JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Promotion of green hospitals by improving efficiency / environment in national hospitals in Vietnam
Reference number	VN002
Third-party entity (TPE)	Lloyd's Register Quality Assurance Limited (LRQA)
Project participant contracting the TPE	Mitsubishi Corporation
Date of completion of this report	31/08/2015

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 Socialist Republic of Viet Nam, in line with Vietnamese 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: Chiba	First name: Michiaki
Title: Climate Change Manager - Asia & Pacific	
Specimen signature: [redacted]	Date: 31/08/2015

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Michiaki Chiba	LRQA Ltd.	Team leader	☒	Technical competence authorised	☒
Mr. ☒ Ms. ☐	Nguyen Thang	External expert	Host country expert	☐	N/A	☒
Mr. ☐ Ms. ☐				☐		☐
Mr. ☒ Ms. ☐	Xianxin Yan	LRQA China	Internal reviewer	☒	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>

The PDD was checked and confirmed as complete against JCM Guidelines for Developing PDD and MR No. JCM_VN_GL_PDD_MR_ver01.0. A valid form of the JCM PDD Form No. JCM_VN_F_PDD_ver01.0 is used for the PDD Version 01.0 dated 16/06/2015 (the first edition). It was re-checked for the revised PDD Version 02.0 dated 25/08/2015. The version is the final version on which the validation was completed.

<Findings>

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

No issue was identified to the requirement.

<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.

C.2. Project description

<**Means of validation**>

The project is to reduce CO2 emissions by facilitating the utilisation of more energy efficient inverter room air conditioners (RACs) in place of the conventional and more energy intensive non-inverter air conditioners in Vietnam.

Inverter technology enables air conditioners to operate with less electricity consumption compared to the conventional types by varying revolution speed of the compressor according to the desired room temperature and operating conditions.

The proposed JCM project improves energy efficiency at two national hospitals in Vietnam, that are People's Hospital 115 in Ho Chi Minh City and Viet Duc Hospital in Hanoi, by implementing high efficiency inverter RACs.

The project is participated by Energy Conservation Center Ho Chi Minh City (ECC) from the Socialist Republic of Viet Nam, Mitsubishi Electric Corporation, Mitsubishi Corporation and Mitsubishi UFJ Morgan Stanley Securities Co., Ltd. from Japan (the PPs).

The start date of project operation is on 06/08/2015 and the expected operational lifetime of the project is for 10 years.

Approximately 1,000 units of energy efficient inverter air conditioners manufactured by Mitsubishi Electric Corporation, Japan, are introduced by the proposed project. The project also introduces Energy Management System (EMS), which is also designed by Mitsubishi Electric Corporation and optimises operation of multiple inverter RACs. While energy efficiency improvement by EMS is not numerically counted as the emission reductions by the project, introduction of EMS will enhance efficient energy use in the public sector buildings.

The project has been selected as a demonstration project by the New Energy and Industrial Technology Development Organization (NEDO) of Japan, and receives partial financial support from Japanese public funding.

The validation team assessed the PDD and the supporting documents, conducted a physical site visit to validate the requirements concerning accuracy and completeness of the project description. Through the processes taken, a CL was raised and subsequently closed 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.

Grade / Ref: CL 1

Nature of the issue raised:

The PPs were requested to clarify locations of the project with the latitude and longitude presented in a format N 10º 10’ 00” and E 100º 10’ 00”.

Nature of responses provided by the PPs:
The PPs amended the description of the project locations in the revised PDD. The location of project sites are confirmed in the revised PDD as:
Location 1. People's Hospital 115: Ho Chi Minh City / Ward 12, District 10, N 10º 46' 29.42" and E 106º 40' 2.69"
Location 2. Viet Duc Hospital: Hanoi / Hoan Kiem District, N 21º 1' 38.40" and E 105º 50' 49.31"

Assessment of the responses:
The validation team reviewed the information provided in the revised PDD and supporting evidence and confirmed it as consistent with the project locations confirmed by the on site assessment including the visits to the project sites. The CL was closed.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team assessed the project description provided in the PDD with the supporting documents and conducted a physical site visit to validate the requirements on the accuracy and completeness. The CL raised was successfully closed as the resolution above detailed. The validation team confirmed that the proposed JCM project in the revised PDD is described in accurate and complete manners that is understandable the nature of the proposed project activity.

C.3. Application of approved methodology(ies)

<**Means of validation**>

The project applied the approved methodology: JCM_VN_AM002_ver01.0 "Introduction of room air conditioners equipped with inverters". The methodology is approved by the JC on 14/01/2015 and valid as of the time of the validation.
The validation team assessed if the selected methodology is applicable to the proposed project. The project applicability was checked against each criterion in the approved methodology selected. The steps taken to validate each eligibility criterion and conclusions about its applicability to the proposed project are summarised as below.

Criterion 1: The methodology is applicable to the following types of projects:
- Installation of inverter RACs to public sector buildings.
- Replacement of existing non-inverter RACs by inverter RACs in all types of buildings.

Justification in the PDD: The project newly introduces RACs equipped with inverters, and replaces some existing non-inverter RACs by inverter RACs at People's Hospital

115 and Viet Duc Hospital. Both People's Hospital 115 and Viet Duc Hospital are national hospitals, administrated by national government.
Steps taken for assessment: The validation team reviewed the organizational information and conducted on site assessment including interviews.
Conclusion: The validation team confirmed that the project introduces approximately 1,000 units of inverter RAC to the 2 national hospitals, some replace the existing non-inverter RACs and the other are newly installed. Both new installation of inverter RACs and replacement of existing non-inverter RACs by inverter RACs meet the requirements of the criterion.

Criterion 2: Rated cooling capacity of a project RAC is within the applicable range of the Vietnamese National Standard TCVN 7831:2012.
Justification in the PDD: TCVN 7831:2012 is applicable to non-ducted air conditioners with a rated cooling capacity up to 14 kW. Rated cooling capacity of project RACs are between 2.6 kW and 3.65 kW, within the applicable range of the standard.
Steps taken for assessment: The validation team reviewed the technical specification of the project RACs, the requirements of the national standard and conducted on-site assessment.
Conclusion: The validation team confirmed that the rated cooling capacity of the project RACs are within the range the National Standard TCVN 7831:2012 is applicable and the criterion is met by the project.

Criterion 3: Ozone Depletion Potential (ODP) of the refrigerant used for project RAC is zero.
Justification in the PDD: Refrigerant used for project RACs is R410A whose ODP is zero.
Steps taken for assessment: The validation team reviewed technical specification of project RACs and the Safety Data Sheet of refrigerant used, that were physically observed through the on site assessment.
Conclusion: The validation team confirmed that the project RACs use R410A as the refrigerant and its ODP is zero. Therefore the requirement of the criterion is met by the project.

Criterion 4: Plans to prevent release of refrigerants into the atmosphere at the time of RAC removal are prepared for both project RACs and the existing RACs replaced by the project. In the case of replacing existing RACs by project RACs, execution of the prevention plan is checked at the time of verification, in order to confirm that refrigerant

used for the existing RACs removed by the project is not released to the air.
Justification in the PDD: To prevent release of refrigerants into the atmosphere due to the project, at the time of RAC removal, the project plans to collect refrigerants from RACs removed and ensure storage of collected refrigerants by using refrigerant recovery check sheet. In addition, the project plans to provide relevant training for local workers to acquire adequate refrigerant collecting technique. Procedures of refrigerant collection are outlined in refrigerant recovery process.
Steps taken for assessment: The validation team reviewed the plan inclusive of the refrigerant collection procedures and staff training.
Conclusion: CL2 was raised and subsequently closed as detailed below. The validation team confirmed that the PPs prepared relevant plans to prevent atmospheric release of refrigerant from the removed RACs including safe storage and controls through the period that meet the criterion.

<**Findings**>

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

Grade / Ref: CL 2

Nature of the issue raised:

The PPs were requested to clarify the plan to prevent atmospheric release of refrigerant including the relevant measures for safe storage and controls of the collected refrigerant.

Nature of responses provided by the PPs:

The PPs took measures and improved safe storage of collected refrigerant that constitute a part of the plan to prevent atmospheric release of refrigerant used in the removed RACs.

Assessment of the responses:

The validation team confirmed that the PPs have taken measures to improve the safe storage of the collected refrigerant in addition to the relevant plan and the procedures to manage recovery of the refrigerant gas from the removed equipment as assessed through the on site validation visit including physical observation of the dedicated spaces for the storage and implementation of the control systems. The plan takes account the host country regulations and requirements of the technology supplier, Asada Corporation of Japan. Tonets is the contractor for removal of RACs, collection and storage of refrigerants and staff of Tonets is trained by Asada Corporation.

<**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.

C.4. Emission sources and calculation of emission reductions

<**Means of validation**> The validation team assessed the documented evidence and by means of on site visit 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 project emissions and reference emissions for the proposed project comply with the requirements of the approved methodology. The emission sources are electricity consumption by reference RACs and project RACs and CO2 is the GHG to be accounted. The reference emissions are determined as a product of monitored electricity consumption of project RACs, ratio of energy efficiency of reference RACs and project RACs based on cooling seasonal performance factor (CSPF), and CO2 emission factor of the electricity. The reference RACs, CSPF of reference RACs and project RACs are determined ex-post in accordance with the procedures provided in the applied methodology. The project applies single split type RACs with rated capacity less than 4.5 kW (2.6 – 3.65 kW). The ex-ante estimation of GHG emission reductions is based on reference RACs: - Not equipped with inverters - Categorised as Grade 4 of the energy efficiency grades by EER as outlined in Table 3 of Vietnamese National Standard TCVN 7830:2012. The EER of the selected reference RACs is 3.257 and 3.262 that are higher than the EER of the Grade 4 split type RAC with rated capacity less than 4.5 kW as 3.20 in Table 3 of TCVN 7830:2012. - Cooling capacity belongs to the same rated capacity class as the project RAC based on the three rated capacity classes in Table 3 of TCVN 7830:2012. The same rated cooling capacity class is applied for the reference RACs and the project RACs, i.e. below 4.5 kW according to Table 3 of TCVN 7830:2012. - Reference RAC is previously unused and is currently available in the market at the time of CSPF determination (PDD development for ex-ante estimation). The current models of non-inverter RAC are selected for ex-ante estimation, that will be confirmed ex-post at the time of CSPF determination. CSPF of the reference RACs and the project RACs will be determined ex-post by the third party testing facility in line with ISO 5151 and the testing procedures and

conditions outlined in the Vietnamese National Standard TCVN 7831:2012 using a balanced ambient room type calorimeter that will be supplied by Ohnishi Netsugaku Co., Ltd. of Japan to determine the parameters before completing the first monitoring report of the project for a verification. It is, for ex-ante purpose, estimated as 3.42 for the reference RACs and 5.11 for the project RACs of the Location 1 in Ho Chi Minh City and 4.61 for the project RACs of the Location 2 in Hanoi (The relatively low value is due to the shorter cooling time in Hanoi locating in the northern part of the country). The factors are chosen highest for the reference RACs and lowest for the project RACs to make the estimation conservative in accordance with the applied methodology.

The 2 national hospitals included in the project are supplied electricity by the national grid. The CO2 emission factor of the electricity is determined ex-ante and fixed for the project period based on the latest value published by the Ministry of Natural Resources and Environment of Vietnam (MONRE) at 0.5603 tCO2/MWh based on the data in year 2012.

The project emissions are calculated by the monitored electricity consumption by the project RACs and the CO2 emission factor of the electricity.

The total electricity consumption by the project RACs in a year is estimated as 1,363 MWh for the Location 1 and 1,012 MWh for the Location 2. Electricity meters are installed for each group of RACs, 10 for the Location 1 and 11 for the Location 2, thus total 21 for the project.

The reference emissions are estimated ex-ante 1,140.7 tCO2 for the Location 1 and 763.6 tCO2 for the Location 2 in a year.

The project emissions are estimated ex-ante 763.4 tCO2 for the Location 1 and 566.5 tCO2 for the Location 2 in a year.

The total emission reductions are therefore estimated ex-ante 574 tCO2 in a year.

Through the processes taken, a CL was raised and subsequently closed as the resolution detailed 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.

Grade / Ref: CL 6

Nature of the issue raised:

The PPs should provide supporting evidence for the ex-ante estimated values for electricity consumption by project RACs, energy efficiency (CSPF) of reference as well as project RACs.

Nature of responses provided by the PPs:

The PPs provided supporting evidence for the ex-ante estimation for review by the validation team. In the process of clarification, the PPs amended the estimated electricity consumption and CSPF values in the PDD and the Monitoring Plan Sheet (MPS) to be consistent with the evidence.

Assessment of the responses:
The validation team reviewed the supporting documents and confirmed relevance of the ex-ante estimation of the electricity consumption and CSPF in the PDD and the MPS after amended. The estimation referred to TCVN 7830:2012, TCVN 7831:2012, and database of the National Climatic Data Center under the U.S. Department of Commerce National Oceanic & Atmospheric Administration. The amendments made along with the resolution of the finding are reflected in the revised PDD and the MPS as appropriate.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team confirmed that:

- The methodology was applied correctly to calculate project emissions and reference emissions 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 MPS was not altered and the fields were filled in as required so that all estimates of the reference emissions 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 proposed project is to introduce energy efficient inverter air conditioners in the national hospitals and the PDD stated that an environmental impact assessment is not required by laws of the host country. The validation team assessed the applicable legal

requirements in the host country using its local expertise. The project replaces about 170 units of existing RACs in total for the 2 hospitals (the rest are new installation). The contractor Tonets Vietnam Co., Ltd. manages disposal of the removed RACs, collection and safe storage of the refrigerant used in the removed RACs in compliance with the host country regulations as applicable. 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 issue was raised to the requirement of the section.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team confirmed by assessing the relevant documents and using the local expertise and confirmed 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.

C.6. Local stakeholder consultation

<**Means of validation**>

The PPs identified the hospitals where the project is implemented and the related government bodies as the local stakeholders and collected comments on the proposed project through individual meetings and holding a stakeholder consultation meeting on 17/09/2014. The local stakeholders appreciate the project and provided positive comments. No negative issue was raised through the processes that require actions to be taken by the PPs.

The validation team raised CAR 2 and confirmed through assessing the resolution as detailed below on submission of the records of the stakeholder consultation processes. 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.

Grade / Ref: CAR 2

Nature of the issue raised:

Evidence was not presented for the local stakeholders' consultation process and the comments received at the initial stage of the validation.

Nature of responses provided by the PPs:

The PPs provided relevant evidence for review by the validation team that included the

minutes of meeting of the local stakeholders' consultation meeting, records of individual meetings with the hospitals and related government bodies.

Assessment of the responses:
The validation team assessed the evidence for local stakeholder consultation and confirmed that the PPs have completed the local stakeholder consultation process taking the relevant steps and seeking comments to the project. The process and comments received are summarised in the PDD as appropriate.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team confirmed that the PPs have invited comments to the proposed project from the relevant 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 received from the local stakeholders as the processes described in the PDD.

C.7. Monitoring

<**Means of validation**>

The Monitoring Plan (MP) consisting of the MPS and Monitoring Structure Sheet (MSS) was based on the approved methodology. The monitoring parameters include electricity consumption by the project RACs in groups, CSPF of the reference RACs and project RACs.

Electricity consumption by the project RACs is measured by electricity meters to be installed for each group of RACs. The parameters are monitored continuously and recorded electronically or manually every month. The electricity meters have accuracy class of 0.5s. Although the meters are not used for billing purpose and not a subject of the national regulations for calibration of meters, the PPs applied similar quality controls as specified in the National Standard DLVN 39:2012 with either regular calibration or replacement with new meters in 3 years.

CSPF is determined ex-post based on the tests by third party testing facility once during the project life using a calorimeter in line with ISO 5151 and the testing procedures and conditions outlined in the latest version of the Vietnamese National Standard TCVN 7831. The highest value is to be chosen for the reference RACs and the lowest value is to be applied for the project RACs as CSPF from the measured values for conservative calculation of the reference emissions in accordance with the applied methodology.

In addition, the project introduces balanced ambient room type calorimeter to an independent national institute, that enables to test cooling efficiency of the air

conditioners in the host country.
The management structure has been designed and roles and responsibilities have been assigned to the Project Manager, Monitoring Manager and Facilities Manager as specified in the MSS for each of 2 hospitals included in the project. For the initial years of the implementation, the team of Japanese experts and the contractors will support the monitoring management as covered by NEDO model project.
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. CLs were closed after reviewing of the clarification by the PPs. 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.

Grade / Ref: CL 3

Nature of the issue raised:

The PPs were requested to specify identification of monitoring equipment and ensure indicating in PDD C.2. the monitoring point numbers corresponding to those of parameters listed in the MPS.

Nature of responses provided by the PPs:

The PPs provided identification information of the monitoring equipment for People's Hospital 115. The monitoring equipment was completed installation and started the normal data collection for People's Hospital 115 on 06/08/2015, that was confirmed as the start date of the project operation. Monitoring equipment of Viet Duc Hospital was under the installation.

Assessment of the responses:

The validation team confirmed that the identification information of the monitoring equipment for People's Hospital 115 provided by the PPs ensures the corresponding monitoring points listed in the PDD. The monitoring equipment for Viet Duc Hospital, meanwhile, was not completed the installation when the validation was conducted but the validation team confirmed that the monitoring equipment in Viet Duc Hospital can be specified in the same manner as People's Hospital 115. The CL was closed.

Grade / Ref: CL 4

Nature of the issue raised:

As the Option C is applied, the PPs were requested to confirm whether national laws

and regulations on measurement exist and calibration is conducted as applicable for all the monitoring equipment to be used.

Nature of responses provided by the PPs:
The PPs revised the MPS. Electricity meters in the project are not used for the billing purpose and the National Standard DLVN 39:2012 is not applicable. However, the electricity meters will be calibrated either every three years, which is the frequency specified in the standard for 3 phase static meter, or replaced by a calibrated meter to ensure accuracy of the measurement.

Assessment of the responses:
As the PPs clarified in the revised MPS, the Vietnamese National Standard DLVN 39:2012 is applicable to a billing meter. A regular calibration is not a requirement to the electricity meters used in the project that are not for a commercial purpose, however, the PPs decided to control accuracy of the measurement following the standard. The revised MPS describes that the electricity meters are re-calibrated or replaced every 3 years.
The manufacturer's specification does not require regular re-calibration and the validation team confirmed that the revised MPS clarifies the national standard, its applicability and how the PPs applied the calibration requirement for the project as appropriate. The CL was closed.

Grade / Ref: CL 5
Nature of the issue raised:
Concerning the MPS:
1) QA/QC procedures applied to the monitoring parameters should be described.
2) The PPs should also describe details of the measuring equipment including the accuracy level and calibration information.
3) The PPs should confirm that the monitored data will be kept and archived for two years after final issuance of credits.

Nature of responses provided by the PPs:
The PPs revised the MPS where:
1) QA/QC procedures are added,
2) Details of the measuring equipment are described including the accuracy level and calibration information, and
3) Statement is added that the monitored data will be kept and archived for two years

after final issuance of credits.

Assessment of the responses:
The validation team reviewed the revised MPS and confirmed that the requested information was added to clarify how the project fulfills the requirements of JCM Guidelines. The CL was therefore 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 Guidelines for developing PDD and MR, and the PPs have demonstrated feasibility of the monitoring structure and their ability to implement the MP.

C.8. Modalities of Communication

<**Means of validation**>

The MoC was submitted to LRQA for review in the form JCM_VN_F_MoC_ver01.0 that nominates Mitsubishi Corporation as the focal point and was signed by the authorized representatives of all the PPs with the contact details. The form used is the latest one as of the time of validation.
The validation team assessed the personal identities including specimen signatures and employment status of the authorized signatories through directly checking the evidence for corporate and personal identity of the PPs and their authorized signatories. A CAR was raised since the relevant evidence was not submitted by the PPs at the start of the validation process that was subsequently closed as the resolution below detailed.
The validation team also confirmed through reviewing the corporate information of the PPs and by meeting the persons representing the PPs that the information provided in the MoC is correct.

<**Findings**>

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

Grade / Ref: CAR 1
Nature of the issue raised:
Evidence was not presented to enable confirming authorization of signatories from all the PPs for the MoC at the initial stage of the validation.

Nature of responses provided by the PPs:
The PPs provided relevant evidence for review by the validation team.

Assessment of the responses:
The validation team assessed the evidence for authorisation and personal identity of the authorised signatories and individuals nominated from the PPs and the focal point in the MoC by direct checking and interviewing and confirmed completeness and authorisation of the MoC.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MoC was completed using the latest form. A CAR was issued as above detailed and subsequently closed after assessment conducted on relevance of the MoC in compliance with the requirements of the JCM Guidelines.

C.9. Avoidance of double registration

<**Means of validation**>

The validation team assessed and confirmed relevance of the written confirmation in the MoC from the PPs that the proposed JCM project was not registered under the other 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), Gold Standard (GS) and the other schemes, 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 researches 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.
Particular attention was given to that there is an approved CDM methodology,
AMS II.C - Demand-side energy efficiency activities for specific technologies that might be applicable to the type of project. There were 13 projects registered and 39 projects submitted for validation applying the methodology but none of them applied the similar project technology of inverter RACs and located in Vietnam.

<**Findings**>

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

No issue was raised to the requirement of the section.

<**Conclusion based on reporting requirements**>

Please state conclusion based on reporting requirements.

The validation team confirmed that the proposed JCM project was not registered under the other international climate mitigation mechanisms.

C.10. Start of operation

<Means of validation>

The start date for the operation of the proposed JCM project is indicated as 06/08/2015 in the PDD. The information was updated in the revised PDD based on the status of the project location 1 achieved instrument set up and the normal data collection as of the date of this report. It was also noted that the project location 2 was in an advanced stage of equipment installation.

The validation team confirmed correctness/relevance of the information by reviewing the supporting evidence and on site visit, including but not limited to assessing of the contracts and commissioning reports, and that the date is not before 01/01/2013 as required to be eligible as a JCM project.

<Findings>

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

No issue was raised to the requirement of the section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed through the on site assessment that the start date of operation of the proposed JCM project is 06/08/2015 and not before 01/01/2013 as required to be eligible as a 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 24/07/2015 to 22/08/2015 as per

https://www.jcm.go.jp/vn-jp/projects/8.

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

No comment was received during the above period to receive public inputs.
Thus no action was required to be taken by the PPs to satisfy the JCM requirement.

E. List of interviewees and documents received

E.1. List of interviewees

Mitsubishi Corporation
Yosuke Kuroda, Assistant General Manager, Head of Environmental Business Team, Environment Business, R&D Dept., Environmental Business Div.
Shoichi Takeshita, Assistant General Manager, Environmental Business Team, Environment Business, R&D Dept., Environmental Business Div.
Naohiko Miki, Deputy General Manager, Hanoi Representative Office
Tran Thi Thanh Ha, Business Manager, Machinery Department 1, Hanoi Representative Office
Hua Quang Thang, Associate, Machinery Department, Ho Chi Minh City Representative Office

Mitsubishi Electric Corporation
Hiroaki Makino, Manager, Engineering Sect. B, Room Air Conditioner Dept., Shizuoka Works

Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.
Satoshi Nakamura, Senior Consultant, Clean Energy Finance Division
Chisato Nakade, Consultant, Clean Energy Finance Division

Energy Conservation Center Ho Chi Minh City (ECC HCMC)
Huynh Kim Tuoc, Director
Nguyen Thi Ngoc Tho, Chief of Technical Department
Nguyen Thi Hoa, Chief of Renewable Energy Department
Mai Van Huyen, Chief Representative at Hanoi Office

Vu Thi Lan Anh, Project Officer, ECC HCM Office in Hanoi Hospital 115 Nguyen Dinh Phu, Vice Director Nguyen Tuan Thanh, Manager Nguyen Van Hieu, Manager of Administration Department Viet Duc Hospital Nguyen Thi Bich Huong, Deputy Director Nguyen The Dat, Deputy Manager, Department of Material & Equipment Tonets Vietnam Co., Ltd. Takeshi Hashimoto, General Director Do Anh Tuan, Chief Manager & Engineer Hoang Tuan Son, Engineer

E.2. List of documents received

Category A documents (documents prepared by the PPs) - PDD Version 01.0 dated 16/06/2015 - PDD Version 2.0 dated 25/08/2015 - MoC dated 23/07/2015 - Project plan and schedule - Technical specification of project RACs MSY-GH and MSZ-GH series - Introduction of People's Hospital 115 - Introduction of Viet Duc Hospital - Feasibility study report and project proposal - Evidence for authorized personnel - Introduction of Energy Conservation Centre Ho Chi Minh City (ECC HCMC) - New air conditioner installation checklist - Warranty from manufacturer - Explanation of designed lifetime of RACs - JIS 9921:2009 Standard use conditions for room air conditioners to predetermine design standard use period - Outline of Energy Management System (EMS) - Specification of balanced ambient room type calorimeter

- TVCN 7830:2012 Non-ducted Air Conditioners – Energy efficiency
- TVCN 7831:2012 Non-ducted Air Conditioners – Method for determination of energy efficiency
- Power supply system diagram
- Technical specification of electricity meters
- Inspection certificates for electricity meters
- Accreditation certificate for the calibration entity
- List of electricity meters
- Estimation of CSPF and total seasonal energy consumption
- Layout of power distribution panels
- Safety Data Sheet R-410A
- Procedures of refrigerant collection
- Refrigerant recovery check sheet
- Records of refrigerant recovery training
- Grid Electricity Emission Factor for year 2012 published by MONRE in 2014
- The Government Decree No. 18/2015/ND-CP on Environmental Protection Planning, Strategic Environmental Assessment, Environmental Impact Assessment and Environmental Protection Plans
- The National Assembly Law No. 55/2014/QH13 on Environmental Protection
- Minutes of meeting with Department of Health, People's Committee of Ho Chi Minh City dated 29/05/2014
- Minutes of meeting with Office of People's Committee, People's Committee of Ho Chi Minh City dated 29/07/2014
- Minutes of local stakeholders' consultation meeting dated 17/09/2014
- Supporting letter from the Ministry of Health dated 16/01/2015
- Records for start of project operation (06/08/2015)
- Storage of refrigerant collected at Vietnam Hospital, TONETS Vietnam Co., Ltd, 21/08/2015

Category B documents (other documents referenced)
- JCM_VN_AM002_ver01.0 Introduction of room air conditioners equipped with inverters
- JCM Project Cycle Procedure JCM_VN_PCP_ver02.0
- JCM Guidelines for Validation and Verification JCM_VN_GL_VV_ver01.0
- JCM Guidelines for Developing PDD and MR JCM_VN_GL_PDD_MR_ver01.0
- JCM Glossary of Terms JCM_VN_Glossary_ver01.0
- JCM PDD Form JCM_VN_F_PDD_ver01.0

- JCM MoC Statement Form JCM_VN_F_MoC_ver01.0
- JCM Validation Report Form JCM_VN_F_Val_Rep_ver01.0
- Safety Data Sheet R-410A
- Safety Data Sheet R-22
- Technical Note: Comparing R407C and R410A as Alternatives for R22, Emerson
- IPCC Forth Assessment Report
- Approved Small Scale Methodology AMS II.C. Demand-side energy efficiency activities for specific technologies
- CDM approved methodological tool “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” Version 01
- Calculation of grid emission factor applied by registered CDM projects
- ISO 5151:2010 Non-ducted air conditioners and heat pumps – Testing and rating for performance
- JIS C 9612:2013 Room Air Conditioner
- The Ministry of Science and Technology Circular No. 23/2013/TT-BKHCN on Group 2 Measuring Instruments dated 26/09/2013
- Decision No.02/2007/QD-BCN Issuing the provisions required technical equipment for electricity meters counting the power plant, the Ministry of Industry, 09/01/2007
- DLVN 07:2012 Alternating current induction watt-hour meters Verification procedures, 2012
- DLVN 39:2012 Alternating current static watt-hour meters Verification procedures, 2012
- TCVN 7589-11:2007 (IEC 62053-11:2003) Electricity metering equipment (a.c.) – Particular requirements – Part 11: Electromechanical meter for active energy (classes 0.5, 1 and 2)
- Outline of balanced ambient room type calorimeter, Ohnishi Netsugaku Co., Ltd.
- High Pressure Gas Safety Act of Japan
- TCVN 6304:1997 LPG Cylinders – Safety Requirements – The storage, handling and transportation
- TCVN 6223:2011 Liquefied petroleum gas (LPG) store Safety Requirements
- TCVN 5507:2002 Hazardous chemicals - Code of practice for safety in production, commerce, use, handing and transportation

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.

Certificate of Appointment is attached to this report.

Lloyd's Register
LRQA

Joint Crediting Mechanism Certificate of Appointment

Title of Project: Promotion of green hospitals by improving efficiency / environment in national hospitals in Vietnam

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

Name of Person	Assigned Roles
Michiaki Chiba	Team Leader
Nguyen Tri Thang	Team Member
Xianxin Yan	Technical Reviewer

Signed by

[redacted]

Michiaki Chiba
Climate Change Manager – Asia & Pacific
07/05/2015