JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Lao PDR Energy Efficient Datacenter Project (LEED)
Reference number	LA001
Third-party entity (TPE)	TPE-LA-002 Japan Quality Assurance Organization
Project participant contracting the TPE	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.
Date of completion of this report	24/03/2017

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 Lao People's Democratic Republic, in line with Laos's procedures.	☒

Item	Validation requirements	No CAR or CL remaining
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.	☒
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: Yano	First name: Tadayuki
Title: Senior Executive	
Specimen signature: [redacted]	Date: 24/03/2017

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Koichiro Tanabe	JQA	Team leader	☒	Authorized	☐
Mr. ☐ Ms. ☒	Sachiko Hashizume	JQA	Team member	☒	Authorized	☒
Mr. ☒ Ms. ☐	Tadashi Yoshida	JQA	Internal reviewer	☒	Authorized	☐
Mr. ☐ Ms. ☐	N/A	N/A	N/A	☐	N/A	☐

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>

Through a review of the draft PDD, it was checked and confirmed that the PDD was completed using the latest version of the PDD form (JCM_LA_F_PDD_ver02.0) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR (JCM_LA_GL_PDD_MR_ver02.0).

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the PDD was completed using the valid form in line with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The proposed JCM project aims to reduce CO2 emissions in Lao PDR by introducing energy-efficient container based data center to fulfil increasing needs for data center in the country and in the region. The proposed project applied a JCM approved methodology LA_AM001 “Installation and operation of energy-efficient data center (DC) in the Lao PDR, Version 01.0”. The proposed project introduces the first full-fledged container based data center with the total power receiving capacity of 500kW at Vientiane Capital in Lao PDR. Compared to the conventional building type DCs, the module type DC achieves higher energy efficiency by utilizing indirect-outside-air-cooling system which ventilate the inside heat using the outside air. Depending on the condition of outside air, the air cooling block of the DC selects its operation mode by taking advantage of outside air throughout the year, leading to the greater energy saving. In addition, unlike traditional building type DCs entire structure needs to be built at the beginning, module type or container based DC can be expanded based on the data processing demand. Such flexibility is considered as a suitable feature for the DC to be built in developing countries.

The expected emission reduction that would be achieved by the LEED project in its first year of operation is 300 tCO_2. The actual emission reduction may vary depending on the rate of DC utilization. When the DC demand reaches to its full capacity of currently installed equipment, the emission reductions that would be achieved by the proposed project are estimated to be 695 tCO_2 annually.

The validation team conducted document review, and then conducted a one-day on-site inspection on 08/02/2017, including a follow-up interview. The location of the proposed JCM project was checked during the on-site inspection. The project description was also cross-checked through the physical inspection and interview with a representative of each of the entities below, who have been involved in the proposed JCM project as project participants (PPs):

- Ministry of Science and Technology, Lao P.D.R (MOST)
  MOST is the counterpart of the proposed project, and the DC is to be operated by the DC team of MOST.
- Toyota Tsusho Corporation (TTC)
  TTC is in charge of overall project supervision, logistics, training of the MOST DC team.
- Internet Initiative Japan Inc (IIJ)
  IIJ is in charge of the design and consultation of the DC.
- Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. (MUMSS)
  MUMSS is in charge of JCM aspects of this data center project including but not

limited to the JCM validation and verification procedures.

With respect to duration of the proposed JCM project, a CL was raised. Through resolution of the CL, it was confirmed that the starting date of project operation is 17/01/2017, which is the day that the project DC was handed over to MOST, by signing the Implementation document site test of LEED. It was also confirmed through resolution of the CL that the expected operational lifetime of the proposed JCM project is five years, which is in line with the useful life time for depreciation provided by tax authority of Lao and Japan.

The project has been selected as one of the JCM demonstration projects by the New Energy and Industrial Technology Development Organization (NEDO). For the purpose of knowledge transfer of the low- carbon technology, TTC has provided the training of the optimum operation and maintenance of the container-type data-center to the DC team of MOST. TTC assigned its subsidiary company, TT Network integration (Thailand) Co.,Ltd.(TTNI-T) to conduct the training and support the start up of the DC operation. This finding was confirmed through review of supporting documents and the on-site inspection, with a satisfactory result.

As a result, the team determined that the description of the proposed JCM project in the PDD was accurate, complete, and provided an understanding of the proposed JCM project.

<Findings>

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

(Issue raised as CL04)

Expected operational lifetime of project is defined as 4 years. According to PPs, , the IT servers typically in a DC are renewed in 4 to 5 years after installation as more efficient IT servers will be available. Therefore, PPs set the expected operational lifetime of project as 4 years.

It is requested to provide documents showing the appropriateness of the above explanation.

(Summary of the response on CL04)

According to the list of operating life of equipment/fixtures provided by Japanese national tax agency, the operating life time of IT equipment, excluding personal computers, is 5 years. While operational lifetime of IT equipment is from 4 to 5 years in practice, to ensure clearer reference the PPs have revised the expected operational lifetime of project in the Section A.5. of the PDD to 5 years.

In addition, PPs have revised the starting date of project operation in Section A.5. of

the PDD to 17 January 2017, based on the date indicated in the implementation document site test of LEED.

(Assessment result of the responses on CL04)

Through reviewing the provided documents, it was confirmed as follows;

-the operating lifetime of IT servers is provided as 5 years by Japanese national tax agency,

-the project DC was handed over to MOST, by signing the Implementation document on site test of LEED on 17 January 2017.

To examine the appropriateness of the 5-year project life time in terms of LAO tax regulation, JQA also checked the depreciation period of IT servers defined by LAO tax law. Through reviewing the information provided by several entities including Ministry of Planning and Investment Lao and global audit firms, it was confirmed that the depreciation period of IT servers is not explicitly provided, but the shortest period for tangible fixed assets is defined as 5 years by LAO tax law.

Considering above findings, it was confirmed that the expected operational life time and the starting date of project operation is defined appropriately.

Therefore, this issue was closed.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team reached the conclusion that the project description is accurate and complete. The issues raised by the team were fully clarified.

C.3. Application of approved methodology(ies)

<**Means of validation**>

Selection of methodology(ies)

Through a review of the draft PDD and Monitoring Plan (Monitoring Plan Sheet and Monitoring Structure Sheet), it was confirmed that the following latest version of methodology was correctly quoted and applied in the proposed JCM project.

- JCM_LA_AM001_ver1.0

The assessment results of the eligibility criteria in the approved methodology are summarized as below:

Criterion 1

"The project DC is newly introduced, highly efficient with designed PUE value under 1.3."

Through reviewing supporting documents and interview during the on-site inspection, the project information of Criterion 1 described in the PDD, was checked and confirmed as below with a satisfactory result:

- The designed PUE value for the project DC is 1.28 as described in "Designed PUE (dPUE) of LEED Datacenter".
- The project DC was newly introduced as the first official DC in Lao PDR which deploys modern technology from Japan.

Criterion 2

"The container is highly air-tight with IEC60529 value of IP-54 or higher based on manufacturer's inspection results."

It was confirmed through checking the name plate of the container during the on-site inspection that the container installed is manufactured by NML ECL. The results of the inspection conducted by NML ECL was provided and it shows that the IP level of the containers used for LEED project achieves (gives) IP-54.

Criterion 3

"The project DC installs IT equipment that has operating temperature recommended by manufacturer with upper limit of 40 degrees C or higher."

Through reviewing the system configuration guide of "NEC Express5800R/R120f-1E", it was confirmed that the operating temperature recommended is 10 °C to 40 °C.

During the on-site inspection it was confirmed that the above mentioned IT equipment is used for the project DC. It was also confirmed that other IT equipments including net work device (NW) and storage are installed in the project DC.

It was confirmed that the upper limit of operating temperature recommended by manufacturer of each NW and storage equipment is 40 °C or higher.

Criterion 4

"Ozone Depletion Potential (ODP) of the refrigerant used for the project DC is zero."

Through reviewing the user's manual of "Indirect outside air conditioning unit Model: FCA-40A", it was confirmed that the refrigerant is HFC410a (R410a). The ODP of R410a is zero.

During on-site inspection, it was confirmed that the above mentioned air conditioning unit is used for the project DC. It was also confirmed that there are no other cooling equipments used for the project DC.

Criterion 5
"A plan for not releasing refrigerant used for project DC is prepared."

Through interview with PPs, it was confirmed that PPs were preparing an operation manual for the project DC including a prevention measure of refrigerant leakage. The prevention plan is to be based on "Guide of simplified fluorocarbons leak check"., which is established by Japanese government in conjunction with "Act on rational use and proper management of fluorocarbons".

As such manual was not available to JQA during the on-site inspection, JQA was not able to confirm the fulfilment of this criterion, therefore a CL was raised. Through resolution of the CL, it was confirmed that a plan for not releasing refrigerant used for project DC was prepared as a part of the operation manual for the project DC.

<**Findings**>
Please state if CARs, CLs, or FARs are raised, and how they are resolved.
(Issue raised as CL01)

Through interview with the PP, it was confirmed that the PP is preparing an operation manual for the project DC including a prevention measure of refrigerant leakage. The prevention plan is to be based on "Guide of simplified fluorocarbons leak check", which is established by Japanese government in conjunction with "Act on rational use and proper management of fluorocarbons".

It is requested to provide such manual for the TPE's confirmation.

(Summary of the response on CL01)

PPs are currently preparing an operation manual for the project data center including a prevention measure of refrigerant leakage based on "Guide of simplified fluorocarbons leak check"., which is established by Japanese government in conjunction with "Act on rational use and proper management of fluorocarbons".

The relevant section from the draft operation manual which covers the simplified refrigerant leak check procedures has been submitted for the TPE's review.

(Assessment result of the responses on CL01)

Through reviewing the draft operation manual for air conditioners of LEED project, it

was confirmed that a plan for prevention of refrigerant leak is appropriately included.

Therefore, this issue was closed.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team reached the conclusion that the relevant information contained in the PDD is in compliance with the eligibility criterion listed in the approved methodology applied. The issue raised by the team was fully clarified.

C.4. Emission sources and calculation of emission reductions

<**Means of validation**>

It is confirmed through desk review that the emission sources and GHGs, which are described in the PDD, are described based on evidential documents properly. It is also confirmed through an on-site inspection that they are corroborated as below:

- As figured in the PDD, the proposed JCM project is a DC which includes power receiving facility, UPS (Uninterruptible Power Supply), IT equipments and other facility. Those equipments and facilities are operated with grid electricity.
- It was observed that four captive power generators (diesel fuel) had been installed in the DC, for emergency use. According to the applied methodology, it is not required to distinguish the emission sources of captive electricity consumption from grid electricity consumption for the monitoring and calculation of project emissions. As the applied methodology requires to select the smaller value between the latest Laotian national grid emission factor (0.5595 tCO2e/MWh) and the emission factor of captive power generation (0.8 tCO2e/MWh) provided as the most recent figure of CDM approved small scale methodology: AMS-I.A. In this regards, PPs exclude the captive power generators from the project boundary. Based on the applied methodology, the validation team considered it reasonable.

Since the applied methodology does not allow the PPs to choose any source or gas to be included, all emission sources and their associated GHGs relevant to the proposed JCM project meet the applied methodology.

With respect to the calculation of emission reductions, it was confirmed that an appropriate Monitoring Spreadsheet defined in the applied methodology is used without being altered. It is cross-checked and concluded that the required fields of the spreadsheet are filled in appropriately as a result of resolution of a CL mentioned below.

Parameters to be fixed ex ante

Through cross-check of the project-specific parameters fixed *ex ante*, it was not confirmed whether EF_{elec} (CO_2 emission factor of electricity consumed) in the Monitoring Spreadsheet is in line with the applied methodology or not. Therefore, a CL was raised.

<Findings>

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

(Issue raised as CL02)

It was not confirmed whether applied value (0.5764 tCO2e/MWh) for the EF_{elec} is the most recent value announced by the Ministry of MONRE, DNA for CDM or the value instructed by the Joint Committee. Therefore, it is requested to apply the value in accordance with the methodology and to provide the supporting document for the source.

In addition, it is requested to describe the source of data explicitly in the column (e) of the same table.

(Summary of the response on CL02)

The applied EF_{elec} was revised to the most recent value announced by the Ministry of Natural Resources and Environment (MONRE). The most recent value is published in "Calculation for the emission factor for electricity generation in Lao PDR, 2010", and the value is 0.5595 tCO_2/MWh. In addition, column (e) in Table 2 of the Monitoring Plan Sheet was revised to explicitly describe the source of data.

Consequently, the expected emission reduction was recalculated and the relevant section in the PDD was also revised to reflect the latest EF_{elec} value.

(Assessment result of the responses on CL02)

It was confirmed that the PP applied the most recent value of emission factor for electricity generation in Lao PDR, 2010, and the expected emission reduction is recalculated correctly.

It was also confirmed that the source of data is explicitly described in Table 2 of Monitoring Plan Sheet.

Therefore, this issue was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team reached the conclusion that the selected emission sources and

GHG types were justified for the proposed JCM project. The validation team assessed values for project-specific parameters to be fixed ex ante in the Monitoring Plan Sheet andcalculation process to derive the values. As a result, those were considered reasonable in the context of the proposed JCM project. The issue raised by the team was fully clarified, which resulted in a revision of the PDD and the Monitoring Plan Sheet.

C.5. Environmental impact assessment

<**Means of validation**>

PPs provided the report on the EIA requirements and procedures in Laos issued and published by Institute of Global Environment Strategy (IGES). According to the report, it was confirmed that no EIA is required for a DC project.

In addition, it was confirmed by the interview during the on-site inspection that the following is the latest relevant requirement.

- MONRE [Ministry of Natural Resources and Environment]. 2013. Ministerial Agreement No. 8056 on the Endorsement and Promulgation of List of Investment Projects and Activities Requiring for Conducting the Initial Environmental Examination or Environmental and Social Impact Assessment. Vientiane.

<**Findings**>

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

No outstanding issue was raised.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team concluded that the project design of the proposed JCM project was in accordance with the EIA regulation in Lao PDR.

C.6. Local stakeholder consultation

<**Means of validation**>

Through reviewing the PDD and the minutes of local stakeholder consultation (LSC) meeting, it was confirmed that a LSC was implemented for the following local stakeholders.

- Department of Disaster Management and Climate Change (DDMCC), Ministry of Natural Resource and Environment (MONRE)

- International Relation Division, Lao Women Union
- REDD Office, Department of Forestry, Ministry of Agriculture and Forestry (MAF)
- Department of Industry and Handicraft, Ministry of Industry and Commerce (MOIC)
- Institute of Public Work and Transport, Ministry of Public Works and Transport (MPWT)
- Ministry of Health
- Ministry of Education and Sport
- Renewable Energy Institute, Ministry of Science and Technology (MOST)
- Renewable Energy Promotion Institute, Ministry of Energy and Mines (MEM)
- Department of Information and Technology, Ministry of Science and Technology (MOST)
- E-Government Center, Ministry of Post and Telecommunication
- Electricite Du Laos (EDL)
- ESL Sole, Co. Ltd.

According to the information obtained through the document review above, no follow up actions were required to address the comments by those local stakeholders.

It was also confirmed through cross-check interview during the on-site inspection that the information on the LSC in the PDD is correct and appropriate.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the local stakeholder consultation of the proposed JCM project was adequate.

C.7. Monitoring

<Means of validation>

(a) Assessment of compliance of the monitoring plan with the approved methodology and/or PDD and Monitoring Guidelines

It was confirmed that the following parameters are listed in the Monitoring Plan Sheet appropriately based on the latest version of LA_AM001.

$EC_{PJ,P}$: Total electricity consumption of project DC during the period p

"Measured with an electricity meter(s). Electricity meter readings at the beginning and end of each monitoring period will be documented with photographs showing clearly the meter readings and the date when the meter reading is taken.

The meters are installed and managed by the electrical utilities of Lao PDR."

Through the on-site inspection、 it was confirmed that the meters are installed and managed by Electricite Du Laos (EDL).

With respect to the calibration of the meters to monitor the parameter in this proposed JCM project , it was confirmed that no calibration by the project participants is required in accordance with the following calibration requirements provided by LA_AM001.

"In case a calibration certificate issued by an entity accredited under national/international standards is not provided, such electricity meters are required to be calibrated, unless the meters are installed and managed by the electrical utilities of Lao PDR." $\Sigma EC_{IT,j,p}$: Sum of electricity consumption by IT equipment measured by electricity meters during the period p

"'Measured with electricity meters. Electricity meter readings at the beginning and end of each monitoring period will be documented with photographs showing clearly the meter readings and the date when the meter reading is taken.

Calibration certificates are issued for all 48 meters by Japan Electric Meters Inspection Corporation (JEMIC), and are valid until November 2023."

Through the on-site inspection, it was confirmed that 48 meters were installed to monitor electricity consumption by IT equipments in the proposed JCM projects. It was confirmed that the calibration certificates for these meters were issued at the time of delivery from the manufacturer and they are valid until November 2023.Therefore, it is not required to calibrate those 48 meters for the proposed JCM project.

As a result, t was confirmed that the monitoring parameters and means of monitoring in the Monitoring Plan Sheet comply with the requirements of LA_AM001.

With respect to the figure of monitoring points in Section C.2. of the PDD, a CL was raised.

(b) Assessment of the implementation of the plan

The following responsible personnel and their roles are described in the Monitoring Structure Sheet.

- JCM Project Manager

Oversees the planning, implementation, and tracking the tasks within the JCM validation and verification procedures

Responsible for communication with TPE and the Secretariat

- JCM Monitoring Manager

Archiving the monitoring data

Analysis of the monitored data

Preparation of the monitoring report

Aggregating and archiving the repair/replacement incidence report from JCM Facilities Manager

Reporting to JCM Project Manager

- JCM Facility Manager

Oversees the operation of JCM facilities

Reporting of repair/replacement incidence of the project transformers to the JCM Monitoring Manager

It was confirmed that the description above is in line with the PDD and Monitoring guidelines.

Through interviews with PPs during the on-site inspection, it was confirmed that each function of above mentioned structure is to be assumed as below, and the monitoring structure are feasible within the project design.

- JCM Project Manager: assumed by MUMSS
- JCM Monitoring Manager :assumed by MUMSS
- JCM Facility Manager :assumed by DC team of MOST with support by TTNI-T

It was confirmed through reviewing the training records and the manual for the DC operation that the data management and QA/QC procedures could be effectively implemented.

<**Findings**>

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

(Issue raised as CL03)

The monitoring point No. defined in column (a) of "Table 1:Parameters to be monitored ex post" in the Monitoring Plan Sheet is not clearly indicated in the Section C.2. Figure of all emission sources and monitoring points relevant to the JCM project.

(Summary of the response on CL03)

Section C.2. in the PDD was revised so that the monitoring point No. defined in column (a) in the Table 1 of the Monitoring Plan Sheet was clearly indicated.

(Assessment result of the responses on CL03)

It was confirmed that the monitoring point No. was clearly figured in Section C.2. of

the PDD.

Therefore, this issue was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that Monitoring Plan of the proposed JCM project complied with the requirements of the methodology and/or PDD and Monitoring Guidelines, and the project participants had ability to implement the described Monitoring Plan, including Monitoring Structure Sheet.

C.8. Modalities of Communication

<Means of validation>

The Modalities of Communication (MoC) was submitted to JQA on 26/12/2016 together with the PDD for public comments. It was confirmed that the latest version of the form for the MoC was used. All the four entities listed as PPs in the PDD are included in the MoC. Among four entities, MUMSS is nominated as a focal point entity.

JQA reviewed the website of each entity and confirmed its identity. For three entities from Japan, the personnel identity of the authorized signatory was confirmed through a direct communication at the kick-off meeting for this validation.

The personal identity of the authorized signatory of Ministry of Science and Technology, Lao PDR was confirmed through the interview during the on-site inspection.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the MoC complied with all relevant forms and requirements.

C.9. Avoidance of double registration

<Means of validation>

It was confirmed through review of the relevant website (e.g. UNFCCC website,

Markit Environmental Registry, etc.) that the proposed JCM project has not been registered under other international climate mitigation mechanisms. Also, the written confirmation of the avoidance of double registration was provided through the signed MoC, and was cross-checked through interview with PPs, with a satisfactory result.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concluded that the proposed JCM project was not registered under the other international climate mitigation mechanisms at the stage of validation.

C.10. Start of operation

<Means of validation>

Through interview with the project participant, it was confirmed that the starting date of project operation was identified as 17/01/2017, which is the day that the project DC was handed over to MOST, by signing the Implementation document site test of LEED. It was confirmed that the date is not before 01/01/2013.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team concludes that the start of the operating date of the proposed JCM project has been defined appropriately.

C.11. Other issues

<Means of validation>

No other issue was identified.

<Findings>

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

No outstanding issue was raised.

<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

The PDD of the proposed JCM project, which was submitted in line with the Project Cycle Procedure, was made publicly available through the JCM website for public inputs. This call for public comments is open from 27/12/2016 to 25/01/2017. The specific JCM website is as below:

- https://www.jcm.go.jp/la-jp/projects/18

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

No comment was received during the period of the public comments; therefore, no action was required to be taken into due account by PPs.

E. List of interviewees and documents received

E.1. List of interviewees

- Keonakhone Saysuliane, Directore General, Information Technology Department, Ministry of Science and Technology, Lao PDR
- Souliya Sengdalavong, Deputy Directore General, Information Technology Department, Ministry of Science and Technology, Lao PDR
- Hitoshi Nakayama, Group Leader, Business Solution Group, Information Technology Business Dept., Toyota Tsusho Corporation
- Tomonori Nakamura, Project Manager, Business Solution Group, Information Technology Business Dept., Toyota Tsusho Corporation
- Chumpol Tangdumrongvong, General Manager, Lao PDR Project Office, TTNetwork Integration (Thailand) Co.,ltd.
- Futoshi Ebata, Deputy Division Director, Government, Public & Educational

Organization Business Division, Internet Initiative Japan Inc. · Isao Kubo, General Manager, Data Center Engineering Department, Service Infrastructure Division, Internet Initiative Japan Inc. · Yusuke Tsutsumi, Engineer, Engineering Section, Data Center Engineering Department, Service Infrastructure Division, Internet Initiative Japan Inc. · Masayuki Toyofuku, General Manager, Clean Energy Finance Division, Mitsubishi UFJ Morgan Stanley Securities Co.,Ltd. · Chisato Nakade, Consultant, Clean Energy Finance Division, Mitsubishi UFJ Morgan Stanley Securities Co.,Ltd. · Shigeru Ogawa, Consultant, Clean Energy Finance Division, Mitsubishi UFJ Morgan Stanley Securities Co.,Ltd.

E.2. List of documents received

· Project Design Document (draft) (JCM_LA_F_PDD_ver02.0_LEED.docx) · Project Design Document (final) · (JCM_LA_F_PDD_ver02.0_LEED_v2.docx) · Monitoring Plan Sheet and Monitoring Structure Sheet (draft) · (JCM_LA_AM001_ver01.0_LEED.xlsx) · Monitoring Plan Sheet and Monitoring Structure Sheet (final) · (JCM_LA_AM001_ver01.0_LEED_v3.xlsx) · Modalities of communications statement (submitted with the draft PDD for publication) · JCM Approved Methodology LA_AM001 (JCM_LA_AM001_ver01.0.pdf) · Monitoring Plan Sheet and Monitoring Structure Sheet LA_AM001 (JCM_LA_AM001_ver01.0.xlsx) · JCM Glossary of Terms (JCM_LA_Glossary_ver01.0) · JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_LA_GL_PDD_MR_ver02.0) · JCM Project Cycle Procedure (JCM_LA_PCP_ver02.0) · JCM Guidelines for Validation and Verification (JCM_LA_GL_VV_ver01.0) · JCM Modalities of Communication Statement Form (JCM_LA_F_MoC_ver01.0.pdf)

- JCM Project Design Document Form (JCM_LA_F_PDD_ver02.0.docx)
- Article on the first data center in Laos, Vientiane Times, 30 November 2016
- Implementation Document Plan Site Test of LEED including facility list
- The plan and record of training to the operators in Lao PDR for the optimum operation and maintenance of the container-type data-center
- Designed PUE (dPUE) of LEED Datacenter
- Indirect outside air conditioning unit Model: FCA-40A user's manual
- The manufacture's inspection results of IP value
- The technical specification of IT equipment to be installed in the project DC
  "NEC Express5800/R120f-1E System Configuration Guide"
  "Data sheet for Cisco 890 Series Integrated Services Routers, Cisco 2900 Series Integrated Services Routers, Cisco Catalyst 2960-X Series Switches, Cisco Catalyst 3650 Series Switches"
  "Specifications for FAS8020 (storage array)"
- Guide of simplified fluorocarbons leak check
- Act on rational use and proper management of fluorocarbons
- co-Izmo/I Single Line Diagram Location : Vientiane
- Ministerial Agreement_No.8056_English (unofficial translation)
- Minutes of local stakeholder consultation
- The source of value for the parameter $EC_{PJ,p}$ and $EC_{IT,i,p}$
- Calculation for the emission factor for electricity generation in Lao PDR, 2010
- LEED Air conditioner maintenance manual and maintenance sheet
- List of operating life of equipment/fixtures provided by Japanese national tax agency
- Useful life of tangible assets defined by Lao tax law
- Calibration certificates of the electricity meters for IT equipments

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

Name: Mr. Koichiro Tanabe

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	-
Verifier	2014/12/22
Team leader	2015/3/24

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22

Statement of competence

Name: Ms. Sachiko Hashizume

Qualified and authorized by Japan Quality Assurance Organization.

Function

	Date of qualification
Validator	2015/11/20
Verifier	2015/11/20
Team leader	-

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2015/11/20
TA 1.2. Renewables	2015/11/20
TA 3.1. Energy demand	2015/11/20
TA 13.1. Solid waste and wastewater	2015/11/20

Statement of competence

Name: Dr. Tadashi Yoshida

Qualified and authorized by Japan Quality Assurance Organization.

Function

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

Technical area within sectoral scopes

	Date of qualification
TA 1.1. Thermal energy generation	2014/12/22
TA 1.2. Renewables	2014/12/22
TA 3.1. Energy demand	2014/12/22
TA 4.1. Cement and lime production	2015/11/12
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	2014/12/22
TA 10.1. Fugitive emissions from oil and gas	2014/12/22
TA 13.1. Solid waste and wastewater	2014/12/22