

## JCM Validation Report Form

### A. Summary of validation

#### A.1. General Information

Title of the project	10 MW Mini Hydro Power Plant Project in North Sumatra
Reference number	ID027
Third-party entity (TPE)	Japan Quality Assurance Organization (JQA) (TPE-ID-003)
Project participant contracting the TPE	TOYO ENERGY FARM CO., LTD.
Date of completion of this report	31/03/2021

#### A.2 Conclusion of validation

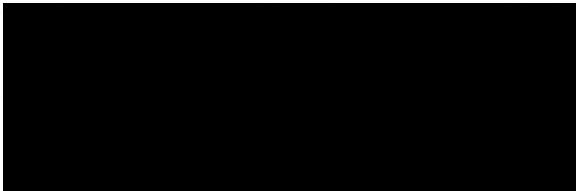
Overall validation opinion	<input checked="" type="checkbox"/> Positive <input type="checkbox"/> Negative
----------------------------	---

#### 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.	<input checked="" type="checkbox"/>
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
	The values for project specific parameters to be fixed <i>ex ante</i> listed in the Monitoring Plan Sheet are appropriate, if applicable.	<input checked="" type="checkbox"/>
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Republic of Indonesia, in line with Indonesia's procedures.	<input checked="" type="checkbox"/>
Local stakeholder	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage	<input checked="" type="checkbox"/>

Item	Validation requirements	No CAR or CL remaining
consultation	stakeholders and solicit comments for the proposed project unless a local stakeholder consultation has been conducted 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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
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.	<input checked="" type="checkbox"/>
	The MoC has been correctly completed and duly authorized.	<input checked="" type="checkbox"/>
Avoidance of double registration	The proposed JCM project is not registered under other international climate mitigation mechanisms.	<input checked="" type="checkbox"/>
Start of operation	The start of the operating date of the proposed JCM project does not predate January 1, 2013.	<input checked="" type="checkbox"/>

Authorised signatory:	Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>
Last name: Asada	First name: Sumio
Title: Senior Executive	
Specimen signature:	Date: 31/03/2021
	

## B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Tadashi Yoshida	External Individual	Team Leader	<input checked="" type="checkbox"/>	Authorized	<input type="checkbox"/>
Mr. <input checked="" type="checkbox"/> Ms. <input type="checkbox"/>	Hiroshi Motokawa	JQA	Internal Reviewer	<input checked="" type="checkbox"/>	Authorized	<input type="checkbox"/>

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>

The PDD form is checked and confirmed to be complete in accordance with the JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM\_ID\_GL\_PDD\_MR\_ver03.0). The latest version of the JCM PDD form (JCM\_ID\_F\_PDD\_ver02.0) is used for the PDD of the proposed project.

#### <Findings>

No issues are raised to the requirement.

#### <Conclusion based on reporting requirements>

The validation team concludes that the PDD is completed using the valid version of the PDD form and drafted in line with the JCM Guidelines for Developing Project Design Document and Monitoring Report.

### C.2. Project description

#### <Means of validation>

The purpose of the proposed project is to reduce CO<sub>2</sub> emissions from the national/regional grid electricity by displacing the grid electricity with the electricity generated by the mini hydro power plant. The introduction of hydro power plant which utilizes the renewable energy

resource contributes to the reduction of electricity shortage in North Sumatra, Indonesia. The run-of-river type hydro power plant with a capacity of 10 MW (2 x 5 MW turbine-generator unit) was newly installed at Sibarung Barung/Sion Selatan, Humbang Hasundutan, North Sumatra, Indonesia, and has been successfully operated since 27/08/2020. The mini hydro power plant was manufactured by Voith Fuji Hydro K.K., Japan, and owned and operated by PT. Citra Multi Energi (hereinafter called CME).

All electricity generated by the hydro power plant is delivered to the Sumatra grid via Dolok Sanggul grid substation. The proposed project would generate electricity of 68.78 GWh per year, which corresponds to the emission reductions of 32,807 tCO<sub>2</sub> per year and 339,485 tCO<sub>2</sub> in total during the monitoring period of 2020 - 2030.

The proposed project is implemented by TOYO ENERGY FARM CO., LTD from Japan and CME from the Republic of Indonesia. The commissioning of the hydro power plant was satisfactorily completed by PT. VOITH HYDRO INDONESIA on 22/08/2020, based on the 72 hours load run test of Unit 1 and Unit 2 of the hydro power plant. PT. PLN (Persero) UIW Sumatera (Buyer) and CME (Seller) agreed and signed to start the commercial operation of 2 x 5 MW Sion Mini Hydro Power Plant Project on 27/08/2020 (Nomor: 0082.BA/KIT. 10.01/08000000/2020). Thus, it is confirmed that the starting date of project operation is 27/08/2020.

The expected operational lifetime of the project is 22 years, which is based on the legal durable years for the facilities of retailing business issued by Ministry of Finance, Japan.

The proposed project was partially financed by the Ministry of the Environment (MOE), Japan, through the contract with Global Environment Centre Foundation (GEC) on 05/10/2016, which provides financial support of less than half of the initial investment for the hydropower generation facilities of the project in order to acquire JCM credits.

As for the technology transfer, the OJT training on the inspection standard and methods for various equipment and technological knowledge of hydropower generation operation have been conducted for the engineering staffs of CME by Voith Fuji Hydro K.K. Japan from 28/07/2020 until the commercial operation date.

The validation team has assessed the PDD and the supporting documents through the desk review and the e-mail interview with the PPs, without on-site visit, to validate the accuracy and completeness of the project description based on the relevant requirements. No on-site visit is justified as follows: The validation of the accuracy and completeness of the project description has been conducted by the document review and the e-mail interviews with the PPs. The sufficient evidences and information relevant to the proposed project are provided by the PPs, and the team has determined whether the information and description in the PDD are accurate and complete.

The persons interviewed and documents received are provided in Section E of this report.

Regarding the project description, the validation team raised CL 01 and the issue was resolved as explained in “Findings”.

**<Findings>**

**< CL 01 >**

*The purpose of the project and means to achieve the purpose of the project are not explained appropriately in A. 2 of the PDD.*

**< Comments from the PPs >**

The sentence is revised as follows: “The purpose of the JCM proposed project is to reduce GHG emissions by displacing the grid electricity with the electricity that is generated by a 10MW mini hydro power plant. This project newly installs a run-of-river type hydro power generation system in North Sumatra and supplies generated electricity to the national/regional grid, thus contributing to reduce the power shortage and increase green energy with renewable energy in the region. This project is owned and operated by PT. Citra Multi Energi.”

**< Assessment by the TPE >**

It is confirmed through the review of the revised PDD that the project description and applied technology have been accurately and completely provided in A. 2 of the PDD. Thus, CL 01 is closed.

**<Conclusion based on reporting requirements>**

The validation team concludes that the description of the proposed project in the revised PDD is consistent with the supporting documents and information obtained through the desk review and the interview with the PPs, and the description is accurate and complete.

**C.3. Application of approved methodology(ies)**

**<Means of validation>**

The approved methodology JCM\_ID\_AM019\_ver01.0 "Electricity generation by installation of run-of-river hydro power generation system(s) in Indonesia" is applied to the proposed project. The methodology is approved by the JC on 09/05/2019 (Electric decision by JC) and valid at the time of submission of the proposed JCM project for validation.

The validation team has assessed whether the selected methodology is applicable to the proposed project. The project applicability was checked against one eligibility criterion contained in the approved methodology. The project information for the eligibility criterion and the assessment/conclusion about its applicability to the proposed project are summarized

in the following table.

Eligibility criteria	Descriptions specified in the methodology	Project information	Assessment and conclusion
Criterion 1	The project newly installs a run-of-river hydro power generation system(s).	This project newly installs a 10MW Mini Hydro Power Plant (a run-of-river type system) in North Sumatra.	It is confirmed through the review of the Commissioning Report including 72 hours load run test and the e-mail interview with the PPs that the run-of-river type mini hydro power plant with a capacity of 10 MW (2 x 5MW) is newly installed and operated in North Sumatra. Hence, Criterion 1 is satisfied.

Regarding the type of hydro power plant in B.2 of the PDD, the validation team raised CAR 01 and the issue was resolved as explained in “Findings”.

**<Findings>has been**

**< CAR 01 >**

*The type (run-of-river) of hydro power plant is missing in Project information in B. 2 of the PDD.*

**< Comments from the PPs >**

The type of hydro power plant “run-of-river type system” is appropriately added to “Project information” in B. 2 of the PDD.

**< Assessment by the TPE >**

It is confirmed through the review of the revised PDD that the type of hydro power plant “run-of-river type system” which is eligible condition for the applied methodology has been appropriately added to “Project information”. Thus, CAR 01 is closed.

**<Conclusion based on reporting requirements>**

The validation team concludes that the proposed project is eligible for applying the valid version of the approved methodology ID\_AM019 and all eligibility criteria are met by the proposed project.

#### C.4. Emission sources and calculation of emission reductions

**<Means of validation>**

The proposed project aims to reduce GHG emissions from the national grid by displacing the grid electricity with the electricity that is generated by a 10 MW hydro power plant newly installed in North Sumatra.

As per the methodology ID\_AM019\_ver. 01.0, reference emissions are sourced from the consumption of grid electricity including national/regional and isolated grids and/or captive electricity and project emissions are sourced from the generation of electricity from the hydro power generation system(s).

Reference emissions in the proposed project are calculated on the basis of the electricity output of the hydro power generation system(s) multiplied by the conservative emission factor of the grid, which is expressed by Equation (1), in accordance with the methodology ID\_AM019:

$$RE_p = \sum (EG_{i,p} \times EF_{RE,i}) \quad \text{----- (1)}$$

Where:

$RE_p$  : Reference emissions during the period  $p$  (tCO<sub>2</sub>/p)

$EG_{i,p}$  : Quantity of the electricity generated by the project hydro power generation system  $i$  during the period  $p$  (MWh/p)

$EF_{RE,i}$  : Reference CO<sub>2</sub> emission factor for the project hydro power generation system  $i$  (tCO<sub>2</sub>/MWh)

The *ex-ante* value of  $EG_{i,p}$  in the MPS (input) is estimated by the following basic calculation:

$$\begin{aligned} EG_{i,p} &= 9.8 \times \text{Water flow} \times \text{Head} \times \text{Efficiency of turbine} \times \text{Efficiency of generator} \times \\ &\quad 8,760 \text{ h} \times \text{Plant load factor (77.26\%)} \\ &= 68,779 \text{ MWh/p} \end{aligned}$$

As the hydro power generation system is connected to a national/regional grid via an internal grid (Case 2), the default value of the reference CO<sub>2</sub> emission factor, *i.e.*, 0.477 tCO<sub>2</sub>/MWh for Sumatra grid, is applied in the proposed project in accordance with the methodology ID\_AM 019\_ver01.0.

Project emissions are the emissions from the hydro power generation system, which are assumed to be zero as per the methodology ID\_AM 019\_ver01.0. Therefore, it is expressed by Equation (2):

$$PE_p = 0 \quad \text{----- (2)}$$

Where:

$PE_p$  : Project emissions during the period  $p$  (tCO<sub>2</sub>/p)

Thus, the GHG emission reductions during the period  $p$  are calculated by Equation (3), in line with the methodology:

$$\begin{aligned} ER_p &= RE_p - PE_p \\ &= RE_p \end{aligned} \quad \text{-----} \quad (3)$$

Where:

$ER_p$  : Emission reductions during the period  $p$  (tCO<sub>2</sub>/p)

$RE_p$  : Reference emissions during the period  $p$  (tCO<sub>2</sub>/p)

$PE_p$  : Project emissions during the period  $p$  (tCO<sub>2</sub>/p)

As a result, the annual emission reductions estimated *ex-ante* for 10 MW mini hydro power plant in the MPS(calc\_process) are calculated as follows:

$$\begin{aligned} ER_p &= RE_p - PE_p \\ &= \sum (EG_{i,p} \times EF_{RE,i}) - PE_p \\ &= (68,779 \text{ MW} \times 0.447) - 0 \\ &= 32,807 \text{ tCO}_2/p \end{aligned}$$

The GHG annual emission reductions are estimated to be 32,807 tCO<sub>2</sub> and the sum of the emission reductions for the period of 2020 – 2030 is estimated to be 339,485 tCO<sub>2</sub>.

It is confirmed through the review of relevant documents and the e-mail interview with the PPs that all GHG emission sources specified by the applied methodology are identified, and the reference emissions ( $RE_p$ ), project emissions ( $PE_p$ ) and emission reductions ( $ER_p$ ) in the revised PDD (ver03.0) and Monitoring Plan Sheet are correctly calculated, in accordance with the methodology ID\_AM019\_ver01.0.

Regarding the reference CO<sub>2</sub> emission factor, the validation team raised CL 06 and the issue was resolved as explained in “Findings”.

**<Findings>has been**

**< CL 06 >**

*The PPs are requested to specify the case of grid connection and the value of reference CO<sub>2</sub> emission factor from the default values in the methodology in Table 2 of the MPS (input).*

**< Comments from the PPs >**



The description in Table 2 of the MPS (input) is revised as follows:

“According to the methodology, there are 3 cases of grid connection as described below:

Case1: 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

Case2: Connected to an internal grid connecting to both a national/regional grid and an isolated grid and/or captive power generator

Case3: Only connected to an internal grid connecting to an isolated grid and/or captive power generator

This project is Case 2, and the grid to be connected is the Sumatra grid. Therefore, the following default value specified in the methodology shall be adopted: Sumatra grid 0.477 tCO<sub>2</sub>/MWh.

#### < Assessment by the TPE >

It is confirmed through the review of the revised MPS (input) that the case of grid connection (Case 2) and the default value of reference CO<sub>2</sub> emission factor for Sumatra grid (0.477 tCO<sub>2</sub>/MWh) connected to the proposed project have been correctly selected in accordance with the methodology. Thus, CL 06 is closed.

#### <Findings>

No issues are raised to the requirement.

#### <Conclusion based on reporting requirements>

The validation team confirms that all emission sources and GHG types specified in the approved methodology are appropriately justified. The validation team concludes that the value of parameter to be monitored *ex-post* (EG<sub>i,p</sub>) in the MPS is correctly estimated based on the data of water flow, water head and efficiencies of turbine and generator, and the values for the project-specific parameter to be fixed *ex-ante* (EF<sub>RE,i</sub>) listed in the MPS is also correctly determined by using the default value. In addition, the equations to calculate reference emissions, project emissions and emission reductions for the proposed project are also appropriately derived and the annual emission reductions are correctly calculated using parameters and data in the MPS, in accordance with the applied methodology. As a result, the values are considered reasonable in the context of the proposed project.

### C.5. Environmental impact assessment

#### <Means of validation>

The purpose of the proposed project is to reduce CO<sub>2</sub> emissions from the consumption of grid electricity by displacing the grid electricity with the electricity generated by the mini hydro power plant newly installed in North Sumatra.

The PDD states that an Environmental Impact Assessment (EIA) is required for the proposed project which involves a physical development with an impact to the society and the environment around the project site. The project is classified into a category of UKL-UPL (Environmental management plan and environmental monitoring plan), and therefore the Report entitled “Environmental management plan & Environmental monitoring plan for 10MW Mini Hydro Power Plant Project in North Sumatra” was submitted to Humbang Hasundutan District Government, Department of Forestry and Environment on 05/10/2015 and approved on 22/01/2016.

It is confirmed through the review of the relevant documents and the e-mail interview with the PPs that the mitigation measures have been implemented during construction and in-service in accordance with the EIA because impacts on natural environment and biodiversity were expected during construction and operation phase.

#### **<Findings>**

No issues are raised to the requirement.

#### **<Conclusion based on reporting requirements>**

The validation team confirms that the PPs have submitted the UKL-UPL report on the proposed project to the local government and got approval, in line with procedures as required by the Republic of Indonesia.

### **C.6. Local stakeholder consultation**

#### **<Means of validation>**

The PPs conducted a local stakeholder consultation at Aula Pertemuan Kec., Parlilitan Kab., Humbang Hasundutan Sumatera Utara on 25/09/2018. Prior to the meeting, the invitation letter was delivered to the stakeholders on 19/09/2018.

Following public and private entities are identified as stakeholders and they were invited for Local Stakeholders’ Consultation Meeting:

- Environmental Institution of Tapanuli Tengah Regency
- Environmental Institution of Humbang Hasundutan
- Environmental Institution of Pak Bharat Regency
- BAPPEDA of Humbang Hasundutan Regency

The local stakeholders provided positive comments for the proposed project. No negative issues that require actions to be taken by the PPs were raised through the consultation. It is confirmed through the review of the relevant documents and the e-mail interview with the PPs that the stakeholder consultation process was appropriately conducted to collect stakeholders' opinions on the project. The summary of the comments received in the consultation and due account of all comments taken by the PPs are fully described in the PDD.

Regarding the further action to the comments, the validation team raised CL 02 and the issue was resolved as explained in "Findings".

#### **<Findings>**

##### **< CL 02 >**

*The PPs are requested to clarify in E. 2 of the PDD whether further action is needed or not to the comments received from the local stakeholders.*

##### **< Comments from the PPs >**

The PPs have confirmed that no further actions are required in the local stakeholder consultation because the PPs answered all the questions from the local stakeholders.

##### **<Assessment by the TPE >**

It is confirmed through the review of the revised PDD that the PPs answered all the questions from the local stakeholders and hence no further action is needed to all comments. Thus, CL 02 is closed.

##### **<Conclusion based on reporting requirements>**

The validation team concludes that the PPs have completed a local stakeholder consultation process and invited comments on the proposed project from the local stakeholders. The summary of the comments received is provided in the PDD in a complete manner and the PPs have taken due account of all the comments and described this process in the PDD.

## **C.7. Monitoring**

#### **<Means of validation>**

As illustrated by the figure in C.2 of the PDD, the monitoring point is located at the grid substation. The quantity of the electricity generated by the hydro power generation system  $i$  ( $EG_{j,p}$ ) is continuously measured by main meter and back-up meter with accuracy class of 0.2S installed at Dolok Sanggul grid substation, according to the power purchase agreement (PPA)

between PT. PLN (Persero) and CME contracted on 02/08/2017. The reading and recording of these meters are performed jointly by the staffs of both CME and PLN on the first day of each month. In addition to the monthly recording, the CME operator contacts with Dolok Sanggul grid substation to record the one-day electricity export every day.

The main meter and back-up meter (Type Mk6E, made by EDM) installed at the grid substation are owned and managed by CME, but operated and calibrated by PLN. These meters are calibrated at 3 years interval according to PLN regulation.

The meters installed at the hydro power plant are mainly used to calculate transmission loss between the hydro power plant and the grid substation and to monitor equipment operation.

The roles and responsibilities of the personnel are described in Monitoring Structure Sheet. The monitoring structure consists of Project Manager (TOYO ENERGY FARM CO., LTD), Supervisor (CME) and Meter Reader (CME). Project Manager is responsible for entire project management and reporting, and all monitored data which are required for verification and issuance are kept and archived electronically for two years after the final issuance of the credits by Project Manager. Supervisor is responsible for the check of recorded data, monitoring of the system performance and the calibration of electricity meter. Meter Reader is responsible for data reading and recording.

It is confirmed through the review of the relevant documents and e-mail interview with the PPs that the monitoring plan complies with the requirements of the approved methodology and the PPs are able to implement the monitoring activity appropriately according to the monitoring plan.

Regarding the monitoring frequency, the archiving of the monitored data, the monitoring system, calibration procedure of the meter and the monitoring structure, the validation team raised CAR 02, CAR 03 and CL 03- CL 05 and these issues were resolved as explained in "Findings".

#### **<Findings>**

##### **< CAR 02 >**

*The PPs are requested to provide monitoring frequency as well as monthly recording in Table 1 of the MPS (input).*

##### **< Comments from the PPs >**

The description is revised to "Continuously monitoring and monthly recording" in the cell of (i) Monitoring frequency.

##### **< Assessment by the TPE >**

It is confirmed through the review of the revised MPS (input) that "Continuously monitoring

and monthly recording” has been appropriately provided in the column of (i) Monitoring frequency of the MPS (input). Thus, CAR 02 is closed.

**< CAR 03 >**

*The information on the archiving of the data for two years after the final issuance of credits is not provided in the MSS.*

**< Comments from the PPs >**

As a role of Project Manager in the MSS, the following sentence is added: “Data monitored and required for verification and issuance will be kept and archived electronically for two years after the final issuance of credits”.

**< Assessment by the TPE >**

It is confirmed through the review of the revised MSS that the description on the archiving of the monitored data has been appropriately added to the role of Project Manager. Thus, CAR 03 is closed.

**< CL 03 >**

*The PPs are requested to clarify in Table 1 of the MPS (input) which meter is used to measure the quantity of electricity generated by hydro power plant.*

**< Comments from the PPs >**

Following sentence is provided: “The amount of electricity generated by the hydro power plant is measured by MAIN METER and Back-up Meter having 0.2S class installed at the DOLOK SANGGUL grid substation. The reading and recording of the electronic main and back-up meters are conducted on the first day of each month.”

**< Assessment by the TPE >**

It is confirmed through the review of the revised MPS (input) and the relevant documents that the quantity of the electricity generated by the project hydro power generation system (EG<sub>i,p</sub>) is measured by the main meter and back-up meter installed at the DOLOK SANGGUL grid substation, and the meter reading and recording are performed on the first day of each month jointly by the staffs of both CME and PLN in accordance with the PPA. Thus, CL 03 is closed.

**< CL 04 >**

*The PPs are requested to provide information on the calibration procedures (national regulation, calibration frequency and certificate) and accuracy of electricity meter in Table 1*

*of the MPS (input).*

**< Comments from the PPs >**

Following sentence is provided: “MAIN METER and Back-up Meter at the DOLOK SANGGUL grid substation will be calibrated at 3 years interval according to PLN standards. These meters are operated and calibrated by PLN, but owned and managed by CME.

**< Assessment by the TPE >**

It is confirmed through the review of the revised MPS (input) and the relevant documents that the calibration frequency of the meters installed at the DOLOK SANGGUL grid substation is 3 years interval according to PLN standard procedures. The accuracy class of these meters is 0.2S, in accordance with the PPA. Thus, CL 04 is closed.

**< CL 05 >**

*The PPs are requested to clarify the affiliation of each personnel and the responsible personnel for the calibration of electricity meter in the MSS.*

**< Comments from the PPs >**

The affiliation of each personnel and the responsible personnel for the calibration of electricity meter are provided in the MSS.

**< Assessment by the TPE >**

It is confirmed through the review of the revised MSS and the e-mail interview with the PPs that Project Manager comes from TOYO ENERGY FARM CO., LTD, and Supervisor and Meter Reader come from CME. Supervisor is responsible for the calibration of electricity meter. Thus, CL 05 is closed.

**<Conclusion based on reporting requirements>**

The validation team concludes that the description of the MPS and MSS complies with the requirements of applied methodology and JCM Guidelines for Developing Project Design Document and Monitoring Report, and the monitoring point as well as measuring equipment is also appropriate. Thus, the PPs have demonstrated feasibility of the monitoring structure and their abilities to implement the monitoring activity appropriately.

## C.8. Modalities of Communication

**<Means of validation>**

The MoC was provided to JQA for review on 08/02/2021, in the valid form

(JCM\_ID\_F\_MoC\_ver01.0) at the time of validation, in which TOYO ENERGY FARM CO., LTD. is nominated as the focal point. The MoC was signed by the authorized representatives of CME on 01/02/2021 and by the authorized representatives of TOYO ENERGY FARM CO., LTD. on 05/02/2021, along with the contact details.

The validation team has checked the personal identities and employment status of the authorized signatories through the review of their business cards. Primary authorized signatory of TOYO ENERGY FARM CO., LTD. is General Manager of International Marketing Division, and alternate authorized signatory is staff of the same Division. Primary authorized signatory of CME is Supervisor M/E and alternate authorized signatory is Supervisor Civil of PLTM SION.

It is confirmed through the check of business cards and the e-mail interview with the PPs that all corporate and personal details including specimen signatures and the information in the MoC are valid and accurate as requested in the JCM Guidelines for Validation and Verification.

**<Findings>**

No issues are raised to the requirement.

**<Conclusion based on reporting requirements>**

The validation team concludes that the MoC is completed using the valid version of the form, and the information and the specimen signature of the PPs provided in the MoC are correct and sufficient, in compliance with the requirements of the JCM Guidelines.

**C.9. Avoidance of double registration**

**<Means of validation>**

The representative of focal point entity in the MoC, General Manager of International Marketing Division of TOYO ENERGY FARM CO., LTD., declares that the proposed project is not registered under any other international climate mitigation mechanism other than the JCM. It is confirmed through the check of publicly available information (e.g. CDM/JI website, etc.) that the proposed project is not registered under any other international climate mitigation mechanisms in terms of the name of entity, applied technology, scale and location.

**<Findings>**

No issues are raised to the requirement.

**<Conclusion based on reporting requirements>**

The validation team concludes that the proposed project is not registered under any other

international climate mitigation mechanisms and hence it will not result in double counting of GHG emission reductions.

#### C.10. Start of operation

##### <Means of validation>

For the proposed project, the commissioning of the proposed project “10MW Mini Hydro Power Plant Project in North Sumatra” was satisfactorily completed on 22/08/2020, based on the result of 72 hours load run test of Unit No. 1 and Unit No. 2 of Sion Hydro Power Plant conducted between 16/08/2020 and 22/08/2020. And, PT. PLN (Persero) UIW Sumatera (Buyer) and CME (Seller) agreed and signed to start the commercial operation of 2 x 5 MW Sion Mini Hydro Power Plant Project on 27/08/2020 (Nomor: 0082.BA/KIT.10.01/08000000/2020).

It is confirmed through the review of Commissioning Report issued by PT. VOITH HYDRO INDONESIA and a written confirmation of the commercial operation start date between PT. PLN (Persero) UIW Sumatera and CME that the project operation actually commenced on 27/08/2020.

##### <Findings>

No issues are raised to the requirement.

##### <Conclusion based on reporting requirements>

The validation team concludes that the starting date of project operation, 27/08/2020, is correct and does not predate 01/01/2013 as required by the Guideline of the JCM project.

#### C.11. Other issues

##### <Means of validation>

No more issues are raised in the validation of the proposed 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 between 19/02/2021 and 20/03/2021 to invite public comments on the following JCM website:

<https://www.jcm.go.jp/id-jp/information/404>

No public comments are 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

- |   |   |
|---|---|
| - Mr. Takashi Kanazawa, General Manager,  | International Marketing Division,       |
|   | TOYO ENERGY FARM CO., LTD               |
| - Ms. Natsuko Hiramatsu, Staff,           | International Marketing Division,       |
|   | TOYO ENERGY FARM CO., LTD               |
| - Mr. Buche Achmad, Business Development, | PT. Citra Multi Energi (Jakarta office) |
| - Mr. Tedi Margiono, Plant Manager,       | SION HEPP, PT. Citra Multi Energi       |

### E.2. List of documents received

1. PDD, ver. 02.0 dated 08/02/2021 and ver. 03.0 dated 17/03/2021
2. Monitoring Plan Sheet and Monitoring Structure Sheet, ver. 02.0 dated 08/02/2021, ver. 03.0 dated 17/03/2021
3. JCM Modalities of Communication Statement Form (MoC) submitted for JC, dated 08/02/2021
4. Business cards of Primary authorised signatory, Alternate authorised signatory from Japanese and Indonesian sides along with Contact person
5. JCM Approved Methodology ID\_AM019\_ver01.0, 09/05/2019 (Electronic decision)
6. Monitoring Spreadsheet JCM\_ID\_AM019\_ver01.0
7. JCM Modalities of Communication Statement Form (JCM\_ID\_F\_MoC\_ver01.0)

8. JCM Glossary of Terms (JCM\_ID\_Glossary\_ver02.0)
9. JCM Project Cycle Procedure (JCM\_ID\_PCP\_ver05.1)
10. JCM Project Design Document Form (JCM\_ID\_F\_PDD\_ver02.0)
11. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM\_ID\_GL\_PDD\_MR\_ver03.0)
12. JCM Validation Report Form (JCM\_ID\_F\_Val\_Rep\_ver01.0)
13. JCM Guidelines for Validation and Verification (JCM\_ID\_GL\_VV\_ver01.0)
14. Feasibility study of Sion MHPP, Parlilitan sub district, Humbang Hasundutan Regency, North Sumatera Province, issued by PT. Citra Multi Energi, September 2015
- 15-1. 72 Hours Load Run Test report on Unit 1 and Unit 2 of Sion hydro power plant, issued by PT. VOITH HYDRO INDONESIA, dated 22/08/2020
- 15-2. Commissioning certificate of Unit 1 and Unit 2 of Sion hydro power plant, issued by PT. VOITH HYDRO INDONESIA, dated 22/08/2020
- 16-1. Brochure of Voith Hydro Holding GmbH & Co., KG
- 16-2. Data book of Generator Unit 1 & 2 of Sion HEP (2 x 5MW + 21%COL)
- 16-3. Data book of Generator transformer of Sion HEP (2 x 5MW + 21%COL)
17. Map showing the location of hydro power plant site and weir
18. Company profile of TOYO ENERGY FARM CO., LTD.
19. Company profile of PT. Citra Multi Energi
20. Agreement of Commercial Operation Date (COD) for 2 x 5 MW Sion mini hydro power plant between PT. PLN (Persero) and PT. Citra Multi Energi, dated 27/08/2020 (Nomor: 0082.BA/KIT. 10.01/08000000/2020)
21. Legal durable year list issued by Ministry of Finance, Japan, indicating the expected operational lifetime (22 years) of the hydro power generation equipment
22. Contract of the proposed project between TOYO ENERGY FARM CO., LTD. and Global Environment Centre Foundation (GEC) dated 05/10/2016
- 23-1. Training schedule for Sion mini hydro power plant
- 23-2. Text of training programme for Sion mini hydro power plant, prepared on 30/07/2020
- 23-3. List of site employee education and site structure
24. Photos of hydro power plant equipment such as turbine, generator, transformer, etc.
25. Electricity line diagram of Sion hydro power plant
26. Guidelines for operation and maintenance of the Sion mini hydro power plant, substations and transmission lines, issued by PT. Citra Multi Energi and TOYO ENERGY FARM CO., LTD., dated May 2020
27. Minutes of the local stakeholder consultation meeting held on 25/09/2018
28. Invitation letter sent to the stakeholders dated 19/09/2018
29. List of attendees of local stakeholder consultation meeting

30. Presentation materials used at the local stakeholder consultation meeting
- 31-1. Environmental Management Plan and Environmental Monitoring Plan (UKL-UPL) for 2 x 5 MW Mini Hydro Power Plant Project in North Sumatra
- 31-2. Approval of UKL-UPL dated 22/01/2016
32. Data source and calculation of 68,779 MWh/p for the *ex-ante* value of EGi,p
33. Monthly report of electricity generated by the hydro power plant for August, September and October 2020
34. Catalogue and specification of electricity meter Mk6E made by EDM I
35. Monitoring system of the proposed project including grid substation and plant site
36. Monitoring points and monitoring procedures at the Dolok Sanggul grid substation and hydro power plant
37. Photos of main meter (S/N 219153888) and back-up meter (S/N 216439223) installed at the Dolok Sanggul grid substation
38. PLN calibration report of main meter and back-up meter tested on 23/07/2020
- 39-1. PLN Management of measuring tools including 3 years calibration frequency
- 39-2. PLN Management of measuring tools including 3 years calibration frequency (refer to d. Maintenance of APP Phase Three Customers TM and TT in page 18)
40. National regulation on recalibration of measuring tools, Minister of Trade of the Republic of Indonesia, Appendix 1, page 12. (Recalibration period is 10 years for electronic/Static kWh meter)
- 41-1. Power purchase agreement (PPA) between PT. PLN (Persero) and PT. Citra Multi Energi, signed on 02/08/2017
- 41-2. Summary of PPA (Japanese version)
42. Photo of electricity meter (S/N 212614588) installed at the hydro power plant site
43. Calibration certificate of electricity meter (S/N 212614588) tested on 26/12/2012

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

*Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.*

### Statement of competence



### Statement of competence



Name: Dr. Tadashi Yoshida

Qualified and authorized by Japan Quality Assurance Organization.

Name: Mr. Hiroshi Motokawa

Qualified and authorized by Japan Quality Assurance Organization.

Function	Date of qualification	Function	Date of qualification
Validator	2014/12/22	Validator	2014/12/22
Verifier	2014/12/22	Verifier	2014/12/22
Team leader	2014/12/22	Team leader	2014/12/22

Technical area within sectoral scopes	Date of qualification	Technical area within sectoral scopes	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22	TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22	TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22	TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2015/11/12	TA 4.1. Cement and lime production	2014/12/22
TA 5.1. Chemical industry	2014/12/22	TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	2014/12/22	TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2014/12/22	TA 13.1. Solid waste and wastewater	2014/12/22
TA 14.1. Afforestation and reforestation	-	TA 14.1. Afforestation and reforestation	-