JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Installation of Solar Power System and Storage Battery to Commercial Facility
Reference number	ID023
Third-party entity (TPE)	TPE ID013 - PT TUV Rheinland Indonesia
Project participant contracting the TPE	ITOCHU Corporation
Date of completion of this report	03/09/2020

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: Hermanto	First name: Agus	
Title: Lead Validator/Verifier		
Specimen signature: [redacted]		Date: 03/09/2020

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Agus Hermanto	PT TUV Rheinland Indonesia	Lead Validator/Verifier	☒	Authorized	☒
Mr. ☒ Ms. ☐	Muhammad Fundy Cholis Kurniawan	PT TUV Rheinland Indonesia	Validator/Verifier	☒	Authorized	☒
Mr. ☐ Ms. ☒	Rahmawati Noor	PT TUV Rheinland Indonesia	Technical Reviewer	☒	Authorized	☐
Mr. ☐ Ms. ☐				☐		☐

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 validation process commenced with reviewing of the project design document (PDD) Version 02.0 dated 01/08/2019 third edition submitted by the project participants (PPs). A valid JCM form of the JCM PDD Form No. JCM_ID_F_PDD_ver02.0 is implemented for developing the PDD Version 02.0 dated 01/08/2019 third edition. The validation process will be refer to JCM Guidelines for Developing Project Design Document and Monitoring Report JCM_ID_GL_PDD_MR_ver03.0. Through the processes taken, CAR 1.1, CAR1.3 and CAR 1.5 were raised as the resolution detailed below.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Revised PDD needed to be completed as following section:

CAR 1.1 is about chapter A.5 Duration: “Expected operational lifetime of project” should be mentioned 3 year and 6 months (due to the project is until 31 Mar 2021.
CAR 1.3 is about chapter C3 Estimated emissions reductions in each year “Column Year” should be clear mentioned the dated of end project (31 Mar 2021) or only March 2021.
CAR 1.5 is about revision history of PDD “Please put information or explanation contents of revised”.

PP responses: The PPs completed the relevant part of the PDD for the revisions.
PDD version 02.0 date 13/02/2020 fourth edition was submitted respectively to response corrective action request.

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The validation team confirmed that the PDD was completed using the valid form of the JCM PDD Form and in accordance with the JCM Guidelines for Developing PDD and MR. The issue raised by the team have been fully resolved, which resulted in a revision of the PDD. The CAR 1.1, CAR 1.3 and CAR 1.5 are closed.

C.2. Project description

<Means of validation>
The proposed JCM project aims to reduce CO2 emissions by introducing a total of 500kW solar photovoltaic (PV) system combined with a 111kwh storage battery system at AEON MALL Jakarta Garden City. The PV system is installed on the rooftop of the mall and the storage battery system is installed at the ground of the mall area. During the daytime, power generated by the PV modules is charged to the storage battery system for the night time use, while its surplus power replaces the grid electricity for part of the mall lighting system. During the night time, power is discharged from the storage battery system for part of the mall lighting to replace the grid electricity.
The project solar PV systems employ photovoltaic module monocrystalline silicon/amorphous silicon hetero-junction model No. VBHN325SJ47 of Panasonic, Sanyo Electric Co. Ltd, Japan. Total 1,560 panels are installed on the rooftop of Aeon Mall buildings. The solar PV modules are connected to 10 x 50 kW inverters of ABB Solar Inverter Model TRIO-50.0-TL-OUTD. The battery storage system employ model Y.Cube 100 kW/111 kWh of Younicos AG, Germany. The monitoring system employ ABB solar monitoring model VSN700 Data Logger, the generation data to enable remote monitoring.
The proposed JCM project is implemented by ITOCHU Corporation from Japan side and PT Aeon Mall Indonesia from Indonesian side. The starting date for the project is 30/09/2017,

which is the day for starting to monitor data collected. The expected operational lifetime of the proposed JCM project is 10 (ten) years, which is determined based on "Definitive Agreement for construction work between PT Aeon Mall Indonesia and PT Fuji Furukawa E&C Indonesia" (EPC company as appointed by ITOCHU corporation) concerning the product warranty. The proposed JCM project was partially supported by the Japanese Ministry of the Environment through the financing programme for JCM model projects, which provided financial support of less than half of the initial investment for the projects in order to facilitate GHG emission reduction project in Indonesia and to acquire JCM credits. The project is implemented by ITOCHU Corporation and PT Aeon Mall Indonesia. PT Fuji Furukawa E&C Indonesia serve as appointed EPC company. Regarding the technology transfer, PT Fuji Furukawa E&C Indonesia provides training for operation and maintenance before the starting date of operation and will continue to do so throughout project operation period.

The starting date of project operation is confirmed on 30/09/2017 and the expected operational of the project period is for 3 (three) years and 6 (six) months. Validation team was found a gap period from comissioning test date until starting date of the project. PP explained that the starting date is tailored with mall grand opening on date 30/09/2017 officially. CO2 emission reduction is estimated amount of 1382 t-CO2e during project period.

The validation team conducted the desk review of the PDD and the supporting documents, also conducted an on-site assessment, on 05/02/2020, to validate the requirements about accuracy and completeness of the project description. The details of the persons interviewed, and documents reviewed are provided in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were identified to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

It is confirmed that the project description of the PDD is reasonable and appropriate.

C.3. Application of approved methodology(ies)

<Means of validation>

The project applied the approved methodology of JCM_ID_AM017_ver01.0, "Installation of Solar PV System and Storage Battery System", The methodology is approved by the Joint Committee on 28/11/2018 and valid at the time of the validation. The validation team assessed whether the selected methodology was applicable to the proposed JCM project. Applicability of the proposed JCM project was checked against three eligibility criteria stipulated in the approved methodology. The steps taken to validate each eligibility criterion and the conclusion about its applicability to the proposed JCM project are summarized as below.

Criterion 1: The solar PV system(s) and storage battery system(s) are newly installed.
Validation on site: the solar PV system and storage battery system are newly installed. It was proven by document of "Definitive Agreement For Construction Work of Solar PV and Energy Storage System" between PT Aeon Mall Indonesia and PT Fuji Furukawa E&C Indonesia" signed date 03/12/2016. The criterion was confirmed

Criterion 2: The PV modules are certified for design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).
Validation on site: The PV modules are certified for design qualifications accordance to IEC 61215 and safety qualification IEC 61730-1 and IEC 61730-2. Certificate was issued by Japan Electrical Safety & Environment Technology (JET), valid until 05/10/2020. The criterion was confirmed

Criterion 3: The equipment to monitor output power of the solar PV system(s) and irradiance is installed at the project site.
Validation on site: The output power of the solar PV system was monitored by installed equipment of ABB solar inverter model TRIO-50.0-TL-OUTD and completed by ABB solar monitoring model VSN 700 Data logger, the generation data to enable remote monitoring as well. For energy storage system (ESS) is employ model Y.cube 100kW/111 kWh of Younicos. Irradiance was monitored by installed Pyranometer ABB VSN 800 weather station. Thus the criterion was confirmed as satisfied by the project

Criterion 4: In the case of replacing the existing storage battery system (s), a plan is prepared in which mercury used in the existing storage battery system (s) is not released to the environment. Execution of the prevention plan is checked at the time of verification, in order to confirm that mercury used for the existing one replaced by the project is not released to the environment. CAR 1.2 was raised to revised the PDD document based on implementation on site by PP regard with hazardous waste handling.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

During validation it was found on PDD document chapter B.2 Explanation of how the project meets eligibility criteria of the approved methodology: “Criterion 4 – Project information” should be clear what the next step to handling the used battery if the project is finished. Refer to Indonesian national regulation the used battery categorized as hazardous waste and must be disposal to the licensing collector”.

Response PP: The statement of PDD document, table B.2 was revised on the project information column of criterion 4. The proposed project does not replace the existing storage battery systems. The newly installed battery for the project will not be released to the environment complying with the Indonesian regulation. PP has permit for hazardous waste temporary storage based on authorities decree No. 13/K.5/31/-1.774.15/2018 issued by local authorities (Dinas Lingkungan Hidup), valid until 10/01/2023. Furthermore, the agreement of disposal and transport for hazardous waste between PT Aeon Mall Indoensia and PT PPLI (licensed collector and processing company for hazardous waste) was established, document No. AMI-JGC/Agreement-Facility-021/VI/2019, issued on 1 June 2019.
PDD version 02.0 date 13/02/2020 fourth edition was submitted respectively to response corrective action request.

<Conclusion based on reporting requirements>
Please state 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. it was confirmed that CAR 1.2 is resolved and closed.

C.4. Emission sources and calculation of emission reductions

<Means of validation>
The project 500kW solar photovoltaic (PV) system combined with a 111kwh storage battery system installed on the rooftop of building facilities for the self-consumption and displaces electricity purchased from the public power grid system.
The source of GHG emissions is consumption of grid electricity and CO2 emissions in the reference scenario are considered to determine the reference emissions (REs), while the project emissions (PEs) are assumed to be zero for the solar PV system in accordance with the applied methodology. The annual electricity generation of the project is estimated by ex- ante accordance to monitoring year 2018 as basis for calculating GHG emission reduction for crediting period. Monitoring data of 2018 is applied for estimation basis due to full operation of the plant without break off in a year. The default CO2 emission factor for the PV system connected to the Jamali (Java-Madura-Bali) grid of 0.616 t-CO2/MWh is applied. Based on methodology, the GHG reference emission is calculated by option 3-1 (In case the project storage battery system(s) are only charged by the project PV system(s)) as following formula:
RE p = {Sum of (EG i,p − EC i,j,p + ED j,p)} × 0.616 t CO2/MWh

RE p : Reference emissions during the period p [tCO2/p]
EG i,p : Quantity of the electricity generated by the project solar PV system i during the period

p [MWh/p]
EC i,j,p : Quantity of the electricity charged by the project solar PV system i to the project storage battery system j during the period p [MWh/p]
ED j,p : Quantity of the electricity discharged from the project storage battery system j during the period p [MWh/p].
Reference emission (RE) of year 2018 as basis is calculated based on monitoring data of 2018 which is
- Quantity of the electricity generated by solar PV system is 653.87 MWh
- Quantity of the electricity charged by PV solar system to storage battery system is 42.10 MWh.
- Quantity of the electricity discharged from storage battery system is 30.70 MWh.
Thus annual reference emission (yesar 2018) is calculated {653.87 - 42.10 + 30.70} x 0.616 = 395 tCO2. Since project emission is zero, thus annual GHG emission reduction (ER) is 395 - 0 = 395 tCO2e. Total emission reduction (ER) is 1382 tCO2e within crediting period. The validation team assessed the documented evidence and confirmed that all the relevant GHG emission sources covered in the applied methodology are addressed, and the steps taken and the equations applied to calculate REs for the proposed project comply with the requirements of the approved methodology. The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.
During validation process the issues were raised regard with the calculation of estimated reference emission is applied by invalid of emission factor. The other issue is the calculation should be based on actual value (ex-post) for period 2017-2019. CAR 1.6 and CAR 1.7 was raised to correct estimated reference emission on PDD document.

<Findings>
Please state if CARs, CLs, or FARs are raised, and how they are resolved.
CAR 1.6 is estimated reference emission should be recalculate based on methodology JCM_ID_AM017_ver01.0 with used valid emission factor of JAMALI region.
CAR 1.7 is the estimated reference emission in 2017 – 2019 should be recalculate based on actual value (ex-post).
Response PP: Emission factor was revised refer to document JCM_ID_AM017_Ver 01.0 (emission factor for Indonesia- JAMALI/Jawa-Madura-Bali region is 0.616). The actual values of EG, EC and ED are available for 2017, 2018 and 2019, annual estimated reference emissions were recalculated as ex-post respectively, as conservative approach as well. The excel calculation was submitted including raw data of monitoring for the period. The calculation is refer to new revision of JCM_ID_AM017_MPS_Ver01.0 date 19/02/2020
- For annual estimated emissions reductions for 2020, the value was taken from that of year

2018, when the facility was in full operation.
- For 2021, the value of 2018 was taken adjusting the monitoring period to three months out of a year (398.98*(3/12) = 99.75).
- Total emission reduction (ER) was revised to be 1303 tCO2e within crediting period.

PDD version 02.0 date 13/02/2020 fourth edition was submitted respectively to response corrective action request. The monitoring plan sheet (MPS) JCM_ID_AM017_MPS_Ver01.0 date 19/02/2020 was submitted to explain ER calculation based on approved methodology JCM_ID_AM017 date 28/11/2018.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that:
- The revised versions of the PDD were submitted by the PPs completed with the revision for estimated reference emission respectively to resolve CAR 1.6 and CAR 1.7;
- The methodology was applied correctly to calculate PEs and REs and no other significant emission source was identified that would be affected and reasonably attributed by implementation of the proposed project but not addressed by the applied methodology;
- The choice of whether an emission source or gas is to be included where the applied methodology allows was reasonably justified by the PPs;
- The Monitoring Plan Sheet (MPS) was not altered and the fields were filled in as required so that all estimates of the REs could be replicated using the data and parameter values provided in the PDD;
- The values for the project specific parameters fixed ex ante listed in the MPS were appropriate with all the data sources and assumptions and the calculations were correct to the proposed JCM project;
- All assumptions and data used by the PPs were listed in the PDD, including their references and sources; and all values used in the PDD were considered reasonable in the context of the proposed JCM project.

C.5. Environmental impact assessment

<Means of validation>

The purpose of the proposed JCM project is to reduce CO2 emission through the installation of the solar power plant in commercial building, Aeon mall, Jakarta, Indonesia.

The PDD states that an Environmental Impact Assessment (EIA) is not required. However PT Aeon Mall Indonesia as site where PV solar system facility is located has obligation to conduct Environmental Management Efforts and Environment Monitoring Efforts (hereinafter referred to as UKL/UPL). UKL/UPL was implemented by PP consistently as follow up action of

environmental permit No 65/7.4/31/1.774.15/2016 for Aeon Mall operation. The permit was issued by local authorities on date 31/08/2016.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were identified to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed by assessing the relevant documents that the project does not need an environmental impacts assessment to be conducted to meet the legal requirement of the host country and the PDD satisfies the requirements of the JCM. However PP is need to conduct UKL-UPL as follow up of environmental permit for their operation.

C.6. Local stakeholder consultation

<Means of validation>

PPs conducted the stakeholder consultation on 29/09/2019 at Hotel Santika Premiere Kota Harapan Indah, Bekasi, Indonesia. The PPs identified the representative participant from the government of the host country, local government, JCM secretariate, vendor equipment, EPC contractor and management & staff PT Aeon Mall Indonesia and ITOCHU corporation were held a consultation meeting. Representatives of the local stakeholders attended the meeting provided comments mainly related to the implementation of the project. There is no negative issue that require action to be taken by the PPs. It is confirmed through the review of the relevant documents and the interview with the PPs during the on-site assessment that the stakeholder consultation process was appropriately conducted to collect stakeholder's opinion. Through the processes taken, CAR 1.4 was raised as the resolution detailed below. The details of the persons interviewed and documents reviewed are provided in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

CAR 1.4 is about chapter E.2 Summary of comments received and their consideration "every answer, please closed with "no further action regarding this matter/or/other statement to verify that question is closed.

PP responses: The PPs completed the relevant part of the PDD for the revisions.

PDD version 02.0 date 13/02/2020 fourth edition was submitted respectively to response corrective action request.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed the information added to the revised PDD as appropriate. The CAR 1.4 was closed. The summary of the comments received is provided in the PDD in a complete manner and the PPs have put "no further action required" to closed all the comments received from the local stakeholders as processes described in the PDD.

C.7. Monitoring

<Means of validation>

MP consisting of the MPS and Monitoring Structure Sheet (MSS) is based on the approved methodology.

The electricity generated by the project solar power systems and as well charged and discharged process by battery storage system is directly and continuously measured. The power meter is installed each unit of inverter with the type of ABB solar inverter model TRIO-50.0-TL-OUTD. There are instelled ten (10) unit inverter on site. The meter also completed by ABB solar monitoring model VSN 700 data logger, the generation data to enable remote monitoring as well. Energy storage system (ESS) is employed model Younicos, Y.cube 100 kW/111kWh to monitor electrical charge/discharge on battery storage system. Irradiance was monitored by installed Pyranometer ABB VSN 800 weather station.

The reading of power generated from PV solar syatem and power charging/discharging of battery storage system is taken from power meter. The reading is taken manually or electronically using a data logger. The quantity of the electricity is measured and recorded electronically by the electricity meter with manufacture’s specification. The accuracy of the electricity meter is should be within ± 5%. The compiled data is checked in accordance with monitoring manual. The roles and responsibilities of the persons are described in the MSS in accordance with the requirements of the applied methodology. The reading results of electricity meters are monthly recorded and checked by responsible persons.

The validation team confirmed that the MP complied with the requirements in the approved methodology and that the PPs will be able to apply the MP following the monitoring arrangements described in it. CL1 and FAR 1 were issued that the details of resolution are as described below.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

The Monitoring Plan needed to be completed with the specific information of the project in related with the details of the measuring equipment on accuracy level and calibration information. Regard with accuracy level information, it was found during validation that the factory functionally checklist, Y.Cubex (Younicos) and as well from ABB for the inverter:

statement no.16 in section 5 (commissioning of inverters) need further clarification regarding verify power measurement values result. CL1 was raised to confirm this issue.
For calibration information, refer to JCM guideline for developing project design development (PDD) and monitoring report, JCM_ID_GL_PDD_MR_ver 03.0, “the parameters are to be measured/calculated including Quality Assurance/Quality Control (hereinafter referred to as “QA/QC”) procedures applied. If the parameter will be measured, describe the equipments to be used to measure it, including details on accuracy level, and calibration information (frequency, date of calibration and validity)” and as well on MRS that ‘the calibration at an interval following the regulations in the country”, it shall be completed on monitoring period and will be used for verification process. Based on the Regulation of the Minister of Trade of the Republic of Indonesia, Number: 08/M-DAG/PER/3/2010 concerning Measuring, Dosing, Weighing Instrument and their Accessories Required to be Calibrated and Recalibrated, the digital kWh meter for this project should be calibrated and recalibrated, specifically for commercial use. The recalibration interval is regulated according to the Regulation of the Minister of Trade of the Republic of Indonesia, Number: 95/M-DAG/PER/11/2015 concerning Regulatory Changes of the Minister of Trade of the Republic of Indonesia, Number: 69/M-DAG/PER/10/2012. The digital kWh meter should be calibrated with the maximum interval for every 10 years or when the valid calibration mark is broken. FAR 1 was raised to need further action required on next verification process.

Response PP : The factory calibration results for Y. Cubex and ABB inverters was submitted including accuracy level information.

Assessment response: Initial calibration was done by manufacturer and the result had been defined, the accuracy of meter is still meet the JCM requirement as stated on approved methodology JCM_ID_AM017_ver01.0 (the accuracy of meter is confirmed within ± 5%). Clarification CL 1 is resolved and closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MP was described in compliance with the requirements of the approved methodology and the JCM Guidelines for developing PDD and MR. The project participants have ability to implement the described Monitoring Plan, including Monitoring Structure. Further action, FAR 1 is required to be follow up at next verification process regard with calibration information for monitoring purpose and clarification CL1 is resolved

C.8. Modalities of Communication

<Means of validation>

The MoC was submitted to PT TUV Rheinland Indonesia for review in the latest form at the time of validation. The MOC was signed by the authorized representatives of all the PPs with the contact details. PT TUV Rheinland Indonesia has assessed the personal identities including specimen signatures and employment status of the authorized signatories directly through the interview with PPs during the on-site assessment. It is confirmed 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>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issues were identified to the requirement

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team has concluded that the MOC complies with all relevant forms and requirements. The issue raised by the team has been fully clarified.

C.9. Avoidance of double registration

<Means of validation>

The validation team assessed and confirmed relevance of the written confirmation in the MoC form the PPs that the proposed JCM project was not registered under the other GHG scheme or international climate mitigation mechanisms.

The team in addition to the interviews with the PPs checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard (VCS) and Gold Standard (GS) and found no identical project as the proposed JCM project in terms of the name of entities, applied technology, scale and the location. The result of validation confirmed that the proposed project was not registered under the other international climate mitigation mechanisms than JCM and it will not result in a double counting of GHG emission reductions.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirms that the proposed JCM project is not registered under the other international climate mitigation mechanisms and hence will not result in double accounting of GHG emission reductions.

C.10. Start of operation

<Means of validation>

The starting date of the proposed JCM project is set as 30/09/2017 in the PDD. It is confirmed through the review of relevant documents, the on-site assessment, and the interview with the PPs that the operation of the proposed JCM project is planned to start couple of month after the commissioning completed, tailor with mall grand opening on the date and the facilities started full operation.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

No issue was raised to the requirement.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed through the review of relevant documents and the onsite assessment that the starting date of the proposed JCM project operation has been set appropriately as required by the Guideline of the JCM project.

C.11. Other issues

<Means of validation>

No issue was identified as relevant element not covered above.

<Findings>

Please state if CARs, CLs, or FARs are raised, and how they are resolved.

Not applicable.

<Conclusion based on reporting requirements>

Please state 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 is to be made publicly available for 30 days to invite public comments. The PDD was made publicly available in line with the requirements of the procedure for the period of 15/01/2020 to 13/02/2020 indicated in the following view page of the proposed JCM project:

- https://www.jcm.go.jp/id-jp/projects/72

As a result, no comment has been 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. ITOCHU Corporation
- Kent Tanaka (ITOCHU Corporation, Japan. Attended by telecon)
- Kyohei Nagayama (PT ITOCHU Indonesia)
2. PT Aeon Mall Indonesia
- Sri Prayogio (General Manager Mall Operation).
- Agus Triwanto (Facility Manager, Facility Department)
3. PT Fuji Furukawa E&C Indonesia
- Syed Abdul Kadir Zawawi (Civil Control Manager)
- Ade Firmansyah (Senior Engineer, Engineering Division)
4. PricewaterhouseCoopers Aarata LLC
- Yasuhiro Matsuda (Manager, Risk Digital Assurance)
- Tomomi Hoshiko (Risk Digital Assurance, attended by telecon)

E.2. List of documents received

1. PDD Version 02.0 dated 01/08/2019 third edition with the monitoring spreadsheet
2. Revised PDD Version 02.0 dated 13/02/2020 with the monitoring spreadsheet
3. JCM Sustainable Development Implementation Plan Version 01.0, First edition, date 28/01/2019
4. Approved methodology JCM_ID_AM017_ver01.0, date 28/11/2018
5. MOC document JCM_ID_F_MOC Version 01.0 submission date 26/12/2019
6. MPS and MSS document JCM_ID_AM017_MPS_Ver01.0 date 27/01/2020
7. Revised MPS and MSS document JCM_ID_AM017_MPS_Ver01.0 date 19/02/2020

8. Single Line diagram of PV system including PLN parallel line diagram to PV system.
9. Grounding diagram
10. Photograph view of PV solar panel instalation on rooftop
11, Photograph of each installed inverter ABB model TRIO-50.0-TL-OUTD including the serial number of the equipment.
12. Photograph of battery storage system and weather station
13. Project structure of organization
14. Solar PV System and Energy Storage System Monitoring System
15. Chronological plan of the project
16. Specifications of Photovoltaic Module Panasonic Model Number VBHN325SJ47
17. Monitoring Plan Sheet of JCM Approved Methodology ID_AM001 (JCM_ID_AM017_ver01.0.xlsx)
18. JCM Glossary of Terms (JCM_ID_Glossary_ver02.0)
19. JCM Project Cycle Procedure (JCM_ID_PCP_ver05.0.pdf)
20. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_ID_GL_PDD_MR_ver03.0.pdf)
21. JCM Guidelines for Validation and Verification (JCM_ID_GL_VV_ver01.0.pdf)
22. JCM Validation Report Form (JCM_ID_F_Val_Rep_ver01.0.docx)
23. Energy Storage System (ESS) panel inspection test certificate, date 13 July 2017
24. Factory Acceptance Test (FAT) LVMDB 3 panels - Low Voltage Main Distribution Panel of solar PV system date 08/05/2017
25. Site Test Report of whole PV solar system: PV modules, Power conditioners, Monitoring system dan LVMDB-3 Panels, date 26 May - 7 June 2017
26. Solar PV & Energy Storage System for Aeon Mall JGC - ESS Field Test Report from Panasonic, date 25/07/2017
27. AC Connection Board Inspection date 05-10 May 2017
28. EPC agreement between PT Aeon Mall Indonesia and PT Fuji Furukawa Indonesia date 03/12/2016
29. General Installation Manual PV Module type panasonic VBHN325SJ47
30. Product manual ABB Solar inverter 50 kW TRIO-50.0-TL-OUTD
31. Product manual ABB Solar Monitoring VSN700 Data Logger
32. Technical Specification for Y.Cube 100kW/111kWh
33. As built drawing AC Connection Board, date 12/05/2017
34. As built drawing ESS distribution panel, date 02/07/2017 revision 4
35. Product Manual VSN800 Weather Station
36. Functional Test and factory calibration for ten (10) ABB solar inverter 50 kW TRIO-50.0-TL-OUTD

37. Younicos Y.cube factory calibration data
38. Certificate of IEC 61215, IEC 61730-1 and IEC 61730-2 issued by Japan Electrical Safety and Environment technology Laboratories dated 06/10/2015
39. Indonesia Minister of Trade decree No. 08 year 2010
40. Indonesia Minister of Trade decree No. 95 year 2015
41. Indonesia Minister of Trade decree No. 69 year 2012
42. UKL-UPL semester I and semester II year 2019
43. Maintenance Plan of Solar PV and Energy Storage System (ESS) Aeon Mall JGC - PT Fuji Furukawa E&C Indonesia.
44. Consortium Agreement between PT Aeon Mall Indonesia and ITOCHU Corporation date 01/12/2016
45. Raw data Monitoring 2017-2019
46. Minute of Meeting Local Stakeholders Consultation for the project, date 29/09/2017
47. Attendance list of Meeting Local Stakeholders Consultation, date 29/09/2017

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.

Joint Crediting Mechanism
Certificate of Appointment

Title of Project : Validation Installation of Solar Power System and Storage Battery to Commercial Facility – Aeon Mall Jakarta

We hereby certify that the following personnel have engaged in the verification process that has fully satisfied the competence requirements of the validation of the JCM Project.

Name of Person	**Assigned roles**
Agus Hermanto	Team Leader
M Fundy Cholis Kurniawan	Team Member
Rahmawati Noor	Technical Reviewer

Jakarta, September 2nd 2020

Dian S. Soeminta
Climate change and sustainability manager
PT TUV Rheinland Indonesia