
VALIDATION REPORT (rev.4.3)

**"Programme of Activities to introduce renewable energy
system into collective housing, Republic of Korea"**

REPORT No. : 2011-11A

KSA KOREAN
STANDARDS
ASSOCIATION

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ABBREVIATIONS

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification Request
CME	Coordinating and Managing Entity
CO₂	Carbon dioxide
CPA	Component Project Activity
CPA-DD	CPA-Design Document
DNA	Designated National Authority
DOE	Designated Operational Entity
GHG	Greenhouse gas
GWP	Global Warming Potential
KEPCO	Korea Electric Power Co. Ltd.
KSA	Korean Standards Association
FAR	Forward Action Request
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MP	Monitoring Plan
MoV	Means of Validation
NGO	Non-Governmental Organization
ODA	Official Development Assistance
OM	Operating Margin
PoA	Programme of activities
PoA-DD	Programme of Activities-Design Document
PP	Project Participant
UNFCCC	United Nations Framework Convention on Climate Change
VVS	CDM Validation and Verification Standard

0. VALIDATION OPINION

Korean Standards Association (KSA) has carried out validation of the "Programme of Activities to introduce renewable energy system into collective housing, Republic of Korea". The proposed program of activities is to generate electricity for captive use by installing photovoltaic power plants. The validation has been performed on the basis of UNFCCC criteria for the Clean Development Mechanism and the host country criteria.

According to the standard audit technique defined in the 'Validation and Verification Standard (EB70)', the validation has been performed by desk review based on the program of activities design document and other additional documents, follow-up actions including on-site assessment and interviews with project stakeholders, and resolution of issues and the preparation of the validation report.

Emission reductions attributable to the proposed PoA are additional to any that would occur in the absence of the program of activity. Given that the PoA is implemented as designed, the CPA under the same are likely to achieve emission reductions.

Validation team also confirmed that monitoring and management plans are clearly defined and adequate.

In KSA's opinion, the proposed PoA meets all relevant UNFCCC requirements for CDM, is eligible as a category I small-scale CDM program of activity, and correctly applies the approved simplified baseline and monitoring methodologies AMS-I.F. (ver.02). Hence, KSA requests the registration of the "Programme of Activities to introduce renewable energy system into collective housing, Republic of Korea" as a CDM program of activity.

Dec 27th, 2012



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1. INTRODUCTION

Korea Land & Housing Corporation (hereafter LH corporation), one of the PPs, is a well-known public organization in the host country. Major duty of the organization is to supply housing units to the vulnerable to improve their residential environment¹⁾. To gratify the duty, LH corporation has developed plan to introduce renewable energy sources at the collective housings that they have been constructed.

Ecoeye Co., Ltd. (consulting firm, one of the project participants of the proposed PoA) has contracted Korean Standards Association (hereafter, KSA) to carry out a validation of the proposed CDM PoA project "Programme of Activities to introduce renewable energy system into collective housing, Republic of Korea" (hereafter, the program of activity) and the Component Project Activity (CPA) template with generic information applicable to all CPAs under that PoA and the associated real case CPA-DD. This report summaries the findings over the validation process that has been performed on the validation requirements of the Clean Development Mechanism (CDM).

1.1 Objective

The purpose of validation process is to ensure a thorough, independent assesment of proposed program of activities submitted for registration as a CDM PoA, and the Component Project Activity (CPA) template with generic information applicable to all CPAs under that PoA and the related real case CPA-DD against the applicable CDM requirements. In particular, the project's baseline, monitoring plan and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. And also validation of the Programme of activities (PoA) has the completed CPA-DD for specific CPA with the title "PV power plants projects on collective housing of 2011– <2011-LH-001-01457>" submitted together with the generic CPA-DD. The validation is seen as necessary to provide assurance to stakeholder regarding the quality of the program of activities and its intended generation of certified emission reduction (CERs).

1.2 Scope

The scope of the validation is defined as an independent and objective review of the proposed Program of Activities (PoA), the generic Component Project Activity (CPA) template, the initial CPA-DD and the relevant documents. The information in these documents is reviewed against the criteria stated in

- Kyoto Protocol (decision 17/CP.7) : Article 12 and the CDM modalities and procedures
- Marrakech Accords,
- Simplified modalities and procedures for small-scale CDM project activities

1) http://world.lh.or.kr/englh_html/englh_about/about_2.asp

- Relevant decisions of the COP/MOP and the CDM Executive Board
- Approved baseline and monitoring methodology AMS-I.F. (ver.02)

The KSA validation team follows a risk-based approach in the validation focusing on the identification of significant risks for project implementation and generation of certified emission reductions (CERs). Validation is no meant to provide any consulting toward the CME, CPA implementer(s) and project participants. However, the corrective action requests (CARs) and clarifications (CLs) may have provided input for improvement of the project design.

1.3 Validation Team

The validation has been performed by the following personnel;

<i>Role/Qualification</i>	<i>Name</i>	<i>Document Review</i>	<i>Site Visit</i>	<i>Follow-up Actions</i>	<i>Reporting</i>	<i>Technical Review</i>
Team Leader CDM Validator	Mr. Seung-Keun Choi	✓	✓	✓	✓	
Team Member CDM Validator	Mr. Kyoo-II Sohn	✓	✓	✓		
Team Member CDM Validator	Mr. Seong-Yong Park	✓		✓		
Team Member Technical Expert	Mr. Chung-Kook Lee	✓	✓	✓		
Technical Reviewer	Mr. Chan-Sik Yun					✓

For the qualification of individual team members, see appendix B

2. METHODOLOGY

To assess the correctness of the information provided by the project participants, the validation consists of the following three phases;

I . Review of Documents, including;

- Review of data and information to verify the correctness, credibility and interpretation of presented information;
- Cross checks between information provided in the PoA-DD /1/, the generic CPA-DD template (part II of PoA-DD) /2/, the real case (initial) CPA-DD /3/ and information from sources other than that used, if available, and if necessary independent background investigations.

II. Follow-up actions, including;

- Interview with relevant stakeholder in the host country, personnel with knowledge of the project design and implementation;
- Cross-check of information provided by interviewed personnel to ensure that no relevant information has been omitted the validation

III. The resolution of outstanding issues and the issuance of the final validation report and opinion.

Validation Protocol Table 1: Requirement checklist				
Checklist Question	Reference	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in five different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to noncompliance with the checklist question (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final Conclusion".

Figure 1 Validation Protocol Tables

2.1 Review of Documents

The validation is performed by KSA primarily based on the review of the PoA-DD /1/, the generic CPA-DD /2/, the real case CPA-DD /3/ and the other supporting documents. The PoA-DD version 01, dated 29/08/2011, was initially reviewed and KSA requested the project entity to present the supporting information and documents. Such additional information and documents were also reviewed by KSA. Through the validation process, the PoA-DD /1/, the generic CPA-DD /2/, the real case CPA-DD /3/ and relevant documents were evaluated to confirm the actions taken by the

project entity to the CARs and CLs issued by KSA.

2.2 Follow-up Actions including Interviews

After desk review, validation team has conducted on-site assessment including interviews with the stakeholders and monitoring personnels on 12/04/2012 and 13/04/2013 as follows:

No.	Site	Date of visit	Topics
1	Headquarter of CME (CPA implementer also)	12/04/2012	CME manual and implementation records
2	Anyang Gwanyang	12/04/2012	Interview with monitoring personnel Physical inspection Monitoring and recording procedure Stakeholder consultation Environmental Impact Baseline Scenario
3	Osan Cheongho(1,2BL)	12/04/2012	
4	Jecheon Gangjeo(A2BL)	13/04/2012	
5	Chungju Yeonsu(2)	13/04/2012	

Although initial CPA has 15 sites, validation team selected only 4 sites to visit. Procedure to determine size of sample site has been provided in A.5.6, Table 1 of Appendix A in this report. Physical information and operational issues for other 11 sites have been verifiable by review of CME's operation records /7/, especially technical review for initial CPA inclusion /7-2/ and training records for CPA implementers /7-5/.

Validation team also reviewed following documents for each site and concluded that physical and technical features of all 15 sites are homogeneous:

- Statement of Installed Items /20/
- Inspection Certificate prior to Operation /21/
- List of PV module serial numbers /22/
- Certificate of New&Renewable Energy Facilities for PV modules /23/
- Test Report of Installed Inverters /24/
- Single Line Diagram /28/

The list of persons interviewed is included in the section 5. reference.

2.3 Resolution of clarification and corrective action requests

As an outcomes of the validation process, the validation team can raise Corrective Action

Requests (CAR) and Clarifications (CLs) in order to confirm that the proposed program of activities meets the CDM requirements and can achieve credible emission reductions. CARs and CLs require the project participants to modify the program design, to rectify the PoA-DD /1/, the generic CPA-DD /2/, the real case CPA-DD /3/ or to provide adequate additional explanations or evidence. Criteria for CARs and CLs are as follows and are based on the "Clean Development Mechanism Validation and Verification Standard (EB70 Annex 3)" /10/.

- Corrective Action Request (CAR) shall be raised if one of the followings occurs;
 - a) The project participants have made mistakes that will influence the ability of the program of activities to achieve real, measurable additional emission reductions;
 - b) The CDM requirements have not been met;
 - c) There is a risk that emission reduction cannot be monitored or calculated.
- Clarification (CL) Request shall be raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

KSA validation team has identified 29 CARs. The resolution of CARs raised by KSA is to be reflected in the revised PoA-DD and generic CPA-DD, and submitted to KSA validation team for conclusion.

2.4 Internal Quality Control

After validation team prepared draft validation report, the person in charge of internal quality control process of KSA designated Mr. Chan-Sik Yun, who has been qualified by KSA's internal procedure, as a technical reviewer to review validation report and relevant documents prior to the submission of the report to the project participants and UNFCCC CDM secretariat. As a result of the review, validation report has been revised.

3. VALIDATION FINDINGS

In this section, means of validation and validation findings for each criteria are stated, in line with VVS (EB70 Annex3). Additional validation approaches are described in the validation protocol, appendix A of this report.

3.1. Global Stakeholder Consultation

The PoA-DD was initially made available on the UNFCCC website and was open for comments from Parties, stakeholder and NGOs from 01 Sep 2011 until 30 Sep 2011. However, KSA decided to proceed additional consultation process because initial version of PoA-DD did not provide enough information about the program, so revised PoA-DD was opened from 15 Feb 2012 to 15 Mar 2012.

By the way, during validation process, one of the applied methodology AMS-I.C. has been excluded, and only AMS-I.F. has remained. In accordance with paragraph 19 of CDM Project Cycle Procedure, KSA published revised PoA-DD under VVS track on UNFCCC website from 22 Nov 2012 to 21 Dec 2012.

No comments were received throughout all three consultation processes.

3.2 DNA Approval

From the PPs, validation team has received the Letter of Approval /9/, issued by host party's (Republic of Korea) DNA, dated on 05/07/2012. Precise project title is identified in the Letter of Approval, and it clearly states followings:

- (i) Host party has ratified Kyoto Protocol
- (ii) The project is voluntary
- (iii) The project contributes to sustainable development in the host party

To verify received LoA, validation team made phone call to the administrative personnel of DNA, and he confirmed that the LoA is effective.

3.3 Authorization

The PoA-DD identified that Korea Land & Housing Corporation, CME of the proposed programme of activities, and Ecoeye Co., Ltd. have been involved for the program of activities as the

participants. Both are organizations in the host party, which is non-Annex I country. Both PPs are consistently stated not only in section A.3 but also the other parts of the PoA-DD.

In addition, validation team has confirmed that Korea Land & Housing Corporation and Ecoeye Co., Ltd. are also exactly listed in the Letter of Approval issued by host party's DNA

As a result, validation team has confirmed that the project participants have been consistently listed in the project documentation.

3.4 Sustainable Development

Letter of Approval /9/ issued by host party's DNA states that the proposed program contributes to sustainable development in Korea. Validation team has received the LoA by the PPs, and confirmed it by contacting administrator of DNA.

3.5 Modalities of Communications

3.5.1 General

By review of written confirmation /30/ and on-site interview, validation team confirms that the MoC statement /29/ submitted to KSA is in accordance with the requirements established in VVS.

3.5.2 Modalities of Communications Statement

Validation team confirms that MoC statement /29/ provided by the PPs complies with all relevant forms and requirements.

3.6 Program of activities Design Document

The PoA-DD and the CPA-DD template are in compliance with relevant form and guidance as provided by UNFCCC. The most recent version of the forms are used.

KSA confirms that the guideline for the completion of the PoA documents in their most recent version under VVS track have been followed. Relevant information was provided by the Coordinating and Managing Entity and/or project participants in the applicable PoA Section.

3.7 Project Description

Project Description

The information presented in the PoA-DD on the technical design are consistent with the actual planning and implementation of the program of activities as confirmed by;

- Review of following document provided by the PPs:
 - PoA-DD /1/
 - Excel Spreadsheets for calculation of the operating/build margin emission coefficient /4/
 - Plan for PV and solar thermal CDM program of activities from 2011 /6/
 - CDM Operation Manual /7/ and CME's technical review record for CPA inclusion /7-2/
- On-site assessment has been performed including interviews with relevant personnels.

In the view of the above, KSA confirms that the project description as included in the PoA-DD is sufficiently accurate and complete in order to comply with the requirements of the CDM

Choice of Crediting Period

Section D.2 of the PoA-DD defined crediting period of the proposed program as 28 years. In accordance with paragraph 197 of Validation and Verification Standard (ver.3.0), validation team confirms that the choice of crediting period for the proposed PoA is appropriate.

3.8 Application of Selected Methodology

3.8.1 Applicability of selected methodology

For AMS-I.F.(ver.02) /11/, the program of activities meets the following applicability conditions:

- Electricity production from renewable sources.
- Displace electricity from the grid.
- Produced electricity is supplied to end user, not to the grid.
- Installed capacity is less than 15MW

Section B.3 of the PoA-DD demonstrates how the proposed program of activities meets the applicability conditions. To assess eligibility of the program of activity, validation team carried out following activities:

- *Review of following document*
 - PoA-DD /1/

- Applied methodology AMS-I.F. (ver.02) /11/
- Plan for PV and solar thermal CDM program of activities from 2011 /6/
- CDM Operation Manual /7/
- *On-site assessment at CME's office and initial CPA sites, including interviewed people who related to the initial CPA.*

As a result, validation team confirms that the proposed PoA is eligible for selected methodology AMS-I.F. (ver.02), with the findings below:

- Eligibility criteria for CPA inclusion in the PoA-DD defines assessment conditions reflecting applicability conditions of the methodology;
- Chapter 6 of the CME's CDM operation manual reflects the eligibility criteria

3.8.2 PoA Boundary

Section A.5 of the PoA-DD defined that the geographical boundary of the proposed PoA is limited into the territory of Republic of Korea. Electricity generated by the proposed PoA will displace electricity would otherwise be supplied from KEPCO grid, which is also in the territory of Republic of Korea. Validation team confirms that boundary of the PoA is appropriate.

Project boundary at CPA level has been defined in section B.3, Part II of PoA-DD, as physical, geographical site of renewable generating unit, facilities consuming the generated electricity, and all power plants connected physically to the electricity system that the project power plant is connected to. Validation team confirms that this definition of project boundary at CPA level is in accordance with applied methodology AMS-I.F. (ver.02)

3.8.3 Baseline Scenario Identification and Description

Baseline Emission determined in the Methodology

According to the applied methodology AMS-I.F. (ver.02), baseline emission can be calculated by amount of electricity production and emission factor. Section B.4, Part II of the PoA-DD describes baseline for the proposed program in accordance with the applied methodology.

Emission Factor for Electricity Consumption

The ex-ante grid emission factor determined in B.6.1, Part II of PoA-DD will be fixed for the

selected crediting period. Since the program of activities is the installation of a new renewable power plant, the baseline scenario is correctly identified as electricity displaced from the grid by the program of activities by the combined margin (CM) calculation described in the "Tool to calculate the emission factor for an electricity system (ver.3.0)" /14/, namely "the net electricity amount by the project activity" multiplied by "CM factor". For this purpose it has been validated by KSA validation team that the project participant applied all the 6 steps as per the approved baseline methodology.

Since the Korean electricity system is not constituted of layered dispatch system, the grid is considered for the determination of a baseline grid electricity emission coefficient (EF_{CO_2}).

At first, the PPs have selected year of 2008, 2009, and 2010 to calculate operating margin (OM). According to the "Tool to calculate emission factor for an electricity system (ver.3.0)" /14/, to calculate simple OM, 3-year generation-weighted average based on the most recent data at the time of submission of the PoA-DD to the DOE shall be used. The initial version of PoA-DD has been submitted to KSA in Sep. 2011, while "The status report of generation facility for 2010" /16/, which is essential information to calculate OM, has been published on July 2011. In this reason, validation team has concluded that the selection of 2008~2010 for OM is appropriate.

Step 1: Identify the relevant electric power system

The electricity by the proposed project activity is connected physically to KEPCO grid which is the only one in Korea. And the power plant in islands except Jeju Island are not connected to the KEPCO grid, so they are not considered. Thus, the relevant electric power system is KEPCO grid.

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)

"Option I. Only grid power plants are included in the calculation" was chosen.

Step 3: Select an Operation Margin (OM) Method

As low-cost/must-run resources constitute less than 50% of total grid generation in average of the five most recent years, "Simple OM" method option has been chosen.

During the most recent 5 years (2006 ~ 2010), low-cost/must run resources constitute 37.78% of total grid generation which is less than 50%.

Step 4: Calculate the operation margin emission factor according to the selected method.

According to the selected method, simple OM is calculated as the generation-weighted average emission per electricity unit of all generating power plant within KEPCO grid, not including low-operating cost and must run power plants for the most recent three years (2008 ~ 2010).

Subsequently choosing Option A, the simple OM emission factor is determined as per formulae

of tool as OM = 0.6933

Step 5: Calculate the build margin (BM) emission factor

In the calculation of build margin, capacity additions of the most recent plants contributing to 20% of the total generation are used. Since 20% falls on part capacity plants contributing to 20.078% of the total generation have been considered during build margin calculations.

The approximate operation margin is calculated as average of data available for three years 2008, 2009 and 2010, which is the most recent statistics available at the time of CDM-PoA-DD submission to the DOE for validation. The build margin is calculated using data of 2010.

BM is calculated as the generation-weighted average emission factor of all generating power plant within KEPCO grid during the most recent year y for which power generation data is available. BM emission factor is determined as per formulae of tool as BM = 0.6357.

Step 6: Calculate the combined margin (CM) emission factor.

According to "Tool to calculate the emission factor for an electricity system (ver.3.0)", the weighting factor is set to be respectively $W_{OM} = 75\%$ and $W_{BM} = 25\%$.

The combined margin (CM) of the project activity is calculated as 0.6789 tCO_{2-eq}/MWh. The baseline emission factor determined ex-ante will be used for calculation of emission reductions.

OM	BM	CM
0.6933	0.6357	0.6789

All steps and formula mentioned in the methodology are properly applied in the PoA-DD. There is no transfer of energy generating equipment from another activity or the transfer of exiting equipment to another activity. The emission reduction by the project will be direct function of the net electricity fed to the KEPCO grid.

The power sector data used for the calculation has been cross checked as follows;

- Each power plant of the electric generation amount : "Statistics of Electric Power in Korea" /17/ and "The status report of generation facility" by KPX /16/.

"Statistics of Electric Power in Korea" for 2008, 2009 and 2010 have been verified with KEPCO website (<http://www.kepco.co.kr>), i.e. those were issued by KEPCO (Korea Electric Power Corporation) on May 2009, May 2010 and May 2011 respectively. The "Status Report of the Generation Facility in Korea for 2010" /16/ was published on July 2011, which is most recent data for the PPs at the time of PoA-DD preparation.

Thus, "Statistics of Electric Power in Korea" for 2008, 2009 and 2010 were the most recent available data sources at the time of PoA-DD submission to KSA for validation as per "Tool to

calculate the emission factor for an electricity system (ver.3.0)" /14/

- Each Fuel of CGVs and NCVs : "Energy Act" /18/ and IPCC guideline on greenhouse gas inventories.

As above, KSA confirmed that all data used for the calculation are not excessive and appropriate.

All the equations involved along with the KEPCO grid power sector data used for calculation were found by the validation team to be in line with the "Tool to calculate the emission factor for an electricity system (ver.3.0)" /14/.

The grid emission factor (CM) has been validated as 0.6789 tCO₂/MWh, the same value has properly been used in the emission reduction calculation as per the requirement of AMS-I.F. (ver.2).

Conclusion

Based on the validated assumptions on calculations, KSA considered the identified baseline scenario is reasonable. KSA confirms that all related CDM requirements, including relevant and/or sectoral policies and circumstances, have been correctly identified taken into account in the definition of the baseline scenario. A verifiable description of the baseline scenario has been included in the PoA-DD, KSA confirms that:

- All the assumptions and data used by the project participant are listed in the PoA-DD, including their references and sources;
- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PoA-DD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD;
- The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity

3.8.4 Algorithms and/or formulae used to determine emission reductions

Section B.6, Part II of PoA-DD defined equation to calculate emission reductions in accordance with applied methodology.

Baseline Emission

According to paragraph 14 of AMS-I.F. (ver.02), baseline emission is calculated by following equation:

$$\text{Baseline Emission } (BE_y) = EG_{BL,y} \times EF_{CO_2,y}$$

where,

$EG_{BL,y}$ is quantity of net electricity displaced,

$EF_{CO_2,y}$ is emission factor for electricity system

According to section B.6.1, Part II of PoA-DD, expected amount of net electricity production, $EG_{BL,y}$, has been calculated by considering capacity of the plant and load factor. By review of PoA-DD and emission reduction calculation spreadsheet /5/, validation team confirmed that the calculation of baseline emission is in accordance with applied methodology.

Project Emission

No project emission sources are identified. Validation team confirmed it after on-site assessment.

Leakage Emission

No leakage emission sources are identified.

Conclusion

Emission reduction is calculated by:

$$\text{Emission Reductions} = \text{Baseline Emission} - \text{Project Emission} - \text{Leakage Emission}$$

where, Project Emission, Leakage Emission = 0

In summary, the calculation of emission reduction are considered correct and the baseline methodology has been correctly applied according to the relevant requirements.

- All the assumptions and data used by the project participants are listed in the PoA-DD, including their references and sources;
- All documentation used by project participants as the basis for assumptions and sources of data is correctly quoted and interpreted in the PoA-DD;

- All values used in the PoA-DD are considered reasonable in the context of the proposed CDM program of activity.
- The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PoA-DD.

3.8.5 Additionality of PoA

3.8.5.1 Starting date of PoA and initial CPA

Section D.1 of the PoA-DD defined the starting date of PoA as 01/09/2011 when the initial version of PoA-DD has been opened on the CDM website for global stakeholder consultation. By review of construction contracts for initial CPA /15/, validation team confirmed that starting date of initial CPA is 19/09/2011, after the starting date of PoA.

3.8.5.2 Additionality of PoA

At first, section B.1 of the PoA-DD stated that additionality would be demonstrated at CPA level, in accordance with paragraph 73 of EB 47th meeting report.

To assess demonstration of additionality for the proposed PoA, validation team has reviewed EB 47th meeting report, "Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (ver.2.1, EB70 Annex5)" /12/, and VVS (ver.3.0, EB70) /10/.

According to paragraph 7 of the "Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (ver.2.1, EB70 Annex5)" /12/, PoA-DD demonstrates that CPA would not be implemented without CDM because there is no regulation that compels the PPs to install renewable energy sources. Validation team confirms this demonstration in that DNA of host party (Republic of Korea) states in the LoA that the proposed PoA is voluntary.

According to the paragraph 2 of the "Guidelines on the Demonstration of Additionality of Small-Scale Project Activities (ver.9.0, EB68 Annex27)" /13/, off-grid renewable energy generation project up to 15MW is automatically additional. The proposed PoA is to install PV power plant less than 15MW for captive use.

In accordance with paragraph 9 and 11 of the "Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (ver.2.1, EB70 Annex5)" /12/, eligibility criteria for CPA inclusion, defined in the B.2 of the PoA-DD and CME's CDM Operation Manual, correctly reflects eligibility conditions described in above paragraph.

In conclusion, the proposed program of activities is additional.

3.8.6 Assessment of Prior Consideration of the CDM

According to paragraph 29 of CDM project standard, the demonstration and assessment of prior consideration of the CDM is not applied to PoA.

3.8.7 Monitoring Plan

According to the applied monitoring methodology AMS-I.F. (ver.02), monitoring parameter is the quantity of net electricity displaced. Section C and B.6.2, Part II of PoA-DD defined parameter to be monitored complying with the methodology. After desk review and on-site assessment, validation team concluded that proposed monitoring plan described in the PoA-DD is appropriate, and CME can ensure successful operation of the plan.

1. Monitoring System at the PoA Level

To confirm monitoring plan, validation team reviewed PoA-DD, "Plan for PV and solar thermal CDM program of activities from 2011" /6/, CDM Operation Manual /7/ and its implementation records /7-1 to 7-16/, and conducted on-site assessment including interviews with relevant personnels at CME's office and selected sites in the initial CPA.

1.1 Organizational Structure

CME's CDM Operation Manual /7/ provides form for "Agreement for CPA inclusion" which guarantees effectiveness of Operation Manual /7/ to any CPA implementer. Section C of PoA-DD described that any CPA implementer is required to sign on the agreement. Considering the manual appropriately defined (i) roles, responsibilities and competence procedure, (ii) monitoring and reporting procedure, and (iii) education and training procedure for CPA implementers, as described in 3.11.1 below, validation team concluded that organizational structure for successful operation of the proposed program is appropriate.

1.2 Competence of Human Resources

As described in section 3.11.1 below, CME's CDM Operation Manual appropriately defined competence requirement and training procedure for relevant personnel related to the program, and validation team reviewed operation records /7-5/ of the procedures. As a result, validation team confirms that the proposed PoA can ensure competence of human resources.

1.3 Monitoring Data Management

CDM Operation Manual /7/ defines parameters to be monitored, level of accuracy, responsibilities and reporting process. The amount of electricity generation is recorded in the computer at each CPA site, and reported to CME in accordance with monitoring procedure in the manual. Reported data is controlled in accordance with document and data control procedure in the manual. After review of the procedures in the manual and operation records, validation team concluded that data management system is appropriately developed and has been operated.

1.4 QA/QC System

Section B.7.2, Part II of PoA-DD defined calibration frequency as 3 year, in accordance with "General Guidelines for SSC CDM Methodologies" /26/. This is also consistently defined in the CDM Operation Manual /7/. Calibration procedure and internal audit procedure have been developed in the Operation Manual /7/. As described in section 3.11.1 below, validation team confirmed that the procedures and operation records /7-8/7-13,-14,-15/ are appropriate, so CME can ensure successful operation of QA/QC system.

2. Monitoring Plan at typical CPA Level

CDM Operation Manual /7/ developed by the CME includes monitoring equipment management, record control and QA/QC procedures to ensure monitoring plan described in the generic CPA-DD (Part II of PoA-DD template).

2.1 Monitoring Equipments

B.7.1, Part II of PoA-DD defined that accuracy level of monitoring parameter - quantity of net electricity production - is $\pm 3.0\%$ of permissible error, complying with "Guideline for the Support on the New & Renewable Energy Equipments" by Ministry of Knowledge and Economy /27/. To ensure this, eligibility criterion 4 defined in the PoA-DD requires that certified inverters would be installed. Validation team concluded that this arrangement is appropriate to ensure accuracy level of monitoring.

CME provides CPA implementers CDM Operation Manual /7/, including "Maintenance Record Registry" /7-4/ and "Monitoring Equipment Management Registry" /7-8/. As described above and in

section 3.8.1 below, CDM Operation Manual /7/ has been appropriately developed and the manual is also effective to the CPA implementers. After review of documents and on-site assessment, validation team concluded that monitoring equipments can be managed in accordance with the monitoring arrangement developed by CME, to ensure accuracy level of measurement.

2.2 Records Control

Monitoring data, amount of electricity generation, is recorded in computer system at each site, so validation team concluded that measurement and recording procedure do not have considerable risk. "Chapter 9. Monitoring" procedure in the manual /7/ defined the CPA implementers to report data to CME regularly, and to keep all monitoring data up to 2 year after crediting period. Considering organizational structure, competence requirements, training procedures and operation records /7-5/7-11/ of these procedures are appropriate as described in 3.11.1 below, validation team concluded that records control procedure is appropriate and can be successfully implemented, and description in the generic CPA-DD is also appropriate.

2.3 QA/QC procedure

Calibration procedure in the CDM Operation Manual /7/ is also applied to the CPA implementers. as described above, validation team confirmed that QA/QC procedure described in the generic CPA-DD is appropriate.

3.9 Environmental Impacts

The PoA-DD defines that environmental impact assessment would be carried out at CPA level. Same as local stakeholder consultation, environmental impact is likely to be limited to the project site and surroundings, so validation team confirmed that it is appropriate.

However, according to appendix 1 of the "Enforcement Rule of Environmental Impact Assessment Act" /19/, EIA is required for photovoltaic power plant only when capacity is more than 100,000 kW, higher threshold than 15 MW of eligibility condition for the program. In this reason, CME implementer does not have to conduct EIA for their potential CPA.

3.10 Local Stakeholder Consultation Process

Section F of PoA-DD defined that local stakeholder consultation would be carried out at CPA level. Considering that potential stakeholder of any photovoltaic project activity at collective housings is not national-wide, but mostly limited to local residents, validation team concluded that it is appropriate

for CME to carry out local stakeholder consultation process at CPA level.

Section D.2 of initial CPA-DD described that implementation of initial CPA had been noticed on the CPA implementer's webpage since 23/08/2011, but no comments had been received.

To validate adequacy of the process, validation team has carried out following assessment:

- Visited CME's webpage²⁾ to confirm date and contents of the notice;
- Interviewed with CME staff to confirm comments received;
- Interviewed with residents who lived in the sites.

As a result, validation team states that local stakeholder consultation process was appropriate, and no negative opinion had been raised.

4 Specific Validation Activities for PoA

4.1 CME's Management System

Korea Land & Housing Corporation (CME) has registered the CDM project activity - "Korea Land & Housing Corporation (LH Corporation)'s National Rental House PV power plant bundling CDM project" (reference no. 5251). The registered project is also to introduce PV power plants at the collective housing for captive use, applying same methodology AMS-I.F. (ver.02). By interviews with CME staffs, validation team found that monitoring and reporting of emission reduction for the registered project has also been implemented by same department and personnel of the CME.

CME has developed CDM Operation Manual /7/ and implemented for the sites where construction had been finished. The manual consist of following major criteria:

No.	Title	Remarks
1	Roles, Responsibilities and Competencies	This chapter defines role, responsibility and competence requirements for the CME staffs and CPA operators. Taking into account availability of human resources in the CME and CPA implementer, validation team reviewed and concluded that the chapter appropriately defined roles and responsibilities. In addition, competence requirements are appropriate to ensure successful operation of CME's processes. Validation team has also reviewed operation records of this chapter and confirmed that appropriate personnels have been designated.
2	CPA Inclusion and Management	Eligibility criteria for CPA inclusion including avoidance of

2) http://www.lh.or.kr/lh_html/lh_service/service_1_1_view.asp?BD_IDX=166

		double counting, defined in the PoA-DD, have been fully reflected in this chapter. Validation team has reviewed record of technical review /7-3/, conducted to determine whether initial CPA is eligible to be included in the PoA. CME has conducted appropriate assessment for inclusion, with objective evidences.
3	Education and Training	This chapter defines frequency, minimum contents and trainees. Validation team concluded that this procedure is appropriate. Validation team also confirmed that not only CME staffs but also all CPA operators have been trained in accordance with this procedure. Training records /7-5/ and material /7-5/ have been provided as the evidences.
4	Monitoring	This chapter defines parameters to be monitored, level of accuracy, responsibilities and reporting process. Validation team reviewed this chapter and concluded that the CME can ensure appropriate operation of monitoring system. In addition, the amount of electricity generation are recorded in the computer at each CPA site. In accordance with this procedure, CPA implementer shall report monitored data to CME regularly. Validation team reviewed monitoring data registry /7-6/ and raw datasheet /7-6/ reported by each CPA implementer.
5	Calibration	This chapter defines roles & responsibilities for calibration, minimum frequency, and calibration record control procedures. Validation team confirms that the procedures are appropriate. In accordance with this chapter, CME has managed monitoring equipment registry /7-8/ that provides initial installation date of each monitoring equipments, date of last calibration, and result of calibration. By review of the record, validation team concluded that CME has ability to manage monitoring equipments.
6	Internal Quality Control	This chapter defined competence requirements for internal auditors, minimum frequency of internal audit, and implementation procedure. Validation team reviewed internal audit report and confirmed that the procedure has been appropriately implemented.
7	Continuous Improvement	Continuous improvement process has been appropriately developed.
8	Documents and Data Control	This chapter defines general principles, class of documents, and control procedure. In case any CPA implementer is different organization from CME, agreement between CME and CPA implementer is required to guarantee effectiveness of

		CME's CDM Operation Manual /7/ into the CPA. In this case, CPA implementer can ensure that document and data control procedure is in line with CME's system. Validation team reviewed the requirements and implementation records /7-1 to -16/, and confirmed the control system is appropriate.
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As a review of CDM operation manual /7/ and its operation records, validation team concluded that operation and management arrangement for the PoA is appropriate and in accordance with paragraph 19 of the "Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (ver.2.1, EB70 Annex5)" /12/ as follows:

No.	Paragraph in the standard /12/	Corresponding Criteria in the Manual /7/
1	19 (a)	1. Roles, Responsibilities and Competencies
2	19 (b)	3. Education and Training
3	19 (c)	2. CPA Inclusion and Management
4	19 (d)	2. CPA Inclusion and Management
5	19 (e)	8. Documents and Data Control
6	19 (f)	6. Internal Quality Control 7. Continuous Improvement
7	19 (g)	4. Monitoring & 5. Calibration

4.2 Eligibility Criteria for inclusion of a SSC-CPA under PoA

Eligibility criteria for CPA inclusion has consistently described in section B.2 of PoA-DD, section B.5 of generic CPA-DD (Part II of PoA-DD), and "chapter 6. CPA inclusion and management" of CME's CDM operation manual. Validation team confirms that the criteria are verifiable and reflects minimum requirements described in the "Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities (ver.2.1, EB70 Annex5)" /12/ as below:

No.	Required Criterion	Developed Criterion
1	(a) The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA;	Criterion 1
2	(b) Conditions that avoid double counting of emission	Criterion 3

No.	Required Criterion	Developed Criterion
	reductions like unique identifications of product and end-user locations (e.g. programme logo);	
3	(c) The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;	Criterion 2,4
4	(d) Conditions to check the start date of the CPA through documentary evidence;	Criterion 5
5	(e) Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs;	Criterion 6
6	(f) The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality;	Criterion 2,7
7	(g) The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis;	Criterion 8, 9
8	(h) Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance;	Criterion 10
9	(i) Where applicable, target group (e.g. domestic/commercial/industrial, rural/urban, gridconnected/off-grid) and distribution mechanisms (e.g. direct installation);	N/A
10	(j) Where applicable, the conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys	N/A. Sampling is not applied.
11	(k) Where applicable, the conditions that ensure that every CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those thresholds throughout the crediting period of the CPA;	CPA is not limited to microscale project, but eligibility criterion 2 defines condition for small scale threshold.
12	(l) Where applicable, the requirements for the debundling check, in case CPAs belong to small-scale (SSC) or microscale project categories.	Criterion 11

After review of CDM Operation Manual and applicable CDM requirements, Validation team confirms that ;

- All of eligibility criteria are appropriated to the inclusion of CPA under the proposed PoA.
- All of eligibility criteria are verifiable.
- All of eligibility criteria are sufficiently objective and comprehensive to permit the validation team assessment of the inclusion of CPAs in the PoA

4.3 Generic CPA-DD

The PPs has prepared generic CPA-DD template for any real case CPA, utilizing part II of the F-CDM-SSC-PoA-DD (ver.2.0) under VVS track. By review of PoA-DD and generic CPA-DD (part II of PoA-DD), validation team confirms that information and description in the generic CPA-DD is consistent with PoA-DD.

4.4 Validation of initial CPA

Independent validation report for initial CPA /8/ has been prepared.

5. REFERENCES

Documents provided by the Client and background documents related to the design and/or methodologies employed in the design or other reference documents.

- /1/ PoA-DD, initial version on 29/08/2011, final version 8 on 03/12/2012
- /2/ Generic CPA-DD template, initial version 01, final version 8 has been merged into PoA-DD under VVS track
- /3/ Initial CPA-DD, initial version 01, final version 08, 03/12/2012
- /4/ Emission Factor Calculation Spreadsheet
- /5/ Emission Reduction Calculation Spreadsheet for initial CPA
- /6/ Plan for PV and solar thermal CDM program of activities from 2011
- /7/ CME's CDM operation manual, rev.3
 - /7-1/ Pre-evaluation Record for CPA inclusion
 - /7-2/ Technical Review Record for initial CPA inclusion, revised on 17/10/2012
 - /7-3/ Facility Management Registry, revised on 23/08/2012
 - /7-4/ Maintenance Record Registry
 - /7-5/ Training Record Registry and Training Material, revised on 13/09/2012
 - /7-6/ Monitoring Data Registry
 - /7-7/ Facilities Checklist
 - /7-8/ Monitoring Equipment Management Registry
 - /7-9/ Technical Document Registry
 - /7-10/ Standards Registry
 - /7-11/ General Documents Registry (internal)
 - /7-12/ General Documents Registry (external)
 - /7-13/ Internal Quality Audit Plan, 11/09/2012
 - /7-14/ Internal Quality Audit Checklist, 12/09/2012
 - /7-15/ NC report for Internal Quality Audit, 12/09/2012
 - /7-16/ Internal Quality Audit Report, 13/09/2012
- /8/ Validation Report for Initial CPA as a Program of activities
- /9/ Letter of Approval, issued on 05/07/2012 by DNA of Korea
- /10/ CDM Validation and Verification Standard (ver.3.0, EB70)
- /11/ AMS-I.F. (ver.02)
- /12/ Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of

Multiple Methodologies for Programme of Activities (ver.2.1, EB70 Annex5)

/13/ Guidelines on the Demonstration of Additionality of Small-Scale Project Activities (ver.9.0, EB68 Annex27)

/14/ Tool to calculate emission factor for an electricity system (ver.03)

/15/ Construction contracts for initial CPA

/16/ The status report of generation facility for 2010

/17/ Statistics of Electric Power in Korea

/18/ Energy Act

/19/ Enforcement Rule of Environmental Impact Assessment Act

/20/ Statement of Installed Items

/21/ Inspection Certificate prior to Operation

/22/ List of PV module serial numbers

/23/ Certificate of New&Renewable Energy Facilities for PV modules

/24/ Test Report of Installed Inverters

/25/ Procedures for Registration of a Programme of Activities as a Single CDM Project Activity and Issuance of Certified Emission Reductions for a Programme of Activities (ver.04.1, EB55 Annex38)

/26/ General Guidelines for SSC CDM Methodologies (ver.19, EB69 Annex27)

/27/ Guideline for the Support on the New & Renewable Energy Equipments, Ministry of Knowledge and Economy. (2012-18)

/28/ Single Line Diagram

/29/ Modalities of Communications Statement

/30/ Written Confirmation of Modalities of Communications

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above.

/1/ Interview on 12/04/2012

Name	Organization	Position
Gyu-Hae Lee	LH Corporation	CME / General Manager
Sang-Young Lee	LH Corporation	CME / Assistant Manager
Ji-Young Kim	LH Corporation	CME / Assistant Manager
Hong-Suk Kim	Osan Cheongho(1,2BL)	Assistant Manager
Jeong-Hwan Lee	Ecoeye Co., Ltd.	Consultant
Sang-Sun Ha	Ecoeye Co., Ltd.	Director, Consulting Firm
Hyun-Mi Park	Anyang Gwanyang(A1BL)	Stakeholder, Resident's representative

/2/ Interview on 13/04/2012

Name	Organization	Position
Sung-Young Lee	Korea Housing Management Jechon Gangjeon (A2BL)	Monitoring personnel
Hyang-Suk Jung	Jechon Gangjeon (A2BL)	Stakeholder, Resident's representative.
Gun-mo Yang	Korea Housing Management, Chungju Yeonsu(2)	Monitoring personnel

APPENDIX A

VALIDATION PROTOCOL FOR SMALL-SCALE PoA

Table 1. Requirements Checklist

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity					
A.1. Global stakeholder consultation					
A.1.1. Did receive any comment on the PDD of the proposed project activity during the Global stakeholder consultation?	/VVS/ 37	DR	No comments were received during global stakeholder consultation process.	OK	OK
A.1.2. If yes, report the details of the actions taken to take due account of the comments received during the validation process.	/VVS/ 38	DR	N/A	OK	OK
A.2. Approval					
A.2.1. Have all parties involved approved the project activity ?	/VVS/ 38	DR, I	OK. Only Republic of Korea has involved in the programme	OK	OK
A.2.2. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.4 of the PDD provided a written letter of approval ?	/VVS/ 38	DR	OK. Letter of Approval issued by host party's DNA indicates it.	PENDING	OK
A.2.3. Does each letter confirms that ; a) The party is a party to the Kyoto Protocol. b) Participation is voluntary. c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country.	/VVS/ 39 /M&P 40(a)	DR	OK. Letter of Approval confirms them.	PENDING	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.					
A.2.4 Is the letter(s) of approval unconditional with respect to (a) to (d) above A.1.3 ?	/VVS/ 40	DR	Yes. The LoA is unconditional.	PENDING	OK
A.2.5 Has the letter(s) of approval been issued by the respective Party's DNA and valid for the proposed CDM project activity ?	/VVS/ 41	DR	OK. The proposed PoA is implemented in Republic of Korea, so, Letter of Approval has been issued by DNA of Republic of Korea.	PENDING	OK
A.2.6 Has the letter(s) of approval been issued by the respective Party's DNA ? If in doubt, verify with the DNA that letter(s) of approval are valid for the proposed projects activity, project participants and authentic.	/VVS/ 42, 43	DR	OK. Letter of Approval has been issued by the host party's DNA. Validation team contacted administrator of DNA to confirm the LoA.	PENDING	OK
A.3 Authorization					
A.3.1 Has each project participant been approved by at least one Party involved in a letter of approval?	/VVS/ 45	DR	OK. Letter of Approval issued by the Host party's DNA states the participation of both project participants.	PENDING	OK
A.3.2. Is the information the project participants listed in section A.4 and Annex 1 of the PDD internally consistent to each other and exactly the same as in the LoA from each Party involved	/VVS/ 46	DR	OK. Korea Land & Housing Corporation (briefly LH Corporation) and Ecoeye Co., Ltd. have been consistently listed as project participants, throughout the PoA-DD, generic CPA-DD (Part II of PoA-DD) and real case (initial) CPA-DD. LH corporation is also defined as CME.	PENDING	OK
A.3.3 Are there no entities other than those approved as	/VVS/	DR	No other entities has been identified.	PENDING	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
project participants as project participants included in these sections of the PDD.	47				
A.3.4 Has the approval of participation been issued for the relevant DNA and valid for the proposed CDM project participants?	/VVS/ 48	DR	OK. Participation of LH Corporation and Ecoeye Co., Ltd. are approved by DNA of host party.	PENDING	OK
A.4. Sustainable development					
A.4.1 Does the letter approval by the DNA of the host Party confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party ?	/VVS/ 51	DR	OK. LoA issued by host party's DNA confirms that the project contributes to sustainable development.	PENDING	OK
A.5 Modalities of Communications					
A.5.1 Has been validated the corporate identity of all project participants and focal points included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories?	/VVS/ 53	DR, I	OK. By on-site interview, validation team confirms that MoC is correctly prepared with exact information of focal point of the project participants.	PENDING	OK
A.5.2 Has been confirmed that ; (a) Directly checking evidence for corporate, personal identity and other relevant documentation; (b) Notarized documentation; or (c) Written confirmation from the project participant or the CME that submits to it the MoC statement that	/VVS/ 54	DR, I	OK. By on-site interview, validation team confirms that MoC is correctly prepared with exact information of focal point of the project participants. In addition, the PPs provided written confirmation to confirm MoC submitted to validation team.	PENDING	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
all corporate and personal details, including specimen signatures, are valid and accurate.					
A.5.3 Has been confirmed that the MoC statement is received from a PP with whom the DOE has a contractual relationship, in case of PoAs, from the CME?	/VVS/ 55	DR	OK. By on-site interview, validation team confirms that MoC is correctly prepared with exact information of focal point of the project participants.	PENDING	OK
A.5.4 Has been confirmed that the official who submits the MoC statement to the DOE and the official who signed the written confirmation (if a different person) is/are duly authorized to do so on behalf of the respective project participant or coordinating/managing entity?	/VVS/ 56	DR, I	OK. By on-site interview, validation team confirms that MoC is correctly prepared with exact information of focal point of the project participants.	PENDING	OK
A.5.5 Has the MoC statement been confirmed that: (a) The latest version of the form "Modalities of Communication statement"(F-CDM-MOC) has been used; (b) The information required as per the F-CDM-MOC, including its annex 1, is correctly completed; (c) The project participant's authorized signatories signing the F-CDM-MOC correspond to the project participant's authorized signatories included in	/VVS/ 59&60	DR,I	OK. By on-site interview, validation team confirms that MoC is correctly prepared with exact information of focal point of the project participants.	PENDING	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
F-CDM-MOC, annex 1.					
A.6. Project Design Document					
A.6.1. Was the PDD prepared in accordance with the latest template from the EB ?	/VVS/ 62	DR	OK. PoA-DD and CPA-DD template under VVM track have been used. During validation process, PoA-DD and CPA-DD have been revised under VVS track.	OK	OK
A.6.2. Confirmed to state regarding the compliance of the PDD with the relevant forms and guidance ?	/VVS/ 63	DR	OK. PoA-DD including generic CPA-DD (Part II of PoA-DD) and real case (initial) CPA-DD have been completed in accordance with guidelines under VVM track. However, during validation process, PoA-DD and CPA-DD have been revised under VVS track. Validation team also confirms that thd design documents have been prepared in accordance with relevant guidelines.	OK	OK
A.7. Description of Project Activity					
A.7.1 Is the information in Section A of the PDD accurate and complete, and does provides an understanding of the proposed CDM project activity?	/VVS/ 64	DR, I PSI	OK. Description is clear and precise. Validation team has carried out desk review and on-site assessment to confirm the information in the design documents The PPs shall provide evidence that shows how utilizing photovoltaic emits zero GHG into the atmosphere or water system without any natural resources depletion, as described in section A.2 of PoA-DD /CAR10/. Project emission sources are not identified in the applied methodology, and validation team	PENDING CAR10	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.																
			<p>confirmed no project emission sources have been identified in initial CPA.</p> <p>However, some terms are not consistently described throughout the PoA-DD (ver.01). For example, KEPCO grid and PoA-DD. CAR/11/</p> <p>In addition, documents referred in the PoA-DD (ver.1) does not have version, so validation team cannot determine if latest versions have been applied. /CAR12/</p>	<p>CAR11</p> <p>CAR12</p>																	
<p>A.7.2 Does conduct a physical site inspection for the proposed project activities?</p> <p>In case a site inspection has been concluded, does the description in PDD reflect the proposed CDM project activity?</p> <p>If a physical site inspection is not undertaken, how the project description was assessed for appropriateness and what is the outcome?</p>	<p>/VVS/ 65, 66</p>	<p>DR, I PSI</p>	<p>OK. On-site assessment has been partially conducted. However, construction contracts and other documents provide clear information about the other sites.</p> <p>Validation team decided size of sample for on-site assessment with following procedure:</p> <p>1. Assumed that all sites have homogeneous physical features and management system.</p> <p>2. Applied following statistical method with 90/10 confidential level, minimum sample size is 3:</p> <div><div>□ Confidence Level</div><table><tr><td>Confidence level</td><td>80%</td><td>90%</td><td>95%</td></tr><tr><td>value of z</td><td>1.282</td><td>1.645</td><td>1.96</td></tr><tr><td>CV</td><td>0.1</td><td>0.1</td><td>0.1</td></tr><tr><td>Sampling Error</td><td>3%</td><td>5%</td><td>10%</td></tr></table></div> <p>□ N (Number of Population) : 15 PV power plants</p> <p>□ In case of infinite population (n)</p>	Confidence level	80%	90%	95%	value of z	1.282	1.645	1.96	CV	0.1	0.1	0.1	Sampling Error	3%	5%	10%	<p>PENDING</p>	<p>OK</p>
Confidence level	80%	90%	95%																		
value of z	1.282	1.645	1.96																		
CV	0.1	0.1	0.1																		
Sampling Error	3%	5%	10%																		

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.																																										
			<p>Sampling Size $(n)=\frac{(z\text{ value}\times CV)^2}{\delta^2}$</p> <p>where : n : Sampling size in infinite population CV: Coefficient of Variability δ : Sampling error</p> <table><tr><th rowspan="2">infinite population</th><th rowspan="2">Sampling Error</th><th colspan="3">confidence level</th></tr><tr><th>80%</th><th>90%</th><th>95%</th></tr><tr><td rowspan="3">Size of Sample</td><td>3%</td><td>19</td><td>31</td><td>43</td></tr><tr><td>5%</td><td>7</td><td>11</td><td>16</td></tr><tr><td>10%</td><td>2</td><td>3</td><td>4</td></tr></table> <p>□ In case of finite population (n^*)</p> <p>Sampling Size $(n^*)=\frac{N\times n}{N+n}$</p> <p>where : n^* : Sampling size in finite population N : Number of Population n : Sampling size in infinite population</p> <table><tr><th rowspan="2">Numberof Sampling</th><th rowspan="2">Sampling Error</th><th colspan="3">confidence level</th></tr><tr><th>80%</th><th>90%</th><th>95%</th></tr><tr><td rowspan="3">finite population</td><td>3%</td><td>9</td><td>11</td><td>12</td></tr><tr><td>5%</td><td>6</td><td>7</td><td>8</td></tr><tr><td>10%</td><td>2</td><td>3</td><td>4</td></tr></table> <p>With this approach, validation team has carried out on-site assessment for 4 sites, more than 3 of minimum sample size.</p> <p>In addition, for all sites, validation team requested the PPs to</p>	infinite population	Sampling Error	confidence level			80%	90%	95%	Size of Sample	3%	19	31	43	5%	7	11	16	10%	2	3	4	Numberof Sampling	Sampling Error	confidence level			80%	90%	95%	finite population	3%	9	11	12	5%	6	7	8	10%	2	3	4		
infinite population	Sampling Error	confidence level																																													
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Size of Sample	3%	19	31	43																																											
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	10%	2	3	4																																											
Numberof Sampling	Sampling Error	confidence level																																													
		80%	90%	95%																																											
finite population	3%	9	11	12																																											
	5%	6	7	8																																											
	10%	2	3	4																																											

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
			<p>provide following documents:</p> <ul style="list-style-type: none"> - Statement of Installed Items - Inspection Certificate prior to Operation (legal document) - List of PV module serial numbers - Certificate of New&Renewable Energy Facilities for PV modules (legal document) - Test Report of Installed Inverters - Single Line Diagram <p>By reviewing above documents and on-site assessment, validation team confirmed technology applied, installed capacity, and applicability of the methodology.</p>		
A.7.3 For not referred project activities to in para 65-66 in the VVS, undertake the validation of project description by reviewing available designs and feasibility studies and conduct comparison analysis with equivalent project?	/VVS/ 67	DR	No designs or FSR have been available. However, master plan for the programme were provided by the PPs, and information in the document was consistent with PoA-DD.	OK	OK
A.7.4 Does the proposed project activities involve alteration of an existing installation or process ? If yes, confirm that the project description states the differences resulting from the project activity compared to the pre-project situation.	/VVS/ 68	DR, PSI	N/A. Proposed PoA and real case CPA is a greenfield project.	OK	OK
A.7.5 Does the information on public funding provided conform to the actual situation or planning as presented by the project participant?	PDD A.5	DR, I	OK. A.4.5 of PoA-DD described that no public funding has been provided for the proposed programme. For CPA level, eligibility criteria includes condition to prevent diversion of ODA. Validation team confirms that there is no ODA in Korea supported by Annex I country.	OK	OK
A.8 Eligibility as a small-scale project					

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A.8.1 Is the project activity a small scale project activity ? (If yes, assess the specific small-scale activity below)	/VVS/ 150	DR	OK. Eligibility criteria in the PoA-DD request any CPA installed capacity up to 15MW. Total installed capacity of initial CPA is also less than 15MW.	OK	OK
A.8.2 Does the project activity qualify within the thresholds of the three possible types of small scale project activities?	/VVS/ 152 (a)	DR, I, OSI	OK. Eligibility criteria in the PoA-DD request any CPA installed capacity up to 15MW. Total installed capacity of initial CPA is also less than 15MW.	OK	OK
A.9 Debundling for project activity					
A.9.1 Confirm that the proposed small-scale project activity is not a debundled component of a large-scale project activity in accordance with the "Guidelines on assessment of debundling for SSC project activities".	/VVS/ 154	DR, I, OSI	OK. Eligibility criteria listed in the PoA-DD and CME operation manual includes condition to check de-bundling of large scale project activity. In addition, validation team confirmed that technical review record for initial CPA inclusion successfully validated the criterion.	OK	OK
A.9.2 Is there a registered small-scale project activity or an application to register another small-scale project activity within 1 km of the project boundary? If applicable, does the proposed small-scale project activity to be a debundled component of a large-scale project activity?	/VVS/ 155	DR, I, OSI	OK. LH Corporation has registered small-scale CDM project activity. Debundling issue has been handled at CPA level.	OK	OK
A.9.3 Confirm that the proposed small-scale project activity is not a debundled component taken into account specific debundling requirements for Type I project	/VVS/ 156	DR, OSI	OK. Initial CPA is not a de-bundled component of a large scale project activity. Refer to the validation report for initial CPA inclusion.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
activities and small-scale transport project activities.					
B. Baseline and monitoring methodology					
B.1 Applicability of selected methodology to the project activity.					
B.1.1 Is the selected baseline and monitoring methodology applicable to the project activity and that the selected version is valid at the time of submission of the proposed project activity for registration?	/VVS/ 73	DR, PSI	PoA-DD (ver.1) applied two methodologies - AMS-I.F. and AMS-I.C. Combination of both methodologies is available, but design of the programme is to separately install of each technology. /CAR01/	CAR01	OK
B.1.2 Is the methodology correctly quoted with the actual text of the applicable version of the methodology and the choice of methodology justified ?	/VVS/ 74	DR	OK. AMS-I.F. (ver.2) is correctly quoted.	OK	OK
B.1.3 Is the PDD of a proposed project activity is based on a previous version of a methodology and was published for global stakeholder consultation but was not submitted for registration within the grace period? If applicable, confirm to request the project participants to provide a revised PDD in accordance with the Project cycle procedure.	/VVS/ 75, EB50 Annex 48	DR	N/A. PDD was published with latest version of methodology.	OK	OK
B.1.4 Confirm that the project activity meets each of the applicability conditions of the approved methodology or any tool or other methodology component referred to therein.	/VVS/ 76	DR, I, PSI	OK. The proposed programme is to install PV power plant for captive use. Eligibility criteria listed in the PoA-DD and CPA-DD include condition to check applicability of methodology. Validation team also confirmed that technical review record for initial CPA inclusion has successfully validated applicability conditions for all project sites in the initial CPA.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
			After reflecting VVS track, generic CPA-DD has been included in part II of PoA-DD.		
B.1.5 Is comparable information available from other sources and cross check with the PDD in order to assess the applicability ?	/VVS/ 76	DR, I	OK. Validation team has reviewed specifications of all initial CPA sites.	OK	OK
B.1.5 Is the project activity expected to result in emission other than those allowed by the methodology ?	/VVS/ 76	DR, I	N/A	OK	OK
B.1.5 Is the project activity a small scale project activity ? (If yes, assess the specific small-scale activity below)	/VVS/ 150	DR	OK.	OK	OK
B.1.6 Does the project activity qualify within the thresholds of the three possible types of small scale project activities?	/VVS/ 152 (a)	DR, I	OK. PV project is type I, category D, and proposed program is applying less than 15 MW of capacity.	OK	OK
B.1.7 Does the project activity conforms to one or more of the approved small-scale methodologies applied in conjunction with the general guidelines to SSC CDM methodologies?	/VVS/ 152 (b)	DR	N/A. The proposed program conforms single methodology.	OK	OK
B.1.8 Is the project activity not a debundled component of a large-scale project, in accordance with the rules defined in appendix C of the simplified modalities and procedures for small scale CDM project activities and the "Guidelines on assessment of de-bundling for SSC project activities"?	/VVS/ 152 (c)	DR, I	OK. Eligibility criteria in the PoA-DD include requirement for de-bundling check in accordance with "Guidelines on Assessment of de-bundling for SSC project activities (ver.3.0)"	OK	OK
B.2 Project Boundary					

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.2.1 State documented evidence and site inspection result which has been adopted for verifying project boundary.	/VVS/ 83	DR, OSI	Boundary of the proposed PoA is territory of Host Party.	OK	OK
B.2.2 Is the delineation of the project boundary in the PDD correct and does it meet the requirements of the selected baseline methodology ?	/VVS/ 84	DR, I	OK. Boundary of the proposed programme is clearly defined as the territory of Republic of Korea. For CPA-level, generic CPA-DD (Part II of PoA-DD) defined project boundary in accordance with AMS-I.F. (ver.02)	PENDING	OK
B.2.3 Have all sources and GHG's required by the methodology been included within the project boundary ?	/VVS/ 84	DR	OK.	OK	OK
B.2.4 Does the methodology allows project participants to choose whether a source or gas is to be included within the project boundary? If yes, confirm that the project participants have justified that choice with followings: - The justification shall be reasonable, based on an assessment of supporting documented evidence provided by the project participants - Corroborated by observations.	/VVS/ 84	DR, OSI	N/A	OK	OK
B.3 Baseline scenario identification and description					
B.3.1 Has any procedure contained in the methodology to identify the most reasonable baseline scenario been correctly applied?	/VVS/ 89	DR, I	N/A	OK	OK
B.3.2 Does the selected methodology require use of tools to	/VVS/	DR, I	OK. To calculate emission factor for the grid, methodology	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
establish the baseline scenario?	89		proposed to apply "Tool to calculate emission factor for an electricity system (ver.3.0)".		
B.3.3 Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	/VVS/ 90	DR, I	N/A	OK	OK
B.3.4 If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed project activity?	/VVS/ 90		N/A	OK	OK
B.3.5 Does PDD provide all the assumptions and data including reference and sources ?	/VVS/ 91&94(a)	DR, I	Yes. All the assumptions and data used including reference and sources are provided in the PoA-DD. Emission factor for KEPCO grid has been calculated based on 2008 to 2010. However, Validation team has received initial PoA-DD on 30/08/2011, while most recent statistics for electricity generation in Korea was issued on July 2011. The PPs are required to reflect most recent data. /CAR27/	GAR27	OK
B.3.6 Are all the documentation used for establishing the baseline scenario correctly quoted and interpreted in the PDD ?	/VVS/ 91&94(b)	DR, I	Yes, all the documentation is used for establishing the baseline scenario and correctly quoted and interpreted in the PDD.	OK	OK
B.3.7 Are the information provided in the PDD cross-checked with other credible sources, such as local expert opinion, if available ?	/VVS/ 91		Yes. cross-checked with national regulations and sectoral information that publically available as belows; - Framework Act on Low Carbon Green Growth - Statics of Electric Power in Korea (Chapter 1, Section 5 Power generating results by plants)	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
			<ul style="list-style-type: none"> - The status report of generation facility for 2010 by KPX - Supporting system in feed-in tariffs of electric generation from new & renewable energy sources by MKE (http://www.mke.go.kr) - A five year National Strategy for Green Growth in Korea by the Committee of Green Growth Korea 		
B.3.8 Are all the assumptions and data used by the project participants justified appropriately and supported by evidence ?. Are those deemed reasonable?	/VVS/ 94(c)	DR, I	Yes. The assumptions and data used are checked by KSA. It is justified appropriately and supported by evidence. And it is deemed reasonable.	OK	OK
B.3.9 .Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	/VVS/ 92	DR, I	OK, it is confirmed.	OK	OK
B.3.10 Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	/VVS/ 93 /M&P/ 45	DR, I	OK, it is confirmed.	OK	OK
B.3.11 Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM EB?	/VVS/ 93&94(d) , /M&P/ 45,		OK, it is confirmed.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	EB22 Annex3 para 6&7				
B.4 Algorithms and/or formulae used to determine emission reductions					
B.4.1 Have the equations and parameters in th PDD been correctly applied as required by the selected approved methodology ?	/VVS/ 97 & EB41 Annex 12	DR	E.4 of PoA-DD (ver.03) described that emission factor for the electricity system as per AMS-I.D. But, AMS-I.D does not define the calculation process. /CAR17/ OK. All equations and parameters in PoA-DD, generic CPA-DD (Part II of PoA-DD) and initial CPA-DD have been correctly applied in accordance with methodology and methodological tools	CAR17	OK
B.4.2 In case the methodology provides the selection of different options for equations or parameters, has an adequate justification been provided and were the correct equations and parameter used in accordance with the methodology ?	/VVS/ 97, EB41 Annex12	DR	Section E.6.1 of PoA-DD (ver.03) does not provide explanation of methodological choice. /CAR20/	CAR20	OK
B.4.3 Is the choice of data and parameters used in the equations appropriate ?	/VVS/ 98	DR	OK. The amount of net electricity displaced is the only parameter to be monitored.	OK	OK
B.4.4 In case of ex-ante data and parameters, are all data sources and assumptions appropriate ? And Are calculations correct, applicable to the proposed project activity ?	/VVS/ 98	DR, I	E.6.2 of PoA-DD (ver.03) provide following equation to calculate baseline emission: $E_{GBL,y} = C_{photovoltaic} * H * UC$ But the PPs shall demonstrate (i) how the equation is	CAR21	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
			reasonable, and (ii) what utilization coefficient would be applied. /CAR21/		
B.4.5 In case of ex-post data and parameters, are the estimates provided in the PDD for these data and parameters reasonable ?	/VVS/ 98	DR, I	OK. The ex post parameter defined in PoA-DD is in accordance with applied methodology.	OK	OK
B.5. Additionality of PoA					
B.5.1 Additionality shall be demonstrated by establishing that in the absence of CDM, none of the implemented CPAs would occur	EB70 Annex5 para.7 & VVS 195	D R	<p>Procedure to demonstrate additionality of CPA is not consistently described in A.4.3 and E.5.1 of PoA-DD (ver.03). /CAR14/</p> <p>Refer to step I, section E.5.2 of the PoA-DD (ver.03), the PPs are required to demonstrate how any CPA is additional if the CPA meets two criteria described in the table. /CAR18/</p> <p>Step II, section E.5.2 of the PoA-DD (ver.03) described that any CPA to be included shall consistently demonstrate one of the barrier, but the PPs defined all barriers for 'data for criteria'. The PPs shall clearly explain how it can ensure consistent manner to demonstrate additionality. /CAR19/</p> <p>OK. In the revised PoA-DD (ver.5), description of voluntary action of the proposed program has been provided.</p>	<p>CAR14</p> <p>CAR18</p> <p>CAR19</p>	OK
B.5.2 PoAs that consist of one or more microscale projects	EB70	DR	N/A	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
as CPAs shall include eligibility criteria derived from all the relevant requirements of the .Guidelines for demonstrating additionality of microscale project activities.	Annex5 para.8				
B.5.3 PoAs that consist of one or more small-scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of attachment A of Appendix B of the .Simplified modalities and procedures for small-scale CDM project activities	EB70 Annex5 para.9	DR	To demonstrate additionality on CPA level, the PPs provided procedures as per "Guidelines for demonstrating additionality of microscale project activities" and "Attachment A to appendix B of simplified M&P for SSC CDM project activities". But, the context in the section A.4.3 of PoA-DD (ver.03) is different from those documents. /CAR13/ OK. In the revised PoA-DD (ver.5), eligibility criteria include condition for small scale threshold.	CAR13	OK
B.5.4 PoAs that consist of one or more large scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements contained in the additionality section of the large scale methodologies applied to CPAs	EB70 Annex5 para.10	DR	N/A	OK	OK
B.5.5 The CME shall demonstrate that compliance with the additionality-related eligibility criteria set in the PoA design document will ensure that all the relevant additionality-related guidelines, tools or any requirements embedded in the methodologies are met	EB70 Annex5 para.13		OK. Eligibility criteria developed in the PoA-DD include condition for additionality.	OK	OK
B.5.6 For PoAs involving combinations of technologies/measures and/or methodologies, the	EB70 Annex5		N/A	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
eligibility criteria relative to each of them shall be proposed to demonstrate additionality. Types of combinations as indicated in paragraph 29(a) to 29(d) below shall be taken into account	para.14				
B.6 Prior Consideration of PoA					
B.6.1 Is the start date of the project activity, reported in the PDD, 'the earliest date at which either the implementation or construction or real action of a project activity begins'(Glossary of CDM terms)?	/VVS/ 106	DR	Start date of the proposed PoA is determined as the start date of global stakeholder consultation - September 01, 2011	OK	OK
B.6.2 Is a start date of the project activity, (a) <i>on or after 02 Aug 2008</i> or (b) <i>before 02 Aug 2008</i> ?	/VVS/ 106	DR	It is after 02 Aug 2008	OK	OK
B.6.3 In (a) case, for which PDD has not been published for global stakeholder consultation or a new methodology is proposed to the EB before the project activity start date, confirm by referring to the list of prior consideration notifications from the UNFCCC website and communication between the project proponent, the secretariat and the host Party DNA regarding the commencement of a new project activity within 180 days of project start date ?	/VVS/ 107 & EB 62 Annex 13	DR	N/A	OK	OK
B.6.4 In (b) case (project activities with start date before 02 Aug 2008) for which the start date is prior to the date of publication of the PDD for global stakeholder	/VVS/ 108	DR	N/A	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
consultation, please verify through documents review that PP's prior consideration ;					
(a) Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, other project participant, to undertake the project as a proposed CDM project activity.	/VVS/ 108 (a)	DR	N/A	OK	OK
(b) Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), evidence of agreements or negotiations with a DOE for validation services, submission of a new methodology to the CDM Executive Board, publication in newspaper,	/VVS/ 108 (b)	DR	N/A	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat.					
B.7 Identification of Alternatives					
B.7.1 Does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the applied approved methodology prescribes the baseline scenario and no further analysis is required?	/VVS/ 113	DR	N/A. Applied methodology provide baseline scenario, so identification of alternatives is not required.	OK	OK
B.7.2 Does the list of alternatives given in the PDD ensures that:	/VVS/ 114	DR	N/A	OK	OK
(a) The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	/VVS/ 114 (a)	DR	N/A	OK	OK
(b) The list contains all plausible alternatives which can be considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	/VVS/ 114 (b)	DR	N/A	OK	OK
(c) The alternatives comply with all applicable and enforced legislation?	/VVS/ 114 (c)	DR	N/A	OK	OK
B.8 Monitoring Plan					
B.8.1 Does the PDD include a monitoring plan ?	/VVS/ 131	DR	OK	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.8.2 Does the monitoring plan comply with the approved methodology ?	/VVS/ 132	DR, I	See Belows	PENDING	OK
- Has the list of parameters required by the selected approved methodology been identified?	/VVS/ 132 (a) (i)	DR, I	E.7.1 of PoA-DD (ver.01) described that quantity of net electricity and the amount of net thermal energy would be monitored, but there is no information how NET value can be obtained. Moreover, same table described that single meter measures net value, which means both electricity/thermal energy export and import can be measured by the meter. /CAR23/ OK. Revised PoA-DD fully considered not only electricity generation but also auxiliary consumption.	GAR23	OK
- Does the monitoring plan contain all necessary parameters ?	/VVS/ 132 (a) (ii)	DR, I	E.6.2 of PoA-DD (ver.03) described that project emission is zero because the system does not use any energy source for operation. But, during on-site assessment, validation team has found that auxiliary power is supplied from the grid while PV system does not produce electricity. /CAR22/ OK. All necessary parameters have been included in the PoA-DD and generic CPA-DD (Part II of PoA-DD).	GAR22	OK
- Does the means of monitoring described in the plan comply with the requirements of the methodology including applicable tool ?	/VVS/ 132 (a) (ii)	DR, I	E.7.1 of PoA-DD (ver.03) defined data source of monitoring parameter as CPA database. But, it is not clear to understand how the PPs can ensure to monitor the parameters required by methodologies. /CAR24/	GAR24	OK
B.8.3 Are the monitoring arrangements described in the monitoring plan feasible within the project design? - Are the means of implementation of the monitoring	/VVS/ 132 (b)	DR, I OSI	E.7.2 described that all data collected will be recorded electronically, but validation team found that records is kept by registered form documented by CPA operators. /CAR26/	GAR26	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
plan, including the data arrangement and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by requesting from the proposed CDM project can be reported ex post and verified ?			<p>OK. Revised PoA-DD clearly describes organizational structure for monitoring and reporting process. In generic CPA-DD (Part II of PoA-DD), monitoring equipment and QA/QC system is appropriately described.</p> <p>A.4.4 of PoA-DD (ver.03) and operating manual (ver.2) described that monitoring data for all CPAs shall be managed by CME, by electronically transferring monitored data. But, project sites validation team has visited were not able to do. /CAR16/</p> <p>Table in section E.7.1 of PoA-DD defined that measuring devices for both PV and solar heating project will be managed by schedule and procedure provided by technology provider and/or grid operator. The PPs shall demonstrate how it can ensure CDM requirements related to managing monitoring equipments. Moreover, QA/QC process developed in the operating manual is not in accordance with PoA-DD. /CAR25/</p> <p>OK. Monitoring arrangement described in the revised PoA-DD is clear, appropriate and able to ensure emission reductions achieved.</p> <p>For generic CPA-DD (Part II of PoA-DD), monitoring plan is complete and able to ensure accuracy or conservativeness of parameters.</p>	<p>GAR16</p> <p>GAR25</p>	
C. Environmental Impacts					

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
C.1 Has the PP conducted an analysis of environmental impacts of the project activity? Confirm whether those impacts are considered significant by the project participants or the host Party is an Environmental Impact Assessment (EIA) generated?	/VVS/ 134	DR, I	OK. PoA-DD defined that EIA would be carried out at CPA level. This is appropriate because impact of photovoltaic project is limited to local area, not national-wide. However, EIA is not required for the PV project whose installed capacity less than 100,000 kW, according to "Enforcement regulation of Environment Impact Assessment Act", while any CPA under 15 MW capacity is only eligible in the PoA.	OK	OK
C.2 Were transboundary environmental impacts identified in the analysis?	/VVS/ 134	DR, I	N/A	OK	OK
C.3 Will the project create significant adverse environmental effects?	/VVS/ 134	DR, I	N/A	OK	OK
C.4 Have the identified environmental impacts been addressed in the project design sufficiently?	/VVS/ 136	DR, I	N/A	OK	OK
C.5 Does the project comply with environmental legislation in the host country?	/VVS/ 136	DR, I	N/A	OK	OK
D. Local Stakeholder Consultation					
D.1 Have PPs conducted a local stakeholder consultation? Is it adequate enough stakeholder to be engaged?	/VVS/ 138	DR, I	OK. See below	PENDING	OK
D.2 Were relevant stakeholders invited by the PP's to comment on the proposed CDM project activity? If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder	/VVS/ 138 & 139 (a)	DR	OK. PoA-DD defines that local stakeholder consultation would be implemented at CPA level. It is appropriate because impact of the photovoltaic project at collective housing is very limited to local residents.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
consultation process been carried out in accordance with such regulations/laws?			According to CPA-DD, Korea Land & Housing Corporation has noticed the CDM programme and initial activities on their webpage. Validation team has accessed the website and confirmed it. Moreover, during on-site assessment, validation team has interviewed resident representatives and they confirmed that no negative opinions have been raised for the programme.		
D.3 Have appropriate media been used to invite comments by local stakeholders?		DR, I	OK. Website of the PP has been used, and each of the CPA implementers has noticed at their collective buildings. Validation team confirmed both by desk review and on-site assessment.	OK	OK
D.4 Is the summary of the received comments completed?	/VVS/ 139 (b)	DR, I	OK. No negative opinion has been submitted.	OK	OK
D.5 Have the PPs taken due account of any comments received and have they described this process in the PDD?	/VVS/ 139 (c)	DR	OK. No negative opinion has been submitted.	OK	OK
E. Specific requirements for PoA					
E.1 Is management system described in the PoA-DD in accordance with "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities"?	/VVS/ 186	DR, I	OK. See Below criteria. CME (Korea Land & Housing Corporation) has a registered CDM project that applies same technology and methodology. In Addition, CME has developed CDM Operation Manual for the proposed program of activity. Validation team has reviewed the manual and conducted on-site assessment, then concluded that CME has appropriate organization and process to manage all CPAs as a CDM.	PENDING	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
E.2 The DOE shall assess any proposed CPA that a coordinating/managing entity wishes to include in the PoA, to determine whether it complies with the eligibility criteria specified in the CDM-PoA-DD. The means of validation to determine compliance with this requirement will be specific to the PoA	/VVS/ 187	DR	OK. CME has documented procedure to determine whether a potential CPA is eligible to be included. Validation team reviewed implementation record of technical review for initial CPA.	PENDING	OK
E.3 The DOE should consider a desk review of the documentation sufficient to determine compliance in certain instances and also consider follow-up interviews and/or site visits necessary for other types of PoA	/VVS/ 188	DR, I	N/A	OK	OK
E.4 The DOE shall assess the CDM-PoA-DD and the PoA-specific CDM-CPA-DD that is submitted by the coordinating/managing entity and shall confirm the framework developed for the implementation of the PoA, and defining a CPA under the PoA.	/VVS/ 189	DR	OK. PoA-DD and initial CPA-DD are prepared in accordance with relevant guidelines, and CME has prepared operating manual for implementation of the program.	PENDING	OK
E.5 The DOE shall assess the boundary of the PoA within which all CPAs included in the PoA will be implemented.	/VVS/ 191	DR, I	OK. Boundary of the PoA is identified as host party, and all site in the initial CPA is in the boundary.	OK	OK
E.6 The DOE shall determine whether, in establishing the boundary of the PoA, the project participants have taken into consideration all applicable national and/or sectoral policies and regulations within that chosen boundary.	/VVS/ 192	DR	OK. Defined boundary of the PoA is territory of republic of Korea. LH corporation is a public organization and Ecoeye Co., Ltd. is consulting firm with enough experiences of CDM, so they are able to identify local policies and regulations.	OK	OK
E.7 The DOE shall confirm that the start date of any CPA	/VVS/ 	DR	OK. Start date of initial CPA is after start date of PoA	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
is on or after the start date of the PoA	193				
E.8 The DOE shall assess prior consideration of the CDM for the PoA applying VVS 107 requirement	/VVS/ 194	DR	OK.	OK	OK
E.9 The DOE shall determine whether the length of a PoA does not exceed 28 years	/VVS/ 197	DR	OK. Proposed length of PoA is 28 years.	OK	OK
E.10 Is the monitoring plan for a CPA in accordance with the approved monitoring methodology, including applicable tool(s).	/VVS/ 198	DR OSI	See B.8 above.	PENDING	OK
E.11 Was the analysis of environmental impact of the PoA undertaken as per the requirement of the CDM M&P?	/VVS/ 199	DR	N/A. EIA has been conducted at CPA level.	OK	OK
E.12 If not undertaken for the PoA, but conducted at the CPA level, was it conducted as described in the PoA-DD and CPA-DD ?	/VVS/ 200	DR	OK. It is described in the independent validation report for initial CPA	OK	OK
E.13 Was the local stakeholder consultation process carried out for the whole PoA or at the CPA level? If comments by local stakeholders were invited with regard to the whole PoA, determine how these comments were invited; whether the summary of the comments received is complete and how due account was taken of all comments received.	/VVS/ 201	DR	Local stakeholder consultation process was undertaken at CPA level.	OK	OK
E.14 If the local stakeholder consultation is conducted at the CPA level, is it in accordance with the level of consultation specified by the coordinating/managing	/VVS/ 202	DR	OK. It is described in the independent validation report for initial CPA	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
entity and whether the local stakeholder comments were taken into account and described in the CDM-PoA-DD and the CDM-CPA-DD?					
E.15 Is the proposed SSC CPA of a PoA is not a debundled component of a large-scale project activity in accordance with the "Guidelines on assesment of debundling for SSC project activities"?	/VVS/ 203	DR I	OK. See A.9 above.	OK	OK
E.16 Did CME developed eligibility criteria for inclusion of a CPA under PoA, include these criteria in the PoA-DD, and demonstrate their usability to assess the inclusion of CPA in the generic CPA-DD?	EB70 Annex5 para.15	DR	OK. See E.2.2 below	OK	OK
E.16.1 Have all minimum eligibility criteria listed in paragraph 16 been reflected into the PoA-DD?	EB70 Annex5 para.16 & VVS 196	DR	<p>Validation team reviewed eligibility criteria for CPA in the PoA-DD(ver.03) and operating manual (ver.02), but could not found evidence how the PP has defined roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of competencies. /CAR02/</p> <p>Training procedure developed by the PP does not ensure competencies of administrative personnel involved in the PoA. /CAR03/</p> <p>The PPs are required to demonstrate how each developed eligibility criteria can be verified. To be specific, "procedure for CPA management and inclusion" defined eligibility criteria and document to be assessed, but validation team cannot agree for</p>	<p>CAR02</p> <p>CAR03</p> <p>CAR04</p>	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
			<p>some. Moreover, validation team does not have evidences that the procedure works. /CAR04/</p> <p>The PPs are required to demonstrate how signing the confirmation document can ensure avoidance of double counting. /CAR05/</p> <p>The PPs are required to demonstrate operating manual including records and documentation control process for the CPA is in effect. /CAR06/</p> <p>PoA-DD and supplemented document does not include measures for continuous improvements. Operating manual defined that the manual can be revised only when required by a CPA operator. /CAR07/</p> <p>Eligibility criteria does not provide conditions not to result in the diversion of ODA assistance /CAR08/</p>	<p>GAR05</p> <p>GAR06</p> <p>GAR07</p> <p>GAR08</p>	
E.16.3 Are eligibility criteria developed in the PoA-DD sufficiently objective and verifiable?	EB70 Annex5 para.17 & 18	DR	OK. CME has carried out technical review to include initial CPA as a CDM, and validation team reviewed the record. CME has reviewed with objective evidences and decided that the initial CPA as eligible. For raised issue, refer to E.16.1 above and CAR04.	OK	OK
E.17 CME shall have competencies to check the features of potential CPAs and ensure that each CPA meets all	EB70 Annex5	DR	OK.	PENDING	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
requirements and eligibility criteria before inclusion	para.19 & 20				
(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies			OK.	OK	OK
(b) Records of arrangements for training and capacity development for personnel			OK. CME's CDM operation manual has procedure for training for personnel. Validation team also reviewed the records.	OK	OK
(c) Procedures for technical review of inclusion of CPAs			OK. CME's CDM operation manual has procedure for technical review. Validation team also reviewed the records.	OK	OK
(d) A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA			A.4.4.1 of PoA-DD (ver.03) defined role of CME to avoid de-bundle of large scale project activity. But, the PPs shall demonstrate how signed declaration can ensure avoidance of de-bundling. /CAR15/	CAR15	OK
(e) Records and documentation control process for each CPA under the PoA			OK. Operation manual has document control process, and CME has provided its record.	OK	OK
(f) Measures for continuous improvements of the PoA management system			OK. CDM operation manual includes the process.	OK	OK
(g) Any other relevant elements			OK	OK	OK
E.18 Does CME have procedure to update their eligibility criteria for the case of revision or replace of applied methodology?	EB70 Annex5 para.23 & 24	DR	The PoA-DD and operating manual does not include procedure for updating eligibility criteria as required. /CAR09/	CAR09	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
E.19 Does the proposed CPA comply with the eligibility criteria specified in the PoA-DD?		DR, I	OK. Validation Report for initial CPA inclusion has been independently prepared.	OK	OK
E.20 Does PoA-DD include the following information?	EB55 Annex38 para. 6	DR	OK. See belows	PENDING	OK
(a) Identification of the coordinating/managing entity, host Party(ies) and PoA participants;	EB55 Annex38 para. 6	DR	OK. CME is Korea Land & Housing Corporation. PPs of PoA are CME and Ecoeye Co., Ltd. A.3 of PoA-DD identified it.	OK	OK
(b) Definition of the boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all CPAs included in the PoA will be implemented, taking into consideration all applicable national and/or sectoral policies and regulations within that chosen boundary are reflected in the determination of the baseline;	EB55 Annex38 para. 6	DR	OK. A.4.1.2 of PoA-DD defined boundary of PoA as Republic of Korea.	OK	OK
(c) Description of the policy/measure or stated goal that the PoA seeks to promote;	EB55 Annex38 para. 6	DR	OK. A.2 of PoA-DD described policy/measure and stated goal of the PoA.	OK	OK
(d) Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity;	EB55 Annex38 para. 6	DR	OK. A.2 of PoA-DD stated that the PoA is voluntary action by CME.	OK	OK
(e) Demonstration that in the absence of the CDM either:	EB55	DR	OK. A.4.3 of PoA-DD demonstrated that the program is	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
(i) the proposed voluntary measure would not be implemented, or (ii) the mandatory policy/regulation would be systematically not enforced and that non-compliance with those requirements is widespread in the country/region, or (iii) that the PoA will lead to a greater level of enforcement of the existing mandatory policy /regulation. This shall constitute the demonstration of additionality of the PoA as a whole;	Annex38 para. 6		voluntary and would not be implemented in absence of the CDM.		
(f) Description of a typical CPA that will be included in the PoA covering the technology or measures to be used, justification of the choice of an approved baseline and monitoring methodology (or combination of approved methodologies) ¹ , application of an approved baseline and monitoring methodology;	EB55 Annex38 para. 6	DR	OK. A.4.2.1 of PoA-DD described typical technology/measure that would be applied to any potential CPA.	OK	OK
(g) Definition of eligibility criteria for inclusion of a project activity as a CPA under the PoA, which shall include, as appropriate, criteria for demonstration of additionality of the CPA, and the type and/or extent of information (e.g. criteria, indicators, variables, parameters or measurements) that shall be provided by each CPA in order to ensure its eligibility;	EB55 Annex38 para. 6	DR	OK. A.4.2.2 of PoA-DD defined eligibility criteria for inclusion of a CPA under the proposed PoA. Criterion 2 defined additionality condition.	OK	OK
(h) Starting date and length of the PoA not exceeding 28 years (60 years for A/R);	EB55 Annex38	DR	OK. B.1 of PoA-DD stated starting date of PoA, as the date of start-up of global stakeholder consultation. B.2 defined length of prgoram as 28 years.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	para. 6				
(i) Description of the operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA, including a record keeping system for each CPA under the PoA, a system/procedure to avoid double accounting e.g. to avoid the case of including a new CPA that has been already registered either as CDM project activity or as a CPA of another PoA, the provisions to ensure that those operating the CPA are aware and have agreed that their activity is being subscribed to the PoA;	EB55 Annex38 para. 6	DR	<p>A.4.4.1 of PoA-DD describes operational and management arrangements, roles and responsibilities of CME and CPA implementer, and procedure to avoid double counting.</p> <p>However, description about record keeping is only about CME's document control. Moreover, provided list of information that CME will manage does not include monitoring and/or operational data for each CPA. /CAR28/</p>	PENDING CAR28	OK
(j) Description of a monitoring plan for a CPA, developed in accordance with the approved monitoring methodology, and identification of the monitoring provisions and data parameters a CPA has to apply/monitor;	EB55 Annex38 para. 6	DR	<p>A.4.4.2 of PoA-DD (ver.5) describes monitoring plan for the PoA, in terms of organizational issues for monitoring, calibration issues, and reporting provisions. However, the description does not reflect applied monitoring methodology, and data parameters a CPA has to apply/monitor in accordance with paragraph 6(j) of the "Procedures for Registration of a Programme of Activities as a Single CDM Project Activity and Issuance of Certified Emission Reductions for a Programme of Activities (ver.04.1, EB55 Annex38)" /CAR29/</p> <p>OK. Revised PoA-DD (ver.6.1) appropriately describes monitoring plan for a CPA.</p>	CAR29	OK
(k) If the coordinating /managing entity does not wish to have all CPAs verified, a description of the proposed	EB55 Annex38	DR	A.4.4.2 of PoA-DD stated that no sampling method will be applied.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA;	para. 6				
(l) Environmental analysis of the PoA as per requirements of the CDM modalities and procedures. If this analysis is not undertaken for the PoA but is to be done at the CPA level this shall be described and reflected in the CDM-POA-DD and the CDM-CPA-DD;	EB55 Annex38 para. 6	DR	C.1 of PoA-DD defined EIA would be carried out at CPA level. Generic CPA-DD (Part II of PoA-DD) and initial CPA-DD correctly reflected it.	OK	OK
(m) If comments by local stakeholders were invited with regard to the total PoA, information on how comments by local stakeholders were invited, a summary of the comments received and how due account was taken of any comments received, as applicable. If such comments are to be sought at the CPA level this shall be described and reflected in the CDM-POA-DD and the CDM-CPA-DD;	EB55 Annex38 para. 6	DR	D.1 of PoA-DD defined local stakeholder consultation would be carried out at CPA level. Generic CPA-DD (Part II of PoA-DD) and initial CPA-DD correctly reflected it.	OK	OK
(n) In case public funding is used a confirmation that official development assistance is not being diverted to the implementation of the PoA.	EB55 Annex38 para. 6	DR	A.4.5 of PoA-DD stated that no public funding has been applied for the proposed program. Validation team confirms that no ODA is available in the host country.	OK	OK
E.21 Is consistency between PoA-DD and generic CPA-DD ensured?	EB55 Annex38	DR	OK. Description and information between PoA-DD and generic CPA-DD (Part II of PoA-DD) is consistent.	OK	OK

Checklist Question	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	15(d)				
E.22 In case where more than one methodology will be applied to each CPA, has the application of multiple methodologies been approved?	EB55 Annex38 15(e)	DR	N/A	OK	OK

Table 2. Resolution of Corrective Action and Clarification Requests

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
CAR 01	PoA design shall be same combination of technologies/measures under same combination of methodologies, but PoA-DD and specific CPA-DD described that PV power generation and solar heating project can be independently considered. So, the PPs shall demonstrate how the proposed program design is homogeneous.	Table 1 B.1.1	As CME determined the change of PoA design due to some issues in solar heating project, on 25 May 2012, this PoA involve the photovoltaic power plant system coherently. The official letter related to design change is submitted to DOE.	Resolved In the revised PoA-DD (ver.4.1), solar heating project activity has been withdrawn.
CAR 02	Validation team reviewed eligibility criteria for CPA in the PoA-DD(ver.03) and operating manual (ver.02), but could not found evidence how the PP has defined roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of competencies.	Table 1 E.16.1	In "Chapter 6, CPA Management and inclusion", roles and responsibilities of CME personnels are determined based on "Article 4, Competency requirement" in "Chapter 4, Roles, Responsibilities and Competencies". CME personnels have been authorized into three position, in case they satisfy the criteria both a) academic background and career and b) technology. As for the personnels included in the process for CPA inclusion, CME has compared if each personnel satisfies the relevant competency requirement of 'Chapter. 4' and approved through confirmation of the competency requirement check. The confirmation including the diploma, certificate of career, etc of personnel is documented in No. 9(Management register of description document) of database. And the information for satisfying the technology criteria is documented in No.5(Training	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions										
			<p>register) of database</p> <p>As for roles and responsibilities of CME personnels, the assistant manager of Green Growth Project Department is responsible for assessing eligibility criteria for CPA inclusion, the deputy manager is responsible for reviewing the assessment results and the general manager is responsible for finally approving the assessment results. The personnel information involved in CME is as follows:</p> <table><tr><td>Department</td><td>Position</td><td>Name</td></tr><tr><td rowspan="3">Green Growth Project Department</td><td>Assistant manager</td><td>Ms. Ji-young Kim</td></tr><tr><td>Deputy manager</td><td>Mr. Seung-chil Nam</td></tr><tr><td>General manager</td><td>Mr. Gyu-hae, Lee</td></tr></table> <p>The above description is added to article 3 of "Chapter 6, CPA Management and inclusion" and No.5,9 of database is submitted to DOE.</p> <p>In addition, the each procedure of CDM Operation Manual added the description that assistant manager, deputy manager and general manager are designated for roles and responsibilities of each procedure. And the description related to above CME personnels is</p>	Department	Position	Name	Green Growth Project Department	Assistant manager	Ms. Ji-young Kim	Deputy manager	Mr. Seung-chil Nam	General manager	Mr. Gyu-hae, Lee	
Department	Position	Name												
Green Growth Project Department	Assistant manager	Ms. Ji-young Kim												
	Deputy manager	Mr. Seung-chil Nam												
	General manager	Mr. Gyu-hae, Lee												

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
CAR 03	Training procedure developed by the PP does not ensure competencies of administrative personnel involved in the PoA	Table 1 E.16.1	<p>added to article 3 of Chapter 4.</p> <p>As the competency requirement need to satisfy the criteria both a) academic background and career and b) technology, CME planed and implemented the training to train the technology criteria related to CDM or Monitoring activities. CME personnels participated in the training course and PV power plant operators at project site finished the course through the training confirmation in writing.</p> <p>The data related to training is documented in No.5(Training register), 12(Management register of general document) of database and is submitted to DOE.</p>	Resolved
CAR 04	The PPs are required to demonstrate how each developed eligibility criteria can be verified. To be specific, "procedure for CPA management and inclusion" defined eligibility criteria and document to be assessed, but validation team cannot agree for some. Moreover, validation team does not have evidences that the procedure works.	Table 1 E.16.1	<p>In current PDD and CDM Operation Manual, CME revised the eligibility criteria in accordance with "Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities(EB 65, Annex 3)".</p> <p>CME has evaluated the eligibility criteria using desk review method for initial CPA.</p> <p>But, CME revised the evaluation method and description to evaluate No. 6, 8, 10, 12 of eligibility criteria, as CPA-DD is not made at the time for evaluating the eligibility criteria for CPA inclusion yet. The above criteria is evaluated by on-site visit and the evaluation description is added to the above criteria. In</p>	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions																
			<p>addition, the above description is revised to be consistent in CDM operation manual and database.</p> <p>The assessment result is documented in No. 2(Assessment register of eligibility criteria) of database and is submitted to DOE.</p>																	
CAR 05	The PPs are required to demonstrate how signing the confirmation document can ensure avoidance of double counting.	Table 1 E.16.1	<p>To avoid double counting, PP will be compared to the list of project activities that are under validation or registered at the UNFCCC or VCS. Before the inclusion of any CPA, PP will be made aware of the double counting principle and certify in writing that proposed CPA is not currently registered under the CDM of UNFCCC or any voluntary scheme.</p> <p>The above description is added to A.4.4.1 of PoA-DD and the certificate of double counting check is submitted to DOE.</p>	Resolved Modified procedure can ensure avoidance of double counting.																
CAR 06	The PPs are required to demonstrate operating manual including records and documentation control process for the CPA is in effect.	Table 1 E.16.1	<p>According to para 17 of EB 65, Annex 3, CME developed CDM Operation Manual of the proposed PoA. The manual involves 13 procedures as follows:</p> <table><tr><th>Chapter</th><th>PROCEDURES</th></tr><tr><td>1</td><td>PoA Policy</td></tr><tr><td>2</td><td>General</td></tr><tr><td>3</td><td>Framework of PoA</td></tr><tr><td>4</td><td>Roles, Responsibilities and Competencies</td></tr><tr><td>5</td><td>Pre-evaluation of eligibility before CPA inclusion</td></tr><tr><td>6</td><td>CPA Management and Inclusion</td></tr><tr><td>7</td><td>Technology and Facility</td></tr></table>	Chapter	PROCEDURES	1	PoA Policy	2	General	3	Framework of PoA	4	Roles, Responsibilities and Competencies	5	Pre-evaluation of eligibility before CPA inclusion	6	CPA Management and Inclusion	7	Technology and Facility	Resolved
Chapter	PROCEDURES																			
1	PoA Policy																			
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No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions																												
			<table><tr><td>8</td><td>Training</td></tr><tr><td>9</td><td>Monitoring</td></tr><tr><td>10</td><td>Calibration</td></tr><tr><td>11</td><td>Document and Data Control</td></tr><tr><td>12</td><td>Internal Quality Audit</td></tr><tr><td>13</td><td>Continuous Improvements of CDM Operation Manual</td></tr></table> <p>In addition, this manual provides 16 database forms using template.</p> <p>Original version of this manual was made by Green Growth Project Department(CME) on 15/08/2011. Current version(No. 04) has been updated three times through article 5 of "Chapter. 13, Continuous Improvements of CDM Operation Manual" on 10/09/2012 and the revision history of the manual is added.</p> <p>As for the 1st CPA, CME made CPA implementing records and document control records using database as follows:</p> <table><tr><th>No.</th><th>List</th></tr><tr><td>2</td><td>Assessment register of eligibility criteria</td></tr><tr><td>3</td><td>Facilities Management Register</td></tr><tr><td>5</td><td>Training register</td></tr><tr><td>6</td><td>Monitoring data management register</td></tr><tr><td>7</td><td>Inspection records</td></tr><tr><td>8</td><td>Management register for measuring instrument</td></tr><tr><td>9</td><td>Management register of description document</td></tr></table>	8	Training	9	Monitoring	10	Calibration	11	Document and Data Control	12	Internal Quality Audit	13	Continuous Improvements of CDM Operation Manual	No.	List	2	Assessment register of eligibility criteria	3	Facilities Management Register	5	Training register	6	Monitoring data management register	7	Inspection records	8	Management register for measuring instrument	9	Management register of description document	
8	Training																															
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7	Inspection records																															
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No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions																						
			<table><tr><td>10</td><td>Management register of standard document</td></tr><tr><td>11</td><td>Management register of general document(Internal document)</td></tr><tr><td>12</td><td>Management register of general document(External document)</td></tr><tr><td>13</td><td>Quality audit plan</td></tr><tr><td>14</td><td>Quality audit check list</td></tr><tr><td>15</td><td>Quality audit check report</td></tr><tr><td>16</td><td>Quality audit result report</td></tr></table> <p>Among the above database, CME designated the auditor not related 'Green Growth Project Department' through the confirmation, as the staff satisfied the requirements for the auditor in article 5 of 'Chapter 12, Internal Quality Audit' and participated in 'CDM and Monitoring training' on 06/09/2012.</p> <p>The staff involved in internal quality audit is as follows:</p> <table><tr><td>Department</td><td>Position</td><td>Name</td></tr><tr><td rowspan="2">Technology Standard Department</td><td>Assistant manager</td><td>Mr. One Huh</td></tr><tr><td>General manager</td><td>Mr. In-seok Jang</td></tr></table> <p>The related information is documented in No. 5 and 9 of database and submitted to DOE. In addition, the operation records for 'internal quality audit' are added to No.13-16 of database.</p> <p>CDM Operation manual and implementing records are</p>	10	Management register of standard document	11	Management register of general document(Internal document)	12	Management register of general document(External document)	13	Quality audit plan	14	Quality audit check list	15	Quality audit check report	16	Quality audit result report	Department	Position	Name	Technology Standard Department	Assistant manager	Mr. One Huh	General manager	Mr. In-seok Jang	
10	Management register of standard document																									
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Technology Standard Department	Assistant manager	Mr. One Huh																								
	General manager	Mr. In-seok Jang																								

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
CAR 07	PoA-DD and supplemented document does not include measures for continuous improvements. Operating manual defined that the manual can be revised only when required by a CPA operator.	Table 1 E.16.1	<p>submitted to DOE.</p> <p>As for the Chapter 13, Continuous improvements of CDM Operation Manual, the method for continuous improvements is added as follows:</p> <ul style="list-style-type: none"> a) Continuous improvement annually b) Requests by CPA implementer c) Replacement of the existing procedures or Inclusion of new procedures d) Quality Audit Results Report by Internal Quality Audit e) CAR/CL/FAR by DOE, etc. <p>And the above method is added to A.4.4.1 of PoA-DD.</p> <p>As for the Internal quality audit, the regular audit will conduct annually by the department other than CME.</p> <p>The above description is added to "Chapter 12, Internal quality audit".</p> <p>According to "Chapter 13, Continuous improvements of CDM Operation Manual", the manual has been revised three times and the revision history made by CME personnel ensure that continuous improvements have implemented as described in Chapter. 13.</p> <p>The Manual(Ver.04) is submitted to DOE.</p>	Resolved
CAR 08	Eligibility criteria does not provide conditions not to result in the diversion of ODA assistance	Table 1 E.16.1	<p>The condition related an affirmation that does not result in diversion of ODA is added to eligibility criteria of A.4.2.2.</p>	Resolved Condition related to ODA funding has been added in the eligibility criteria.

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
CAR 09	The PoA-DD and operation manual does not include procedure for updating eligibility criteria as required.	Table 1 E.18	According to EB 65, Annex 3, CME added two provisions that the eligibility criteria will update : i) In case the version of AMS-I.F methodology applied by PoA is revised or replaced ii) In case of the renewal of the crediting period of a PoA(the renewal of the first CPA) As for two provisions, the specific description for updating eligibility criteria is added to A.4.2.2 of PoA-DD and Chapter 6 of CDM Operation Manual.	Resolved. Revised PoA-DD (ver.05) and CDM Operation Manual have correctly reflected the requirements.
CAR 10	The PPs shall provide evidence that shows how utilizing photovoltaic emits zero GHG into the atmosphere or water system without any natural resources depletion, as described in section A.2 of PoA-DD	Table 1 A.7.1	As it is uncertain that photovoltaic power plants applied in all CPAs does not emit GHG and the potential CPAs may emit the project emissions due to the use of fossil fuels, the improper description is excluded.	Resolved. Description in section A.2 of revised PoA-DD (ver.5) is now clear. Assessment of identification of emission sources have been provided in relevant section.
CAR 11	Some terms are not consistently described throughout the PoA-DD. For example, KEPCO grid and PoA-DD	Table 1 A.7.1	The term such as KEPCO grid, etc is modified to be consistent in PoA-DD.	Resolved
CAR 12	References shall include version.	Table 1 A.7.1	The version of methodology, methodological tool and guideline is added to E.1 of PoA-DD and the other Section.	Resolved
CAR 13	To demonstrate additionality on CPA level, the PPs provided procedures as per "Guidelines for demonstrating additionality of microscale project activities" and "Attachment A to appendix B of simplified M&P for SSC CDM project activities". But, the context in the section A.4.3 of PoA-DD (ver.03) is different from those documents.	Table 1 B.5.3	As this PoA applies photovoltaic power plants and the total installed capacity is less than or equal to 15MW, PP revised the context to demonstrate the additionality through the positive list, in accordance with "Guidelines on the demonstration of additionality of small-scale project activities(EB 68, Annex 27, Version 09.0)" The above description is added to A.4.3 of PoA-DD.	Resolved
CAR 14	Procedure to demonstrate additionality of CPA is not consistently described in A.4.3 and E.5.1 of PoA-DD	Table 1 B.5.1	Procedure for demonstrating the additionality is modified to be consistent in A.4.3 and E.5.1.	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
	(ver.03)			
CAR 15	A.4.4.1 of PoA-DD (ver.03) defined role of CME to avoid de-bundle of large scale project activity. But, the PPs shall demonstrate how signed declaration can ensure avoidance of de-bundling.	Table 1 E.17 (d)	<p>The description in A.4.4.1 of PoA-DD is revised based on debundling check list in "GUIDELINES ON ASSESSMENT OF DEBUNDLING FOR SSC PROJECT ACTIVITIES, Version 03".</p> <p>CME excluded the description related to the signed declaration, CME describes that the proposed project is not a de-bundled component through the de-bundling check list and CPA information(e.g. CPA implementer name, address, capacity, GPS information, etc) by conducting desk review and on-site visit.</p> <p>And every new CPA will be compared to the list of project activities under validation or registered at the UNFCCC.</p> <p>The information related to the above description is added to A.4.4.1 of PoA-DD. In addition, means of evaluation for No. 12 of eligibility criteria and database No.2 is revised to include desk review and on-site visit. And the evidence is revised to include below:</p> <ul style="list-style-type: none"> - Check of geographical area - Check of applied technology/measure - Check of project activities under validation or registered 	Resolved.
CAR 16	A.4.4 of PoA-DD (ver.03) and operating manual (ver.2) described that monitoring data for all CPAs shall be managed by CME, by electronically transferring monitored data. But, project sites validation team has visited were not able to do.	Table 1 B.8.3	As monitoring data collected from all CPAs will be managed by the electronic method or the report format, A.4.4.2 of .PoA-DD and Chapter 9 of CDM operation manual is modified to consistent.	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
CAR 17	E.4 of PoA-DD (ver.03) described that emission factor for the electricity system as per AMS-I.D. But, AMS-I.D does not define the calculation process.	Table 1 B.4.1	As paragraph 12 of AMS-I.D, ver.17 describe a transparent and conservative manner for the emission factor calculation, this PoA choose the manner of a combined margin and the process for the emission factor calculation is in compliance with "Tool to calculate the emission factor for an electricity system (version 3.0)" The above description is modified to be consistent in E.4 of PoA-DD.	Resolved.
CAR 18	Refer to step I, section E.5.2 of the PoA-DD, the PPs are required to demonstrate how any CPA is additional if the CPA meets two criteria described in the table.	Table 1 B.5.1	PP revised the context to demonstrate the additionality through the positive list, in accordance with "Guidelines on the demonstration of additionality of small-scale project activities(EB 68, Annex 27, Version 09.0)" If the CPA meet the criteria 1 in E.5.2, the SSC-CPA is automatically additional corresponding the positive list. E.5.2 of PoA-DD is modified to include the description above..	Resolved.
CAR 19	Step II, section E.5.2 of the PoA-DD described that any CPA to be included shall consistently demonstrate one of the barrier, but the PPs defined all barriers for 'data for criteria'. The PPs shall clearly explain how it can ensure consistent manner to demonstrate additionality..	Table 1 B.5.1	PP revised the context to demonstrate the additionality through the positive list, in accordance with "Guidelines on the demonstration of additionality of small-scale project activities(EB 68, Annex 27, Version 09.0)" So, the description related to barriers is excluded.	Resolved.
CAR 20	Section E.6.1 of PoA-DD (ver.03) does not provide explanation of methodological choice.	Table 1 B.4.2	Explanation of methodology choice is added to E.2 of PoA-DD and Explanation of methodological tool choice is added to E.6.1 of PoA-DD.	Resolved.
CAR 21	E.6.2 of PoA-DD (ver.03) provide following equation to calculate baseline emission:	Table 1 B.4.4	In ex-ante calculation, PP excluded the equation for $EG_{BL,y}$ calculation stipulated by the improper parameter. In E.6.2 of PoA-DD, PP added the description that	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
	$EG_{BL,y} = C_{photovoltaic} * H * UC$ But the PPs shall demonstrate (i) how the equation is reasonable, and (ii) what utilization coefficient would be applied.		<p>$EG_{BL,y}$ is estimated based on total installed capacity, operating days and utilization coefficient of photovoltaic system using duration of sunshine.</p> <p>And the utilization coefficient is based on the data available published from public entities.</p>	
CAR 22	E.6.2 of PoA-DD (ver.03) described that project emission is zero because the system does not use any energy source for operation. But, during on-site assessment, validation team has found that auxiliary power is supplied from the grid while PV system does not produce electricity.	Table 1 B.8.2	<p>To calculate quantity of net electricity(the difference between the total quantity of electricity generated by this project and the auxiliary electricity consumption.), the measurement method of $EG_{BL,y}$ parameter in E.7.1 is modified to include below :</p> <p>As for the total quantity of electricity generated by this project,</p> <p>Measuring equipment : Watt hour meter (the measuring device in inverter) Measurement interval : Continuous</p> <p>As for the auxiliary electricity consumption (of connector bands and inverters),</p> <p>The auxiliary electricity consumption is calculated as follows:</p> <p>The auxiliary electricity consumption = Standby power (of connector bands and inverters) * Numbers * Hours.</p> <p>In B.6.1of CPA-DD, the actual auxiliary electricity consumption added the description to be calculated during the monitoring period and the operating hours</p>	Resolved Revised monitoring plan for the parameter is appropriate.

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
CAR 23	E.7.1 of PoA-DD (ver.01) described that quantity of net electricity and the amount of net thermal energy would be monitored, but there is no information how NET value can be obtained. Moreover, same table described that single meter measures net value, which means both electricity/thermal energy export and import can be measured by the meter.	Table 1 B.8.2	<p>is considered as 24 hours in conservative approach.</p> <p>CME determined the change of PoA design due to some issues in solar heating project, on 21 May 2012. So, PoA involve the photovoltaic power plant system. The official letter related to design change is submitted to DOE.</p> <p>And E.7.1 of PoA-DD is modified to measure quantity of net electricity coherently.</p>	Resolved.
CAR 24	E.7.1 of PoA-DD (ver.03) defined data source of monitoring parameter as CPA database. But, it is not clear to understand how the PPs can ensure to monitor the parameters required by methodologies.	Table 1 B.8.2	<p>According to continuous improvements, CME has been updated 'CDM Operation Manual' and current version is 04.</p> <p>CME will collect the data source related to the net electricity required by AMS-I.F(ver.2) using the database of CDM Operation Manual.</p> <p>According to 4)-6) of article 6 in "Chapter 9, Monitoring"(See page 43-44), CME has managed the total quantity of electricity generated before CPA inclusion. After CPA inclusion, CME will manage below parameter during the monitoring period :</p> <ul style="list-style-type: none"> a) Numbers of connector bands and inverters installed at project site; b) Standby power from manufacturer's specification; c) Operating hours(24 hours/day in conservative approach) <p>So, CME will calculate the auxiliary electricity consumption and the net electricity during monitoring</p>	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
			<p>period in No. 6 of database.</p> <p>As this CPA is not yet registered to component project activity, CME has managed the total quantity of electricity of the second quarter of 2012 in No. 6(Management register of monitoring data). In the monitoring data, some PV power plants have provided the total quantity for one month or two months in the second quarter, as the collective housing are not yet ready for occupancy.</p> <p>As described in the manual, CME will manage the net electricity and the auxiliary electricity consumption during monitoring period, according to "Chapter 9, Monitoring".</p>	
CAR 25	Table in section E.7.1 defined that measuring devices for both PV and solar heating project will be managed by schedule and procedure provided by technology provider and/or grid operator. The PPs shall demonstrate how it can ensure CDM requirements related to managing monitoring equipments. Moreover, QA/QC process developed in the operating manual is not in accordance with PoA-DD.	Table 1 B.8.3	<p>Based on "General Guidelines to SSC CDM methodologies, Version 17" and the guideline for the support on the new & renewable energy equipments of Korea, the QA/QC description in table of E.7.1 is modified to be compliance with the CDM requirements.</p> <p>In addition, "Chapter 10, calibration" of CDM operation manual is modified to be consistent with PoA-DD.</p> <p>Based on this chapter 10, No. 8(management register of measuring device) of database has been used by operators at photovoltaic power plant sites.</p> <p>CME has managed No. 6(management register of monitoring data) of database by collecting the total quantity of electricity generated from project site.</p>	Resolved

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
			And No. 7(Inspection records) of database has been used by operators at photovoltaic power plant sites. The updated No. 6-8 is submitted to DOE.	
CAR 26	E.7.2 described that all data collected will be recorded electronically, but validation team found that records is kept by registered form documented by CPA operators.	Table 1 B.8.3	As all data will be recorded by the electronic method or the report format, this description is modified in E.7.2 of PoA-DD and CDM operation manual. The report format data collected from person in charge at project site has been documented in No.12* of database, according to 'Document and data control' procedure of CDM operation manual No. 12 of database and the report format data is submitted to DOE. *.management register of general document(external document)	Resolved
CAR27	According to the "Tool to calculate emission factor for an electricity system (ver.2.2.1)", emission factor is determined based on 3 year weighted average from most recent data available at the time of submission of the CDM PDD to validating DOE. KSA has received initial version of PoA-DD on 30/08/2011, while the "Status report of generation facilities, 2011" has been issued on July 2011. However, the PPs have calculated emission factor based on 2007 to 2009.	Table 1 B.3.5	In PDD(ver.5), PP recalculate and apply the emission factor based on 2008 to 2010 using "Status report of generation facilities, 2011". The revised documents are submitted to DOE.	Resolved. Validation team confirmed that most recent data for the grid has been applied to calculate emission factor.
CAR28	A.4.4.1 of PoA-DD describes operational and management arrangements, roles and responsibilities of CME and CPA implementer, and procedure to avoid double counting.	Table 1 E.20 (i)	In A.4.4.1 of PoA-DD(Ver.6.1), PP added the description related to data flow for a record keeping system. The flow of data will occur at three different steps, such as project site, SSC-CPA, CME. The data	Resolved. Appropriate description has been included in accordance with EB55 Annex38 6(i).

No. of CAR/CL	Description of the CAR/CL	Ref.	Comments/Response from project proponent	Conclusions
	However, description about record keeping is only about CME's document control. Moreover, provided list of information that CME will manage does not include monitoring and/or operational data for each CPA.		<p>generated at project site(Step I) will first flow to the SSC-CPA(Step II) and is then finally archived at the CME(Step III). And detailed description about the respective step is added.</p> <p>In addition, the additional information for CME's management included as follows:</p> <ul style="list-style-type: none"> - Monitoring data generated by CPA - Implementing records for CPA operation <p>The revised PDD including the above description is submitted to DOE.</p>	
CAR29	A.4.4.2 of PoA-DD (ver.5) describes monitoring plan for the PoA, in terms of organizational issues for monitoring, calibration issues, and reporting provisions. However, the description does not reflect applied monitoring methodology, and data parameters a CPA has to apply/monitor in accordance with paragraph 6(j) of the "Procedures for Registration of a Programme of Activities as a Single CDM Project Activity and Issuance of Certified Emission Reductions for a Programme of Activities (ver.04.1, EB55 Annex38)"	Table 1 E.20 (j)	<p>In A.4.4.2 of PoA-DD(ver.6.1), PP added the information related to monitoring provision and parameter of AMS-I.F methodology.</p> <p>The monitoring plan for each CPA included as follows:</p> <ul style="list-style-type: none"> - The CPA will implement each CPA individually and monitor and record all parameters included in section E.7.1. - The CME will provide the manual to each CPA on how monitoring should be conducted and data should be collected, transferred, archived in regards to emission reductions calculation. - The CPA will provide data on monitored parameters included in section E.7.1 to the CME. - The CME will document and store all parameters included in section E.7.1 provided by CPA, while primary data will be stored by CPA. - The CME review relevant monitoring documents, prepare the monitoring report, and provide the latter to the DOE. <p>The revised PDD including the above description is submitted to DOE.</p>	Resolved. Appropriate description has been included in accordance with EB55 Annex38 6(j).

APPENDIX B

CERTIFICATE OF COMPETENCE

KSA

CDM Validator/Verifier Certificate

Seung-Keun Choi

Certificate No. : CDM-015

Technical Area : -

Korean Standards Association hereby certifies that the above person is qualified by KSA's Qualification requirements to conduct validation and verification for CDM and GHG project.

VALID FROM

2011.01.21

VALID UNTIL

2014.01.20

PRESIDENT OF KSA



KOREAN STANDARDS ASSOCIATION

13F, Ace High-end Tower 3, 371-50, Gasan-dong, Gwumcheon-gu, Seoul, Korea



GHG Validator/Verifier Certificate

Kyoo-Il Sohn

Certificate No. : CDM-001

Technical Area : 13.1

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2014.1.20

PRESIDENT OF KSA

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KOREAN STANDARDS ASSOCIATION

13F, Ace High-end Tower 3, 371-50, Gasan-dong, Gwumcheon-gu, Seoul, Korea

KSA

CDM Validator/Verifier Certificate

Seong-Yong Park

Certificate No. : CDM-014

Technical Area : -

Korean Standards Association hereby certifies that the above person is qualified by KSA's Qualification requirements as a technical expert for CDM validation and verification activities.

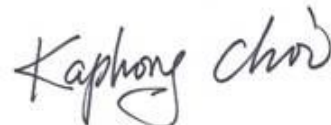
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KOREAN STANDARDS ASSOCIATION

13F, Ace High-end Tower 3, 371-50, Gasan-dong, Gwumcheon-gu, Seoul, Korea



Technical Expert Certificate

Chung-kook Lee

Certificate No. : CDM-013

Technical Area : 1.2, 2.1, 2.2, 3.1

Korean Standards Association hereby certifies that the above person is qualified by KSA's Qualification requirements as a technical expert for CDM validation and verification activities.

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2010.09.20

VALID UNTIL

2013.09.19

PRESIDENT OF KSA

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KOREAN STANDARDS ASSOCIATION

13F, Ace High-end Tower 3, 371-50, Gasan-dong, Gwumcheon-gu, Seoul, Korea



CDM Validator/Verifier Certificate

Chan-Sik Yun

Certificate No. : CDM-006

Technical Area : 1.2, 2.1, 2.2, 3.1

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2013.09.19

PRESIDENT OF KSA

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KOREAN STANDARDS ASSOCIATION

13F, Ace High-end Tower 3, 371-50, Gasan-dong, Gwumcheon-gu, Seoul, Korea