JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Energy Saving for Air conditioning in Tire Manufacturing Factory with High Efficiency Centrifugal Chiller
Reference number	TH007
Third-party entity (TPE)	(TPE-TH-003) Japan Quality Assurance Organization
Project participant contracting the TPE	INABATA & CO., LTD.
Date of completion of this report	17/07/2020

A.2 Conclusion of validation

Overall validation opinion	☒ Positive ☐ Negative

A.3. Overview of final validation conclusion

Only when all of the checkboxes are checked, overall validation opinion is positive.

Item	Validation requirements	No CAR or CL remaining
Project design document form	The TPE determines whether the PDD was completed using the latest version of the PDD forms appropriate to the type of project and drafted in line with the Guidelines for Developing the Joint Crediting Mechanism (JCM) Project Design Document, Monitoring Plan and Monitoring Report.	☒
Project description	The description of the proposed JCM project in the PDD is accurate, complete, and provides comprehension of the proposed JCM project.	☒
Application of approved JCM methodology (ies)	The project is eligible for applying applied methodology and that the applied version is valid at the time of submission of the proposed JCM project for validation.	☒
Emission sources and calculation of emission reductions	All relevant GHG emission sources covered in the methodology are addressed for the purpose of calculating project emissions and reference emissions for the proposed JCM project.	☒
	The values for project specific parameters to be fixed *ex ante* listed in the Monitoring Plan Sheet are appropriate, if applicable.	☒
Environmental impact assessment	The project participants conducted an environmental impact assessment, if required by the Kingdom of Thailand, in line with Thai procedures.	☒
Local	The project participants have completed a local stakeholder	☒

Item	Validation requirements	No CAR or CL remaining
stakeholder consultation	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: Asada	First name: Sumio
Title: Senior Executive	
Specimen signature: [redacted]	Date: 17/07/2020

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☐ Ms. ☒	Sachiko Hashizume	JQA	Team Leader	☒	Authorized	☐
Mr. ☒ Ms. ☐	Koichiro Tanabe	JQA	Team Member	☒	Authorized	☒
Mr. ☒ Ms. ☐	Tadashi Yoshida	External Individual	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 validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

Through a review of the PDD submitted for the public comments, it was checked and confirmed that the PDD was completed using the latest version of the PDD form (JCM_TH_F_PDD_ver02.0) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR (JCM_TH_GL_PDD_MR_ver02.0).

<Findings>

No outstanding issue was raised.

<Conclusion based on reporting requirements>

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

C.2. Project description

<Means of validation>

The purpose of the proposed JCM project is to reduce CO_2 emission by improving energy saving for air-conditioning and process cooling in a tire manufacturing factory of Bridgestone Tire Manufacturing (THAILAND) Co., Ltd. The proposed JCM project

replaces three existing chillers with three non-inverter type high-efficiency centrifugal chillers of Ebara Thailand in the factory, and the project chillers are distributed by INABATA & CO., LTD.

The expected emission reductions that would be achieved by the proposed JCM project are estimated to be 208 tCO_2 annually. The total emission reductions of the period from 2018 through 2027 are estimated to be 1,731 tCO_2 in the PDD.

The validation team conducted document review and one-day on-site assessment on 14/02/2018, for this proposed JCM project. The site visit included follow-up interviews with the following the project participants (PPs).

- Bridgestone Tire Manufacturing (THAILAND) Co., Ltd. (hereinafter referred to as “BTMT”)
- INABATA & CO., LTD. (hereinafter referred to as “INABATA”)

The location information and the other description stated in Section A (Project description) of the PDD were cross-checked through the physical inspection, and those were eventually verified with a satisfactory result. As for the duration of the proposed JCM project, it was confirmed that the starting date of project operation, 01/02/2018, was the date that the third project chiller was installed and started operation. The expected operational lifetime of the proposed JCM project was defined as nine years, which was in line with legal useful life of the operational equipment under Japanese tax regulation. Contribution from Japan was also described in the PDD and it was confirmed that the project chiller producer prepared an instruction manual of operation and maintenance for providing direct instruction on proper operation to the PPs appropriately. For the project description, the validation team raised CL01 and CL02. Those were resolved in “Findings” below.

<**Findings**>

CL01

It is requested to clarify the coordinates (latitude and longitude) of the project location by using Google map.

(Resolution by the PPs)

Coordinates (latitude and longitude) are revised properly in the Section A.3. The validation team confirms that the PDD has been revised appropriately; therefore, this CL is closed.

CL02

The following findings were confirmed through the on-site assessment.

1) In the PDD, the starting date of project operation was described for each of the three project chillers. Meanwhile, it was confirmed through interview with the project participants that the starting date of the JCM project operation should be aligned with that of chiller No. 3.
2) When three starting date of project operation is reviewed and then unified to be a single starting date, the expected operational lifetime of project should be also reconsidered accordingly.

Therefore, the PDD should be clarified accordingly.

(Resolution by the PPs)

1) Starting date of the project operation for three (3) chillers are aligned on February 1, 2018 (01/02/2018).
2) The expected operational lifetime of the project is unified as nine (9) years.

Above information was described in the Section A.5. The validation team confirms that the PDD has been revised appropriately; therefore, this CL is closed.

<**Conclusion based on reporting requirements**>

In conclusion, 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.

C.3. Application of approved methodology(ies)

<**Means of validation**>

Selection of methodology(ies)

Through a review of the 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_TH_AM005_ver02.0

Eligibility criteria

The assessment results of the eligibility criteria in the approved methodology are

summarized as below:

Criterion 1

"Project chiller is a non-inverter type centrifugal chiller with a capacity which is less than or equals to 1,500 USRt.
Note : 1 USRt = 3.52 kW"

The project information regarding the project chiller's specification was checked through review of supporting documents. As a result, it was confirmed that the project chiller is a non-inverter type centrifugal chiller with a capacity of 600 USRt; therefore it was confirmed that the project information stated in the PDD was described properly.

Criterion 2

*"COP for project chiller i calculated under the standardizing temperature conditions*1 ($COP_{PJ,tc,i}$) is more than the threshold COP values set in the table below. ("x" in the table represents cooling capacity per unit……)"*

The project information regarding coefficient of performance (COP) for the project chiller was checked by the validation team through document review and interview with the PPs, and then, t it was confirmed that the project information stated in the PDD was described properly.

Criterion 3

"Periodical check is planned at least one (1) time annually."

The project information regarding the project chiller's specification was checked through interview with the PPs. As a result, it was confirmed that the factory was planning to conduct periodical maintenance check (at least more than once a year) for the project chiller, according to the PDD; therefore it was confirmed that the project information stated in the PDD was described properly.

Criterion 4

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

The project information regarding the project chiller's specification was checked through document review. As a result, it was confirmed that refrigerant for the project chiller was HFC245fa, and its ODP was zero; therefore it was confirmed that the

project information stated in the PDD was described properly.

Criterion 5

"A plan for prevention of releasing refrigerant used for project chiller is prepared. In the case of replacing the existing chiller with the project chiller, a plan for prevention of releasing refrigerant used in the existing chiller to the air (e.g. re-use of the equipment) is prepared. Execution of this plan is checked at the time of verification, in order to confirm that refrigerant used for the existing one replaced by the project is prevented from being released to the air."

The project information regarding plan for prevention of releasing refrigerant was checked through document review. In this process, an issue was raised and resolved as explained in "Findings" (CL03).

<**Findings**>

CL03

The validation team confirmed that a document, titled "Refrigerant recovery and charging procedure plan", was created by the equipment manufacturer and signed by the project participants appropriately, in order to implement an appropriate practice regarding "a plan for prevention of releasing refrigerant used for project chiller" defined in the eligibility criteria. Therefore, it is requested to clarify it to the PDD accordingly.

Resolution by the PPs

To respond the requirement, the descriptions of Eligibility Criteria 5 were revised properly in the Section B.2. The validation team confirms that the revised description regarding Eligibility Criteria 5 are in line with the current situation and it meets the eligibility criteria. Therefore, this CL is closed.

<**Conclusion based on reporting requirements**>

The validation team reached the conclusion that the relevant information contained in the revised PDD is in compliance with the eligibility criterion listed in the approved methodology applied. The issue raised by the validation 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 in line with the evidential documents properly. It is also confirmed by interview with the PPs they are corroborated as below:

- As illustrated in the PDD, the proposed JCM project consists of three units of the project chillers. No fuel was being consumed by the project chillers.
- The factory operates 24 hours, through the entire year excluding 16 legal holidays. Under this condition, the PPs measured the power consumption of project chillers.
- No captive (back-up) power generator has been installed inside the factory; therefore the proposed JCM project does not include monitoring of fuel input and power generation.
- Each of the project chillers is equipped with an electricity measuring device and data collection/transfer system, and thus the data monitored by each unit is automatically sent to a data collection server, in which all of power consumption data are stored for production control.

Since the applied methodology does not allow the PPs to choose any emission source or gas to be included, all emission sources and their associated GHGs relevant to the proposed JCM project meet the applied methodology. For Monitoring Spreadsheet, the form has been defined in the applied methodology, and the latest appropriate version of the form is used. It is confirmed that the required fields of the spreadsheet are filled in completely.

There is one project specific parameter to be fixed ex ante in the MPS.

- EF_{elec} :CO2 emission factor for consumed electricity [Electricity is directly supplied from small power producer]

  Through the interview with PPs, it is confirmed that the electricity consumed by the project chiller is directly supplied from the dedicated independent power producer (Amata B. Grimm Power) in the industrial park. Based on this actual situation on power usage by BTMT, CO2 emission factor 0.405 tCO2/MWh is applied which is derived from the letter on emission factor from Amata B. Grimm. The team confirms that CO2 emission factor for consumed electricity is applied appropriately.
- $T_{cooling\text{-}out,i}$: Output cooling water temperature of project chiller i set under the project specific condition

  PPs apply 37 degree Celsius which is derived from the specification document issued by EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO.,LTD. The team confirms that the value is applied appropriately.
- $T_{chilled\text{-}out,i}$: Output chilled water temperature of project chiller i set under the project

specific condition

PPs apply 10 degree Celsius which is derived from the specification document issued by EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO.,LTD. The team confirms that the value is applied appropriately.

- $COP_{RE,i}$: COP of reference chiller i under the standardizing temperature conditions

  PPs apply 5.81 which is the default value for the reference chiller with cooling capacity 500-800 USRt provided in TH_AM005. The team confirms that the value is applied appropriately.
- $COP_{PJ,i}$: COP of project chiller i under the project specific conditions

  PPs apply 6.94 for Chiller No.1 and 7.00 for Chillers No. 2 & 3. Each value is derived from the specification document issued by EBARA REFRIGERATION EQUIPMENT & SYSTEMS CO.,LTD. The team confirms that the value is applied appropriately.
- $COP_{PJ,tc,i}$: COP of project chiller i calculated under the standardizing temperature conditions

  PPs apply 6.31 for Chiller No.1 and 6.36 for Chillers No. 2 & 3. Each value is automatically calculated by the function set in the MPS(input_separate) sheet in line with the eligibility criterion 2 of the TH_AM005. The team confirms that the value is applied appropriately.

As for the calculation of emission reductions, the validation team raised two issues. These issues were eventually resolved in the sub-section “Findings” below (CL04 and CL05).

<**Findings**>

CL04

As the starting date of project operation and its operational lifetime are changed, the table in the Section C.3 of the PDD is necessary to be revised accordingly.

Resolution by the PPs

Taking the revised starting date of the project operation (01/02/2018) for three chillers into consideration, estimated emissions in the table of the Section C.3 were revised properly. The validation team confirms that the PDD has been revised appropriately; therefore, this CL is closed.

CL05

It is necessary to clarify the estimated value of annual electricity consumption of the project chiller accordingly. At the beginning of validation, 6,075.14 MWh/p per unit was

described in the initial MPS.

Resolution by the PPs

Based on the actual monitoring data of the project chiller, annual electricity consumptions were corrected. The validation team confirms that the MPS has been revised appropriately and the estimated value of annual electricity consumption of the project chiller is eventually calculated to be 1861 MWh/p per unit. Therefore, this CL is closed.

<**Conclusion based on reporting requirements**>

The validation team reached the conclusion through the validation that the selected emission sources and GHG types were justified for the JCM project. The validation team assessed values for the project-specific parameters to be fixed ex ante, as well as estimated parameters to be monitored ex post, in the MPS and intermediate processes 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, resulting in the revised PDD and the MPS.

C.5. Environmental impact assessment

<**Means of validation**>

It is confirmed through document review and interview with the PPs that the proposed JCM project is not required to conduct assessment of environmental impact according to the national legal requirement of assessment in Thailand.

<**Findings**>

No outstanding issue was raised.

<**Conclusion based on reporting requirements**>

The validation team concludes that the project design of the proposed JCM project is in accordance with the EIA regulation in Thailand.

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, and the following information was confirmed with a satisfactory result.

(a) Comments have been invited from local stakeholders that are relevant for the proposed project.

- The relevant local stakeholders have been identified by the PPs, and a LSC meeting was held on 28/11/2017, inviting mainly the authorities on greenhouse gases management in Thailand, the project chiller producer, and the factory's employees.

(b) The summary of the comments received as provided in the PDD is complete.

- The summary of the comments received has been described in the PDD. Through interview with the PPs, it is confirmed that those comments have been described in the PDD appropriately.

(c) The PPs have taken due account of all comments received and have described this process in the PDD.

- The validation team determines that the information on the LSC meeting has been described in the PDD appropriately. All comments received and the process described in the PDD have been fully taken into consideration.

As a result, it is concluded that no additional actions are required for the comments received.

As for the description of LSC , the validation team raised one issue. The issue was resolved in the sub-section "Findings" below (CL06).

<**Findings**>

CL06

The detail of the LSC is not provided in the PDD.

Resolution by the PPs

PPs described the detail of the LSC in the revised PDD. The validation team confirms that the PDD has been revised appropriately; therefore, this CL is closed.

<**Conclusion based on reporting requirements**>

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

C.7. Monitoring

<**Means of validation**>

Through document review and interviews with the project participants, the following information was confirmed.

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

The parameters to be monitored ex-post are determined in accordance with Monitoring Plan Spreadsheet (MPS) of the applied methodology as below

- $EC_{PJ,i,p}$ (Power consumption of project chiller *i* during the period *p*)

(b) Assessment of the implementation of the plan

It was confirmed by interview with the PPs that the power consumption of project chiller is monitored by measuring equipment. In this regard, the validation team raised CL06. This CL was resolved in “Findings” below.

The roles and responsibilities of the personnel are described in the MSS. The monitoring structure consists of the following personnel;

- Plant manager
- Supervisor on facility operation
- Facility operator

By applying the stepwise process, the team confirms the compliance of monitoring plan with the methodology and the Guidelines for PDD. Also, by reviewing the relevant documents and interviewing with the PPs, the team, confirms that the monitoring structure in the MSS are feasible within the project design, and that the means of implementation of the monitoring plan, including the data management and QA/QC procedures, are sufficient for ex post reporting and verification.

<**Findings**>

CL07

It is requested to clarify "Measurement methods and procedures" of Monitoring point No.1, especially a method of calibration, accordingly.

Resolution by the PPs

There is no national regulation on the calibration frequency of the electricity meter used for the monitoring of the electricity consumption of facilities in the host country. Also, no requirement or recommendation on the calibration is provided by the

manufacturer of the electricity meter. Thus, BTMT has decided to conduct a calibration annually unless a type approval, manufacturer's specification, or certification issued by an entity accredited under international/national standards for the measuring equipment has been prepared by the time of installation. Accordingly, the PPs revised the description of "Measurement methods and procedures" in the MPS. The validation team determines that the calibration frequency is sufficient to ensure the reliability of the measurement and the description of “Measurement methods and procedures” is appropriate. Therefore, this CL is closed.

<**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 have ability to implement the defined Monitoring Plan. It is also confirmed that the Monitoring Structure is feasible as for the means of monitoring.

C.8. Modalities of Communication

<**Means of validation**>

Through document review, it is confirmed that the signed Modalities of Communication (MoC) is prepared by using the applicable version of MoC form. The validation team also conducted interviews with some of the signatories of the MoC, and then identified the personnel and their employment status, including the specimen signatures. Therefore, the validation team determines that the information of all project participants, including the focal point provided in the MoC and its correctness of authority, is appropriate.

<**Findings**>

No outstanding issue was raised.

<**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, 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 the project participant, with a satisfactory result.

<**Findings**>

No outstanding issue was raised.

<**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 project chillers have been installed into the factory, divided into three phases as below.

Phase	Starting date of commercial operation after commissioning
Chiller 1	01/09/2016
Chiller 2	01/06/2017
Chiller 3	01/02/2018

As a result, it was confirmed that the starting date of project operation, 01/02/2018, was the date that the third project chiller was installed and fully started operation. It was considered reasonable and appropriate. It was also confirmed that the date is not before January 1, 2013.

<**Findings**>

No outstanding issue was raised.

<**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**> No outstanding issue was raised. <**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 opened from 13/06/2019 – 12/07/2019 (24:00 GMT). The specific JCM website of the proposed JCM project is as below: https://www.jcm.go.jp/th-jp/projects/64 As a result, no comment was received.

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

Not applicable

E. List of interviewees and documents received

E.1. List of interviewees

・ Hiroyuki Ozaki, Managing Director, Bridgestone Tire Manufacturing (THAILAND) Co., Ltd. ・ Masahiro Rikitoku, Director, Administration and Sales Department, Bridgestone Tire Manufacturing (THAILAND) Co., Ltd. ・ Sitthisin Wansanoh, Department Manager, Engineering Department, Bridgestone

Tire Manufacturing (THAILAND) Co., Ltd.
- Kasem Gunchen, Plant Manager, Bridgestone Tire Manufacturing (THAILAND) Co., Ltd.
- Sitthiporn Potipibool, Section Manager, Maintenance Section, Engineering Department, Bridgestone Tire Manufacturing (THAILAND) Co., Ltd.
- Phurit Julraksa Staff, Maintenance Section, Engineering Department, Bridgestone Tire Manufacturing (THAILAND) Co., Ltd.
- Kenji Kojima, Sales Section III, Sales Dept.I, Information & Electronics Div.III, Bridgestone Tire Manufacturing (THAILAND) Co., Ltd.
- Akira Masui, General Manager, EBARA (THAILAND) LIMITED
- Tomohiko Yamase, General Manager, EBARA THERMAL SYSTEMS (THAILAND) CO., LTD.
- Masaru Ishikawa, Manager, NIPPON KOEI CO., LTD.

E.2. List of documents received

1. Project Design Document for publication (JCM_TH007_PDD_draft.pdf)
2. Monitoring Plan Sheet and Monitoring Structure Sheet for publication (JCM_TH007_MPS_draft.xlsx)
3. Modalities of communications statement for publication (.pdf)
4. JCM Approved Methodology TH_AM005 (JCM_TH_AM005_ver02.0.pdf)
5. Monitoring Plan Sheet and Monitoring Structure Sheet TH_AM005 (JCM_TH_AM005_ver02.0.xlsx)
6. JCM Modalities of Communication Statement Form (JCM_TH_F_MoC_ver01.0.pdf)
7. JCM Project Design Document Form (JCM_TH_F_PDD_ver02.0.pdf)
8. JCM Validation Report Form (JCM_TH_F_Val_Rep_ver01.0.docx)
9. JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_TH_GL_PDD_MR_ver02.0.pdf)
10. JCM Guidelines for Validation and Verification (JCM_TH_GL_VV_ver01.0.pdf)
11. JCM Glossary of Terms (JCM_TH_Glossary_ver01.0.pdf)
12. JCM Project Cycle Procedure (JCM_TH_PCP_ver02.0.pdf)
13. Any evidential document to demonstrate Location of project, including coordinates
14. Company profile of Bridgestone Tire Manufacturing (THAILAND) Co., Ltd.
15. Company profile of INABATA & CO., LTD.
16. Legal durable years list stipulated in the Regulation of the Ministry of Finance,

Japan No.15/1965 used for the evidence of the proposed JCM project's equipment life time.

17. O&M manual of the project chiller
18. Minutes of meeting (inspection and test record) for the project chiller No.1
19. Product brochure, catalog, or specification sheet of the project chiller, newly installed in the tire factory
20. Periodical Maintenance Subject for Centrifugal Chiller
21. Refrigerant recovery and charging procedure plan
22. Report of refrigerant transaction record for the existing chillers, signed by Ebara Thailand
23. Calculation results of emission reductions for 2018 and 2027
24. Guideline for legal requirement of environmental impact assessment in Thailand
25. LSC meeting report, including the invitation letter, the attendees' list, and minutes of the meeting
26. Presentation materials for the local stakeholder consultation
27. Data of actual power consumption of the project chiller
28. Calculation of emission factor issued by Amata B. Glimm Power
29. Photos taken through the on-site assessment, for the project chiller No.1, 2, 3 and the corresponding monitoring meters respectively
30. Operation manual and specification of multi power monitor Model 53U, M-system Co.,Ltd.
31. Project Design Document version 2 (JCM_TH_PDD_Inabata_200408)
32. Monitoring Plan Sheet and Monitoring Structure Sheet version 2 (JCM_TH_AM005_ver02.0_Inabata_200616)

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: 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	2018/6/22

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 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: 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: 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 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	-