JCM Verification Report Form

A. Summary of verification

A.1. General Information

Title of the project	Low carbon hotel project in Vietnam: Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment
Reference number	VN003
Monitoring period	01/04/2016-31/05/2017
Date of completion of the monitoring report	28/08/2017
Third-party entity (TPE)	Japan Quality Assurance Organization (JQA)
Project participant contracting the TPE	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.
Date of completion of this report	14/09/2017

A.2 Conclusion of verification and level of assurance

Overall verification opinion	☒ Positive ☐ Negative
☒ Unqualified opinion	Based on the process and procedure conducted, JQA (TPE's name) provides reasonable assurance that the emission reductions for Low carbon hotel project in Vietnam: Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment (project name) ✓ Are free of material errors and are a fair representation of the GHG data and information, and ✓ Are prepared in line with the related JCM rules, procedure, guidelines, forms and other relevant documents
(If overall verification opinion is negative, please check below and state its reasons.) ☐ Qualified Opinion ☐ Adverse opinion ☐ Disclaimer	<State the reasons> N/A

A.3. Overview of the verification results

Item	Verification requirements	No CAR or CL remaining
The project implementation with the eligibility criteria of the applied methodology	The TPE determines the conformity of the actual project and its operation with the eligibility criteria of the applied methodology.	☒
The project implementation against the registered PDD or any approved revised PDD	The TPE assesses the status of the actual project and its operation with the registered/validated PDD or any approved revised PDD.	☒
Calibration frequency and correction of measured values with related requirements	If monitoring Option C is selected, the TPE determines whether the measuring equipment have been properly calibrated in line with the monitoring plan and whether measured values are properly corrected, where necessary, to calculate emission reductions in line with the PDD and Monitoring Guidelines.	☒
Data and calculation of GHG emission reductions	The TPE assesses the data and calculations of GHG emission reductions achieved by/resulting from the project by the application of the selected approved methodology.	☒
Avoidance of double registration	The TPE determines whether the project is not registered under other international climate mitigation mechanisms.	☒
Post registration changes	The TPE determines whether there are post registration changes from the registered PDD and/or methodology which prevent the use of the applied methodology.	☒

Authorised signatory: Mr. ☒ Ms. ☐

Last name: Asada First name: Sumio

Title: Senior Executive

Specimen signature: [redacted] Date: 14/09/2017

B. Verification 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	☐

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 verification, findings and conclusions based on reporting requirements

C.1. Compliance of the project implementation and operation with the eligibility criteria of the applied methodology

<Means of verification>

The project has been registered as a JCM project on 15 May 2016, with applying JCM Approved Methodology VN_AM003 " Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment, Version 01.0" under the scheme of Joint Crediting Mechanism between the Socialist Republic of Viet Nam (herein after referred to as Vietnam) and Japan.

The project participant from Vietnam is Hochiminh City University of Natural Resources and Environment (herein after referred to as HCMUNRE) and the project participants from Japan are Hibiya Engineering, Ltd. (herein after referred to as Hibiya) and Mitsubishi UFJ Morgan Stanley Securities Co., Ltd (herein after referred to as MUMSS).

Under this JCM project, three energy efficiency measures, namely, two high efficiency boilers, a heat recovery heat pump and 195 LED lamps were installed in Hotel Nikko Hanoi (herein after referred to as Nikko or Location 1), and two high efficiency boilers were installed in Renaissance Riverside Hotel Saigon (herein after referred to as Renaissance or Location 2).

The JCM website indicates the starting date of the project operation is 01 April 2016

and this monitoring period starts from that day. It was confirmed that project participants started the formal monitoring from the day after the installation and commissioning of project equipment.

Through a review of relevant documents, the verification team assessed whether the project implementation and operation after the starting date of project operation complied with the eligibility criteria of the applied methodology during the monitoring period. After the desk review, an on-site assessment was conducted on 12 and 13 July 2017. The verification team conducted a physical inspection and interviews with project participants and other entities involved in the project as below:

- Energy Conservation Center, which is commissioned by Hibiya to act as its local agent in Vietnam (herein after referred to as ECC)
- Hotel Nikko Hanoi, Location 1
- Renaissance Riverside Hotel Saigon, Location 2

The assessment results regarding the eligibility criteria are summarized as below:

JCM_VN_AM003_ver01.0

Criterion 1

The project involves implementation of one or more energy efficiency measures categorized in Table 1 by using high efficiency equipment at an existing facility.

Projects involving installation of high efficiency lighting need to be coupled with another energy saving measure(s) in order to be eligible under this methodology.

High efficiency equipment introduced by the project replaces the existing equipment or substitutes the output of the existing equipment, and it is included in the applicable technologies as shown in Table 1:

No	*Energy efficiency measures*	*Applicable technologies and their criteria*
1	*Energy efficiency improvement by reducing fossil fuel consumption*	*High efficiency boiler with the following features:* *- Energy efficiency is greater or equal to 93% (e.g. small once -through boiler);* *- Equipped with automatic unit number control device; and* *- Individual performance test report is provided.*
2	*Fuel switch to electricity and/or efficiency improvement*	*Heat recovery heat pump using electricity, which generates both cooling and heating energy (temperature of hot water ≥80°C) and uses non-HFC refrigerant with zero Ozone Depletion Potential (ODP)*
3	*Installation of high efficiency lighting*	*LED lighting*

Though reviewing supporting documents, including the specifications, and the physical inspection during on-site assessment, the verification team confirmed that the project implementation and operation complied with above eligibility criteria.

Criterion 2
If the existing equipment is a chiller containing CFCs, HFCs, or HCFCs and is removed due to the project, a plan to prevent release of refrigerant used for the existing chiller into the atmosphere is prepared. Execution of the prevention plan is checked at the time of verification, in order to confirm that the refrigerant used for the existing chiller is not released to the air.

Though reviewing supporting documents, including the specifications, and the physical inspection during on-site assessment, the verification team confirmed that no removal of a chiller containing CFCs, HFCs or HCFCs were occurred due to the project. Therefore, it was confirmed that this eligibility criterion is not applicable to the project.

Criteion 3
High efficiency equipment in the project guarantees a better performance than the reference equipment for a minimum of one year.
The performance level can be confirmed by comparing the efficiency or rated electricity consumption between the high efficiency equipment and the reference equipment, with an evidence of either a manufacturer's performance guarantee or energy saving company's (ESCO) energy saving guarantee of high efficiency equipment. Where such evidence is not available for the reference equipment, high efficiency equipment in the project guarantees a better performance than the default efficiency values provided in the methodology.

It was confirmed through reviewing the submitted product guarantee for each equipment that the guarantee period is one-year. In addition, it was confirmed through reviewing the maintenance record that maintenance services were appropriately provided for the project boiler and heat pump during the monitoring period. It was also confirmed through the interview with technical staff of each hotel that each project equipment has high energy efficiency and stable operation.
Based on the above-mentioned confirmation, it was considered reasonable that the performance level of higher efficiency equipment, compared to the reference equipment for a minimum of one year. Therefore the verification team confirmed that

the project implementation and operation complied with above eligibility criteria.

<Findings>

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

No out-standing issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that the actual project and its operation were in compliance with the eligibility criteria of the applied methodologies during this monitoring period.

C.2. Assessment of the project implementation against the registered PDD or any approved revised PDD

<Means of verification>

The verification team assessed the status of the actual project and its operation with the registered PDD by a desk review, an on-site visit and interviews. The assessment results are summarized as below;

[Physical features of the project]

Through the desk review, on-site visit and interview with project participants and relevant entities, it was confirmed that two high efficiency boilers, a heat recovery heat pump and 195 LED lightings had been installed at Location 1, and two high efficiency boilers had been installed at Location 2. , and also confirmed all project equipment are operated as per the registered PDD. However, it was not clearly confirmed that all equipment were installed and commissioned appropriately before the starting date of this monitoring period, 2016/04/01 and operated as per the registered PDD during the monitoring period. Therefore, an issue was raised and resolved as described under <Findings> below.

[Monitoring points]

There are two parameters related to the GHG emission reductions of the project monitored by measuring equipment.

At Location 1, an oil meter is installed for the monitoring of fossil fuel consumption of the project high efficiency boilers (at Monitoring point M1 in Section C.2. Figure of all emission sources and monitoring points relevant to the JCM project of PDD), and an electricity meter is used for the monitoring of electricity consumption of the project heat recovery heat pump (M2, same as above). At Location 2, an oil meter is

installed for the monitoring of fossil fuel consumption of the project high efficiency boilers (M1, same as above).

With respect to operation hours of hot water pump (M3, same as above) used for heat recovery heat pump at Location 1, project participants take a conservative approach instead of direct monitoring. Namely, an assumption of continuous operation has been applied in the calculation of GHG emission reductions. Meanwhile, operation hours of LED lamps (M4, same as above) at Location 1 are monitored by checking the actual operation time against the operation schedule. Detailed information on the monitoring data of these two monitoring points is described in Section C.4. Assessment of data and calculation of GHG emission reductions of this verification report.

[Monitoring structure]

Through the interview with project participants and relevant entities, it was confirmed that the monitoring structure was formed and operated in line with the registered PDD during the monitoring period.

The verification team confirms by means of an on-site visit for the first verification, that physical features of the project in the registered/validated PDD are in place and that the project participants have operated the project as per the registered/validated PDD.

<Findings>

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

(Issue raised as CL01)

As an evidence of installation date of project equipment, project participants provided the completion notice issued by ECC and list of equipment installed. Through reviewing those documents, it was confirmed that the release of the notice was executed on 25th March 2016.

However, it is not clearly confirmed the date of installation for each project equipment at each location.

(Summary of the response on CL01)

A set of additional evidential document were submitted to clarify the date of installation for each equipment at each location.

Based on the evidence installation date for each equipment at each location were confirmed as follows:

[Location 1: Hotel Nikko Hanoi]
High efficiency boilers: 21 March 2016
Heat Pump: 5 February 2016
LED: 21 March 2016
[Location 2: Renaissance Riverside Hotel Saigon]
High efficiency boilers: 1 February 2016

(Assessment result of the responses on CL01)
Through reviewing the provided documents, it was confirmed that all equipment were installed and commissioned appropriately before the starting date of this monitoring period, 2016/04/01.
Therefore, this CL was closed

<Conclusion based on reporting requirements>
Please state conclusion based on reporting requirements.
The verification team concluded that the project implementation was in accordance with the registered PDD during the monitoring period, and no change was found from the registered PDD.

C.3. Compliance of calibration frequency and correction of measured values with related requirements

<Means of verification>
As stated in Section C.2. above, the verification team confirmed that there are two measuring equipment (an oil meter and an electricity meter) and one measuring equipment (an oil mete) installed at Location 1 and Location 2 respectively, for the monitoring of parameters used for GHG emission reductions calculations. The compliance of calibration frequency is confirmed as bellow.

- oil meter

In the monitoring plan, it is requested to monitor fossil fuel consumption by a volumetric meter subject to maintenance/calibration/replacement in line with manufacturer's or meter suppliers' specifications.
An oil meter manufactured by OVAL has been installed for each location. Through reviewing the product guarantee issued by OVAL, it was confirmed that the guarantee period of oil meters is one year. Model number FLOWPET-EG was originally installed at the time of the project high efficiency boilers installation. After one-year operation, each oil meter has been replaced with new one, model number

FLOWPET-5G.

It was confirmed that this replacement was conducted in line with manufacture's specification as required in the monitoring plan.

- electricity meter

In the monitoring plan, it is requested to monitor electricity consumption by an electricity meter calibrated or replaced in line with relevant national/ international standards or manufacturer's specifications.

An electricity meter manufactured by Electric Measuring Instrument Co., Ltd (GELEX EMIC) has been installed at Location 1. Through reviewing the calibration certificate issued by GELEX EMIC at the time of shipment in January 2016, it was confirmed that the validity of the calibration, two years, covered all the monitoring period. Therefore, it was confirmed that the electricity meter was calibrated in line with manufacturer's specification as required in the monitoring plan.

<Findings>

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

No outstanding issues are raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded that the calibration frequency was in compliance with related requirements. Therefore, no correction of the measured value was required.

C.4. Assessment of data and calculation of GHG emission reductions

<Means of verification>

The verification team assessed the data and calculation of GHG emission reductions achieved by the project as below;

(a) Through reviewing the monitoring report for the project, titled as "LCH_JCM_VN_AM003_ver02.0_Loc1_Loc2_20170622.xlsx", it was confirmed that the appropriate Monitoring Report Sheet of applied methodology has been used.

(b) A complete set of data for the monitoring period for all parameters monitored ex post except one parameter (t_p) was provided to the verification team in the form of several kinds of files. Through the desk review and interview with the project participants, it was confirmed that these files contain the evidence and records for

the fossil fuel and electricity consumption of project high efficiency boilers and heat recovery heat pumps, as well as operating hours of LED lighting.

The character of each file is summarized as below;

1) “Monitoring sheet”

This type of file contains picture of the meter reading value of the measuring equipment at each hotel. Both oil meter and electricity meter are recorded for Location 1, and oil meter is recorded for Location 2 by this type of file. The monitoring and creation of this Monitoring sheet is conducted by a staff of Energy Conservation Center (ECC) which is commissioned by Hibiya. At the end of every month, ECC staff visits each hotel and conduct the monitoring.

2) “Fuel and electricity consumption calculation data”

This type of file is created to aggregate monthly meter reading data into total consumption data. JCM monitoring manager from MUMSS creates this file based on the above mentioned Monitoring sheet. Monitored values of fossil fuel and electricity consumption in Table 1 of MRS Input Sheet are derived from this file.

3) “LED Monitoring Sheet”

This file is created to record the result of monthly check of the actual operating hours of project LED lighting against the operation schedule prepared by the project participant. At the end of each month, the facilities manager of Nikko confirms whether there are any changes between the schedule and the actual operation, and if there are any changes, records the actual operating hours in this sheet.

4) “LED monitored_prep_calc_emission reduction.xlsx”

This file contains a table titled “LED Operating Hours (Monitored, aggregated)”. JCM monitoring manager from MUMSS creates this table to calculate the monthly operating hours of LED lighting based on the above mentioned LED Monitoring Sheet. Monitored values of operating hours of LED lighting in Table 1 of MRS Input Sheet are derived from this file.

With respect to the monitoring data of “t_p“, operating hours of auxiliary electric equipment, project participants applied an assumption that the equipment has been operated continuously throughout the monitoring period. Therefore, no monitoring data have been provided for this parameter.

(c)The verification team reviewed all the above mentioned complete data set of the monitoring data.

Parameters	Monitored values	Method to check values in the monitoring report with sources
$FC_{PJ1,l,p}$	Location 1 299,065 Location 2 264,339	The verification team checked the monthly meter reading value against "Monitoring Sheet" and the formulae and result of calculation of the total fossil fuel consumption of project during the monitoring period in "Fuel and electricity consumption calculation data".
$EC_{PJ2,l,p}$	Location 1 206,988	The verification team checked the monthly meter reading value against "Monitoring Sheet" and the formulae and result of calculation of the total electricity consumption of project during the monitoring period in "Fuel and electricity consumption calculation data".
t_p	Location 1 10,224	As mentioned above, project participants applied an assumption of continuous operation. This monitoring period is 426 days, therefore 426*24 is applied as the monitored value. Considering this parameter is to calculate the project emission, the verification team confirmed this assumption is conservative.
$t_{i,p}$	Location 1 9,062	The verification team checked the value of monthly operating hours against "LED Monitoring Sheet" and the formulae and result of calculation of the total electricity consumption of project during the monitoring period in "LED Operating Hours (Monitored, aggregated)".

(d) Through reviewing the monitoring plan sheet attached to the registered PDD and observation during on-site assessment, it was confirmed that the assumptions, emission factors and default values were appropriately applied in the calculations of emission reductions in the monitoring report for this monitoring period.

<Findings>

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

No outstanding issues are raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The verification team concluded through assessment of data and calculation of GHG

emission reductions that the reported values in the monitoring report were verified in an accepted manner.

C.5. Assessment of avoidance of double registration

<Means of verification> It was confirmed that a written confirmation from project participants regarding the registration under other international climate mitigation mechanisms were provided in the JCM Modalities of Communication Statement. In addition, through the interview with the PO, it was confirmed that the project has not been registered under any other mechanisms. According to a form of declaration for avoidance of double registration in the JCM Modalities of Communication Statement, the declaration letter signed by the project developer's representative was submitted to the Joint Committee at the validation stage, and it was also cross-checked at the verification stage. In addition, through search on the website of the CDM and JI, it was confirmed that no project with similar technology and location had been registered in The Social Republic of Viet Nam. **<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 verification team concluded that the project had not been registered under other international climate mitigation mechanisms.

C.6. Post registration changes

<Means of verification> It was confirmed through the review of documents and the on-site assessment that the project had not been changed from the registered PDD and/or methodology. **<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 verification team concluded that the project had not been changed from the registered PDD and/or methodology.

D. Assessment of response to remaining issues

An assessment of response to the remaining issues including FARs from the validation and/or previous verification period, if appropriate

No remaining issues including FARs from the validation, and this is the first verification period, therefore this item is not applicable.

E. Verified amount of emission reductions achieved

Year	Verified Reference Emissions (tCO_2e)	Verified Project Emissions (tCO_2e)	Verified Emission Reductions (tCO_2e)
2013	-	-	-
2014	-	-	-
2015	-		-
2016	1,267.6	1,095.3	171
2017	672.3	581.3	90
2018	-	-	-
2019	-	-	-
2020	-	-	-
Total (tCO_2e)			261

F. List of interviewees and documents received

F.1. List of interviewees

Name	Title	Organization
Pham Hoang Hai Quan	Energy efficiency consultant	Energy Conservation Center HCMC
Nguyen Ngoc Nhat	Energy efficiency consultant	Energy Conservation Center HCMC
Dinh Thi Nga	Vice head, Office of R&D and External Relatons	Ministry of Natural Resources and Environment, Hochiminh City University of Natural Resources and Environment
Ho Thi Thanh Van	Dean, Office of R&D and External Relatons	Ministry of Natural Resources and Environment, Hochiminh City University of Natural Resources and Environment
Ho Mai	Supervisor	Renaissance Riverside Hotel Saigon
Chisato Nakade	Senior Consultant	Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.
Mitsuo Tomoyori	Consultant	Hibiya Engineering, Ltd

Bui Thanh Son	Project officer	Energy Conservation Center HCMC
Nguyen Hai Hang	Project officer	Energy Conservation Center HCMC
Le Quy Toan	Technical staff	Hotel Nikko Hanoi
Hoan Thinh Van	Technical staff	Hotel Nikko Hanoi

F.2. List of documents received

1	Monitoring Report Sheet(draft) (LCH_JCM_VN_AM003_ver02.0_Loc1_Loc2_20170622.xlsx)
2	Monitoring Report Sheet(final) (LCH_JCM_VN_AM003_ver02.0_Loc1_Loc2_20170622_2016.xlsx LCH_JCM_VN_AM003_ver02.0_Loc1_Loc2_20170622_2017.xlsx)
3	JCM Approved Methodology VN_AM003 “Improving the energy efficiency of commercial buildings by utilization of high efficiency equipment” (JCM_VN_AM003_ver01.0.pdf)
4	Form of Monitoring Plan Sheet and Monitoring Structure Sheet (VN_AM003) (JCM_VN_AM003_ver01.0.xlsx)
5	JCM Glossary of Terms (JCM_VN_Glossary_ver01.0)
6	JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_VN_GL_PDD_MR_ver02.0)
7	JCM Project Cycle Procedure (JCM_VN_PCP_ver03.0)
8	JCM Guidelines for Validation and Verification (JCM_VN_GL_VV_ver01.0)
9	Standard for Sampling and surveys for CDM project activities and programmes of activities Version 05.0
10	Project Design Document, dated on 12/02/2016, ver.2.0 (JCM_VN_F_PDD_VN003.pdf)
11	Monitoring Plan Sheet (LCH_JCM_VN_AM003_ver02.0_Loc1_Loc2.xlsx)
12	JCM Modalities and Communication Statement Form, dated on 20/11/2015 (JCM_VN_F_MoC_VN003.pdf)
13	JCM Validation Report, dated on 25/02/2016 (JCM_VN_F_Val_Rep_VN003.pdf)
14	Commissioning reports of project boilers and heat pump issued by manufactures

15	LED installation report issued by ECC
16	Monitoring sheet
17	Fuel and electricity consumption calculation data
18	LED monitoring sheet
19	LED electricity consumption calculation data
20	Specification of project high efficiency boiler "EZ-1000SK", KOREA MIURA CO.,LTD
21	Specification of project heat recovery heat pump "HE-HWA-2HTC-380", MAYEKAWA
22	Specification of project LED lighting
23	Specification of hot water pump installed for the project heat recovery heat pump "EBARA Centrifugal pump CD"
24	LED lighting lay out
25	Individual performance test report for the project high efficiency boiler issued by MIURA
26	Manufacturer's guarantee for a minimum of one year along with the specification of high efficiency equipment in the project issued by MAYEKAWA
27	Specification of oil meter for the project high efficiency boiler "FLOWPET-EG" and "FLOWPET-5G", OVAL
28	Specification of electricity meter for project heat recovery heat pump ”GELEX Three phase electric meter　EM-40mG"
29	Product guarantee of the oil meter for the high efficiency boiler issued by OVAL
30	Calibration record of the electricity meter for the project heat recovery heat pump issued by GELEX EMIC
31	Maintenance record of project equipment

Annex Certificates or curricula vitae of TPE's verification 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	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	-
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
TA 14.1. Afforestation and reforestation	-

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 4.1. Cement and lime production	-
TA 4.6. Other manufacturing industries	-
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
TA 13.1. Solid waste and wastewater	2015/11/20
TA 14.1. Afforestation and reforestation	-

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	-
TA 13.1. Solid waste and wastewater	-
TA 14.1. Afforestation and reforestation	-