JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Yangon Waste to Energy plant by introducing power generation and avoidance of landfill gas emissions through combustion of municipal solid waste (MSW)
Reference number	MM001
Third-party entity (TPE)	TPE-MM-001 Japan Quality Assurance Organization (JQA)
Project participant contracting the TPE	JFE Engineering Corporation
Date of completion of this report	29/03/2019

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	The project participants conducted an environmental	☒

Item	Validation requirements	No CAR or CL remaining
impact assessment	impact assessment, if required by the Republic of the Union of Myanmar, in line with Myanmar procedures.	
Local stakeholder consultation	The project participants have completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project.	☒
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 16 September, 2015.	☒

Authorised signatory:	Mr. ☒ Ms. ☐
Last name: Asada	First name: Sumio
Title: Senior Executive	
Specimen signature: [redacted]	Date: 29/03/2019

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. ☐	Hiroshi Motokawa	JQA	Team member	☒	Authorized	☒
Mr. ☐ Ms. ☒	Aya Watarai	JQA	Team member	☐	-	☒
Mr. ☐ Ms. ☒	Tamami Nagayama	JQA	Team member	☐	-	☐
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 validation, findings, and conclusion based on reporting requirements

C.1. Project design document form

<Means of validation>

By reviewing the PDD, it is checked and confirmed that the PDD is completed using the latest version of the PDD form (JCM_MM_F_PDD_ver02.0) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR (JCM_MM_GL_PDD_MR_ver02.0).

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team (herein after the team) concludes that the PDD is completed using the valid form in line with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The title of the JCM project is “Yangon Waste to Energy plant by introducing power generation and avoidance of landfill gas emissions through combustion of municipal solid waste (MSW)” (herein after the JCM project).

The JCM project aims to generate electricity by the project facility which displaces electricity from a grid or captive power generator which is generated using fossil fuels, and to avoid emissions of methane associated with disposed organic waste in a solid waste disposal site (SWDS).

The key technology is to combust the MSW by the incinerator and generate electricity from the heat generated (Waste to Energy, “WtE”). The JCM project utilizes the MSW in Yangon city as resource to generate electricity and reduces the amount of landfilled waste.

The 0.76 MW electricity output plant has a capacity to treat 60 tons of waste per day and has been designed and built using technology developed by JFE Engineering Corporation (herein after JFEE).

The project participant (herein after PP) of the host country is Yangon City Development Committee (herein after YCDC) and the PP of Japan is JFEE.

The JCM project is expected to achieve the emission reductions of 56,946 tCO_2e between 2017 and 2030. The estimated emission reductions of the period between 2017 and 2030 are calculated in the PDD.

The starting date of project operation is 01/06/2017 and the expected operational lifetime of the JCM project is 15 years, which is stated on a document “Statutory lifetime (i.e. legal durable years)” indicated by the website of National Tax Agency (NTA) Japan as the evidence for the “Expected operational lifetime of project.” Thus, the PPs determine the expected operational lifetime based on the statutory lifetime by NTA.

The JCM project was partially supported by the Ministry of the Environment, Japan (MOEJ) through the Financing Programme for JCM Model projects, which provided financial support of less than half of the initial investment for the projects in order to acquire JCM credits. Further, implementation of the JCM project promotes diffusion of the technology of Yangon Waste to Energy plant which has been developed by the Japanese project participant, JFEE. The Japanese PP transfers the operational technology by the installation of new equipment and the training to the Myanmar PP, YCDC by dispatching the supervisor for a year from starting the operation.

The team conducted desk review, interviews and an on-site assessment to confirm the accuracy and completeness of the project description. The documents reviewed

during the validation are listed in Section E.2. of this report. The on-site assessment including the interviews with the PPs was undertaken on 28/01/2019. The interviewees are listed in Section E.1.

<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 team concludes that the project description in the PDD is accurate and complete.

C.3. Application of approved methodology(ies)

<Means of validation>

The project applies the approved methodology JCM_MM_AM001 "Power generation and avoidance of landfill gas emissions through combustion of municipal solid waste (MSW)" version.01.0. This methodology was approved by JC on 25 June 2018. It is confirmed that this methodology is applicable to the JCM project and the applied version of 01.0, of the methodology is valid at the time of validation.

The fulfilment of each eligibility criterion defined in the methodology is confirmed by checking the documentation referred to in the PDD and by reviewing comparable information.

Criterion 1: The project newly installs an incinerator, waste heat recovery boiler, exhaust gas treatment equipment and turbine generator.

The team received the following documents;

- *Specifications of Furnace Equipment*
- *General Specification of Boiler*
- *Specifications of Bag Filter*
- *Specifications of Steam Turbine Generator and Condensing System (Electrical Equipment and Mechanical Equipment)*

During on-site assessment, it was confirmed that the project incinerator, waste heat recovery boiler, exhaust gas treatment equipment and turbine generator were already installed properly and operated. Based on document review and on-site assessment, the team confirms that Criterion 1 of the approved methodology JCM_MM_AM001 is

satisfied.

Criterion 2: The project incinerates municipal solid waste (MSW) which has been disposed at a SWDS where the generated landfill gas is not recovered, and generates electricity from steam produced in waste heat recovery boiler.

During on-site assessment, the team confirmed the situation of the SWDS, at which the MSW would have been disposed without the project implementation, and the landfill gas generated at the SWDS is not recovered. It was confirmed that the electricity is generated using steam produced by waste heat recovery boiler at the project site.

Criterion 3: There is a plan to operate the project facility for more than 5 years.

By reviewing the contract between YCDC and JFEE, "International Consortium Agreement," stating that the project facility is to be operated for 15 years under the contract, the team confirms the project meets Criterion 3.

<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 team confirms that the project meets all the eligibility criterion of JCM_MM_AM001_ver01.0 which is the latest version of the methodology at the time of the validation. Therefore the team concludes that the project is eligible for applying selected methodology and that the applied version is valid at the time of the validation.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The sources of reference emissions are decomposition of waste at SWDS and electricity generation. The sources of project emissions are combustion of fossil carbon contained in waste, incineration of waste, electricity use by the project facility and consumption of auxiliary fossil fuels needed to be added into incinerator.

By document review and on-site assessment, it is confirmed that all the emission sources covered by the applied methodology are included.

The Monitoring Plan Sheet (MPS) has been prepared by utilizing JCM_MM_AM001_ver01.0.xlsx. The team confirms that it is not altered, and its required fields are appropriately filled in.

As for 17 project specific parameters to be fixed ex ante listed below, the team assesses the estimated value for each of them by reviewing relevant documents.

- MCF (Methane correction factor)
- P_{paper} (Fraction of the waste type “Paper/cardboard”)
- $P_{textiles}$ (Fraction of the waste type “Textiles”)
- P_{food} (Fraction of the waste type “Food waste”)
- P_{wood} (Fraction of the waste type “Wood”)
- P_{garden} (Fraction of the waste type “Garden and park waste”)
- $P_{nappies}$ (Fraction of the waste type “Nappies”)
- P_{rubber} (Fraction of the waste type “Rubber and leather”)
- $P_{plastics}$ (Fraction of the waste type “Plastics”)
- P_{metal} (Fraction of the waste type “metal”)
- P_{glass} (Fraction of the waste type “Glass”)
- P_{other} (Fraction of the waste type “Other, inert waste”)
- EF_{elec} (Emission factor for electricity generation)
- DC (Dry matter content of MSW)
- EF_{N2O} (Emission factor for N_2O associated with incineration)
- NCV_{fuel} (Net calorific value of fuel)
- $EF_{CO2, fuel}$ (CO_2 emission factor of fuel)

Regarding 11 parameters of P (Fraction of the waste type), the methodology states that it should be taken at least one sample in each season (both rainy and dry), weighed each waste fraction (measure on wet basis), and taken the average each waste fraction j among the samples before the validation of the JCM project. The PPs conducted these surveys before the validation, and issued a report “Feasibility study report of JCM SSIP project in 2013.” The PPs set 11 parameters of “P” based on this report.

As for the parameter DC, the methodology also states that it should be taken at least one sample in each season (both rainy and dry), weighed each sample in wet and dry basis, calculated the fraction of dry matter content for each sample, and taken the average the values obtained before the validation of the JCM project. The PPs conducted these surveys before the validation, and issued the report “Feasibility study report of JCM SSIP project in 2013.” Based on this, the PPs set 39.5% as this parameter DC.

Regarding EF_{N2O}, it is stated by the methodology that default value is determined based on the technology of the incinerator - (1) Continuous and semi-continuous incinerators ($1.21*50*10^{-6}$ tN_2O/t waste wet basis) or (2) Batch-type incinerators ($1.21*60*10^{-6}$ tN_2O/t waste wet basis). The PPs set the technology of the incinerator as (1) Continuous and semi-continuous incinerators, based on the actual continuous operation with 24 hours a day. Thus, 0.0000605 tN_2O/t waste is set as the default value of EF_{N2O}.

As for $EF_{CO2, fuel}$, the methodology states that it should be selected a value for the fuel combusted by the JCM project from the IPCC default value at the upper limit of the uncertainty at a 95% confidence interval. Based on a document “Chapter 2 Stationary Combustion of 2006 IPCC Guideline for National Greenhouse Gas Inventories,” The PPs select “Gas/ Diesel Oil” as fuel type and set 0.0748 tCO_2/GJ as IPCC default value.

Based on these information mentioned above, the team determines that these 15 parameters are appropriately fixed in line with the applied methodology.

During on-site assessment, the team confirmed 2 parameters “MCF” (Methane correction factor) and “NCV_{fuel}” (Net Calorific value of fuel).

As for MCF, the methodology states that it should be selected one of the following taking into consideration the situation of the project;

(1) In Yangon City

Default value of 0.8: The appropriate value was selected from the default values $MCF_{default}$ in the tool taking into consideration the situation in Yangon City

(2) In other places in Myanmar

(2)-1: In case of a water table above the bottom of the SWDS, estimate the MCF using the following equation.

$$MCF = MAX \{(1 - 2/d_y), h_{w,y}/d_y\}$$

Where:

$h_{w,y}$ = Height of water table measured from the base of the SWDS [m]

d_y = Depth of the SWDS [m]

(2)-2: In case that the SWDS does not have a water table above the bottom of the SWDS, select the applicable value from the following:

- 1.0 for anaerobic managed solid waste disposal site. These have controlled placement of waste (i.e. waste directed to specific deposition areas, a degree of control of scavenging and a degree of control of fires) and will include at

least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) levelling of the waste;

- 0.5 for semi-aerobic managed solid waste disposal sites. These have controlled placement of waste and will include all of the following structures for introducing air to the waste layers: (i) permeable cover material; (ii) leachate drainage system; (iii) regulating pondage; and (iv) gas ventilation system;
- 0.8 for unmanaged solid waste disposal sites-deep. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of greater than or equal to 5 meters;
- 0.4 for unmanaged-shallow solid waste disposal sites or stockpiles that are considered SWDS. This comprises all SWDS not meeting the criteria of managed SWDS and which have depths of less than 5 meters. This includes stockpiles of solid waste that are considered SWDS.

The PPs applies 0.8 as the value of MCF in line with the default value ((1) and (2)-2) provided by the methodology. The SWDS of the JCM project is located in Yangon City, thus the team confirms that the value 0.8 based on (1) listed above is appreciable for the JCM project.

By the interview with the PPs and Yangon Control & Cleansing Department (herein after YCCD) at on-site assessment, the following points were confirmed;

- Gas recovery has not been conducted at the SWDS before the JCM project has been implemented;
- Any cover material has not been used at the SWDS;
- The SWDS have depths of greater than or equal to 5 meters, beyond 13 meters at the most highest places;
- Neither mechanical compacting nor levelling of the waste has been implemented at the SWDS;
- Since May 2018, YCCD partially started the landfill gas emission control at the small area within the SWDS by utilizing slim bamboos of 2 meters in order to avoid fires.

In April 2018, a large eruption has occurred at another unmanaged SWDS in Yangon, where the control situation was the same as the SWDS visited by the team. After that, YCCD started partial fire control at both SWDSs in Yangon. The team determines the degree of control of fires is very low and insufficient. Based on the information listed above, the team confirms that the SWDS is unmanaged solid waste disposal sites.

These points are fulfilling with some conditions of the value 0.8 based on (2)-2. Accordingly, the team determines that the value 0.8 based on (2)-2 listed above is more appreciable for the JCM project.

Regarding NCV_{fuel}, MPS states that the value is decided from the specifications described on invoices or other commercial/contractual evidence. The team confirms through the review of a document "Invoice of diesel fuel" that fuel type is diesel, and that any evidence of NCV_{fuel} is not provided. Accordingly, an issue was raised.

Regarding the parameters to be monitored ex post, the values of W_i (Quantity of MSW fed into incinerator in the year *i* (wet basis)), p_start (The N^{th} year from the first disposal (or incineration), which is the first year of the period *p*), $EG_{elec,p}$ (Quantity of electricity generated by the project facility during the period *p*), EC_p (Quantity of electricity consumed by the project facility during the period *p*) and $FC_{fuel,p}$ (Quantity of auxiliary fossil fuel consumed during the period *p*) are provided to complete the ex-ante estimation of CO_2 emission reductions achieved by the JCM project in Table 3 of Monitoring plan sheet (Input sheet).

By the interview with the PPs at on-site assessment, it was confirmed that these values listed above were determined based on the feasibility study report and other related documents, not on the actual operation. Thus, issues were raised.

<Findings>

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

(Issue raised as CL01)

The team confirmed that the value of $FC_{fuel,\ p}$ is 120.0 kL/p on the Monitoring Plan Sheet (MPS). The PPs are requested to provide the reason the 120.0 kL/p is applied to MPS.

(Summary of the response on CL01)

The reason of the 120.0 kL/p is applied to MPS was that it was calculated based on the value. This value is the quantity of auxiliary fossil fuel consumed for each starting-up and shutting-down of the incinerator was assumed 5 kL at one time. The frequency of starting-up and shutting-down of the incinerator was assumed 12 times/year, and hence (5 kL +5 kL)*12 times=120.0 kL/p.

On the other side, after a year operation it has been determined that there is a discrepancy between the prediction and the result for $FC_{fuel,p}$. The data for $FC_{fuel,p}$ based on the actual operation 25.43 kL/p is adopted because it is more correct than the data 120.0 kL/p calculated based on the prediction.

Regarding the data of actual operation, it was provided. Revised PDD and MPS were

provided.

(Assessment result of the responses on CL01)

A document “Annual report of plant operation in 2018” was received, and it is confirmed that the value for $FC_{fuel,p}$ has been revised to 25.43 kL per year, which is based on the actual monitored value of auxiliary fossil fuel consumed in 2018. The team confirms that monitored data is reflected on PDD and MPS, and decides that the value 25.43 kL/p of $FC_{fuel,p}$ on actual basis is applicable for the JCM project. Therefore, this issue is closed.

(Issue raised as CL02)

The team received the evidence including expected values of W_i (Quantity of MSW fed into incinerator in the year *i* (wet basis [t]), $EG_{elec,p}$ (Quantity of the electricity generated by the project facility during the period *p* [MWh/p]) and EC_p (Quantity of the electricity consumed by the project facility during the period *p* [MWh/p]). It was confirmed during on-site assessment that the equipment installed has been already operated, and that the PPs already collected data of actual operation. Thus these data on yearly basis (i.e. number of operation day, amount of waste fed into incinerator, and the amount of electricity generation and consumption for the most recent year) are to be provided.

(Summary of the response on CL02)

The data on yearly basis was provided.

After a year operation, it has been determined that there is a discrepancy between the prediction and actual operation data for W_i, $EG_{elec,p}$ and EC_p.

1) The data for W_i was re-calculated based on the new prediction 18,300 tons/p, which is 60 tons/day under 305 operating days a year (prediction data: 21,900 tons/p, which is 60 tons/day under 365 operating days).
2) The data for $EG_{elec,p}$ was calculated based on the prediction 5,563 MWh/p, which is 760 kW under 305 operating days a year 24 hours a day (prediction data: 5,720 MWh/p, which is 653 kW under 365 operating days a year 24 hours a day).
3) The data for EC_p was based on the actual operation from a document “Annual report of plant operation in 2018” 1,828.8 MWh/p (prediction data: 2,628 MWh/p, which is 300 kW under 365 operating days a year 24 hours a day).

As for EC_p, the data from the actual operation was more correct than calculated based on the prediction. On the other hand, as for $EG_{elec,p}$, the prediction based on the

calculation was more correct than the actual operation by the prospect of operation improvement.

(Assessment result of the responses on CL02)

For clarification of the accuracy of the parameters - W_i, $EG_{elec,p}$ and EC_p, the team confirms the following data by reviewing relevant documents ;

- Number of operation day
- Quantity of MSW fed into incinerator (monthly basis and yearly basis)
- The amount of electricity generation and consumption

Through document review, the team confirms the following points;

- The incinerator is operating 24 hours per day and 10 months per year (expect for 2 months for maintenance of the incinerator);
- The quantity of MSW was 12,765.9 tons per year on actual operation basis;
- The actual electricity consumption was 1,828.8 MWh per year, and the actual electricity generation was 2,600.3 MWh per year.

By the interview with the PPs at on-site assessment, the team also confirmed the following reasons for data differences between new prediction data and operation data;

- The JCM project can dispose 60 tons per day at maximum, however, it was first year for operating the incinerator, thus actual operation had been unstable;
- As for the quantity of MSW on expectation basis, the PPs calculated the waste disposal based on 365 days on PDD.

Based on these information mentioned above, the team confirms that revised data based on the actual operation is tolerance range of the new prediction data, and that actual data is reflected on PDD and MPS. The PPs' response to CL02 is fulfilled. Therefore, this issue is closed.

(Issue raised as CL03)

MPS states that the value of NCV_{fuel} (Calorific value of fuel [GJ/kL or m^3]) are determined by the specifications described on invoices or other commercial/contractual evidence. Through the review of the fuel invoice, the team confirms that fuel type is diesel, and that any information of NCV_{fuel} value is not clarify. The other evidence including the NCV, is to be provided.

(Summary of the response on CL03)

The evidence of NCV "The result of diesel fuel ANALYSIS" was submitted by local fuel supplier on 19 March 2019. Based on this analysis result, NCV was 38.928 MJ/L (=45.917 MJ/kg*0.8478 kg/L). PDD and MPS was revised under the result of this analysis.

(Assessment result of the responses on CL03)

The team confirms that the PPs set the value of NCV based on the result of diesel fuel analysis, and that the data is reflected on PDD and MPS. By the interview with the PPs at on-site assessment, the team also confirmed that this value includes the fuel for operating the office and utilizing lighting in the office, when power outage is suddenly occurred. Therefore, this issue is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team reaches the conclusion that the selected emission sources and GHG types are justified for the JCM project. The team assesses the estimated values for project-specific parameters in the MPS including intermediate processes to derive the values. Including the issue of the value of NCV_{fuel}, the issues raised by the team are fully clarified, which resulted in a revision of the PDD and the MPS.

C.5. Environmental impact assessment

<Means of validation>

It is confirms that the Initial Environmental Examination (IEE) was required for the JCM project through the review of the following document:

- Myanmar Environmental Impact Assessment Procedure" (EIA Procedure), Notification No. 616/2015 (established by Ministry of Environmental Conservation and Forestry)

Based on the “Annex 1 Categorization of Economic Activities for Assessment Purpose” attached to the EIA procedure, it is required to conduct any additional assessment, either IEE, EIA and/or Environmental Management Plan (EMP). Also, the Annex 1 states that implementation of EIA and/or IEE is categorized by the amount of waste incinerated per hour;

- Waste more than 3 tons per hour, EIA must be implemented.
- Those less than 3 tons per hour, IEE must be implemented.

The PPs provide some relevant documents of the JCM project listed below;

- *Initial Environmental Examination Report for Yangon Waste to Energy Plant*
- *Letter of Endorsement by the Project Proponent issued by PCCD*

The PPs state the following points;

- The JCM project is classified into "No.104, Non-Hazardous Waste Incinerators of Waste Management";
- The equipment installed can incinerate 60 tons of waste par day, and it operates 24 hours;
- 2.5 tons per hour of waste can be incinerated by this equipment installed.

Based on these information mentioned above, the team confirms that the JCM project incinerates waste less than 3 tons per hour.

As for “Section D. Environmental impact assessment” and “Section F. References in PDD,” issues were raised.

<Findings>

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

(Issue raised as CAR01)

Through document review, the team confirms that the "Letter of Endorsement by the Project Proponent" to the "Initial Environment Examination Report (IEER) for Yangon Waste to Energy Plant" was issued by Head of Pollution Control & Cleansing Department, and that IEER was prepared by Myanmar Engineering Society (MES).

Although the section D in the PDD states "Yes", no description on these letter/report is found in the section F. The information on these letter/report (e.g. document title, document number, issuer and date of issue) are to be added to the section F.

(Summary of the response on CAR01)

The information on IEE report is added to the PDD section F. Revised PDD was provided.

(Assessment result of the responses on CAR01)

Through revised PDD, it is confirmed that the information on IEE report “INITIAL ENVIRONMENTAL EXAMINATION REPORT FOR YANGON WASTE TO ENERGY PLANT (April 2017), PREPARATED BY: ESIA TEAM, and MYANMAR ENGINIEERING SOCIETY” is added on Section F. of PDD. The team decides that response for CAR01 is fulfilled. Therefore, this issue is closed.

Thus it is confirmed that IEE had been implemented properly under the applicable laws including the EIA procedure.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the implementation of the project is in accordance with the regulation in Myanmar and the requirements of the JCM.

C.6. Local stakeholder consultation

<Means of validation>

Since the Initial Environmental Examination (IEE) has been required for the JCM project under the EIA procedure, local stakeholder consultation (herein after LSC) was carried out as a part of IEE on 6th March 2016.

[Venue]

Project site

[Agencies participated in the consultation]

53 people from local community employees of YCDC working at the project site, representatives from the project site and representatives from Myanmar Engineering Society (MES)

Through the review of “6. Public Consultation and Information Disclosure” in IEE report, and the interview with the PPs at on-site assessment, an issue was raised.

<Findings>

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

(Issue raised as CAR02)

Through a document review “Report of Initial Environmental Examination (IEE)” and the interview with the PPs, it is confirmed that PPs held LSC twice on 13th Oct. 2015 and 6th Mar. 2016, and that the first LSC was held at village administration office and 12 local authorities were invited.

The followings are to be added in the PDD,

1) The LSC were held twice;
2) Date, venue and discussions of the first LSC;
3) The local people living around the project site, which would feel comparative impact from the project, were invited and
4) Participant organization or attribute (e.g. local resident, local authority and project

local employee) for each comment in the column of "Stakeholders" in the table of the section E.2. (as much as you could read from the IEER).

(Summary of the response on CAR02)

The following information was added to the section E.1 of the PDD.

1) The LSC were held twice;
2) Date, venue and discussions of the first LSC;
3) The local people living around the project site, which would feel comparative impact from the project, were invited and
4) Participant organization or attribute (e.g. local resident, local authority and project local employee) for each comment in the column of "Stakeholders" in the table of the section E.2. (as much as you could read from the IEER).

The following information was added to the section E.2. of the PDD.

- LSC on 13th Oct. 2015 was held as a group discussion with 12 local authorities from Hlawkar Village

The following information was added to the section E.1. of the PDD.

- LSC on 6th Mar. 2016 was held for 53 people from local community employees of YCDC working at the project site, representatives from the project site and representatives from Myanmar Engineering Society (MES)

(Assessment result of the responses on CAR02)

Based on revised PDD, the team confirms that local residents who would feel comparative impact from the project participated in LSC which was carried out twice as a part of IEE. Through section E.1. and E.2. in the revised PDD, it is confirmed that 1) participant list and 2) participant organization or attribute.

The team concludes that the comments received at the meeting are fully taken into account and the results are reflected in the PDD, and that all responses are applicable for the findings of CAR02. The team concludes that no further action is required. Therefore, this issue is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The team concludes that the LSC of the JCM project has completed appropriately under the EIA.

C.7. Monitoring

<Means of validation>

Through the review of the Monitoring Plan Sheet (MPS) and Monitoring Structure Sheet (MSS), it is confirmed that they are described in line with the applied methodology MM_AM001 ver. 01.0.

Through the review of PDD, it is confirmed that there are four monitoring points in the JCM project; 1) Quantity of MSW, 2) Quantity of electricity generated, 3) Quantity of electricity consumed, and 4) Quantity of auxiliary fossil fuel consumed. The team confirmed during on-site assessment that they were set up properly.

Regarding 1) Quantity of MSW "W_i", spring balance for calculating quantity of waste when feeding into the hopper, is monitoring point in the project. The spring balance is set up on the hopper in order to measure the waste quantity for feeding into the incinerator installed by the JCM project, and it is calculating 60 tons per time.

Regarding 2) and 3) - the meters of electricity generation/consumption, the PPs set them up in the electricity control room, which is located outside of the office of YCDC. The project equipment including the control room partially consume the electricity generated by the JCM project, and the rest of electricity is exported to the national grid.

Regarding 4) Quantity of auxiliary fossil fuel consumed, the flow meter is set up on the pipes from the fuel tank to the incinerator.

All monitoring data is stored in data server. Both JFEE Yangon branch and headquarter of JFEE can check it and headquarter of JFEE manages the data.

With respect to the monitoring structure, it is confirmed the following roles based on MSS;

- Head of Department, Pollution Control and Cleansing Department of YCDC is in charge of approval of monitoring report;
- Deputy Head of Department, Pollution Control and Cleansing Department of YCDC is in charge of quality assurance of the stored data and preparation of monitoring report;
- Plant Manager of YCDC is in charge of measuring equipment, collecting and achieving data and maintaining the stored data.

By the interview with responsible personnel who is written in the MSS at on-site assessment, the team confirmed that all of them are involved in the same roles described on the Sheet.

As for the calibration and/or replacement of measuring equipment – meter for calculating quantity of waste (spring balance), electricity meter and flow meter, the team confirmed the following points by the interview with the PPs at on-site

assessment;

- The PPs have the plan that the electricity meter and flow meter will be calibrated every three years;
- Spring balance will be replaced every three years;
- It will be planned that the calibration and replacement of meters will be implemented with the same frequency .

By the interview with the PPs at on-site assessment, it was confirmed that the implementation plan for calibration and/or replacement of measuring equipment is decided properly by the PPs, and that this plan is reasonable.

<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 team concludes that Monitoring Plan of the JCM project complied with the requirements of the methodology and/or PDD and Monitoring Guidelines, and the PPs have the ability to implement the described Monitoring Plan including feasibility of MSS.

C.8. Modalities of Communication

<Means of validation>

Through the desk review, it is confirmed that the draft Modalities of Communication (MoC), provided by one of the PP, JFEE, with whom JQA has a contractual relationship, had applied the latest version of MoC form. The date of submission indicated in the MoC was 08/01/2019, and it is considered to be valid.

As for the draft MoC, an issue was raised.

<Findings>

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

(Issue raised as CL04)

The MoC provided by the PPs at the time of public comment, does not included 1) Signature of all PPs, and 2) Date.

(Summary of the response on CL04)

Revised MoC, including 1) Signature of all the PPs, and 2) Date, was provided.

(Assessment result of the responses on CL04)

Based on the revised MoC provided by the PPs, it is confirmed on updated MoC that 1) Signature of all the PPs and 2) Date were included. Therefore, this issue is closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

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

C.9. Avoidance of double registration

<Means of validation>

It is confirmed preliminarily through review of the relevant website (e.g. UNFCCC website, Markit Environmental Registry, etc.) that the JCM project had not been registered under other international climate mitigation mechanisms. The written confirmation of the avoidance of double registration was also provided through the signed MoC. The team cross-checked by the interview with the PPs at on-site assessment.

<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 team concludes that the JCM project is not registered under the other international climate mitigation mechanisms at the stage of validation.

C.10. Start of operation

<Means of validation>

In the PDD submitted for the invitation of public inputs as described in Section D, the start date of operation is indicated as 01/06/2017.

By reviewing the following documents, the team confirms that the equipment has been installed on 31/05/2017 and operated since 01/06/2017.

- *Operation daily report (1st of Jun., 2017)*
- *Acceptance Certificate of Incinerator Installation*

The cross-check was implemented by the interview with the PPs at on-site assessment. It was confirmed that both the start date of operation and the installation date of the equipment, coincide with the information by the documents listed above. Therefore, this date is not before September 16, 2015.

<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 team confirms that the start of the operation is determined appropriately.

C.11. Other issues

<Means of validation>

No other issue was identified.

<Findings>

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

No outstanding issue was raised.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Not applicable.

D. Information on public inputs

D.1. Summary of public inputs

The PDD of the JCM project, which was submitted in line with the Project Cycle Procedure, was made publicly available through the JCM website for public inputs. The duration of call for public inputs on the PDD was 30 calendar days subsequent to the publication of the PDD, and it started from 11/12/2018. The specific JCM website is as below:

https://www.jcm.go.jp/mm-jp/projects/56

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

No comment was received during the period of the public comments, covering

11/12/2018 to 09/01/2019; therefore, no action was required to be taken into due account by the project participants.

E. List of interviewees and documents received

E.1. List of interviewees

ID	Name	Title	Organization
1	Tomoharu GENTSU	Manager	JFE Engineering Yangon Branch
2	Tsutomu OYAMA	Manager	JFE Engineering
3	Yusuke SAI	Deputy Manager	JFE Engineering
4	Nyein Chan Aung	Interpreter	JFE Engineering
5	Sein Myint		PCCD, YCDC
6	Soe Nyi		PCCD, YCDC
7	Tun Tun		PCCD, YCDC
8	Rie MATSUDA	Senior Consultant	Mitsubishi UFJ Research & Consulting Co., Ltd

E.2. List of documents received

No.	Document Title (including version No. and/or issue date)
1	Project Design Document (draft) (JCM_MM_F_PDD_ver02.0.docx)
2	Monitoring Plan Sheet and Monitoring Structure Sheet (draft) (JCM_MM_AM001_ver01.0.xlsx)
3	Modalities of communications statement submitted together with the PDD for public comments (JCM_MM_F_MoC_ver01.0.pdf)
4	Modalities of communications statement, a validated version for submission of request for registration
5	JCM Approved Methodology JCM_MM_AM001 " Power generation and avoidance of landfill gas emissions through combustion of municipal solid waste (MSW), ver. 01.0"
6	JCM_MM_AM001　Monitoring Plan Sheet
7	JCM Glossary of Terms (JCM_MM_Glossary_ver01.0)
8	JCM Project Cycle Procedure (JCM_MM_PCP_ver02.0)

9	JCM Modalities of Communication Statement Form (JCM_MM_F_MoC_ver01.0.pdf)
10	JCM Guidelines for Developing Project Design Document and Monitoring Report (JCM_MM_GL_PDD_MR_ver02.0)
11	JCM Project Design Document Form (JCM_MM_F_PDD_ver02.0.pdf)
12	JCM Guidelines for Validation and Verification (JCM_MM_GL_VV_ver01.0.pdf)
13	JCM Validation Report Form (JCM_MM_F_Val_Rep_ver01.0.docx)
14	Location information of the proposed JCM project
15	Company profile of Yangon City Development Committee(YCDC)
16	Company profile of JFE Engineering Corporation (JFEE)
17	1.Operation daily report (1st of Jun., 2017) 2.Completion certificate for the project equipment installation
18	Statutory lifetime (i.e. legal durable years) indicated by the website of National Tax Agency (NTA) as the evidence for the Expected operational lifetime of project, https://www.keisan.nta.go.jp/survey/publish/34255/faq/34311/faq_34360.php
19	Specifications of Furnace Equipment
20	General Specification of Boiler
21	Specifications of Bag Filter
22	1.Specifications of Steam Turbine Generator and Condensing System (Electricity equipment) 2.Specifications Steam Turbine Generator and Condensing System (Mechanical equipment)
23	1.International Consortium Agreement 2.Amendment of International Consortium Agreement
25	Ministry of Environmental Conservation and Forestry Notification No. 616/ 2015 - ENVIRONMENTAL IMPACT ASSESSMENT PROCEDURE
26	Letter of Endorsement by the Project Proponent issued by PCCD
27	Minutes of Local Stakeholder Consultation Meeting
28	Presentation material for Local Stakeholder Consultation Meeting
29	Operation daily report (20th of Dec., 2018)
30	1.O&M manual for waste feeding conveyor 2.Specification of RW-JT04/RW-JT04A+Summing Load cell Amplifier 3.Specification of LCS-E1 Load cell

31	Evidence of generation output of generator (Equipment Outline)
33	Feasibility study report of JCM in FY2014
35	Technical specification for Yangon SSIP Project
37	Feasibility study report of JCM SSIP project in 2013
38	CLEAN DEVELOPMENT MECHANISM PROJECT DESIGN DOCUMENT FORM (CDM-PDD) VERSION 03 - IN EFFECT AS OF: 28 JULY 2006
39	Invoice of diesel fuel
40	Chapter 2 Stationary Combustion of 2006 IPCC Guideline for National Greenhouse Gas Inventories
41	Project Design Document (revised) (JCM_MM_F_PDD_ver02.0.docx)
42	Monitoring Plan Sheet and Monitoring Structure Sheet (revised) (JCM_MM_AM001_ver01.0.xlsx)
44	Annual report of plant operation in 2018
45	Participant list of Local Stakeholder Consultation Meeting
46	The result of diesel fuel ANALYSIS

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 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: Mr. Hiroshi Motokawa

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	2014/12/22
TA 4.6. Other manufacturing industries	2014/12/22
TA 5.1. Chemical industry	-
TA 10.1. Fugitive emissions from oil and gas	-
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 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	-