JCM Validation Report Form

A. Summary of validation

A.1. General Information

Title of the project	Introduction of Ultra-lightweight Solar Panels for Power Generation at International School
Reference number	KH001
Third-party entity (TPE)	Lloyd's Register Quality Assurance Limited (LRQA)
Project participant contracting the TPE	Asian Gateway Corp.
Date of completion of this report	21/12/2017

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 Cambodia, in line with Cambodian 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	☒

Item	Validation requirements	No CAR or CL remaining
	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 TPE validates the start of the operating date of the proposed JCM project.	☒

Authorised signatory:	Mr. ☒	Ms. ☐
Last name: Chiba	First name: Michiaki	
Title: Climate Change Manager - Asia & Pacific		
Specimen signature: [redacted]		Date: 21/12/2017

B. Validation team and other experts

	Name	Company	Function*	Scheme competence*	Technical competence*	On-site visit
Mr. ☒ Ms. ☐	Michiaki Chiba	LRQA Ltd.	Team leader	☒	Technical competence authorised	☒
Mr. ☒ Ms. ☐	Stewart Niu	LRQA China	Internal reviewer	☒	N/A	☐
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>

The initial version of PDD was checked and confirmed as complete against the JCM Guidelines for Developing Project Design Document (PDD) and Monitoring Report (MR) No. JCM_KH_GL_PDD_MR_ver02.0. A valid form of the JCM PDD Form as of the time of commencement of the public comment period No. JCM_KH_F_PDD_ver02.0 was used for the PDD Version 01.0 dated 11/09/2017.

The completeness was also checked for the revised PDD Version 02.0 dated 15/12/2017 against the updated JCM Guidelines for Developing Project Design Document (PDD) and Monitoring Report (MR) No. JCM_KH_GL_PDD_MR_ver03.0 and JCM PDD Form No. JCM_KH_F_PDD_ver03.0.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.
The validation team confirmed that the PDD was completed using the valid form of the JCM PDD Form and in accordance with the JCM Guidelines for Developing PDD and MR.

C.2. Project description

<Means of validation>

The project is to introduce 200 kW solar power generation system on rooftop of buildings of the International School of Phnom Penh (ISPP) in Phnom Penh, Cambodia. The electricity generated by the project solar power generation system is self-consumed and reduces GHG emissions from generation of grid electricity that is imported by ISPP in the absence of the JCM project. The project solar power generation system employs the photovoltaic module applying ultra-lightweight solar panel Lightjoule of Asahi Glass Co., Ltd., Japan.

The project is implemented by ISPP and Asian Gateway Corp. from Japan. The start date of project operation is on 01/08/2016 and the expected operational lifetime of the project is for 17 years. The PPs referred to the Statutory useful life for the calculation of depreciation and amortization for machinery and equipment issued by Japan's Ministry of Finance for the basis of the expected operational lifetime of the project solar power generation system indicated as for 17 years (the other facilities mainly made of metal for education industries), while the period of depreciation applied by ISPP for tangible properties is for 20 years. The project solar power generation system applying the state-of-art design of the Japanese leading manufacturer will have a longer operational lifetime with sound operation and maintenance activities, but the PPs selected shorter lifetime specified by the applicable regulations. That is conservative and considered acceptable as it fulfils the duration of the crediting period.

The project receives financial support for JCM model projects from the Ministry of the Environment, Japan. The PP from Japan contributes in transfer of technology by provision of capacity building on operation and monitoring.

The validation team assessed the PDD and the supporting documents, interviewed the PPs to validate the requirements concerning accuracy and completeness of the project description.

The details of the persons interviewed and documents reviewed are provided in the Section E of this report.

Through the processes taken, CL 1 was raised as the resolution detailed below.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

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

Grade / Ref: CL 1

Nature of the issue raised: The PPs were requested to clarify the date the project PV system started operation and the estimated emission reductions in the first year of the operation.
Nature of responses provided by the PPs: The PPs amended the start date of the operation to 01/08/2016 and revised estimated ERs in the first year of the operation.
Assessment of the responses: The validation team confirmed that the project solar PV system started operation in August 2016 as described in the revised PDD based on the generation data and the estimated ERs in the first year of operation has been re-calculated for the change. The CL was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team assessed the project description provided in the PDD with the supporting documents to the requirements on the accuracy and completeness. The validation team confirmed that the proposed JCM project in the PDD is described in accurate and complete manners that is understandable the nature of the proposed project activity.

C.3. Application of approved methodology(ies)

<Means of validation>

The project applied the approved methodology JCM_KH_AM002_ver01.0 "Installation of Solar PV System" Ver 01.0.
LRQA assessed if the selected methodology is applicable to the proposed project. The project applicability was checked against each eligibility criterion in the selected approved methodology. The steps taken to validate each eligibility criterion and the conclusions about its applicability to the proposed project are summarised as below.

Criterion 1: The project installs solar PV system(s).
Justification in the PDD: The project installs 200kW green-field solar power system on the roof of the international school in Phnom Penh.
Steps taken for assessment: Document review was conducted on the project documentation, technical specification, the test and commissioning report, and the on-site visit and interviews were conducted at the project site.
Conclusion: Based on the validation processes taken, the validation team confirmed that the project installed solar PV system on the roof of buildings of ISPP and the criterion is met.

Criterion 2: The PV modules have obtained a certification of design qualifications (IEC 61215, IEC 61646 or IEC 62108) and safety qualification (IEC 61730-1 and IEC 61730-2).
Justification in the PDD: The PV modules installed in the project have been certified for IEC 61215, IEC 61730-1 and IEC 61730-2).

Steps taken for assessment: Document review was conducted on the technical specification, certificates of design qualifications and safety qualification, the test and commissioning report, and the on-site visit and interviews were conducted at the project site.
Conclusion: Based on the validation processes taken, the validation team confirmed that the PV modules of the project solar PV system have obtained the certificates in compliance with the international standards IEC61215, IEC61730-1 and IEC61730-2 as appropriate. The criterion was therefore fulfilled.

Criterion 3: The equipment to monitor output power of the solar PV system(s) and irradiance is installed at the project site.
Justification in the PDD: Electricity meter and pyranometer have been installed at the international school to monitor output power and irradiance respectively.
Steps taken for assessment: Document review was conducted on the technical specification, the test and commissioning report, and the on-site visit and interviews were conducted at the project site.
Conclusion: Based on the validation processes taken, the validation team confirmed that the monitoring equipment has been installed for output power of the solar PV system as well as irradiance at the project site. Thus the criterion was confirmed as satisfied by the project.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the project applied the valid version of the approved methodology and the applicability was demonstrated to the eligibility criteria as appropriate.

C.4. Emission sources and calculation of emission reductions

<Means of validation>

The project supplies electricity generated by 200 kW solar power generation system installed on the rooftop of school buildings for the self-consumption and displaces electricity purchased from the public power grid system.
ISPP has implemented the project to install rooftop solar power generation systems in two phases. The phase 1 included total 200 kW solar power generation system on the roof of the Secondary School Building A and the Black Box Theatre building and it is applied for the validation to be registered as a JCM project. The phase 2 included total 800 kW solar power generation system on the roof of the other buildings of ISPP and the construction completed in March 2017.

The 200 kW solar power generation system proposed as a JCM project and 800 kW solar power generation system supply electricity for self-consumption by facilities of ISPP and reduce import from the public electricity grid. Approximately 60% of the total electricity consumption of ISPP is supplied by the solar power generation system on weekdays. There are 2 x 1,500 kVA diesel power generators in the school to back up electricity supply from the public electricity grid system.

The project 200 kW solar power generation system together with the Phase 2 800 kW solar power generation system is controlled the output electricity to match with the level of electricity consumption by the school facilities and stops when the total electricity consumption of the school facilities falls below 20 kW in order to prevent reverse electricity flow into the diesel power generators and the public electricity grid under current situation that ISPP is discussing with the electricity company off-taking of surplus electricity. There is more electricity demand than 20 kW for basic consumption of the school facilities, such as air-conditioning in the school offices and server rooms, even on the school holidays and the solar power systems are operated for 365 days a year under normal conditions.

The source of GHG emissions is consumption of grid electricity and CO2 emissions in the reference scenario are considered to determine the reference emissions (REs), while the project emissions (PEs) are assumed to be zero for the solar PV system in accordance with the applied methodology. The annual electricity generation of the project is estimated ex-ante at 296.6 MWh. The estimation is based on the information from the technology supplier, the site conditions and public information in the host country. The default CO2 emission factor for the PV system connected to the national grid of 0.353 t-CO2/MWh is applied. The annual GHG emission reductions (ERs) are calculated using the estimated annual electricity generation of the project: ERs = REs – PEs = 296.6 MWh x 0.353 – 0 = 104.7 t-CO2e. The project started operation from 01/08/2016 and the ERs in the first year of operation are estimated based on the estimated electricity generation in August to December as: 115.4 MWh x 0.353 – 0 = 40.7 tCO2e.

The validation team assessed the documented evidence and confirmed that all the relevant GHG emission sources covered in the applied methodology are addressed, and the steps taken and the equations applied to calculate REs for the proposed project comply with the requirements of the approved methodology.

Through the processes taken, CAR 2 and CL 2 were raised as the resolution detailed below.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

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

Grade / Ref: CAR 2

Nature of the issue raised: The PPs selected default reference CO2 emission factor of 0.533 tCO2/MWh for the project solar PV system but the PV system of the proposed project is connected to the national grid.
Nature of responses provided by the PPs: The PPs confirmed that the project solar PV system is connected to the national grid and the default reference CO2 emission factor of 0.353 tCO2/MWh is applied in the revised calculation.
Assessment of the responses: The validation team confirmed that the default reference CO2 emission factor of 0.353 tCO2/MWh is applied in the revised PDD and the monitoring spreadsheet. The estimated annual ERs of the project is changed to from 158 tCO2 to 104 tCO2. The CAR was closed.

Grade / Ref: CL 2
Nature of the issue raised: The PPs were requested to clarify relevance of ex-ante estimation of GHG emission reductions. The electricity generation of the project PV system by the time of validation on site visit seemed to be in a lower level than the estimation by the technology provider due to the restriction to prevent a reverse power flow to the public electricity grid system when the level of internal electricity consumption is low e.g. on holidays.
Nature of responses provided by the PPs: The PPs clarified that the current level of electricity generation is low but negotiation with the electric power company is underway to allow surplus electricity to flow into the public electricity grid system upon agreement and the level of electricity generation used in the ex-ante estimation of ERs is expected to be achieved.
Assessment of the responses: The validation team confirmed through interviewing the PPs that the PPs are under discussing off-taking of surplus electricity by the electric power company. The validation concluded that the estimated ERs do not need to be changed at the stage even though the actual generation in the first year of operation is in a lower level. The CL was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that:

- The methodology was applied correctly to calculate PEs and REs and no other significant emission source was identified that would be affected and reasonably attributed by implementation of the proposed project but not addressed by the applied methodology;
- The choice of whether an emission source or gas is to be included where the applied methodology allows was reasonably justified by the PPs;
- The Monitoring Plan Sheet (MPS) was not altered and the fields were filled in as required so that all estimates of the REs could be replicated using the data and parameter values provided in the PDD;
- The values for the project specific parameters fixed ex ante listed in the MPS were appropriate

with all the data sources and assumptions and the calculations were correct to the proposed JCM project;
- All assumptions and data used by the PPs were listed in the PDD, including their references and sources; and
- All values used in the PDD were considered reasonable in the context of the proposed JCM project.

C.5. Environmental impact assessment

<Means of validation>

The proposed project is to install 200 kW solar power generation system on rooftop of the existing school buildings and an environmental impact assessment is not required by laws of the host country. The validation team assessed the applicable legal requirements in the host country using its local sources/expertise and confirmed that an environmental impact assessment is not required to be conducted for implementation of the project.

The details of the persons interviewed and documents reviewed are provided in the Section E of this report.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed by assessing the relevant documents and using the local sources/expertise that the project does not need an environmental impacts assessment to be conducted to meet the legal requirement of the host country and the PDD satisfies the requirements of the JCM.

C.6. Local stakeholder consultation

<Means of validation>

The PPs identified the staff of ISPP working at the project site as the main local stakeholders and held a consultation meeting. The staff of ISPP attended the meeting provided comments mainly related to the monitoring activities and the validation. No negative issue was raised through the process.

The details of the persons interviewed and documents reviewed are provided in the Section E of this report.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the PPs have invited comments to the proposed project from the relevant local stakeholders, the summary of the comments received is provided in the PDD in a complete manner and the PPs have taken due account of all the comments received from the local stakeholders as the processes described in the PDD.

C.7. Monitoring

<Means of validation>

The MP consisting of the MPS and Monitoring Structure Sheet (MSS) is based on the approved methodology. The Case 1 is selected for calculation of REs following the applied methodology. The project PV system does not supply electricity to a national grid but the annual business days of the facilities to which the project PV system supplies electricity are 365 days or 366 days. School facilities need electricity supply including the school holidays, e.g. for air-conditioning in the school office, server rooms, etc. Total quantity of the electricity generated in the project is the parameter to be monitored ex-post in the Case 1.

The electricity generated by the project solar power generation system is directly and continuously measured by electricity meters. Electricity meters are installed to measure electricity generation from the solar PV modules on the roof of Secondary School Building A and Black Box Theatre. Type approval is provided for the electricity meter in compliance with IEC 62053-22 and the accuracy class is 0.5s.

The roles and responsibilities of the persons are described in the MSS in accordance with the requirements of the applied methodology. The reading results of electricity meters are monthly recorded, checked by the Operation Administrator, ISPP Director and General Manager (Asian Gateway).

The validation team confirmed that the MP complied with the requirements in the approved methodology and that the PPs will be able to apply the MP following the monitoring arrangements described in it. CAR 1, CL 3, and CL 4 were issued that the details of resolution are as described below.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

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

Grade / Ref: CAR 1

Nature of the issue raised: The MPS needs to be completed for the monitoring parameter (1) The total quantity of the electricity generated with the specific information applicable for the project:

1) Whether the monitoring option B or C is applied,
2) Whether invoice/receipts or measured data is applied as the source of data,
3) Whether the reading of electricity meters is recorded manually or electronically, and
4) Details of the measuring equipment on accuracy level.
Nature of responses provided by the PPs: The PPs revised the relevant parts of the MPS as below.
1) The Monitoring Option is specified as Option C.
2) Source of Data is specified as Measured data.
3) The Measurement method and procedures are added confirmation that the data of electricity generation is measured and recorded electronically.
4) The accuracy level of the electricity meter is indicated as 0.5s.
Assessment of the responses: The validation team reviewed the revised MPS and confirmed the requested information specific to the project is filled for the monitoring parameter. The CAR was closed.

Grade / Ref: CL 3
Nature of the issue raised: The PPs were requested to clarify how the PPs ensure that data monitored and required for verification and issuance be kept and archived electronically for two years after the final issuance of credits.
Nature of responses provided by the PPs: The PPs confirmed that the monitored data will be kept and archived electronically for two years after final issuance of credits and it was added in the revised MPS.
Assessment of the responses: The validation team reviewed the revised MPS and confirmed the requested information specific to the project is filled for the monitoring parameter. The CL was therefore closed.

Grade / Ref: CL 4
Nature of the issue raised: The PPs were requested to clarify responsibility and procedure for managing monitoring points to maintain and control measuring instruments.
Nature of responses provided by the PPs: The PPs revised the MSS and added description of responsibility by Operators to conduct maintenance of electricity meter.
Assessment of the responses: The validation team reviewed the revised MPS and confirmed the requested information specific to the project is filled for the monitoring parameter. The CL was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MP was described in compliance with the requirements

of the approved methodology and the Guidelines for developing PDD and MR, and the PPs have demonstrated feasibility of the monitoring structure and their ability to implement the MP.

C.8. Modalities of Communication

<Means of validation>

The MoC was submitted to LRQA in the form JCM_KH_F_MoC_ver01.0. The MoC nominates Asian Gateway Corp. as the focal point and was signed by the authorized representatives of all the PPs with the contact details. The form used is the latest one as of the time of validation. The validation team assessed the personal identities including specimen signatures and employment status of the authorized signatories through directly checking the evidence for corporate and personal identity of the PPs and their authorised signatories. The validation team also confirmed through reviewing the corporate information of the PPs and by meeting the persons representing the PPs that the information provided in the MoC is correct.

CAR 3 was issued that the details of resolution are as described below.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

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

Grade / Ref: CAR 3

Nature of the issue raised: The PPs were requested to re-submit the MoC completed with the correct information for the focal point entity and the other project participants.

Nature of responses provided by the PPs: The PPs submitted the MoC after amendments.

Assessment of the responses: The validation team reviewed the revised MoC and confirmed the information of the PPs is corrected as appropriate.The CAR was closed.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the MoC was completed using the latest form after assessment conducted on relevance of the MoC in compliance with the requirements of the JCM Guidelines.

C.9. Avoidance of double registration

<Means of validation>

The validation team assessed and confirmed relevance of the written confirmation in the MoC from the PPs that the proposed JCM project was not registered under the other international climate mitigation mechanisms.

The team in addition to the interviews with the PPs checked publicly accessible information of Clean Development Mechanism (CDM), Joint Implementation (JI), Verified Carbon Standard

(VCS) and Gold Standard (GS) and found no identical project as the proposed JCM project in terms of the name of entities, applied technology, scale and the location. The result of researches confirmed that the proposed project was not registered under the other international climate mitigation mechanisms than JCM and it will not result in a double counting of GHG emission reductions.

The details of the persons interviewed and the documents reviewed are shown in the Section E of this report.

<Findings>

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

No issue was raised to the requirements of this section.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

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

C.10. Start of operation

<Means of validation>

The start date for the operation of the proposed JCM project is indicated in the PDD as 01/08/2016.

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

<Findings>

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

Please refer to CL 1 in the above section C.2. The start date of the project operation was changed from 01/10/2016 to 01/08/2016 in the revised PDD.

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

The validation team confirmed that the start date of operation of the proposed JCM project is 01/08/2016 and not before 01/01/2013 as required to be eligible as a JCM project.

C.11. Other issues

<Means of validation>

No issue was identified as relevant element not covered above.

<Findings>

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

Not applicable

<Conclusion based on reporting requirements>

Please state conclusion based on reporting requirements.

Not applicable

D. Information on public inputs

D.1. Summary of public inputs

In line with the JCM Project Cycle Procedure, the PDD is to be made publicly available for 30 days to invite public comments. The PDD was made publicly available in line with the requirements of the procedure for the period of 14/09/2017 to 13/10/2017 as per https://www.jcm.go.jp/kh-jp/projects/30.

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

No comment was received during the above period to receive public inputs.

Thus no action was required to be taken by the PPs to satisfy the JCM requirement.

E. List of interviewees and documents received

E.1. List of interviewees

International School of Phnom Penh (ISPP)

Michael Hodgson, Operations Administrator

Sam Ol Kong, Building/Ground Manager

Vichet Kem, MEP Engineer, Maintenance

Asian Gateway Corporation

Tomonori Kimura, Founder & CEO

Yuma Nagata, Director, International Consulting Department

Ly Bunheng, Application Engineer, Energy Division

Meach Makara, Sales Manager, Project Development

Environmental Resource Management (ERM) Japan Ltd.

Tsuyoshi Nakao, Group Leader, Sustainability Management Team

E.2. List of documents received

Category A documents (documents prepared by the PP)

- PDD Version 01.0 dated 11/09/2017 with the monitoring spreadsheet
- Revised PDD Version 02.0 dated 15/12/2017 with the monitoring spreadsheet
- MoC dated 24/10/2017 and revised one dated 22/11/2017
- Project implementation plan and schedule
- Installation details and authorization request of system design and connection to main electricity distribution system of ISPP, Solar Partners Asia
- Delivery specifications for 200 kW Asahi Glass Solar System ISPP Phase 1, Solar Partners Asia
- EPC contract agreement
- Specification of photovoltaic module, Light joule, Asahi Glass Co., Ltd.
- Specification of String Inverter SUN2000-33KTL, Huawei
- Technical specification of DIRIS A20 Multifunction meters - PMD, Socomec S.A.
- Technical specification of Silicon-cell Pyranometer, Kipp & Zonen BV
- User manual
- Photographs of project construction
- Estimation of solar power generation
- Useful lifetime based on the act of Japan's Ministry of Finance for calculation of useful lifetime for depreciation and amortization
- Depreciation period of solar power generation system
- Commissioning Report, Sharp Solar Solution Asia Co., Ltd.
- Asahi Glass Limited Warranty Certificate
- Huawei String Inverter Warranty and Service Condition
- Single Line Diagram
- Certificate by TUV Rheinland No. PV 50285520 to IEC 61215:2005 dated 23/06/2014
- Certificate by TUV Rheinland No. PV 50285522 to IEC 61730-1:2004 and IEC 61730-2:2004 dated 23/06/2014
- Attestation of Conformity No. AC 1039 PRO, Socomec S.A. dated 04/07/2011 for DIRIS A20 following specifications IEC 62053 class 0.5s active energy
- Explanation on the monitoring structure and process
- Sub-degree #72 ANRK.BK on Environment Impact Assessment Process (PDF) 990881, Council of Minister for the Development of Cambodia dated 11/08/1999
- Report of local stakeholders' consultation meeting dated 07/09/2017

Category B documents (other documents referenced)

- JCM_KH_AM002_ver01.0 Installation of Solar PV System, Ver 01.0
- JCM Project Cycle Procedure JCM_KH_PCP_ver03.0
- JCM Guidelines for Validation and Verification JCM_KH_GL_VV_ver01.0
- JCM Guidelines for Developing PDD and MR JCM_KH_GL_PDD_MR_ver02.0 and JCM_KH_GL_PDD_MR_ver03.0
- JCM Glossary of Terms JCM_KH_Glossary_ver01.0
- JCM PDD Form JCM_KH_F_PDD_ver02.0 and JCM_KH_F_PDD_ver03.0
- JCM MoC Statement Form JCM_KH_F_MoC_ver01.0
- JCM Validation Report Form JCM_KH_F_Val_Rep_ver01.0
- Approved Small Scale CDM Methodology AMS I.D. Version 18.0 Grid connected renewable electricity generation
- Approved CDM Methodological Tool to calculate the Emission Factor for an electricity system
- Proposed and registered projects under CDM, VCS, Gold Standard, and the other international schemes
- IEC 62053-22:2003, Electricity metering equipment (ac) - Particular requirements. Part 22: Static meters for active energy (classes 0,2 S and 0,5 S)

Annex Certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers

Please attach certificates or curricula vitae of TPE's validation team members, technical experts and internal technical reviewers.

Certificate of Appointment is attached to this report.

Joint Crediting Mechanism Certificate of Appointment

Title of Project: Validation for Introduction of Ultra-lightweight Solar Panels for Power Generation at International School (KH001)

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

Name of Person	Assigned Roles
Michiaki Chiba	Team Leader
Stewart Niu	Technical Reviewer

Signed by

[redacted]

Michiaki Chiba
Climate Change Manager – Asia & Pacific
10/10/2017