JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Rehabilitation Project of Power Generation System at Karai 7 Mini Hydro Power Plant
Reference number	ID035
Third-party entity (TPE)	PT Mutuagung Lestari Tbk (TPE-ID-011)
Project participant contracting the TPE	Voith Fuji Hydro K.K.
Date of completion of this report	25/11/2024

A.2 Conclusion of validation

Overall validation opinion	☒ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☒
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☒
Application of approved JCM methodology (ies)	The project is eligible for applying applied methodology and that the applied version is valid at the time of submission of the proposed JCM project for validation.	☒
Emission sources and calculation of emission reductions	All relevant GHG emission sources covered in the methodology are addressed for the purpose of calculating project emissions and reference emissions for the proposed JCM project.	☒
	The values for project specific parameters to be fixed *ex ante* listed in the Monitoring Plan Sheet are appropriate, if applicable.	☒
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Republic of Indonesia, in line with Indonesia's procedures.	☒
Local stakeholder consultation	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project unless a local stakeholder consultation has been conducted	☒

Item	Validation requirements	No CAR or CL remaining
	under an environmental impact assessment.	
Monitoring	The description of the Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet) is based on the approved methodology and/or Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan, and Monitoring Report. The monitoring points for measurement are appropriate, as well as whether the types of equipment to be installed are appropriate if necessary.	☒
Public inputs	All inputs on the PDD of the proposed JCM project submitted in line with the Project Cycle Procedure are taken into due account by the project participants.	☒
Modalities of communications	The corporate identity of all project participants and a focal point, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories are included in the MoC.	☒
	The MoC has been correctly completed and duly authorized.	☒
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	☒
Start of operation	The start of the operating date of the proposed JCM project does not predate January 1, 2013.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Masduki	First name: Ibrahim Pasha
Title: Operational Manager	
Specimen signature: [redacted] Date: 25/11/2024	

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☐ Ms. ☒	Yuniar Mitikauji	PT Mutuagung Lestari Tbk	Team Leader	☒	Authorized	☒
Mr. ☒ Ms. ☐	Irham Hatami	PT Mutuagung Lestari Tbk	Team Member	☒	Authorized	☒
Mr. ☒ Ms. ☐	Muhammad Yusuf Maulana	PT Mutuagung Lestari Tbk	Team Member	☒	Authorized	☒
Mr. ☒ Ms. ☐	Dwi Kus Pardianto	PT Mutuagung Lestari Tbk	Independent Review	☒	Authorized	☒

Please specify the following for each item.

* *Function: Indicate the role of the personnel in the validation activity such as team leader, team member, technical expert, or internal reviewer.*

* *Scheme competence: Check the boxes if the personnel have sufficient knowledge on the JCM.*

* *Technical competence: Indicate if the personnel have sufficient technical competence related to the project under validation.*

C. Means of validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

Based on the results of checking the PDD of the proposed project, the PPs have used the latest PDD writing format as stipulated by the JCM guidelines for PDD writing and the applicable monitoring guidelines.

JCM's proposed project aims to reduce greenhouse gas emissions by renovating the Karai 7 Hydroelectric Power Plant in North Sumatra, Indonesia, using Voith Hydro's latest turbine technology, including HVOF coating, to enhance durability. This innovation is expected to increase annual electricity output significantly, raising the plant's capacity from 7.08MW to 7.7MW. The project, owned and operated by PT Global Karai Energy, contributes to the regional electricity grid, addressing power shortages and promoting green energy adoption.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

The rehabilitation project proposed by JCM for the Karai 7 Hydroelectric Power Plant in North Sumatra, Indonesia, aims to enhance energy output through innovative turbine technology, contributing to greenhouse gas reduction and bolstering regional renewable energy capacity. MUTU concludes that the implementation and the operation of the implemented JCM project comply with the eligibility criteria of the approved methodology approved by JCM ID_AM021.

C.2. Project description

<Means of validation>

[Completeness of PDD form]

The MUTU validation team has conducted an assessment of the purpose of the project as outlined in the PDD. The proposed JCM project aims to reduce greenhouse gas emissions by rehabilitating the river-type hydroelectric power generation system, specifically the Karai 7 Hydroelectric Power Plant in North Sumatra, Indonesia. By implementing the latest turbine technology from Voith Hydro, including High Velocity Oxygen Fuel (HVOF) coating, it is anticipated that maximum output and annual electricity generation will increase through this rehabilitation project.

The assessment of how the proposed project reduces greenhouse gas emissions, through the implementation of the latest turbine technology from Voith, results in an increase in the capacity of the Karai 7 Hydroelectric Power Plant from 7.08 MW (3.54 MW x 2 systems) to 7.7 MW (3.85 MW x 2 systems). This hydroelectric power generation project is connected to the national/regional electricity grid, thus the increase in electricity generation through this rehabilitation contributes to alleviating power shortages and enhancing green energy with renewable energy sources in the region.

MUTU has conducted a site check on the project's activities and facilities, based on the Project Design Document (PDD) indicating the location situated at Simanambun, Pasir Melayu, Silau Kahean, Simalungun Regency, North Sumatra, Indonesia, Latitude N 3°06'07.1" and Longitude E 98°48'30". Considering the results of the site visit's coordinate verification, the information stated in the PDD was found to be accurate and correct.

Based on the assessment of the conformity of the Project Participants listed in the Project Design Document (PDD) with the relevant MoC documents from the results of desk reviews and interviews with the Project Proponents (PPs), it is confirmed that the Project Participants from Indonesia are PT Global Karai Energy, and from Japan, Voith Fuji Hydro K.K. The project started on January 1, 2023, and the expected operational life of the project is 22 years.

Support from Japan, in this case, is provided by the Ministry of the Environment of Japan (MOEJ) through the financing program for JCM model projects. MOEJ offers financial support amounting to less than half of the initial investment for projects with the aim of obtaining JCM credits. Japan also provides support in the form of instructions and training for the operation and maintenance (O&M) of equipment units at the power plant site for the operator and maintenance teams. The training was conducted on January 24, 2023.

[Development of Monitoring Plan]

The MUTU validation team has reviewed the monitoring documents submitted by the Project Proponent (PP), as follows:

Monitoring Point of EGi,p: Quantity of net electricity generated by the project's hydro power generation systems i during the period p (MWh/p).

Measured data from the electricity meter is utilized to determine the net power output of the project's hydro power generation system. If measured data from the electricity meter is used, readings are conducted manually or electronically using a data logger. The electricity meter is replaced or calibrated at intervals following regulations from PLN (conducted every 1-2 years). Monitoring of electricity generated data is recorded once a month.

MUTU Validation Team also confirmed to the PP regarding the Monitoring Structure of the project activities that have been determined and ensured that the roles and responsibilities of each role and position specified are consistent with the descriptions contained in the Monitoring Structure Sheet (MSS) of the registered Project Design Document (PDD).

The division of tasks, authorities, and responsibilities for each role in the project activities is as follows:

- Project Manager (Voith Fuji Hydro K. K.): Responsible for project implementation, monitoring results, and reporting.
- Deputy Project Manager (PT Global Karai Energy): Appointed to oversee the verification of archived data.
- QA/QC Team (PT Global Karai Energy): Responsible for checking the archived data for irregularities and calibrating the monitoring equipment.
- Operator for Monitoring (PT Global Karai Energy, Karai 7 Power Station): Responsible for conducting monthly monitoring, operation, and maintenance of the plant facility.

Training for the maintenance and operation of the project furnace was conducted on 24/01/2023, based on the document "O&M On-Site training Minutes of Activity_24-Jan-2023".

[Preparation of the actual measurement]

Based on the results of the interview verification with the Project Proponent (PP), the frequency/interval of calibration for the measuring instruments of the electricity meter in project activities is conducted every 1-2 years. The PP's basic statement for determining this calibration interval refers to the regulations on the calibration interval of electricity meters by PLN currently in effect. The MUTU validation team has reconfirmed the regulations referred to by the PP and confirmed the calibration interval for electricity meters as set by PLN, which is once a year for digital measuring devices and once every 2 years for analog measuring devices, with a checking interval between devices every 6 months.

The electricity meter used to monitor project activities includes:

1. ITRON electricity meter with type SL 761A071 installed on 2/7/2020, with accuracy levels based on specification documents (Direct connected, Class 1 or Class B).
2. EDMI electricity meter with type MK6E and specifications (based on documents of checking and calibration of measuring devices) Current 5(10)A, Voltage 3x57.7/100V - 3x230/400V, Class 0.2S.

[Compatibility of project activity implementation with the approved methodology]

The methodology that has been approved by JCM ID_AM021 (Electricity generation by rehabilitation of run-of-river hydro power generation system(s) in Indonesia, ver1.0) is used to calculate reference emissions based on Reference emissions are calculated with the net electricity output of the hydro power generation system(s), maximum output of reference hydro power generation system(s), maximum output of project hydro power generation system(s), multiplied by either;

1) conservative emission factor of the grid, or

2) conservative emission factor of the captive diesel power generator based on the location of the projects.

Project emissions are the emission from the hydro power generation systems, which are assumed to be zero. and the monitoring parameters are based on the net electricity generated by the project hydro power generation systems.

The methodology consists of one eligibility criteria as outlined below, MUTU assesses the project's implementation compliance with eligibility criteria through a desk review of relevant documents listed in the annex to this validation report.

Criterion 1 : The project increases the power generation capacity of an existing run-of-river hydro power generation system by rehabilitation.

during the desk review, the MUTU Validation Team requested supporting documents for clarification that plant operations started after the rehabilitation phase. PP stated that it completed installation and commissioning on December 21, 2022, with the issuance of a commissioning completion certificate. PP considered the project fully operational on January 1, 2023. Based on the team's examination, PP confirmed this date as the start of full operation after the commissioning test on December 21, 2022. The validation team assessed that based on the documents and information at the site, they were in place and adequate.

Also one of the matters discussed at the desk review, TPE required additional evidence in the form of an agreement document between Voith Fuji K. K. and PT GKE, which PP confirmed by attaching it to TPE. The MUTU validation team assesses that the cooperation agreement is in place and adequate.

<Findings>
No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Based on the results of checking by the MUTU validation team, it can be concluded that the assessment of the PDD in the proposed project has met the criteria specified by the JCM, including completeness, development of a monitoring plan, and preparation for actual monitoring measurements.

C.3. Application of approved methodology(ies)

<Means of validation>
The proposed project has applied approved methodology ID_AM021_ver01.0 "Electricity generation by rehabilitation of run-of-river hydro power generation system(s) in Indonesia". The methodology was approved by the Joint Committee on October 31st 2019 as an initial approval.
The validator team has checked project applicability against eligibility of one criteria as mentioned in the approved methodology. The project information for eligibility criterion and the conclusion about its applicability to the proposed project are summarized as follow :

Criterion 1:
The project increases the power generation capacity of an existing run-of-river hydro power generation system(s) by rehabilitation.

Based on review of relevant documents, observation on site visit, and interview with relevant personnel, this project rehabilitated a 7.08 MW (3.54MW x 2 systems) Hydropower project (a run-of-river type system) in North Sumatra, and increased the capacity to 7.7MW (3.85MW x 2 systems). The manufacturer is Voith Hydro Indonesia. Turbine type Horizontal Francis Turbine & Generator type Horizontal Brushless Synchronous Generator. Result of the commissioning of load 72 hours the average is around 4 MW and the nameplate of the specification generator machine is 4.25 MW. However, in the state PDD and MPS the capacity

is 3.85MW. It is confirmed through justification by PP that after the installation of the new unit, the peak capacity of the plant reached about 4.2MW due to efficiency improvement design. After re-examining the design using the head and flow rate given after the equipment contract, it was found that the appropriate installed capacity was optimized to 4,250kW (4.25MW) and the validation team assessed that the capacity generator engine has been revised in PDD and the calculation for the reference emission in the MPS are in accordance and sufficient.

<Findings>
No issue was raised to the requirement.

<Conclusion based on reporting requirements>
The validation team confirmed that the project applied the valid version of the approved methodology and the applicability was demonstrated to the eligibility criteria as appropriate.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The proposed JCM project aims to reduce greenhouse gas emissions through the installation of the latest turbines from Voith Hydro including High Velocity Oxygen Fuel (HVOF) coating to increase wear resistance and replacement of generators. As methodology ID_AM021 "Electricity generation by rehabilitation of run-of-river hydro power generation system(s) in Indonesia, ver1.0" The increased electricity production generated contributes to mitigating energy shortages and enhancing green energy through renewable sources in the area.

Reference emissions (REs) are sourced from consumption of grid electricity including national/regional and isolated grids and/or captive electricity and the project emissions from generation of electricity from the hydro power generation system(s).

Reference emissions are calculated based on: the Quantity of the net electricity generated by the project hydro power generation system i during the period p [MWh/p]; the Maximum output of the reference hydro power generation system i [MW]; the Maximum output of the project hydro power generation system i [MW]; Reference CO2 emission factor for the project hydro power generation system I [tCO2/MWh].

Factor Emissions [EFRE,i] are calculated in case the hydro power generation plant in a proposed project activity is directly connected or connected via an internal grid, not connecting to either an isolated grid or a captive power generator, to a national/regional grid (Case 1). Therefore, the following default value specified in the methodology shall be adopted by Sumatra grid 0.477 tCO2/MWh.

The ex-ante value of EGi,p within the MPS (input) is derived from the estimation calculation: This estimation is based on the calculation of annual electricity generated, where: the potential water power (Pw) is obtained from the water flow rate based on the average water flow available for hydropower generation (flow water) and a water elevation of 80.03 m based on turbine testing. Then, the turbine efficiency of 0.9177 is obtained from turbine testing. The generator efficiency of 0.97 is obtained from generator testing. The loss factor value used is a power factor value of 0.97 obtained from generator testing. Refer to the document in section E.2.

[EGi,p] = (9.8 x Water flow rate x Water elevation) x Efficiency of turbine x Efficiency of generator x Loss factor of transmission x 24 hours

= (Estimated daily generated electricity) - (Estimated daily generated electricity x 0.015 Average consumption internal 1-day)

= (Average amount of electricity available for sale on operating days x Operating days per month in annual)

= 48,312.63 MWh/p

[MORE,i] of 2x3.54 MW is obtained from the specification capacity of previous power generation.
[MOPJ,i] of 2x4.25 MW is obtained from the specification of installed capacity of power generation.

The annual hydro power generation of the project is estimated ex-ante at 48,312.63 MW. The estimation is based on the calculation of the annual generated electricity as follow :
REp = 48,312.63 MW X (1-7.08 MW/8.50 MW) x 0.477tCO2/MWh = 3,849.89 tCO2
PEp = 0

ERp = REp – Pep
ERp = 3,849.89 tCO2 - 0
ERp = 3,849.89 tCO2

The validation team assessed the documented evidence and confirmed that all the relevant GHG emission sources covered in the applied methodology and the steps taken and the equations applied to calculate REs for the proposed project comply with the requirements of the approved methodology.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

The validation team assessed that all emission sources and GHG types specified in the approved methodology are appropriately justified. The value of parameter to be monitored ex-post [EGi,p] in the MPS is correctly estimated base on the data of water flow rate, water elevation, efficiency of turbine and generator, and the values for the project-specific parameter to be fixed ex-ante [MORE,i], [MOPJ,i], and [EFRE,i] is also correctly determined by using the default value. In addition, the formula of calculation reference emission, project emission and reduction emission are appropriate and calculations are correct as applicable to the proposed JCM project. The validation team concluded that the MPS are in accordance with the methodology and the values of each parameter and calculation are considered reasonable in the context of the proposed JCM project.

C.5. Environmental impact assessment

<Means of validation>

MUTU validation team has assessed completeness of official documents related to the Environmental Impact Assessment of the proposed project, the proposed project is a rehabilitation project, so the previously available EIA documents do not require revision.

The proposed project undergoes rigorous pollution control measures. It does not emit air pollutants or discharge water pollutants, nor does it generate waste. While there is a slight increase in noise and/or vibration levels compared to the current status, tests conducted at the site reveal that these remain below government quality standards. Furthermore, the project does not cause ground subsidence or emit odors, ensuring minimal environmental impact and compliance with regulations.

The assessment of Safety and Health aspects for the proposed project indicates compliance with applicable Occupational Health and Safety (OHS) criteria. Personnel demonstrate a thorough understanding of associated risks and utilize appropriate personal protective equipment. Adequate supporting equipment, such as fire extinguishers, is available to mitigate hazards. Furthermore, comprehensive risk mitigation measures are outlined in Standard Operating Procedures (SOPs) developed by the project participants, ensuring a safe and healthy work environment throughout project operations.

The proposed project's impact on the natural environment and biodiversity is minimal. It is not situated in protected areas designated by national laws or international treaties. Additionally, the project does not alter land use in communities or protected habitats for endangered species. It does not introduce foreign species or involve construction activities that affect the natural environment. Furthermore, the project does not utilize surface water, groundwater, or deep groundwater, ensuring preservation of environmental integrity and biodiversity.

The proposed project demonstrates positive economic impacts without adversely affecting local workforce capacity or the welfare of the community. It contributes to economic growth and stability by providing opportunities for employment and fostering community well-being. Additionally, it promotes local development and prosperity without imposing negative repercussions on the workforce or community welfare, ensuring sustainable economic benefits for all stakeholders involved.

The proposed project demonstrates a commitment to social responsibility and community engagement. It does not trigger resettlement or conflict, ensuring stability and harmony within the local community. Moreover, the project actively addresses and follows up on comments and complaints received from local communities, prioritizing transparency and accountability. Additionally, project participants adhere to all relevant laws and ordinances pertaining to working conditions, respecting the rights and well-being of local communities. This approach fosters a positive social environment and encourages meaningful community participation in the project's development and implementation.

The proposed project emphasizes the importance of technology transfer and technical assistance to enhance human resource capacity. It ensures that activities are in place to facilitate the transfer of knowledge and skills, promoting sustainable development and empowering local communities. Additionally, the project provides comprehensive information on technology specifications, including manuals and troubleshooting guides in both English and Bahasa Indonesia. This ensures effective operation of the project on-site and enables personnel to address any potential challenges that may arise, fostering efficiency and reliability in project implementation.

The purpose of the proposed project is to reduce CO2 emission from the consumption of the grid electricity, by displacing the grid electricity to the electricity generated by the mini hydro power plant (rehabilitation project) in North Sumatera.

The objective of the proposed project is to reduce CO2 emissions from the consumption of grid electricity by replacing grid electricity with green energy generated by a mini-hydro power plant in the form of a rehabilitation project of a recently installed VOITH unit in North Sumatra.

The PDD states that an Environmental Impact Assessment (AMDAL) is required for the proposed project, which involves physical development affecting the community and environment around the project site. Therefore, the report entitled "Environmental Management Plan and Environmental Monitoring Plan for the 7.7 MW Hydro Power Plant Project in North Sumatra" has been submitted to the Government of Simalungun Regency and reviewed by the

Department of Forestry and Environment Pematang Raya, North Sumatra on February 18, 2021 and approved on March 3, 2021.

Through the review of relevant documents and email interviews with PP, it can be confirmed that mitigation measures have been implemented during construction and operation in accordance with the AMDAL by considering the impacts on the natural environment and biodiversity expected to occur during the construction and operation phases.

<Findings>
No issues identified from the specified requirements

<Conclusion based on reporting requirements>

MUTU has assessed that the proposed project aims to diminish CO2 emissions by substituting grid electricity with green energy generated by a mini-hydro power plant in North Sumatra. An Environmental Impact Assessment is mandated for the project, with the "Environmental Management Plan and Environmental Monitoring Plan" duly reviewed and approved by relevant authorities. Mitigation measures have been implemented during construction and operation, aligning with AMDAL regulations and considering impacts on the natural environment and biodiversity.

C.6. Local stakeholder consultation

<Means of validation>

The project proponent conducted consultations with local stakeholders through an online meeting on October 4th, 2023.

The list of participants who attended the meeting was determined in consultation with the JCM Indonesia Secretariat.

Date and Time: 4th October 2023, 9:00-10:00 (Indonesian Western Standard Time)

Place: Web conference

Agenda:

1. Opening Remarks
2. Introduction of the project
3. Overview of the JCM
4. Question and answer session

Participants:

[Local stakeholders]

1. Indonesia JCM Secretariat / Coordinating Ministry for Economic Affairs of Indonesia
2. Ministry of Energy and Mineral Resources (MEMR)

There is no further action required as for the consideration of comment received to be taken by the PPs. It is confirmed through the review of the relevant documents and the interview with the PPs during the online consultation assessment that the stakeholder consultation process was appropriately conducted to collect stakeholder’s opinion

The summary of the comments received in the consultation and due account of all comments taken by the PP’s are fully described in the PDD.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>
MUTU validation team concludes that the PPs have appropriately completed a local stakeholder consultation process and invited comments from the stakeholders relevant to the project. The minutes of meeting of the comments received is provided in the PDD in a complete manner.

C.7. Monitoring

<Means of validation>
The monitoring plan consists of the Monitoring Plan Sheet (MPS) and the Monitoring Structure Sheet (MSS) referring to the approved methodology. There are several monitoring parameters as follows:
1. The quantity of net electricity generated by the project's hydro power generation system(s).

The monitoring point is located at the grid substation. There are 2 electricity meters installed at the substation, the first one belongs to PT GKE, an ITRON type meter used as a monitoring point, and the second one belongs to PLN, an EDMI type meter used for comparison. Both electricity meters have been calibrated in accordance with PLN regulations. It is confirmed through justification by PP that the frequency of calibration which is carried out every 2 years at once, calibration is carried out simultaneously between 2 devices and calibration certificates are available. Measurements are conducted continuously, and electricity production can also be monitored automatically through a data logger system and manually. Reading and recording of these meters are performed jointly by personnel from PT GKE and PLN on the first day of each month. These recordings represent the net electricity generated by the mini hydro power plant, which is then supplied to the PLN substation. Monthly recordings will be used as parameters for ex-post calculations. Based on interviews with relevant personnel, daily monitoring is also conducted by taking photos of the kWh meters belonging to PT GKE and PLN at 10 a.m. and 7 p.m., and evidence of these recordings was provided during the site visit.

The roles and responsibilities of the personnel are described in the Monitoring Structure Sheet (MSS). The monitoring structure consists of Project Manager (Voith Fuji Hydro K.K.) is responsible for project implementation, monitoring outcomes, and reporting. Deputy Project Manager (PT Global Karai Energi HQ) is responsible for confirming recorded data and archived data. The QA/QC team (PT Global Karai Energi HQ) is responsible for inspecting archived data for irregularities and calibration of monitoring equipment. Operator for monitoring (PT Global Karai Energi, Karai 7 Power Station) is responsible for monthly monitoring, as well as operation and maintenance of plant facilities.

The validation team confirmed through the review of the relevant document, interview with personnel relevant and observation site visit that the PP are able to implement the monitoring activity appropriately to the monitoring plan.

Regarding the procedure of the monitored data, and recording of data, the validation team raised CAR 01 and CAR 02 were issued that the details of resolution are as described below.

<Findings>
<Issue Raised as CAR01 >
Based on site verification, it is sighted that the project participant has conducted the daily data record. In the project facility, the record is conducted automatically using SCADA and manually

by operator manual record. The hard copy of the manual data recorded is sighted and the data input to the excel system is sighted. Based on interview there is project participant representative there is a daily double check on the manual data input to excel sheet. There is monthly report to PLN using data from meter in Gardu Induk. However, the SOP for this monitoring record is not yet available

<Response provided by the PP>

The Project proponent has provided documents evidence of data flow management related to the flow record data. The data management consisting mechanism from data collection, data input, data transfer and data monitoring applied by project proponent in managing the quality and completeness of data flow avoiding data gap in calculation.

<Assessment of the response by the TPE>

The validation team assessed that the SOP document has been provided, and it describes the recording data flow. Base on the review of the corrective evidence, the document was sufficient.

<Issue Raised as CAR 02 >

Monitoring is already conducted by daily checking intervals about 10 am to 7 pm and PP is already done monthly. Daily record, however the recording has not been provided yet.

<Response provided by the PP>

Project proponent has provided documents "LOG SHEET 01-06-2023 up to 30-06-2023". Based on the justification by the Project Proponent, monitoring is conducted by taking photos of the kWh values on both installed electricity meters, one of which belongs to GKE, at the grid substation every day at 10a.m. and 7p.m. Additionally, real-time monitoring is conducted using the SCADA/data logger system with a one-hour interval.

<Assessment of the response by the TPE>

The record is provided in the form of a photo taken from the meter every 10 am to 7 pm. Based on the comparison between the log sheet with electricity sales certificate to PLN in June, there is a difference in values due to losses during distribution to the substation. However, the difference is not significant. Based on the review on the corrective evidence provided, the data is complete and sufficient. Based on the review, the CAR 02 is closed.

<Conclusion based on reporting requirements>

The Validation team assessed that the description of the MPS and MSS complies with the requirements of applied methodology. JCM Guidelines for Developing PDD, MR, Monitoring point and measurement equipment are in accordance and the PP have demonstrated feasibility of the monitoring structure and their ability to implement the MP.

C.8. Modalities of Communication

<Means of validation>

MUTU conducted an assessment of the Monitoring Plan (MoC) submitted by the Project Proponent (PP). The review confirms that the PP utilized the latest version, JCM_ID_F_MoC_ver01.0 form. Voith Fuji Hydro K.K. serves as the focal point entity, while PT Global Karai Energi acts as the project participant entity.

The MoC bears the signatures of authorized representatives from both entities. A profile check during the desk review, along with coordination with the PPs, validated the accuracy and validity of all corporate and personal details, including signatures, as stipulated by the JCM Guideline for Validation and Verification activities.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>
The validation team from MUTU has concluded that the Monitoring Plan (MoC) was prepared using a valid version of the form. Furthermore, they found that the information provided, as well as the specimen signatures of the Project Proponents (PPs) included in the MoC, were accurate and comprehensive, meeting the requirements outlined in the JCM Guidelines.

C.9. Avoidance of double registration

<Means of validation>
The representative from the focal point entity in the MoC, Chief Sales Officer, Head of Sales & Proposals Voith Fuji Hydro K.K., stated that the proposed project is not registered under any other international climate mitigation mechanisms apart from the JCM, as confirmed in the document submitted on December 27, 2023.

This was verified through public information checks, revealing that the proposed project is not listed under other international greenhouse gas (GHG) programs in terms of entity name, applied technology, and location.

Therefore, it can be concluded that the proposed project will not result in double counting in GHG emissions reduction.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>
The validation team at MUTU has concluded that the proposed project is not registered under any other international climate change mitigation mechanism scheme. Furthermore, they have confirmed that there is no occurrence of double counting in greenhouse gas (GHG) emission reduction within the proposed project.

C.10. Start of operation

<Means of validation>

The installation of the Rehabilitation Project of Power Generation System at Karai 7 Mini Hydro Power Plant was completed at the project site from August, 2022 until December, 2020. The commissioning of Rehabilitation Project Power Generation System Mini Hydro were start from October 22, 2022 unit 2 and December 20, 2022 unit 1.

Based on the review of relevant documents and interviews with relevant personnel, the project implementation commenced on January 1, 2023, as stated in the PDD. This has been confirmed through the document "Completion Erection & Commissioning Certificate of unit 1 & 2 Karai 7 (2 x 4.4MW) Hydro Electric Project," which underwent a load test for 72 hours on October 22, 2022, for unit 2 and December 20, 2022, for unit 1. Additionally, it has been signed by PT. Voith Hydro Indonesia and PT. Global Karai Energi.

<Findings>

No issue was raised to the requirement.

<Conclusion based on reporting requirements>
The validation team confirmed that the start date of operation of the proposed JCM project is

01/01/2023 and not before 01/01/2013 as required to be eligible as a JCM project.

C.11. Other issues

<Means of validation>

No more issued are raised in the validation of the project

<Findings>
Not applicable

<Conclusion based on reporting requirements>
Not applicable

D. Information on public inputs

D.1. Summary of public inputs

In line with the JCM Project Cycle Procedure, the PDD was made publicly available for 30 days from February 05, 2024 to March 05, 2024 to invite public comments on the following JCM website https://www.jcm.go.jp/id-jp/projects/119

As a results, no public comments were received.

D.2. Summary of how inputs received have been taken into account by the project participants

Not applicable.

E. List of interviewees and documents received

E.1. List of interviewees

1. PT Global Karai Energi
   - Muhammad Fajar Griyadi (Operational Director)
   - Jonson Situmorang (Assistant to Operational Director)
   - Ahmad Rifai (Plant Manager)

2. Voith K. K.
   - Kato Naoto

3. NTT Data IOMC
   - Shintaro Higashi

E.2. List of documents received

1. Evidence document of substitute turbine & generator installation
2. Commissioning Documents
3. Manual Book of Turbine Operation
4. Manual Book of Generator Operation
5. Power Purchase Agreement Document between PLN and Global Karai Energi
6. Regulatory Documents from Japanese Government governing mini hydro for operation duration for 22 years
7. Training record for the operation and maintenance (O&M) for the operator team and the maintenance team on 24-Jan-2023
8. Organization Chart PLTM Karai 7
9. SOP Operator Power House
10. SOP Perawatan Unit Turbin
11. Line diagram of Electricity Mini Hydro Power Plant
12. Operation and Control Panel maintenance procedure
13. Evidence of stakeholder consultation held on 4-Oct-2023
14. Minute of meeting of stakeholder consultation on 4-Oct-2023
15. Environmental Impact Assessment Document (UKL-UPL, AMDAL) (UKL-UPL PLTM Karai 7)
16. Document JCM SDIP
17. Monthly Record of Net Electricity Generated used in the MPS
18. Specifications of Metering Tools
19. PLN regulation on Electricity Meter Calibration
20. Certificate of Electricity Meter Calibration
21. Procedure on data monitoring and storage
22. Agreement on International Consortium
23. Berita acara peneraan alat ukur PLTM Karai 7
24. [3-10] Turbine specification proposed in Oct-2018 (Expected Value)
25. Document LOG SHEET PLTM KARAI 7
26. DIAGRAM SOP ALUR DATA PH-Model
27. Logsheet PLTM Karai 7 Unit 1 & 2

Annex Certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers

Personnel	**Yuniar Mitikauji**
Certification Scheme	GHG Validation and Verification
Specific Scope	JCM
Basic Competencies	
Parameter	**Observation**
Work Experience	1. Research Assistant in Forestry Faculty, Gadjah Mada University, 2003 - 2005 2. Program Manager of Land Rehabilitation Project in Samboja Lestari Project, East Kalimantan, 2005 - 2008 3. Coordinator of Roundtable Sustainable Palm Oil (RSPO) Certification Scheme at PT Mutuagung Lestari, Auditor of Indonesia Sustainable Palm Oil (ISPO) and RSPO, 2014 – 2018 4. Sub Division Manager of Energy and Industry Certification; Auditor of ISO 14064, ISPO, RSPO, International Sustainability and Carbon Certification (ISCC), Joint Crediting Mechanism (JCM) and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) 2018 – now
Training	• ISPO Training on June 2014 • RSPO Training on September 2014 • ISO 14064; 2009 of emission validation and verification Training on June 2015 • ISO 50001 of energy management Training on April 2018 • SA 8000 of Social Accountability Certification Training on May 2018 • Life Cycle Assessment (LCA) Training on February 2019 • CORSIA Training by Joint Aviation Authorities Training Organisation (JAA Training Organisation) on May 2019 • ISCC Training by ISCC Secretariat on May 2019 • GHG Management Training (New standards), March 2021
Auditing Experience	Audit on certification scheme of RSPO and ISPO since 2014 – now Audit on certification scheme of ISCC since 2018 – now Verification of JCM, ISO 14064 since 2018 – now

Personnel	**Irham Hatami**
Certification Scheme	GHG Validation and Verification
Specific Scope	JCM
Basic Competencies	
Parameter	**Observation**
Work Experience	1. Validator / Verificator in Trainee for GHG Scheme at PT. Mutuagung Lestari Tbk (2023 – Present). 2. Staff Colocation DC in Technology Department at PT. Telin (2022-2023) 3. Staff Efficiency Energy in Responsible Supply Chain Department at PT. Adis Dimension Footwear (2021 – 2022)

Training	• ISO 14064 Series Training by ALSI on Oct 2023 • Life Cycle Assessment (LCA) (ISO 14040, 14044, and 14020) Training on 2023 • ISO 50001:2018 on 2022 • ISO 14001:2018 on 2022 • ISO 45001:2018 on 2022
Auditing Experience	Internal auditor Energy management in PT. Adis Dimension Footwear 2021-2022

Personnel	**Muhammad Yusuf Maulana**
Certification Scheme	GHG Validation and Verification
Specific Scope	JCM
Basic Competencies	
Parameter	**Observation**
Work Experience	• Laboratory Chemical Analyst for Agriculture, Food, & Environmental Sector. (2016 - 2019) • Laboratory Business & Testing Method Research and Development (2020 - Present) • Validator / Verificator in Trainee for GHG Scheme (2023 - Present)
Training	• ISO 17025 (Sep 2020) • ISO 9001 (Nov 2023) • ISO 19011 (Nov 2023) • ISO 14064 Series (Oct 2023)
Auditing Experience	• Auditor for testing and calibration laboratory competence (2020-Present) • Observer for JCM Validation & verification (Feb 2024)

Personnel	**Dwi Kus Pardianto**
Certification Scheme	GHG Validation and Verification
Specific Scope	JCM
Basic Competencies	
Parameter	**Observation**
Work Experience	1. Assistant professor in Marine Biology Department, Pukyong Nat'1 Univ. Republic of Korea. 2015 - 2017 2. Manager Subdivision Quality Assurance PT Mutuagung Lestari, 2019 - present
Training	• Workshop training on GHG Management and verification, November 2017 • Life Cycle Assessment on July 2018 • CORSIA Verifier by Indonesia DGCA on July - August 2019 • JCM-TPE Training by JCM Indonesia Secretariat and IGES on September 2019 • ISCC Basic training on December 2019 • GHG Management Training (New standards), March 2021
Auditing Experience	• Validation in JCM on August 2018 • Validation and verification for others GHG Program on September 2019 – present • ISCC audit, 2020 – present • Verification for CORSIA, 2021 – present • Validation for Sistem Registri Nasional, 2022 - present