

VERIFICATION REPORT

Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation



Document prepared by AENOR INTERNACIONAL S.A.U.

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ER Program Name	Emission Reduction Report for the Indonesia-Norway Partnership
Baseline Reference Period Covered in this Report	1 st July 2006 to 30 th June 2016 (2006/2007 to 2015/2016)
Reporting Period Covered in this Report	2 nd Monitoring Period: 1 st July 2017 to 30 th June 2018 (2017/2018 period) 3 rd Monitoring Period: 1 st July 2018 to 30 th June 2019 (2018/2019 period)
Number of ERs	(1) 286,406,892 tCO ₂ e before double claiming discounting <ul style="list-style-type: none"> • 76,258,928 tCO₂e for 2017/2018 • 210,147,963 tCO₂e for 2018/2019 (2) 285,378,419 tCO ₂ e after double claiming discounting <ul style="list-style-type: none"> • 75,522,287 tCO₂e for 2017/2018 • 209,856,132 tCO₂e for 2018/2019 (3) 185,495,972 tCO ₂ e after 35% deduction due to uncertainty risk and Indonesia's ambition to reduce GHG emissions <ul style="list-style-type: none"> • 49,089,487 tCO₂e for 2017/2018 • 136,406,486 tCO₂e for 2018/2019
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1. INTRODUCTION

1.1. Objective

In verifying the results available, the process of verification has considered the content of Indonesia's results report based on all elements of MRV Protocol /2/ and its Annex /3/, referring to the MoU and Contribution Agreement. AENOR's audit team has ensured that the agreed use of methods, processes, and consistencies as established by the MRV Protocol /2/ are the guiding criteria for the verification. The verification ensures that the reported results are based on consistent use of appropriate methodologies in line with the MRV Protocol /2/ .

As such, the objective of the verification is the independent evaluation of the results in reducing emissions from deforestation and forest degradation in Indonesia at national level, reported in the document "Emission Reduction Report for the Indonesia – Norway Partnership" or ERR /1/. The following two monitoring periods have been taken into account:

- 2nd Monitoring Period: 1st July 2017 to 30th June 2018 (2017/2018 period).
- 3rd Monitoring Period: 1st July 2018 to 30th June 2019 (2018/2019 period).

For clarifying purposes, in a previous assessment that happened between 2019 and 2020, AENOR assessed the following period:

- 1st Monitoring Period: 1st July 2016 to 30th June 2017 (2016/2017 period).

The three monitoring periods (for this verification process, only 2017/2018 and 2018/2019 periods have been considered) were assessed in comparison to the following results-based payment (RBP/C) baseline, as reported in the document *4th_Revised_ERR_Indonesia-Norway_as_per_23_Nov_23_19_24_Clean* /1/ (from now on, "ERR"):

- 1st July 2006 to 30th June 2016 (2006/2007 to 2015/2016).

This RBP/C baseline is valid up to 2019/2020, in accordance with the MRV Protocol /2/ most updated version, Section 2.2.

Moreover, as per required by the Framework Contract between the Royal Norwegian Ministry of Climate and Environment and AENOR INTERNACIONAL S.A.U, there are some general verification objectives:

- Ensure an independent, credible, and high-quality verification, aligned with UNFCCC decisions and considering international standards and practice for results-based payments.
- Validate the consistency of the methodology used to estimate emissions reductions in relation to the methodology established by the Forest Partner Country in the development of its Reference Level and in accordance with the relevant MRV protocol.
- Allow reconstruction of reported emission reductions.
- Verify the results on estimated emission reductions in order to avoid errors, omissions or misrepresentations that could influence the overall results, and thereby decisions related to results-based payments.
- Analysis and propose options for strengthening MRV systems, where applicable.

1.2. Scope

The scope of the verification was limited to the following indicators:

- Emissions from gross deforestation at the national level 2006/2007-2015/2016 used as RBP/C baseline for the 2017/2018 and 2018/2019 monitoring periods.
- Emissions from gross forest degradation at the national level 2006/2007-205/2016 used as RBP/C baseline for the 2017/2018 and 2018/2019 monitoring periods.
- Emission reductions measured as tonnes CO₂e, including all sources of emissions included in the RBP/C.

The ERR for the Indonesia – Norway Partnership verification process has been carried out in accordance with the requirements established in the ISO 14065:2020 and ISO 14064-3:2019 “Greenhouse Gases. Part 3: Specification with guidance for validation and verification on greenhouse gases”.

1.3. Criteria

The criteria for assessing the reported results were the correct application of the methodology used for the definition of the First Indonesia Forest Reference Emission Level (FREL), applied to the periods 2006/2007-2015/2016 for constructing the RBP/C baseline reference period and 2017/2018 and 2018/2019 monitoring periods to quantify the emission reductions against it, under the framework outlined by the bilateral agreements of the Indonesia-Norway partnership, the MRV Protocol.

These criteria are specified in the following documents:

- National Forest Reference Emission Level (FREL) for Deforestation and Forest Degradation: In the Context of Decision 1/CP.16 para 70 UNFCCC (Encourages developing country Parties to contribute to mitigation actions in the forest sector). (2016).
- MRV protocol for the Indonesia-Norway partnership on climate, forests and peat /2/.
- Annex: Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership /3/.

Moreover, other relevant documents can be found within Annex 5: Reference documentation, within this verification report. Some of them are quoted below as guidance:

- Report on the technical assessment of the proposed forest reference emission level of Indonesia submitted in 2016. (2016).
- Indonesia Second Biennial Update Report Under the United Nations Framework Convention on Climate Change. (2018).
- Technical report on the technical analysis of the technical annex to the second biennial update report of Indonesia submitted in accordance with decision 14/CP.19, paragraph 7, on 21 December 2018. (2018).
- Indonesia Third Biennial Update Report Under the United Nations Framework Convention on Climate Change.

- Technical report on the technical analysis of the technical annex to the third biennial update report of Indonesia submitted in accordance with decision 14/CP.19, paragraph 7, in December 2021.
- 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands.
- 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- Good Practice Guidance for Land Use Land-Use Change and Forestry. (2003).
- Good Practice Guidance and Uncertainty Management in National GHG Inventories. (2000).
- Global Observation of Forest and Land Cover Dynamics (GOFC-GOLD) REDD+ Source Book. (2015).
- GFOI Methods and Guidance Documents (2013&2016) and supplementary modules.
- ISO 14064-3:2019 Part 3: Specification with guidance for the verification and validation of greenhouse gas statements (2019).

1.4. Level of assurance and materiality

The assessment was conducted to provide a reasonable level of assurance of conformance against the defined audit criteria and materiality thresholds within the audit scope. Based on the audit findings, a positive evaluation statement reasonably assures that the greenhouse gas (GHG) assertion is materially correct and credible.

The threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions was five percent (5%).

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2. AUDIT PROCESS

2.1. Audit team

The audit team consisted of the following members:

Role	Name	Attending site visit
Team Leader 1	Daniel Bermejo Vesga	Yes
Team Leader 2	Javier Cócera Cañas	No
Support Verifier 1	Adrián Vidal de Prados	No
Support Verifier 2	Pablo Moreno	No
Regional Expert	Waqar Ahmed	Yes
Project Manager and Technical Reviewer	Jose Luis Fuentes	No

Daniel Bermejo is a Forest Engineer with a MSc in Sustainable Finance. He began his career in private consulting, specializing in climate risk analysis and TCFD risks, forestry development, agriculture and forestry banking standards, environmental footprint projects and others. He has participated as an auditor in several AFOLU projects in different carbon schemes, such as VCS, CCB, GS, FCPF, Cercarbono and BCR. Daniel has a professional Certificate Program in Sustainable & Inclusive Landscapes from Wageningen University, understanding topics regarding Landscape Leadership, Governance, Finance and Climate Action. He has participated in several ISO lead auditor courses. He has worked in LATAM, North America, Africa, and Europe countries. He speaks Spanish, English and French fluently.

Javier Cócera is a Forest Engineer with a MSc in Forest Management. He has developed his career focused on forest management. Mainly he has been working through sustainability in two ways: the main one as forestry consultancy, developing forest management plans, working with GIS and LiDAR both in the field and the office and getting experience of the forest resources. The second one was developing environmental footprint projects and sustainability reports. Currently Javier is working in AENOR as auditor focused in AFOLU projects. Javier participated in courses about ISO lead auditing and have performed audits in projects in Europe, LATAM, Africa and Asia. He speaks Spanish and English fluently.

Adrián Vidal holds a master's degree in Forest Engineering from the Technical University on Madrid, and a Postgraduate Diploma in Climate Change from the National University of Quilmes and the National University of Jujuy, with the support of UNEP. Adrián works at the Climate Change Unit in AENOR and has more than 5 years of professional experience in forestry and sustainability. Prior to joining AENOR, he worked at the Basque Center for Climate Change (BC3) in carrying research in global governance, national policies, and modelling of Agriculture, Forestry and other Land Use (AFOLU) mitigation measures. He worked as an intern at the AFOLU Unit of the Transparency division of UNFCCC, providing support to the intergovernmental climate change process on issues related to land-use, land-use change and forestry (LULUCF), agriculture and REDD+. He also worked in urban

forestry, landscape forest restoration and environmental consultancy, and collaborated in the Global Forest Survey project of FAO.

Pablo Moreno is a Forest Engineer with a Master's in Forest management. Pablo joined AENOR in 2023 and has more than four years of experience in forestry and sustainability. Since finishing his master's degree, Pablo has worked in forest management, operations management, technical analysis, working with GIS and fieldwork, as well as quality assessment and R&D development in forestry production-related topics in search of efficiency and process optimization. His other career path has focused on sustainability consultancy, research, and climate change. He has worked in different countries: Spain, U.S.A., and Australia. In AENOR works with international projects, mainly in Africa and South America. He is a native Spanish speaker proficient in English and holds a basic level of French.

Waqar Ahmed is serving in the University of Karachi as a full-time faculty since 2006. Currently serving as an Assistant Professor, his duties include teaching, research and community service. He has also got experience in teaching as a visiting faculty in other universities like, University of Warsaw, Poland and Hamdard University. He has gained experience in research publications, with particular reference to marine pollution. With a MSc in environmental science and a PhD on Ecology of Mangroves of Indus Delta Pakistan, he has good knowledge of ecology, mangroves and marine pollution. He has written 24 international research articles and is well versed with principles of ecology and biodiversity. He teaches the subjects of Wildlife Ecology and Wetland Management, Climate Change, Marine Pollution, and others. He is also a certified trainer of the Integrated Coastal Management by IUCN. He has worked as a freelancer in various carbon assessment projects in Pakistan and Indonesia. He also has experience of providing consultation for implementation of biodiversity standards in CDC funded projects (following the IFC Guidelines on PS6, Biodiversity Management) in wind power plants in Pakistan. He is also a member of IUCN Commission on Ecosystem Management. He is fluent in English language in both spoken and written.

José Luis Fuentes is the manager of the Climate Change Unit of AENOR. He is a Forestry Engineer with a master's in business administration and a Post-Graduate in Environmental Management. He is fluent in Spanish and English. He has over 20 years of experience in auditing, consulting and training activities related to environmental and carbon management projects. Jose Luis has actively participated in the audit of international sustainable development projects in several carbon schemes, such as the Clean Development Mechanisms (CDM), Verified Carbon Standard (VCS), Climate, Community and Biodiversity Standards (CCB), Gold Standard (GS) and carbon footprints (ISO 14067 and ISO 14064). Jose Luis has extensive technical knowledge about the regulatory framework, policies and technical provisions emanating from the Paris Agreement, the Kyoto Protocol and the Conferences of the Parties.

2.2. Method and considerations

The verification was performed through a combination of document review, interviews and communications with relevant personnel. The conformity of the determination of emission reductions was evaluated against the criteria set forth in Section 1.3 and Appendix 5. As described below, findings were issued to ensure that all requirements were met.

The audit team carried out a risk-based assessment for the assurance of gross deforestation, gross forest degradation and the estimated emissions reductions. In accordance with ISO 14064-3:2019, the risk assessment is based on:

- The inherent risks of discrepancies for each variable used to estimate emission source and the GHG reporting system.
- The risk that controls are insufficient to detect and prevent each inherent risk from causing a discrepancy in the GHG assertion.
- The potential magnitude of each inherent and control risk described above resulting from the contribution of the associated emission source.

This information was used to develop an appropriate verification procedure for each identified risk. Each procedure was designed to reduce the probability that the verification would not detect a discrepancy that has not been corrected by the technical team responsible for the control.

Although there may be a level of risk inherently related to remote estimation processes and the development of the deforestation and forest degradation emission factors used in the estimation, the audit team did not focus on this since this risk has already been defined with the use of the 1st FREL as a guide and main criterion for verification. For this reason, the following elements included in the ERR /1/ constitute a risk classified as low, where it is not expected to have further findings or discrepancies regarding the procedures followed since these simply must comply with the established in the 1st FREL:

- Area and geographical boundaries.
- Carbon pools and types of GHG included.
- Forest, deforestation and forest degradation definition.
- Emission factors.

The next aspects were considered of medium risk. Therefore, they were assessed more thoroughly:

- Land use and land use change maps elaboration.
- Gross deforestation calculation.
- Gross forest degradation calculation.
- Emissions from deforestation and forest degradation calculation.

In AENOR's opinion, the verification has turned out to be of low-medium risk taking into account that: 1) the Indonesia-Norway partnership on climate, forests and peat has standardized processes for cartographic management and calculation, under the responsibility of the National Forest Monitoring System (NFMS), 2) that the Ministry of Environment and Forestry (MoEF) technical team involved in the MRV and the elaboration of the report have the appropriate knowledge, and 3) that the elaboration of Indonesia's 1st FREL and 3rd BUR, prior to this process, have allowed the learning and improvement of the processes, protocols, etc. Therefore, the risk of errors, discrepancies or omissions is considered low-medium.

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The audit team focused its activity during the verification process on ensuring that the procedures carried out for the calculation of gross deforestation, gross forest degradation and the reduction of deforestation and forest degradation emissions have been carried out following the same methodology as the used in Indonesia's 1st FREL, as agreed by the parties of the Indonesia-Norway partnership in the MRV Protocol.

AENOR reproduced and verified 100% of the calculations in the calculation spreadsheet *Spreadsheet REDD Norway_2006-2019_Final_Update Risk of Double Claim_as per 23 Nov 23_18_37 /8/* (from now on, "REDD calculation spreadsheet") for the estimation of emissions from deforestation and forest degradation for the period 2006/2007-2015/2016 and emissions reductions from reduced deforestation and forest degradation for the monitoring periods 2017/2018 and 2018/2019. It was verified that the data necessary to calculate GHG reductions were adequately provided and reproducible.

The geographical boundaries and the deforested and degraded areas during the monitoring period were verified using the land cover maps from 2006/2007-2015/2016 and 2017/2018 and 2018/2019 monitoring periods by the NFMS through the analysis of the data obtained by remote sensing. The accuracy assessment of the land cover maps was reviewed to determine their level of accuracy.

Carbon pools and forest classes were 100% verified and checked against Indonesia's 1st FREL and the *Annex: Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership /3/*.

Some errors were identified and subsequently corrected. These findings are detailed in Annex 6. All clarifications have been successfully closed.

An in-country visit was conducted from October the 4th to 6th, 2023, in which members of the audit team interviewed relevant staff of the MoEF responsible for the monitoring and reporting of the reduced emissions from deforestation and forest degradation.

Based on the assessment carried out, AENOR confirms with a reasonable level of assurance that the claimed GHG emission for the period 2006/2007-2015/2016 and the claimed GHG emissions reductions for the monitoring periods 2017/2018 and 2018/2019 are free from material errors, omissions or misstatements.

In addition, AENOR confirms that sufficient evidence was presented and that there is a clear audit trail that contains the evidence and records that confirm the stated figures in this Verification Report since:

- The evidence available and presented to AENOR is sufficient. 100% of the data used in the calculations have been provided to achieve the final amount of GHG emissions and GHG emissions reduction reported.
- The nature of the evidence is adequate. The raw data were collected from reliable sources. They are detailed in the *ERR /1/* and have been provided to the verification team. The most relevant are appropriately detailed in Annex 3.
- Evidence was cross-checked. AENOR verified the information provided and reproduced the calculations.

Hence, AENOR confirms that the stated figures in the *ERR /1/* are correct and confirms that is able to verify the deforestation and forest degradation emissions reductions based on verifiable and reliable evidence.

2.3. Document review

AENOR carried out a thorough review of the documentation provided by the Directorate General of Climate Change of the MoEF to verify compliance with the verification criteria. The reviewed documentation includes, among others:

- Emission Reduction Report for the Indonesia-Norway Partnership /1/.
- National Forest Reference Emission Level for Deforestation and Forest Degradation: In the Context of Decision 1/CP.16 para 70 UNFCCC (Encourages developing country Parties to contribute to mitigation actions in the forest sector).
- Report on the technical assessment of the proposed forest reference emission level of Indonesia submitted in 2016.
- Indonesia Second Biennial Update Report Under the United Nations Framework Convention on Climate Change.
- Technical report on the technical analysis of the technical annex to the second biennial update report of Indonesia submitted in accordance with decision 14/CP.19, paragraph 7, on 21 December 2018.
- Indonesia Third Biennial Update Report Under the United Nations Framework Convention on Climate Change.
- Technical report on the technical analysis of the technical annex to the third biennial update report of Indonesia submitted in accordance with decision 14/CP.19, paragraph 7, in December 2021.
- Land cover maps: 1990, 1996, 2000, 2003, 2006, 2009, 2011, 2012, 2013, 2015, 2016, 2017, 2018 and 2019.
- Land cover changes database *PIVOTDB*.
- Emissions calculation spreadsheet *Spreadsheet_REDD Norway_2006-2019_Final_Update Risk of Double Claim_as per 23 Nov 23_18_37 /8/*.
- Indonesia Report on REDD+ Performance.

Annex 3 contains the complete list of the documentation reviewed during the verification process.

2.4. In-country visit

An in-country visit was conducted from October the 4th to 6th, 2023. The main objectives of the site visit were to:

- Understand in practice the estimation of gross deforestation and gross forest degradation at the national level: choice satellite images and pre-processing, image processing, accuracy assessments and activity data reporting.
- Understand the methodological steps for the determination of emissions from deforestation and forest degradation, the emissions reductions and the results reported under the RBP/C system.

- Understand the uncertainty estimation methods and the QA/QC procedures used.
- Understand the institutional arrangements put in place for the monitoring and reporting of the reduced emissions from deforestation and forest degradation.
- Understand how MoEF has considered the risk of double claiming in the conservativeness of the emission reductions calculations due to deforestation and forest degradation.

During the visit, the audit team had the opportunity to listen and raise their questions to the technical team responsible for processing and preparing the land cover maps and for the calculation of emission and emissions reductions.

Annex 5 contains the lists of the attendants to the meetings held during the in-country visit.

2.5. Resolution of clarifications

As a result of the verification process, the audit team identified several findings, raised as clarifications (CLs). A Clarification Request (CL) shall be raised if the information is insufficient or not clear enough to determine whether the applicable finding-specific requirements have been met.

The findings raised during the verification process, and the responses for their closure, are described in Annex 6.

All findings issued by the AENOR audit team during the verification process have been closed.

2.6. Internal quality control

The Verification Report has undergone an internal quality control process through a technical review, once the assigned verification team issued its final opinion. The technical reviewer is a qualified member of AENOR, independent of the team that carried out the verification. The technical reviewer or the team assigned for such review are qualified in the relevant technical areas.

3. VERIFICATION FINDINGS

3.1. Area and geographical boundaries

The geographical boundary and area covered by RBP/C under the Indonesia-Norway partnership on climate, forests and peat is clearly defined in the *Emission Reduction Report* as the whole natural forest (primary and secondary) in the territory of the Republic of Indonesia, including dryland, mangrove and swamp forest. Only areas with forest classes existing in the year 1990 that were not deforested up to 2006 were considered.

The audit team verified that the definition of boundaries is consistent with the *MRV protocol /2/* and its *Annex: Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership /3/*.

Moreover, the area of all-natural forest in 2006 (start RBP/C period) is 96,454,143 ha.

AENOR's audit team verified, through the land cover maps, that boundaries and areas considered for the determination of the RBP/C baseline, and the emissions reductions are correct.

3.2. Activities covered, carbon pools and GHG

The REDD+ activities considered for the RBP/C were those related to deforestation and forest degradation, as stated within Section 2.2.2 of the ERR /1/, in accordance with the MRV Protocol /2/ and the agreed ToRs. Other REDD+ activities found in the 2nd Indonesian FREL have been excluded.

The only carbon pool included as part of the RBP/C baseline and reductions is aboveground biomass (AGB) and the only considers changes in carbon stocks, reported as CO_{2e}.

AENOR verified that the activities, carbon pools and GHGs considered are in accordance with the *Annex: Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership /3/*.

Emissions from peat decomposition and peat fires are included in the *ERR /1/* as an annex and, for the two applicable monitoring periods, excluded from the RBP/C, in conformity with the *Annex: Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership /3/*.

3.3. Forest, deforestation and forest degradation definitions

The AENOR team verified that the definitions used for forest, deforestation and forest degradation are consistent with those used in Indonesia's 1st FREL.

Forest

Land area of more than 6.25 hectares with trees higher than 5 meters at maturity and a canopy cover of more than 30 percent. Six classes of natural forest are considered in the RBP/C, in line with Indonesia's 1st FREL:

- Primary dryland forest
- Secondary dryland forest
- Primary mangrove forest
- Secondary mangrove forest

- Primary swamp forest
- Secondary swamp forest

Only the existing natural forest in 1990 are considered. Plantation forests are excluded.

Deforestation

One-time conversion of natural forest cover to other land-cover categories that occurred in the same area. Deforestation occurred in regenerated forest, that previously deforested, is not considered.

Forest degradation

Forest degradation refers to the process of transforming from primary to secondary forest classes. This transition leads to a reduction in the amount of carbon stocks within the forest due to human activities. The secondary forests that result from these transitions have undergone selective logging or experienced other disturbance events, such as fires and encroachment.

3.4. Baseline for RBP/C definition

AENOR's audit team verified that the definition used for Results-Based Payment/Contribution (RBP/C) is consistent with the requirements of the MRV Protocol. Specifically, it refers to the projection of CO₂ gross emissions that is used as a reference to compare against actual emissions at a given point in time in the future.

3.5. Data (Activity Data and Emission Factors)

3.5.1. Activity Data

According to the information crosschecked from the ERR Section 2.3.1, the activity data used comes from land cover maps created by the MoEF as part of the National Forest Monitoring System (NFMS). The maps from 2006, 2009, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019 were analyzed for historical land cover changes and emissions estimates. Additional datasets from 1990, 1996, 2000, and 2003 were also included to ensure consistency.

AENOR's audit team reviewed the NFMS and the online map services and compared it with the information disclosed within the REDD+ Spreadsheet calculations /8/. The audit team has made sure that the reporting included accurate activity data and the description of data sources and coverage.

3.5.2. Emission Factors

According to the information crosschecked from the ERR Section 2.3.2, the RBP/C baseline calculation for Indonesian forest degradation (FREL) uses emission factors (EFs) derived from data from the National Forest Inventory (NFI), a national program initiated by the Ministry of Forestry in 1989.

The analysis uses Tier-2 EFs for deforestation and forest degradation (local activity data, with conversion factors sourced from relevant sources of information of Indonesia), with over 3,900 clusters of sample plots developed from 1989 to 2013.

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The AGB of individual trees in the plots is estimated using an allometric model developed for tropical forests, but the generalized allometric model of Chave et al. (2005) was selected due to its performance in Indonesian tropical forests.

The emission factors for deforestation and forest degradation are calculated using the losses of carbon stock from the deforested forest and the difference in carbon stock between primary and secondary forests. The conversion factor from C to CO₂ is calculated using the 44/12 conversion factor, as recommended by the IPCC. More information on forest carbon stock can be found within Annex 3 of Indonesia's FREL, as has been assessed by AENOR's audit team.

Moreover, within this same Section, Tables 2 and 3 refer to the deforestation and forest degradation emission factors by forest classes and regions, respectively. As such, Table 2 reports information about the different six forest classes, in accordance with the FREL, for seven (7) different regions: Jawa, Kalimantan, Maluku, Bali-Nusa Tenggara, Papua, Sulawesi and Sumatera.

The same principle applies for Table 3, but only for the three primary forest classes: Primary Dryland Forest, Mangrove Forest and Swamp Forest, as there is no forest degradation identified in Secondary Dryland Forest, Mangrove Forest and Secondary Swamp Forest.

The audit team verified that the emission factors for deforestation and forest degradation used were the same of Indonesia's 1st FREL, which were derived from the NFI, and consider only AGB.

Forest Classes	Emission factors of deforestation (tCO ₂ e/ha)						
	JAWA	KALIMANTAN	MALUKU	NUSA BALI	PAPUA	SULAWESI	SUMATERA
Primary Dryland Forest	458.8	464.7	519.9	473.3	412.4	474.7	463.3
Secondary Dryland Forest	294.1	350.7	383.1	280.6	311.2	356.2	314.3
Primary Mangrove Forest	455.2	455.2	455.2	455.2	455.2	455.2	455.2
Secondary Mangrove Forest	347.9	347.9	347.9	347.9	347.9	347.9	347.9
Primary Swamp Forest	332.4	474.0	332.4	332.4	308.4	369.8	380.9
Secondary Swamp Forest	274.8	294.1	274.8	274.8	251.3	221.3	261.1

Forest Classes	Emission factors of forest degradation (tCO ₂ e/ha)						
	JAWA	KALIMANTAN	MALUKU	NUSA BALI	PAPUA	SULAWESI	SUMATERA
Primary Dryland Forest	164.7	114.0	136.8	192.7	101.3	118.5	149.0
Primary Mangrove Forest	107.3	107.3	107.3	107.3	107.3	107.3	107.3
Primary Swamp Forest	57.6	179.9	57.6	57.6	57.1	148.5	119.7

Finally, the audit team has assessed that emission factors were updated for constructing calculation in the second FREL, but to maintain consistency with the RBP/C/RBC Baseline, and complying with the MRV Protocol, the same EFs used in the 3rd BUR and Technical Annex of the 1st FREL have been considered for the ERR /1/.

AENOR's audit team has made sure that reporting has covered all the emission factors, rationale and data sources for estimating them. Proper description of methodological details has been disclosed for allowing the audit team reviewing and assessing that data is built on transparency, accuracy, completeness and consistency. Accessibility and proper identification of types of evidence has allowed the audit team to reconstruct the reported emission reductions.

The audit team has accessed the National Forest Inventory and crosschecked the information with reported data from the first Indonesian FREL. The information has been consistent with the reported data from the third BUR. The audit team has assessed the rational on the use of Chave et al, 2005 for quantifying aboveground biomass (AGB).

3.6. Methodology and Procedures

3.6.1. Forest Cover Change Analysis

In accordance with Section 2.4.1 of the ERR /1/, the annual forest cover change analysis from 1990 to 2019 identified deforestation as the transformation of natural forests into other land cover classes, occurring once at any location. Forest degradation refers to the transformation of primary forests into secondary forests in the subsequent year. Degraded forests were identified by comparing the Land Cover (LC) dataset of T_n (primary forests in the first period) to T_{n+1} (secondary forests in the consecutive period).

More information about the calculation process has been disclosed within Annex 1 of the ERR.

3.6.2. Reference Period

AENOR verified that the reference period considered for the elaboration of the RBP/C baseline was 1st July 2006 to 30th June 2016 (2006/2007 to 2015/2016) as agreed in the Annex: *Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership /3/*.

Moreover, the selection of the RBP/C baseline interval period in Indonesia was based on transparent, accurate, and consistent land-cover data, a reflection of the forest transition, and the length of time that could account for national circumstances, policy dynamics, and carbon emissions under the Indonesia-Norway forest partnership.

3.7. Baseline Construction Results

3.7.1. Emission estimates from Deforestation

Section 2.5.1 of the ERR /1/ provides the average annual historical emissions from deforestation in MtCO_{2e}, from 2006/2007 to 2015/2016, in accordance with the reference period. Conclusions reported refer to an average annual emission from deforestation of 236.9 MtCO_{2e}, providing the baseline definitive value for deforestation.

3.7.2. Emission estimates from Forest Degradation

Section 2.5.2 of the ERR /1/ provides the average annual historical emissions from forest degradation in MtCO_{2e}, from 2006/2007 to 2015/2016, in accordance with the reference period. Conclusions reported refer to an average annual emission from forest degradation of 41 MtCO_{2e}, providing the baseline definitive value for forest degradation.

3.8. Constructed and Projected RBP/C Baseline and results

Thus, the total annual emissions from deforestation and forest degradation amounted 277.9 MtCO_{2e} for the 2006/2007 to 2015/2016 baseline period, as highlighted within Section 2.6 of the ERR /1/.

Below can be found the calculation of the historical and projected annual emissions from deforestation and forest degradation, using historical data of 2006/2007 to 2015/2016. The same information has been reported within the REDD spreadsheet calculations /8/ and has been properly calculated.

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Year	Deforestation	Forest Degradation	Total annual emission	
2006-2007	286,399,781	59,051,617	286,399,781	Historical
2007-2008	286,399,781	59,051,617	286,399,781	
2008-2009	286,399,781	59,051,617	286,399,781	
2009-2010	173,890,857	18,510,520	173,890,857	
2010-2011	173,890,857	18,510,520	173,890,857	
2011-2012	248,936,401	5,805,289	248,936,401	
2012-2013	285,586,539	19,833,885	285,586,539	
2013-2014	116,066,230	9,515,931	116,066,230	
2014-2015	232,677,053	85,190,736	232,677,053	
2015-2016	279,220,589	75,225,065	279,220,589	
2016-2017	236,946,787	40,974,680	277,921,466	Baseline
2017-2018	236,946,787	40,974,680	277,921,466	
2018-2019	236,946,787	40,974,680	277,921,466	
2019-2020	236,946,787	40,974,680	277,921,466	

After deducting baseline emissions from actual annual emissions, emissions reductions from deforestation and forest degradation for periods of 2017/2018 and 2018/2019 are obtained, as reported in table 5 of Section 3 of the ERR /1/. See results below.

RBP/C baseline (tCO ₂ e/year)	
Deforestation	236,946,787
Forest degradation	40,974,680
Total RBP/C baseline	277,921,466

Result Period	RBP/C Baseline (Million tCO ₂)		Actual Emissions (Million tCO ₂)		Result (Million tCO ₂)		Total (million tCO ₂ e)
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation	
2017/2018	236.95	40.97	140.86	60.80	96.09	-19.83	76.26
2018/2019	236.95	40.97	60.45	7.32	176.49	33.65	210.15
Total	473.89	81.95	201.31	68.12	272.58	13.83	286.41

AENOR verified that the methodology used for the quantification of the gross deforestation and gross forest degradation for the periods 2006/2007-2015/2016 and 2017/2018 and 2018/2019 monitoring periods has been consistent with the methodology used for in Indonesia's 1st FREL. This was based in annual cover change analysis, overlaying land cover maps developed by the NFMS, for the period 1990-2019. As mentioned above, only forest areas existing in 1990 and not altered until 2006 were considered.

During the in-country visit, the audit team was able to follow in an exhaustive manner, together with the responsible technicians, the process of preparing the land cover maps. Detailed explanations of each of the steps were made and examples of the process were shown.

Deforestation and forest degradation emissions were calculated using the same methodology used in for Indonesia's 1st FREL, as explained in Annex 1 of the ERR /1/. The deforested or degraded areas (Activity Data or AD) are multiplied by the relevant deforestation or degradation emission factor (EFs) per forest class. In accordance with IPCC literature, the simplest and most conservative method was used to calculate the emissions, which involves the oxidation of 100% of the carbon stock immediately after deforestation/degradation.

The equations used were:

$$GE_{ij} = A_{ij} \times EF_i$$

Where:

- GE_{ij} emissions from deforested or forest degraded area-i at forest change class-j; tCO₂e.
 A_{ij} deforested or forest degradation area-i in forest change class j; ha.
 EF_i emission factor from the loss of carbon stock due to change of forest class-j, owing to deforestation or forest degradation; tCO₂e/ha.

$$GE_t = \sum_{i=1}^N \sum_{j=1}^P GE_{ij}$$

Where:

- GE_t emission from deforestation and forest degradation at period t; tCO₂e.
 GE_{ij} emissions from deforested or forest degraded area-i at forest change class-j; tCO₂e.
 N number of deforested or degraded forest area unit at period t (from t₀ to t₁)
 P number of forest classes, which meet natural forest criterion.

AENOR reviewed the methodology for the quantification of the emissions from deforestation and forest degradation for the period 2006/2009-2015/2016 and 2017/2018 and 2018/2019 monitoring periods and found that it is used is in compliance with the criteria set in Section 1.3. AENOR reproduced all the calculations and obtained the same results, so it is considered that they are clearly and correctly represented in the spreadsheet and in the results report provided.

3.9. National Forest Monitoring System (NFMS)

The National Land Cover Map (NFMS) was established in 1989 by the MoEF in collaboration with the Government of Indonesia (GOI) and FAO. Its primary purpose is forest resources monitoring, using satellite imagery, mainly from Landsat data, to create land cover maps. The NFMS generates land cover maps of Indonesia regularly, covering 23 land cover classes, including cloud cover and no-data. The main data sources for the NFMS in Indonesia are the Landsat 5 Thematic Mapper (TM) and Landsat 7 Enhanced Thematic Mapper Plus (ETM+).

In 2008, the USGS changed its Landsat data policy, making it freely available over the internet. This has increased the availability of data for the NFMS, with approximately 218 scenes of Landsat data used to cover Indonesia within selected year intervals. In 2014, the NFMS established an MoU with the Indonesian National Space Agency (LAPAN) to ensure data sustainability.

The 23 land cover classes in the NFMS are generated based on the physiognomy or appearance of bio-physical covers, which can be visually distinguished using Landsat remote sensing data at a 30-meter spatial resolution. The classification process focuses on the visual appearance of the land cover, rather than probable land uses or covers. The minimum polygon unit size is 6.25 hectares, equivalent to 2.5 cm x 2.5 cm at a zoom screen of 1:50,000.

Figure 5 of the Section 4 of the ERR /1/ represents the general Indonesian Land Cover map workflow.

The National Forest Management System (NFMS) in Indonesia uses ground-truth points and reference data from Landsat satellite image pixels from 1990 to 2019. Quality control and quality assurance (QC/QA) processes are implemented for land-cover data, carbon stock data, and GHG emission calculation processes. QC is carried out at the regional office level at BPKH and the Forest Resources Inventory and Monitoring Directorate of MoEF.

QA is carried out at the plot level (PSP) by the regional office, involving forest biometric experts from the University and the National Research and Innovation Agency Indonesia. For GHG emission calculation, QC is carried out by the GHG Inventory & MRV Directorate and the Forest Resources Inventory and Monitoring Directorate, with at least three people or personnel independently involved.

External experts from MRV specialist practitioners, academics, and the National Research and Innovation Agency Indonesia are involved in QA. Reference points are selected using random sampling techniques and correlated with other data sources, such as SPOT 6 and 7 satellite imagery from 2013 to 2016.

The NFMS portal integrates internet and forest resource information systems to promote good forest governance through transparency. It maintains up-to-date, complete information and encourages public participation by providing a platform for access and benefit from shared information. The system assesses error matrix and user and producer accuracy.

AENOR verified that the personnel responsible for deforestation and forest degradation monitoring activities are fully trained and that the quality control and quality assurance (QA/QC) procedures to identify, review and manage the inconsistencies found are comprehensive and properly implemented.

The audit team cross-checked the land cover data contained in the spreadsheet *Pivot DB GIS_DD_Norway 2006-2019_20230723_final /9/* (data retrieved from the land cover maps for the years 1990, 1996, 2000, 2003, 2006, 2009, 2011-2019) with the activity data (deforested and degraded area) reported in the *ERR /1/* and used in the *REDD+ Spreadsheet Calculation /8/*. No discrepancy was found.

AENOR's audit team confirms that the report considers guidance from UNFCCC Decisions on REDD+ and MRV decisions, on National Forest Monitoring Systems and includes a clear description of the NFMS, how it builds on existing systems and a description of the respective roles and responsibilities of institutions included in the national forest monitoring system. Moreover, AENOR's audit team has reviewed that there is a broad QA/QC activities description.

The audit team, during the site visit, requested relevant sources of evidence that demonstrate the applicability of QA/QC activities. As such, several documents were shown and discussed. As soon as the site visit finished, those SOPs were shared with the audit team. A sample of them are shown below:

1. akurasi-data-penutupan-lahan-nasional-tahun-1990-2016.pdf /18/
2. Definition_Method_Landcover.pdf /18/
3. Juknis Penafsiran Update Data PL 2020 Final.pdf /19/
4. Land Cover Process.pdf /20/
5. petunjuk-teknis-penafsiran-citra-satelit-resolusi-sedang.pdf /21/
6. petunjuk-teknis- pengecekan-lapangan-hasil-penafsiran-csrs.pdf /22/
7. potensi-sdh-indonesia-dari-plot-ihn.pdf /23/

These same documents referred to the (1) Accuracy National Land Cover Data, (2) the Definition and Method of Land Cover, (3) and (5) Technical Instructions, interpretation of medium resolution satellite images to update national land cover data, (4) Land Cover Data, (6) Technical Instructions, field check of interpretation results medium resolution satellite imagery to produce land cover data and (7) Potential of Indonesian Forest Resources from National Forest Inventory Plots.

3.10. Uncertainty

3.10.1. Uncertainty analysis

Uncertainty (U) was determined in accordance with the IPCC 2006 Guidelines, specifically outlined in volume 1, Chapter 3. To calculate the combined uncertainty (U_j) for activity j , which takes into account the uncertainties from Activity Data (AD) and the emission factor (EF), Equation 1 is used:

$$U_j = \sqrt{EA_j^2 + EE_j^2}$$

Uncertainty related to Activity Data (AD)

Uncertainties related to deforestation and forest degradation activity data were obtained from the overall accuracy assessment of the land cover map.

The proportion of accuracy contribution (C_j) for activity j was calculated using Equation 2, which involves the uncertainty (U_j) associated with activity j , the total emissions that occurred in the corresponding activities (E_j), and the total emissions from the corresponding year (E):

$$C_j = (E_j * U_j)^2 / E$$

The total uncertainty of each year (TU) was obtained by taking the square root of the sum of the proportion of accuracy contribution (C_j) for all activities using Equation 3:

$$TU = \sqrt{\sum C_j}$$

The uncertainty for the parameter “activity data” (land cover) was improved significantly 4.7% - 8.6% as compared to the previous calculation of 10%-12%. The accuracy assessment of land cover maps was performed based on randomly distributed reference points and the reference data for validating the land cover maps. The reference data sources used in this analysis were satellite images with a higher resolution than the satellite imagery used as a data source for land cover mapping, or better temporal resolution with multiple acquisitions. The total number of reference points used in the analysis for the period 1990-2016 were 10,000 sample points, randomly and proportionally distributed to all islands in Indonesia. Afterward, an accuracy assessment conduct yearly and reported in the recalculation of Indonesia's Land Cover Data Report /4/, as assessed by AENOR's audit team.

Uncertainty related to Emission Factors (EF)

The uncertainties of emission factor used in estimating carbon emissions were generated based on the standard error of carbon stock values from different forest types or classes in each major island or group of islands in Indonesia.

The carbon stock values were estimated from NFI plots that have been established in seven major islands/groups of islands in the country.

The uncertainty for the parameter “emission factor” varies between 17.6% to 24.9% depending on the specific island/group of islands and land cover classes considered. The uncertainty of emission factors related to deforestation and forest degradation is determined from the sampling errors of the NFI from each forest cover class within each island/group of islands.

Over the period from 2006 to 2017, the uncertainties in the emissions estimation showed improvement, declining from 18.5% in 2006 to 16.5% in 2017-2018. This improvement can be attributed to enhancements in the accuracy of activity data used in the estimation process. The uncertainties stemming from the activity data are often a result of potential misinterpretation of satellite imageries by the operators responsible for delineating the forest and land cover maps. However, efforts have been made to minimize these errors through various measures, including regular training and coordination, as well as the implementation of a robust QA/QC process encompassing specific SOPs for data collection, processing, and mapping standardization.

The uncertainties from the emission factors remained constant over time because all available NFI plot data from 1990 to 2014 were used for estimating carbon stocks for all periods. The uncertainty from emission factors was generated from the sampling errors of the NFI data. It's important to note that the uncertainty analysis for the emission factors did not incorporate the errors associated with the allometric equation used for converting NFI measurement data into carbon stock values.

AENOR reviewed the evaluation of the accuracy assessment of the land cover maps for the years 1990, 1996, 2000, 2003, 2006, 2009, 2011-2019

AENOR's audit team has reviewed relevant evidence regarding the QA/QC procedures applied by Indonesia, as can be seen within Section 3.9 of this verification report.

Thus, AENOR's confirms that the ERR includes a description of methodologies and data references used to analyse the uncertainty of the estimates. The audit team confirms the efforts made by Indonesia to comply with IPCC good practice requirements, regarding applying conservative approaches.

Moreover, AENOR confirms that the ERR provides accurate, precise and confidence levels for activity data and emission factors that are reasonable, and discuss key uncertainties, their sources and impacts.

3.11. Emissions from peat decomposition and peat fires

Annex 2 and Annex 3 of the ERR /1/ includes estimation of calculation of emissions from peat decomposition and peat fires, as the first one was reported and explained in the technical annex of the Biennial Update Report (BUR) until 2020, and the second one was not included in Indonesia's first FREL calculation. However, it is relevant to highlight that, in accordance with the Annex of the MRV Protocol /3/:

"Emissions from decomposition of deforested peatlands, and emissions from peat fires, will be **measured and reported** on using the best available methods and data, and the goal is to **phase also these performance indicators into the bilateral RBP/C** model over time.

Improvements to data and methodology, as well as the inclusion of additional activities, pools and gases (e.g., emissions from peat decomposition of peatlands outside of forests), are encouraged over time provided that these improve completeness, comprehensiveness, and accuracy. Such **improvements should be specified in an MRV improvement plan** that prepares for RBP/C baseline updates in line with point 2.6 of the MRV protocol."

Moreover, the same Annex of the MRV Protocol /3/ states that: "Peat decomposition and emissions from peat fire shall be measured and reported, but **not included as a performance indicator in the first reporting period under the partnership**. Plans shall be made to include peat decomposition and peat fire emissions in the RBP/C model over time. Even though peat fire emissions are not part of the RBP/C model from the start, a proxy approach for measuring reduced emissions from peat fires will be piloted and reported on".

As such, as stated alongside this verification report, the only two performance indicators taking into account by the ERR /1/ are emissions from deforestation and forest degradation, but Indonesia, in compliance with the Annex of the MRV Protocol /3/, decided to estimate and disclose both emissions from peat decomposition and peat fires.

Following the reported information, within Annex 2 and Annex 3 emissions from decomposition of deforested peatlands have been measured, explained and reported, using the best available methods and data, as has been reviewed by AENOR's audit team in the Peat spreadsheet calculation /11/. During the on-site technical meetings, different topics were conversed, maps were shown, and statistical treatment was broadly discussed.

All the procedures have been reported and crosschecked by the audit team. Relevant information, such as Land Cover Transition Matrix of Peatlands in 2012-2013, Matrix of CO₂ EFs from Peat Decomposition, estimates of burnt area from peat and mineral soils between 2006 and 2020, Procedures for estimating the burnt peat area have been included as an example, among other relevant items.

To compute historical emissions from peat decomposition, the ERR /1/ states that peat decomposition emissions are a result of inherited emissions from degraded peatlands, which will not decrease unless they are converted back into forests. The first FREL document used regression analysis to develop linear equations for annual peat emissions. However, multi-year land cover maps were not available in certain years, so annual emissions were generated from average values of mapping periods.

The reference emission level for 2017-2020 was constructed using linear projection, with a coefficient of determination (R^2) of 0.97, indicating a strong correlation. The reference period for this analysis was from 2006/2007 to 2015/2016. The conversion of degraded peatlands back into forests is unlikely to occur during the assessment period. Conclusions of emissions from Peat Decomposition can be found below:

Year	Peat Decomposition	Actual Emission	Result
2007	200,067,598		
2008	200,067,598		
2009	200,067,598		
2010	215,742,080		
2011	215,742,080		
2012	226,109,789		
2013	234,152,020		
2014	240,799,350		
2015	248,530,578		
2016	255,413,778		
2017	260,556,280	256,741,233	3,815,047
2018	267,263,024	270,321,401	-3,058,377
2019	273,969,768	280,910,820	-6,941,052
2020	280,676,512		

To conclude about peat decomposition estimates:

- In 2017/2018, actual peat decomposition emissions were measured at 270,321,401 tCO₂e. Based on historical emissions in the reference emission level for the period 2006-2016, the 2017/2018 emissions were projected to be 267,263,024 tCO₂e. As such, the emission reduction for this period amounted to -3,058,377 tCO₂e.
- In 2018/2019, actual peat decomposition emissions were measured at 280,910,820 tCO₂e. Based on historical emissions in the reference emission level for the period 2006-2016, the 2018/2019 emissions were projected to be 273,969,768 tCO₂e. As such, the emission reduction for this period amounted to -6,941,052 tCO₂e.

Regarding historical emissions from peat fires, they were calculated for the period 2006-2016. Significant variation was found in the annual estimated burnt peat areas from 2006 to 2016. The highest rate of burnt peatland occurred in 2006, amounting to 1,140,438 ha, while the lowest rate was in 2008, with only 71,321 ha of burnt peat areas. Using this historical data set, the average value of burnt peat areas used as activity data was determined to be 374,948 ha.

As such, the results of the calculation of emissions from burnt peat areas have been presented in Figure Annex 3.4 of the ERR /1/. The peat fire average emissions from extreme years from 2006 to 2016 were 711,277,540 tCO₂e/y, whereas for normal years they were 137,424,802 tCO₂e/y. Thus, in 2018, emissions from peat fires decreased significantly, primarily due to stringent and extensive law enforcement measures and the continued moratorium (termination) on granting new licenses on primary forest and peatland. Fire incidents in peat areas that year impacted an area of 132,051 ha. In 2019, the number of fire incidents increased substantially, driven by factors including the El Niño extreme weather phenomenon, impacting an area of 501,499 ha.

As such, the ER from peat fires in 2018 and 2019 amounted to 15,534,497 tCO₂e and 248,364,564 tCO₂e respectively.

3.12. Double accounting

1. Section 2.8 of the MRV Protocol /2/ states that:
 - A national system of accounting will be in place, to provide transparency and certainty that no double counting to emission reductions delivered under other agreements or partnerships occurs.
 - Rewarded emissions reductions should be registered in the Lima Info Hub to ensure transparency and certainty that no double counting to emission reductions delivered under other agreements or partnerships occurs.
2. Moreover, Section 3.2 of the MRV Protocol /2/ states that:
 - To ensure consistent, complete, transparent and accurate reporting of emission reductions resulting from reduced deforestation and other performance indicators, as agreed, in Indonesia.
3. Regarding REDD+ decisions, double counting has been mentioned on several occasions during COP meetings, including Cancun COP16 and Durban COP17. Closer to this moment, Article 6.4 of the Paris Agreement (COP26) provides guidance on how to ensure environmental integrity, and avoidance of double counting, considering also corresponding adjustment.
4. Finally, it is relevant to consider the importance of using best practice available for proceeding with emission reduction claims. As such, double accounting is a very sensitive topic that has raised importance as one of the most important aspects that provides transparency and accuracy.

Thus, to ensure consistent, complete, transparent, and accurate reporting of emission reductions resulting from reduced deforestation, Indonesia takes into account emission reductions that have been claimed at the same time as this reporting period (2017/2018 and 2018/2019). Based on the search and analysis that has been carried out (see Annex 5 of the ERR for more information about jurisdictional and voluntary carbon projects with potential of double claim with ERR), there are some indications of overlapping calculation areas in the ERR with several project proponents who have claimed emission reductions in the voluntary scheme. Those potential double-claimed areas in the period 2017/2018 are 248,081 ha and 98,281 ha for the period 2018/2019.

The scope of those voluntary schemes varies among projects, in terms of carbon pools, gases, activity, and methodologies. Concerning those variations, the Emission Reductions on those voluntary schemes becomes high, particularly in the peat soil calculation. Activities in the voluntary schemes generally were created to avoid deforestation and forest degradation, not as in the ERR calculation. This ERR only measures deforestation and forest degradation activities with the carbon pool only from AGB.

Based on that situation, and considering the conservative principle, Indonesia has used the proportion of the wide area covered by the voluntary projects with the area measured for the ERR accounting. This wide proportional approach is conservative due to considering the biggest proportion of emission reduction that could be gained inside the project area with the same size as the ERR calculation. The proportion of potentially double-claimed area is obtained from the area that has made ER claims compared to the total area covered in the ER calculation, which is the national natural forest area in 2006 (the beginning of the reference period). Next, the wide proportion is calculated by multiplying the proportion of the area that has the potential to double claim with Total ER in ERR.

Based on the explanation above, double claim indications for the 2017/2018 period amounted to 736,641 tCO₂-e and in the 2018/2019 period amounted to 291,831 tCO₂-e. As for the jurisdictional REDD+ scheme, there were no overlapping claims. Considering the possibility of double claims, the total ER calculation results will be 75,522,287 tCO₂e for the 2017/2018 period and 209,856,132

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tCO₂e for the 2017/2018 period, total observation period (2017/2018 and 2018/2019) will be amount to 285,378,419 tCO₂-e.

Area Overlap (ha)	2017/2018	248.081
	2018/2019	98.281
Area ERR (All-Natural Forest 2006) (ha)		96.454.143
Emission Reduction (tCO ₂ e)	2017/2018	76.258.928
	2018/2019	210.147.963
Total ER (tCO ₂ e)		286.406.892
Overlap by area (%)	2017/2018	0,26%
	2018/2019	0,10%
Potential of Doble Claim (tCO ₂ e)	2017/2018	736.641
	2018/2019	291.831
Total ER minus Double Claim (tCO ₂ e)	2017/2018	75.522.287
	2018/2019	209.856.132
Total (tCO ₂ e)		285.378.419

The emission reduction results later deducted 35% (more information in the following Section of this report, 3.13).

All these numbers have been assessed. Conservative procedures applied by Indonesia are accepted by the audit team, as per the complexities of separating voluntary ER claimed from peat and SOC with respect to only AGB, in the same applicable circumstances that the ones referred in the ERR /1/.

3.13. Results-Based Payment/Contribution

According to Section 8 of the ERR /1/, RBP/C baseline for this report was established using the annual historical average level of each of the two performance indicators: emissions from deforestation and forest degradation. The baseline was developed based on data from the reference period covering the years 2006/2007 to 2015/2016 and remains valid up to the year 2019/2020.

Based on the MRV Protocol of Norway and Indonesia Partnership /2/, as assessed by the audit team, both Parties have agreed terms to treat statistical uncertainty, reversal risk, and possibly other risk factors inclusion of Indonesia's ambition. This treatment term later simplifies called set-asides/deductions as has been stated in the Annex of MRV Protocol /3/ that was agreed by both parties Indonesia – Norway. From the REDD spreadsheet calculations /8/, the following set-asides/deductions are used to determine the maximum number of emission reductions Indonesia can be rewarded for by Norway. The term of set-asides/deductions consist of the following details:

- From the reported emission reduction results, set-aside/deduction of 20% to reflect the risk of uncertainty in estimates;
- In terms of deduction to reflect the risk of leakage, Indonesia – Norway agreed to not include this deduction due to the baseline and performance of REDD+ in the Indonesia – Norway partnership being counted in the national-level accounting. Therefore, 0% deduction to reflect the risk of leakage is set. The 0% deduction from leakage was also consistently used in

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Indonesia's national FREL and REDD+ Performance in the 2nd BUR (Biennial Update Report) that was submitted to UNFCCC as Indonesia's approach for REDD+ implementation in the national level;

- c. In terms of reflecting Indonesia's ambition to reduce national GHG emissions, Indonesia and Norway agreed to deduct 15%.

AENOR's audit team can confirm that the three items described above have been obtained through the MRV Protocol Annex /3/.

As systems are developed over time, and policies and strategies are put in place to reduce uncertainty risk, risk of leakage, and reflection of Indonesia's ambition, the set-aside factor can be reduced. Based on the first reporting period under the Indonesia – Norway partnership, the total set aside factor of 35% will be applied.

After applying double claiming deductions (see Section 3.12 above), double claim indications for the 2017/2018 period amounted to 736,641 tCO₂-e and in the 2018/2019 period amounted to 291,831 tCO₂-e. The total ER calculation results will be 75,522,287 tCO₂e for the 2017/2018 period and 209,856,132 tCO₂e for the 2018/2019 period, total observation period (2017/2018 and 2018/2019) will be amount to 285,378,419 tCO₂-e.

The emission reduction results later deducted 35%. Therefore, the total net emission reductions that could potentially be awarded would be 185,495,972 tCO₂-e consisting of net emission reductions 49,089,487 tCO₂-e in period 2017/2018 and 136,406,486 tCO₂-e in period 2018/2019.

Result Period	RBP/C Baseline (tCO ₂)		Actual Emissions (tCO ₂)		Result (tCO ₂)		Total (tCO ₂ e)	Risk of Double Claim (tCO ₂ e)	Clean of Double claim (tCO ₂ e)	Set Aside 35 % (tCO ₂ e)	Potential of RBP/C (tCO ₂ e)
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation					
2017/2018	236.946.787	40.974.680	140.859.913	60.802.625	96.086.874	-19.827.946	76.258.928	736.641	75.522.287	26.432.801	49.089.487
2018/2019	236.946.787	40.974.680	60.452.760	7.320.743	176.494.027	33.653.936	210.147.963	291.831	209.856.132	73.449.646	136.406.486
Total	473.893.574	81.949.359	201.312.673	68.123.369	272.580.901	13.825.991	286.406.892	1.028.473	285.378.419	99.882.447	185.495.972

The audit team reproduced the calculations to achieve the same results and deems they are clearly and correctly depicted in the REDD Spreadsheet Calculations /8/ and the ERR /1/. AENOR considers that the formula is used in compliance with the criteria defined in Section 1.3.

Therefore, AENOR deems that the calculated emission reduction, after applying risk of double claiming and set asides, consisting of net emission reductions 49,089,487 tCO₂-e in period 2017/2018 and 136,406,486 tCO₂-e in period 2018/2019, are correct.

AENOR verified the parameters used in the calculation and references to documents where they are used or explained, through the review, reproduction and cross-checking of the evidence provided by the MoEF. AENOR checked that the values of these parameters are appropriate and are used correctly in the equations.

AENOR found no inconsistencies between the information reported in the ERR /1/ and the REDD spreadsheet calculations /8/.

After a thorough and comprehensive review and replication of calculations, AENOR considers that the monitored parameters available are correct, credible and consistent. Therefore, AENOR deems that the reported results are credible, consistent and accurate.

4. VERIFICATION CONCLUSION

AENOR has verified that the estimation of the emissions from gross deforestation and from gross forest degradation at national level for the period 2006/2007-2015/2016 and 2017/2018 and 2018/2019 monitoring periods and the emission reduction from reduced deforestation and reduced forest degradation for the monitoring periods 2017/2018 and 2018/2019 have been carried out in compliance with the criteria set in Section 1.3.

Therefore, AENOR is able to confirm that the RBP/C baseline and 2017/2018 and 2018/2019 emission reduction have been determined in a consistent, transparent and reproducible way and that are correct, credible and free from material errors, omissions and/or false statements.

The verification process was carried out in the following phases: i) a documentary review of all the material provided by the MoEF; ii) in-country interviews with the team responsible for monitoring and reporting; iii) reproduction of the calculations; iv) the resolution of pending issues and v) the issuance of the report and final verification opinion. In the course of the verification process, clarifications were found and properly closed.

AENOR is able to issue a positive verification opinion for the **RBP/C baseline of 277,921,466 tCO₂e/year** (236,946,787 tCO₂e/year from deforestation and 40,974,680 tCO₂e/year from forest degradation) and for the **2017/2018 and 2018/2019 monitoring periods emission reductions of 75,522,287 tCO₂e and 209,856,132 tCO₂e**, after applying the discount for risk of double claiming, as reported in the *Emission Reduction Report for the Indonesia–Norway Partnership* /1/.

In accordance with the *MRV protocol for the Indonesia-Norway partnership on climate, forests and peat* /2/ and the *Annex: Detailed steps for calculating results based payments under the Indonesia-Norway forest partnership* /3/ and the application a 35% set-asides/deductions, AENOR is able to issue a positive verification opinion with a reasonable level of assurance for the Indonesia proposed net results of **49,089,487 tCO₂e for the 2017/2018 monitoring period, and 136,406,486 tCO₂e for the 2018/2019 monitoring period, for a total of 185,495,972 tCO₂e.**

Madrid, November 30th, 2023.



Daniel Bermejo Vesga
Team Leader 1



Jose Luis Fuentes
Project Manager

ANNEXES

Annex 1: Recommendations for improvements in MRV system

During the verification process several improvement opportunities were identified for Indonesia-Norway MRV system by the audit team. These improvement options are to be considered additional to those stated in the Plan of the improvement of the *Emission Reduction Report for the Indonesia-Norway Partnership /1/*. The recommendations are listed according to the suggested implementation priority in opinion of the audit team:

1. Enforce the registration of both public and private REDD+ initiatives in the National Registry System on Climate Change and integrate the double-counting preventive measures into the MRV system. Although significant progresses have been made within the National Registry System as reported in Section 7.2 of the ERR /1/, AENOR's audit team raised concerns alongside the verification process of possible double accounting that was not identified preliminary by the MoEF, and corrective measures were implemented to properly it considered. Would it be appropriate to have a direct access to projects that have issued VERs, VCU, carbon credits and/or others, within Indonesia in the same and different monitoring periods that applies to this RBP/C.
2. Include the carbon pools of below-ground biomass (BGB) and dead organic matter (dead wood and litter) in deforestation and forest degradation emissions calculation on future RBP/C. As part of the release of Indonesian 2nd FREL, deforestation, forest degradation and enhancement of forest carbon stock, decomposition of peat, fires (peat and minerals) in areas experiencing deforestation or forest degradation, and emissions from conversion of mangrove forests into cultivated areas have been considered. Moreover, new carbon pools are included, such as AGB, BGB, deadwood, litter, and soils. This information has been already gathered.
3. Consider including peat decomposition and peat fire emission estimates in future RBP/C, as they have been already reported in this RBP/C ERR in accordance with the MRV Protocol, even though results might provide in a case-by-case basis negative ER.
4. Compile and translate to English the procedures followed for the elaboration of the land cover maps, land forest cover change analysis and QA/QC. Providing public access in English to the procedures and methodologies followed would facilitate future verification process and would improve transparency towards third parties.
5. Provide a clear procedure in English to access all relevant items necessary to reproduce procedures and calculations, so that all stakeholders interested can access public data, not only third parties involved in audit processes. Public information means accessibility must be granted in a reasonable way.
6. In accordance with the Annex of the MRV Protocol /3/, improvements as those described in the "Activities, pools and gases included in the RBP/C baseline" Section should be specified in a MRV improvement plan that prepares for RBP/C baseline updates in line with point 2.6 of the MRV Protocol.

Annex 2: Analysis of the Plan of improvement

The auditor team has analysed the Plan of improvement for the Indonesia-Norway partnership MRV, included in the *Emission Reduction Report for the Indonesia-Norway Partnership /1/*.

Several relevant topics have been discussed, such as the following:

1. Progress made by producing the third BUR, including remote sensing technology to generate coverage for the total mainland area and improving EF by using new existing research.
2. The National Registry System has been developed to provide good carbon governance and a web-based emission calculation monitoring system is under construction. This item is relevant for the audit team, as it is related to one of the recommendations (number 1) regarding double accountability.
3. A legal framework for carbon-related activities and schemes in Indonesia is under the process, with several regulations related to carbon markets, providing specific procedures and guidelines for carrying out carbon-related initiatives and policies. The objective of MoEF is making sure Indonesia complies with FOLU Net Sink 2030 targets, reviewed by AENOR's audit team for understanding country-specific objectives.

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Annex 3: List of evidence provided

No.	Evidence
1	4th_Revised ERR Indonesia-Norway_as per 23 Nov 23_19_24_Clean.docx
2	MRV protocol for the Indonesia-Norway partnership on climate, forests and peat
3	Annex: Detailed steps for calculating results-based payments under the Indonesia-Norway forest partnership
4	National Forest Reference Emission Level for Deforestation and Forest Degradation In the Context of Decision 1/CP.16 para 70 UNFCCC
5	Report on the technical assessment of the proposed forest reference emission level of Indonesia submitted in 2016
6	Indonesia Third Biennial Update Report
7	Technical report on the technical analysis of the technical annex to the third biennial update report of Indonesia submitted in accordance with decision 14/CP.19, paragraph 7, in December 2021
8	Spreadsheet_REDD Norway_2006-2019_Final_Update Risk of Double Claim_as per 23 Nov 23_18_37.xlsx
9	Pivot DB GIS_DD_Norway 2006-2019_20230723_final.xlsx
11	DB_Fire_Peat_Norway_II.xlsx
12	Land cover maps at the NFMS webGIS (online)
13	Indonesia Report on REDD+ Performance
14	Indonesia National Registry System on Climate Change
15	National Forest Monitoring System (NFMS) for Land Based Sector
16	Margono, B.A., et al. (2016). Indonesia's Forest Resource Monitoring
17	akurasi-data-penutupan-lahan-nasional-tahun-1990-2016.pdf
18	Definition_Method_Landcover.pdf
19	Juknis Penafsiran Update Data PL 2020 Final.pdf
20	Land Cover Process.pdf
21	petunjuk-teknis-penafsiran-citra-satelit-resolusi-sedang.pdf
22	petunjuk-teknis- pengecekan-lapangan-hasil-penafsiran-csrs.pdf
23	potensi-sdh-indonesia-dari-plot-ihn.pdf

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Annex 4: Reference documentation

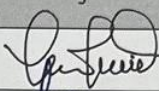
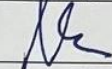
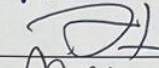
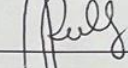
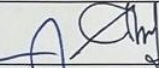
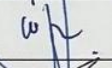
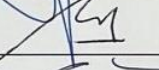

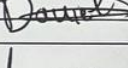
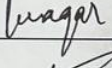
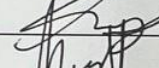
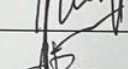

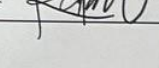
No.	Document
1	ISO 14064-3:2019 Part 3: Specification with guidance for the verification and validation of greenhouse gas statements (2019)
2	ISO 14065:2020 General principles and requirements for organizations that carry out the validation and verification of environmental information
3	ISO 17029 Conformity assessment — General principles and requirements for validation and verification bodies
4	2006 IPCC Guidelines for National Greenhouse Gas Inventories (2006)
5	2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands (2013)
6	2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories (2006)
7	IPCC Good Practice Guidance and Uncertainty Management in National GHG Inventories (2000)
8	GFOI 2016 Methods and Guidance Document (2013 and 2016) and supplementary modules
9	REDD decisions and MRV decisions under the UNFCCC, including the Enhanced Transparency Framework of the Paris Agreement
10	GOFC-GOLD REDD Source Book (2015)
11	GFOI Integrating remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative (2014)
12	The Technical Assessment of the FREL presented to the UNFCCC
13	The reference level submitted to the UNFCCC, including the historical average deforestation level and the results-based payment/contribution baseline of the Indonesia-Norway Bilateral Agreement
14	The Third Biennial Updated Report under the UNFCCC (2021)
15	MRV protocol as agreed under the MoU and Contribution Agreement between Indonesia and Norway and reporting requirements and agreed format for reporting (see ToR), as agreed in the MRV-protocol and its annex.

VERIFICATION REPORT

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Annex 5: Attendance lists

**Rapat verifikasi independen Emission Reduction Report (ERR) Indonesia - Norwegia
Tanggal 4 Oktober 2023**

No.	NAMA	INSTANSI	NO. TELP / HP	TANDATANGAN
1	2	3	4	5
1	Belinda AM	IPSDH		
2	Vanda Muti			
3	DANI WIBOWO	IGRUMV		
4	Rully Dhora C	IGRK MPV	081340844846	
5				
6	Anna Tosiani	IPIDH	0817460964	
7	Nanyu Marjaka	MSLN		
8	Stichin Manan	Konsultan Individu	081367777638	
9	Wahyu Cahya A	BPM	081349055835	
10	Daniel Bermejo Vesga	AENOR Lead Auditor	+34 652987523	
11	Wagar Ahmed	AENOR Regional Expert	+92-333-2175881	
12	Hendra Permana	Biro KLN	082110077450	
13	RWA ROVANI	IPSDH	085759577339	
14	Dirra Kurniawati	IGRE MPV	081382767180	
15	LOLITA RATNASARI	IGRK - MPV	085640528500	
16				
17				
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19				
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Annex 6: Findings

Clarifications (CLs)

CL ID	01	Date: 24/10/2023
CL description		
<p>Alongside the ERR, references to periods are made in the form of "2006/2007", "2015/2016", "2016/2017", and other non-clarifying ways of reporting monitoring periods.</p> <p>The ERR shall be updated to provide clear references to baseline periods, monitoring periods and others, following best international practices, clearly referring the start date and end date of each of the self-referred periods.</p>		
Project proponent's response		Date: 06/11/2023
<p>Thank you for the suggestion, the baseline period used by ERR for the activities data start date from 2006/2007 (1 July 2006 - 30 June 2007), with the end date is on 2015/2016 (1 July 2015 - 30 June 2016)</p> <p>While the monitoring period start from 2016/2017 (1 Juli 2016 - 30 Juni 2017) until 2019/2020 (1 Juli 2019 - 30 Juni 2020)</p> <p>Whilst those reference period used in this ERR mentioned above, the reporting period for mitigation achievement is use the 2017/2018 (1 Juli 2017 - 30 Juni 2018) and 2018/2019 (1 Juli 2018 - 30 Juni 2019) period.</p> <p>Meanwhile, capaian 2016/2017 telah laporkan pada 1st ERR (previous ERR)</p> <p>These periods refer to the data source of National Forest Monitoring System → dokumen NFMS dari IPSDH</p>		
Documentation provided by the project proponent		
<p>We add the information needed in to Chapter 2.4.2 as follows:</p> <p>RBP/C baseline was determined using data from the reference period spanning from 2006/2007 to 2015/2016. The data source to produce the annual land cover map (e.g period 2015/2016), is Landsat imagery with acquisition date from June to July one year after. Therefore, the start date of RBP/C baseline period is from 2006/2007 (1 July 2006 - 30 June 2007), with the end date is on 2015/2016 (1 July 2015 - 30 June 2016).</p> <p>The period selection has considered the following aspects: (1) availability of land-cover data that is transparent, accurate, complete and consistent, (2) reflection of the general condition of forest transition in Indonesia, and (3) the length of time that could reflect the national circumstances, policy dynamics and impacts (biophysical, social, economic, political and spatial planning), as well as associated carbon emission. This RBP/C baseline interval period is arrange following the MRV protocol Annex : Detailed steps for calculating results based payments under the Indonesia-Norway forest partnership.</p> <p>All of the documentation used is available on this link : https://nfms.menlhk.go.id/download</p>		
VVB's evaluation		Date: 16/11/2023

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The audit team has reviewed the clarifications provided within the findings sheet, and the updates to Section 2.4.2. This way now is easier to understand the start date and end date of the reference period, and the start and end dates of each one of the verifications periods.
Thus, CL 01 is closed.

CL ID	02	Date: 24/10/2023
CL description		
Annex 1, page 23 out of 40, states that "LUTM is derived (...), covering two consecutive years (e.g., 2012 - 2013). An example of the LUTM transition matrix for the period 2012-2013 (...)", whereas the information reported in Annex 1.4 and 1.5, and in the DB_Norway_II_LUTM spreadsheet refers to deforestation and/or degradation periods of 2017-2018 in East Kalimantan Region. Updates within the ERR are required.		
Project proponent's response		Date: 06/11/2023
Thank you for your thoroughness, the mistake in the year written will be corrected in the ERR.		
Documentation provided by the project proponent		
We update the mistakes in the description of Annex 1 as follows: The estimation of emissions from deforestation and forest degradation, specifically from the loss of above-ground biomass, over a two-year period relies on the use of a land use transition matrix (LUTM). The LUTM is derived from a spatial analysis of a series of land cover maps, typically covering two consecutive years (e.g. 2017 - 2018). An example of the LUTM transition matrix for the period 2017 - 2018 is provided in Table Annex 1.4.		
VVB's evaluation		Date: 16/11/2023
Corrections have been provided within the Emission Reduction Report (ERR). Thus, CL02 is closed.		

CL ID	03	Date: 24/10/2023
CL description		
Section 3, Table 5 of the ERR, the information reported does not clearly explain the process for directly computing the Total Emission Reductions both from deforestation and forest degradation.		

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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Some steps are lacking within this table based on Spreadsheet_REDD Performance_Norway_2006-2019_20230723_Final.

Provide further clarifying information.

Project proponent's response	Date: 06/11/2023
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We appreciate for this finding, to clarify the readings of the result table, then we will improve the information regarding the process for computing the Total Emission Reductions both from deforestation and forest degradation in the Table 5 of ERR.

Documentation provided by the project proponent

3. Results

Emission reductions are calculated by deducting baseline emissions from actual annual emissions. Point 2.4.3 on the RBP/C Baseline mentions that the baselines for deforestation and forest degradation are 236,946,787 tCO₂e.yr⁻¹ and 40,974,680 tCO₂e.yr⁻¹, respectively.

Table 5 Emissions reductions from deforestation and forest degradation for periods of 2017/2018 and 2018/2019

Result Period	RBP/C Baseline (Million tCO ₂)		Actual Emissions (Million tCO ₂)		Result (Million tCO ₂)		Total (tCO ₂ e)
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation	
2017/2018	236.95	40.97	140.86	60.80	96.09	-19.83	76.26
2018/2019	236.95	40.97	60.45	7.32	176.49	33.65	210.15
Total	473.89	81.95	201.31	68.12	272.58	13.83	286.41

VVB's evaluation	Date: 16/11/2023
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Table 5 of the Emission Reduction Report has been properly updated, and now clearly refers for both verification periods (2017/2018 and 2018/2019) the baseline emissions, actual emissions, the result and the total for Deforestation and Forest Degradation.

Thus, CL03 is closed.

CL ID	04	Date: 24/10/2023
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CL description

According to the MRV Protocol, Section 4, reporting shall cover emissions factors, rationale and data sources for estimation of emission factors.

However, not enough information has been included within Section 2.3.2 of the ERR to comply with this requirement.

Further information is required.

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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Project proponent's response	Date: 06/11/2023
<p>Thank you for this note, regarding to complete the information, we will update the ERR with more information into section 2.3.2 regarding the rationale and data sources for estimation emission factors</p>	
Documentation provided by the project proponent	
<p>We elaborate the information needed in to Chapter 2.3.2 as follows:</p> <p>The emission factors for deforestation and forest degradation, mainly Tier-2 EFs were used in the analysis. From 1989 until 2013, more than 3,900 clusters of sample plots have been developed which are distributed on 20x20 km, 10x10 km and 5x5 km grids across the country (Ditjen Planologi Kehutanan, 2014). Each cluster consists of a permanent sample plot (PSP) with a size of 1ha surrounded by 8 temporary sample plots (TSP). A total of 4,450 measurements of PSPs from NFI (1990-2013) across the country were available for data processing and analysis. Additional forest research data especially for mangrove forests in Indonesia had to be used since the amount of PSP records for this forest type was statistically not sufficient.</p> <p>The AGB of individual trees in the plots were estimated using allometric model developed for tropical forest (Chave et al., 2005), which used diameter at breast height (DBH) and wood density (WD) of the species as the key parameters. However, the availability of local allometric models specific for six forest types was not given for all seven main islands of Indonesia so the generalized allometric model of Chave et al. (2005) was selected instead. This model has been found to perform equally well as local models in the Indonesian tropical forests (Rutishauser et al., 2013; Manuri et al., 2014). Further information regarding forest carbon stock can be found in the Annex 31.</p> <p>The emission factor for deforestation was calculated by using the losses of the carbon stock from the deforested forest, while the emission factor for the forest degradation was calculated by using the difference in carbon stock between primary forest and secondary forest. The conversion factor from C to CO₂ by using the 44/12. Detailed emission factors used for deforestation and forest degradation can be found in Table 2 and Table 3, respectively.</p>	
VVB's evaluation	Date: 16/11/2023
<p>New information has been included regarding about EF, sampling plots (both permanent and temporal) used from the Indonesian NFI, measurements, allometric equations and differentiations from deforestation and forest degradation, among other topics. Everything has been supported with relevant consistent types of evidence, particularly the FREL and the 3rd BUR.</p> <p>Thus, CLO4 is closed.</p>	

¹ https://redd.unfccc.int/media/frel_submission_by__indonesia_final.pdf

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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CL ID	05	Date: 24/10/2023
CL description		
<p>Section 3.3 of the MRV Protocol requires that the ERR shall describe the NFMS, including how it builds on existing systems and a description of the respective roles and responsibilities of institutions included in the NFMS. Moreover, it requires a description of QA/QC assurance activities.</p> <p>However, Section 4 of the ERR briefly introduces QA/QC activities, and explanations regarding the relevance of ground-truth points (and the people responsible for making this assessments) and uncertainty analysis are not properly clarified within the ERR, among other things.</p> <p>Further information is required.</p>		
Project proponent's response		Date: 06/11/2023
<p>We appreciate this finding, we will put additional information and description of QA/QC assurance activities and any other requirements into Section 4 of the ERR.</p>		
Documentation provided by the project proponent		
<p>We update the information into Section 4 as follows :</p> <p>The Quality Assurance (QA) and Quality Control (QC) processes are carried out on the processes of producing land cover data, carbon stock data, and the GHG emission calculation process. For land cover data, QC is carried out at the regional office level at BPKH and QA is carried out by Forest Resources Inventory and Monitoring Directorate of MoEF. In the QA process by the Forest Resources Inventory and Monitoring Directorate, an assessment of overall accuracy and kappa analysis are also carried out using of 5000-10,000 samples.</p> <p>For emission factors, QC is carried out at the plot level (PSP) by the regional office. The data generated at the plot level is in the form of biomass volume. Furthermore, hectare biomass volume data per stratum was converted using a certain allometric into carbon stock data by involving QC from academics of the University and the National Research and Innovation Agency Indonesia. Plot data from regional offices was compiled nationally and subjected to QC and QA by Dit. The QA process involves forest biometric experts from academics of the University and the National Research and Innovation Agency Indonesia.</p> <p>For the GHG emission calculation process, QC was carried out involving the GHG Inventory & MRV Directorate and the Forest Resources Inventory and Monitoring Directorate. Each calculation involves at least 3 people or personnel independently. This process is then followed by a joint discussion of the results of each calculation. If there is a discrepancy, it will be traced until it finds a result that is not discrepant. As for QA, it is carried out by involving external experts from MRV specialist practitioners, academics, and the National Research and Innovation Agency Indonesia</p>		
VVB's evaluation		Date: 16/11/2023
<p>New information has been provided, clarifying relevant topics regarding QA/QC for producing land cover data, carbon stock data and GHG emission calculation process.</p> <p>Thus, CL 05 is closed.</p>		

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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CL ID	06	Date: 24/10/2023
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CL description

The Annex of the MRV Protocol states that, from the reported ER, deductions shall be applied to reflect the risk of uncertainty (20%) and to reflect Indonesia’s ambition to reduce national GHG emissions (15%).

However, no information has been reported about these requirements within the ERR.

Project proponent’s response	Date: 06/11/2023
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Thank you for this note, we will add the deduction applied into the ER calculation and updated the information in the ERR text.

Documentation provided by the project proponent

we have added the information related to applied deduction to the ER result as follows:

As mentioned in Chapter Results, Indonesia has reduced the emissions from deforestation and forest degradation in total observation period (2017/2018 and 2018/2019) amount to 286,406,892 tCO2-e. This result comes from 76,258,928 Ton CO2e for 2017/2018 period and 210,147,963 in 2018/2019. The emission reduction results later deducted 35%. Therefore, the net results amounted to 49,568,304 tCO2-e in period 2017/2018 and 136,596,176 tCO2-e in period 2018/2019 tCO2-e.

For your reference, those calculation number can be found in the spreadsheet (Sheet name: RBP/C Baseline+ER)

Result Period	RBP/C Baseline (tCO2)		Actual Emissions (tCO2)		Result (tCO2)		Total (tCO2e)	Set Aside 35 % (tCO2e)	Potential of RBP/C (tCO2e)
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation			
2017/2018	236,946,787	40,974,680	140,859,913	60,802,625	96,086,874	-19,827,946	76,258,928	26,690,625	49,568,304
2018/2019	236,946,787	40,974,680	60,452,760	7,320,743	176,494,027	33,653,936	210,147,963	73,551,787	136,596,176
Total	473,893,574	81,949,359	201,312,673	68,123,369	272,580,901	13,825,991	286,406,892	100,242,412	186,164,479

VVB's evaluation	Date: 16/11/2023
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Section 8 has been updated, to consider the relevant deductions that shall be apply for both verification periods, 2017/2018 and 2018/2019. Initially, it was stated a total amount of emission reductions, for both periods, and also for deforestation and forest degradation, of 286,406,892 tCO2e. With the new corrections, there is a deduction of 100,242,412 tCO2e, allowing a final 186,164,479 tCO2e.

However, until CL10 is closed, CL06 cannot be closed, as the information reported within Section 8 and alongside the text might not be correct and accurate.

Thus, CL06 is not closed.

Project proponent’s response	Date: 23/11/2023
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Thank you for proposing a way for calculating double-claims. However, based on our findings,

not all projects provide KML files, thus we sought for alternatives using a proportional method.

Potential double claims for 336.312 (2017/2018) and 291.831 (2018/2019) determined by using the proportion of ER based on the total ERR. The proportion of potentially double-claimed area is obtained from the areas that has made claims compared to the total area covered in the ERR calculation, which is the national natural forest area in 2006 (the beginning of the reference period).

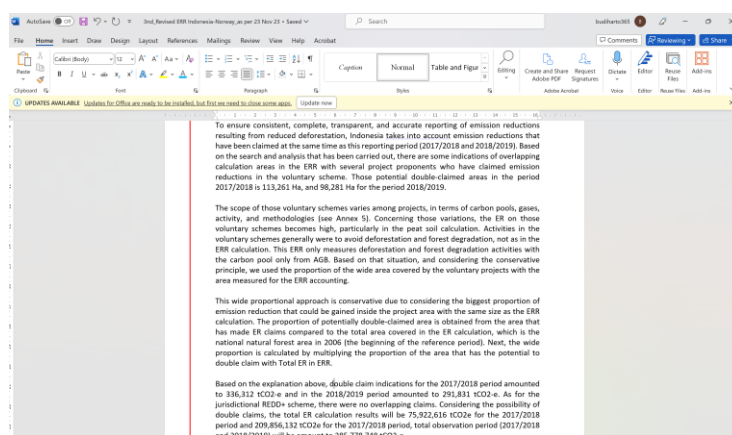
The proportion approach is used with the assumption that the entire area that is the calculation area has the same potential to produce ER. So, if in the calculation there are a number of overlapping areas, the potential double-claim ER can be calculated as a proportion of its area to the total ER.

Looking at these concerns, it is clear that the various schemes (which will be added in the Annex of ERR) described have distinct activities or methodology, carbon pools, and types of gas that are estimated to emission reductions calculation. Areas that consider peat soil carbon pools, for example, will result in emission decreases, although these carbon pools are not considered in national ERR estimates. Aside from that, almost all schemes calculate activities based on emission calculations from avoid deforestation and forest degradation activities or avoid deforestation plans, whereas those calculated nationally, activities based on deforestation and degradation, and carbon pools are only calculated by AGB.

By looking at these considerations, it is based on the fact that the various schemes that have been identified have different activities or methodologies used, carbon pools, and types of gas that are calculated to estimate emission reductions. For example, areas that take into account peat soil carbon pools will result in emission reductions, while these carbon pools are not taken into account in national ERR calculations. Apart from that, the activities calculated by almost all schemes apply emission calculations from avoid deforestation and forest degradation activities or avoid deforestation plans, while those calculated nationally, the activities calculated from deforestation and degradation, and carbon pools are calculated only by AGB. Thus, the approach is considered appropriate and quite conservative in considering the potential for double claims regarding emission reduction results in overlapping areas.

Documentation provided by the project proponent

The information above will be included to the ERR.



Also added information in the Annex 5 as shown below:

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Annex 5. Jurisdiction and project potential of double claim with ERR

No	Carbon Standart/Registry	Project Name	Location	Area (Ha)	Activity / Methodology	Carbon Pool	Gases	ER Reporting Period	Potential of double area (Ha)		
									2017/2018	2018/2019	
A Jurisdictional REDD+											
1	FCPF World Bank/CATS	FCPF Carbon Fund	East Kalimantan	12,746,546	REDD+	AGB, SOC	CO ₂	1 July 2019-31 Aug 2020	0	0	
2	ISFL - World Bank/-	Jambi Sustainable Landscape Management Project (J-SLMP)	Jambi	2,082,286	REDD+ISFL	AGB, BGB, SOC	CO ₂	Not yet reported	0	0	
B Voluntary Carbon Satndard											
1	Gold Standard/Impact Registry	No Project type under A/R or REDD+								0	0
2	Plan Vivo / Markit Registry	Rimbak Pakai Pengidup Project	West Kalimantan	1,430	ADD	AGB, BGB	CO ₂	01/01/2018 - 31/12/2018 01/01/2019 - 31/08/2020	1,430	1,430	
		Bujang Raba Community PES Project	Jambi	5,336	ADD, PES	AGB, BGB	CO ₂	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018 01/01/2019 - 31/12/2017	5,336	5,336	
		Durian Rambun	Jambi	3,616	ADD, PES	AGB, BGB	CO ₂	01/01/2015 - 01/09/2018	3,616	3,616	
3	Verra/VCS	Katingan Peatland Restoration and Conservation Project	Kalimantan Tengah	14,980	ARR; REDD; WRC / VM0007	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018	14,980	0	
		Rimba Raya Biodiversity Reserve Project	Kalimantan Tengah	64,977	REDD - APD / VM0004	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	23/06/2017 - 31/12/2017 01/01/2018 - 31/12/2018 01/01/2019 - 30/06/2019	64,977	64,977	
		Sumatra Merang Peatland Project (SMPP)	Sumatera Selatan	22,922	ARR; WRC / VM0007	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018	22,922	22,922	
TOTAL				113,261					113,261	98,281	
APD	Avoided Plan Deforestation			ARR	Afforestation, Reforestation, and Revegetation						
ADD	Avoided Deforestation and Forest Deerdation			WRC	Wetlands Restoration and Conservation						

VVB's evaluation

Date: 23/11/2023

A typo regarding Katingan Peatland Restoration and Conservation Project needs to be corrected. Indonesia team reported that the area (ha) is 14,980 ha. However, the correct number is 149,800 ha, ten times larger.

The spreadsheets and the ERR needs to be updated to consider this new area.

Thus, CLO6 is not closed.

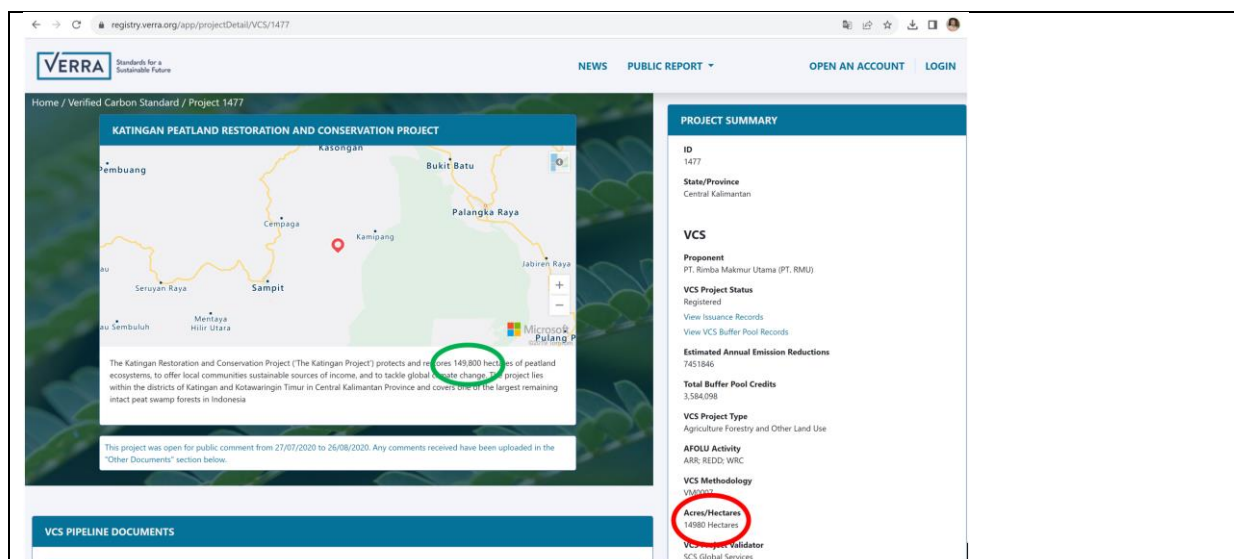
Project proponent's response

Date: 23/11/2023

Thank you, Aenor team is very careful, yes we misquoted the numbers we took from Verra's Registry webpage.

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We should have taken the data at the bottom of the map (green mark) but we took the data in the project summary (red mark).

We have corrected it in the Katingan Peatland Restoration Project area in the spreadsheet and updated the calculation figures affected by the typo.

Documentation provided by the project proponent

VVB's evaluation

Date: 24/11/2023

The new data reported is accurate and properly refers double accountability risks. The procedure applied is appropriate, considering the risk of accounting carbon pools not applicable to the ERR and under the MRV Protocol.

Thus, CL06 is closed.

CL ID

07

Date: 24/10/2023

CL description

Section 3.5 and 3.6 of the MRV Protocol states that:

- Description of methodologies (including the reference data) used to analyze the uncertainty of the estimates of the change detection.
- Discussion of key uncertainties, their sources and impacts.

However, the information included within Table 7 is insufficient, considering the aspects disclosed within UNFCCC reported documentation and including a 41-page document shown during the on-site visit that reports relevant and specific information about how Indonesia has reduced uncertainty during the period 1990-2016, the 10.000 sampling plots, the selection of

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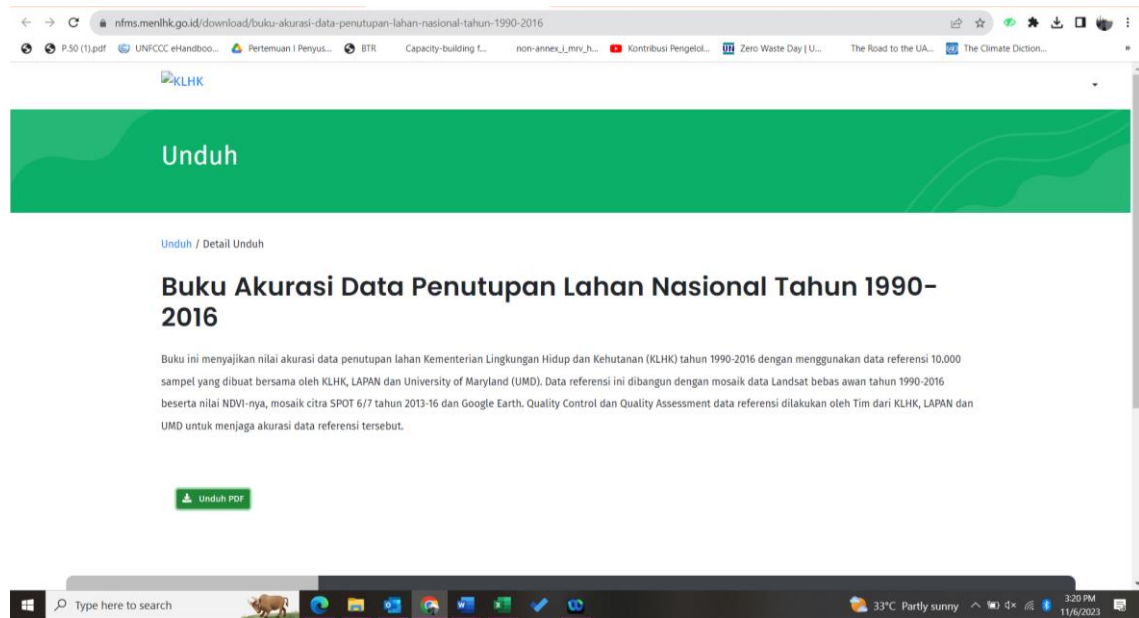
30 samples per region, etc.
Provide further information and share relevant evidence.

Project proponent's response	Date: 06/11/2023
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Thank you for this finding, please clarify, since there is no Table 7, do you mean is Table 6? If Yes then we will update the specific information and description related about how Indonesia has reduced uncertainty into the ERR.

Documentation provided by the project proponent

We added information and references regarding uncertainty assessment by using 10,000 plot samples. Detailed information refer to this link below:
<https://nfms.menlhk.go.id/admin/files/download/akurasi-data-penutupan-lahan-nasional-tahun-1990-2016.pdf>.



VVB's evaluation	Date: 16/10/2023
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New and accurate information has been included.
Thus, CL07 is closed.

CL ID	08	Date: 24/10/2023
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CL description

Uncertainty reported data within Table 6 of the ERR was based on the Uncertainty Calculation_Norway_II_20230725 spreadsheet shared with the audit team.
However, the reported data within Table 6 has missing information and some minor mistakes,

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comparing the information with the spreadsheet.

Update both Table 6, Section 7.1 of the ERR and the spreadsheet as necessary.

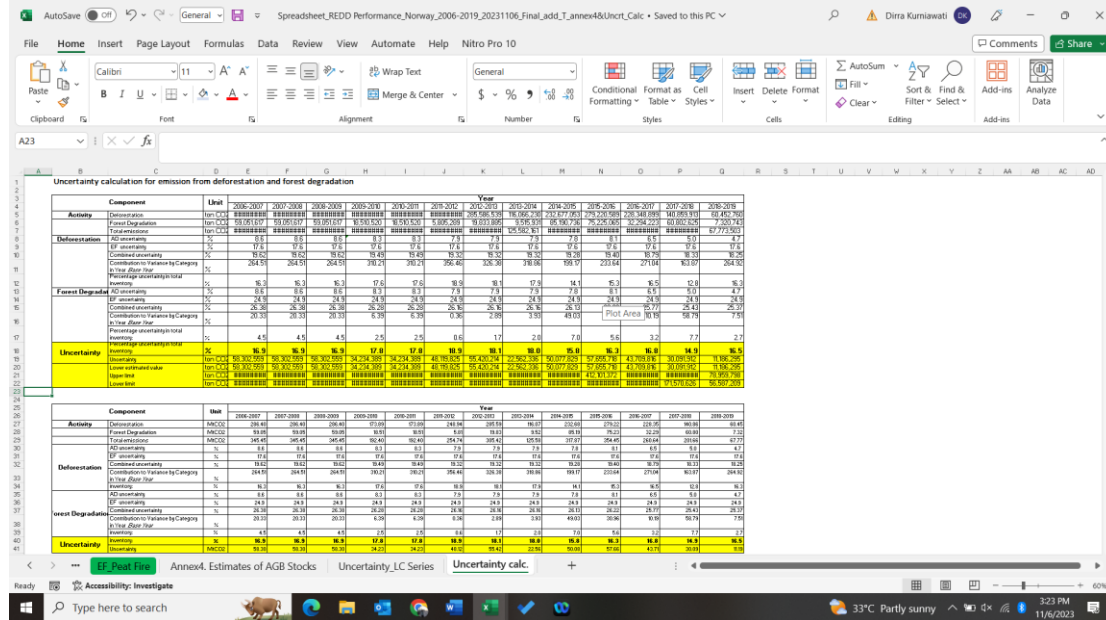
Project proponent's response

Date: 06/11/2023

Thank you for this note, we will improve the minor mistakes and updated the information within Table 6 and spreadsheet as necessary.

Documentation provided by the project proponent

We have updated the spreadsheet with the updated ones and that sheet has been integrated to others in the spreadsheet file.



VVB's evaluation

Date: 16/11/2023

Information is now consistent between the ERR and the spreadsheets.

Thus, CLO8 is closed.

CL ID

09

Date: 24/10/2023

CL description

The information reported within Annex 4, at the end of the ERR, requires further clarifying information, and interconnections with shared spreadsheets with the audit team and reported UNFCCC documentation, to be clearly assess.

Project proponent's response

Date: 06/11/2023

Thank you for this finding, to clarify the information we will put additional description related and sheet needed for the annex table 4 into the spreadsheets.

Documentation provided by the project proponent

We have already added table annex 4 to the previous spreadsheet that has been shared so that the emission factor used in the analysis has referred to table annex 4 automatically. As for additional information, we have already added sheets for the uncertainty calculation to the spreadsheet.

Here is as attached the picture of the table annex 4 and the sheet of uncertainty calculation as evidence. For further information, we will share the updated spreadsheet.

Annex 4. Estimates of AGB Stocks and Their Uncertainties in Each Forest Class in Indonesia

Forest Class	Main Island	Mean AGB (Mg ha ⁻¹)	95% Confidence Interval (Mg ha ⁻¹)	N of plot measurements	SE(%)		
Primary Dryland Forest	Bali-Nusa Tenggara	274.4	247.5	301.3	52	10%	
	Jawa				0		
	Kalimantan	269.4	258.2	280.6	333	4%	
	Maluku	301.4	220.3	382.5	14	27%	
	Papua	239.1	227.6	250.6	162	5%	
	Sulawesi	275.2	262.3	288.1	221	5%	
	Sumatera	288.6	247.1	290.1	92	8%	
	Indonesia (Average)	266.0	252.3	279.6	874	5%	
	Secondary Dryland Forest	Bali-Nusa Tenggara	162.7	140.5	184.9	69	14%
		Jawa	370.5			1	
Kalimantan		203.3	196.30	210.30	608	3%	
Maluku		222.1	204.40	239.80	99	8%	
Papua		180.4	158.40	202.40	60	12%	
Sulawesi		206.5	194.30	218.70	197	6%	
Sumatera		182.2	172.00	192.40	265	6%	
Indonesia (Average)		197.7	190.48	204.87	1299	4%	
Bali-Nusa Tenggara							
Jawa							
Kalimantan	274.8	267.7	281.9	3	3%		

Uncertainty calculation for emission from deforestation and forest degradation

Component	Unit	Year								
		2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013	2013-2014	2014-2015
Activity										
Deforestation	ton CO2	286,399,781	286,399,781	286,399,781	173,890,857	173,890,857	248,936,401	285,586,539	116,066,230	232,677,053
Forest Degradation	ton CO2	59,051,617	59,051,617	59,051,617	18,510,520	18,510,520	5,805,289	19,833,885	9,515,931	85,190,736
Deforestation	%	345,451,398	345,451,398	345,451,398	192,401,377	192,401,377	254,741,690	305,420,424	125,582,161	317,867,789
AD uncertainty	%	8.6	8.6	8.6	8.3	8.3	7.9	7.9	7.9	7.8
EF uncertainty	%	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6	17.6
Combined uncertainty	%	19.62	19.62	19.62	19.49	19.49	19.32	19.32	19.32	19.28
Contribution to Variance by Category in Base Year	%	264.51	264.51	264.51	310.21	310.21	356.46	326.38	318.86	199.17
Forest Degradation	%	16.3	16.3	16.3	17.6	17.6	18.9	18.1	17.9	14.1
AD uncertainty	%	8.6	8.6	8.6	8.3	8.3	7.9	7.9	7.9	7.8
EF uncertainty	%	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
Combined uncertainty	%	26.38	26.38	26.38	26.28	26.28	26.16	26.16	26.16	26.13
Contribution to Variance by Category in Base Year	%	20.33	20.33	20.33	6.39	6.39	0.36	2.89	3.93	49.03
Percentage uncertainty in total inventory	%	4.5	4.5	4.5	2.5	2.5	0.6	1.7	2.0	7.0
Uncertainty	%	16.9	16.9	16.9	17.8	17.8	18.9	18.1	18.0	15.8
Percentage uncertainty in total inventory	%	58,302,559	58,302,559	58,302,559	34,234,389	34,234,389	48,119,825	55,420,214	22,562,336	50,077,829
Uncertainty	ton CO2	58,302,559	58,302,559	58,302,559	34,234,389	34,234,389	48,119,825	55,420,214	22,562,336	50,077,829

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Annex 4 and the spreadsheet have been properly updated.
Thus, CL09 is closed.

CL ID	10	Date: 24/10/2023
CL description		
<p>5. Section 2.8 of the MRV Protocol states that:</p> <ul style="list-style-type: none"> • A national system of accounting will be in place, to provide transparency and certainty that no double counting to emission reductions delivered under other agreements or partnerships occurs. • Rewarded emissions reductions should be registered in the Lima Info Hub to ensure transparency and certainty that no double counting to emission reductions delivered under other agreements or partnerships occurs. <p>6. Moreover, Section 3.2 of the MRV Protocol states that:</p> <ul style="list-style-type: none"> • To ensure consistent, complete, transparent and accurate reporting of emission reductions resulting from reduced deforestation and other performance indicators, as agreed, in Indonesia. <p>7. Regarding REDD+ decisions, double counting has been mentioned on several occasions during COP meetings, including Cancun COP16 and Durban COP17. Closer to this moment, Article 6.4 of the Paris Agreement (COP26) provides guidance on how to ensure environmental integrity, and avoidance of double counting, considering also corresponding adjustment.</p> <p>8. Finally, it is relevant to consider the importance of using best practice available for proceeding with emission reduction claims. As such, double accounting and claiming is a very sensitive topic that has raised importance to be defined as one of the most important aspects that provides transparency and accuracy.</p> <p>Taking into consideration the previous statements, the information compiled during the on-site visit through direct conversation with Indonesia ERR team experts and the desk-review, the audit team requires further information to provide assurance that no double accounting has happened during the two monitoring periods under assessment with other agreements or partnerships that might have already claimed verified emission reductions.</p> <p>Evidence shall be shared with the audit team.</p> <p>Methodological explanations shall be provided within this finding sheet and the ERR.</p>		
Project proponent's response		Date: 06/11/2023
<p>Thank you for this note, we will provide in the ERR the related explanations needed for this issue, as follows:</p> <ol style="list-style-type: none"> 1. We will seek the information in the international registry, regarding payment for AFOLU projects in Indonesia during the monitoring period. If there are any payments have been paid during those periods then we will calculate those payment based on the 		

proportion by national wide. The proportion of the area will be considered as the deduction or set aside from total ER during the monitoring periods.

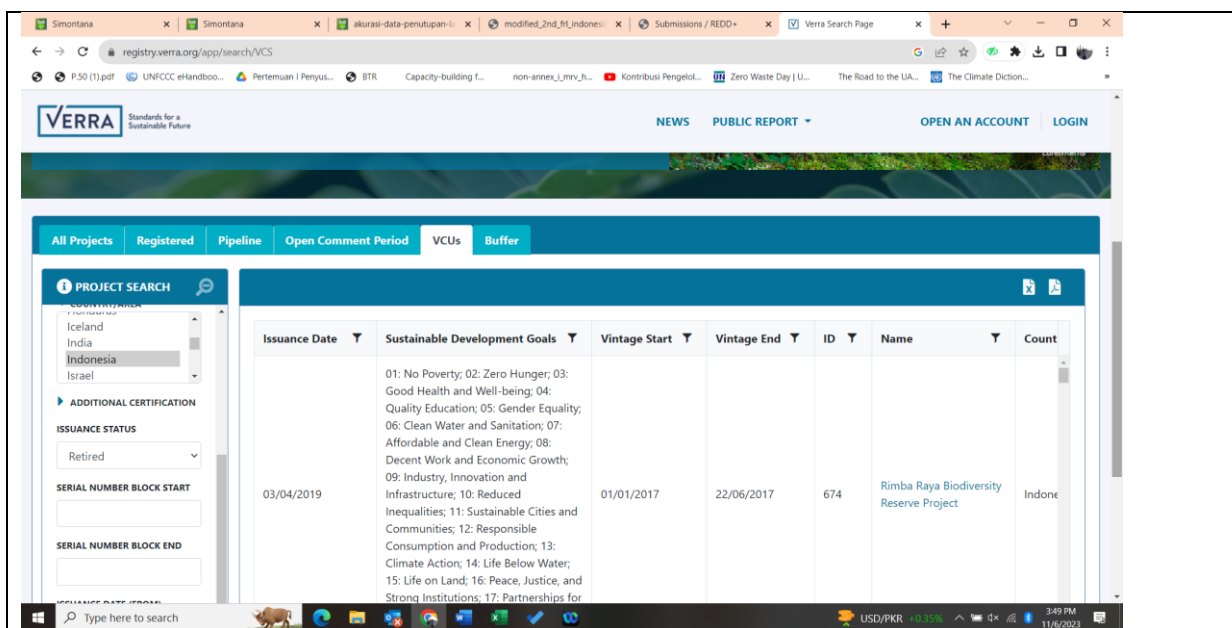
2. We regulate the double counting issue in our Minister Regulation No 7/2023 regarding Carbon Trading in Forestry Sector.
3. In our National Registry System, we require the project owner to register all activities regarding the mitigation action, including to upload the polygon of the carbon accounting area.

Documentation provided by the project proponent

To avoid double payment of emission reduction, we checked on the various registries e.g. Redd+ Web Platform, Verra registry, and Markit Registry, etc. for example, the emission reduction in 2017/2018 and 2018/2019 in Verra registry was found that payments of emission reduction project in Indonesia have been paid.

The screenshot shows the REDD+ WEB PLATFORM interface. The main content is a table titled 'Reporting to the UNFCCC' with the following data:

Date (Year)	Results (t CO ₂ eq/year)	Assessed forest reference level (t CO ₂ eq/year)	Quantities for which payments were received (t CO ₂ eq/year)	Entity paying for results	Links to documentation
2013	48,978,427	568,859,881	-	-	FCCC/SBI/ICA/2019/TATR.1/IDN Biennial update report with submission of REDD+ results (BUR 2)
2014	48,978,427	572,355,593	6,750,000	Green Climate Fund (funding proposal)	FCCC/TAR/2016/IDN Submission on proposed reference level
2015	48,978,427	575,851,125	6,750,000	Green Climate Fund (funding proposal)	Modified submission on proposed reference level
2016	48,978,427	579,346,747	6,750,000	Green Climate Fund (funding proposal)	Safeguards information summary Third National Communication (Including Safeguards information summary)
2017	48,978,427	582,842,369	-	-	National REDD+ Strategy
2018	192,483,053	586,337,991	-	-	FCCC/SBI/ICA/2022/TATR.2/IDN Biennial update report with submission of REDD+ results (BUR 3)
2019	192,483,053	589,833,613	-	-	FCCC/TAR/2016/IDN Submission on proposed reference level
2020	192,483,053	593,329,235	-	-	Modified submission on proposed reference level



VVB's evaluation

Date: 16/11/2023

The ERR has not been updated to consider the risk of double claiming.

Unless Indonesia Team can provide solid evidence that the same emission reductions claimed by other voluntary and/or jurisdictional projects will not be double count by the verification periods claimed within the ERR, the following steps are required:

1. Indonesia team must make an analysis of the exact amount of verified emission reductions that have been already claimed by voluntary or jurisdictional carbon projects within the same areas and activities covered, land cover classes, carbon pools and gases, and always considering the applicable conditions of the MRV Protocol and the statements within the ERR (only for the two verification periods claimed by Indonesia team on the ERR, 2017/2018 and 2018/2019). Indonesia must consider all the voluntary and jurisdictional carbon standards that might be operating on the country, not only Verra (e.g., Gold Standard, the FCPF World Bank, etc.).
2. Indonesia shall share evidence of this analysis to the audit team, so that it can be confirmed that all voluntary and jurisdictional projects have been properly considered to proceed with the deduction of the gross total emission reductions (286.4 million tCO₂e, before applying the 35% discount).
3. The spreadsheet calculations shall also be updated and shared to take into consideration this possible double counting reality. The audit team shall be capable to reproduce the steps taken to transform the gross total emission reductions (before applying the 35% deduction) to net total emission reductions free of double accounting (before applying the 35% deduction and also after applying it).
4. All this process shall be disclosed within the ERR, explaining how Indonesia has assured that all the claimed emission reductions within the ERR are free of double counting, quoting the analysis made for assuring that everything is in accordance with the MRV Protocol, best practices available and other relevant criteria as described within the Audit Plan.

Thus, all sections of the ERR affected by possible double counting shall be updated to provide clarity and reality.

- All the numbers referring to deforestation and forest degradation within the ERR shall be corrected to discount the already claimed emission reductions by other voluntary and/or jurisdictional projects.

Finally, CLO6 is not closed as the data reported does not consider the risk of double counting, and might require a deduction for being properly quoted within the ERR.

Thus, CL10 is not closed.

Project proponent's response

Date: 20/11/2023

Thank you for the evaluation by the AENOR team. We have updated the ERR by considering the potential double claiming in the same ER calculation area as the existing voluntary schemes (Verra, Gold Standard and Plan Vivo) in the section 8. For Jurisdictional REDD+ (FCPF and BioCF) there are no potential double claims as both jurisdictional schemes started ER claims from 1 July 2019, while ERR claims ended on 30 June 2019. All evidence can be found in the excel file (Spreadsheet_REDD Norway_2006-2019_Final_Update Risk of Double Claim_20231119.xlsx) on the sheets tab :

Recap_Jurisdiction_Voluntary Gold Standard Plan Vivo Project PV Rimbak PV Bujang Raba PV Durian Rambun PV Gula2 Verra Standard DB_Indonesia_all_VCUs Pivot_VCUs

The calculation for considering potential double claim can be found in the tab sheet named 'RBP/C Baseline + ER'.

Risk Analysis of Double Claim		
Area Overlap (Ha)	2017/2018	113,261
	2018/2019	98,281
Area ERR (All Natural Forest 2006)		96,454,143
Emission Reduction	2017/2018	76,258,928
	2018/2019	210,147,963
Total ER		286,406,892
Percentage of overlap by area	2017/2018	0.12%
	2018/2019	0.10%
Potential of Doble Claim (tCO2e)	2017/2018	336,312
	2018/2019	291,831
Total ER minus Double Claim	2017/2018	75,922,616
	2018/2019	209,856,132

Result Period	RBP/C Baseline (tCO2)		Actual Emissions (tCO2)		Result (tCO2)		Total (tCO2e)	Risk of Double Claim (tCO2e)	Clean of Double claim (tCO2e)	Set Aside 35 % (tCO2e)	Potential of RBP/C (tCO2e)
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation					
2017/2018	236,946,787	40,974,680	140,859,913	60,802,625	96,086,874	-19,827,946	76,258,928	336,312	75,922,616	26,572,916	49,349,700
2018/2019	236,946,787	40,974,680	60,452,760	7,320,743	176,494,027	33,653,936	210,147,963	291,831	209,856,132	73,449,646	136,406,486
Total	473,893,574	81,949,359	201,312,673	68,123,369	272,580,901	13,825,991	286,406,892	628,144	285,778,748	100,022,562	185,756,186

Result Period	RBP/C Baseline (MtCO2)		Actual Emissions (MtCO2)		Result (MtCO2)		Total (MtCO2e)	Risk of Double Claim (MtCO2e)	Clean of Double claim (MtCO2e)	Set Aside 35 % (MtCO2e)	Potential of RBP/C (MtCO2e)
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation					
2017/2018	236.95	40.97	140.86	60.80	96.09	-19.83	76.26	0.34	75.92	26.57	49.35
2018/2019	236.95	40.97	60.45	7.32	176.49	33.65	210.15	0.29	209.86	73.45	136.41
Total	473.89	81.95	201.31	68.12	272.58	13.83	286.41	0.63	285.78	100.02	185.76

Documentation provided by the project proponent

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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VVB's evaluation	Date: 21/11/2023
<p>The audit team has acknowledged that several modifications has been made within the ERR and the shared spreadsheets. However, there are still some concerns regarding compliance with double accountability. Specifically:</p> <p>New spreadsheet tab defined as "Recap_Jurisdiction_Voluntary", summaries a "TOTAL" potential of double claimed (tCO2e) and potential as of double area (ha) for the two verification monitoring periods (2017/2018 and 2018/2019). The information is 11.583.307 tCO2e for 2017/2018 and 3.661.698 tCO2e for 2018/2019 for some projects listed in Verra and Plan Vivo registries. Relevant information about carbon pools (AGB, peat and SOC) and GHG gasses (CO2, CH4, N2O and others) have also been included. However, within Section 8 of the ERR, the following statement has been made:</p> <p>" Based on the search and analysis that has been carried out, there are some indications of overlapping calculation areas in the ERR with several project proponents who have claimed emission reductions in the voluntary scheme. <u>Double claim indications for the 2017/2018 period amounted to 336.312 tCO2-e and in the 2018/2019 period amounted to 291.831 tCO2-e.</u> (...) Considering the possibility of double claims, the total ER calculation results will be <u>75.922.616 tCO2e for the 2017/2018 period and 209.856.132 tCO2e for the 2017/2018 period</u>, total observation period (2017/2018 and 2018/2019) will be amount to 285,778,748 tCO2-e."</p> <p>It is not clear for the audit team, the logical process that has been implemented to go through the following numbers, 11.583.307 (2017/2018) and 3.661.698 (2018/2019), reported within the spreadsheet, to 336.312 (2017/2018) and 291.831 (2018/2019), as has been reported in the ERR. Does it have any relationship with already sold VCUs? It is related to not applicable carbon pools and/or GHG gasses accounted by these voluntary projects and not accounted by the ERR in accordance with the MRV Protocol?</p> <p>Explanations shall be included within the ERR, and the audit team shall access the procedure applied by Indonesia team both in the ERR and the spreadsheet. If any VCUs from voluntary projects have been excluded due to not sharing the same carbon pools as those described within the MRV applicable protocol, this information shall be reported and clarified. It shall be as clear as possible so that the audit team can achieve the same deduction that the country in technical terms.</p> <p>The audit team is willing to have a quick call to resolve this open finding if it can be useful for all the parties to understand the open clarification.</p> <p>Thus, CL10 is not closed.</p>	
Project proponent's response	Date: 23/11/2023
<p>Thank you for proposing a way for calculating double-claims. However, based on our findings, not all projects provide KML files, thus we sought for alternatives using a proportional method.</p> <p>Potential double claims for 336.312 (2017/2018) and 291.831 (2018/2019) determined by using the proportion of ER based on the total ERR. The proportion of potentially double-claimed area is obtained from the areas that has made claims compared to the total area covered in the ERR calculation, which is the national natural forest area in 2006 (the beginning of the reference period).</p> <p>The proportion approach is used with the assumption that the entire area that is the calculation area has the same potential to produce ER. So, if in the calculation there are a</p>	

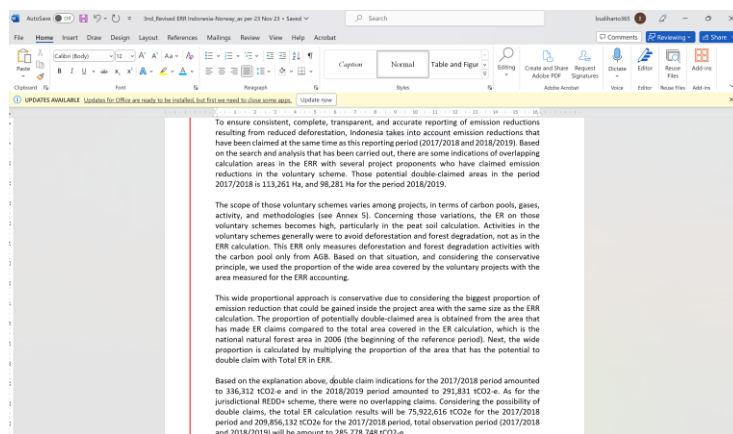
number of overlapping areas, the potential double-claim ER can be calculated as a proportion of its area to the total ER.

Looking at these concerns, it is clear that the various schemes (which will be added in the Annex of ERR) described have distinct activities or methodology, carbon pools, and types of gas that are estimated to emission reductions calculation. Areas that consider peat soil carbon pools, for example, will result in emission decreases, although these carbon pools are not considered in national ERR estimates. Aside from that, almost all schemes calculate activities based on emission calculations from avoid deforestation and forest degradation activities or avoid deforestation plans, whereas those calculated nationally, activities based on deforestation and degradation, and carbon pools are only calculated by AGB.

By looking at these considerations, it is based on the fact that the various schemes that have been identified have different activities or methodologies used, carbon pools, and types of gas that are calculated to estimate emission reductions. For example, areas that take into account peat soil carbon pools will result in emission reductions, while these carbon pools are not taken into account in national ERR calculations. Apart from that, the activities calculated by almost all schemes apply emission calculations from avoid deforestation and forest degradation activities or avoid deforestation plans, while those calculated nationally, the activities calculated from deforestation and degradation, and carbon pools are calculated only by AGB. Thus, the approach is considered appropriate and quite conservative in considering the potential for double claims regarding emission reduction results in overlapping areas.

Documentation provided by the project proponent

The information above will be included to the ERR.



Also added information in the Annex 5 as shown below:

Annex 5. Jurisdiction and project potential of double claim with ERR

No	Carbon Standard/Registry	Project Name	Location	Area (Ha)	Activity / Methodology	Carbon Pool	Gases	ER Reporting Period	Potential of double area (Ha)		
									2017/2018	2018/2019	
A Jurisdictional REDD+											
1	FCPF World Bank/CATS	FCPF Carbon Fund	East Kalimantan	12,746,546	REDD+	AGB, SOC	CO ₂	1 July 2019-31 Aug 2020	0	0	
2	ISFL - World Bank/-	Jambi Sustainable Landscape Management Project (J-SLMP)	Jambi	2,082,286	REDD+ISFL	AGB, BGB, SOC	CO ₂	Not yet reported	0	0	
B Voluntary Carbon Standard											
1	Gold Standard/Impact Registry	No Project type under A/R or REDD+								0	0
2	Plan Vivo / Markit Registry	Rimbak Pakai Pengidup Project	West Kalimantan	1,430	ADD	AGB, BGB	CO ₂	01/01/2018 - 31/12/2018 01/01/2019 - 31/08/2020	1,430	1,430	
		Bujang Raba Community PES Project	Jambi	5,336	ADD, PES	AGB, BGB	CO ₂	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018 01/01/2019 - 31/12/2017	5,336	5,336	
		Durian Rambun	Jambi	3,616	ADD, PES	AGB, BGB	CO ₂	01/01/2015 - 01/09/2018	3,616	3,616	
3	Verra/VCS	Katingan Peatland Restoration and Conservation Project	Kalimantan Tengah	14,980	ARR; REDD; WRC / VM0007	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018	14,980	0	
		Rimba Raya Biodiversity Reserve Project	Kalimantan Tengah	64,977	REDD - APD / VM0004	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	23/06/2017 - 31/12/2017 01/01/2018 - 31/12/2018 01/01/2019 - 30/06/2019	64,977	64,977	
		Sumatra Merang Peatland Project (SMPP)	Sumatera Selatan	22,922	ARR; WRC / VM0007	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018	22,922	22,922	
TOTAL				113,261					113,261	98,281	
APD	Avoided Plan Deforestation			ARR	Afforestation, Reforestation, and Revegetation						
ADD	Avoided Deforestation and Forest Degradation			WRC	Wetlands Restoration and Conservation						

VVB's evaluation

Date: 23/11/2023

A typo regarding Katingan Peatland Restoration and Conservation Project needs to be corrected. Indonesia team reported that the area (ha) is 14,980 ha. However, the correct number is 149,800 ha, ten times larger.

The spreadsheets and the ERR needs to be updated to consider this new area.

Thus, CL10 is not closed.

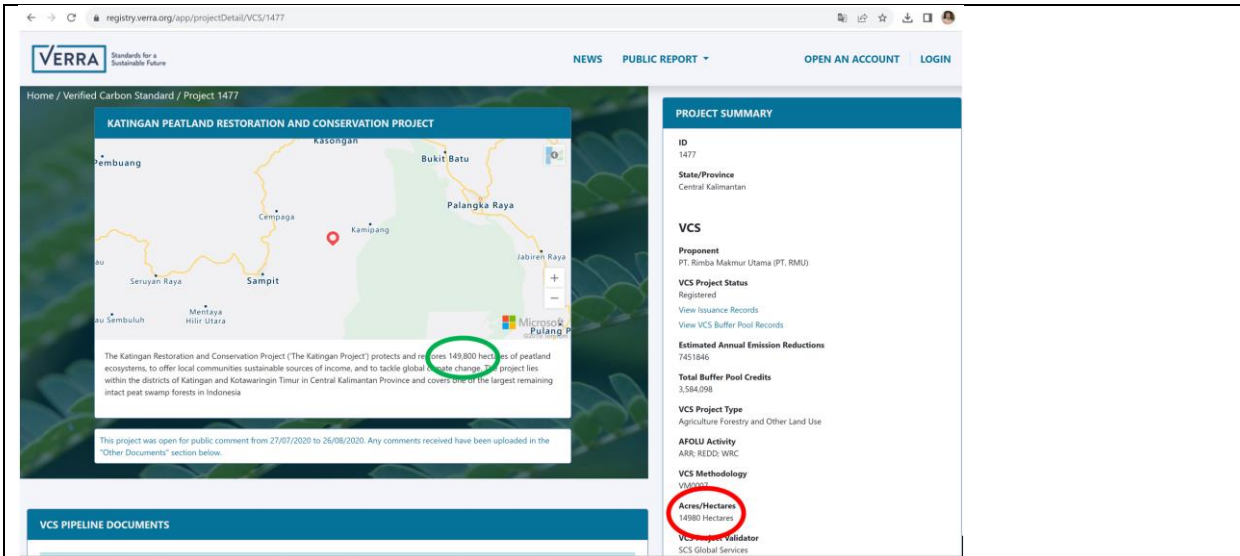
Project proponent's response

Date: 23/11/2023

Thank you, Aenor team is very careful, yes we misquoted the numbers we took from Verra's Registry page.

VERIFICATION REPORT

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We should have taken the data at the bottom of the map (green mark) but we took the data in the project summary (red mark).

We have corrected it in the Katingan Peatland Restoration Project area in the spreadsheet and updated the calculation figures affected by the typo.

Documentation provided by the project proponent

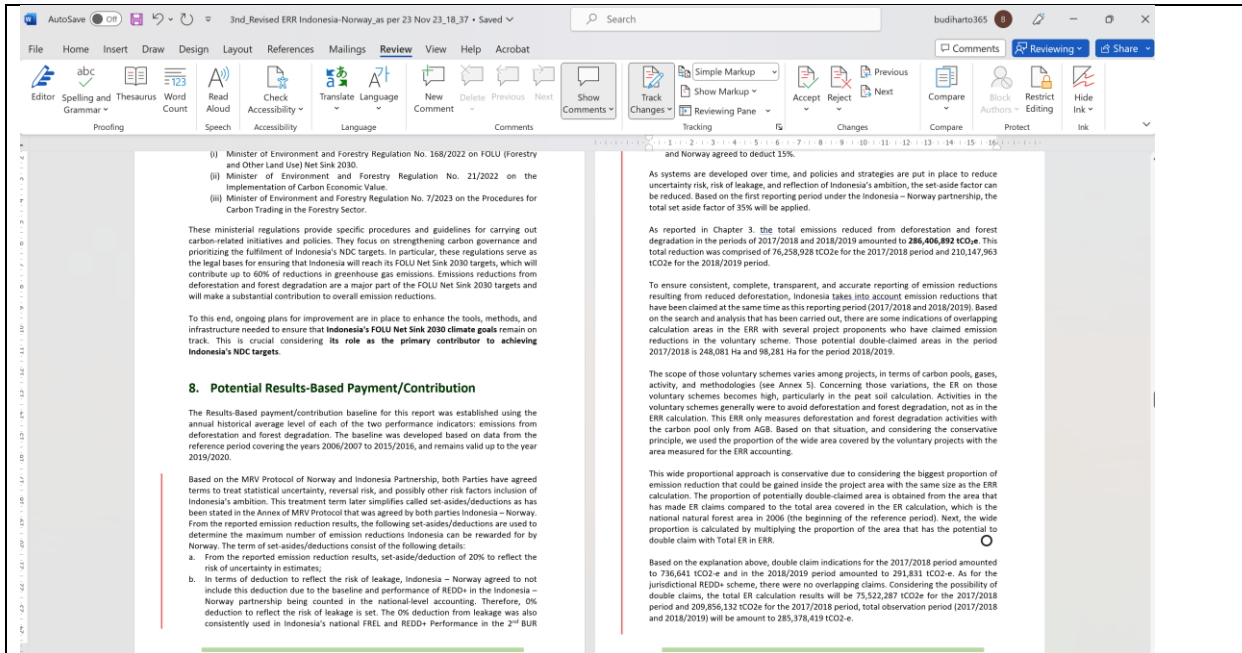
No	Carbon Standard/Registry	Project Name	Location	Area (Ha)	Activity / Methodology	Carbon Pool	Gases	ER Reporting Period	Potential of Double Area (Ha) 2017/2018 - 2018/2019
A Jurisdictional REDD+									
1	FCPF World Bank/CATS	FCPF Carbon Fund	East Kalimantan	12,746,546	REDD+	AGB, SOC	CO ₂	1 July 2019-31 Aug 2020	0 0
2	ISFL - World Bank/-	Jambi Sustainable Landscape Management Project (J-SLMP)	Jambi	2,082,286	REDD-HFL	AGB, BGB, SOC	CO ₂	Not yet reported	0 0
B Voluntary Carbon Standard									
1	Gold Standard/Impact Registry	No Project type under A/R or REDD+							0 0
2	Pian Vivo / Marik Registry	Rimbak Pakai Pengadap Project	West Kalimantan	1,430	ADD	AGB, BGB	CO ₂	01/01/2018 - 31/12/2018 01/01/2019 - 31/08/2020	1,430 1,430
		Buang Riba Community PES Project	Jambi	5,336	ADD, PES	AGB, BGB	CO ₂	01/01/2017 - 31/12/2017 01/01/2018 - 31/12/2018 01/01/2019 - 31/12/2017	5,336 5,336
		Durian Ramban	Jambi	3,616	ADD, PES	AGB, BGB	CO ₂	01/01/2015 - 01/09/2018	3,616 3,616
3	Verra/VCS	Katingan Peatland Restoration and Conservation Project	Kalimantan Tengah	149,800	ARR, REDD, WRC / VM0007	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	01/01/2017 - 31/12/2017	149,800 0
		Rimba Raya Biodiversity Reserve Project	Kalimantan Tengah	64,977	REDD - APD / VM0004	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	23/06/2017 - 31/12/2017 01/01/2018 - 31/12/2018 01/01/2019 - 30/06/2019	64,977 64,977
		Sumatra Merang Peatland Project (SMPP)	Sumatera Selatan	22,922	ARR, WRC / VM0007	AGB, Peat SOC	CO ₂ , CH ₄ , N ₂ O	01/01/2017 - 31/12/2017	22,922 22,922
TOTAL									248,081 98,281

Risk Analysis of Double Claim

Result Period	RBP/C Baseline (tCO2)		Actual Emissions (tCO2)		Result (tCO2)		Risk of Double Claim (tCO2e)	Clean of Double claim (tCO2e)	Set Aside 35 % (tCO2e)	Potential of RBP/C (tCO2e)	Area Overlap (Ha)		
	Deforestation	Degradation	Deforestation	Degradation	Deforestation	Degradation					2017/2018	2018/2019	
2017/2018	236,946,787	40,974,680	140,859,913	60,802,625	-19,827,946	76,258,928	736,641	75,522,287	26,432,801	49,089,487	248,081	98,281	
2018/2019	236,946,787	40,974,680	60,452,760	7,320,743	33,653,936	210,147,963	291,831	209,856,132	73,449,646	136,406,486	96,454,143	76,258,928	
Total	473,893,574	81,949,359	201,312,673	68,123,369	272,580,901	13,825,991	286,406,892	1,028,473	285,378,419	185,495,972	286,406,892	174,563,119	
											Percentage of overlap by area	2017/2018 2018/2019	0.26% 0.10%
											Potential of Double Claim (tCO2e)	2017/2018 2018/2019	736,641 291,831
											Total ER minus Double Claim	2017/2018 2018/2019	75,522,287 209,856,132
											Total	2018/2019	285,378,419

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VVB's evaluation

Date: 24/11/2023

The new data reported is accurate and properly refers double accountability risks. The procedure applied is appropriate, considering the risk of accounting carbon pools not applicable to the ERR and under the MRV Protocol.

Thus, CL10 is closed.

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Annex 7: Emission estimates differences between versions of the Emission Reduction Report for the Indonesia-Norway Partnership

As a consequence of the verification process, the emissions estimates have changed from the first version of the ERR (ERR Indonesia-Norway_Final_31July2023.pdf), delivered to the audit team in mid-August 2023, to the last verified version (4th_Revised ERR Indonesia-Norway_as per 23 Nov 23_19_24_Clean.docx), delivered to the audit team the 23rd of November 2023. Those changes were caused by clarification number 10 (CL10):

1. For the calculation of both ER from reduced deforestation and forest degradation, Indonesia did not disclose the possible risk of double claiming by other voluntary and/or jurisdictional projects for the two ERR monitoring periods, 2017/2018 and 2018/2019.

The response to this CL10 had a minor impact on the estimation of emission from deforestation. However, the estimates of emissions from forest degradation varied due to the changes. The following table summarises the changes of the estimates between the first and the last version of the *Emission Reduction Report*:

	Version 16 th of August 2023 2017/2018	Version 23 rd November 2023 2017/2018	Version 16 th of August 2023 2018/2019	Version 23 rd November 2023 2018/2019	TOTAL v.16 th of August 2023, 2017/2018 & 2018/2019	TOTAL v.23 rd November 2023, 2017/2018 & 2018/2019
Deforestation & Forest Degradation (tCO ₂ e)	76.258.928	75.522.287	210.147.963	209.856.132	286.406.892	285.378.419
Total Difference between initial and final version results (tCO ₂ e)	- 736.641		- 291.831		-1.028.473	
% Variation between the initial and the final version results	0,96%		0.13%		0.35%	

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Annex 8: Comments on the draft of the Verification Report

N°	MoEF Indonesia comments (30/11/2023)	AENOR response (30/11/2023)	MoEF Indonesia comments (30/11/2023)
The Entire Document Generally			
1	<p>In the entire document, we found that there is specifically written number behind the document's name and/or others in e.g as highlighted below:</p> <p>On Para 1 chapter 1.1: "In verifying the results available, the process of verification has considered the content of Indonesia's results report based on all elements of MRV Protocol /2/ and its Annex /3/, referring to the MoU and Contribution Agreement. AENOR's audit team has ensured that the agreed use of methods, processes, and consistencies as established by the MRV Protocol /2/ are the guiding criteria for the verification. The verification ensures that the reported results are based on consistent use of appropriate methodologies in line with the MRV Protocol /2/"</p> <p>Please do clarify the numbers' meaning, is it a mark for a footnote?</p>	<p>Annex 3 of this verification report refers to the list of evidence provided, from 1 to 23.</p> <p>It is business as usual to quote the numbers that refer to a specific type of evidence.</p> <p>For instance, when you see MRV Protocol /2/, you can go to annex 3 and see the name of the document we have used on item number 2.</p> <p>No updates will be made regarding this suggestion.</p>	<p>Thank you and accepted for the clarification</p>
2	<p>To ensure consistency with the ERR document, the RBP terminology should be written as Result Based Payment/Contribution (RBP/C). As a result, all the abbreviations of RBP need to be replaced with RBP/C.</p>	<p>Corrected alongside the verification report.</p>	<p>Correction accepted.</p>
3	<p>we found some terminologies "avoided" deforestation and degradation i.e as stated below:</p> <p>AENOR reproduced and verified 100% of the calculations in the calculation spreadsheet <i>Spreadsheet_REDD_Norway_2006-2019_Final_Update_Risk_of_Double_Claim_as_per_23_Nov_23_18_37_18/</i> (from now on, "REDD calculation spreadsheet") for the estimation of emissions from deforestation and forest degradation for the period 2006/2007-2015/2016 and emissions</p>	<p>Corrected alongside the verification report.</p>	<p>Correction accepted.</p>

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N°	MoEF Indonesia comments (30/11/2023)	AENOR response (30/11/2023)	MoEF Indonesia comments (30/11/2023)
	<p>reductions from avoided deforestation and forest degradation for the monitoring periods 2017/2018 and 2018/2019.</p> <p>All terminology of “avoided” should be replaced by “reduced”</p>		
Specific items in the document			
1	<p>In Chapter 1.1, Para 4 stated as below: “The three monitoring periods (2017/2018 and 2018/2019 periods during this verification process) were assessed in comparison to the following results-based payment (RBP/C) baseline, as reported in the document <i>4th_Revised ERR Indonesia-Norway as per 23 Nov 23_19_24_Clean /1/</i> (from now on, “ERR”).”:</p> <p>Regarding the monitoring periods (as highlighted above), the three monitoring periods should be : 2016/2017, 2017/2018, and 2018/2019.</p>	<p>As was directly identified by the audit team, there are three monitoring periods, but only two of them are within the scope of the audit process. The audit team decided to disclose this information for clarifying purposes, but the sentence is correct, as the audit team is only assessing 2017/2018 and 2018/2019.</p> <p>“The three monitoring periods (2017/2018 and 2018/2019 periods during this verification process), were assessed in (...)” is maintained and no further updates are required.</p>	<p>Thank you and accepted the explanation.</p>
2	<p>Chapter 1.2. The Scope on the first bullet is stated as below: Emissions from gross deforestation at the national level 2006/2007-2015/2016 for the 2017/2018 and 2018/2019 monitoring periods</p> <p>We proposed the suggested sentence: Emissions from gross deforestation at the national level 2006/2007-2015/2016 used as RBP/C baseline for the 2017/2018 and 2018/2019 monitoring periods</p>	<p>Suggestion accepted.</p>	<p>Correction accepted.</p>
3	<p>Chapter 1.2. The Scope on the second bullet is stated as below: Emissions from gross forest degradation at the national level 2006/2007-2015/2016 for the</p>	<p>Suggestion accepted.</p>	<p>Correction accepted.</p>

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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N°	MoEF Indonesia comments (30/11/2023)	AENOR response (30/11/2023)	MoEF Indonesia comments (30/11/2023)
	<p>2017/2018 and 2018/2019 monitoring periods</p> <p>We proposed the suggested sentence: Emissions from gross forest degradation at the national level 2006/2007-2015/2016 used as RBP/C baseline for the 2017/2018 and 2018/2019 monitoring periods</p>		
4	<p>Part of 2.2. Method and Considerations and 2.4. In- country visit, The duration of the audit is written as below:</p> <p>An in-country visit was conducted between October the 4th and 6th, 2023</p> <p>We proposed the suggested sentence: An in-country visit was conducted from October the 4th to 6th, 2023.</p>	Suggestion accepted.	Correction accepted.
5	<p>Chapter 2.3. Document Review</p> <p>The reviewed documentation is written in the 8th bullet as stated below:</p> <p>Land cover maps: 1990, 1996, 2000, 2003, 2006, 2009, 2011, 2012, 2013, 2015, 2016 and 2017.</p> <p>This statement needs to be added land cover maps of 2018 and 2019.</p>	Suggestion accepted; it was a typo.	Correction accepted.
6	<p>Chapter 2.3 Document Review</p> <p>The reviewed documentation is written in the 11th bullet as stated below:</p> <p>Uncertainty calculation spreadsheet Uncertainty Calculation_Norway_II_20230725 /10/.</p> <p>This spreadsheet is integrated to Spreadsheet_REDD Norway_2006-2019_Final_Update Risk of Double</p>	Suggestion accepted.	Correction accepted.

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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N°	MoEF Indonesia comments (30/11/2023)	AENOR response (30/11/2023)	MoEF Indonesia comments (30/11/2023)
	Claim_as per 23 Nov 23_18_37		
7	<p>Chapter 3.5.2 Emission Factors</p> <p>Moreover, within this same Section, Tables 2 and 3 refer to the deforestation and forest degradation emission factors by forest classes and regions, respectively. As such, Table 2 reports information about the different six forest classes, in accordance with the FREL, for seven (7) different regions: Jawa, Kalimantan, Maluku, Bali-Nusa Tenggara, Papua, Sulawesi and Sumatera. The same principle applies for Table 3, but only for the three primary forest classes: Primary Dryland Forest, Mangrove Forest and Swamp Forest, as there is no forest degradation identified in Secondary Dryland Forest, Mangrove Forest and Swamp Forest.</p> <p>Suggestion:</p> <p>Primary Dryland Forest, Primary Mangrove Forest and Primary Swamp Forest, as there is no forest degradation identified in Secondary Dryland Forest, Secondary Mangrove Forest and Secondary Swamp Forest.</p>	Suggestion accepted.	Correction accepted.
8	<p>Chapter 3.5.2 Emission Factors, in the last paragraph is written as below:</p> <p>The audit team has accessed the National Forest Inventory and crosschecked the information with reported data from the first Indonesian FREL. The information has been consistent with the reported data from the third BUR. The audit team has assessed the rational on the use of Chavel et al, 2005 for quantifying aboveground biomass (AGB).</p>	Suggestion accepted; it was a typo.	Correction accepted.

VERIFICATION REPORT	Indonesia - Norway Verification of reduced emissions from deforestation and forest degradation
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N°	MoEF Indonesia comments (30/11/2023)	AENOR response (30/11/2023)	MoEF Indonesia comments (30/11/2023)
	Chavel needs to be replaced with Chave.		
9	<p>3.10.1. Uncertainty analysis</p> <p>AENOR’s audit team has reviewed relevant evidence regarding the QA/QC procedures applied by the PP, as can be seen within Section 3.9 of this verification report.</p> <p>Please replace “the PP” with “Indonesia”</p>	Suggestion accepted.	Correction accepted.
10	<p>3.13. Result-Based Payment/Contribution, Para 5 is written below:</p> <p>After applying double claiming deductions (see Section 3.11 above), double claim indications for the 2017/2018 period amounted to 736,641 tCO₂-e and in the 2018/2019 period amounted to 291,831 tCO₂-e. The total ER calculation results will be 75,522,287 tCO₂e for the 2017/2018 period and 209,856,132 tCO₂e for the 2017/2018 period, total observation period (2017/2018 and 2018/2019) will be amount to 285,378,419 tCO₂-e.</p> <p>The highlighted word needs to be replaced by 2018/2019.</p>	Suggestion accepted; it was a typo.	Correction accepted.

No comments have been provided by The Royal Norwegian Ministry of Climate and Environment.