# JCM Validation Report Form

## A. Summary of validation

A.1. General Information

| | |
|---|---|
| Title of the project | Introduction of Smart Mini Grid System at Addu City |
| Reference number | MV002 |
| Third-party entity (TPE) | Third-party entity (TPE)<br>Japan Quality Assurance Organization (JQA)<br>(TPE-MV-001) |
| Project participant contracting the TPE | Ministry of Environment, Climate Change and Technology |
| Date of completion of this report | 29/12/2022 |

A.2 Conclusion of validation

| | |
|---|---|
| Overall validation opinion | ☒ Positive<br>☐ 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 | The project participants conducted an environmental impact assessment, if required by the Republic of Maldives, in line | ☒ |

| Item | Validation requirements | No CAR or CL remaining |
|---|---|---|
| assessment | with Maldivian 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.<br>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: 29/12/2022 |

## B. Validation team and other experts

| | Name | Company | Function* | Scheme competence* | Technical competence* | On-site visit |
|---|---|---|---|---|---|---|
| Mr. ☒ Ms. ☐ | Hiroshi Motokawa | JQA | Team Leader | ☒ | Authorized | ☐ |
| Mr. ☒ Ms. ☐ | Tadashi Yoshida | JQA | Internal Reviewer | ☒ | Authorized | ☐ |
| Mr. ☐ Ms. ☐ | | | | ☐ | | ☐ |
| Mr. ☒ Ms. ☐ | | | | ☐ | | ☐ |

*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>**

In this report, the validation team (hereinafter, the team) validates two versions of PDD, the version 02.0 submitted for validation (hereinafter, the PDD), and the version 03.0 revised during the validation and dated 28/12/2022 (hereinafter, the revised PDD).

Regarding the documents referred to in this report, the same applies to the Monitoring Plan Sheet (i.e., the MPS and the revised MPS), Monitoring Structure Sheet (the MSS and the revised MSS) and the Modalities of Communication (the MoC and the revised MoC).

By reviewing the PDD, it is checked and confirmed that the PDD is completed using the latest version of the PDD form (JCM_MV_F_PDD_ver02.0) appropriate to the type of project and drafted in line with JCM Guidelines for Developing PDD and MR, JCM_MV_GL_VV_ver02.0 (hereinafter, the guidelines).

**<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 PDD is completed using the valid form and drafted in line with the guidelines.

C.2. Project description

**<Means of validation>**

The proposed JCM project is “Introduction of Smart Mini Grid System at Addu City” (hereinafter, the project). The project aims to reduce CO2 emissions by introducing a smart grid system composed of an Energy Management System (EMS), a Battery Energy Storage System (BESS, 0.47MWh) and Solar PV Systems (1.6MW in total) in Addu city of the Republic of Maldives.

The coordinates in the PDD indicate the exact location of the project site, i.e., central power station.

The starting date of project operation is 02/12/2021 and the expected operational lifetime of the project is 20 years.

The team conducted no on-site inspection for the project. The reasons for this are that the following were available:

- Sufficient evidences and information relevant to the project description;
- Photos taken before and after the project start;
- Interviews through on-line meeting and e-mail with the PPs, when necessary, the related stakeholders, for understanding the project;
- Purchase records and/or relevant contracts of the project equipment.

An issue was raised.

**<Findings>**

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

< CAR01 >

MPS(calc_process) of Monitoring Plan Sheet (MPS) shows annual "Estimated Reference emissions (tCO2e)" are 1189.7. In the PDD, those for each year during the period from 2022 to 2030 in the table of C.3. are 1189 and 101 in 2021. The inconsistency between MPS and PDD exist as mentioned above.

Furthermore, the value of 2021 is to be recalculated based on the value of MPS(calc_process).

< PP response to this issue >

The PPs revised the values in the PDD according to CAR01.

< Assessment of PP response >

The team confirms that the revised values during the period from 2022 to 2030 in the revised PDD are consistent with the values in MPS(calc_process), and that the revised value in 2021 is considered appropriate.

Therefore, this issue is closed.

< CAR02 >

By reviewing the relevant documents and interviewing with the PPs, it is confirmed that project

solar PV systems were newly installed at five sites respectively (e.g., schools, hospital, etc.) by 3rd November 2018.
The description about new installation of PV systems is not found in the PDD.
In addition, by interviewing with the PPs and the project battery manufacturer, and by reviewing the manufacturer specifications, it is confirmed that the lifetime estimated by the manufacturer is 15 years, NOT 20 years described in the PDD that is seemed to be optimistic.
The PPs are requested to update "Expected operational lifetime of project" in the PDD considering the fact mentioned above.
< PP response to this issue >
The PPs added the description of the PV system installation and changed the lifetime from 20 to 15 in the PDD.
< Assessment of PP response >
The team confirms that the revisions in the revised PDD are appropriately made.
Therefore, this issue is closed.

**<Conclusion based on reporting requirements>**
*Please state conclusion based on reporting requirements.*
The team concludes that the project description in the revised PDD is accurate and complete.

C.3. Application of approved methodology(ies)

**<Means of validation>**
The project applies the approved methodology, MV_AM002 Ver1.0, "Installation of Energy Management System, Battery Energy Storage System (EMS-BESS) and Solar PV System" (hereinafter, the methodology).
By checking the JCM website at the time of submission of the project for validation, the team confirms that the applied version was valid at that time.
By comparing the PDD with the actual text of the methodology, the team confirms that the methodology is correctly quoted and applied.
By checking the relevant documents including documentation referred to in the PDD and reviewing comparable information as deemed necessary, the team confirms that the project meets each eligibility criterion of the methodology as follows:

Criterion 1: EMS, BESS and solar PV system(s) are newly installed to replace a grid and/or captive electricity which is sourced at least from, but not limited to multiple fossil fuel thermal power units such as DGs.
The PDD states “EMS, BESS and solar PV systems are newly installed to replace a grid

electricity which is sourced from multiple DGs".

By reviewing the layout drawing, shipping invoices, photos of the project equipment and commissioning report issued by NISHIZAWA LIMITED, it is confirmed that EMS and BESS were newly installed to replace a grid and captive electricity which is sourced from fossil fuel thermal power units such as DGs.

By reviewing the layout drawing, contract document and commissioning report, the team confirms the following:

- Total installed capacity of DGs :17,811 kW;
- DC Capacity of the BESS :470.85 kWh;
- The model of Solar modules: TSM-255PC05A;
- Total installed capacity of PV systems at five sites : 1,601.15 kW;
  - > Hithadhoo School: 246.33kW( 966pcs x 255Wp);
  - > Addu hospital; 626.53kW( 2,457pcs x 255Wp);
  - > STO Wearhouse: 192.78kW (756pcs x 255Wp);
  - > Sharafudddin School: 374.85kW (1470pcs x 255Wp);
  - > Addu high school: 160.65kW (630pcs x 255Wp).

The invoices show that the following were installed at the project site, FENAKA central power station;

- One EMS and related equipment;
- One BESS/PC and related equipment;
- Six 400V electricity meters (incl. 1 spare);
- Five 11KV electricity meters; (incl. 1 spare);
- Two fuel flow meters.

Hence, the team determines that the project meets Criterion 1.

Criterion 2: Installed EMS is equipped with economic load dispatching control function and load frequency control which controls diesel generators and BESS based on projections of electric-load/demand and output of solar PV system(s).

The PDD states "Installed EMS is equipped with economic load dispatching control function and load frequency control which controls diesel generators and BESS based on projections of electric-load/demand and output of solar PV systems".

By reviewing the commissioning report, especially Page 24 of "1. System description document" and Page 82-86 of "2. Functional description document", it is confirmed that installed EMS is equipped with the functions mentioned above.

Hence, the team determines that the project meets Criterion 2.

Criterion 3: The equipment to monitor output power of the solar PV system(s) is installed at

the project site.
The PDD states “Five electricity meters are installed to monitor output power of the solar PV systems at the project sites”.
As mentioned on Criterion 1 above, the invoice shows the five 400V electricity meters were installed at the project site.
Hence, the team determines that the project meets Criterion 3.

Criterion 4: Data of fuel consumption and fuel consumed before activation of EMS and BESS is available for each fossil fuel thermal power units such as DG(s) in the power station. The data is to be collected monthly for at least one year.
The PDD states “Monthly data of fuel consumption and fuel consumed before activation of EMS and BESS is available for each DG in the power station in Addu City. The data is available for more than two years”.
By reviewing the monthly data and ER calculation sheet and interviewing with the PPs, the team confirmed that the fuel consumption and fuel consumed before activation of EMS and BESS were monitored daily and monthly from Jan 2015-Nov 2018, more than three years, and available for each fossil fuel thermal power units.
Hence, the team determines that the project meets Criterion 4.

Criterion 5: The PV modules need to be certified for design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).
The PDD states “The PV modules are certified for design qualification IEC61215 and safety qualification IEC61730-1 and IEC61730- 2.”.
By checking the certificate with the No. Z2140170321023 issued by Tuv-SUD, it is confirmed that the PV modules (model:TSM-255PC05A) installed by the project are certified for design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and 61730− 2).
Hence, the team determines that the project meets Criterion 5.

Criterion 6: In the case of replacing the existing storage battery system (s), a plan is prepared in which mercury used in the existing storage battery system (s) is not released to the environment. Execution of the prevention plan is checked at the time of verification, in order to confirm that mercury used for the existing one replaced by the project is not released to the environment.
The PDD states “There is no exiting storage battery system before the proposed project”.
The project newly installed BESS in 2021, NOT replaced the existing battery, therefore, this criterion is not applicable.
Hence, the team determines that Criterion 6 is not applicable to the project.

**<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 criteria of the methodology whose applied version is valid at the time of submission of the project for validation. Therefore, the team concludes that the project is eligible for applying the methodology.

C.4. Emission sources and calculation of emission reductions

**<Means of validation>**

The MPS was prepared by using JCM_MV_AM002_ver01.0. By reviewing the relevant documents, the team confirms the following:

- The MPS is not altered,
- Its required fields are appropriately filled in line with the methodology and the guidelines,
- All the emission sources covered by the methodology are included.

The value of Σ EGi,p in the MPS(input) is 1,673.30 MWh/p. By reviewing the calculation process of Σ EGi,p, it is confirmed that this value is the sum of the actual electricity generation of the installed PV systems at each site in 2021.

By reviewing the emission factor calculation sheet provided by the PPs, the team confirms that EFER is calculated by the following parameters;

- FCj,q: 1,647,771 L/y, fuel consumption by DG No.7 (the most efficient DG in the project site) from Jan 2015-Jan 2017 prior to the installation of the PV systems;
- EGj,q: 6150,000 kWh/y, electricity generation by DG No.7 from Jan 2015-Jan 2017;
- NCV: 43.0 GJ/t, IPCC default values provided in Table 1.2 of Chapter 1 of Vol. 2 of the “2006 IPCC Guidelines for National GHG Inventories";
- EFd: 72.6 kgCO2/GJ, IPCC default values provided in tables 1.4 of Ch.1 Vol.2 of the “2006 IPCC Guidelines on National GHG Inventories”. The lower value of diesel oil is applied;
- CF: diesel oil: 0.85 kg/liter, value provided by Petroleum Association of Japan (diesel oil: 0.85 kg/liter).

By interviewing with the PPs, the team confirms that the PPs selected EFd of 72.6 kgCO2/GJ provided by IPCC default values, and CF of 0.85 kg/L, provided by Petroleum Association of Japan because it was not possible for them to choose the higher priority options.

**<Findings>**

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

< CAR03 >

NCV applied to the EFER calculation is NOT the default values at the lower limit, 41.4 GJ/t

< PP response to this issue >

The PPs recalculated EFER by using the revised NCV of lower limit value of 41.4 GJ/t.

< Assessment of PP response >

The team confirms that the NCV in the revised MPS(calc_process) is in line with the methodology.

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 project. The team assesses the estimated values for project specific parameters in the MPS including intermediate processes to derive the values. The questions on the values raised by the team were fully clarified, which resulted in some revisions of the MPS. As a result, the values are considered reasonable in the context of the project.

C.5. Environmental impact assessment

**<Means of validation>**

The regulation and procedures of the Republic of Maldives, "Regulation on the Preparation of Environmental Impact Assessment Report 2012 (Regulation Number: 2012/R-27) , Ministry of Housing and Environment" indicate that the proposed project is NOT subject to an environmental impacts assessment.

Moreover, by interviewing with Mr. Ahmed Ali of the focal point entity, who is Director General, Energy Department of Ministry of Environment, Climate Change and Technology (MoECCT), the team confirms that in the project development review phase, he consulted with the EIA authority and obtained the letter for permission of project development, which is written in local language.

**<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 PPs did not conduct any EIA in line with the regulations in the Republic of Maldives.

C.6. Local stakeholder consultation

**<Means of validation>**

Since no EIA was required to the project under the regulations in the Republic of Maldives, local stakeholder consultation (hereinafter, LSC) was carried out as described in the PDD.

By reviewing the relevant documents and interviews with the PPs, the team confirms that the date, time, venue, participants, summary of the comments received at the LSC meeting, and due account of all comments received are consistent with those provided in the PDD.

**<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 LSC of the project has completed adequately and the process and information considered above are stated in the PDD.

C.7. Monitoring

**<Means of validation>**

C.7. Monitoring

By reviewing the specifications of installed electricity meters, the team confirms the following specifications of the electricity meters:

- Model: METSEPM5340,
- Type of network: 3P, 3P+N, and 1P+N,
- Accuracy class: 0.5S.

By reviewing the Test/Calibration Certificates issued by the manufacturer of electricity meter, manufacture's recommendation about the necessity of the re-calibration and “Letter of Commitment” issued by the PPs, the team confirms that those tests conducted before the shipping show that the instrumental errors stay within the required level of accuracy (i.e., ±0.5%), and that "the installed meters does not require the periodic re-calibration over the operational life of the meters, unless accuracy drift occurs due to environmental or other unknown factors". The team determines that the PPs conducted no periodic calibration and replace the meters at the end of lifetime unless any troubles occurs, and that the procedure is in line with the methodology.

Considering the above-mentioned statement, the team confirms the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, are sufficient for ex post reporting and verification, in line with the methodology.

By reviewing the MPS and relevant documents, the team confirms that;
1) All the parameters are listed in the MPS appropriately based on the methodology,
2) Monitoring information described in the MPS(input) complies with the requirements of the methodology,
3) Monitoring point and the type of monitoring equipment, i.e., electricity meter, are illustrated in the figure of C.2.,

The Monitoring Structure Sheet (MSS) states the following:
- Project Manager: Responsible for operation and maintenance of the project, monitoring results and reporting;
- Manager: Responsible for checking the recorded data, operation and maintenance of the project and archiving all checked Excel files;
- Operator: Responsible for check of the reading of the electricity meters and recording, daily operation of EMS to receive and store the monitoring data.
An issue was raised.

**<Findings>**
*Please state if CARs, CLs, or FARs are raised, and how they are resolved.*
< CAR04 >
By interviewing with "Project Manager" and "Operator", the team confirms as follows;
1) Operator does not record the reading of electricity meters, just checking the electronically recorded data and
2) MSS states "Manager archives all checked Excel files", however, it is not clearly described what Excel files are.

< PP response to this issue >
The roles in the MSS were revised according to CAR04 above.
< Assessment of PP response >
By reviewing the revised MSS, the team confirms that "Operator" is not responsible for recording the reading., and that Manager archives all checked CSV data electronically recorded by EMS.
Thus, this issue is closed.
**<Conclusion based on reporting requirements>**
*Please state conclusion based on reporting requirements.*
The team concludes that the monitoring plan described in the revise MPS complies with the requirements of the methodology and the guidelines, and that the PPs have ability to implement the described monitoring plan including feasibility of monitoring structure.

C.8. Modalities of Communication

**<Means of validation>**

By directly reviewing personal business cards, relevant websites and specimen signatures, it is confirmed that all corporate and personal details described in the MoC are valid and accurate.

By checking the version and information in the MoC, it is confirmed that the latest version of the form (JCM_PW_F_MoC_ver01.0) is used.

**<Findings>**

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

< CAR05 >

The project title written in the MoC, "Introduction of Smart Micro Grid System at Addu Atoll", is not consistent with that in the PDD, "Introduction of Smart Mini Grid System at Addu City".

< PP response to this issue >

The title in the MoC was revised according to CAR05 above.

< Assessment of PP response >

The team confirms that the project title in the revised MoC is consistent with that in the PDD. Thus, 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>**

By reviewing the relevant websites (e.g. CDM website, Markit Environmental Registry, etc.) and the Section 7 of the MoC, the team confirms that the project is not registered under other international climate mitigation mechanisms.

**<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 is not registered under the other international climate mitigation mechanisms.

C.10. Start of operation

**<Means of validation>**

By reviewing the relevant documents provided by the PPs, it is confirmed that commissioning

test of the project equipment had been completed before 25/11/2021, that Inauguration ceremony was held on 02/12/2021, i.e., the stating date of project operation indicated in the PDD, that the monitoring activity has just started on 02/12/2021, and that it does not predate January 1, 2013.

The teams determines that the starting date of project operation is appropriately set on 02/12/2021 in the PDD.

**<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 starting date of project operation in the PDD 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.*

Not applicable.

**<Conclusion based on reporting requirements>**

*Please state conclusion based on reporting requirements.*

Not applicable.

## D. Information on public inputs

D.1. Summary of public inputs

The PDD had been publicly available for 30 days between 18/10/2022 and 16/11/2022 to invite public inputs on the JCM website, https://www.jcm.go.jp/mv-jp/projects/108.

No public comments were received.

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

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

- Mr. Ahmed Ali, Director General, Energy Department, Ministry of Environment, Climate Change and Technology
- Mr. Mausoom Shakoor, Senior Engineer, Addu Central Power Station, Fenaka Corporation Limited
- Mr. Moosa Ibrahim, Senior Engineer, Addu Central Power Station, Fenaka Corporation Limited
- Mr. Ali Mibsam Thasneem, Technician, Addu Central Power Station, Fenaka Corporation Limited
- Mr. Tetsuya Saito, Environmental Science & Engineering Dept., International Consulting Operations, International Environment Department, Consulting Operations Headquarters, Nippon Koei Co., Ltd.
- Ms. Yuka Nakagawa, Environmental Science & Engineering Dept., International Consulting Operations, International Environment Department, Consulting Operations Headquarters, Nippon Koei Co., Ltd.

E.2. List of documents received

1. Project Design Documents, JCM_MV_F_PDD_MV002.docx, version 02.0 dated 06/10/2021 and Version 03.0 dated 28/12/2022
2. Monitoring Plan Sheet and Monitoring Structure Sheet, JCM_MV_AM002_MV002.xlsx, Version 01.0 and 02.0
3. Modalities of communications statement, JCM_MV_F_MoC_MV002.pdf, Version 01.0 and 02.0
4. Project Design Document Form, JCM_MV_F_PDD_ver02.0.docx
5. JCM Modalities of Communication Statement Form, JCM_MV_F_MoC_ver01.0.docx
6. JCM Approved Methodology, JCM_MV_AM002_ver01.0, “Installation of Energy Management System, Battery Energy Storage System (EMS-BESS) and Solar PV System”
7. Monitoring Plan Sheet and Monitoring Structure Sheet attached to the methodology, JCM_MV_AM001_ver01.0.xlsx
8. JCM Glossary of Terms, JCM_MV_Glossary_ver01.0
9. JCM Project Cycle Procedure, JCM_MV_PCP_ver03.0
10. JCM Guidelines for Developing Project Design Document and Monitoring Report, JCM_MV_GL_PDD_MR_ver02.0
11. JCM Guidelines for Validation and Verification, JCM_MV_GL_VV_ver01.0.pdf
12. JCM Validation Report Form, JCM_MV_F_Val_Rep_ver01.0

13. JCM website of project information, https://www.jcm.go.jp/mv-jp/projects/108
14. JCM website of JCM_MV_AM002, https://www.jcm.go.jp/mv-jp/methodologies/121
15. Specifications/catalogues, purchase contracts and relevant documents of EMS, BESS and the Solar PV Systems installed by the project.
16. Purchase records (e.g., purchase agreement, invoice, delivery proof) indicating the types and numbers of all equipment installed by the project.
17. Location of the project site shown by Google Earth.
18. Organization info of Fenka Corporation Limited, https://fenaka.mv/about
19. Organization info of Ministry of Environment, Climate Change and Technology, https://www.environment.gov.mv/v2/en/
20. Inauguration ceremony agenda as evidence for the starting date of project operation.
21. Battery manufacturer specification showing the lifetime, 15 years.
22. Commissioning report and “DESIGN, SUPPLY, AND INSTALLATION OF EMS AND BESS OF PV DIESEL HYBRID SYSTEM IN ADDU CITY OF MALDIVES” indicating the project starting date.
23. Single line diagram of EMS/BESS and PV systems indicating all the lines connected with the grids and the project equipment.
24. Layout drawing and photos, before and after the project equipment installation, including the physical features and nameplates of the project equipment.
25. System description and functional description document of EMS.
26. Specifications of the five electricity meters installed at project sites and manufacture's recommendation about the necessity of the re-calibration of the meters.
27. Monthly data of fuel consumption and fuel consumed by the DG for more than two years before activation of the installed EMS and BESS
28. Certificate for design qualifications (IEC 61215) and safety qualification (IEC 61730-1 and 61730- 2), issued by Tuv Sud with the No. Z2140170321023.
29. "Regulation on the Preparation of Environmental Impact Assessment Report 2012 (Regulation Number: 2012/R-27) , Ministry of Housing and Environment" including the addenda issued later.
30. LSC invitation letter or mail, presentation materials, Minutes with participant list.
31. Emission factor calculation sheet.
32. Test and calibration certificates of five electricity meters installed at the project sites, and “Letter of commitment” on electricity meter management issued by the PPs.
33. Monitoring daily data of each PV system power generation in 2021-2022.
34. Copies of Business cards and signatures of the personnel shown in the MoC, and relevant websites (https://fenaka.mv/support,and http://www.environment.gov.mv/v2/en/contact-form).

## 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***

JQA

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 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***

JQA

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 | - |