Reforestation and restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar

Report No. 10502MO

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Summary:

TÜV SÜD South Asia Pvt. Ltd. (TÜV SÜD) has performed the verification of the VCS project activity "Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar" against the VCS Version 3 and all applicable requirements therein, for the monitoring period from 15 June 2018 to 14 June 2019.

The project activity consists of restoration and reforestation activities of a mangrove habitat located in the northern part of Ayeyarwady Division of Myanmar in three village tracts namely Magyi, Thabawkan and Thaegone in ShweThaung Yan Township.

The CDM afforestation and reforestation Large-scale Methodology: AR-AM0014 "Afforestation and reforestation of degraded mangrove habitats, version 3.0." and corresponding tools are applied to quantify the GHG removals achieved in this project.

The Worldview International Foundation (Project Proponent) has requested TÜV SÜD to perform the 2nd VSC verification audit, for which a Monitoring Report, a Non-Permanence-Risk Report and supporting documents were provided. TÜV SÜD, acting as an independent third party, has assessed the documents and evidences provided, and performed an on-site assessment, which included a desk review, a site visit to the project area and a series of interviews with the technical and field staff and community members affected by the project activity. TÜV SÜD verified the information contained and the emissions reductions and/or removals claimed in the Project Implementation Report, calculated in compliance with the requirements of the Verified Carbon Standard (VCS) and the requirements of the methodology applied.

In total two Clarification Request, five Corrective Action Request and one Forward Action Request were raised.

After performing the verification audit, TÜV SÜD confirms that the Project complies with all the requirements of the Verified Carbon Standard, having generated 26,615 t CO2 equivalents net emission reductions during the present reporting period, after discounting 10% for buffer.

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1 INTRODUCTION

1.1 Objective

Worldview International Foundation has commissioned an independent verification by TÜV SÜD South Asia Pvt. Ltd. (TÜV SÜD) of its listed VCS project: "Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar" for the 2nd monitoring period from 15-06-2018 until 14-06-2019.

The objective of the verification work is to comply with the requirements of the VCS for verification (VCS Standard version 03). Per this assessment, TÜV SÜD shall:

- ensure that the project activity has been implemented and operated as per the registered PD "Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar", and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place,

- ensure that the published Monitoring and Project Implementation Report and other supporting documents provided are complete, verifiable and in accordance with applicable VCS requirements,

- ensure that the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology.

- Evaluate the data recorded and stored as per the AR-AM0014 "Afforestation and reforestation of degraded mangrove habitats, version 3.0.

1.2 Scope and Criteria

The verification scope encompasses an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the Validation Verification Body (VVB) approved auditor respectively. The verification is based on the submitted combined VCS Monitoring Report respectively, the validated project design documents including its monitoring plan and validation report, the applied monitoring methodology, relevant decisions, clarifications and guidance from VCS and any other information and references relevant to the project activity's resulting emission reductions. These documents are reviewed against the requirements of the VCS, including:

- VCS Program Guide version 3.7
- VCS Standard version 3.7 and other relevant requirements defined by VCSA
- AFOLU Requirements version 3. 6
- CDM AR-AM0014, version 3.0

TÜV SÜD has applied a rule-based approach for the verification of the project. The principles of accuracy, completeness, relevance, reliability and credibility were combined with a conservative approach to establish a traceable and transparent verification opinion.
The verification considers both quantitative and qualitative information on emission reductions.

The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the monitoring activities.

1.3 Level of Assurance

The verification report expresses a conclusion with a reasonable level of assurance about whether the reported net anthropogenic GHG removals data is free from material misstatement. TÜV SÜD applied a materiality threshold of 5% with respect to omission or misstatements concerning reported quantities. This has been calculated based on the fact that the project is a VCS "Project", generating less than 300,000 tons of GHG reductions per year and is hence subject to the 5% materiality threshold, as per VCS standard, section 4.1.8 4).

1.4 Summary Description of the Project

Project activity:	"Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar"
VCS project ID and Registry:	1764
Project Participants:	Worldview International Foundation
Location of the project:	The grouped project is located in the northern part of Ayeyarwady Division of Myanmar in three village tracts namely Magyi, Thabawkan and Thaegone in ShweThaung Yan Township: Latitude: 17°10´18.12 - 17°02´04.01 N Longitude: 94°27´05.41- 94°31´27.87 E
Starting date of the crediting period:	May 15th, 2015

"Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar" is a A/R project activity located in Myanmar Mangrove Forests. The project area covers 962.82 ha. The project duration is 20 years.

The 2nd monitoring period is from June 15th, 2018 to June 14th, 2019. In this period a net carbon emission reduction of 29,572 tCO_2-equivalent has been determined, which results in 26,615 VCUs excluding the 10 % buffer (IRL 4,5,6).

2 VERIFICATION PROCESS

2.1 Method and Criteria

Verification Process

The verification process is based on the approach depicted in the VCS Standard documents.

Standard auditing techniques have been adopted for the verification process. The verification team performs first a desk review, followed by an on-site visit and the consideration of any comments received during the assessment, which results in the formation of a protocol that includes all the findings. The next step involves the evaluation of the findings through direct communication with the PPs and then finally the preparation of the verification report. This verification report and other supporting documents then undergo an internal quality control by the Certification Body "Environment and Energy" of TÜV SÜD, before final submission of the verification report.

Verification Team

The appointment of the verification team takes into account the technical area(s), sectoral scope(s) and relevant host country experience required amongst team members for verifying the ER achieved by the project activity in the relevant monitoring period for this verification.

TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Verifier (V);
- Technical Experts (TE).

The verification team consisted of the following members:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect	Host country experience
Martin Opitz	ATL; V	þ	þ	NA	þ

Technical Review

Name	Qualification	Coverage of scope	Coverage of technical area
Eswar Murty	TR		
Dr. Akhlaq Wani	TR expert (14.1)	þ	þ

2.2 Document Review

The VCS Monitoring Report (version 01) was submitted by the PP to TÜV SÜD in July 2019, together with a set of supporting documents and spreadsheets. The MR was assessed by the audit team based on all the relevant supporting documents. The aim of the assessment in the desk review was to:

- verify the completeness of the data and the information presented in the MR; and
- check the compliance of the MR with respect to the monitoring plan depicted in the registered PD and verify that the applied methodology (and applicable modules and tools) was followed. Particular attention to the quality of the inventory measurement and the quality assurance and quality control procedures was paid,
- evaluate the data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.
- A complete list of all documents reviewed is available in annex 2 of this report. The final VCS MR is version 1.2, dated 26 Sep 2019.

2.3 Interviews

Between July 21st and 24th 2019, TÜV SÜD performed interviews with project stakeholders and a physical site inspection to confirm relevant information and to resolve issues identified in the first document review. The table below provides a list of persons interviewed in this context:

Name	Organisation
Mr. Win Maung	Project Manager
Mr. Myint Sein	Field Manager
Mr. Aung Aung Myint	Deputy Project Manager
Ms. Win Sandar Htay	Administrator, International Coordinator
Dr. Arne Fjortoft	Secretary General
Suraj Vanniarachchy	Forest and VCS Specialist
Members of the Forest Department	The Forest Department participated during the first field day.
Representatives and community members of of the village Daboga	13 male / 2 female
Representatives and community members of of the village Magyi	7 male / 5 female

Besides the listed person administrative staff in the project area have been interviewed in the course of the onsite visit.

2.4 Site Inspections

Between July 21st and 24th 2019, TÜV SÜD performed a physical site inspection to:

- confirm the implementation and operation of the project; and
- review the sample design, measurement of sample plots and the data flow aggregating and reporting the monitoring parameters; and
- confirm the correct implementation of procedures for operations and data collection; and
- cross-check the information provided in the MR documentation with other sources; and
- check the monitoring equipment against the requirements of the PD/MR and the approved methodology, including calibrations, maintenance, etc.; and
- review the calculations and assumptions used to obtain the GHG data and ER; and
- identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.

The on-site inspections were carried out including the physical inspection of a sub-set of the sample plots assessed as part of the PP´s monitoring procedures (IRL 1, 13, 14,15).

2.5 Resolution of Findings

The objective of this phase of the verification process is to resolve any outstanding issues, which require clarification for TÜV SÜD's conclusion of the achieved GHG emission reduction. The findings raised as Forward Action Requests (FARs) (if any) indicated in previous reports (validation/verification) were discussed during this phase and, issues raised in the FARs were resolved, during communications between the PP and TÜV SÜD.

Concerns raised in the desk review, the on-site audit assessments and the follow up interviews and the responses provided for the raised concerns are documented in Annex 1 (verification protocol) to guarantee the transparency of the verification process.

A Corrective Action Request (CAR) is raised where TÜV SÜD identifies:

- non-conformities in monitoring and/or reporting with the monitoring plan and/or methodology;

- that the evidence provided is not sufficient to prove conformity;
- mistakes in assumptions, data or calculations that impair the ER;
- FARs stated during validation that are not solved until the on-site visit.

A Clarification Request (CL) is raised where TÜV SÜD does not have enough information or the information is not clear in order to confirm a statement or data.

Information or clarifications provided as a response to a CAR or CL could also lead to a new request.

2.5.1 Forward Action Requests

A Forward Action Request (FAR) is raised where TÜV SÜD identifies that monitoring and/or reporting require special attention or adjustments for the next verification period.

In total one FAR was raised in the course of the 2nd verification concerning the timely implementation of self-imposed QA/QC requirement of remeasuring 20% of the sample plots.

2.6 Eligibility for Validation Activities

TÜV SÜD is a validation/verification body which holds accreditation for validation for the relevant sectoral scope under the VCS Program.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

This section is not applicable as the project does not seek registration under other approved GHG program. No changes since validation/verification (IRL 10, 11).

3.2 Methodology Deviations

Not applicable.

3.3 Project Description Deviations

Since 1th verification two new deviation of the project description occurred.

As per the VCS PD in 2018 an area of 350 ha in Thabawkhan and 100 ha in Thaegone were to be planted. However only 297.88 ha was planted in 2018 in Thabawkan due to delays in regard to mobilize funding, planting material and staff.

Due to the construction of a hotel, approximately 36.56 hectares (rd. 5%) of the project area planted until 2017 had to be removed. The area removed is demarcated by a fence around the hotel area. The PP, the Forest Department as well as the hotel owner have agreed to not further expand into the project area. Respective confirmation was acquired during the onsite visit (IRL 1, 13).

The applicability of the methodology is not affected by the described smaller planted area respectively the loss of project area. The same applies for the additionality of the project as it is based on barriers such as i) investment barriers, other than insufficient financial returns and ii) technological barriers. No impact on the described barriers and thus the additionality could be identified. Further no change of the baseline scenario could be identified, thus the appropriateness of the baseline scenario is not affected.

TÜV SÜD concludes that the project description devations of the 2nd verification period do not impact the applicability of the methodology, the additionality or the appropriateness of the baseline scenario. Further it can be highlighted that the above mentioned changes are in compliance with the CDM Guidelines EB 66 Annex 24, describing specified types of changes in A/R project activities.

3.4 Grouped Project

N/A

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity is completely operational and the same has been confirmed on-site (IRL 03,09,13,14, 15).

The project is implemented according to the description presented in the registered PD except of those described in the previous section (3.3) respectively in the corresponding section of the 1st verification report.

The implementation status of the project is described in detail in the MR and could be confirmed in the course of the on-site inspection (IRL 02,13,14,15).

The verifier confirms, through the visual inspection that all physical features of the proposed VCS project activity including data collecting, analysing and storage systems have been implemented in accordance with the registered PD. The verifier confirms, to the best of his knowledge, that the GHG emission reductions generated by the project have not become included in an emissions trading program or any other mechanism that includes GHG allowance trading. Furthermore, the verifier confirms that the project has not received or sought any other form of environmental credit or has become eligible to do so since validation or previous verification; and that the project has not participated or been rejected under any other GHG programs since validation or previous verification.

The project is contributing to a sustainable development in the affected communities by implementation of a range of activities such as the introduction of new sources of income such as batik technics, increase of fish/crap/etc. yield and provided necessary infrastructure which could be confirmed on-site via intensive interviews in the communities of Daboga and Magyi (IRL 1,10)

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

Compliance of the Monitoring Plan with the Monitoring Methodology

The monitoring plans provided in the PD (IRL 03) is in accordance with the approved methodology AR-AM0014 as well as all applicable tools, applied by the VCS project activity.

Compliance of the Monitoring with the Monitoring Plan

The monitoring has been carried out in accordance with the monitoring plan presented in the registered PD. All parameters contained in the monitoring plan were reviewed by the audit team respectively and found to be monitored according to the registered PD.

The monitoring plan is provided consisting of different processes that as a conjunction represent the monitoring system of the project. The following processes/monitoring are mentioned:

- Project Boundary
  - ð The geographic coordinates of the project boundary and all stratifications within the project have been established and will be recorded
- Existing plants
  - ð Existing plants are recorded in each sample plot. These plants will not be removed and will be monitored throughout the project period.
- Supervision of project activities
  - ð Conduct comparisons between the trees actually planted and the trees recorded in the management plan
  - ð Assess the survival rate of the mangrove seedlings and prepare reports with the findings
  - ð Area verification. Project parcels will be verified using GPS in the field as well as through drone images and Google Earth imagery analysis
- Identification and monitoring of strata / Sampling plan and stratification
  - ð Ex-ante stratification is conducted on basis of the year of replanting and year of restoration.
  - ð Strata will be monitored periodically, if a change in number and area of the project strata occurs, the sampling framework will be adjusted accordingly
- Mangrove carbon inventory (Actual carbon monitoring)
  - ð Collecting reliable field measurements and Precise field monitoring
  - ð Verifying the methods used to collect field data
  - ð Verifying data entry and analysis techniques
  - ð Data maintenance and achieving

During the onsite visit the audit team assessed the result all the above mentioned steps of the monitoring plan with an emphasize on the last one (IRL 07,08,13,14,15)

Assessment of Data and Calculation of Greenhouse Gas Emission Reductions

The required data for the monitoring was available, and the parameters were monitored in accordance with the registered monitoring plan, considering the deviations described above.

The data collection was conducted by manual measurements in the field. The dbh as well as the height as

measured using calipers and measurement poles for the project trees which are all marked with metal tags. Besides the trees the number of saplings were counted. The data was collected manually. A detailed description of the data generation, storing, processing and aggregating, collating and reporting is described in the MR and the corresponding SOP (IRL 16). During the onsite visit the data collection, processing, collating and reporting was demonstrated and discussed in depth (IRL 07,08,15, 16).

The data collected during the onsite visit, replicating the exact same methodology as described in the MR and subsequent documents was subject to a statistical analysis. An F-test of equality of variances was conducted for the two sets of dbh and the height mean values of each tree at each sample plot obtained during the actual monitoring and the field visit. The test value was mostly smaller than the F-value (see also annex 1) both variances origin from the same population. Thus, there is no significant difference between the differences of the two separate measurements (IRL 06,07,09,14,15). Only in the strata of the plantings of 2018 there have been slightly higher test values than the F-value in those plots, where less than 20% of the trees were remeasured. This can be explained by the relatively young age of the trees which have been planted in 2018 and is considered acceptable.

In total 44% of all sample plots were visited out of which 34% of the trees were remeasured in the course of the onsite visit.

Baseline emissions were quantified in line with Equation (1) of the applied methodology (AR-AM0014).

Carbon stock and carbon stock changes in baseline tree and non-tree were accounted for as zero in line with A/R Methodological Tool “Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities” (Version 04.2.) as all conditions described in section 5 of the respective tool are met. Thus, no changes since 1st verification.

Baseline carbon pools of dead wood and litter are conservatively excluded as per PD because the project activity will not increase the amount of dead wood respectively will not decrease the rate of accumulation of the litter. The project activity does not include any type of timber harvesting nor the removal of existing plants respectively a management practice that favours the mortality of existing mangrove plants. Thus no significant reduction of the mentioned pool can be expected.

The project emissions were quantified in line with Equation (2) of the applied methodology (AR-AM0014).

Changes in carbon stock in tree biomass is quantified in line with methodological tool Estimation of carbon stocks and change in carbon stocks of trees and shrubs in A/R CDM project activities (AR-TOOL14) following equation (12) and subsequent equations. For the quantification of the change in carbon stock in tree biomass the PP applied two allometric equations for I) above ground biomass and II) below ground biomass. The appropriateness of the allometric equations applied was demonstrated applying the homonymous methodology (EB 65, Annex 28). Thus, no changes since 1st verification.

Change in carbon stock in shrub biomass is not accounted for at this second verification as they haven’t been actively introduced into the project area. This is considered a conservative approach as potentially shrub vegetation will be growing in the project area. Thus, no changes since 1st verification.

Change in carbon stock in dead wood is not accounted for at this second verification as dead wood will not be removed and thus remain in the project area compliance with the project design. Thus, no changes since 1st verification.

Change in carbon stock in the soil organic carbon is quantified in line with equation (4) of the applied methodology (AR-AM0014). A value of 7.32 tC/ha/year is applied which was already accepted at valdation and verification and by an assessment conducted by VERRA. Thus, no changes since 1st verification.

The uncertainty of the estimation of the GHG removals is calculated in line with guidance provided in the AR-TOOL14. Due to an uncertainty of 13% a discount rate of 25% of the uncertainty is applied in line with Appendix 2 of AR-TOOL14.

The audit team confirms that the methods and formulae used to estimate the baseline and project emissions are appropriate. The calculation was done in accordance with the methods and formulae described in the registered monitoring plan and applicable methodology (IRL 02,03,06,14).

The audit team confirms that the monitoring report includes all required and relevant parameters. The parameters have been measured at the intervals required by the applied methodology and monitoring plan.

The audit team confirms that all the assumptions, emission factors and default values have been correctly justified. All the emission factors and default values are explicitly mentioned in the monitoring report.

In all cases, the audit team assessed the procedures follow by the PP in order to acquire, collate, transpose and process the data sets. The audit team found that the GHG emission reductions were quantified correctly in accordance with the project description and the applied methodology as well as all the applicable modules and tools (IRL 06, 14).

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Among several evidence items submitted, the following relevant and reliable evidence material was used by the audit team during the verification process:

- GIS files (IRL 09)
- Field sheets (IRL15)
- Calculation spreadsheets (IRL 06, 14)

Enough evidence covering the full verification period in the required frequency is available to validate the figures stated in the final MR. The source of the evidence was discussed in chapter 2 of this report. Specific cross-checks have been done in cases that further sources were available.

The monitoring report's figures were checked by the audit team against the raw data (IRL 07,08). The data collection, transcription and processing system meet the requirements of the monitoring plan as per the methodology in terms of sufficiency of the quantity and appropriateness of quality of the evidence used to determine the GHG emission reductions.

4.4 Non-Permanence Risk Analysis

The risk assessment for this monitoring period was conducted according to the "AFOLU Non Permanence Risk Tool". Each risk category was calculated based on the VCS guidance and the input provided by the PPs. The information was validated and cross-checked through document and literature review, onsite visits of the project area and interviews conducted. Following the VCS guidance, a buffer of 10% is determined.

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
Internal Risk				
1. Project Management				
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.	1, 4, 5	The species being planted are Rhizophora mucronata, Rhizophora apiculata, Bruguiera gymnorrhiza, Bruguiera cylindrica, Bruguiera sexangula and Ceriops tagal. All of these species are natively occurring in Myanmars mangroves. This could be observed during the onsite visit, no changes since 1st verification.	**0**	**0**
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.	1, 4, 5	The project is supported by the Forest Department whose officials joined the audit at the first field day. Further the project focuses on the empowerment and collaboration of all three villages affected to replant/restore and maintain the mangrove ecosystem based on a good understanding and appreciation of the importance of the ecosystem. This could be sustained during the onsite visit via interviews held in the villages of Daboga and Magyi (2 out of 3 villages), no changes since 1st verification.	**0**	**0**
c. Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (ie, any area of required experience is not covered by at least one individual with at least 5 years' experience in the area).	1, 4, 5	The management team has a track record of restoration work in mangroves of more than 20 years. This could be sustained during the onsite visit via interviews, no changes since 1st verification.	**0**	**0**
d. Management team does not maintain a presence in the country or is located more than a day of travel from the project site, considering all parcels or polygons in the project area.	1, 4, 5, 13	WIF has its main office in Yangon, the project area are located about 4-5 hours' journey from the office of the management team. A branch office is located within the project area. This could be sustained during the onsite visit via interviews as well as observations, no changes since 1st verification.	**0**	**0**
e. Mitigation*: *Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (eg, individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.	1, 4, 5	Mr. Suraj A. Vanniarachchy has a proven track record of having the capacity to design this AFOLU project, account for carbon removals, and report and participate in validation and verification under respective VCS methodology and standard requirements. This could be sustained during the onsite visit via observations and interviews, no changes since 1st verification.	**-2**	**-2**
f. Mitigation*: *Adaptive management plan in place.	1, 4, 5,	The PP is periodically physically monitoring the projects sides, in a constant consultations process with communities, and the forest department and involved in scientific collaborations with local scientist of the University of Pathein. Further a surplus of planting material in the projects nursery in case the survival rate requires replanting. This could be sustained during the onsite visit via observations and interviews.	**-2**	**-2**
Total Score Project Management			**-4**	**-4**
2. Financial Viability				

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
a. Project cash flow breakeven point is greater than 10 years from the current risk assessment	1, 4, 5	The project has no other financial return than the carbon credit benefits. The Breakeven point is greater than 10 years.	**3**	**3**
b. Project cash flow breakeven point is between 7 and up to 10 years from the current risk assessment	n.a.	n.a.	**0**	**0**
c. Project cash flow breakeven point between 4 and up to 7 years from the current risk assessment	n.a.	n.a.	0	0
d. Project cash flow breakeven point is less than 4 years from the current risk assessment	n.a.	n.a.	**0**	**0**
e. Project has secured less than 15% of funding needed to cover the total cash out before the project reaches breakeven	n.a.	n.a.	**0**	**0**
f. Project has secured 15% to less than 40% of funding needed to cover the total cash out required before the project reaches breakeven	n.a.	n.a.	**0**	**0**
g. Project has secured 40% to less than 80% of funding needed to cover the total cash out required before the project reaches breakeven	n.a.	n.a.	**0**	**0**
h. Project has secured 80% or more of funding needed to cover the total cash out before the project reaches breakeven	n.a.	n.a.	**0**	**0**
i. Mitigation: *Project has available as callable financial resources at least 50% of total cash out before project reaches breakeven*	n.a.	n.a.	**0**	**0**
Total Score Financial Viability			**3**	**3**
3. Opportunity Cost				
3. 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	n.a.	n.a.	**0**	**0**
b. NPV from the most profitable alternative land use activity is expected to be between 50% and up to100% more than from project activities	n.a.	n.a.	**0**	**0**
c. NPV from the most profitable alternative land use activity is expected to be between 20% and up	n.a.	n.a.	**0**	**0**

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
to 50% more than from project activities				
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	1, 4, 5, 10	Baseline activities of the members of the three communities involved is subsistence driven. The projects aims to bring about net positive community impacts both in the short run and on a long-term basis via provision of job opportunities during the replanting and restoration activities and by starting to introduce new sources of income such as the establishment of oyster farms, initative to start nypa sap production and the provision of trainings of e.g. the production of batik textiles. Further the project has an positive effect on the yield of fish and craps. This could be sustained during the onsite visit via interviews and observations, no changes since 1st verification.	**0**	**0**
e. NPV from project activities is expected to be between 20% and up to 50% more profitable than the most profitable alternative land use activity	n.a.	n.a.	**0**	**0**
f. NPV from project activities is expected to be at least 50% more profitable than the most profitable alternative land use activity	n.a.	n.a.	**0**	**0**
g. Mitigation: *Project proponent is a non-profit organization*	n.a.	n.a.	**0**	**0**
h. Mitigation: *Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over the length of the project crediting period*	n.a.	n.a.	**0**	**0**
i. Mitigation: *Project is protected by legally binding commitment (see Section 2.2.4) to continue management practices that protect the credited carbon stocks over at least 100 years*	n.a.	n.a.	**0**	**0**
Total Score Opportunity Cost			**0**	**0**
4. Project Longevity				
Without legal agreement or requirement to continue the management practice	n.a.	n.a.	**0**	**0**
With legal agreement or requirement to continue the management practice	1, 4, 5, 11,12,	The PP has signed legally binding contracts with the University of Pathein and Village tract committees for a period of 30 years. The contract can be further extended for another 30 years. Further a MoU is signed between WIF and the Government of Myanmar (Forst Departement) providing a legally binding commitment of 100 years for restoring and maintaingin the restored/replanted mangroves. No change since the validation.No changes have occurred since 1st verification.	**0**	**0**
Total Score Project Logevity			**0**	**0**

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
Summary Internal risk				
Project Management			-4	**-4**
Financial Viability			3	**3**
Opportunity Cost			0	**0**
Project Longevity			0	**0**
TOTAL			0	**0**
External risk				
5. Land Tenure				
a. Ownership and resource access/use rights are held by same entity(s)	n.a.	n.a.	**0**	**0**
b. Ownership and resource access/use rights are held by different entity(s) (eg, land is government owned and the project proponent holds a lease or concession)	1, 4, 5	As described in section 1.12.1 of the Project Description, the lands that will be restored under the project belong to Magyi, Thabawkan and Thaegone village tracts. The ownership of these lands lies with the Government of Myanmar. The Government has given the lands of Magyi village tract to University of Pathien for a period of 30 years. Lands in Thabawkan and Thaegone have been given to their respective Village Tract Committees for a period of 30 years. This period can be extended for another 90 years. The University of Pathein and the Village Tract Committees of Thabawkan and Thaegone have agreements with WIF for the development of mangrove reforestation/ restoration project. WIF, on behalf of University of Pathein and the Village Tract Committees of Thabawkan and Thaegone will develop the project as a forest carbon project No changes have occurred since 1st verification.	**2**	**2**
c. In more than 5% of the project area, there exist disputes over land tenure or ownership	1, 4, 5	Access/use rights are clearly defined. Disputes over land tenure or ownership do not exist., No changes since 1st verification.	**0**	**0**
d. There exist disputes over access/use rights (or overlapping rights)	1, 4, 5	Access/use rights are clearly defined. Disputes over land tenure or ownership do not exist., No changes since 1st verification.	**0**	**0**
e. WRC projects unable to demonstrate that potential upstream and sea impacts that could undermine issued credits in the next 10 years are irrelevant or expected to be insignificant, or that there is a plan in place for effectively mitigating such impacts.	1, 4, 5, 11		**5**	**5**
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 of the project crediting period*	1, 4, 5	The project is protected by a legally binding commitment to continue management practices that protect carbon stocks over the length of the project crediting period. No changes since 1st verification	**-2**	**-2**

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
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*	1, 4, 5	n.a.	n.a.	**0**
Total Score Land Tenure			**5**	**5**
6. Community Engagement				
a. Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted	1, 4, 5	There are no households living inside the project area. This could be sustained during the onsite visit via interviews and observations. No changes since 1st verification.	**n.a.**	**n.a.**
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.	1, 4, 5, 10	WIF is in constant exchange with the villages involved in the project activity. Thus 100% of the communities/households are consulted. This could be sustained during the onsite visit via interviews and observations. No changes since 1st verification.	**n.a.**	**n.a.**
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*	1, 4, 5, 10	The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area as explained in section 1 (Opportunity cost) of this document. No changes since 1st verification.	**-5**	**-5**
Total Score Community Engagement			**-5**	**-5**
7. Political Risk				
Governance score	1, 4, 5, 17	The data provided in the document of the PP is not the most recent data. The audit team has calculated the most recent values with the following result: Governance score is -1.08.	**6**	**6**
f. Mitigation: *Country is implementing REDD+ Readiness or other activities, as set out in this Section 2.3.3 of VCS AFOLU Non-Permanence Risk Tool v. 3*	1, 4, 5, 18	Myanmar is a UN-REDD partner country since December 2011. Myanmar received UN-REDD targeted support in 2013 to develop a REDD+ Readiness Roadmap and used this Roadmap to develop a funding proposal in November 2013 based on a full UN-REDD National Programme. Myanmar has a DNA (Ministry of Environmental Conservation and Forestry). No changes since 1st verification.	**-2**	**-2**
Total Score Political Risk			**4**	**4**
Summary External risk				
Land Tenure			**5**	**5**
Community Engagement			**-5**	**-5**
Political Risk			**4**	**4**
TOTAL			**4**	**4**
8 Natural risk				
a. Are all-natural risk factors applicable to the project been assessed	1, 4, 5	Respective information has been provided.	**0**	**0**

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
using the Likelihood and significance (LS) and mitigation (M) (if any) approach? (See Table 10 of VCS Non-Permanence tool v.3)				
8.1 Fire Risk				
Has evidence been provided for assessing the risk of fire occurring in the project area?	1, 4, 5	N.a. Mangroves	**0**	**0**
8.2 Pest and diseases outbreaks				
Has evidence been provided for assessing the risk of incidence of pests and disease attack?	1, 4, 5,	There are no reported pest attacks in the coastal mangrove area. However, there have been few pest attacks in Sonneratiaceae family and Avicenniaceae family in the delta mangrove area. Further there are reports of some propagules and seedlings in young stage being attacked by crabs but the significance is insignificant. As a conservative measure it is estimated that there is likelihood for a pest or disease outbreak to occur in less than every 10 years time. To mitigate the risk, the project is regularly monitoring and evaluating the planted areas. Significance = Insignificant Likelihood = Less than every 10 years Mitigation = 0.5	**1**	**1**
8.3 Extreme weather				
Has evidence been provided for assessing the risk of extreme climatic events (e.g. floods, droughts, winds, frost) occurring?	1, 4, 5,	The project area is under risk of cyclones. Nonetheless the mangrove habitat is very well adapted on cyclones Significance = Major Likelihood = Every 10 to less than 25 years Mitigation = 0.5	**2.5**	**2.5**
8.4 Geological risks				
Has evidence been provided for assessing the geological risk (e.g. volcanoes, earthquakes, landslides)?	1, 4, 5,	As geological risks earthquakes as well as Tsunamis are identified. Earthquakes Significance = No Loss Likelihood = Once every 100 yeas Tsunami Significance = Devasting Likelihood = Once every 100 yeas	**0**	**0**
8.5 other natural risk				
Are there any other natural risks identified for the project area? Has evidence been provided for assessing these risks?	1, 4, 5	n.a.	**0**	**0**
Summary Natural risk Determined by (LS × M)				

CHECKLIST QUESTION	Ref.	COMMENTS	Draft Concl	Final Concl
Fire (F)			**0**	**0**
Pest and Disease Outbreaks (PD)			**1**	**1**
Extreme Weather (W)			**2.5**	**2.5**
Geological Risk (G)			**0**	**0**
Other natural risk (ON)			**0**	**0**
TOTAL			**3.5**	**3.5**

Overall Risk Rating

Risk Category	Rating
a) Internal Risk	**0**
b) External Risk	**4**
c) Natural Risk	**3.5**
Overall risk rating (a + b + c)	**10**

5 SAFEGUARDS

5.1 No Net Harm

The project activity consists of a reforestation and restoration of a mangrove habitat located in the northern part of Ayeyarwady Division of Myanmar. The project area was a degraded land without vegetation but in the intertidal zone with scattered mangroves trees (bare soils close to mature mangroves in steady state or degrading). The only current land use is related with wetlands´ non forest products (fish, shellfish, oyster and crab). The project activity aims to restore degraded wetlands and to improve soil and environmental conditions, restoring ecological, economic and social services of degraded mangroves within the northern part of Ayeyarwady Division of Myanmar. It consists of the replanting of the lost mangrove forest only and does not include any commercial utilization of the timber or any related goods. Thus, no negative environmental and socio-economic impacts are identified (IRL 01, 03, 04).

5.2 Local Stakeholder Consultation

As the project activity has no negative environmental and socio-economic impacts no negative or critical stakeholder comments have been received by the project proponent (IRL 01).

6 VERIFICATION CONCLUSION

TÜV SÜD South Asia Pvt. Ltd. Performed the 19econd periodic verification of the VCS project: “India Sundarbans Mangrove Restoration”. The verification is based on the currently valid documentations of the VCS.

The management of the Livelihoods Fund in collaboration with NEWS signs responsible for the preparation of the GHG emissions data and the reported GHG emission reductions on the basis set out within the project’s Monitoring Plan indicated in the VCS Project Description version 3.0, dated 19 February 2018 and the applied CDM Methodology AR-AM0014 version 3.0

Verification period: From 15 June 2018 to 14 June 2019. The Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO_2e)	Actual net GHG removals by sinks (tCO_2e)	Leakage emissions (tCO_2e)	Net GHG emission reductions or removals (tCO_2e)
2018-19	0.00	29,572.5	0.00	29,572.5
Total	0.00	29,572.5	0.00	29,572.5
Total after reducing 10% buffer				**26,615.5**

The verifier can confirm that:

- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the project is operated as planned and described in the project design document;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements;
- the monitoring plan in Monitoring and Implementation Report is as per the PD and monitoring plan;
- the monitoring plan in the PD is as per the applied methodology.

Our opinion is based on the project's GHG emissions and resulting GHG emission reductions reported, which have been both determined through the valid and registered project's baseline, its monitoring plan and its associated documents.

Pune, 10 October 2019

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Eswar Murty

Sr. Manager, Certification Body "Environment and Energy"
TÜV SÜD South Asia Pvt. Ltd.

APPENDIX 1: SUMMARY OF REQUESTS AND RESPONSES

CL from this verification

Table 1.

CL ID: CL 1	Doc: Non-Permanence Risk Report	Section no.: 1.1 Project Management	Date: 24. Jul. 2019
Description of CL			
Clarify in how far an adaptive management is implemented.			
Project participant response			**Date: 02. Aug. 2019**
Worldview International Foundation (WIF) has taken several adaptive measures to mitigate project management risks. Their staff consist of ex-forest department officials who were having over 30 years of experience in mangrove planting and management. Their younger staff are graduates from the University of Forestry who have sound knowledge on forest management practices. The species selection was also done after a 3 year research on trial plots. Several reference manuals are used for the management of the plantation including a manual prepared by Win Maung (2012), Mangrove Management Hand Book (Department of Environment and Natural Resources, 2000), Steps to Successful Ecological Restoration of Mangroves and a FAO publication on Mangrove Management (1994). WIF maintains a surplus of planting material (seedlings and propagules) for patching during the following years after the initial planting. Joint operations conducted with the Forest Department is also considered an adaptive management practice.			
Documentation provided by project participant			
1. Management structure 2. Nursery and planting technique (Eng) 3. Taking Growth Measurements of Mangrove Trees Manual Book 4. WIF Training on Forest Management Myanmar 5. WIF Training on Forest Management ENGLISH 6. Organization Management Structure & Quality Assurance and Quality Control 7. (18.12.2016) Meeting with WIF & Forest Department Officer E-Version 8. (18.12.2016) Meeting with WIF & Forest Department Officer M-Version 9. Nursery and planting technique (Myan) 10. MANGROVE MANAGEMENT HANDBOOK 11. Steps to Successful Ecological Restoration of Mangroves 12. FAO Mangrove Management 1994			
DOE assessment			**Date: 12.09.2019**

The PP provided information describing how the document and its Management adapted the project activity according to the conditions of the project. It is not explicitly stated in how far the management will be adapted in case of serious changes of the project circumstance due to e.g. tropical storms, etc.

Nevertheless, the Audit team concludes that an adaptive management is in place as:

- Staff is permanently based within the project area, thus any critical changes will be noted immediately
- Due to the staff composition (senior staff/young graduates) as well as the number of staff members any immediate action required could be taken in case of serious disturbances
- The senior staff showed a high knowledge of the necessities of the mangrove habitats.

CL can be closed.

Table 2.

CL ID: CL 2	**Doc: Non-Permanence Risk Report**	**Section no.: 2.2 Community Engagement**	**Date: 24. Jul. 2019**
Description of CL			
During the field visit thorough stakeholder interviews were conducted in form of village meetings in the villages Daboga and Magyi. A broad variety of different village engagement activities, infrastructural enhancements as well as educational activities respectively activities of knowledge transfer were explained and described. The respective section in the Non-Permanence Risk Report is missing information in regard to a) results of analysis of the circumstances of the participating villages and b) corresponding plans of future activities as well as a list of activities already conducted.			
Project participant response			**Date: 02. Aug. 2019**
The Non-Permanence Risk Report was updated and included all the community development activities conducted during 2014-2019 and also the future activities.			
Documentation provided by project participant			
1. The Non-Permanence Risk Report Version 1.0 2. Photo evidences for community development 3. Photos – Net positive impacts on the social and economic well-being of the local communities 4. Bank Slip for balance Payment for Oil Press Machine and Centrifugal Filter 5. EDNA education approach.pdf 6. Scholarship Progress Report May-Nov2018			
DOE assessment			**Date: 12.09.2019**
The Non-Permance Risk Report was updated as described above. The information provided is consistent with the information contained in the field via stakeholder consultations conducted in the villages of Daboga and Magyi. CL an be closed.			

CAR from this verification

Table 3.

CAR ID: CAR 1	Doc: Non-Permanence Risk Report	Section no.: n.a.	Date: 24. Jul. 2019
Description of CL			
The Non-Permanence Risk Report is on the status of 15 November 2017 and therefore needs a complete update.			
Project participant response			**Date: 02. Aug. 2019**
Non-Permanence Risk Report was prepared for this monitoring period (2018-2019)			
Documentation provided by project participant			
1. The Non-Permanence Risk Report Version 1.0 2. Annex 1 Species distribution 3. Annex 2 Management structure 4. Annex 3 World Governance Index for Myanmar 5. Annex 4 Proof for UNREDD partner country 6. Annex 5 Myanmar Disaster Management Reference Handbook 2017 7. Annex 6 Mangrove Conservation as Sustainable Adaptation to Cyclonic Risk 8. Annex 7 Hazard Profile of Myanmar 2009 9. Annex 8 VCS Risk Report Calculation Tool, v3.1 10. Annex 9 Photo evidences for community development			
DOE assessment			**Date: 12.09.2019**
The Non-Permanence Risk Report was updated as required. CAR can be closed.			

Table 4.

CAR ID: CAR 2	Doc: Monitoring Report	2.2.2. Project Description Deviations	Date: 24. Jul. 2019
Description of CL			
Due to the construction of a hotel resort, the planted area was reduced of rd. 10 ha and the total project area of rd. 35 ha. Provide respective information in the monitoring report and explain and sustain, why this does not affect the applicability of the methodology, additionality or the appropriateness of the baseline scenario			
Project participant response			**Date: 02. Aug. 2019**

The following description included in the Monitoring Report – Due to the construction of a hotel, approximately 36.56 hectares had to be removed from the project area. After assessing the situation, the University of Pathein, World View International Foundation and the Forest Department held discussions with the hotel owner. The management of the hotel resort have agreed to stop expanding their project to any further mangrove areas and an arrangement has been agreed. As a result the management have built a fence demarcating their hotel area which has not expanded further to the project area. This has been documented and the Forest Department will further enhance their monitoring of the project area together with WIF and the University. As per the methodology, the baseline emissions have been calculated to be zero. Since the baseline emissions are zero, this change of land area from 701.5 ha to 664.9 ha does not change the baseline emissions. However the ex-post GHG reductions will change but not beyond the ex-ante estimations. This change does not impact the additionality since only a part of land has been excluded instead of adding a totally new land area to the project. PP together with the University of Pathein and Forest Department have agreed with the hotel management no further encroachment will happen and annual monitoring of the project boundary shall be reported in each Monitoring Reports.
Documentation provided by project participant
Revised Monitoring report Photographs of the fence built by the hotel management to demarcate their areas and not further encroaching the project area
DOE assessment **Date: 12.09.2019**
The loss of planted area respectively project area was described. The description corresponds with the information obtained in the field via observations (fence) and interviews (forest department). Due to the relatively small portion of project are lost (5.2%) neither the applicability of the methodology, additionality or the appropriateness of the baseline scenario is affected. CAR can be closed.

Table 5.

CAR ID: CAR 3	**Doc: Monitoring Report**	**3.2 Data and Parameters Monitored**	**Date: 24. Jul. 2019**
Description of CAR			
While assessing the shapefiles of the different strata it could be observed, that there are overlapping of different strata that lead to wrong area values.			
Project participant response			**Date: 02. Aug. 2019**
The overlapping of different strata were removed.			
Documentation provided by project participant			
Revised shape files and KML file are in the folder titled “CAR 3”.			
DOE assessment			**Date: 12.09.2019**

Revised, on overlapping could be found, the areas of the shape-files correspond with those in the calculations provided. CAR can be closed.

Table 6.

CAR ID: CAR 4	Doc: Monitoring Report	3.2 Data and Parameters Monitored	Date: 24. Jul. 2019
Description of CAR			
According to the information obtained in the field, it could be detected that the self-imposed QA/QC requirement of the remeasurement of 20% of the sampling points was not conducted. This was revealed during the remeasurement of a representative sample of the sample plots as on several plots of the planting years 2015, 2016 and 2017 a high discrepancy between the measurements of the diameter as well as the height was detected that could not be explained with the growth rates of the trees planted.			
Project participant response			**Date: 02. Aug. 2019**
Taking a special notice of this issue, Win Maung (Project Director) took immediate actions to appoint U Myien Sein (Field Manager) to participate in remeasuring the sample plots for 2015, 2016 and 2017 and report on the progress.			
Documentation provided by project participant			
Measurement sheets for the sample plots of 2015, 2016, 2017 data entered by field assistant, Kyaw Htoo Naing and reviewed U Myind Sein the Field Manager. Photographic evidence of this remeasurement process			
DOE assessment			**Date: 25.09.2019**
The sample plots of 2015, 2016 and 2017 have been remeasured, scans of the field sheets were provided and compared with the data collected in the field. Applying a two-sample f-test, comparing the field data and the data provided the following could be revealed: 1. The remeasured data of the 2016 strata and the 2017 strata does not show a significant higher variance in comparison to the field data, 2. In contrary to the datasets of the strata 2016 and 2017 the remeasured data of the 2015 strata showed a significant higher variance in comparison to the field data, whereas the original data of the 2015 strata did not show a significant higher variance in comparison to the field data. Thus, the data remeasured is less “reliable” than the data originally provided. 3. The data of 2019 showed only for those measurements a significant higher variance, where the sample number is lower than 20% of the total tree number. This can be explained by the relatively young age of the trees which have been planted in 2018. **FAR 1:** **For future monitoring it has to be ensured, that the self-imposed QA/QC requirements of remeasuring 20% of the sample plots is fulfilled.**			

Project participant response	**Date: 26. Sept. 2019**
The biomass for plots planted in 2015 was revised using the data originally provided and the excel sheets and VCS Monitoring report V.1.2 was revised accordingly For the FAR – PP will take due note on the FAR 1 and conduct the QA/QC procedure of remeasuring 50% of the sample plots. These data sheets will be cross-checked by the Field Manager before taking into VCU calculation and other research. This has been already included in the "Organization Management Structure & Quality Assurance and Quality Control" and will be strictly monitored by the Project Director and Carbon Consultant during each data collection process.	
Documentation provided by project participant	
1. VCUs for 2015-2017 plantations V1.1 2. VCS-WIF Monitoring-Report-2019-v1.2 3. Organization Management Structure & Quality Assurance and Quality Control	
DOE assessment	**Date: 26. Sept. 2019**
The calculations file have been revised according to the result of the audit. The original data set of 2015 was used as well as the remeasured data sets of 2016 and 2017. CAR can be closed.	

Table 7.

CAR ID: CAR 5	**Doc: Monitoring Report**	**3.2 Project Emissions / Calculation of uncertainty**	**Date: 24. Jul. 2019**
Description of CAR			
The assessment of the VCS calculation revealed, that an uncertainty calculation was not conducted.			
Project participant response			**Date: 02. Aug. 2019**
TBD (to be done)			
Project participant response			**Date: 20. Sept. 2019**
The uncertainty calculation was conducted as per the tool and the values have been applied in the Monitoring Report V.1.1. Based on the calculation, the uncertainty was calculated to be 11.3%. Therefore, as per the methodological tool (10<U<15), a discount was 25% was applied for the tree biomass calculations. Therefore, the final calculated Ers have been changed accordingly.			
Documentation provided by project participant			

Monitoring report Version 1.1
Uncertainty calculation sheet

DOE assessment	**Date: 25. Sept. 2019**

The uncertainty calculations have been assessed in depth. The assessment revealed, that the total biomass per hectare is estimated on basis of an average number of trees, that does not represent the reality. Further it could be detected, that non-correct t-values have been applied:

1. Ensure, that the total Biomass is estimated on basis of the actual present numbers of trees per plot respectively hectare
2. Ensure that the correct t-value is applied (=TINV(0,1;[n-1])

Project participant response	**Date: 26. Sept. 2019**

1. The total biomass was estimated on the basis of actual present numbers of trees per plot
2. Correct t-values were applied and the excel sheet “Uncertainty” and the VCS Monitoring Report V.1.2 were revised accordingly. T(0.1,7) = 1.89, t(0.1,6) = 1.94 and t(0.1,12) = 1.78

Documentation provided by project participant

1. VCS-WIF Monitoring-Report-2019-v1.2
2. Uncertainty calculation sheet Version 1.1

DOE assessment	**Date: dd. mmm. Yyyy**

The uncertainty calculations have been revised according to the actual number of trees as well as the correct t-value. In total an uncertainty of < 15% was calculated and respective deductions (25%) of the AGB and BGB conducted.
CAR can be closed

FAR from this verification

Table 4.

FAR ID: FAR 1	Doc: Monitoring Report	3.2 Data and Parameters Monitored	Date: 25.09.2019
Description of FAR			
For future monitoring it has to be ensured, that the self-imposed QA/QC requirements of remeasuring 20% of the sample plots is fulfilled.			
Project participant response			**Date: 26.09.2019**
For the FAR – PP will take due note on the FAR 1 and conduct the QA/QC procedure of remeasuring 50% of the sample plots. These data sheets will be cross-checked by the Field Manager before taking into VCU calculation and other research. This has been already included in the "Organization Management Structure & Quality Assurance and Quality Control" and will be strictly monitored by the Project Director and Carbon Consultant during each data collection process.			
DOE assessment			**Date: 26.09.2019**
Shall be assessed during next verification.			

APPENDIX 2: INFORMATION REFERENCE LIST

<table>
<tr><th>Ref. No.</th><th>Author/Editor/ Issuer</th><th>Title/Type of Document. Publication place</th><th>Issuance and/or submission date</th></tr>
<tr><td>01</td><td>Tüv Süd</td><td>List of Participants/Interviewed Persons:
<table>
<tr><td>Mr. Win Maung</td><td>Project Manager</td></tr>
<tr><td>Mr. Myint Sein</td><td>Field Manager</td></tr>
<tr><td>Mr. Aung Aung Myint</td><td>Deputy Project Manager</td></tr>
<tr><td>Ms. Win Sandar Htay</td><td>Administrator, International Coordinator</td></tr>
<tr><td>Dr. Arne Fjortoft</td><td>Secretary General</td></tr>
<tr><td>Suraj Vanniarachchy</td><td>Forest and VCS Specialist</td></tr>
<tr><td>Members of the Forest Department</td><td>The Forest Department participated during the first field day. No signatures were gathered, nonetheless the mentioned participation is proven by pictures taken.</td></tr>
<tr><td>Representatives and community members of of the village Daboga</td><td>13 male / 2 female</td></tr>
<tr><td>Representatives and community members of of the village Magyi</td><td>7 male / 5 female</td></tr>
</table></td><td>21 – 24 Jul 2019</td></tr>
<tr><td>02</td><td>WIF</td><td>VCS Monitoring Report: Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar; Version 1.2</td><td>26 Sep 2019</td></tr>
<tr><td>03</td><td>WIF</td><td>VCS Project Description: Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar; Version 3.0</td><td>19 Feb 2018</td></tr>
<tr><td>04</td><td>WIF</td><td>Non-Permancence-Risk Report: Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar; Version 2.0</td><td>26. Sep 2019</td></tr>
<tr><td>05</td><td>WIF</td><td>VCS Risk Report Calculation Tool, v3.1</td><td>26. Sep 2019</td></tr>
<tr><td>06</td><td>WIF</td><td>Carbon Calculation Files:
VCUs for 2015-2017 plantations V1.1</td><td>26 Sep 2019</td></tr>
</table>

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or sub-mission date
		VCUs for 2018 plantation Uncertainty calculation FINAL_25092019	
07	WIF	Digital Raw Data: Data_sheet_for_sample_plots_planted_in_2015 Data_sheet_for_sample_plots_planted_in_2016 Data_sheet_for_sample_plots_planted_in_2017 Sample plots of 2018 planted	26 Oct 2019
08	WIF	Analog Raw Data	26 Oct 2019
09	WIF	GIS shape files: 2018_Planted Magyi Replanted Areas	02 Aug 2019
10	WIF	Annex 9 Photo evidences for community development / Risk Assessment	02 Aug 2019
11	RINA Services SPA	Valdiation Report: Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar; Version 1.1Aa	26 Feb 2017
12	RINA Services SPA	Verification Report: Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar; Version 1.0Aa	18 Oct 2018
13	Tüv Süd	GPS tracks & waypoints	21 – 24 Jul 2019
14	Tüv Süd	Statistics Verification: Reforestation and Restoration of degraded mangrove lands, sustainable livelihood and community development in Myanmar	03 Oct 2018
15	Tüv Süd	Field Sheets	29 Jul – 3 Aug 2018
16	WIF	Taking Growth Measurements of Mangrove Trees Manual Book	02 Aug 2019
17	WorldBank	https://info.worldbank.org/governance/wgi/#home	02 Aug 2019
18	UN REDD	http://www.unredd.net/regions-and-countries/asia-pacific/myanmar.html	02 Aug 2019