local Stakeholder Consultation

As confirmed through site assessment and provided supportive documents/15/. it was confirmed that the local stakeholder consultation had happened in two processes i.e. 1. The preliminary local stakeholder consultation that was performed during project development phase, and 2. the local stakeholder consultation that has been and will further be performed in the implementation phase.

1. Preliminary stakeholder consultation for identification and engagement of relevant local stakeholders in the project development phase Primary

The local stake holder consultation for the grouped project held in different location for different mangrove region of the Gambia which are follows:

Region	Date	Stakeholder category	Place	Number of participants
Greater Banjul Meeting	Friday 24th of September	Government Agencies (TAC), local authorities, women leaders, youth representatives, area councilors, education and research institutions, CBOs, and Vulnerable groups	Baobab Holiday Resort	23
Central River Region (CRR)	Wednesday the 29th of September, 2021	Government Agencies (TAC), local authorities, women leaders, youth representatives, area councillors, CBOs, and Vulnerable groups	Governor's Office	22
North Bank Region (NBR)	Thursday the 28th of September, 2021	Government Agencies (TAC), local authorities, women leaders, youth representatives, area councillors, education and research institutions, CBOs, and Vulnerable groups	Governor's Office	24
Lower River Region	Friday the 1st of October, 2021	Government Agencies (TAC), local authorities, women leaders, youth representatives, area councillors, education and research institutions, CBOs, and Vulnerable groups	Governor's Office	19

West Coast Region (WCR)	Saturday the 25 th of October, 2021	Government Agencies (TAC), local authorities, women leaders, youth representatives, area councillors, education and research institutions, CBOs, and Vulnerable groups	Governor's Office	20
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Stakeholder were invited through a press release in the newspaper regarding progress, invitation letters, phone calls, and WhatsApp messages. The information shared during the stakeholder consultation meetings included project concept and background, project partners, anticipated project impacts and benefits, current situation, and the steps to be followed from development of project through to issuance of carbon credits. Validation team confirms that some general questions were asked regarding the how the reforestation work is going to be happen and what impact of the project will happen on the regional community. The questions raised by the stakeholders have been detailed in every consultation report of mangrove region, for each of the five stakeholder consultations, a summary report was conducted containing an attendance list and an overview of raised questions, comments and/or issues from the stakeholders and the responses and/or clarifications to such from the project developers. Furthermore, additional attendance lists including signatures from the attendees has been produced and provided during validation process.

1. Engagement with local stake holders during project implementation phase

The Government of Gambia along with the other entity involved in the project to arrange local stake holder meeting while implementing the project on regular basis to invite the community residing near the project area to give their inputs on developing project for that they had created WhatsApp group also arranged regular village gathering, where the head of the various community interact with local NGOs, the DPWM and Ørsted. PP also had created official webpage for this project www.gambiamangrove.com This webpage also has a forum for questions and discussions to encourage dialogue with community members and to accommodate the wish to have a forum for this project specifically.

No negative comments were received during ongoing communication with local stakeholders, as verified from the grievance register during the site visit. The overall goal was to improve the project design based on stakeholders' comments and suggestions and increase the local awareness and involvement of Various community for implementing the project activity in the project.

Findings: CL 03 & 04 was closed.

The project participant has justified that description of the project design, implementation, and monitoring was discussed during the local stakeholder consultation done for the project. Also, the relevant laws and regulations covering workers' rights in the country was communicated with them. The validation team has selected some of the local people involved in the stake holder consultation process of project and people involved in project implementation activity to ensure this information. Even the project webpage (www.gambiamangrove.com) details of the project. The project webpage has been shared in the whatsapp group and now the updates are listed in the whatsapp message. These screenshots to the whatsapp message were checked and found ok.

3.2.3 Environmental Impact

Not applicable, no environmental impact studies conducted for the proposed grouped project activity, as no negative environmental impacts envisaged from the project, as the project involves restoration of

Mangrove ecosystem. In Gambia to regulate the use and management of natural resources⁵. Two of the main environmental acts and regulations in place that are especially relevant for this project is The Biodiversity Act (2003) and The Forest Act (1998).

3.2.4 Public Comments

No comments have been received during the 30 days listing period of the project at the VERRA project site. The same has been cross checked in the project web page the Verra site as below-
<https://registry.terra.org/app/projectDetail/VCS/3223>.

3.2.5 AFOLU-Specific Safeguards

Local stakeholder identification process

Risks to local stakeholders due to project implementation and the mitigation of such

In general, the implementation of the project activities is perceived as low risk, relating to minor incidents related to working in a wetland area, which for instance could cutting wounds from oyster shells or mangrove leftovers in the mud or in more rare circumstances leach bites and worm infections. As these are situations the local villagers are familiar with and used to navigate it and will be hard to avoid it is something that will be dealt with and mitigated locally.

the validation team has performed the independent assessment to confirm the occupational safety assessment which are as follows.

- Witnessed the evacuation plan, first aid box facility on-site location
- Interview Orsted management and staff responsible for health and safety. Confirm their understanding and implementation of the policies and procedures.
- Conduct on-site inspections to verify that PPE (safety footwear, tight-fitting clothing, first aid kits) is available and used appropriately.
- Check for the presence of safety signage, emergency response plans, and first aid stations

The Project developer signed a contract with all the entities involved in the project implantation and they all agreed to adhere to a code of conduct which covers discrimination and sexual harassment. The validation team reviewed the contract and the grievance register during the visit confirms that there were no complaints related to discrimination or sexual harassment.

Risks to local stakeholder resources due to project implementation and the mitigation of such

Regarding local stakeholder' resources: In PAI#1, the area planted was prior to project implementation under no anthropogenic usage, and no resources were extracted from the area. As a result of the project implementation, the resource availability in the form of for example oysters which live on the mangrove roots and fish-stocks in the adjacent river dependent upon the mangrove ecosystem is expected to

⁵ UNEP (2021): Large scale ecosystem-based adaptation in the Gambia: Developing a climate-resilient, natural resource-based economy, volume 1: Environmental and Social Impact Assessment

increase, creating a net-positive natural resource generation. Therefore, the implementation of the project has no negative influence on the local stakeholder resources.

It is confirmed during onsite audit reforestation under this project will use native species, reforestation will be carried out using scientific and reasonable methods without burning or logging. Therefore, the validation team agrees that the implementation of this project will not affect the biodiversity negatively on the project sites

The validation team checked the information regarding the risk to local stakeholders due to project implementation in the VCS PD. During the site visit by discussion with the local stakeholders it was confirmed the project does not have any negative risk as explained in PD and above para.

Regarding local stakeholders' property rights: In the Gambia, the lands (Provinces) Act has historically been the principal land law of the Gambia. The act recognizes customary land tenure arrangements and states that the use of "land by the indigenes shall be governed and regulated by the customary laws obtaining in the localities in which such lands are situated." District authorities, Alkalis (village chiefs), headmen, elders, and traditional advisors are given authority over customary tenure systems. Legal respect of both customary and Islamic laws is subject to caveats that say that these laws will be respected as long as they are not repugnant to such factors as equity, good conscience, and morality or inconsistent with other laws that may be in force (USAID (1994) Tenure and Natural Resources in the Gambia – Summary of research findings and policy options)

The degraded wetland areas eligible for replanting are typically customary land. As described in section 2.2 the consent of the local communities situated along the project areas is crucial for project success. Without it, the project cannot simply not be implemented as the plantings are performed by the community members themselves. As further described in section 2.2, prior to project implementation, the consent is obtained orally from the Alkalis in the relevant communities. As the project brings no negative consequences, the consent has so far been given by all Alkalis backed up by wide support from the community members within the community. Should some communities in potential future PAI's not wish to be part of the project, the land over which they hold a customary right will be excluded from the project. Project activity sites will always be assessed in the light of the impacts they will have on the local communities and will only be chosen on areas where there is no risk of negative impacts environmentally and socially.

Process to ensure ongoing communication and consultation with local stakeholders.

As presented in section 2.2 of the updated PD, three main communication channels in the form of WhatsApp groups, regular village gatherings and the official project website has been identified and/or established. For more information on the purpose of each communication channel, refer to the subsection. As stated in the subsection, the official project webpage includes a grievance redress contact formula which can be accessed by all local stakeholders, should they wish to raise their voice to the project proponents on matters related to the project. Should the grieving party have troubles with accessing, understanding or completing the online formula, they can contact the project proponent DPWM, who shall then either assist them with drafting and sending the report themselves, or coordinate

with relevant project staff who then assists with drafting and sending the report. Contact details of DPWM can be found on the official project webpage. The grievance procedures also provide a function for submitting inputs anonymously.

Once a report has been received through the webpage formula, the project proponents Ørsted and DPWM receiving the report shall within 7 working days' coordinate with relevant project staff and contact and discuss with the community, community member(s) and/or other stakeholders involved in the report. Based on all collected information from relevant parties. The project proponents and relevant project staff shall propose a solution and mediation within 14 working days. Finally, the complications or grievances shall be dealt with within 30 days. The grievance report, the process of responding to the grievance and its solution shall be uploaded to the official project webpage.

3.3 Application of Methodology

3.3.1 Title and Reference

Approved VCS methodology VM0007: REDD+ Methodology Framework (REDD+ MF), version 1.6/3/ (<https://verra.org/methodologies/vm0007-redd-methodology-framework-redd-mf-v1-6/>)

Approved CDM methodology AR-ACM0003: Afforestation and reforestation of lands except wetlands --- Version 2.0 (<https://cdm.unfccc.int/methodologies/DB/C9QS5G3CS8FW04MYXDF0QDPXWM40E/>) /3/Applied tools/^{16/}:

Module	Full name	Version
M-ARR	VMD0045 Methods for monitoring greenhouse gas emissions and removals in ARR project activities	Version 1.1. Approved 09/03-2015. Latest revision 08/09-2020
T-ADD	CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities	Version 1. Valid from 19/10-2007
T-BAR	AFOLU Non-Permanence Risk Tool	Version 4.0. Valid from 19/09-2019
X-STR	VMD0016 Methods for stratification of the project area	Version 1.2. Approved 03/12-2010. Latest revision 08/09-2020
BL-ARR	VMD0041 Estimation of baseline carbon stock changes and greenhouse gas emissions in ARR project activities	Version 1.1. Approved 09/03-2015. Latest revision 08/09-2020
LK-ARR	VMD0043 Estimation of emissions from displacement of pre-project agricultural activities	Version 1.0. Approved 09/03-2015
M-TW	VMD0051 Methods for Monitoring of Carbon Stock Changes and Greenhouse Gas Emissions and Removals in Tidal Wetland Restoration and Conservation Project Activities	Version 1.0. Approved 08/09-2020
ADD-AM	VMD0052 Demonstration of additionality of tidal wetland restoration and conservation project activities	Version 2.0. Approved 30/09-2021
BL-TW	VMD0050 Estimation of Baseline Carbon Stock Changes and Greenhouse Gas Emissions in Tidal	Version 1.0. Approved 08/09-2020

	Wetland Restoration and Conservation Project Activities	
LK-ECO	VMD0044 Estimation of emissions from ecological leakage	Version 1.1. Approved 09/03-2015. Latest revision 08/09-2020
E-FFC	VMD0014 Estimation of emissions from fossil fuel combustion	Version 1.0. Approved 03/12-2010

Finding: No finding was raised.

3.3.2 Applicability

The VCS PD states all evidence used to demonstrate each condition of the applicable methodology. In opinion of assessment team, the evidence and explanations confirm the fulfilment of the project with the methodology

The assessment was carried out by validation team for each applicability criterion included in the grouped project, among others, the review of evidence and sources provided in the project document and the compliance check of the local project setting with the applicability conditions as per all applied methodology VM0007. The applicability conditions for grouped project and project activities included in PAI#1 has also been justified.

Sl. No	Project activity	Applicability Criteria	PP Justification	VVB Assessment
a)	Afforestation, reforestation and revegetation (ARR)	ARR activities are applicable under the following conditions:		
		1. The project area is non-forest land or land with degraded forest.	1) PAI#1 is degraded wetland and thus non-forest land (see figure 2 for map showing the geographic boundaries of PAI#1). See the “Historical analysis of land cover” report for imagery that demonstrates historical prevalence of degraded wetland/non-forest land	The project plantation is established on degraded mangrove land. The project participant has provided report of the historical analysis of the land cover. To demonstrated this study PP have taken maps from the government of overseas development. The validation team confirmed by the remote sensing analysis data (LULC) during detailed desk review assessment. Which confirmed that the proposed project area is non-forest land or land with degraded forest Hence this applicability criterion is found to be met

		2. In strata with drained organic soil, ARR activities must be combined with rewetting.	2) The soil of PAI#1 is neither classified as organic nor drained. Please refer to section 1.13 of PD for further information.	As per the Soil Atlas of Africa produced by ESDAC and the IPCC wetlands supplement (2013), the soil of PAI#1 activity is not classified as organic nor drained. Hence, there is no rewetting in PA1 activity.
		ARR activities are not eligible under the following conditions:		
		a) The project scenario involves the application of nitrogen fertilizers.	No nitrogen fertilizers are applied in the project scenario of PAI#1. Additionally, financing for nitrogen fertilizers is not available within the budget for project activities, which is available upon request.	By reviewing the financial budget and financial declaration plantation year of the of the proposed project activity, it was found that no budget was allocated for purchasing nitrogen fertilizers in the project scenario. Also, the soil test report checks to confirmed the same. The validation team cross-checked the same during on-site assessment by interviewing with PP. Hence this condition is not applicable,
		b) If ARR activities enhance peat oxidation. Therefore, on peatland, the project must include at least some degree of rewetting. In a tidal system where the tidal regime is restored or continues to be in place, ARR activities are considered not to enhance peat oxidation.	2) In PAI#1, the tidal regime is being restored as a part of the project activities. and the area does not have peat Therefore, the ARR activities are considered not to enhance peat oxidation. Furthermore, the soil of PAI#1 is not classified as organic.	In PAI#1, the tidal regime is being restored as a part of the project activities and the project area does not have peat land. The validation team confirmed the same during on-site assessment. Therefore, the ARR activities are considered not to enhance peat oxidation. Furthermore, the soil of PAI#1 is not classified as organic.

				Hence, this condition is not applicable,
		Where project activities on wetlands are excluded by the applicability conditions of applied modules or tools, such applicability conditions can be disregarded for the purpose of their use within this methodology, as quantification procedures for peat and tidal wetland soils are provided in Modules BL-PEAT, M-PEAT, BL-TW and M-TW. Therefore, ARR activities on wetlands are regarded as combined ARR-RWE activities.	The relevant listed applicable soil modules are applied in this project.	The relevant listed applicable soil modules are applied in this project. Checked by document i.e., IPCC wetlands supplement (2013).
b)	All Wetland Restoration and Conservation (WRC) Activity types Restoration of Wetlands Ecosystems (RWE)	WRC activities are not eligible under the following conditions:		
		1. Project activities lower the water table, unless the project converts open water to tidal wetlands, or improves the hydrological connection to impounded waters.	1) In PAI#1, part of the project activities is to improve the hydrological connectivity of some of the area, but such intervention will not lower the water table. In some cases, it is possible that the hydrological alteration improves the hydrological connection to impounded waters. However, this is according to the methodology approved of.	This was confirmed by discussion with PP and local communities i.e., PAI#1 activities will improve the hydrological connectivity of some of the area, and this is also in line with applied methodology.
		2. Changes in hydrology do not result in the accumulation or maintenance of SOC stock, noting that a) this pertains to projects that intend to sequester carbon through sedimentation and/or vegetation development and b) this does not pertain to projects that increase salinity	2) in PAI#1, the changes in hydrology due to the applied project activities will result in a net-accumulation of SOC compared with the baseline scenario. This can	The proposed project activity is restoration of degraded mangrove. Which is performing on the pre-existing mangrove areas. In PAI#1, part of the project activities is improving the hydrological

		to reduce CH₄ emissions. Projects that aim to decrease CH₄ emissions through increased salinity must account for any changes in SOC stocks.	be justified for two reasons: 1) As mangrove trees are planted, additional organic material is added to the area in the project scenario compared with the baseline scenario, and 2) As the project area through the hydrological changes induced by project activities will become wetter compared to the baseline scenario, the SOC will, due to the more anaerobic environment, have better conditions for accumulating. Note that no sequestration will be claimed until crown coverage achieves thresholds put forth in VMD0051-M-TW	connectivity of project area, resulting will not lower the water table of project area. Hence change in the hydrology does not result in the accumulation of SOC stock.
		3. Hydrological connectivity of the project area with adjacent areas leads to a significant increase in GHG emissions outside the project area.	By discussion with PP and local communities during the site visit to project activity. It was observed that any alteration of the hydrology in the project area will not result in a lowered water table in areas outside of the project area as the altered hydrology is connected to the ocean, ensuring a constant water table in areas where the	As the alteration of hydrology work happened in the project area PAI#1 hence it can impact net-accumulation of SOC compared with the baseline scenario. PP that justifies in two ways: 1) As mangrove trees are planted, additional organic material is added to the area in the project scenario compared with the baseline scenario, and

			hydrology is not altered.	2) As the project area through the hydrological changes induced by project activities will become wetter compared to the baseline scenario, the SOC will, due to the more anaerobic environment, have better conditions for accumulating. This was confirmed by discussion with PP and local communities during the site visit to project activity.
		4. Project activities include the burning of organic soil.	4) In PAI#1, none of the project activities include the burning of organic soil. Furthermore, no organic soil is present. Please refer to section 1.13 for further information.	This condition is not applicable, In PAI#1, none of the project activities include the burning of organic soil.
		5. Nitrogen fertilizer(s), such as chemical fertilizer or manure, are applied in the project area during the project crediting period	5) in PAI#1, none of the project activities include the application of any type of nitrogen fertilizers. Additionally, financing for nitrogen fertilizers is not available within the budget for project activities, which is available upon request	This condition is not applicable, as indicated in the ARR project activity the application of nitrogen fertilizers has not happened in the project area and PAI#1, none of the project activities include the application of any type of nitrogen fertilizers. The validation team reviewed the financial budget and declaration of the implemented year of the proposed project activity along with soil test report confirmed that there is no budget allocated for purchasing nitrogen

				fertilizers in the project scenario and no fertilizer used in the project area.
c)	Restoration of Wetlands Ecosystems (RWE)	For RWE project activities, prior to the project start date, the project area must meet the following conditions.		
		a) The area is free of any land use that could be displaced outside the project area, as demonstrated by at least one of the following, where relevant: - The project area has been abandoned for two or more years prior to the project start date; or - Use of the project area for commercial purposes (i.e., trade) is not profitable as a result of salinity intrusion, market forces, or other factors. In addition, timber harvesting in the baseline scenario within the project area does not occur; or - Degradation of additional wetlands for new agricultural/aqua cultural sites within the country will not occur or is prohibited by enforced law. OR b) The area is under a land use that could be displaced outside the project area, although in such case, baseline emissions from this land use must not be accounted for, and where degradation of additional wetlands for new agricultural/aqua cultural sites within the country will not occur or is prohibited by enforced law. OR c) The area is under land use that will continue at a similar or greater level of service or production during the project crediting period (e.g., reed or	PAI#1 lives up to the conditions set in option a) as the project area has been abandoned for at least two years prior to the project start date.	As the project area is abounded for last two years before initiation of the project hence option a. has been set for PAI #1 project activity instance.

		hay harvesting, collection of fuelwood, subsistence harvesting, commercial fishing). The project proponent must demonstrate (a), (b) or (c) above, based on verifiable information such as laws and bylaws, management plans, annual reports, annual accounts, market studies, government studies or land use planning reports and documents		
		Project activities restoring tidal wetlands may include any of the following, or combinations of the following.		
		1. Creating, restoring and/or managing hydrological conditions (e.g., removing tidal barriers, improving hydrological connectivity, restoring tidal flow to wetlands or lowering water levels on impounded wetlands). 2. Altering sediment supply (e.g., beneficial use of dredge material or diverting river sediments to sediment-starved areas). 3. Changing salinity characteristics (e.g., restoring tidal flow to tidally restricted areas). 4. Improving water quality (e.g., reducing nutrient loads leading to improved water clarity to expand seagrass meadows, recovering tidal and other hydrologic flushing and exchange or reducing nutrient residence time) 5. (Re-)introducing native plant communities (e.g., reseeded or replanting) 6. Improving management practice(s) (e.g., removing invasive species, reduced grazing). 7. In RWE-ARR project activities, the prescribed burning of	All activities presented in this subsection is optional, why PAI#1 shall not live up to anything here to be applicable. However, the activities described in bullet 1, 3 and 5 are relevant for the project.	By discussion with PP and local communities during the site visit to project activity it can be conclude that the activities described in bullets 1, 3 and 5 are relevant for the project and all other activities presented is optional.

		herbaceous and shrub aboveground biomass (cover burns) may occur		
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Application condition for tools & modules applied for this project activity PAI #1

SI No	Module	Applicability Criteria	PP Justification	VVB Assessment
1.	M-ARR	The applicability conditions are provided in AR-ACM0003.		
		Applicability conditions included in AR-ACM0003 and corresponding tools that exclude project activities on wetlands can be neglected for the purpose of their use in this module, as accounting procedures for the peat soil are provided in Modules M-PEAT and M-TW.		
		A project activity applying the methodology AR-ACM0003 shall also comply with the applicability conditions of the tools contained within the methodology and applied by the project activity.		
		The methodology AR-ACM0003 is applicable under the following conditions:		
		a) The land subject to the project activity does not fall in wetland category	Applicability condition (a) of AR-ACM0003: Can be discarded as M-ARR allows for the inclusion of wetland areas.	The proposed group project activity includes the wetland restoration and conservation activities. Hence this applicability criterion is not applicable.
		a) Soil disturbance attributable to the project activity does not cover more than 10 per cent of area in each of the following types of land, when these lands are included within the project boundary: (i) Land containing organic soils; (ii) Land which, in the baseline, is subjected to land-use and management practices and receives inputs listed in appendices 1 and 2 to this methodology.	Applicability condition (b) of AR-ACM0003: Soil disturbances will not cover more than 10% of the area of PAI#1. Furthermore, the soil within PAI#1 does not classify as organic, which is mineral, and the baseline is not subject to any land-use and/or management practices.	Yes, the justification by PP is accepted. The validation team during the visit to the site and by discussion with PP confirms that soil disturbances will not cover more than 10% of the area of PAI#1.
Applicability conditions of tools contained within the methodology AR-ACM-0003				
b) Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities	See module T-ADD within this table for justification.	Yes, PP has used Combined tool to identify the baseline scenario and demonstrate		

				additionality of the project activity.
		c) Estimation of non-CO2 GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity: - The tool is applicable to all occurrence of fire within the project boundary. - Non-CO2 GHG emissions resulting from any occurrence of fire within the project boundary shall be accounted for each incidence of fire which affects an area greater than the minimum threshold area reported by the host Party for the purpose of defining forest, provided that the accumulated area affected by such fires in a given year is $\geq 5\%$ of the project area.	No fire is expected to occur as burning of biomass is not part of the project activities.	The validation team confirmed that by site assessment and by discussion with PP confirms that burning of biomass is not part of the project activities and the occurrence of fire is not seen.
		d) Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities	The tool has no internal applicability conditions.	Not applicable.
		e) Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities.	The tool has no internal applicability conditions.	
		f) Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities	The tool has no internal applicability conditions.	
		g) Estimation of the increase in GHG emissions attributable to displacement of pre-project agricultural activities in A/R CDM project activity h) This tool is not applicable if the displacement of agricultural activities is expected to cause, directly or indirectly, any drainage of wetlands or peat lands.	The project activities will result of plantation of mangrove species hence displacement of agricultural activities is not applicable in the baseline of PAI#1.	During site visit the mangrove plantation areas were visited and found that no displacement of agricultural activities for project
		i) Tool for estimation of change in soil organic carbon stocks	This tool is not used for estimation of change in	Not applicability

		due to the implementation of A/R CDM project activities	soil organic carbon stocks in this project (module M-TW and BL-TW is used instead, as required in the applied methodology), why the applicability conditions are not relevant.	
2.	T-ADD	a) Forestation of the land within the proposed project boundary performed with or without being registered as the A/R CDM project activity shall not lead to violation of any applicable law even if the law is not enforced	No violation of any applicable law (even when not enforced) is taking place because of the project.	During desk review and on-site assessment, the validation team checked all the applicable laws and confirmed that there is no violation of any applicable law taking place because of the proposed project activity. Department of Parks and Wildlife Management Gambia (DPWM) the governing body is part of the project. Hence this criterion is applicable.
		b) This tool is not applicable to small - scale afforestation and reforestation project activities.	The grouped project has a scope of reforesting 10.000 hectares of forest, classifying it as a large - scale reforestation project in CDM terminology.	Yes, project has a scope of reforesting 10.000 hectares of forest. This was confirmed from site visit, discussion with PP, that project is a large - scale reforestation project in CDM terminology.
3.	T-BAR	This tool has no applicability conditions.	This tool has no applicability conditions.	Not Applicable
4.	X-UNC	1. Where an uncertainty value is not known or cannot be simply calculated, a project must justify that it is using an indisputably conservative number and an uncertainty of 0% may be used for this component.	Indisputably conservative numbers have been applied. See section 4.4.	Yes, conservative numbers have been applied in section 4.4 of the PD.

		2. Guidance on uncertainty – a precision target of a 95% confidence interval half-width equal to or less than 15% of the recorded value must be targeted. This is especially important in terms of project planning for measurement of carbon stocks; sufficient measurement plots should be included to achieve this precision level across the measured stocks.	As all parameters applied is deemed as being indisputably conservative, uncertainty estimations are not to be calculated. Please refer to section 4.4 for further information.	
5.	X-STR	1. Any module referencing strata i must be used in combination with this module.	Any module referencing strata i has been used in combination with module X-STR.	This project activity is not in any REDD+ area.
		2. In case of REDD, aboveground biomass stratification is only used for pre-deforestation forest classes, and strata are the same in the baseline and the project scenario. Post-deforestation land uses are not stratified. Instead, average post-deforestation stock values (e.g., simple or historical area-weighted approaches are used, as per Module BL-UP).	REDD is not part of the initial project instance PAI#1. If future project instances of REDD are to be added, this point will be justified in an updated PD.	
		3. For peatland rewetting and conservation project activities this module must be used to delineate non-peat versus peat and to stratify the peat according to peat depth and soil emission characteristics, unless it can be demonstrated that the expected emissions from the soil organic carbon pool or change in the soil organic carbon pool in the project scenario is de minimis.	Peatland rewetting and conservation is not part of the initial project instance PAI#1. If future project instances including such activities are to be added, this point will be justified in an updated PD.	Not applicable for PAI#1.
		4. In the case of WRC project activities, the project boundary must be designed such that the negative effect of drainage activities that occur outside the project area	No drainage activities outside the project area that would negatively affect the GHG benefits within the project area are projected to occur.	The validation team by site assessment and by discussion with stakeholders confirms that no drainage activities

		on the project GHG benefits are minimized.		outside the project area were made.
6.	BL-ARR	This module is applicable under the following conditions:		
		1. The applicability conditions set out in AR-ACM0003 Afforestation and reforestation of lands except wetlands must be met.	See module M-ARR in this table for justification.	The project plantation is established on degraded mangrove land. The validation team verified based on the historical analysis of the land cover report provided by PP and the same has been confirmed during the on-site assessment. Further, this was confirmed by the remote sensing analysis data (LULC) during detailed desk review.
		Applicability conditions included in AR-ACM0003 Afforestation and reforestation of lands except wetlands and corresponding tools that exclude project activities on wetlands can be disregarded for the purpose of their use in this module, as accounting procedures for the peat soil are provided in Modules BL-PEAT and BL-TW.	The relevant listed applicable soil modules are applied in this project.	PAI#1 activity is not a soil/land classified as peatland.
		2. Where the ARR project activity is implemented on peatland, the peatland must be degraded in the baseline scenario as identified by the presence of drainage infrastructure (ditches, canals) and associated lowered water tables below the surface. In the case of forested peatland, degradation may be identified by the removal or degradation of the tree cover before the project start date.	The soil in PAI#1 is not classified as peatland. If future project activity instances are to be implemented on peatland, this point will be justified once relevant in an updated PD.	Yes, PAI#1 activity is on a degraded wetland and the project is not in any REDD+ area.
7.	LK-ARR	3. Where the ARR project activity is implemented on tidal wetlands, the wetland must be degraded, as defined in REDD+ MF.	The area within PAI#1 is classified as degraded wetland.	
		This module is applicable under the following conditions:		
		1) Applicability conditions set out in AR-ACM0003 must be met. Applicability conditions in AR-ACM0003 that exclude project activities on wetlands can be disregarded in the context of this module	See module M-ARR in this table for justification.	The proposed group project activity includes wetland restoration and conservation activities. Hence this applicability criterion of AR-ACM0003 is met and proved in PD.

8.	M-TW	This module applies to tidal wetland restoration and conservation project activities, as defined in REDD+ MF. This module is applicable under the same applicability conditions outlined in REDD+ MF for WRC project activities.	See table 8 for listing and justification of applicability conditions for WRC project activities in the REDD+MF methodology VM0007 v1.6	The project is not in any REDD+ area.
9.	ADD-AM	This module is applicable to tidal wetland restoration and conservation project activities as defined below. Project activities restoring tidal wetlands may include any of the following, or combinations of the following: 1) Creating, restoring and/or managing hydrological conditions (e.g., removing tidal barriers, improving hydrological connectivity, restoring tidal flow to wetlands or lowering water levels on impounded wetlands) 2) Altering sediment supply (e.g., beneficial use of dredge material or diverting river sediments to sediment-starved areas) 3) Changing salinity characteristics (e.g., restoring tidal flow to tidally restricted areas) 4) Improving water quality (e.g., reducing nutrient loads leading to improved water clarity to expand seagrass meadows, recovering tidal and other hydrologic flushing and exchange or reducing nutrient residence time) 5) (Re-)introducing native plant communities (e.g., reseeded or replanting) 6) Improving management practice(s) (e.g., removing invasive species, reduced grazing) 7) In RWE-ARR project activities, the prescribed burning of herbaceous and shrub aboveground biomass (cover burns) may occur.	The project activities applied in PAI#1 includes the activities described in point 1), 3) and 5).	The validation team by site assessment and by discussion with PP confirms that 1) The proposed project is restoring and managing hydrological conditions (i.e., improving hydrological connectivity). 2) No such altering sediment supply in the project activity. 3) Yes, in the project the changing salinity characteristics (e.g., restoring tidal flow to tidally restricted areas) is done by improving hydrological connectivity. 4) Yes, in the project the water quality will be improved by hydrological connectivity alterations.

				5) Yes, (Re-)introducing of native plant communities (e.g., reseeded or replanting) is done in the project activity. 6) No such activity was done in the project activity. i.e., removing invasive species, reduced grazing) 7) No such activity in the project.
10.	BL-TW	This module applies to tidal wetland restoration and conservation project activities, as defined in REDD+ MF. This module is applicable under the same applicability conditions outlined in REDD+ MF for WRC project activities.	See table 8 for listing and justification of applicability conditions for WRC project activities in the REDD+MF methodology VM0007.	Yes, ok
11.	LK-ECO	This module is applicable under the following condition: Leakage caused by hydrological connectivity is avoided by project design and site selection.	Leakage caused by hydrological connectivity is avoided. Justification for can be found in section 4.3.	Yes, in the project Leakage caused by hydrological connectivity is avoided. It is appropriately justified in section 4,3 of the PD.
12.	E-BPB	This module is applicable to REDD project activities with emissions from biomass burning and REDD-WRC project activities with emissions from biomass and/or peat burning. This module is also applicable to RWE and ARR-RWE project activities with emissions from peat burning.	The module is applicable to ARR+RWE project activities with emissions from peat burning. Neither peat burning or biomass burning is expected in the baseline and neither is part of the project activities. However, should this occur or new information regarding such emerge, the module will be applied for estimation of GHG emissions related to such.	Yes, the justification by PP is accepted. The project is not in any REDD+ area.
13.	E-FFC	All fossil fuel combustion associated with a project may be	In the applied methodology VM0007, it is	Yes, the justification by PP

		accounted, including fossil fuel combustion of subcontractors that are conducting (parts of the) work to implement the project. Fossil fuel combustion in all situations is an optional emission source. Project proponents may, however, elect to include fossil fuel combustion if emissions are higher in the baseline than in the project case thus generating emission reductions through project activities. Where emissions from fossil fuel combustion are estimated in the baseline, monitoring and estimation must also occur in the with-project scenario.	stated that fossil fuel combustion related to the implementation of RWE activities must be included in the GHG estimations (See table 9 in VM0007). Therefore, combustion of fossil fuels in the project scenario are included in the GHG estimations of this PD – however they are deemed de minimis, see section 4.2.	is accepted. PP has used CDM tool “Tool for testing significance of GHG emissions in A/R CDM project activities” V1, as per tool <i>“the sum of decreases in carbon pools and increases in emissions that may be neglected shall be less than 5% of the total decreases in carbon pools and increases in emissions, or less than 5% of net anthropogenic removals by sinks, whichever is lower”</i>. In the project activity PAI#1 the fossil fuel emissions along with the soil excavation emissions are the only emissions sources considered in the assessment of de minimis emissions, they can as they together constitute less than 5% of the total net-removals be classified as de minimis and therefore set to zero. The excel file containing fuel combustion calculations is checked by validation team to confirm the same.
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3.3.3 Project Boundary

The grouped project boundary defined in the latest PD included all intact, degraded and deforested wetland areas within the mangrove regions of The Gambia. PP had provided the KML files & geodetic coordinates of project boundary to verify the data.

The validation team was able to confirm during the on-site assessment and through desk review. For each GHG source, sink and reservoir, describe the steps taken to assess that the review of documents that all the identified emission sources which are impacted by the project activity are addressed by the approved methodology and can be seen in the Table below.

Carbon pools

Overall decreases in carbon stocks were taking place in the project scenario because of project activities. Potential further decreases of carbon stocks in the baseline scenario are conservatively not accounted for, PP has mentioned that a small amount of methane and nitrous dioxide emissions from the soil carbon pool which are also considered for in the project scenario, equalling them out. Therefore, the only net-carbon stock changes accounted for in this project are the increases in the below listed carbon pools.

Carbon pool		Included?	Justification/Explanation
Baseline	Aboveground biomass	Included	Major carbon pool subject to the project activities. Covered under ARR.
	Belowground biomass	Included	Carbon stock in this pool is expected to increase due to the implementation of the project activities. Covered under ARR.
	Litter	Excluded	This carbon pool is excluded. It is a conservative choice to exclude the pool as the project activities will not decrease the rate of accumulation of litter.
	Dead wood	Included	Even though stock changes in dead wood in the baseline are not expected to increase, this carbon pool has been considered because the project activities are expected to lead to an increase of SOC. Covered under ARR
	Soil Organic Carbon	Included	Even though the SOC stock in the baseline is not expected to increase (actually they are highly likely to decrease due to ongoing oxidation of C present in the soil – however this factor has conservatively been excluded from these calculations), this carbon pool has been considered because the project activities are expected to lead to an increase of SOC. Covered under RWE.
	Wood product	Excluded	This pool is optional as per VCS rules.
Project	Aboveground biomass (tree and non-tree biomass)	Included	Major carbon pool subject to the project activities. Covered under ARR
	Belowground biomass	Included	Carbon stock in this pool is expected to increase due to the implementation of the project activities. Covered under ARR.

Carbon pool		Included?	Justification/Explanation
	Litter	Excluded	This carbon pool is excluded. It is a conservative choice to exclude the pool as the project activities will not decrease the rate of accumulation of the litter.
	Dead wood	Included	Carbon stock in this pool is expected to increase due to implementation of the project activities. The methodology provides a conservative default approach for accounting of increase in carbon stock in this pool Covered under ARR.
	Soil Organic Carbon	Included	The applied methodology allows in module BL-TW and M-TW for the use of default values to account for the increase in carbon stock in the soil pool. Covered under RWE.
	Wood product	Excluded	This pool is optional as per VCS rules

Sources of GHG emission

Source		Gas	Included?	Justification/Explanation
Baseline	Burning of Biomass	CO ₂	Excluded	Carbon stock decreases due to burning are accounted as a carbon stock change. However, burning of biomass is not expected
		CH ₄	Excluded	Conservatively excluded. Furthermore, burning of biomass is not expected.
		N ₂ O	Excluded	Conservatively excluded. Furthermore, burning of biomass is not expected
	Combustion of Fossil fuel	CO ₂	Excluded	Conservatively excluded
		CH ₄	Excluded	Conservatively excluded
		N ₂ O	Excluded	Conservatively excluded
	Emission from tidal wetlands mineral soil	CO ₂	Excluded	Conservatively excluded
		CH ₄	Included	This emission source is accounted for through the usage of a standard value based on salinity content.
		N ₂ O	Included	This emission source is accounted for through the usage of a standard value based on salinity content.
	Peat or biomass combustion	CO ₂	Excluded	Conservatively excluded.
		CH ₄	Excluded	Conservatively excluded
		N ₂ O	Excluded	Conservatively excluded
Project	Burning of biomass	CO ₂	Included	Carbon stock decreases due to burning of biomass is accounted as a carbon stock change. However, no burning of biomass is expected in the grouped project, and it does not occur in the first project instance PAI#1

Source	Gas	Included?	Justification/Explanation
	CH ₄	Included	Burning of biomass for the purpose of site preparation, or as part of forest management, is allowed. However, no burning of biomass is expected in the grouped project, and it does not occur in the first project instance PAI#1.
	N ₂ O	Included	Burning of biomass for the purpose of site preparation, or as part of forest management, is allowed. However, no burning of biomass is expected in the grouped project, and it does not occur in the first project instance PAI#1.
	Combustion of fossil fuels	CO ₂	This source may result in emissions. However, it is calculated to be de minimis.
		CH ₄	This source may result in emissions. However, it is calculated to be de minimis.
		N ₂ O	This source may result in emissions. However, it is calculated to be de minimis.
	Emissions from tidal wetlands mineral soil	CO ₂	There will be no net CO ₂ emissions from the soil pool in the project scenario. The net-increase in the SOC pool is accounted for through the appliance of a standard value
		CH ₄	This emission source is accounted for through the usage of a standard value based on salinity content.
		N ₂ O	This emission source is accounted for through the usage of a standard value based on salinity content
	Peat or biomass combustion	CO ₂	This emission source is accounted for. However, no combustion of biomass or peat is expected in the grouped project, and it does not occur in the first project instance PAI#1.
		CH ₄	This emission source is accounted for. However, no combustion of biomass or peat are expected in the grouped project, and it does not occur in the first project instance PAI#1.
		N ₂ O	This emission source is accounted for. However, no combustion of biomass or peat are expected in the grouped project, and it does not occur in the first project instance PAI#1.

3.3.4 Baseline scenario:

Prior to the project initiation the project ecosystem type covered by the grouped project was characterized as degraded wetland areas (ARR and RWE project activities. It is validated, especially for PAI #1, that the type of pre-project ecosystem was degraded mangrove areas that are basically bare land with only a few scattered mangrove trees of principally the genus *Avicenna* within it, based on a remote sensing analysis study, also in latest PD it was mentioned the historical land cover for the project area PAI #1 on the basis of the pictures provided it was cleared that the project area is wetlands that has historically been covered by mangrove habitats.

As set out in the applied methodology VM0007, the CDM combined tool T-ADD should be applied for the determination of the most plausible baseline scenario for each of the included categories of grouped

project activity. In the latest PD, the module is applied to the project activity category of RWE+ARR. Additionality

The project's additionality is demonstrated for the grouped projects as well as this current PAI#1 project activity. According to the applied methodology, the latest version of the tool CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities(T-ADD), version 01/17/ must be applied to determine additionality. The additionality assessment has been done according to the grouped project and first project activity instance. The steps are described as follows which have been assessed by validation team.

Additionality for project activity PAI#1 is demonstrate as per the CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities v.1 the following steps are considered to determine additionality:

Step 0: Preliminary screening based on the starting date of the A/R project activity:

PP has mentioned the Lærke Stürup Chrintz, Climate Advisor at Ørsted, Istch@orsted.com, +45 99 55 27 32 Ørsted Headquarters: Nesa Allé 1, 2820 Gentofte, Denmark of the project is 9th of April 2022 which is after the 31st of December 1999 it is validate by the validation team based on the receipts documenting of the payment to the local community members performing the first canal excavation. the main aim of the project is generating VCU's because Ørsted was signed the agreement before the implementation of project Activity-I which is validate by the validation team.

Step 1 Identification of alternative land use scenarios to the proposed project activity:

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

Baseline scenario 1:Status Quo: Continuation of the pre-project land-use, remaining as degraded wetlands.

Baseline scenario 2: Reforestation of the land within the boundaries of the project activities performed without being registered as a VCS project activity.

Baseline scenario 3: Partly reforestation of the land in the absence of the project

Baseline scenario 4: Natural regeneration in the absence of the project

As the project area is already degraded mangrove area the literature study⁶ justified that the mangrove declines in the Gambia from 1980 to 2006 and this study⁷ by Judith Carney et al which estimates a mangrove decline of 12% along the south bank of the lower Gambia river between 1986 and 2010. The validation team has reviewed the research paper and confirmed that there is no naturally regeneration

⁶ Report produced for UNEP-DEPI (2007): Mangroves of Central and Western Africa. Report access: <https://wedocs.unep.org/bitstream/handle/20.500.11822/7768/-Mangroves%20of%20West%20Africa-20073922.pdf?sequence=3>, Accessed 02/02-2023

⁷ Carney, J., Gillespie, T. W., Rosomoff, R. (2014): Assessing forest change in a priority West African mangrove ecosystem: 1986-2010

of the mangrove occurs in the project area and same is cross checked with LULC data of previous 10 years. Hence plausible scenario 3 & 4 found to unrealistic and unreal

The outcome of Sub-step 1a: Based on the justification provided in the PD, a total of two alternative land use scenarios are found deemed credible and realistic:

- Baseline scenario 1: Status Quo: Continuation of the pre-project land use, remaining as degraded wetlands.
- Baseline scenario 2: Reforestation of the land within the boundaries of the project activities performed without being registered as a VCS project activity

The desk review and historical data provided for the project land confirm that there are two baseline scenarios are found to be credible and realistic.

Outcome of Sub-step 1b: The plausible alternative land use scenarios identified in the sub-step-1 of the PD are in compliance with the mandatory legislation and regulation taking into account enforcement within the Gambia

As per the desk review & onsite assessment, the validation team confirms that the project activity is not enforced by with any mandatory applicable laws of Gambia.

STEP 2 Barrier analysis:

Sub-step 2a: Identification of barriers that would prevent the implementation of baseline scenario two:

a. Investment barriers:

The main aim of the project is restoring the degraded mangrove habitats areas, not the sale of the any useful product. Also, mangrove wood is not commercial wood which can be used for getting financial benefits. hence no direct income is generated to the local communities which only results to increases the productivity of mangrove ecosystem⁸. The entire project is only conservation of the mangrove habitat. Only selling of carbon VCUs can generate the money for implementing this project.

b. Technological, logistical and social barriers

Boats, shovels, automobiles, and monitoring devices for the restoration of ecology are all required for the project's successful implementation. Whereas historically the Gambia was heavily relied on the external project-based funding and significant gaps in long-term funding for climate action⁹. The education is still limited in the Gambia only 29% of students in Gambia completed upper secondary education, and most of the local communities have insufficient technical knowledge¹⁰. Also, the local communities don't have the logistical skills, contacts, knowledge nor funds to secure a sufficient supply of high-quality propagules. The local communities must grasp the abilities required

⁸ Albert, J.A. & Warren-Rhodes, K. & Schwarz, Anne-Maree & Duke, Norman. (2012). Mangrove ecosystem services and payments for blue carbon in Solomon Islands. 10.13140/RG.2.1.2301.2081.

⁹ Urquhart, P., GCCA Component 2 Project Team, National Climate Committee, Technical Working Group, Karani, P., Osuteye, E. Abeyasinghe, A., Sharma, A., Ferreira, T., Njie, M., Yade, S., Nyass, M., Feys, F., Watson, D., Sowe, M., & Yaffa, S. (2016). National Climate Change Policy of the Gambia.

African Development Bank. (2023). Country Focus Report 2023 - Gambia - Mobilizing Private Sector Financing for Climate and Green Growth

¹⁰ UNICEF Gambia. (2020). The Gambia Education Fact Sheets.

to complete the project, and they will not work simply for the purposes of ecological restoration; they must be sufficiently rewarded for their efforts as 76% of the rural population in The Gambia live in poverty, and has trended upwards.¹¹ These are the barriers identified by PP when implementing the project activity.

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

Baseline scenario 1 does not face any of the barriers described in sub-step 2a because it's just kept the degraded land as it is, while baseline scenario 2 faces all of the above listed barriers. As a result of such, baseline scenario 2 is eliminated.

Sub-step 2c: Determination of baseline scenario

By applying the decision tree presented in the applicable tool, The baseline scenario is identified as baseline scenario 1: Status Quo: Continuation of the pre-project land-use, remaining as degraded wetlands.

Outcome of step 2

The baseline scenario is identified after the demonstration of barrier analysis is baseline scenario 1: continuation of the pre-project land use, remaining as degraded wetlands.

STEP 4 Common practice analysis:

In line with the applied methodology, CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities (T-ADD) is used to demonstrate project additionality.

PP has submitted a list of implemented in the mangrove restoration projects within the wetlands ecosystem of Gambia are as follows.

1. *GCF project FP011 "Large-scale Ecosystem-based Adaptation in The Gambia: developing a climate-resilient, natural resource-based economy: Implementing Ecosystem-based Adaptation (EbA)"*

The goal of the EbA project is to restore degraded forests and agricultural landscapes in The Gambia with climate-resilient plants, establishing natural resource-based businesses, and strengthening capacity and policies to implement eco based adaptation systems. The duration of the project is 6 years. As part of the project indicated by EbA, the West African Bird Study Association (WABSA) has planted 34.3 ha of degraded mangrove areas identified for the 2021 mangrove restoration action plan. This includes mangrove areas of the Central River Region (CRR) North bank and Lower River Region (LRR) South bank of the river Gambia.

2. *"National Agricultural Land and Water Management Development Project" (NEMA-CHOSSO)¹²* The programme development objective was to reduce poverty of rural women and youth by increasing incomes from improved productivity based on sustainable land and water management practices. The programme was funded by various grants and loans (primarily through IFAD) and lasted from

¹¹ World Bank. (2023). The Gambia. Poverty & Equity Brief.

¹² Some documents name the project: "Strengthening Climate Resilience of the National Agricultural Land and Water Management Development Project" to mean the same project "National Agricultural Land and Water Management Development Project"

2013 to 2019. As part of the programme, mangrove was to be restored in various areas in The Gambia. According to plan, approx. 1800 hectares were to be restored, though exact areas and shapefiles are not available and the actual planting sites have not been identified.

3. *“Resilience of Organizations for Transformative Smallholder Agriculture Project” (ROOTS)*

The programme, a successor of the NEMA-CHOSSO project, was launched on 09 February 2021 and will run until 2025, with funding from the International Fund for Agricultural Development (IFAD), the OPEC Fund for International Development (OFID), the GEF Least Developed Countries Fund (LDCF), the French Development Agency (AFD), the Government of the Gambia and the Project’s beneficiaries. The main goal of ROOTS is to improve food security, nutrition and resilience of smallholder farmers to climate change in The Gambia. To achieve this, the ambition is to restore 1,300 hectares of mangroves.

4. *Project of Mangrove Ecosystem Restoration in The Gambia by the French Development Agency*

On 17 February 2022, the Ministry of Finance and Economic Affairs and French Development Agency has signed agreement to support the mangrove restoration in the Gambia with a total amount of 6.9 million EURO as a five-year program.

The global objective of the project is to provide a strategic, scientific and technical support to Gambia for the large-scale restoration of the mangrove ecosystems, and the improvement of the coastal communities’ conditions, in a context of climate change. The project’s framework corresponds to the four following specific objectives: 1) Strengthen the national legal and policy framework for enhanced climate adaptation and coastal resilience, 2) Test restoration technics on 800 ha of mangrove in different contexts and develop a national strategy and action plans for large-scale restoration of mangrove ecosystems in the Gambia. 3) Improve governance and management effectiveness of marine protected areas in key mangrove areas and 4) Support the development of sustainable value chains and alternative income for grassroots women's and youth organizations in the project's pilot sites.

The difference between the above listed project with the proposed project are

- the above listed restoration project activities are based on different financing strategies, where the existing restoration projects are donor projects financed primarily by grants, and this project is a carbon project where financing is based on a mix of grant and carbon credit incomes.
- the above projects have not reached their restoration goals, because grants have not been success-based, and no documentation or long-term maintenance and monitoring has been integrated as a part of the projects. This project has ensured to integrate these aspects diligently to ensure not only the long-term sustainability of the project but also to ensure a long-term revenue to the Gambia through the sale of carbon credits for new environmental projects and through this to provide an incentive to implement the best possible restoration practices and to secure the long-term success of the project, as the number of restored areas will increase the revenue of carbon credits.

In other words, the existing projects have faced barriers with the actual restoration and maintenance on a longer term for the restoration activities, which with this project is mitigated through the carbon financing mechanism. It should however be noted that this project seeks to embrace other restoration activities as the areas of degraded mangrove in the Gambia is too extensive for one project to cover, and many efforts to restore mangrove in Gambia one way or the other would be available. As the project proponents of DPWM

are overall responsible for wetlands and mangrove restoration it is also ensured that all potential activities are coordinated to avoid overlapping in project areas.

This project moreover differs from the other projects as they will be done with a streamlined planting strategy, which is a relatively new approach in Gambia. Moreover, the restoration activities of the carbon project are based on relevant scientific literature and studies and the extensive experience built up by the DPWM. The long-term monitoring and maintenance of the PAI's is assured by using the revenue from the sales of the carbon credits, contributing to the assurance of the long-term project success. Furthermore, the management of the carbon project is well organized, with the MECCNAR overseeing the implementation of activities through the director of the DPWM. Then, a consortium of local NGO and experts within DPWM experienced with mangrove planting and supported by international experts actively conduct and supervise all activities.

Lastly, the existing restoration activities differ from the carbon project as their scope is limited by the available amount of funds being directed towards the restoration. Even though all the above-mentioned existing restoration activities succeeded with reaching their restoration goals, vast areas of degraded mangrove habitat would still be present in Gambia. With the carbon project, degraded mangrove areas within Gambia that has not yet been restored are targeted and restored by utilizing additional finance through the carbon credit scheme.

Outcome of step 4:

The restoration of the mangrove ecosystem has taken place through various programs in the Gambia. However, this restoration efforts are insufficient to restore the major mangrove ecosystem of Gambia. Also, the proposed project activity is way different in restoration approach and in the form of financing from the other restoration program done in the Gambia.

The validation team based on the information submitted, site observations, by desk review and discussion with PP confirm that the project already implemented in Gambia and the proposed project activity are fundamentally different in financial strategy i.e., the proposed project activity is funded by a donor and also from the revenue by sale of carbon credits. Hence the proposed project is additional.

The PAI#1 project activity is of the combined category ARR+RWE, additionality is determined through both the project method (as required for all project activities other than tidal wetland restoration and conservation) and the activity method (as required for all tidal wetlands conservation and restoration project activities).

- ✓ Project method additionality – In line with the applied methodology, CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities(T-ADD) is applied and additionality is demonstrated above.
- ✓ Activity method additionality – In line with the applied methodology, the module ADD-AM VMD0052: DEMONSTRATION OF ADDITIONALITY OF TIDAL WETLAND RESTORATION AND CONSERVATION PROJECT ACTIVITIES (ADD-AM), version 2 is be applied to demonstrate additionality:

STEP 1: Regulatory surplus

The proposed project activity is not mandated by any law, statute, or for UNFCCC non-Annex I countries or other regulatory framework, and neither any systematically enforced law, the project passes STEP 1.

STEP 2: Positive list

The applicability conditions of the module ADD-AM represent the positive list. The proposed project complies with all applicability conditions listed in the module (see table in section 3.3.2 of this report), the project is deemed additional.

Findings: No findings were raised.

3.3.5 Quantification of GHG Emission Reductions and Removals

Validation team reviewed the baseline emissions, project emissions, leakage and the expected net GHG reductions and removals by sinks calculations in the submitted VCU calculation sheets and compared with PD. VCU calculations sheet are replicated by the audit team, the values and ER estimates presented in the PD are considered reasonable based on the documents reviewed, further references and the result of the interviews during the audit. Based on the information reviewed it can also be confirmed that the sources used are correctly quoted and interpreted in the PD. All assumptions and data indicated in the PD and all relevant references were checked and confirmed. Detailed information on the verification of parameters used in the equations is presented in section 4 of the PD.

The validation team hereby confirms that the methodology is correctly applied. All values in the PD are considered reasonable in the context of the proposed grouped project activity. Data sources are correctly quoted. Hence, the calculation of baseline stocks and removals, leakage, and the expected net anthropogenic GHG removals by sinks are considered correct.

Baseline emissions:

As required in the applicability of methodology, individual baselines were calculated for each activity type in the grouped project. As the PAI#1 of grouped project consists of only ARR+RWE on mineral soils baseline is calculated.

As per the applied methodology, the module BL-ARR is used for estimating the GHG removals in the baseline scenario. As the soil in PAI#1 qualifies as mineral, the module BL is used to estimate the baseline GHG removals from the ARR component.

Baseline net GHG removals from the ARR component

$$\Delta C_{BSL-ARR} = \sum_{t=1}^{t^*} \Delta C_{BSL,t} + \Delta C_{BSL-herb}$$

Where:

$\Delta C_{BSL-ARR}$: Net GHG removals under the ARR baseline scenario up to time t^* (t CO₂e)

$\Delta C_{BSL,t}$: Baseline net GHG removals by sinks in year t (from AR-ACM0003) (t CO₂e)

$\Delta C_{BSL-herb}$: Net GHG removals under the ARR baseline scenario in herbaceous vegetation up to time t^* (t CO₂e) t 1,2,3 ... t^* time since project start (years)

Estimation of baseline net GHG removals by sinks ($\Delta C_{BSL,t}$):

In the applicable module BL-ARR, it is stated that the CDM methodology AR-ACM0003 shall be applied for estimating the net GHG removals under the ARR project baseline. In AR-ACM0003, it is stated that the baseline net GHG removals by sinks ($\Delta C_{BSL,t}$) shall be calculated as follows:

$$\Delta C_{BSL,t} = \Delta C_{TREE_BSL,t} + \Delta C_{SHRUB_BSL,t} + \Delta C_{DW_BSL,t} + \Delta C_{LI_BSL,t}$$

Where,

$\Delta C_{BSL, t}$ = Baseline net GHG removals by sinks in year t ; t CO₂e

$\Delta C_{TREE-BSL, t}$ = Change in carbon stock in baseline tree biomass within the project boundary in year t , as estimated in the tool “*Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities*”; t CO₂-e

$\Delta C_{SHRUB-BSL, t}$ = Change in carbon stock in baseline shrub biomass within the project boundary, in year t , as estimated in the tool “*Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities*”; t CO₂-e.

$\Delta C_{DW-BSL, t}$ = Change in carbon stock in baseline dead wood biomass within the project boundary, in year t , as estimated in the tool “*Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities*”; t CO₂-e.

$\Delta C_{LI-BSL, t}$ = Change in carbon stock in baseline litter biomass within the project boundary, in year t , as estimated in the tool “*Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities*”; t CO₂-e

Estimation of carbon stock change in baseline tree biomass ($\Delta C_{TREE-BSL, t}$) and baseline shrub biomass ($\Delta C_{SHRUB-BSL, t}$):

According to AR-ACM0003, these parameters shall be calculated using the CDM tool AR-TOOL14.

In this CDM tool, it is stated that baseline carbon stock and baseline carbon stock change in trees and shrubs can be estimated as zero if following conditions were met.

For carbon stock in trees in the baseline to be accounted as zero, all of the following conditions must be met:

- (a) The pre-project trees are neither harvested, nor cleared, nor removed throughout the crediting period of the project activity;
- (b) The pre-project trees do not suffer mortality because of competition from trees planted in the project, or damage because of implementation of the project activity, at any time during the crediting period of the project activity;
- (c) The pre-project trees are not inventoried along with the project trees in monitoring of carbon stocks but their continued existence, consistent with the baseline scenario, is monitored throughout the crediting period of the project activity.

As this project fulfilling the all the condition hence the carbon stock in trees in the baseline were accounted as zero.

For changes in carbon stocks in trees and shrubs in the baseline to be accounted as zero, one of the below conditions must be met and documented:

the project boundary through any type of anthropogenic activities, allowed to use a default factor for the Observed reduction in topsoil depth (e.g.as shown by root exposure, presence of pedestals, exposed sub-soil horizons);

- 2. Presence of gully, sheet or rill erosion; or landslides, or other forms of mass-movement erosion;
- 3. Presence of plant species locally known to be indicators of infertile land;

4. Land comprises of bare sand dunes, or other bare lands;
 5. Land contains contaminated soils, mine spoils, or highly alkaline or saline soils;
 6. Land is subjected to periodic cycles (e.g. slash-and-burn, or clearing-re growing cycles) so that the biomass oscillates between a minimum and a maximum value in the baseline;
- For this grouped project applies Conditions (a), (b) and (c) hence, changes in carbon stocks in trees and shrubs in the baseline is set to zero.

Estimation of carbon stock change in baseline dead wood biomass, ($\Delta CDW_{BSL}, t$):

According to AR-ACM0003, this parameter shall be calculated using the CDM tool AR-TOOL12. According to this tool, it is, if dead wood remains in situ and is not removed from estimation of dead wood. As no deadwood are expected to be removed in the baseline scenario, the usage of the default factor is applicable to the project and is selected.

The carbon stock in dead wood ($\Delta C_{DW}, i, t$) is through the usage of the default factor (DF_{DW}) estimated as:

$$\Delta C_{DW,i,t} = C_{TREE,i,t} \times DF_{DW}$$

Where,

$\Delta C_{DW,i,t}$ = Carbon stock in dead wood in stratum i at a given point of time in year t ; t CO₂e

$C_{TREE,i,t}$ = Carbon stock in trees biomass in stratum i at a point of time in year t , as calculated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂e

DF_{DW} = Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass; per cent

$i=1, 2, 3, \dots$ biomass estimation strata within the project boundary

$t= 1, 2, 3, \dots$ years elapsed since the start of the A/R CDM project activity

As the carbon stock in tree biomass is Zero from above calculation hence, the carbon stock in dead wood in the baseline scenario is also zero.

Estimation of carbon stock change in baseline litter biomass ($\Delta CL_{BSL}, t$):

in the PD PP have mentioned that the litter biomass pool was excluded for both project and baseline scenario.

Estimation of uncertainty for ARR project activities:

From the calculation the baseline carbon stock and baseline carbon stock change for trees and shrubs are set to zero, hence estimation of uncertainty was not applicable.

Long term average in case of harvesting

As harvesting is not going to be carried out in the baseline scenario hence the calculation of the long-term GHG benefit was not considered.

Herbaceous vegetation ($\Delta C_{BSL-herb}$)

The carbon pool of herbaceous vegetation is conservatively excluded in both the baseline and the project scenario.

Estimation of baseline net GHG removals from the RWE component

According to applied methodology VM0007 and the classification of soils as mineral module BL-TW used for calculating the net-emissions from the baseline soil pool of RWE-ARR project activities. In module BL-TW, it is stated that the net GHG emissions from soil in the baseline scenario is calculated as follows:

$$GHG_{BSL-TW,i,t} = GHG_{BSL-soil-CO2,i,t} - Deduction_{alloch} + GHG_{BSL-soil-CH4,i,t} + GHG_{BSL-soil-N2O,i,t}$$

Where,

$GHG_{BSL-TW,i,t}$ = GHG emissions from the tidal wetland SOC pool in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

$GHG_{BSL-soil-CO2,i,t}$ = CO₂emissions from the tidal wetland SOC pool in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

$Deduction_{alloch}$ = Deduction from CO₂emissions from the SOC pool to account for the percentage of the carbon stock that is derived from allochthonous soil organic carbon; t CO₂e ha/yr

$GHG_{BSL-soil-CH4,i,t}$ = CH₄emissions from the tidal wetland SOC pool in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

$GHG_{BSL-soil-N2O,i,t}$ = N₂O emissions from the tidal wetland SOC pool in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

i = 1, 2, 3 ... M_{BSL} strata in the baseline scenario

t = 1, 2, 3, ... t^* years elapsed since the project start date

Estimation of baseline CO₂emissions from the SOC pool ($GHG_{BSL-soil-CO2,i,t}$):

$$GHG_{BSL-soil-CO2,i,t} = GHG_{BSL-insitu-CO2,i,t} + GHG_{BSL-eroded-CO2,i,t} + GHG_{BSL-exav-CO2,i,t}$$

Where,

$GHG_{BSL-soil-CO2,i,t}$ = CO₂ emissions from the tidal wetland SOC pool in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

$GHG_{BSL-insitu-CO2,i,t}$ = CO₂emissions from the tidal wetland SOC pool of in-situ soils in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

$GHG_{BSL-eroded-CO2,i,t}$ = CO₂emissions from the eroded tidal wetland SOC pool in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

$GHG_{BSL-exav-CO2,i,t}$ = CO₂emissions from the tidal wetland SOC pool of soil exposed to an aerobic environment through excavation in the baseline scenario in stratum i in year t ; t CO₂e ha/yr

Calculation of $GHG_{BSL-insitu-CO2,i,t}$:

In module BL-TW, it is stated that $GHG_{BSL-insitu-CO2,i,t}$ can be estimated using a default value. If the crown cover is estimated to be 15% or less, the value may be assumed to be insignificant and accounted for as zero. As the crown cover in the project area prior to planting has a crown cover below 15% and as the crown cover is not expected to grow in the baseline scenario as mentioned in the section 3.4, $GHG_{BSL-insitu-CO2,i,t}$ is set to zero.

Calculation of $GHG_{BSL-eroded-CO2,i,t}$:

In BL-TW, it is stated that for each stratum or project activity area it must be determined whether soil erosion occurs. The planting of mangrove trees will because of the establishment of a root system and because of the trees acting as protection against waves, result in less erosion when compared to the amount of erosion in the baseline scenario. To be conservative, erosion is set to zero in both the project and the baseline scenario.

Calculation of $GHG_{BSL-exav-CO2,i,t}$:

In BL-TW, it is stated that for each stratum, it shall for the baseline scenario be determined whether piled up soil exposed to an aerobic environment is present. As excavation of soil is not expected to take place in the baseline scenario, $GHG_{BSL-exav-CO2,i,t}$ is conservatively set to zero.

Calculation of $Deduction_{alloch}$:

As allowed in module BL-TW, $Deduction_{alloch}$ is in this project conservatively set to zero.

Calculation of $GHG_{BSL-soil-CH4,i,t}$:

In module BL-TW, it is stated that if the salinity level (either salinity average or salinity low point) equals or is above 20 ppt, a default factor for $GHG_{BSL-soil-CH4,i,t}$ can be calculated as follows:

$$GHG_{BSL-soil-CH4,i,t} = 0.0056 \text{ t CH}_4 \text{ ha yr} \times CH4_GWP,$$

Where,

$CH4_GWP$ is the global warming potential of CH_4 which was consider as 28 as defined by IPCC in their fifth assessment report (AR5).

According to the module M-TW there was a procedure given for measurement of salinity. here for the project activity PAI #1 estimate the salinity content basis on the using both the procedure i.e. in both pore water, in the water covering the project area during high tide and at the river edge in the Bintang Bolon river adjacent to the project area. This salinity result verifies at the time of validation by the validating team.

As described in section 4.2 of the PD the Project emissions of this Project area PAI#1 the methane emissions in the baseline scenario were the same as the methane emissions in the project scenario, hence it was cancel each other out and results in net zero methane emissions in the project scenario.

Calculation of $GHG_{BSL-soil-N2O,i,t}$:

In module BL-TW, it is stated that a default factor can be used for estimating $GHG_{BSL-soil-N2O,i,t}$, if the project area does not receive hydrologically direct input from a point or non-point source of nitrogen. For non-seagrass wetland systems where the salinity average or salinity low point is above 18ppt, $GHG_{BSL-soil-N2O,i,t}$ can be calculated as follows:

$$GHG_{BSL-soil-N2O,i,t} = 0.000487 \text{ t N}_2\text{O ha yr} \times N2O_GWP,$$

where $N2O_GWP$ is the global warming potential of N_2O which is 265 as per defined by IPCC in their fifth assessment report (AR5). For this project instance PAI#1 the salinity average is above 18 ppm hence pp has used the default factor.

As described Project emissions of this PD, the N_2O emissions in the baseline scenario are the same as the N_2O emissions in the project scenario, meaning that they cancel each other out and results in net-zero N_2O emissions in the project scenario.

Project emissions:

In line with the applied methodology, module M-ARR is used for projecting the future net GHG emissions from ARR project activities and for accounting of biomass burning, as per the soil classification the soil is classify as mineral the module M-TW was used for calculating net GHG emissions from the SOC pool. As it in this methodology is mandatory to include fossil fuel combustion for RWE-ARR activities, the module E-

FFC is applied in the calculations as well. All this calculated data has been provided in the excel sheet and verify at the time of assessment.

Estimation of future net GHG removals from the ARR component

In the applicable module M-ARR, it is stated that future net GHG removals under the ARR project scenario are estimated as follows:

$$\Delta C_{WPS-ARR} = \sum_{t=1}^{t^*} \Delta C_{ACTUAL,t} + \Delta C_{WPS-herb}$$

Where,

$\Delta C_{WPS-ARR}$ = Net GHG removals under the ARR project scenario up to year t^* ; t CO₂e

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks in year t (from AR-ACM0003); t CO₂e

$\Delta C_{WPS-herb}$ = Net GHG removals under the project scenario in herbaceous vegetation up to year t^* ; t CO₂e

$t = 1, 2, 3 \dots t^*$ time elapsed since project start; years

Estimation of actual net GHG removals by sinks ($\Delta C_{ACTUAL,t}$):

In the applicable module M-ARR, it is stated that the CDM methodology AR-ACM0003 shall be applied for estimating the net GHG removals under the ARR project scenario. In AR-ACM0003, it is stated that the actual net GHG removals by sinks ($\Delta C_{ACTUAL,t}$) shall be calculated as follows:

$$\Delta C_{ACTUAL,t} = \Delta C_{P,t} - GHG_{E,t}$$

Where,

$\Delta C_{ACTUAL,t}$ = Actual net GHG removals by sinks, in year t ; t CO₂e

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t ; t CO₂e

$GHG_{E,t}$ = Increase in non-CO₂GHG emissions within the project boundary as a result of the implementation of the A/R CDM project activity, in year t , as estimated in the tool "Estimation of non-CO₂ GHG emissions resulting from burning of biomass attributable to an A/R CDM project activity"; t

As burning of biomass is not part of any of the project activities, $GHG_{E,t}$ is set to zero.

In AR-ACM0003, it is stated that $\Delta C_{P,t}$ shall be calculated as follows:

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

Where,

$\Delta C_{P,t}$ = Change in the carbon stocks in project, occurring in the selected carbon pools, in year t ; t CO₂e

$\Delta C_{TREE_PROJ,t}$ = Change in carbon stock in tree biomass in project in year t , as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂e

$\Delta C_{SHRUB_PROJ,t}$ = Change in carbon stock in shrub biomass in project in year t , as estimated in the tool "Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities"; t CO₂e

$\Delta C_{DW_PROJ,t}$	= Change in carbon stock in dead wood in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO2e
$\Delta C_{LI_PROJ,t}$	= Change in carbon stock in litter in project in year t, as estimated in the tool “Estimation of carbon stocks and change in carbon stocks in dead wood and litter in A/R CDM project activities”; t CO2e
$\Delta SOC_{AL,t}$	= Change in carbon stock in SOC in project, in year t, in areas of land meeting the applicability conditions of the tool “Tool for estimation of change in soil organic carbon stocks due to the implementation of A/R CDM project activities”, as estimated in the same tool; t CO2e

Estimation of carbon stock change in tree biomass ($\Delta C_{TREE_PROJ,t}$):

According to AR-ACM0003, this parameter shall be calculated using the CDM tool AR-TOOL14.

In AR-TOOL14 v4.2, it is stated that if the chosen allometric equation for estimating AGB are to be used for ex-post carbon estimation, it shall be demonstrated that the equation is appropriate for this by applying the tool “Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities”.

In this tool, it is stated that an allometric equation can be applied for ex-post carbon estimation if it is derived from the same tree species or the same group of tree species, derived from trees growing in similar edapho-climatic conditions and furthermore lives up to at least one of the following conditions:

- (a) The equation is used in the national forest inventory, or the national GHG inventory, of the host Party;
- (b) The equation has been used in commercial forestry sector of the host Party for ten years or more;
- (c) The equation was derived from a data set of at least 30 sample trees, and the value of coefficient of determination (R²) obtained was not less than 0.85.

Based on the above requirements, the following allometric equation for AGB (excluding prop roots) developed by Komiyama et al (2005)¹⁵ is chosen: $AGB = 0.251 \cdot P \cdot D^{2.46}$, where P is wood density and D is trunk diameter at 30cm above highest prop root.

- The following justification given for the project activity for the estimating the AGB:
 - a. Same group of tree species: The mangrove species that has been measured for deriving the allometric equation consists of 104 individual trees, of which 46 is of the Rhizophora genus, which qualifies as being the same group of tree species.
 - b. Trees growing in similar edapho-climatic conditions: The trees are sampled from various regions in Thailand and one region in Indonesia. The trees sampled in Thailand (87 out of 104) is sampled in the regions of Pang-nga, Trat, Satun and Ranong, and the trees sampled in Indonesia (17 out of 104) is sampled in the region Halmahera. All trees are sampled in the tropical climate zone (climate group A) as defined by Köppen-Geiger. PAI#1 is as well situated geographically within the Tropical climate zone (climate group A) as defined by Köppen-Geiger.
 - c. Derived from a data set of at least 30 sample trees: The allometric equation has been derived from the sampling of 104 trees of which 46 is of the Rhizophora genus.
 - d. Additional argumentation: In the article by Komiyama et al (2005), it is concluded that the developed common allometric equation is applicable for the determination of mangrove biomass in general, if the wood density of the specific species is determined and used for P. Thus, P for the specific species planted in PAI#1, Rhizophora mangle, is applied. In the below section, the choice of P value is presented and justified.

1. Selection and justification of P value (wood density):

PP has given justification of wood density on the basis of different case studies i.e. In a study by Paulo C. C. Virgulino-Júnior et al (2018).

2. Calculation of root-biomass:

In the applicable tool AR-TOOL14, it is stated that the root biomass can be determined either through a default equation provided in the tool, or by providing verifiable and transparent information justifying a different value. PP justify this parameter on the basis of Komiyama, A., Pongparn, S., Kato, S (2005) research paper.

3. Estimation of projected tree density and trunk diameter

In the applicable tool AR-TOOL14, it is stated that future projected stocking (number of trees per hectare) and average trunk diameter can be modelled through existing data combined with tree growth models. PAI#1 consists two different strata. In this estimate, the future average trunk diameter is expected to be the same in all strata. Regarding the future stocking estimate, it is after 30 years expected to be the same because of the ecosystems reaching a natural balance.

4. Determination of projected stocking:

PP justify this parameter using article Tamoo et al (2008)18, and it was observed to be 3567 ± 398 , tree density of natural stands of a rhizophora species in Kenya is determined to be and in an article by Soares et al (2005), the tree density of natural stands of a

5. Determination of projected average trunk diameter:

For development of this project pp has conducted the field mission in 2022 during the site visit they had observed average DBH of Rhizophora plant which had planted in the year 2017 which was estimated to be 2.13 cm (in the 5 year if age) also this parameter checks with various research paper with different year data which verify by the validating team by gone through with this published research paper. i.e the study by Tamoo et al (2008). also in the study of Hutchison et al (2013)22, global mangrove AGB estimates are modelled based on 95 studies. According to their model, the AGB of mangrove in The Gambia is placed in the mangrove zone containing 120 to 160 tonnes per hectare, but close to the mangrove zone containing 80 to 120 tonnes per hectare. by summarizing all the study PP estimated average DBH for specific year which is follows:

- 5 years after planting: 1.5cm
- 12 years after planting: 4.5cm
- 30 years after planting: 7.9 cm

Estimation of carbon stock change in dead wood ($\Delta C_{DW_PROJ,t}$):

According to AR-ACM0003, this parameter is to be calculated using the CDM tool AR-TOOL12. According to this tool it is, if dead wood remains in situ and is not removed from the project boundary through any type of anthropogenic activities, allowed to use a default factor for the estimation of dead wood. As no deadwood is to be removed in the project scenario, the usage of the default factor is applicable to the project and is selected.

The carbon stock in dead wood ($\Delta C_{DW,i,t}$) is through the usage of the default factor (DF_{DW}) estimated as:

$$\Delta C_{DW,i,t} = C_{TREE,i,t} \times DF_{DW}$$

Where,

$\Delta C_{DW,i,t}$	=	Carbon stock in dead wood in stratum i at a given point of time in year t; t CO2e
$C_{TREE,i,t}$	=	Carbon stock in trees biomass in stratum i at a point of time in year t, as calculated in the tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities”; t CO2e
DF_{DW}	=	Conservative default factor expressing carbon stock in dead wood as a percentage of carbon stock in tree biomass; per cent
i	=	1, 2, 3, ... biomass estimation strata within the project boundary
t	=	1, 2, 3, ... years elapsed since the start of the A/R CDM project activity

In the tool, it is stated that the value of the default factor can be estimated based on the amount of yearly rainfall; In the tropical biome below an elevation of 2000 meters, the default factor is set to 1% for areas with an average annual rainfall of 1000-1600 mm, and to 2% for areas with an average annual rainfall of below 1000 mm. According to the word bank, the average rainfall in the Gambia has between 1980 and 2020 been fluctuating between 586 mm per year (1983) and 1.192 mm per year (1999). To be conservative, the chosen default factor for DF_{DW} is 1%.

Estimation of carbon stock change in litter ($\Delta C_{LI,PROJ,t}$):

The litter biomass pool is conservatively excluded from both the baseline and the project scenario calculations.

Estimation of carbon stock change in soil ($\Delta SOC_{AL,t}$):

According to the applied methodology VM0007, the SOC pool for mineral soil shall be calculated using the verra module M-TW.

Estimation of uncertainty for ARR project activities

In the module M-ARR, it is stated that procedures for estimating uncertainty is provided in AR-ACM0003. In this document, it is stated that precision requirements are listed in AR-TOOL14. In this document, it is stated that ex-ante estimation (projection) of carbon stock in tree biomass is not subjected to uncertainty control.

Long term average in case of harvesting

As the project scenario does not include harvesting, calculating the long-term average GHG-benefit is not relevant.

ARR on wetlands influenced by sea level rise

In M-ARR, it is stated that the procedures presented in module M-TW shall be followed to account for the effect of sea level rise in the project area. In module M-TW, the sea level rise procedure is divided into two sub-sections; Carbon loss in biomass and soil and Long-term average GHG benefit in ARR-WRC project activities.

- Carbon loss in biomass and soil

In module M-TW it is stated that, depending on the geomorphic setting, soil carbon stocks may be submerged and held intact or be eroded and transported beyond the project area. If biomass is submerged, it must be conservatively assumed that the carbon that it holds is immediately emitted to the atmosphere.

According to the Sea Level Projection Tool developed by Nasa and IPCC, the water level will in 2100 in Dakar, if the IPCC scenario SSP3-7.0 is assumed, have risen with 0.69 meters. In scenario SSP3-7.0, the average global temperature will have risen with 3.6 degrees in 2100. With scenario SSP3-7.0 being the second most catastrophic scenario out of the five future scenarios presented by IPCC in their Climate report AR6, assuming that the scenario represents reality in 2100 is the conservative choice.

- Long-term average GHG benefit in ARR-WRC project activities

As the projected sea level rise is not expected to have a negative influence on carbon content within the project area, calculating the long-term average GHG benefit is not relevant and are therefore excluded.

- Herbaceous vegetation

The carbon pool of herbaceous vegetation is conservatively not included in either the baseline or the project scenario

- Prescribed burning

As prescribed burning of biomass is not part of the project scenario, these calculations are excluded.

Estimation of GHG emissions from the RWE component

As stated in the applied methodology VM0007, the module M-TW shall be used for calculating the net-emissions from the soil pool of RWE-ARR project activities when the soils classify as mineral. In module M-TW, it is stated that the net GHG emissions from soil in the project scenario is calculated as follows:

$$GHG_{WPS-TW,i,t} = GHG_{WPS-soil-CO2,i,t} - Deduction_{alloc} + GHG_{WPS-soil-CH4,i,t} + GHG_{WPS-soil-N2O,i,t}$$

Where,

$GHG_{WPS-TW,i,t}$ = GHG emissions from the tidal wetland SOC pool in the project scenario in stratum i in year t; t CO2e ha/yr

$GHG_{WPS-soil-CO2,i,t}$ = CO2emissions from the tidal wetland SOC pool in the project scenario in stratum i in year t; t CO2e ha/yr

$Deduction_{alloch}$	=	Deduction from CO ₂ emissions from the SOC pool to account for the percentage of the carbon stock that is derived from allochthonous soil organic carbon; t CO ₂ e ha/yr
$GHG_{WPS-soil-CH_4,i,t}$	=	CH ₄ emissions from the tidal wetland SOC pool in the project scenario in stratum i in year t; t CO ₂ e ha/yr
$GHG_{WPS-soil-N_2O,i,t}$	=	N ₂ O emissions from the tidal wetland SOC pool in the project scenario in stratum i in year t; t CO ₂ e ha/yr
I	=	1, 2, 3 ... MBSL strata in the project scenario
T	=	1, 2, 3, ... t*years elapsed since the project start date

Estimation of baseline CO₂ emissions from the SOC pool ($GHG_{WPS-soil-CO_2,i,t}$):

$$GHG_{WPS-soil-CO_2,i,t} = GHG_{WPS-insitu-CO_2,i,t} + GHG_{WPS-eroded-CO_2,i,t} + GHG_{WPS-exav-CO_2,i,t}$$

Where,

$GHG_{WPS-soil-CO_2,i,t}$	=	CO ₂ emissions from the tidal wetland SOC pool in the project scenario in stratum i in year t; t CO ₂ e ha/yr.
$GHG_{WPS-insitu-CO_2,i,t}$	=	CO ₂ emissions from the tidal wetland SOC pool of in-situ soils in the project scenario in stratum i in year t; t CO ₂ e ha/yr.
$GHG_{WPS-eroded-CO_2,i,t}$	=	CO ₂ emissions from the eroded tidal wetland SOC pool in the project scenario in stratum i in year t; t CO ₂ e ha/yr.
$GHG_{WPS-exav-CO_2,i,t}$	=	CO ₂ emissions from the tidal wetland SOC pool of soil exposed to an aerobic environment through excavation in the project scenario in stratum i in year t; t CO ₂ e ha/yr

Calculation of $GHG_{WPS-insitu-CO_2,i,t}$:

In line M-TW module $GHG_{WPS-insitu-CO_2,i,t}$ is calculated, The module states that $GHG_{WPS-insitu-CO_2,,t}$ shall be calculated using the same procedures as set out in module BL-TW. In module BL-TW, it is stated that $GHG_{WPS-insitu-CO_2,,t}$ can be estimated using a default value of -1.46 t C/ha/yr. The default value can be applied once the crown cover has reached at least 50%. Hence, for the proposed project PP is applying the default value based on scientific literature and reasoning the conservative choice. The default value by determining $GHG_{WPS-insitu-CO_2,,t}$. It is projected that a crown cover of 50% is reached 3 years after planting.

Calculation of $GHG_{WPS-eroded-CO_2,i,t}$:

In M-TW, it is stated that for each stratum it must be determined whether soil erosion occurs. The planting of mangrove trees will because of the establishment of a root system and because of the trees acting as protection against waves, result in less erosion when compared to the amount of erosion in the baseline scenario. To be conservative, erosion is set to zero in both the project and the baseline scenario.

Calculation of $GHG_{WPS-exav-CO_2,,t}$:

In a smaller section of the project area of PAI#1 of Joreng community, canals have been excavated to allow for the natural hydrology to be re-established. As part of the excavation, a smaller amount of soil has been exposed to partly aerobic conditions.

The amount of soil dug up can be estimated through the following equation:

Total area dug up in m³ x depth of canals dug in m x soil bulk density x SOC%

Total area dug up in m³ and depth of canals dug has been conservatively estimated through site inspections and through inspection of detailed satellite imagery of the area post-excavation. Here, the amount of area dug up was conservatively estimated to be 5% of the total Joreng planting area. The depth of canals dug was through site inspection conservatively estimated to be 0.15 meters on average.

Soil bulk density and SOC% has been conservatively estimated based on existing scientific literature. In the studies referenced above by Yu et al (2021) and Adame et al (2018) above, the bulk density of the top soil layer of a mud flat was estimated to be 0.77 g/cm³ and of a clear cut mangrove to be 0.46 g/cm³. To be conservative, the bulk density is for these calculations estimated to be 0.8 g/cm³.

Based on the above conservative estimates, the amount of CO₂ emitted due to carbon exposed to aerobic conditions is 1249,38 t, equalling 1,47% of the total CO₂ sequestration expected from the project.

Calculation of Deduction_{alloch}:

In module BL-TW, it is stated that the determination of the deduction for allochthonous carbon is mandatory for the project scenario unless the project proponent can demonstrate that the allochthonous carbon would have been returned to the atmosphere in the form of carbon dioxide in the absence of the project. It is as well stated that the deduction must be calculated using the procedures set out in module BL-TW.

In module BL-TW, it is stated that peer reviewed published data may be used for estimating the percentage of allochthonous carbon in the accumulating SOC. The data must have been derived from the same or similar systems as those in the project area based on the guidelines described in the module. In the guidelines, it is stated that the published data must be from systems that are in the same or similar region as the project area, share similar geomorphic, hydrologic, and biological properties, and are under similar management regimes unless any differences should not have a substantial effect on GHG emissions. here for calculating this parameter different research paper is used to estimate this value. i.e Xiong, Y., Liao, B., Wang, F. (2018): Mangrove vegetation enhances soil carbon storage primarily through in situ inputs rather than increasing allochthonous sediments .in the study it is estimated that *Deduction_{alloch}* is in this project set to zero.

Calculation of *GHG_{WPS-soil-CH4, i, t}*:

In M-TW, it is stated that *GHG_{WPS-soil-CH4, i}* shall be calculated using the same procedures as set out in module BL-TW. In module BL-TW, it is stated that if the salinity level (either salinity average or salinity low point) equals or is above 20ppt, a default factor for *GHG_{WPS-soil-CH4, t}* can be calculated as follows:

$$GHG_{WPS-soil-CH4, i, t} = 0.0056 \text{ t CH}_4 \text{ ha yr} \times CH_4_GWP,$$

Where CH₄-GWP is the global warming potential of CH₄ as defined by IPCC in their fifth assessment report (AR5). In this report, CH₄-GWP is defined as being 28.

In module M-TW, it is stated that salinity can be measured directly in the shallow pore water (within 30 cm from soil surface). It is as well stated that salinity can be measured in the main flood water source which can then act as a proxy for the salinity level of the pore water in the

Calculation of $GHG_{WPS-soil-N2O, i, t}$:

In M-TW, it is stated that $GHG_{WPS-soil-N2O, i, t}$ shall be calculated using the same procedures as set out in module BL-TW. In module BL-TW, it is stated that a default factor can be used for estimating $GHG_{WPS-soil-N2O, i, t}$, if the project area does not receive hydrologically direct input from a point or non-point source of nitrogen. For non-seagrass wetland systems where the salinity average or salinity low point is >18 ppt, $GHG_{WPS-soil-N2O, i, t}$ can be calculated as follows:

$$GHG_{WPS-soil-N2O, t} = 0.000487 \text{ t N20 ha yr} \times N20_GWP,$$

Where $N20_GWP$ is the global warming potential of $N20$ as defined by IPCC in their fifth assessment report (AR5). In this report, $N20_GWP$ is defined as being 265.

Maximum Eligible Quantity of GHG Reductions:

As per applied methodology VM007 v 1.6, the module X-STR used to calculate maximum eligible quantity of GHG emission reduction from soil carbon pool. As there is no leakage as justified in Section 4.3, the maximum eligible quantity of GHG emissions reductions is calculated using the following total stock approach formula:

$$C_{WPS-BSL, t100} = \sum_{i=0}^{M_{WPS}} (C_{WPS, i, t100} \times A_{WPS, i, t100}) - \sum_{i=0}^{M_{BSL}} (C_{BSL, i, t100} \times A_{BSL, i, t100})$$

Where,

$C_{WPS-BSL, t100}$	=	Difference between soil organic carbon stock in the project scenario and baseline scenario in stratum i at $t = 100$ (t C)
$C_{WPS, i, t100}$	=	Soil organic carbon stock in the project scenario in stratum i at $t = 100$ (t C ha ⁻¹)
$C_{BSL, i, t100}$	=	Soil organic carbon stock in the baseline scenario in stratum i at $t = 100$ (t C ha ⁻¹)
$A_{WPS, i, t100}$	=	Area of project stratum i at $t = 100$ (ha)
$A_{BSL, i, t100}$	=	Area of baseline stratum i at $t = 100$ (ha)
M_{WPS}	=	Total number of stratum in the project scenario
M_{BSL}	=	Total number of stratum in the baseline scenario
i	=	1, 2, 3, ... M stratum of the scenario
t	=	1, 2, 3, ... t^* years elapsed since the project start date

Calculation of $C_{WPS, i, t100}$

The applied methodology allows in module BL-TW and M-TW for the use of default values to account for the increase in carbon stock in the soil pool. In BL-TW, the default value carbon stock in tidal and mangrove systems is provided as -1.46 t C ha⁻¹yr⁻¹. This is then multiplied by the years of at least 50% crown cover under the project scenario.

calculation of $C_{BSL,i,t100}$

As crown cover is expected to remain at 15% or less in the baseline scenario, the soil organic carbon is expected to not increase, as it is assumed to be insignificant and accounted for as zero. In fact, they are highly likely to decrease due to ongoing oxidation of C present in the soil – however this factor has conservatively been excluded from these calculations. Therefore $C_{BSL,i,t100}$ is assigned a value of 0.

While PAI#1 has two strata, the carbon is expected to develop in the same way in both strata. As such, only one calculation is performed. The calculations for soil organic carbon stock in the project and baseline scenario at 100 years is shown in below.

Table 18: Maximum eligible quantity of GHG emission reductions from soil carbon pool after 100 years for both PAI#1 and per hectare.

	Area (ha)	$C_{BSL,i,t100}$	$C_{WPS,i,t100}$	$C_{WPS-BSL,t100}$
Per Hectare	1	0	-143.08	-143.08
Per PAI#1	235.46	0	-33,689.58	-33,689.58

The difference between the carbon stock in the project scenario and baseline scenario at $t = 100$ ($C_{WPS-BSL,t100}$) is significant if:

$$\sum_{i=0}^{M_{WPS}} (C_{WPS,i,t100} \times A_{WPS,i,t100}) \geq 1.05 \times \sum_{i=0}^{M_{BSL}} (C_{BSL,i,t100} \times A_{BSL,i,t100})$$

Observing that the carbon stock in the project scenario is much greater than the baseline scenario of the calculated significance threshold of 0, the difference between the carbon stock in the project scenario and that of the baseline scenario is significant.

Estimation of GHG emissions from fossil fuel combustion:

As stated in the applied methodology VM0007, module E-FFC must be used for calculating the emissions from fossil fuel combustion in the project scenario. According to the conservative calculations, the emissions from fossil fuel combustion is 0.171t CO₂e per hectare over the 30-year project period. When compared to the total expected emission reductions from 1 hectare over 30 years of 355.5t CO₂e, the fuel combustion emissions equals 0.047% of the total emission reductions.

In the CDM tool Tool for testing significance of GHG emissions in A/R CDM project activitiesV1, it is stated that the sum of decreases in carbon pools and increases in emissions that may be neglected shall be less than 5% of the total decreases in carbon pools and increases in emissions, or less than 5% of net anthropogenic removals by sinks, whichever is lower.

As the fossil fuel emissions along with the soil excavation emissions are the only emissions sources considered in the assessment of de minimize missions, they can as they together constitute less than 5% of the total net-removals be classified as de minimis and therefore set to zero. pp has provided the all data regarding the GHG emission from fossil fuel.

Leakage emissions.

According to applied methodology VM0007, it is stated that module LK-ECO must be used for calculating leakage from WRC project activities, and that module LK-ASP must be used for calculating leakage from RWE-ARR project activities. As the project activities applied in PAI#1 is both WRC and RWE-ARR, both modules are applied to calculate the leakage effect.

In VM0007, it is also stated that any GHG emission increases related to leakage prevention activities shall be accounted for. In this project however, no leakage prevention activities are performed, why there is no GHG emissions related to such to account for.

In VM0007, it is furthermore stated that where applicable, leakage due to market effects must be considered using module LK-ME, and that unsustainable fuelwood collection must be considered using module BL-DFW and LK-DFW. However, as no anthropogenic activities were present pre-project in PAI#1, such leakage analyses are not applicable to PAI#1.

1. Module LK-ECO; Estimation of emissions from ecological leakage

For the proposed project activity PAI#1, none of the project activities leads to any form of negative leakage outside of the project area. It is possible that the excavated canals in some areas of PAI#1 will result in some of the adjacent areas becoming slightly wetter. However, the restoration of the hydrology of the project land does not cause any ecological leakage outside of the project area. As per the following conditions:

Convert non-wetlands to wetlands: To change the hydrology of the project area and improve hydrological connectivity between the river body and the mudflat the project excavation activity was done. It is only taking place within the degraded wetland habitat. The validation team checked the remote sensing imagery and confirmed that there is no conversion happening between the non-wetland area.

Vegetated to non-vegetated: There is now vegetation present in the project land. The validation team checked the remote sensing imagery to confirm that there is no decrease in vegetation due to project land excavation activity.

Increase GHG emissions in existing wetlands: The hydrological engineering increases the water flow and plant ability of mangroves in mudflats which turns the project activity area PAI#1 more anaerobic which leads to less carbon oxidation emission. Hence the hydrological excavation activity does not increase the GHG emission in existing wetlands.

Lower the water table in surrounding wetlands:

As the project area PAI#1 has a direct connection with the ocean Bitang Bolong Therefore, lowering the water table in the project's immediate vicinity is not viable.

Hence after reviewing the provided documents validation team confirmed that there is no ecological leakage calculated for this project. Hence for PAI #1 it is considered as Zero.

2. Module LK-ASP; Estimation of emissions from activity shifting for avoiding planned deforestation/forest degradation and avoiding planned wetland degradation

As no anthropogenic activities are present in PAI#1 prior to project implementation, no activity shifting leakage can arise because of the project activities. Therefore, leakage from shifting activities is in this project set to zero.

Summary of net GHG emission reductions or removals.

Calculation of net GHG emission reductions

As described in the applied methodology VM0007, the total net greenhouse gas emissions reductions of the project are calculated as follows:

$$NER_{REDD+} = NER_{REDD} + NGR_{ARR} + NER_{WRC}$$

Where,

NER_{REDD+} = Total net GHG emission reductions of the REDD+ project activity up to year t^* ; t CO₂e

NER_{REDD} = Total net GHG emission reductions of the REDD project activity up to year t^* ; t CO₂e

NGR_{ARR} = Total net GHG removals of the ARR project activity up to year t^* ; t CO₂e

NER_{WRC} = Total net GHG emission reductions of the WRC project activity up to year t^* ; t CO₂e

As for the proposed project is only for PAI#1 but whenever new PAI is added in the grouped project NER_{REDD+} value will be calculated as the PAIs are added to the grouped project.

Calculation of NER_{REDD} :

As no REDD project activities are included in PAI#1, NER_{REDD} is set to zero.

Calculation of NGR_{ARR} :

In the applied methodology VM0007, it is stated that NGR_{ARR} is calculated as follows:

$$NGR_{ARR} = \Delta C_{WPS-ARR} - \Delta C_{BSL-ARR} - \Delta C_{LK-ARR}$$

Where,

GR_{ARR} = Total net GHG removals of the ARR project activity up to year t^* ; t CO₂e

$\Delta C_{WPS-ARR}$ = Net GHG removals in the ARR project scenario up to year t^* (from Module M-ARR); t CO₂e

$\Delta C_{BSL-ARR}$ = Net GHG removals in the ARR baseline scenario up to year t^* (from Module BL-ARR); t CO₂e

ΔC_{LK-ARR} = Net GHG emissions due to leakage from the ARR project activity up to year t^* ; t CO₂e

For calculation of $\Delta C_{WPS-ARR}$, is given in the project emission section in this report and the calculation of $\Delta C_{BSL-ARR}$, is provided in the section baseline emission. Leakage for PAI#1 is set to zero.

Calculation of NER_{WRC} :

In the applied methodology VM0007, it is stated that NER_{WRC} is calculated as follows:

$$NER_{WRC} = GHG_{BSL-WRC} - GHG_{WPS-WRC} - GHG_{LK-WRC}$$

Where:

NER_{WRC}	=	Total net GHG emission reductions in the WRC project up to year t^* ; t CO ₂ e
$GHG_{BSL-WRC}$	=	Net GHG emissions in the WRC baseline scenario up to year t^* ; t CO ₂ e
$GHG_{WPS-WRC}$	=	Net GHG emissions in the WRC project scenario up to year t^* ; t CO ₂ e
GHG_{LK-WRC}	=	Net GHG emissions due to leakage from the WRC project activity up to year t^* ; t CO ₂ e

In VM0007, it is stated that $GHG_{BSL-WRC}$ for RWE-ARR project activities is calculated as follows:

$$GHG_{BSL-WRC} = GHG_{BSL-PEAT} + GHG_{BSL-TW} + GHG_{BSL-fuel}$$

Where:

$GHG_{BSL-WRC}$	=	Net GHG emissions in the WRC baseline scenario up to year t^* ; t CO ₂ e
$GHG_{BSL-PEAT}$	=	Net GHG emissions in the WRC baseline scenario on peatland up to year t^* ; t CO ₂ e
GHG_{BSL-TW}	=	Net GHG emissions in the WRC baseline scenario on tidal wetland up to year t^* ; t CO ₂ e
$GHG_{BSL-fuel}$	=	Net CO ₂ e emissions from fossil fuel use in the baseline scenario up to year t^* (from Module BL-TW); t CO ₂ e

As In PAI#1 there is no peat soil were present hence $GHG_{BSL-PEAT}$ is set to zero $GHG_{BSL-FUEL}$ is conservatively excluded from the baseline scenario calculations. GHG_{BSL-TW} , is calculated in previous section.

In VM0007, it is stated that $GHG_{WPS-WRC}$ is calculated as follows:

$$GHG_{WPS-WRC} = GHG_{WPS-PEAT} + GHG_{WPS-TW}$$

Where:

$GHG_{WPS-WRC}$	=	Net GHG emissions in the WRC project scenario up to year t^* ; t CO ₂ e
$GHG_{WPS-PEAT}$	=	Net GHG emissions in the WRC project scenario on peatland up to year t^* ; t CO ₂ e
GHG_{WPS-TW}	=	Net GHG emissions in the WRC project scenario on tidal wetland up to year t^* ; t CO ₂ e

As no peat soils are present in PAI#1, $GHG_{WPS-PEAT}$ is set to zero. For calculations of GHG_{WPS-TW} is given in previous section.

In VM0007, it is stated that GHG_{LK-WRC} is calculated as follows:

$$GHG_{LK-WRC} = GHG_{LK-WRC-AS,planned} + GHG_{LK-WRC-AS,unplanned} + GHG_{LK-ECO}$$

Where:

GHG_{LK-WRC}	=	Net GHG emissions due to leakage from the WRC project activity up to year t^* ; t CO ₂ e
$GHG_{LK-WRC-AS,planned}$	=	Net GHG emissions due to wetland degradation from planned deforestation displaced from the project area up to year t^* (from Module LK-ASU); t CO ₂ e
$GHG_{LK-WRC-AS,unplanned}$	=	Net GHG emissions due to wetland degradation from unplanned deforestation displaced from the project area up to year t^* (from Module LK-ASU); t CO ₂ e
GHG_{LK-ECO}	=	Net GHG emissions due to ecological leakage from the WRC project activity up to year t^* (from Module LK-ECO); t CO ₂ e

As there is no leakage found in the PAI#1 project area hence GHG_{LK-WRC} is found to be zero.

Calculation of AFOLU Pooled Buffer Account Contribution

In the applied methodology VM0007, it is stated that the amount of credits set aside for the AFOLU pooled buffer account ($Buffer_{Total}$) is calculated as follows:

$$Buffer_{Total} = Buffer_{Planned} + Buffer_{Unplanned} + Buffer_{Degrad-FW/C} + Buffer_{WRC} + Buffer_{ARR}$$

Where:

$Buffer_{Total}$	=	Total permanence risk buffer withholding; t CO ₂ e
$Buffer_{Planned}$	=	Buffer withholding for avoiding planned deforestation project activities; t CO ₂ e
$Buffer_{Unplanned}$	=	Buffer withholding for avoiding unplanned deforestation project activities; t CO ₂ e
$Buffer_{Degrad-FW/C}$	=	Buffer withholding for avoiding degradation through extraction of fuelwood project areas; t CO ₂ e
$Buffer_{WRC}$	=	Buffer withholding for WRC project activities; t CO ₂ e
$Buffer_{ARR}$	=	Buffer withholding for ARR project activities; t CO ₂ e

Calculations of $Buffer_{ARR}$ and $Buffer_{WRC}$:

In VM0007, it is stated that $Buffer_{ARR}$ and $Buffer_{WRC}$ is calculated as follows:

$$Buffer_{ARR} = NGR_{ARR} \times Buffer\%$$

$$Buffer_{WRC} = NER_{WRC} \times Buffer\%$$

For calculations of NGR_{ARR} and NER_{WRC} , which is given in previous section.

As stated in VM0007, the buffer withholding percentage ($Buffer\%$) must be calculated using the AFOLU Non-Permanence Risk Tool(T-BAR). According to this analysis, the $buffer\%$ is estimated at 10%. & which was verified on the basis on Non-performance Risk Tool(T-BAR).

Also for each PAI, a $Buffer_{Total}$ value will be calculated as the PAIs are added to the grouped project.

Calculation of Buffer_{Total} for PAI#1

As no avoiding planned deforestation, avoiding unplanned deforestation or avoiding degradation project activities has been implemented in PAI#1, Buffer_{Unplanned}, Buffer_{Planned} and Buffer_{Degrad-FW/C} are all set to zero.

Uncertainty Analysis

As per the applied methodology VM0007, the module X-UNC must be used to produce an overall uncertainty estimate of the total net GHG emission reductions. In module X-UNC, it is stated that the module is applicable for estimating uncertainty for WRC project activities, but that the CDM tool *Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities* (AR-TOOL14) must be used for estimating the uncertainty of ARR project activities.

Estimating uncertainty from the WRC project activities through the X-UNC module

In the module, it is stated that the uncertainty of a parameter can be set to zero if the parameter is indisputably conservative, provided that the parameter is based on verifiable literature sources or expert judgement. It is furthermore stated that parameters based on default factors can be set to zero if it can be demonstrated that the default factor is as well indisputably conservative.

The parameters applicable for uncertainty estimation are according to the module for the baseline scenario GHG_{BSL-soil-CO2,i,t}, Deduction_{alloch} (baseline scenario), GHG_{BSL-soil-CH4,i,t} and GHG_{BSL-soil-N2O,i,t}, and for the project scenario GHG_{WPS-soil-CO2,i,t}, Deduction_{alloch} (project scenario), GHG_{WPS-soil-CH4,i,t} and GHG_{WPS-soil-N2O,i,t}.

GHG_{BSL-insitu-CO2,i,t}, GHG_{WPS-soil-CO2,i,t}, GHG_{BSL-eroded-CO2,i,t} and GHG_{WPS-eroded-CO2,i,t}. GHG_{BSL-excav-CO2,i,t} is set to zero and GHG_{WPS-excav-CO2,i,t} is deemed de minimis. As GHG_{BSL-excav-CO2,i,t} cannot be less than zero, estimating it at zero is the most conservative choice.

As per section 4.2 of PD, all parameters included in the estimation of GHG_{WPS-excav-CO2,i,t} is determined conservatively based on inspections in the field and available scientific literature. Therefore, the estimations of these excavation parameters are the conservative choice, why their uncertainty is set to zero.

Further based on the scientific literature and on investigation of a mangrove ecosystem of similar characteristics as of this project's. The validation team concludes that it is reasonable to set Deduction_{alloch} in the project scenario and its uncertainty to zero.

Estimating uncertainty from the ARR project activities through the CDM tool AR-TOOL14

In the tool, it is stated that ex-ante estimation (projection) of carbon stock in tree biomass is not subjected to uncertainty control. Therefore, uncertainty for the projection of the total net-GHG emission reductions from the ARR component is set to zero.

Calculation of Verified Carbon Units

In line with the applied methodology VM0007, the number of Verified Carbon Units (VCUs) for the monitoring period $T = t_2 - t_1$ is estimated using the following equation:

$$VCU_t = (Adjusted_{NER_{REDD+t2}} - Adjusted_{NER_{REDD+t1}}) - Buffer_{Total}$$

Where:

VCU_t = Number of Verified Carbon Units at year $t = t_2 - t_1$; VCU

$Adjusted_{NER_{REDD+t2}}$ = Total net GHG emission reductions of the REDD+ project activity up to year t_2 and adjusted to account for uncertainty; t CO₂e

$Adjusted_{NER_{REDD+t1}}$ = Total net GHG emission reductions of the REDD+ project activity up to year t_1 and adjusted to account for uncertainty; t CO₂e

$Buffer_{Total}$ = Total permanence risk buffer withholding; t CO₂e

As stated in the module X-UNC, the allowable uncertainty is +/-15% of NER_{REDD+} at the 95% confidence level. It is stated that if such precision level is met, then no deduction for uncertainty should be performed. As this precision level as argued above is met, no deduction for uncertainty is applied in this project.

Therefore, the value of $Adjusted_{NER_{REDD+,t}}$ equals the value of $NER_{REDD+,t}$. Therefore, the projection of the amount of carbon credits from PAI#1 over the 30-year project crediting period¹³ is as below;

Year	Adjusted_ NER_{REDD+}	Buffer _{total}	VCUs
1	106.7	10.7	96.1
2	421.3	42.1	379.2
3	2,109.9	211.0	1898.9
4	3,820.4	382.0	3438.3 0
5	5,532.0	553.2	4978.8 4
6	7,634.2	763.4	6870.8
7	9,920.8	992.1	8928.8
8	12,372.4	1237.2	11,135.2
9	14,980.5	1498.1	13,482.5
10	17,735.3	1773.5	15,961.8
11	20,625.7	2062.6	18,563.1
12	23,639.7	2364.0	21,275.7
13	26,764.5	2676.5	24,088.1
14	29,986.9	2998.7	26,988.2
15	33,293.3	3329.3	29,964.0

¹³ To ensure clarity, PP has now added "Table 23" in PD to show the total net greenhouse gas emissions removals over the 30-year project period for the project goal of 10,000 ha calculated using the formula $NER_{REDD+} = NER_{REDD} + NGR_{ARR} + NER_{WRC}$.

16	36,669.8	3667.0	33,002.8 2
17	40,102.3	4010.2	36,092.1
18	43,576.9	4357.7	39,219.2
19	47,079.4	4707.9	42,371.4
20	50,596.0	5059.6	45,536.4
21	54,113.1	5411.3	48,701.8
22	57,617.3	5761.7	51,855.5
23	61,095.5	6109.5	54,985.9
24	64,535.0	6453.5	58,081.5
25	67,923.7	6792.4	61,131.4
26	71,249.8	7125.0	64,124.8
27	74,502.0	7450.0	67,051.8
28	77,669.6	7767.0	69,902.7
29	80,742.6	8074.3	72,668.3
30	83,711.4	8371.1	75,340.2

The estimates on the expected anthropogenic removals which are likely to be achieved by the proposed project activity under the project scenario follow the applied VCS methodology and with the respective VCS requirements. Data and parameter applied for the calculation of VCU's are listed in the PD, the data and source reference were reviewed by the audit team and found in compliance with requirements of the methodology. The estimation of the total uncertainty of the project activity is conducted in compliance with the VCS module by quantifying the uncertainty.

Over the first fixed baseline period of 30 years, total net anthropogenic removals of 85,066.7tCO₂-e are expected. In the VCU calculations sheet submitted for net anthropogenic GHG removals are in compliance with the applied VCS methodology and its corresponding tools. The steps of the calculations are fully traceable and adequate for the project conditions and considered correct by validation team:

All assumptions and data used by the PP are clearly listed in the PD, including their references and sources.

All values used in the PD are considered reasonable in the context of the proposed VCS project activity. The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.

All estimates of the baseline emissions can be replicated using the data and parameter value provided in the PD.

3.3.6 Methodology Deviations

Not applicable as no methodology deviations were assessed during validation.

3.3.7 Monitoring Plan

Monitoring plan for the proposed project activity is presented in section 5 of the PD in line with applied methodology VM0007. All the required data and Parameters relevant to the validation as of the date of this report and verification are available and provided in section 5.3 of the PD. The monitoring equipment and procedures specified in the monitoring plan are applicable and eligible per VCS requirements and the requirements of the module.

Data and Parameters Available at Validation:

Data/parameter and Unit	Value applied	VVB Assessment
$\Delta C_{BSL,degrad-FW/C}$ t CO ₂ e Net greenhouse gas emissions in the baseline from degradation caused by fuelwood collection and charcoal making	0	Sourced from Module BL-DFW. As degradation caused by fuelwood collection and charcoal making is not part of the baseline scenario in PAI#1, this parameter is set to zero.
$\Delta C_{BSL,planned}$ t CO ₂ e Net greenhouse gas emissions in the baseline from planned deforestation	0	Sourced from Module BL-PL. As planned deforestation is not part of the baseline scenario in PAI#1, this parameter is set to zero.
$\Delta C_{BSL,unplanned}$ t CO ₂ e Net greenhouse gas emissions in the baseline from unplanned deforestation	0	Sourced from Module BL-UP. As unplanned deforestation is not part of the baseline scenario in PAI#1, this parameter is set to zero.
$\Delta C_{BSL-ARR}$ t CO ₂ e Net GHG removals in the ARR baseline scenario up to year t*	0	Sourced from Module BL-ARR. Value applied is based on requirements set out in the applicable modules as per the applied methodology VM0007.
$GHG_{BSL-WRC}$ t CO ₂ e Net GHG emissions in the WRC baseline scenario up to year t*	For PAI#1: Year 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 GHG _{BSL-WRC} 67.3 134.6 201.9 269.2 336.5 403.8 471.2 538.5 605.8 673.1 740.4 807.7 875.0 942.3 1009.6 1076.9 1144.2 1211.5 1278.8 1346.1	Sourced from Module BL-TW Calculated value.

	21	1413.5	
	22	1480.8	
	23	1548.1	
	24	1615.4	
	25	1682.7	
	26	1750.0	
	27	1817.3	
	28	1884.6	
	29	1951.9	
	30	2019.2	
$E_{FC,i,t}$ t CO ₂ e Emissions from fossil fuel combustion in stratum i in year t	0		Calculated value. As the fossil fuel emissions in the project scenario are deemed de minimis, they are counted as zero.

Data and Parameters Monitored:

Data/parameter and Unit	Value applied	Monitoring frequency	VVB Assessment
$\Delta C_{LK-AS,degrad-FW/C}$ t CO ₂ e Net greenhouse gas emissions due to activity-shifting leakage for degradation caused by extraction of wood for fuel.	0		Sourced from Module LK-DFW. As no activity shifting leakage for degradation caused by extraction for fuel are expected in relation to PAI#1, this parameter is set to zero and shall not be monitored.
$\Delta C_{LK-AS,planned}$ t CO ₂ e Net greenhouse gas emissions due to activity shifting leakage for projects preventing planned deforestation.	0		Sourced from Module LK-ASP As preventing planned deforestation is not part of the project activities implemented in PAI#1, this parameter is set to zero and shall not be monitored.
$\Delta C_{LK-AS,unplanned}$ t CO ₂ e Net greenhouse gas emissions due to activity shifting for projects preventing unplanned deforestation.	0		Sourced from Module LK-ASU As preventing unplanned deforestation is not part of the project activities implemented in activities implemented in PAI#1, this parameter is set to zero and shall not be monitored.
ΔC_{LK-ME} t CO ₂ e Net greenhouse gas emissions due to market-effects leakage	0		There is no agriculture land observed adjacent to the mangrove area also during interview with leaders of community involved confirmed that there is no cattle grazing was observed in the project area.

			As no markets-effects leakage are observed in PAI#1, this parameter is set to zero.																																																																
$\Delta C_{WPS-ARR} t CO_2e$ Net GHG emissions in the ARR project scenario up to year t*	<table><tr><td colspan="2">For projection:</td></tr><tr><td>Year</td><td>CWPS-ARR</td></tr><tr><td>1</td><td>106.7</td></tr><tr><td>2</td><td>421.3</td></tr><tr><td>3</td><td>849.4</td></tr><tr><td>4</td><td>1,299.4</td></tr><tr><td>5</td><td>1,750.5</td></tr><tr><td>6</td><td>2,592.2</td></tr><tr><td>7</td><td>3,618.4</td></tr><tr><td>8</td><td>4,809.5</td></tr><tr><td>9</td><td>6,157.1</td></tr><tr><td>10</td><td>7,651.4</td></tr><tr><td>11</td><td>9,281.3</td></tr><tr><td>12</td><td>11,034.7</td></tr><tr><td>13</td><td>12,899.1</td></tr><tr><td>14</td><td>14,861.0</td></tr><tr><td>15</td><td>16,906.9</td></tr><tr><td>16</td><td>19,022.9</td></tr><tr><td>17</td><td>21,194.9</td></tr><tr><td>18</td><td>23,408.9</td></tr><tr><td>19</td><td>25,650.9</td></tr><tr><td>20</td><td>27,907.1</td></tr><tr><td>21</td><td>30,163.7</td></tr><tr><td>22</td><td>32,407.4</td></tr><tr><td>23</td><td>34,625.1</td></tr><tr><td>24</td><td>36,804.2</td></tr><tr><td>25</td><td>38,932.4</td></tr><tr><td>26</td><td>40,997.9</td></tr><tr><td>27</td><td>42,989.6</td></tr><tr><td>28</td><td>44,896.8</td></tr><tr><td>29</td><td>46,709.2</td></tr><tr><td>30</td><td>48,417.5</td></tr></table>	For projection:		Year	CWPS-ARR	1	106.7	2	421.3	3	849.4	4	1,299.4	5	1,750.5	6	2,592.2	7	3,618.4	8	4,809.5	9	6,157.1	10	7,651.4	11	9,281.3	12	11,034.7	13	12,899.1	14	14,861.0	15	16,906.9	16	19,022.9	17	21,194.9	18	23,408.9	19	25,650.9	20	27,907.1	21	30,163.7	22	32,407.4	23	34,625.1	24	36,804.2	25	38,932.4	26	40,997.9	27	42,989.6	28	44,896.8	29	46,709.2	30	48,417.5	Annually	Sourced from module M-ARR to be calculated through the procedures set out in the CDM tool AR-ACM0003 and the CDM tool AR-Tool14. For actual credit issuance Measurement of biomass within representative plots: Measuring tape for measuring tree circumference, paint for marking measuring place on the trees, tags and nails for tagging each tree measured, long measuring tape for measuring out the plots in which the biomass is estimated, GPS for marking the geodetic coordinates of the plots. If double sampling is applied: potentially a drone which can map the height and crown diameter of the planted trees within the representative plots. For actual credit issuance: The following procedures and calculations as described in section4.2 and5.3 of this PD.
For projection:																																																																			
Year	CWPS-ARR																																																																		
1	106.7																																																																		
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29	46,709.2																																																																		
30	48,417.5																																																																		
$\Delta C_{LK-ARR} t CO_2e$ Net GHG emissions due to leakage from the ARR project activity up to year t*	0	Regular imagery will be captured using a drone and satellite imagery	There is no agriculture land observed adjacent to the mangrove area also during interview with leaders of community involved confirmed that there is no cattle grazing was observed in the project area. As no leakage is considered in PAI#1, Hence this parameter is set to zero. FAR 04 is raised for subsequent VVB to confirm the same.																																																																
$GHG_{WPS-WRC} t CO_2e$	<table><tr><td colspan="2">For projection:</td></tr><tr><td>Year</td><td>GHG_{WPS-WRC}</td></tr><tr><td>1</td><td>67.31</td></tr></table>	For projection:		Year	GHG _{WPS-WRC}	1	67.31	Annually	Sourced from Module M-TW Calculated value.																																																										
For projection:																																																																			
Year	GHG _{WPS-WRC}																																																																		
1	67.31																																																																		

Net GHG emissions in the WRC project scenario up to year t*	2 134.61 3 -1,058.57 4 -2,251.76 5 -3,444.95 6 -4,638.13 7 -5,831.32 8 -7,024.51 9 -8,217.70 10 -9,410.88 11 -10,604.07 12 -11,797.26 13 -12,990.45 14 -14,183.63 15 -15,376.82 16 -16,570.01 17 -17,763.19 18 -18,956.38 19 -20,149.57 20 -21,342.76 21 -22,535.94 22 -23,729.13 23 -24,922.32 24 -26,115.51 25 -27,308.69 26 -28,501.88 27 -29,695.07 28 -30,888.25 29 -32,081.44 30 -33,274.63		Salinity measurer and GPS for marking the geodetic coordinates of the spots where measurement is performed. For actual credit issuance: The following procedures and calculations as described in section 4.2 and 5.3 of this PD.
GHG_{LK-ECO} t CO ₂ e Net GHG emissions due to ecological leakage from the WRC project activity up to year t	0	NA	Sourced from module LK-ECO Monitoring of ecological leakage is not relevant as no ecological leakage is expected to occur as a result of the project activities.
$E_{FC,i,t}$ t CO ₂ e Emission from fossil fuel combustion in stratum i in year t	0	NA	Sourced from module E-FFC As the emissions from fossil fuel combustion are deemed de minimis, this parameter is set to zero.
$N_2O_{direct-N,i,t}$ t CO ₂ e Direct N ₂ O emission as a result of nitrogen application on the alternative land use within the project boundary in stratum i in year t	0	NA	Sourced from module E-NA As nitrogen application is not part of the implemented project activities, monitoring of this parameter is not relevant.

The monitoring plan presented in the PD complies with the requirement of the applied methodology. The validation team checked all parameters presented in the monitoring plan against the requirements of the

methodology and corresponding tools. Relevant parameters available at validation are listed in the PD. All relevant parameters that need to be monitored are listed in the PD as required by the methodology and corresponding tools.

The monitoring procedures as defined in the PD were reviewed by the audit team and via interviews with technical staff to understand the measurements and technique/method adopted to collect data at site. This information allows us to confirm that the proposed monitoring plan is feasible for the proposed project activity. Hence, validation team concludes that the PP can implement the monitoring plan to report ex-post GHG net anthropogenic removals, which can also be verified.

3.4 Non-Permanence Risk Analysis

A non-permanence risk analysis was carried out following the provisions of the AFOLU Non-Permanence Risk tool, v4.0/18/ and AFOLU Non-permanence risk report/19/submitted to the audit team. 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. findings of the validation team regarding the risk scores applied for each factor are as follows.

3.4.1 INTERNAL RISK

Project Management				
Internal Risk				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB conclusion
a)	Species planted (where applicable) associated with more than 25% of the stocks on which GHG credits have previously been issued are not native or proven to be adapted to the same or similar agro-ecological zone(s) in which the project is located.	0	Only one species of mangrove will be planted - Rhizophora mangle - which is native to the mangrove ecosystem of The Gambia and is still or have historically been present in the regions. DPWM and the involved local NGOs confirm of such. Additionally, all propagules are collected from within the region, so are genetically similar to the existing mangroves	By discussion with PP and visit to site, validation team inclusive of local expert concludes that the mangrove species i.e., Rhizophora mangle are native to the mangrove ecosystem of Gambia. Also, the same was cross checked UNDP mangrove report//.

			and thus are already adapted to the project area. For additional evidence, refer to the UNEP mangrove report ¹⁴ . Thus, there is no risk associated with the species to be planted.	
b)	Ongoing enforcement to prevent encroachment by outside actors is required to protect more than 50% of stocks on which GHG credits have previously been issued.	0	Not Applicable to this project, as the project areas are not under significant threat due to encroachment	By discussion with PP, local villagers and visit to site, validation team concludes that the mangrove species are not under any significant threat of encroachment in Gambia.
c)	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years' experience in the area).	0	Not Applicable to this project, as the DPWM is present within the Gambia and can reach all project areas within a day of travel also Ørsted Nature Based Solutions situated in Denmark hence the Ørsted team can be reach on the project site within the day travel.	The validation team reviewed all the evidence referenced in the VCS non permanence risk report submitted, verified the SOPs at site and by interview with PP and site personnel working in the project confirms that the management team includes individuals with significance experience in skills related to successfully undertaking all activities in the project. Also, personnel work under a management system and trained based on SOPs
d)	Management team VVBs not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area.	0	Not Applicable as, all the management team of DPWM & Ørsted Nature Based Solutions can reach all the project areas within a day.	The validation team by discussion with PP and site personnel confirms that the project area has the constant presence of the maintenance staff, as restoration activities require a day-to-day supervision
e)	Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have	0	The Ørsted team has significant in-house experience within the project design, implementation, carbon accounting and	The validation team by discussion with PP and site personnel confirms that the project management team includes individuals with significant experience in

¹⁴ Report produced for UNEP-DEPI (2007): Mangroves of Central and Western Africa. Report access: <https://wedocs.unep.org/bitstream/handle/20.500.11822/7768/-Mangroves%20of%20West%20Africa-20073922.pdf?sequence=3>, Accessed 02/02-2023

	successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.		reporting under various carbon programmes of both AFOLU & other project categories	AFOLU project design and the expertise of Ørsted group in several AFOLU project is clearly evidenced
f)	Mitigation: Adaptive management plan in place.	0		
Total Project Management (PM) [as applicable, (a + b + c + d + e + f)] i.e., 0 Total may be less than zero.				0

Financial Viability				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
a)	Project cash flow breakeven point is greater than 10 years from the current risk assessment	0	Not applicable to this project	Not applicable
b)	Project cash flow breakeven point is between 7 and up to 10 years from the current risk assessment	0	According to the information provided by the project owner it was identified that the project has secured all funding needed to cover total cash out related to PAI#1 already 0 year from the first risk analysis.	The validation team by discussion with PP, confirms that the project has secured all funding needed to cover total cash out related to PAI#1 already 0 year from the first risk analysis
c)	Project cash flow breakeven point between 4 and up to 7 years from the current risk assessment	0	Not applicable to this project	Not applicable, Selection is correct
d)	Project cash flow breakeven point is less than 4 years from the current risk assessment	0	According to the information provided by the project owner it was identified that the project	The validation team by discussion with PP, confirms that the project has secured all funding

			has secured all funding needed to cover total cash out related to PAI#1 already 0 year from the first risk analysis	needed to cover total cash out related to PAI#1 already 0 year from the first risk analysis
e)	Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	0	Not applicable to this project	Not applicable, Selection is correct
f)	Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven	0	Not applicable to this project	Not applicable, Selection is correct
g)	Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven	0	Not applicable to this project	Not applicable, Selection is correct
h)	Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	0	According to available financial information, the project has obtained more than 100% of the necessary financing before reaching the break-even point.	Not applicable, Selection is correct
i)	Mitigation: Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven	-2	For each new PAI#1 added in the future, the investment related to the planning & implementation will be secured beforehand through additional upfront	The validation team by discussion with PP, confirms that the investment related to the planning & implementation will be secured beforehand through additional upfront

			payments by Ørsted and other upfront payments from other funding source.	payments by Ørsted and other upfront payments from other funding source.
Total Financial Viability (FV) [as applicable, ((a, b, c or d) + (e, f, g or h) + i)] Total may not be less than zero.				-2

Opportunity Cost				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
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	0	Not applicable for this project	Not applicable, Selection is deemed valid.
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.	0	Not applicable for this project	Not applicable, Selection is deemed valid.
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	0	Not applicable for this project	Not applicable, Selection is deemed valid.

d)	NPV from the most profitable alternative land use activity is expected to be between 20% more than and up to 20% less than from project activities; or where baseline activities are subsistence-driven, net positive community impacts are demonstrated	0	Not applicable for this project	Not applicable, Selection is deemed valid.
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	0	It is not applicable for this project	Not applicable, Selection is deemed valid.
f)	NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	-4	As the in the additionality part of the project PP have identified two land use scenario for this project activity that 1) area continues being degraded wetland and 2) that the areas are reforested without being registered as a carbon project so, alternative land use scenario not except any profit	By reviewing the additionality of proposed project, the validation team confirms that the proposed project has identified two baseline scenarios as realistic and reliable. Which demonstrated that there is no profit generated from this alternative land use scenario.
g)	Mitigation: Project proponent is a non-profit organization	0	Not applicable for this project	Not applicable, Selection is deemed valid.

h)	Mitigation: Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over the length of the project crediting period (see project longevity)	0	Not applicable for this project	Not applicable, Selection is deemed valid.
i)	Mitigation: Project is protected by legally binding commitment to continue management practices that protect the credited carbon stocks over at least 100 years (see project longevity)	0	Not applicable to this project.	Not applicable, Selection is deemed valid.
Total Opportunity Cost (OC) [as applicable, (a, b, c, d, e or f) + (g + h or i)] Total may not be less than 0.				-4

Project Longevity				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
a)	Without legal agreement or requirement to continue the management practice	0	Yes, Agreements have been signed with all participating communities that have customary land rights. In these agreements, the communities confirm that they intend to protect the restored mangrove ecosystem from degradation for at least the next 100 years. All documents are shared with the validator upon request	The validation team verified the project's longevity on the basis of the agreement signed between Ørsted and all the participating communities that have customary land rights. By discussion with PP and verifying the agreement records, the validation team

b)	With legal agreement or requirement to continue the management practice	30 - (100/2) = -20	Agreement have been signed with all the participating communities. In these agreements, the communities confirm that they intend to protect the restored mangrove ecosystem from degradation for at least the next 100 years.	confirms the same.
Total Project longevity = -20				0

Internal Risk	
Total Internal Risk (PM + FV + OC + PL)	0
Total may not be less than zero.	

3.4.2 External Risk

External Risk				
Land Tenure and Resource Access/Impacts				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
a)	Ownership and resource access/use rights are held by same entity(s)	0	As project areas were under customary tenure of communities adjacent to the areas therefore this lands under the ownership. The resource use /access were held by this community. the community with customary tenure over land include in the project has all given their consent to the implementation of the project. Also the where this project is getting implemented as of now no practically usage to the local communities and has been not uses	The justification provided is in line with the VCUPA documents. This has been verified during the site visit.

			from long time by the implementing project the not used land turns into land which can provide positively to the community.	
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)	0	Not applicable for this project	Not applicable, Selection is deemed valid.
c)	In more than 5% of the project area, there exist disputes over land tenure or ownership	0	Not applicable for this project	Not applicable, Selection is deemed valid.
d)	There exist disputes over access/use rights (or overlapping rights)	0	Not applicable for this project	Not applicable, Selection is deemed valid.
e)	WRC projects...	0	Not applicable for this project	Not applicable, Selection is deemed valid.
f)	Mitigation: Project area is protected by legally binding commitment (eg, a conservation easement or protected area) to continue management practices that protect carbon stocks over the length	0	Not applicable for this project	Not applicable, Selection is deemed valid.

	of the project crediting period			
g)	Mitigation: Where disputes over land tenure, ownership or access/use rights exist, documented evidence is provided that projects have implemented activities to resolve the disputes or clarify overlapping claims	0	Not applicable for this project	Not applicable, Selection is deemed valid.
Total Land Tenure (LT) [as applicable, (a or b) + c + d + e+ f)] i.e., 0+0+0+0-0+0 = 0. Total may not be less than zero.				0

Community Engagement				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
a)	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	0	For every PAI added all relevant communities' dependent on the mangrove covered by the PAI were directly consulted and involved in the project. which is secured through the structure of the project where the community member themselves were performing the plantation of the project area. before starting the plantation, the training and information were provided to the community who involved in this project by DPWM & Local NGO's As Described in the risk tool house hold can be determined as consulted where they have been direct meeting	The justification provided is in line with the community engagement document provided for assessment.
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	0		During the site visit, the validation team randomly confirmed this in discussion with the local community.

			with associates & community group who can legally recognise to present the household.	
c)	Mitigation: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area	-5	During the preliminary local stakeholder consultation the mangrove community express their willingness to involved in the implementation of the project because many more positive impact of that the project i.e. it will provide the additional income, job opportunity, capacity building, training, improvement of the health of mangrove ecosystem.so it will conclude that the implemented project will have adverse positive impact on the relevant community and the mangrove ecosystem of the Gambia.	The validation team by discussion with the local communities present around the proposed project area confirms that the project will generates positive impacts on the social and economic well-being of the local communities.
Total Community Engagement (CE) [where applicable, (a+b+c)] i.e., 0+0-5 = -5 Total may be less than zero.				-5

Political Risk				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
a)	Governance score of less than -0.79	0	Not applicable for this project	Not applicable, Selection is deemed valid.
b)	Governance score of -0.79 to less than -0.32	4	As per this tool the governance score is calculated from the means of governance score across the six indicator of world bank institute worldwide governance indicator (WGI), Averaged over the most recent five years available data and which was calculated to be -0,464	The validation team validated this score based on the calculations given in the excel sheet regarding this project and found ok.

c)	Governance score of - 0.32 to less than 0.19	0	Not applicable for this project	Not applicable, Selection is deemed valid.
d)	Governance score of 0.19 to less than 0.82	0	Not applicable for this project	
e)	Governance score of 0.82 or higher	0	Not applicable for this project	
f)	Mitigation: Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3.	0	Not applicable for this project	Not applicable, Selection is deemed valid.
Total Political (PC) [as applicable ((a, b, c, d or e) + f)] Total may not be less than zero.				4

External Risk	
Total External Risk (LT + CE + PC) = 0 - 5 + 4 = - 1 Total may not be less than zero	1

3.4.3 Natural Risk

Natural Risk				
Risk Factor	Risk Factor and/or Mitigation Description	Risk Rating	PP justification	VVB Conclusion
a	Fire (F)	0	No Gambian National records exists stating any fire occurrences within the Gambian mangrove ecosystem. Furthermore, as mangrove are wetland ecosystems, fire due to large amount of water not a relevant risk.	The validation team, by discussion with the local communities and PP, confirms that there is no fire risk in mangrove.
b	Pest and Disease Outbreaks (PD)	2	No Gambian national records exist stating any pest & disease outbreak within the Gambian Mangrove	The validation team, by discussion with the local

			ecosystem, according to DPWM small local disease outbreak can occur within the Gambian mangrove ecosystem but they do not have any significant records on that hence this risk factor in the risk analysis conservatively rated as taking place more often than every ten years	communities and PP, confirms that there is no Pest and Disease Outbreaks (PD) in mangrove.
c	Extreme Weather (W)- Extreme floods	2	In the Gambia the main type of extreme weather events potentially affects the project area negatively if the occurrence of droughts. As the project area situated in the river delta sheltering the mangroves form the more severe wave impact along with coastline as mangrove are known for being good at withstanding flooding events and DPWM don't have any records of other weather event. The mangrove ecosystem along with Bintang Bolong has been degraded due to the mixture of several events which together events in a mangrove ecosystem being unable to subsist.as both droughts and mangrove ecosystem naturally occurring in the region the presence of droughts alone were not likely affect the ecosystem because mangrove ecosystem is already adopted to the naturally condition occurring in the nature and if in future new droughts occurs without occurrence of degradation event would likely not result severe degradation. therefore the significance of future drought is	The validation team, by discussion with the local communities and PP, As the proposed project is in the river delta sheltering Extreme Weather (W)- Extreme floods occurrence is rare.

			conservatively rated as major (25% less than 50% less of carbon stocks	
d	Geological Risk (G)	0	Natural hazard not applicable to this project area, As neither volcano eruption nor significant earthquake occurs within the Gambia.	Not applicable, Selection is deemed valid.
e	Seasonal of and depth of the water table	0	The seasonal timing and depth of water table change it would be due to the occurrence of future drought. As the risk associated with drought already included in this analysis, this risk is deemed as not applicable to the project area.	Not applicable, Selection is deemed valid.
f	Wreck deposition in tidal wetland from storm surges	0	Wreck deposition in tidal wetlands from storm surges is not a relevant risk for this project, as no negative impacts of the mangrove of the Gambia due to such risk has been recorded.	Not applicable, Selection is deemed valid.
g	Other natural risk (ON3)	0	Not applicable as no other risk has been identified.	Not applicable, Selection is deemed valid.
h		0	The planting of mangrove trees will because of the establishment of a root system and because of the trees acting as protection against waves, result in less erosion when compared to the amount of erosion in the baseline scenario	Not applicable, As the planting mangrove trees will help to reduce the soil erosion in the baseline scenario.
	Rising sea levels	0	According to several different studies, Rhizophora species adapt very well to significant sea level changes. In a study	Not applicable, as justified by PP and reference study report provided for the rising sea levels

		by Prabakaran (2020)¹⁵, a mangrove community response to the 2004 Sumatra-Andaman earthquake resulting in a subsidence of 1.1 meters in the mangrove area was investigated. In the study, it was concluded that Rhizophora species, contrary to some of the other mangrove species, were able to adapt to the changing conditions and survive. In another study by Rollon et al (2017)¹⁶, the response of planted Rhizophora trees to a subsidence-induced sea level rise in the Philippines caused by the 2013 Bohol earthquake which lowered the mangrove area by 0.51 meters was investigated. The study concluded that the planted Rhizophora trees were highly adaptable to the abrupt sea level rise, and that they responded rapidly by within three years post-quake having created new prop roots above the pre-quake height limits. In the Philippine study, the Rhizophora trees were pre-quake growing in areas with a water level of up to 1.1 meters at high tide. Post-quake, the water level at high tide was measured at 1.6 meters. With the water level rise happening much more gradually and to a lesser degree in the project area than in the referenced studies above, it can be reasonably assumed that future sea level rise is not expected to have a negative impact on the mangrove trees in the project area	in Gambia. Which confirmed that future sea level rise is not expected to have a negative impact on the mangrove trees in the project area.
Total Natural Risk (as applicable, F + PD + W + G + ON)			4

3.4.4 Overall Risk Rating

Risk Category	Rating
a) Internal Risk	0

¹⁵ Prabakaran, N. (2020): Mangrove community response to subsidence inflicted sea level change in Car Nicobar Island, India

¹⁶ Rollon, R. N., Villamayor, B. M. R., Oropesa, L. J. B., Samson, M. S. (2017): Prop root production response of planted Rhizophora to abrupt subsidence-induced sea level rise

b) External Risk	0
c) Natural Risk	4
Overall Risk Rating (a + b + c)	4

As per the paragraph 2.5.4 of AFOLU Non-Permanence Risk Tool v 4.0, the overall risk rating shall be rounded up to the nearest whole percentage. Hence 10% of the total VCUs generated will be kept in buffer account as per VCS requirement.

3.4.5 Risk Analysis Assessment Conclusion

This risk assessment has been performed at the time of validation as recommended by the VCS standard. The assessment shows that the overall risk rating that was determined for the project, in accordance with the VCS Non-Permanence Risk Tool is 4.00%. The audit team has concluded that the above risk rating is in conformance with the VCS rules. However, in accordance with the VCS Non-Permanence Risk Tool, the overall score shall be rounded upto 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.

4 VALIDATION OPINION

“Ørsted Nature Based Solutions” had contracted KBS Certification Services Ltd. to do VCS validation of the project activity: “CONSERVATION & RESTORATION OF THE MANGROVE ECOSYSTEM IN THE GAMBIA THROUGH THE REDD+ MECHANISM” having VCS ID 3223, with regard to the relevant requirements of VCS Standard version 4.4; to attain real, measurable, additional and permanent emission reductions.

The proposed grouped project activity is the restoration & reforestation of degraded mangrove ecosystem in the Gambia. The main aim of the project activity to generate greenhouse gas emission removals and reductions through mangrove restoration and avoided degradation, including wetland restoration and conservation activities.

A risk-based approach has been followed to perform this validation. In the course of the validation 12 Corrective Action Request (CAR) and 20 Clarification Request (CL) were raised and successfully closed. Further, a FAR (FAR 04) was also raised during the validation. Refer to Appendix 2 for further details.

The validation is based on the VCS PD, additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and supporting documents made available to the validation team by project proponent.

As a result of the validation, the validation team confirms that:

- The project fulfils criteria of VCS Standard Version 4.4.
- The project is in line with all relevant VCS requirements.
- The project baseline is sufficiently justified in the PD.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the estimated emission reductions for first project activity PAI#1 will be 2790(round down the value for conservativeness) ER's annually & for 109997 (round down the value for conservativeness) ER's is most likely to be achieved within the 30 years of fixed crediting period.
- No restrictions or uncertainties were identified related to the validation.

The estimated GHG emission reduction for PAI#1 and the grouped project

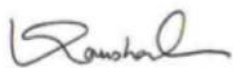
Year	Estimated Yearly GHG emission reductions or removals (tCO ₂ e) for PAI#1	Estimated yearly GHG emission reductions or removals (tCO ₂ e) from the grouped project (in this estimate only including ARR+RWE project activities) (10,000 ha)
2023	106.7	106.7
2024	314.6	1674.4
2025	1688.6	7282.9
2026	1710.5	29,380.5
2027	1711.6	52,966.2

2028	2102.2	72,747.2
2029	2286.7	78,228.1
2030	2451.6	86,565.2
2031	2608.1	96,979.8
2032	2754.8	104,130.0
2033	2890.4	110,747.5
2034	3014.0	116,949.3
2035	3124.8	122,683.9
2036	3222.4	127,911.0
2037	3306.4	132,600.0
2038	3376.5	136,727.8
2039	3432.5	140,278.0
2040	3474.5	143,239.8
2041	3502.5	145,607.6
2042	3516.6	147,379.6
2043	3517.1	148,558.3
2044	3504.2	149,149.3
2045	3478.2	149,161.5
2046	3439.6	148,606.4
2047	3388.7	147,498.1
2048	3326.1	145,852.9
2049	3252.2	143,689.1
2050	3167.6	141,026.9
2051	3073.0	137,888.3
2052	2968.8	134,296.8
Total estimated ERs	83,711.4	3,299,213.0
Total number of crediting years	30	30
Average annual ERs	2790.4	109997.1

Location: Faridabad

Date: 08/01/2025

Authorized Signatory:

A handwritten signature in dark ink, appearing to read 'Kaushal', written in a cursive style.

Kaushal Goyal

Managing Director

KBS Certification Services. Ltd

APPENDIX 1: REFERENCES

/1/	VCS Standard v4.4, Registration and issuance Process v4.3, VCS Program Guide v4.3
/2/	VCS Program Guide Version 4.3
/3/	VM0007 REDD+ Methodology Framework (REDD-MF), v1.6
/4/	AR-ACM0003, Ver. 2 –Methodology for Afforestation and reforestation of land except wetlands
/5/	Initial VCS- PD Version 01, dated 29/12/2022
/6/	Final VCS-PD Version 1.2, dated 11/07/2024
/7/	First canal excavation - receipts of payment to the local community members performing the task with dates
/8/	Spread sheets for Emission Reduction Calculations
/9/	Voluntary Carbon Unit Purchase Agreement (VCUPA) signed between Government of Gambia through the Ministry of Environment, Climate Change and Natural Resources and Ørsted
/10/	VCS Program Definitions
/11/	Grouped project boundary KML file with the geodetic coordinates
/12/	The Biodiversity Act 2003
/13/	The Forest Act (1998)
/14/	The National Environment Act 1994
/15/	Stakeholder consultation documents
/16/	✓ M-ARR - VMD0045 Methods for monitoring greenhouse gas emissions and removals in ARR project activities, Version 1.1. ✓ T-ADD - CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities, Version 1 ✓ T-BAR - AFOLU Non-Permanence Risk Tool, Version 4.0. ✓ X-UNC - VMD0017 Estimation of uncertainty for REDD project activities, Version 1.2 ✓ X-STR - VMD0016 Methods for stratification of the project area, Version 1.2 ✓ BL-ARR - VMD0041 Estimation of baseline carbon stock changes and greenhouse gas emissions in ARR project activities, Version 1.1. ✓ LK-ARR - VMD0041 Estimation of baseline carbon stock changes and greenhouse gas emissions in ARR project activities, Version 1.0. ✓ LK-ARR - VMD0043 Estimation of emissions from displacement of pre-project agricultural activities, Version 1.0 ✓ M-TW - VMD0051 Methods for Monitoring of Carbon Stock Changes and Greenhouse Gas Emissions and Removals in Tidal Wetland Restoration and Conservation Project Activities, Version 1.0. ✓ ADD-AM - VMD0052 Demonstration of additionality of tidal wetland restoration and conservation project activities, Version 2.0 ✓ BL-TW - VMD0050 Estimation of Baseline Carbon Stock Changes and Greenhouse Gas Emissions in Tidal Wetland Restoration and Conservation Project Activities, Version 1.0. ✓ LK-ECO - VMD0044 Estimation of emissions from ecological leakage, Version 1.1. ✓ E-FFC - VMD0014 Estimation of emissions from fossil fuel combustion, Version 1.0.

/17/	CDM Combined tool to identify the baseline scenario and demonstrate additionality in A/R CDM project activities(T-ADD), version 01
/18/	AFOLU Non-Permanence Risk tool, v4.0
/19/	AFOLU Non-permanence risk report
/20/	First mangrove plantation- receipts of payment to the local community members performing the task with dates.

APPENDIX 2: FINDINGS

Summary of findings	CL	CAR	FAR
	20	12	04

Table 1. Remaining FAR from validation and/or previous verifications

This is Validation hence no FAR.

FAR ID	NA	Section no.	-	Date:
Description of FAR				
Project participant response				Date:
Documentation provided by project participant				
VVB assessment				Date:

Table 2: CL for this validation

CL ID	CL 01.	Section no.	1.8	Date: 10/04/2023
Description of CL				
PP to provide the relevant evidence to support the claims under section 1.8 of PD.				
Project participant response		Date: 21/04/2023		
An email confirming the start of the planting activities has been sent to the auditor on the 1st of February containing evidence of the project start date. The evidence is an email containing both text and pictures confirming the start day of the planting. Even though it is not clear from this comment, we suspect that the issue you are highlighting is that it is not possible to have 1st of July as our project start day when we officially started with the digging work in April. Therefore, we have changed the project start date to the 09th of April 2022, as this was the day on which the excavation work began. As proof of this new project start day, we have shared the receipts covering the payments for the community members who performed the digging work. On these receipts, the date of the work is written.				
Documentation provided by project participant				
<i>Receipts covering payments to local communities for performing excavation work, confirming new project start day equaling the first day of excavation work (09th of April 2022)</i> <i>Updated text section in the PD – see red text under section 1.8 in the PD</i>				
VVB assessment			Date: 28/04/2023	
The revised PD submitted by the PP contains the revised start date of the project activity which is not in line with the VCS start date refer, VCS - Program Definitions, “Start Date • The date on which the project began generating GHG emission reductions or removals; equal to “Project Crediting Period Start Date”. Also referred to as “Project Start Date”; or				

- The date on which the jurisdictional REDD+ program began generating GHG emission reductions or removals; equal to "Project Crediting Period Start Date". Also referred to as "Program Start Date"

Hence CL01 is Open

Project participant response	Date: 03/05/2023
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In the DOE assessment above, the definition stated is not from the newest version of the VCS program definition. In the newest version of this document (V 4.3), the following is stated on the matter:

In the program definitions V 4.3, the following is written under "Project Start Date":

Project Start Date

See "Crediting Period Start Date"

In the program definitions V 4.3, the following is written under "Crediting Period Start Date":

Crediting Period Start Date

The start date of a non-AFOLU project is the date on which the project began generating GHG emission reductions or removals. The start date of an AFOLU project or jurisdictional REDD+ program is the date on which activities that led to the generation of GHG emission reductions or removals are implemented (e.g., planting, changing agricultural or forestry practices, rewetting, restoring hydrological functions, or implementing management or protection plans); Equivalent to "Project Start Date" and "Program Crediting Period Start Date"

As stated in the above text, the start date of an AFOLU project is the day on which project activities were first implemented. This can as written in the above text for example be hydrological restoration which was what we started doing on the 9th of April 2022. Therefore, we believe that the stated start day is correct and in line with the newest VCS program definitions (V4.3).

Documentation provided by project participant

VVB assessment	Date: 15/05/2023
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The clarification by PP on project start date is the date when site preparation work was started (i.e., 9th April), the receipt of payments to local communities to perform the work is verified and found ok. Hence CL 01 is closed.

CL ID	CL02	Section no.	1.17	Date: 10/04/2023
Description of CL				
PP to provide more clarity or details on how the project activities are relevant to SDG Goal such as Goal 2-Zero Hunger. And monitoring procedure of all the SDG's indicated				
Project participant response		Date: 21/04/2023		
It is to our understanding not a VCS requirement that the listed SDGs shall be monitored. However, as requested by the Validator, we have adjusted this section of the PD to only include SDGs where we can establish a clear indicator which are already monitored throughout the project crediting period as part of the VCS requirements.				
Documentation provided by project participant				
Updated table 5 in section 1.17 of the PD				

VVB assessment	Date: 28/04/2023
PP has revised and updated the PD with SDG's that can be demonstrated by the project activity. Hence CL 02 is closed	

CL ID	CL03	Section no.	2.1	Date: 10/04/2023
Description of CL				
PP to provide more clarity on the “No Net harm” to the Natural resources or community in line with VCS Standard v4.4.				
Project participant response		Date: 21/04/2023		
In the VCS standard 4.4, the following is written on requirements related to “no net harm” (page 40):				
No Net Harm				
3.18.2 The project proponent shall identify potential negative environmental and socio-economic impacts and shall take steps to mitigate them. Additional certification standards may be applied to demonstrate social and environmental benefits beyond GHG emission reductions or removals (details about labeling with additional certifications are set out in Section 3.23 below).				
We have not identified any negative environmental or socio-economic impacts, why there is nothing to mitigate.				
Proof of no negative socio-economic impact: As written and justified in this PD and as further shown to the auditor during the field visit, the areas planted were under no anthropogenic usage pre-planting, why no socio-economic benefits were generated from the area before the project. The locals have gotten an additional income from performing planting activities as a direct result of this project. This is proved through the confirmed contracted budgets shared with the auditor previously (budgets covering both PAI#1 and PAI#2) and in the receipts shown to the auditor during the site visit, confirming the payments performed to the community members performing the planting. Furthermore, it is in countless literature (see for example shared UNEP-DEPI report Mangroves of Western and Central Africa) highlighted how mangrove ecosystems are contributing positively to local livelihoods through various ecosystem benefits such as resulting in the presence of more aquatic life such as oysters and fish which can be harvested and/or cached and either eaten by the locals or sold for generating additional income. As the auditor heard from all local communities during the site visit, they are very aware that a healthy mangrove ecosystem means more aquatic life, and they are all looking forward to getting access to these benefits once again.				
Proof of no negative environmental impact: As proven in the “historical analysis of land cover” shared with KBS on the 3 rd of February 2023, the original land cover in the project area is mangrove. As further proven in this document and as clearly seen during the field visit, the current land cover of the project area is heavily degraded mangrove areas. Restoring the original ecosystem will naturally therefore of course only result in a positive environmental impact.				
This information has been added to the PD.				
Documentation provided by project participant				
Shared again: Signed contracts including budgets for PAI#1 and PAI#2				
Shared again: Historical analysis of land cover				
UNEP-DEPI 2017 Mangroves of Central and Western Africa				
Updated text section in the PD – see red text under section 2.1 in the PD				
VVB assessment			Date: 28/04/2023	
The clarification by PP on “No Net harm” to the Natural resources or community is accepted and the revised PD, contains the information. Hence CL 03 is closed.				

CL ID	CL04	Section no.	2.2	Date: 10/04/2023
Description of CL				
PP to provide evidence and incorporate photographs in the PD of the relevant stakeholder consultations meeting.				
Project participant response		Date: 21/04/2023		
This evidence has already been shared with the validator. On the 2 nd of February 2023, all documents related to the stakeholder consultations were shared, including invitations, attendance lists, consultation reports and newspaper article. On the 13 th and 14 th of March, documents outlining and confirming the information shared with each community which is part of the PAI#1 planting and confirming their participation in the project was shared. To create more clarity on the local stakeholder consultations and the ongoing local community engagements, the text in this section of the PD has been updated slightly – see text in red in the PD. Further, relevant pictures have as requested by the Validator been added to the PD.				
Documentation provided by project participant				
<i>Shared again: All documents related to the stakeholder consultations</i> <i>Shared again: All documents related to information given to and confirmed participation of involved communities (now with date on last page and “no comments” written in template 3 when applicable)</i> <i>Updated section in the PD – see added pictures and text in section 2.2 in the PD</i>				
VVB assessment			Date: 28/04/2023	
In the revised PD Local stakeholder consultation section has now been updated with photos. Hence CL04 is closed.				

CL ID	CL05	Section no.	1.1	Date: 10/04/2023
Description of CL				
PP to provide evidence such as remote sensing images, data/map to support that no native ecosystem is cleared or drained to generate GHG credits and a declaration of the same.				
Project participant response		Date: 21/04/2023		
It is unclear why the Validator is referring to section 1.1, as this section does not require the requested evidence. This evidence has already been shared with the validator on the 1 st of February 2023. The document acting as evidence is called “Historical analysis of land cover”. Ørsted, in its role as one of the two project proponents, hereby declare that no native ecosystems have been cleared nor drained to generate GHG credits.				
Documentation provided by project participant				
Shared again: Historical analysis of land cover				
VVB assessment			Date: 28/04/2023	
The purpose of the CL was to get information on scenario existing prior to the implementation of the project. Though the description is provided in PD, the evidence to support the claim was made. The evidence submitted i.e., Historical analysis of land cover is verified and found ok, hence CL 05 is closed.				

CL ID	CL06	Section no.	1.1	Date: 10/04/2023
Description of CL				

PP to clarify the harvesting commitments of the planted trees in the project area and provide a declaration for the same. Further clarify whether the project is removal or reduction or both in this section of the PD.	
Project participant response	Date: 21/04/2023
In the documents where the local communities confirm that they are part of the project, they further confirm that it is the intention to protect the restored mangrove ecosystem from degradation for at least the next 100 years. These documents therefore act as evidence and declarations that harvesting of trees are not planned in the restored areas. This was further confirmed during the field visit where the auditor heard from the communities themselves that they would not harvest the restored trees. As the auditor heard from them, they know about the value that the mangrove ecosystem provides them through various ecosystem services, and they are looking forward to benefit from more fish, oyster and the like once again as they did in the past before the mangrove degradation. The grouped project can act as both removal and reduction. The specific instance audited this time, PAI#1, is removal (ARR+RWE). This information has been added in the PD text.	
Documentation provided by project participant	
<i>Shared again: All documents related to information given to and confirmed participation of involved communities (now with date on last page and "no comments" written in template 3 when applicable)</i> <i>Updated section in the PD – see text in red in section 1.1 in the PD</i>	
VVB assessment	Date: 28/04/2023
The clarification and confirmation by PP that the mangrove trees will not be harvested is accepted. Hence CL06 is closed	

CL ID	CL07	Section no.	1.6 & 5.3	Date: 10/04/2023
Description of CL				
PP to clarify the roles & responsibilities of the project proponents. Further, PP to provide declaration that the implementation partner posses’ relevant experience in managing such activities and are devoid of any negative/allegations in the country.				
Project participant response		Date: 21/04/2023		
In the latest VCS template (version 4.2), it is not part of the information requested to clarify the roles and responsibilities of the project proponents. Please refer to the latest template. The implementation partners (Department of Parks and Wildlife, Sahel Wetlands Concern, Kombo Foni Forestry Association and West African Bird Study Association) each bring various expertise to project implementation: Department of Parks and Wildlife Management: One of the main responsibilities of DPWM in the Gambia is to protect and conserve The Gambia's remaining wild fauna as well as their natural environment for the present and future, why the department is deeply involved in all conservation and restoration efforts that involves government, assisting with and facilitating both planning, implementation, and monitoring of restored mangrove sites. See section 3.4 in the PD for a list of existing mangrove restoration projects in the Gambia of which DPWM is involved in all. Sahel Wetlands Concern: SWC has been directly involved in facilitating several previous mangrove restoration efforts in the Gambia, see for example the shared document “<i>Environment, Sahel Wetland Concern, mangrove restoration and rehabilitation for climate change adaptation in Bintang Bolong</i>”. Kombo Foni Forestry Association: KOMFFORA was established to represent and support village communities that have decided to manage their forests as part of the community forest programme in the Gambia. Due to such, KOMFFORA holds extensive knowledge on community involvement, community government structures and how communities can implement and sustain sustainable forest management practices. See for example the shared document “<i>Village perspectives of community forestry in the Gambia, the Kombo Foni Forestry Association</i>”				

West African Bird Study Association: WABSA was formed by indigenous Gambian youths, who are concerned citizens to preserve the country's flora and fauna. their main objective is to support governmental and non-governmental agencies to formulate policies that will effectively and practically mainstream bird study and environmental protection, which play a vital role in sustainable development of the country. Among other projects, WABSA has taken part in implementing the project "RESTORATION OF ECOLOGICAL FUNCTION AND ENVIRONMENTAL SERVICES OF NIUM NATIONAL PARK", which included activities on mangrove planting, monitoring, ecotourism, and nursery establishment. For evidence, see for example the shared document "Webpage screenshots WABSA".

Ørsted, in its role as one of the two project proponents, hereby declare that no negative press and no negative allegations of the above listed implementation partners has been observed, heard of, or identified - neither online, in the local communities, through Gambian authorities nor anywhere else in the Gambia.

Documentation provided by project participant

Environment, Sahel Wetland Concern, mangrove restoration and rehabilitation for climate change adaptation in Bintang Bolong"

Village perspectives of community forestry in the Gambia: the Kombo Foni Forestry Association

Webpage screenshots WABSA

VVB assessment

Date: 28/04/2023

PP to refer section 1.6 and 5.3 of VCS template, version 4.2, clearly indicated to present the roles and responsibilities of the project proponents/ any other entities involved in the development of the project. Now the roles & responsibility of all the PP involved in the project activity provided, hence CL 07 is closed.

CL ID	CL08	Section no.	3.2	Date: 10/04/2023
Description of CL				
1) PP to provide declaration that: PAI#1 is degraded wetland and thus non-forest land (see figure 2 for map showing the geographic boundaries of PAI#1). 2) PP to provide on how the project has planned to mitigate the following throughout the life cycle of the project: a) No nitrogen fertilizers are applied in the project scenario of PAI#1. b) avoid burning in the project areas. c) Avoid application of any type of nitrogen fertilizers. d) project area not used for commercial purposes. e) Project area will not be used for reed or hay harvesting, collection of fuelwoods, subsistence harvesting, commercial fishing), reduced grazing). f) Fuel wood collection & charcoal production.				
Project participant response		Date: 21/04/2023		
1) 1) Evidence of PAI#1 being non-forest land is provided in the already shared document “historical analysis of land cover”. 2a) Application of fertilizers are not part of this project and buying of fertilizer is not part of the budgets (see already shared signed contracts including budgets for PAI#1 planting and PAI#2 planting). Fertilizer is not necessary to make the mangrove trees grow, as was seen by the validator during the field visit. The DPWM has planted mangrove trees in the Gambia for the past many years, and never used fertilizer. Thereby there is no incentive for the locals to use fertilizer in the areas. Furthermore, fertilizer is expensive, and the locals would not “waste” such valuable product on mangrove that can grow without it when they could use it in their agricultural areas instead which provides them with a direct produce. 2b) Burning is not an issue in Gambian mangroves. As the areas are inundated by water daily, it is not likely for fire to originate in the mangroves. Theoretically, fire could spread to mangroves from the				

surrounding forest, but as the validator saw during the field trip, a large bare sandy area separates the terrestrial forest from the mangrove forests, making it unlikely that fires from terrestrial forest is spreading to mangrove.

2c) See answer 2a above.

2d) This is not a requirement in this section according to the applied methodology. In table 8 of the PD, it is for the justification of RWE activities a requirement that EITHER a1, a2, a3, b OR c is met. Please refer to the applied methodology VM0007 page 16-17. In the PD, it is argued that a1 is met, why it is not necessary to justify that the project is mitigating the other points.

2e) This is not a requirement in this section according to the applied methodology. In table 8 of the PD, it is for the justification of RWE activities a requirement that EITHER a1, a2, a3, b OR c is met. Please refer to the applied methodology VM0007 page 16-17. In the PD, it is argued that a1 is met, why it is not necessary to justify that the project is mitigating the other points.

2f) This is not a requirement in this section according to the applied methodology, as this justification is only relevant to REDD project activities. PAI#1 has no REDD project activities, why this is outside the scope of this validation.

Despite of point 2d, 2e and 2f not being a requirement according to the applied methodology in this section of the PD, we hereby as requested by the validator provide information on how these points are mitigated:

2d) Due to the high salinity of the project area (as presented both in the PD in table 4 and as checked by the validator during the field trip), no agriculture is present here, why such mitigation is not needed. It is impossible that the salinity concentration in the area during the life cycle of the project will change so much that agricultural practises can be present, as the project area is directly and highly influenced by the sea water, which is inundating the areas daily through the rising tides.

2e) **Reed or hay harvesting:** As there is no reed or hay present in the area (ass seen by the validator during the field trip and as justified in the already shared historical analysis of land cover) due to the high salinity levels, mitigating for such is not relevant. **Collection of fuelwoods:** Agreements has been signed with all involved communities in which they conform that it is their intent protect the restored mangrove ecosystem from degradation for at least the next 100 years. This was further confirmed during the field visit, where the validator heard from the communities themselves that they would not collect fuelwood from the project area. As the validator heard from all communities during the field visit, they know how valuable the mangrove ecosystem is, and they are looking forward to receiving the benefits that a healthy mangrove ecosystem provides. **Subsistence harvesting and commercial fishing:** The locals are of course allowed to reap the benefits of having access to a healthy mangrove ecosystem by using the restored mangrove areas, for example through fishing and collecting oysters. This does not go against the requirements set out in the applied methodology and does not go against what is stated in the PD. It is neither logical nor ethical to prohibit the locals from getting access to these important livelihood benefits. Their access to these benefits does not influence the carbon pools included in this carbon project. **Reduced grazing:** the areas are not used for grazing as no graze is present due to the high salinity levels of the areas.

2f) Agreements has been signed with all involved communities in which they conform that it is their intent protect the restored mangrove ecosystem from degradation for at least the next 100 years. This was further confirmed during the field visit, where the validator heard from the communities themselves that they would not collect fuelwood from the project area. As the validator heard from all communities during the field visit, they know how valuable the mangrove ecosystem is, and they are looking forward to receiving the benefits that a healthy mangrove ecosystem provides.

Documentation provided by project participant

Shared again: Historical analysis of land cover

Shared again: Signed contracts including budgets for PAI#1 and PAI#2

Shared again: All documents related to information given to and confirmed participation of involved communities (now with date on last page and "no comments" written in template 3 when applicable)

VVB assessment

Date: 28/04/2023

The clarification by PP is accepted. Hence CL08 is closed

CL ID	CL09	Section no.	3.5	Date: 10/04/2023
Description of CL				
PP to update the section 3.5 additionality in relevance to the methodology in line with VCS Standard 4.4				
Project participant response		Date: 21/04/2023		
Section 3.6 is not about additionality. Section 3.6. is “methodology deviations”. We suppose that the section meant is section 3.5, “additionality”. We have now looked through this section one again and believe that it lives up to the requirements as set out in the VCS standard 4.4 and the applied methodology.				
Documentation provided by project participant				
N/A				
VVB assessment			Date: 28/04/2023	
The section number is now corrected to 3.5. The section of the revised PD is found ok, hence CL09 is closed				

CL ID	CL10	Section no.	PD	Date: 10/04/2023
Description of CL				
PP to clarify whether any modifications were made by the project activity and which species will be planted to which extent, in particular the percentage (numbers of trees) of native species. Also, clarify if the project area lies within any “Natural Reserve” and if the implantation and maintenance of a plantation complies with potential regulations.				
Project participant response		Date: 21/04/2023		
It is unclear which section is referred to.				
Clarification whether modifications were made by the project activity: It is not clear what is meant with this comment. All project activities performed is explicitly explained in section 1.11 in the PD. Here, it is written that the project activities of PAI#1 include planting of the native species <i>Rhizophora mangle</i> and excavation of canals in a smaller part of the project area. No other project activities have been performed.				
Clarification of species selected for planting, including percentage of native species: The species planted in PAI#1 and species that can be planted in the future is already stated in section 1.11 of the PD. 100% of these species classify as native to the Gambia. This is as well already stated in section 1.11 of the PD.				
Clarification whether project area lies within any natural reserve: It does not.				
Clarification whether implementation and maintenance of a plantation complies with potential regulations: It does. The project is implemented in close cooperation with the DPWM in the Gambia. As this is the main authority in the Gambia as related to mangrove management, they of course know the regulations on the area and ensures that all activities implemented complies with such. Additional comment: The restored areas are not plantations; they are restored natural ecosystems.				
Documentation provided by project participant				
N/A				
VVB assessment			Date: 28/04/2023	
The purpose of asking “whether modifications were made by the project activity” is to know whether PP had cleared existing mangrove trees and/or modified the area to make planting arrangements.				
The clarification by PP is accepted, hence CL 10 is closed.				

CL ID	CL11	Section no.	PD	Date: 10/04/2023
Description of CL				
During site visit				
At office in the document there was no date and signature were also missing				
At site				
1. The distance between 02 propagules as per procedure is 1m, but this was not followed at site. 2. During discussion, 0% Mortality was mentioned, whereas at site dead propagules were seen. 3. From site visit and by discussion it was evident that there were restoration/afforestation works undertaken by government in the same area. In this case how PP is avoiding double counting and marking the project boundary.				
Clarify				
Project participant response		Date: 21/04/2023		
At office: Missing signature and date in document: It is not clear which document is referred to here. If there is referred to the VCUPA contract, the contract signed by all parties including date was shown online. It is not a requirement according to the VCS standard that such document shall be printed out in hard copy. If there is referred to the documents in which the local communities have signed that they are part of this project, the signature was there for all documents. The date was missing on one line but was instead written two other places in the documents. We have corrected this and added the date to the last line as well, see shared documents "Confirmation of community participation in this project - now with date in all places". At site: 1. In the PD it is stated that <i>approximately</i> 10.000 propagules are planted per hectare. As seen by the validator during the field visit, there was in reality planted more than 10.000 propagules per hectare. As planting more propagules per hectare than counted for in the calculations does not in any way negatively affect the VCU estimations (actually just the opposite), this is considered as a non-issue as related to the VCU calculations. However, to ensure a systematic approach in the 2023 planting and other future plantings, it is part of an upcoming workshop and training session held in June with all recruited project supervisors to ensure that they are aware of the density at which propagules shall be planted. A workshop and training report will be made and shared with the validator who are to validate the upcoming PAIs. 2. During discussion it was mentioned that <i>some</i> of the areas had <i>close to</i> 0% mortality. This was confirmed by the validator during the field visit. One of the visited areas had however more mortality than the others. This was due to propagules being planted in some areas where the hydrology could not support mangrove growth. Supervisors will be present at all sites at during future plantings, and maps based on remote sensing analysis of areas that can be planted will be made in advance for guidance. Documentation for such is to be shared with the validator who are to validate the upcoming PAIs. The limited areas In which some trees will potentially die will not have any problematic effect on the VCU calculations and issuance, as one of the steps in the monitoring procedure is through remote sensing imagery to check whether the planted areas do all have growing mangrove. If there are areas that do not, the project area boundary is updated to only include area where the trees are growing. See the monitoring section (section 5.3) of the PD for more information on this procedure. 3. As stated in the PD, the project boundary of PAI#1 has been marked with GPS by core project staff. Furthermore, high resolution satellite imagery from SKYSAT has been purchased to document the baseline in the project area. From this imagery, it is clearly seen that areas within PAI#1 does not contain already planted areas. All trees present pre-project within the project area is documented through this imagery and are to be excluded from VCU issuance as explained in the PD in section 4.1 and 5.3.				
Documentation provided by project participant				
Shared again: All documents related to information given to and confirmed participation of involved communities (now with date on last page and "no comments" written in template 3 when applicable)				
VVB assessment			Date: 28/04/2023	

The Confirmation of community participation in this project - now with date in all places of all the villages were without date and there was blank sheet, this is brought to the notice of PP team members in the opening meeting.

At site:

1. As observed during site visit, the mortality rate was observed at all the sites. Now, clarify why *"In the PD it is stated that approximately 10.000 propagules are planted per hectare. As seen by the validator during the field visit, there was in reality planted more than 10.000 propagules per hectare"*. Planting more than 10,000 propagules per hectare effect growth due competition, also submit reference for planting 10,000 or more propagules per hectare.

A workshop and training report will be made and shared with the validator who are to validate the upcoming PAIs – This will be raised as FAR01 to be closed in the next verification

2. During discussion PP, it was brought to notice that all sites had mortality and asked why in the opening meeting it was told "0% mortality"? The reason given was "During propagules planting were done by local villagers without PP supervisors.

3. Accepted

Project participant response

Date: 03/05/2023

1. Yes, it is correct that planting more than 10.000 hectares can affect growth due to competition. However, it is reasonably assumed that the additional trees planted make up for this. Furthermore, it is in the PD calculation assumed that there will be a very high mortality rate for the first 5 years of the project (with 2500 trees present per hectare after 5 years). In reality, the mortality rate is as of now observed to be much lower. Furthermore, to ensure that the biomass estimates projected in the project is conservative, the amount of biomass present after 30 years is capped at an amount that is below the amount of biomass in mangroves stands in this climatic area in general. Please refer to section 4.2 in the PD for more information on the calculation method and the studies used for evidence. Specifically, pay attention to page 74-77 and the study *"James Hutchison, Andrea Manica, Ruth Swetnam, Andrew Balmford, Mark Spalding (2013): Predicting Global Patterns in Mangrove Forest Biomass"*. For the convenience of the Validator, the study is shared.

Should the actual amount of biomass present in the project area against the expectation prove to be below the projected amount, this does not result in too many credits issued as the issued credits will depend on what is actually measured in the field in terms of number of trees present and the amount of biomass in each of them.

2. It was during the opening meeting said that some of the sites had close to 0% mortality. When out in the field, the reason given for one of the sites having more mortality than the others were that the supervisors had not been present when the propagules were planted in the wrong areas. If something else was understood by the Validator, this must be because of communication misunderstandings.

In the PD calculations, a very conservative mortality rate of 40% were projected in the first year. As seen in the field, the overall mortality was much lower which only means that more biomass is being sequestered than projected. This is good, as the projections shall be conservative. These estimations have nothing to do with the number of credits issued, as these will depend on what is actually measured in the field in terms of number of trees present and the amount of biomass in each of them. This in in line with the applicable VCS rules and methodology.

Documentation provided by project participant

James Hutchison, Andrea Manica, Ruth Swetnam, Andrew Balmford, Mark Spalding (2013): Predicting Global Patterns in Mangrove Forest Biomass. The document shared with the Validator is called "Documentation CL 11"

VVB assessment

Date: 15/05/2023

The clarification by PP on number of propagules planted per hectare and the mortality rate on planted propagules is accepted. Hence CL11 is closed.

CL ID	CL12	Section no.	PD	Date: 10/04/2023
Description of CL				
PP to submit. 1. Local stakeholder consultation documents 2. Grievance Redressal Mechanism procedure and records of any grievances (if any) 3. SOP's 4. Training records of the field team involved in collection/planting of propagules				
Project participant response			Date: 21/04/2023	
1. All stakeholder consultation documents and documents related to information given to and confirmed participation of involved communities has already been shared with KBS on the 2nd of February 2023 in email and on the 13th of May 2023 and the 14th of May 2023 in a google drive folder. They are for the convenience of KBS shared again. 2. The grievance mechanism is already presented in the PD in section 2.2 and 2.5. As of now, no grievances have been recorded. 3. As stated in the PD section 5.3, SOPs covering the field monitoring measurement procedures will not be developed before the specific monitoring procedure is decided upon. In this very initial stage of the project, it is not yet possible to determine the best monitoring procedure. Which procedure is finally decided upon will be dependent on for example whether a successful drone monitoring procedure is developed or whether we will still need to perform all measurements physically through the DBH measurement method. Please see section 5.3 subsection “Ensuring accurate field data collection” for more information. As stated in the PD already, the exact monitoring procedures will live up to the applicable modules and methodology. 4. Collection of propagules: No project field team is involved in the collection of propagules, as this service is bought through local businesses not established or supervised through this project. Planting of propagules: the team that was involved in supervising the planting of propagules in PAI#1 was all core project staff from DPWM and the three involved NGOs, all being supervised closely by DPWM who has decades of experience with restoring mangrove in the Gambia (please refer to CL07 in this document for evidence). Due to such, the staff overseeing the PAI#1 planting did not need any official training. However, as the planting of PAI#2 which is to be performed in the rainy season of 2023 involves more new supervisors due to the much larger area targeted for planting, and due to the DPWM not being able to be always present at all planting areas, an official training day of supervisors is deemed necessary. This training is already approved to take place in June prior to the start of the planting season with all finance allocated for the activity. For evidence, please see the already shared contract including budget for the PAI#2 planting.				
Documentation provided by project participant				
Shared again: All documents related to the stakeholder consultations Shared again: All documents related to information given to and confirmed participation of involved communities (now with date on last page and “no comments” written in template 3 when applicable) Shared again: Signed contract including budget for PAI#2				
VVB assessment				Date: 28/04/2023
PP to check the dates indicted in the response and rectify, hence CL12 is kept open				

Project participant response	Date: 03/05/2023
A typing error was made in the response, resulting in it stating May instead of March. The correct dates are 13 th of March and 14 th of March. As evidence is shared a PDF containing screenshots of the emails confirming the dates.	
Documentation provided by project participant	
<i>Evidence for dates. The document shared with the Validator is called "Documentation CL 12"</i>	
VVB assessment	Date: 15/05/2023
PP has now corrected the dates, accepted and CL12 is closed	

CL ID	CL13	Section no.	PD	Date: 10/04/2023
Description of CL				
PP to clarify with relevant reference that the proposed project is in line with the Nationally Determined Contribution i.e., NDC of the host country.				
Project participant response		Date: 21/04/2023		
It is not clear which section in the PD that is referred to. This is to our knowledge not a requirement according to any currently active VCS standard documents nor according to the applied methodology nor any of the tools or modules that it refers to. However, as the auditor has requested, we nevertheless hereby provide the requested information and evidence: In the latest NDC of the Gambia (second one), “re-greening degraded landscapes (including protected forests)” is listed as one of the conditional emission reduction targets of the Gambia. Please refer to page 12 in the shared document “Second NDC of The Gambia” for evidence.				
Documentation provided by project participant				
Second NDC of The Gambia				
VWB assessment			Date: 28/04/2023	
The clarification by PP on NDC of the Gambia is accepted, hence CL13 is closed				

CL ID	CL14.	Section no.	Section 2 of PD	Date:28/04/2023
Description of CL				
PP to clarify, In section 2.2, the dates of the stakeholder meetings for the North Bank Region (NBR) and the West Coast Region (WCR) were provided as 30th September 2021 and 2nd October 2021, respectively, which is inconsistent with the date mentioned in the invitation letter.				
Project participant response		Date:03/05/2023		
The dates in table 6 in the PD has now been corrected so that they match the dates in the invitation letters and the dates at which the consultations were held. The mistake in the PD was due to the dates written in the consultation reports not reflecting the day of the consultations, but the day of report finalization. It was this date that by mistake was originally written in the table in the PD.				
Documentation provided by project participant				
Updated section in the PD – see text in red in section 2.2 table 6 in the PD				
WB assessment			Date:15/05/2023	
PP has now corrected the dates, accepted and CL14 is closed				

CL ID	CL15	Section no.	1 & 4	Date:28/04/2023
Description of CL				
Check and rectify. 1. The equation PP described in section 4.2 for calculating root biomass is neither stated in the tool AR-Tool14, nor is it stated in the study publication Komiyama, A., Pongparn, S., Kato, S. (2005) Common allometric equations for determining the tree weight of mangroves, PP to clarify. 2. In section 1.12 in the PD project location and area (Ha) mentioned for first project instance is inconsistent with the area which given on the web page of www.gambiamangrove.com for first project instance i.e PAI #1.				
Project participant response		Date:03/05/2023		
1. The root equation described in the PD is stated in the publication. The article is shared with the validator as evidence. Please refer to page 476 in the journal or page 7 in the shared article. 2. The number of hectares planted written on the webpage was written before the final GPS measuring post-planting were performed, why the hectare count on the webpage was inaccurate. We have now updated the hectare count on the webpage to match reality and what is stated in the PD.				
Documentation provided by project participant				
Komiyama, A., Pongparn, S., Kato, S (2005) Common allometric equations for estimating the tree weight of mangroves. The document shared with the Validator is called "Documentation CL 15"				
VVB assessment				Date:15/05/2023
PP has provided now shared the equation reference, accepted and CL15 is closed				

CL ID	CL16	Section no.	PD	Date:28/04/2023
Description of CL				
Clarify on the				
1. Grouped project eligibility, 2. Methodology deviations 3. Wetland restoration				
Project participant response		Date:03/05/2023		
1. We believe that what is written in the PD (section 1.4.1) is aligned with the requirements for grouped project eligibility as set out in the VCS standard V 4.4. Please refer to section 3.6.16 and 3.6.17 in the VCS standard V 4.4 for requirements. 2. We believe that section 3.6. “Methodology deviations” is clear. However, the section did not reference the newest VCS standard. That has been corrected now so that the section refers to the newest VCS standard (V4.4) where relevant. It can be argued that it is not necessary to write this deviation. The reason for this is that it in this section in the PD is written that a potential addition of REDD+CIW project activities in the future will result in a new validation of the PD, which would then include the relevant Eligibility Criteria for additional instances within that project activity. Therefore, this section can be viewed as an extra service that is just confirming that the potential addition of REDD+CIW activities require new validation. 3. It is not clear which section in the PD is referred to. However, if what the validator is requesting is additional clarification regarding the wetland restoration activities performed in this project, such clarification is hereby given:				

Mangrove habitats are one type of ecosystem that falls within the larger umbrella of wetland ecosystems. Restoring degraded mangrove habitat will thereby as well qualify as wetland restoration. As described throughout the PD, this project is restoring degraded mangrove habitat by planting native mangrove species and by performing hydrological engineering if deemed relevant.	
Documentation provided by project participant	
<i>Updated section in the PD – see text in red in section 3.6 in the PD</i>	
VVB assessment	Date:15/05/2023
Clarification by PP on Grouped project eligibility, Methodology deviations and Wetland restoration is accepted, hence CL16 is closed	

CL ID	CL17	Section no.	1.12, PD	Date:03/05/2023
Description of CL				
PP to add the information to the file as per the latest standard section 3.11.1, serial no.3; “Project location for grouped projects shall be specified using geodetic polygons to delineate the project’s geographic area or areas (see Section 3.6.10 and 3.6.17 for further information on geographic areas for grouped projects) provided in a KML file, together with sufficient additional geographic information (with respect to the location of the instances) to enable evidence gathering by the validation/verification body”.				
Project participant response		Date:05/05/2023		
This information is already shared with the Validator, including a KML file covering the five regions included in the grouped project, a KML file covering the first activity instance of PAI#1 and an excel containing the coordinates of each polygon in PAI#1. For the convenience of the Validator, these documents have been shared again. For further information on each of the polygons see table 3 in the PD.				
Documentation provided by project participant				
Shared again: KML file covering grouped project area				
Shared again: KML file covering PAI#1				
Shared again: Excel file containing the coordinates of each polygon in PAI#1				
VVB assessment				Date:15/05/2023
The KML files now submitted are as per the latest VCS standard, hence CL17 is closed				

CL ID	CL18	Section no.	TR comments	Date:05/07/2023
Description of CL				
1. PP to confirm if species-specific (<i>Rhizophora mangle</i>) Allometric equations were implied for the carbon stock calculation as it was not evident/mentioned in provided ER sheet details.				
2. In section 3.1 it is reported that "For PAI#1 specifically, the pre-project ecosystem type was classified as degraded mangrove areas that are practically bare land with only few scattered mangrove trees of primarily the genus <i>Avicennia</i> within it. ". Please reconfirm the species.				
3. PP to confirm and demonstrate that no invasive species are planted or opted for during the project cycle.				

Project participant response	Date: 11/07/2023
1) All this is already argued for in the PD on page 74-76 and we are confident that the selected equation lives up to all requirements set out for such equation to be applicable. Please refer to the tool “Demonstrating appropriateness of allometric equations for estimation of aboveground tree biomass in A/R CDM project activities” and the study from where the equation is taken which was shared with you previously. 2) It is reconfirmed that the species present in PAI#1 is primarily of the species <i>Avicennia Germinans</i> and therefore of the Genus <i>Avicennia</i>. This could as well be observed by the auditor upon his field visit. 3) This was previously asked about in CAR04. We responded to the CAR, the validator accepted the response and closed it.	
Documentation provided by project participant	
-	
DOE assessment	Date:12/07/2023
The clarification by PP on the species used in calculation of ER's, the species present prior to start of the project and confirmation that no invasive species will be planted in the project activity is accepted. Hence CL18 is closed.	

CL ID	CL19	Section no.	TR comments	Date:05/07/2023
Description of CL				
PP to submit - In PD,- sec 3.4, for Step 0- To provide evidence that the incentive from the planned sale of CERs was seriously considered in the decision to proceed with the project activity, the evidence mentioned in PD is “This can be proved through the fact that Ørsted as of now has paid for most of the implementation activities”. For Sub-step 1a:- the third option is not been explored and reported in PD- (If applicable, forestation of at least a part of the land within the project boundary of the proposed A/R CDM project). PP to demonstrate in PD - “For identifying the realistic and credible land-use scenarios; (land use records, field surveys, data and feedback from stakeholders, and information from other appropriate sources, including Participatory rural appraisal (PRA))”.				

Project participant response	Date: 11/07/2023
1) The sole reason that Ørsted has chosen to invest in this project (and thereby make it happen as there is not sufficient finance available for mangrove restoration in the Gambia without the investments generated by this carbon project – please refer to the additionality analysis in the PD for evidence) is to generate carbon credits for Ørsted's emissions accounting. There are no other incentives for Ørsted, and the mandate given internally in Ørsted for investing in the project is based only on the fact that credits will be generated and can be claimed by Ørsted. Please refer to the VCUPA contract already shared. From this contract between Ørsted and the Government of Gambia, it is stated how Ørsted is the credit purchaser and has exclusivity to the credits. The fact that Ørsted pays for implementation (refer to budgets for PAI1 and PAI2 already shared with you) is of course because we are to gain credits. The VCUPA was also signed before project implementation, making it obvious that the reason for implementation is credit generation. In our opinion, this is clear and indisputable evidence. If you still don't think so, please be specific about what you don't think is sufficient so that we can adhere to that. 2) We have now updated the additionality analysis in the PD to adhere to your comments.	
Documentation provided by project participant	
PD – Version issued 11 th of July 2023	
DOE assessment	Date: 12/07/2023
The clarification by PP on additionality and the revision of additionality steps in PD for is accepted. Hence CL19 is closed.	

CL ID	CL20	Section no.	TR comments	Date: 05/07/2023
Description of CL				
As per ER sheet data, the value for net removals reported for 30 years calculated for 10,000 ha is 33,00,062 tCO ₂ e (1,10,002/yr) and for PA1 for 239.27 hac is 85066.7 tCO ₂ e (2835.6/yr) without buffer consideration. Clarify				
Project participant response				Date: 11/07/2023
Not sure what you request clarification on. We checked the calculations once again and it is our belief that everything in the ER sheet data corresponds correctly to everything stated in the PD. As stated in the PD, PAI#1 is the only instance implemented so far. As further stated, it is the ambition to plant in total 10.000 hectares over the coming years. These future instances will be validated in the future once they have been implemented.				
Documentation provided by project participant				

DOE assessment	Date:12/07/2023
The clarification by PP on buffer calculations in ER's is accepted. Hence CL20 is closed.	

Table 2.CAR for this validation

CAR ID	CAR 01	Section no.	1.4.1	Date: 10/04/2023
Description of CAR				
PP to update details on how the project meet the applicability conditions as per the methodology in line with latest VERRA standards v4.4.				
Project participant response		Date: 21/04/2023		
The details provided in section 1.4.1 of the PD has now been updated so that they comply with the requirements set out in the latest VCS standard Version 4.4.				
Documentation provided by project participant				
Updated section in the PD – see text in red in section 1.4.1 in the PD				
VVB assessment				Date: 28/04/2023
PP has made required changes in the latest PD, hence this CAR is closed				

CAR ID	CAR02	Section no.	1.10	Date: 10/04/2023
Description of CAR				
The project details are not consistent with PD and Verra project page				
Project participant response		Date: 21/04/2023		
The information listed on the Verra project page was put there before the correct calculations in line with the applied methodology were performed, and before all project details were completely understood. This approach is in line with the Verra requirements and guidelines. The ERs listed in the PD is of course the ones that shall as well be listed on the Verra project page once they have been approved by the validation body (KBS). If Verra don't do it automatically, we will request them to update the project details on the Verra project page so that they are consistent with the PD, once the PD has been finally validated by you. Further, some of the information listed in section 1.10 of the PD was only required for the pipeline listing PD, and not for the final PD. Therefore, this information has been deleted so that this section in the PD, fulfilling the requirements set out in the latest VCS project template.				
Documentation provided by project participant				
Updated section 1.10 in the PD				
VVB assessment				Date: 28/04/2023
The clarification by PP is accepted, hence this CAR is closed				

CAR ID	CAR03	Section no.	1.9	Date: 10/04/2023
Description of CAR				
PP to provide and update the details with relevant dates				
Project participant response		Date: 21/04/2023		

The section in the PD has been updated and is now consistent with the latest VCS requirements.	
Documentation provided by project participant	
<i>Updated section in the PD – see text in red in section 1.9 in the PD</i>	
VVB assessment	Date: 28/04/2023
PP has shared updated PD hence this CAR is closed.	

CAR ID	CAR04	Section no.	1.11	Date: 10/04/2023
Description of CAR				
PP to ➤ Update the section with relevant photographs of the species planted/wishing to restore and declare that the species are native. PP to provide additional declaration that the project activities throughout the lifetime of the project will restore with native species. ➤ Demonstrate the life-cycle of the species planted/restored and its relevance to the crediting period and life-cycle of the project proposed ➤ Demonstrate that the no invasive species are planted or introduced throughout the project life-cycle and measures taken to avoid it.				
Project participant response		Date: 21/04/2023		
1) It is already stated in this section of the PD that all species already planted and all species to be planted will be native to the Gambia. However, to ensure that this is 100% clear from the PD, an additional sentence has been added that explicitly states this. Further, illustrations of the species planted/potentially to be planted are as requested by the validator added. For evidence of these species being native to the Gambia, pictures of text confirming this from the field guide book <i>Mangrove trees of Africa and Madagascar</i> is shared with the validator. As <i>avicennia africana</i> is just a synonym for the species <i>avicennia germinans</i>, <i>avicennia africana</i> has been removed from the text in the PD to provide 100% clarity. Ørsted, in its role as one of the two project proponents, hereby declare that all species already planted and to be planted in the future are native to the Gambia. 2) Little is known about the exact life span of mangroves, but the literature existing on this is estimating that mangrove grow very old, often up to 100 years. As the degraded mangrove areas included in this project are restored to their natural state, they will get pollinated and germinate on a continuous basis, as is the case in naturally functioning ecosystems. Because of this, the carbon stored in the system over the project crediting period will remain in the system, as new trees are to naturally grow up once another tree is dying. This information has been added to the PD. 3) No invasive mangrove species are planted or introduced throughout the lifecycle of this project. All propagules collected will originate from mangrove forests within the Gambia. Further, the planting activities performed are closely planned and supervised by DPWM who has extensive experience within mangrove restoration in the Gambia, ensuring that only the species agreed upon are planted. This information has been added to the PD.				
Documentation provided by project participant				
<i>Updated section in the PD – see figure 1 and text in red in section 1.11 in the PD</i> <i>Pictures of text from the field guide book Mangrove trees of Africa and Madagascar</i>				
VVB assessment				Date: 28/04/2023
PP has incorporated all the revised information in PD hence this CAR is closed.				

CAR ID	CAR05	Section no.	1.12	Date: 10/04/2023
Description of CAR				
PP to update the map with relevant geodetic coordinates and provide location inset to show the exact location of the project in the implemented country. And all the maps in the PD should be integrated with the geodetic coordinates.				
Project participant response		Date: 21/04/2023		
The location of PAI#1 is now added to figure 2 in the PD. All geodetic coordinates have been shared with the validator, both in the form of KML files and Excel files. As there are thousands of coordinates outlining the project boundaries, it does not make sense to add them to the maps. It is not a requirement either that the coordinates are added to the map. In the newest VCS template version 4.2, the following is written: 1.12 Project Location <i>Indicate the project location and geographic boundaries (if applicable) including a set of geodetic coordinates. For grouped and AFOLU projects, coordinates may be submitted separately as a KML file.</i> As you can read in the above, for grouped projects and AFOLU projects, coordinates may be submitted separately as a KML file. This has been done.				
Documentation provided by project participant				
Updated figure in the PD – see figure 2 in section 1.12 in the PD Shared again: KML files and Excel file illustrating all relevant geodetic coordinates				
VVB assessment				Date: 28/04/2023
PP clarification is accepted; hence this CAR is closed				

CAR ID	CAR06	Section no.	1.14	Date: 10/04/2023
Description of CAR				
PP to review and update if any other laws are applicable (i.e., Waste management, Human rights, etc.,) for the implementation of such type of project in the host country.				
Project participant response		Date: 21/04/2023		
Additional regional and international laws related to human rights has now been added to the PD. Laws related to waste management is not mentioned in this section as no considerable waste is generated through this project.				
Documentation provided by project participant				
Updated section in the PD – see text in red in section 1.14 in the PD				
VWB assessment				Date: 28/04/2023
PP clarification is accepted; hence this CAR is closed				

CAR ID	CAR07	Section no.	PD	Date: 10/04/2023
Description of CAR				
Update the PD with the latest PD template and VCS standard available on the VCS website.				
Project participant response		Date: 21/04/2023		

The PD has now been updated with the latest VCS template and VCS standard available.	
Documentation provided by project participant	
See shared PD	
VVB assessment	Date: 28/04/2023
PD has updated the PD with latest version as available on the VCS website, hence this CAR is closed.	

CAR ID	CAR08	Section no.	5	Date: 10/04/2023
Description of CAR				
PP to review and update the data & parameters in relation to the applied methodologies.				
Project participant response		Date: 21/04/2023		
There is no section 6 in the PD. However, we have gone through the data and parameters (section 5.1 and 5.2 of the PD) in relation to the applied methodology and believe that they live up to the requirements, as we have listed all parameters and provided all information asked regarding them listed in this section in the applied methodology.				
Documentation provided by project participant				
N/A				
WB assessment				Date: 28/04/2023
The section number is now corrected to 5. Updated PD submitted is accepted, hence this CAR is closed				

CAR ID	CAR 09	Section no.	1.5	Date: 10/04/2023
Description of CAR				
The start date of the project defined in section 1.5 of the PD is not in line with the start date as defined in VCS Program Definitions.				
Project participant response		Date: 21/04/2023		
Section 1.5 is called “project proponent”. We expect that you mean section 1.8 “start date”. This remark has already been addressed fully in CL 01 above.				
Documentation provided by project participant				
Revised VCS-PD				
VWB assessment				Date: 28/04/2023
Refer VCS Program Definitions and rectify. Hence this CAR is open				
Project participant response		Date: 03/05/2023		
This remark has been addressed fully in CL 01 above.				
Documentation provided by project participant				
VWB assessment				Date: 15/05/2023
The start of the project defined now in VCS Program Definitions. Hence CAR09 is closed				

CAR ID	CAR10	Section no.	PD	Date: 10/04/2023
Description of CAR				

PP to provide.	
1. A declaration to confirm that the project is not under any other GHG certification and/or claimed any carbon revenue in any other scheme. And that the project activity is not a CPA that has been excluded from a registered project. 2. Contractual agreement between NGO's is not submitted for verification to understand the role and responsibility for the successful implementation of the project	
Project participant response	Date: 21/04/2023
Not clear which section is referred to.	
1. Ørsted, in its role as one of the two project proponents, hereby declare that the project is not under any other GHG certification and/or has claimed any carbon revenue in any other scheme and that the project activity is not a CPA that has been excluded from a registered project. 2. This agreement was shared with KBS on the 3rd of February 2023. If the purpose of seeing such documents is to get a better understanding of the roles and responsibilities of the NGOs, please also refer to the already shared VCUPA and the already shared <i>signed contracts including budgets for PAI#1 planting and PAI#2 planting</i>. In these the three NGOs are together referred to as the consortium. In the signed budgets you can see which activities supervisors are paid for performing. The supervisor groups will normally always consist of at least one person from each NGO and are coordinated by the DPWM.	
Documentation provided by project participant	
Shared again: Agreement NGOs and Gambia Government	
Shared again: VCUPA	
Shared again: signed contracts including budgets for PAI#1 and PAI#2	
VVB assessment	Date: 28/04/2023
The requested documents submitted, hence this CAR is closed	

CAR ID	CAR11	Section no.	3.4	Date: 10/04/2023
Description of CAR				
As per the applied additionality tool, • Provide evidence that the starting date of the A/R CDM project activity was after 31 December 1999, and • Provide evidence that the incentive from the planned sale of CERs was seriously considered in the decision to proceed with the project activity. This evidence shall be based on (preferably official, legal and/or other corporate) documentation that was available to third parties at, or prior to, the start of the project activity. Update the section accordingly				
Project participant response		Date: 21/04/2023		
We have now updated the argumentation in the PD to adhere more clearly to the requirements set out in the applicable additionality tool.				
Documentation provided by project participant				
Updated section in the PD – see text in red in section 3.4 in the PD				
VVB assessment				Date: 28/04/2023
Updated PD is submitted; hence this CAR is closed				

CAR ID	CAR12	Section no.	TR comments	Date: 05/07/2023
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Description of CAR	
- The template of NPR analysis report is not consistent with the template (ver 04) available at verri site. - Check NPR risk ratings and - Provide NPR risk assessment tool excel sheet for review of the same.	
Project participant response	Date: 11/07/2023
<i>The NPR analysis has now been put into the referred template and excel tool. Please be aware that the excel tool did not work properly in the last risk category table, meaning that the total number of credits to be issued would not show in the yellow box. For this estimate, refer to the template where it is as well stated in the last table.</i>	
Documentation provided by project participant	
VCS non permanence risk report VCS risk report calculation tool	
DOE assessment	Date:12/07/2023
PP has now used latest template, risk rating and assessment are done, hence CAR12 is closed.	

Table 3. FAR from this verification

FAR ID	01	Section no.	PD	Date: 28/04/2023
Description of FAR				
As indicated for response to CL11, PP to submit records/documents to the next validating/verifying VVB. <i>"A workshop and training report will be made and shared with the validator who are to validate the upcoming PAIs"</i>				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

FAR ID	02	Section no.	PD	Date: 12/04/2023
Description of FAR				
In the next verification VVB need to assess all the eligibility criteria is set for new project activity added in the future.				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

FAR ID	03	Section no.	PD	Date: 12/04/2023
Description of FAR				
In the next verification VVB need to ensure that the measuring method set for the monitoring parameter is as per the registered PD				
Project participant response				Date: DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				Date: DD/MM/YYYY

FAR ID	04	Section no.	PD	Date: 12/04/2023
Description of FAR				
In the next verification VVB need to ensure there is any leakage data observed of the proposed project in subsequent verification.				

Project participant response	Date: DD/MM/YYYY
Documentation provided by project participant	
DOE assessment	Date: DD/MM/YYYY

APPENDIX 3: ABBRIVATIONS

Abbreviations	Full forms
BEF	Baseline Emission Factor
CAR	Corrective Action Request
CL	Clarification Request
CO ₂	Carbon dioxide
CDM	Clean development Mechanism
EB	Executive Board
FAR	Forward Action Request
GHG	Green House Gas
ISO	International Standards Organization
MR	Monitoring Report
PD	Project Description
PAI	Project activity instance
PP	Project Proponent
VCS	Voluntary Carbon Standard
VCUPA	Voluntary Carbon Unit Purchase Agreement

APPENDIX 4: COMPETENCE OF TEAM MEMBERS

Personnel Name:		Dr.D.Siddaramu	
Qualified to work as:			
Team Leader	☒	Technical Expert	☒
Validator/Verifier	☒	Financial Expert	☐
Technical Reviewer	☒	Local Expert	☒
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
Energy industries (renewable/non-renewable sources)		TA 1.2: Energy generation from renewable energy sources	
Energy Demand		TA 3.1. Energy demand	
Afforestation and reforestation		TA 14.1 Afforestation and reforestation	
Approved by (Manager C & T)		Sapana Pednekar	
Approval date:		15/12/2022	

Personnel Name:		Shital Hatankar	
Qualified to work as:			
Team Leader	☐	Technical Expert	☐
Validator/Verifier (Trainee)	☒	Financial Expert	☐
Technical Reviewer	☐	Local Expert (India)	☐
Area(s) of Technical Expertise			
Sectoral Scope		Technical Area	
NA		NA	
Approved by (Manager C & T)		Sapana Pednekar	
Approval date:		23/01/2023	

Personnel Name		Mr. Praveen N Urs			
Schemes	☒ CDM	☒ GCC	GS	☒ VCS	☒ Other GHG Schemes (VCS CCB, ICR, CERCARBONO, Social Carbon)
Qualified to work as					
Team Leader			☒	Technical Expert	
Validator/Verifier			☒	Financial Expert	
Technical Reviewer			☒	Local Expert (India)	
Area(s) of Technical Expertise					
Sectoral Scope			Technical Area		
SS 1 - Energy Industries (Renewable/non-			TA 1.1: Thermal energy generation		

renewable)	TA 1.2: Renewable
SS – 13- Waste handling and disposal	TA 13.1: Solid waste and wastewater
	TA 13.2: Manure
SS- 14: Afforestation and Reforestation	TA- 14.1: Afforestation and Reforestation
SS – 15 – Agriculture	TA 15.1: Agriculture
Approved by (Manager Competence & Training)	Mr. Dushyant Parashar
Approval date	12-05-2024

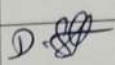
APPENDIX 5: STAKEHOLDER ATTENDANCE LIST

Attendance sheet (Annex to Audit plan)



Conservation and Restoration of the Mangrove ecosystem in the Cambodia through the REDD+ mechanism.

23/03/2023

Name of the Participant	Designation	Organization	Opening Meeting	Closing Meeting	Signature
Dr. D. Siddhartha	WB, TL	KBS			
Sarja Ceasay	Keneba				
Alagie Sangang					
Ebrima Sowe					
Sankou Bago					
Chorno Danso					
Ebrima Sangang					
Mbinkinding Ceasay					
Binta Ceasay					
Pakayen Ceasay					
Nakebba Ceasay					
Nyima Ceasay					
Ansuman Ceasay					
Asba Sora					
Kalilu Ceasay					
Ebrima Ceasay					
Sankung Ceasay					
Malick Ceasay					



Attendance sheet (Annex to Audit plan)

Name of the Participant	Designation	Organization	Opening Meeting	Closing Meeting	Signature
Momodou Ceesay					
Fatmata Njie					
Luwandup Njie					
Jainaba Jarju					
Jamkey Camara					
Yama Ceesay					
Bajana Village					
Motta Touray					
Lamin F. Baio					
Fabakary Sura					
Babu Touray					
Faten Drammeh					
Natoma Njie					
Bakary Badjie					
Faten Njie					
Binta Darboe					
Tifarang Village					
Alimameli Barrow					



Attendance sheet (Annex to Audit plan)

Name of the Participant	Designation	Organization	Opening Meeting	Closing Meeting	Signature
Momodou Ceesay					
Fatmata Njie					
Luwandjip Njie					
Tainaba Jarju					
Tankey Camara					
Yama Ceesay					
Bajana Village					
Motta Touray					
Lamin F. Baio					
Fabakary Sora					
Baba Touray					
Faton Drammeh					
Natoma Njie					
Bakary Badjie					
Faton Njie					
Binta Darboe					
Ifarung Village					
Alimameli Barrow					