



Validation report form for post-registration changes for CDM project activities
(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the validation report form for post-registration changes for CDM project activities" at the end of this form.

VALIDATION REPORT ON POST-REGISTRATION CHANGES (PRCs)

Title and reference number of the project activity	LG Solar Energy Taeann Photovoltaic Power Plant Project
Process track	<input type="checkbox"/> Prior approval <input checked="" type="checkbox"/> Issuance <input type="checkbox"/> Renewal of crediting period
Version number of the validation report on PRCs	Version 01.0
Completion date of the validation report on PRCs	30/12/2015
Type(s) of PRCs	<input type="checkbox"/> Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline <input type="checkbox"/> Corrections <input type="checkbox"/> Changes to the start date of the crediting period <input type="checkbox"/> Inclusion of a monitoring plan to a registered project activity <input checked="" type="checkbox"/> Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline <input checked="" type="checkbox"/> Changes to the project design of a registered project activity <input type="checkbox"/> Types of changes specific to afforestation and reforestation project activities
Version number of PDD to which this report applies	Version 07
Project participant(s)	LG Solar Energy
Host Party	Republic of Korea
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	<ul style="list-style-type: none"> · Sectoral scope: 1_Energy industries (renewable-/non-renewable sources) · Selected methodology: AMS-I.D "Grid connected renewable electricity generation" (Version 15.0)
Name of DOE	Korean Foundation for Quality (KFQ)

Name, position and signature of the approver of the validation report on PRCs	Soon Hong YEOM  Managing Director of Sustainability management institute
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SECTION A. Executive summary

Korean Foundation for Quality (KFQ) is performing periodic verification of the CDM project “LG Solar Energy Taeon Photovoltaic Power Plant Project” in Taeon, Republic of Korea, UNFCCC Registration Ref. No. 3874 for the 2nd monitoring period 09/12/2011 ~ 31/12/2014 of the 1st crediting period.

The validation for the post registration change has been conducted in the course of the verification for the monitoring period from 09/12/2011 to 31/12/2014 of the project activity and the post registration changes for the project does not require prior approval by the Board as per the Appendix 1 of CDM project standard (version 09).

Validation scope

This validation is an independent and objective review of the post registration changes in registered PDD. The scope of the validation of post registration changes is to determine whether there are proposed or actual changes to the project design of the registered CDM project activity and the suggested post registration changes comply with the relevant requirements in the Project standard.

The information presented in the revised PDD provided by the PP was assessed by review of the detailed project documentation especially regarding to reason for permanent changes from registered monitoring plan and change to project design of registered project activity as well as by interviews with personnel at LG solar Energy. This has enabled the validation team to assess and determine that the post-registration change is in compliance with CDM Project standard and relevant guidance provided by the Board.

Validation process

The validation process includes desk review of the revised PDD (and the registered PDD) and other supporting documents and data. Further, onsite inspection and interviews with those involved in project management and operations are conducted. This is followed by preparation of draft validation report for the post registration changes summarizing desk review and on-site inspection findings (i.e. CARs, CLs, and FARs). Upon successful closing of the CARs and CLs raised (if any), the final validation report is prepared. The final report then undergoes a technical review and final approval according to KFQ's internal quality assurance procedures.

General description of the project activity and summary of post-registration change

Title of project activity	LG Solar Energy Taeon Photovoltaic Power Plant Project	
UNFCCC Reference Number	3874	
Project Participants	LG Solar Energy	
Baseline and monitoring methodology	AMS-I.D. (ver.15)	
Location of the project activity	Address	440-11 Bangalli, Taeon county, Chungnam province of Korea (Site #1) 152-5 Bangalli, Taeon county, Chngnam province of Korea (Site #2)
	GPS Coordinates	Longitude : 126.13°E Latitude : 36.53°N
Registration Date	09/12/2010	
Registered PDD	Version 6 of 30/06/2010	

1 st crediting period	09/12/2010 ~ 08/12/2017 (Renewable, 7 years)
1 st Monitoring period	09/12/2010 ~ 08/10/2011 (Completed)
2 nd Monitoring period	09/12/2011 ~ 31/12/2014 (Monitoring period under verification)

The project activity, “LG Solar Energy Taeon Photovoltaic Power Plant Project” is a CDM project which is to generate the electricity from photovoltaic power plant. Total installed capacity of the project is 13.77216MW and the electricity generated by the project is supplied to the Korea Electricity Power Corporation (KEPCO) through the Taeon Transformer Substation.

The project activity had been implemented as per the registered PDD (v.6) and the 1st monitoring period for 09/12/2010 ~ 08/10/2011 was successfully completed and 2nd monitoring period of 09/10/2011~31/12/2014 is under verification by KFQ.

Under the 2nd verification, the PP needed to request post-registration change for the project activity and these are as follows:

There are 2 changes regarding the permanent change of monitoring plan.

- According to the FAR raised from the 1st verification, the information of metering equipment for plant operation is included in the monitoring plan of the revised PDD.
- According to the National regulation, the test interval for metering equipment for power generation is changed from 3 years to 3.5 years \pm 6months (3~ 4 years).

Above 2 permanent changes of monitoring plan were assessed in D.6 of this report and these are not required prior approval by the Board as per paragraph 5(a) and 5(f), Appendix 1 of CDM Project standard (ver.09).

Also, the PP has installed the additional facility in order to reduce the power usage for the plant operation and thus, 90kW PV system and 144kWh ESS has been installed at the project site. The validation team checked that this system used for only internal plant operation purpose not for sale and accordingly, total installed capacity of the registered project is not increased. It is considered as ‘Addition of component or extension of technology’ as per paragraph 289(b) of Project Standard (ver.09.0) and the validation team assessed it in D.7 of this report. This change to project design of registered project activity does not require prior approval by the Board as per paragraph 6, Appendix 1 of CDM Project standard (Ver.09.0).

Conclusion

As a result of our assessment, KFQ confirms that these post-registration changes complied with the relevant requirements related to the ‘Permanent changes to the registered monitoring plan’ and ‘Changes to the project design of a registered project activity’ in CDM Project standard.

SECTION B. Validation team, technical reviewer and approver**B.1. Validation team member**

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader	IR	PARK	Sang Yeon	KFQ	√	√	√	√
2.	Validator	IR	CHO	Jin Seok	KFQ	√	√	√	√

B.2. Technical reviewer and approver of the validation report on PRCs

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	JEONG	Yu Shim	KFQ
2.	Approver	IR	YEOM	Soon Hong	KFQ

Please refer to Appendix 2 below for demonstrate of how the team meets the competence required for the validation.

SECTION C. Means of validation**C.1. Desk review**

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Under the verification process, the revised PDD with the revised MP was submitted by the PP and it was reviewed as initial step of the validation process as for the post registration changes. Also, over the whole validation period, validation team reviewed the previous verification reports, the applied baseline and monitoring methodology and any other information and references relevant to the post registration change. A complete list of all documents reviewed is shown in Appendix 3 of this validation report. KFQ's validation process takes into consideration all the CDM Rules and Guidance applicable to the Project Cycle Procedure, Post Registration Changes and Request for issuance.

C.2. On-site inspection

Detailed validation of all post registration change related information contained in the revised PDD was performed during the site visit at LG Solar Energy on 08/07/2015. During the site visit, the personnel were interviewed or assisted the validation team. The following aspects of the CDM project activity have been confirmed:

- The implementation and operation of the CDM project activity
- A cross-check between information provided in the revised PDD and information from other sources
- A check on whether the change impact the additionality, scale of the project activity, applicability of approved methodology and level of accuracy of the monitoring

Duration of on-site inspection: 08/07/2015				
No.	Activity performed on-site	Site location	Date	Team member
1.	The implementation and operation of the project	Taeon	08/07/2015	Sang Yeon PARK Jin Suk CHO
2	Project design changes according to the installation of additional facility	Taeon	08/07/2015	Sang Yeon PARK Jin Suk CHO
3	Additionality and Scale of the project activity, application of the approved methodology and level of accuracy of the monitoring	Taeon	08/07/2015	Sang Yeon PARK Jin Suk CHO
4	the revision of the registered PDD	Taeon	08/07/2015	Sang Yeon PARK Jin Suk CHO

C.3. Interviews

A list of the persons interviewed during this validation activity is included in the table below.

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	KIM	Jeong Rae	LG Solar Energy (Project owner)	08/07/2015	CEO	Sang Yeon PARK Jin Seok CHO
2	BANG	Byung Sun	LG Serveone (Supporting unit)	08/07/2015	Manager	Sang Yeon PARK Jin Seok CHO

C.4. Clarification requests, corrective action requests and forward action requests raised

Areas of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	0	0	0
Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline	-	-	-
Corrections	-	-	-
Changes to the start date of the crediting period	-	-	-
Inclusion of a monitoring plan to a registered project activity	-	-	-
Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline	0	0	0
Changes to the project design of a registered project activity	0	0	0
Types of changes specific to afforestation and reforestation project activities	-	-	-
Others (please specify)	-	-	-
Total	0	0	0

SECTION D. Validation findings**D.1. Compliance with PDD form**

Means of validation	KFQ has checked the PDD provided by the PP against the latest PDD form in order to determine, whether the PDD form is in compliance with it.
Findings	The PP submitted the revised PDD both track-change and clean versions with the valid version of the latest PDD form for small-scale CDM (v.06.0) and the instructions therein for filling out the PDD form. The PP used the later version of the PDD form for the revised PDD(v.06.0) than the version of the PDD form of the registered PDD(v.03).
Conclusion	KFQ confirms that the revised PDD(v.07) is in compliance with the latest PDD form(v.06.0) and the instruction therein. Also, KFQ confirms that the information transferred to the later version of the PDD form is materially the same as that in the registered PDD.

D.2. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.3. Corrections

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.4. Changes to the start date of the crediting period

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.5. Inclusion of a monitoring plan to a registered project activity

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.6. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline**Change #1. Addition of the meter's information for electricity imported in monitoring plan****The reason for permanent change**

From the previous 1st verification, 1 forward action request (FAR) has been raised and it requires the revision of monitoring plan. The FAR is a result by I&R check for issuance in the course of the 1st verification¹ and its details is as in the following:

*There is not indicated the information on the electricity meter used for plant operation as the meter is out of control from Project owner in the section of monitoring plan of the registered PDD. In above context, it was understood that the monitoring plan for metering equipment was assessed on the meters operated by the project owner in the validation report (Report. No. 2009-15).
Nevertheless, it might be occurred some confusion in the next verification on the monitoring plan.*

¹ https://cdm.unfccc.int/IRCheck/iss_forms/SQXJU96F3YN8LZG/viewPublic

'Net electricity delivered to the Grid (EG_{Taeon PV,MP})' is a only parameter to be monitored for the project activity. For monitoring this parameter, two meters were installed; One is a meter delivered electricity to the grid and the other is meter imported electricity from the grid.

Nevertheless, the meter's information (accuracy and calibration frequency) in the monitoring plan of the registered PDD is only for the meter delivered electricity to the grid. At the time of 1st verification, it was confirmed that the meter's information on electricity imported from the grid is not indicated because of controlling by the 3rd party (KEPCO). Even though it was understood by the audit team in 1st verification, to prevent any confusion such as applying the same level of QA/QC (same accuracy and calibration frequency) to two meters, a forward action to PP was requested regarding the addition of the relevant information for the meter of electricity imported from the grid in monitoring plan.

Thus, the validation team assessed the revised monitoring plan which clearly described a meter's information on electricity imported from the grid through the evidences (meter's register provided by KEPCO, meter's specification and National regulation).

This change can be considered as per paragraph 5(a)-'Change of calibration frequency or practice for monitoring equipment not within the control of PP', Appendix 1 of PS and thus, it does not require prior approval by the Board.

Assessment on the permanent change

The validation team could check that this change does not require any change of the project activity, which is needed to include the information in the monitoring plan for clear understanding in accordance with FAR raised. Thus, PP is still implementing the existing registered monitoring plan to monitor the registered CDM project activity.

Thus, this change does not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan and thus it does not impact the calculation of emission reduction.

The detailed assessment of proposed alternative monitoring is as following:

Data/Parameter	EG _{TaeonPV,MP}
Description	Net electricity generated and delivered to the grid by LG Taeon PV power plant in a monitoring period.
Means of validation	The validation team reviewed the meter's information on electricity imported from the grid and its information with the relevant evidences (meter's register provided by KEPCO, meter's specification and National regulation)
Findings	<p>To be monitor of the parameter 'EG_{Taeon, PV, MP}', the meter's information for electricity transferred to the Grid was only described in the 'B.7.1. Data and parameter to be monitored' in the monitoring plan of registered PDD. Thus, PP additionally included the meter's information for electricity imported from the grid in the monitoring plan of revised PDD.</p> <p>The validation team checked that the information is consistent with the relevant evidences (meter's register provided by KEPCO, meter's specification and National regulation) as well as on-site inspection.</p> <p>The validation team could check that this change does not require any change of the project activity, which is needed to include the information in the monitoring plan for clear understanding in accordance with FAR raised.</p> <p>Thus, validation team could confirm that there is no need alternative monitoring for this change. Also, the validation team confirms that the information included in the monitoring plan is in accordance with a monitoring plan, the applied methodology and the relevant tools.</p>
Conclusion	KFQ confirms that this change which includes the information on a meter for electricity imported from the grid in the monitoring plan is completely complied with the requirements of para.284-287 in the Project Standard (v.09.0).

Change #2. Change of the calibration frequency for meter as per the National regulation**The reason for permanent change**

The PP requests the calibration interval of meter for power generation is changed from 3 year to 3.5 years \pm 6months (3~ 4 years) as per the National regulation.

The installation and maintenance of meter for power plant operation has complied with the related National regulation, "Rules for electricity market operation" published by KPX, in Republic of Korea. According to the National regulation, the meter for over 1MW and below 20MW (1MW~20MW) had a 3 years calibration frequency. And the project was registered on 09/12/2010 and the regulation was revised on 27/12/2007 as 3.5 years \pm 6 months (3years ~ 4 years) for the meter of over 1MW.

3 years calibration frequency has applied for the meter of electricity transferred to the Grid as described in monitoring plan of registered PDD. In the course of 2nd verification with the monitoring period from 09/12/2011 to 31/12/2014, the audit team checked the calibration records for the meters and confirms that the meters had been properly operated. Also, the validation team has assessed that calibration frequency with 3years~4years is applicable as per the National regulation of "Rules for electricity market operation".

This change can be considered as per paragraph 5(f)-'Change of calibration frequency as per the applied methodology or national regulation', Appendix 1 of PS and thus, it does not require prior approval by the Board.

Assessment on the permanent change

The PP has provided the revised monitoring plan to the validation team and it was assessed that the revised monitoring plan clearly indicated the calibration frequency of 3years ~ 4 years for the meter of electricity transferred to the Grid and its information is consistent with the relevant National regulation.

The detailed assessment of proposed alternative monitoring is as following:

Data/Parameter	EG _{TaeonPV,MP}
Description	Net electricity generated and delivered to the grid by LG Taeon PV power plant in a monitoring period.
Means of validation	The validation team reviewed the changes to the monitoring plan described in the revised PDD are in compliance with the applied methodology (AMS-I.D, ver.15) and the changes complies with the requirements in Project standards(v.09.0).
Findings	<p>The meter for electricity transferred to the Grid has a 3 years calibration frequency as per the monitoring plan of the registered PDD.</p> <p>According to the related National regulation "Rules for electricity market operation", meter for over 1MW has a 3years~ 4years testing frequency which has been revised since 27/12/2007. Thus, the validation team could check that the frequency of 3 years in the registered PDD and 3 years~ 4years in the revised PDD also meets the National regulation. Consequently, the validation team confirms that this change is applicable according to the National regulation and the methodology.</p> <p>In the course of 2nd verification with the monitoring period from 09/12/2011 to 31/12/2014, the audit team checked the calibration records for the meters and confirms that the meters have been properly operated through the result of calibration. Nevertheless, the audit team found that the last calibration² on meter of electricity transferred to the Grid was not complied with 3 years calibration frequency as per the monitoring plan of registered PDD even though it meets the National regulation. Thus, the PP has applied the alternative for this change and consequently, the PP has adjusted the data as applying the maximum permissible the error of the applied meter for the period from 29/11/2014 to 31/12/2014. Thus, the emission reduction for the 2nd verification will not be overestimated as a result of</p>

² The last calibration date on all meters for electricity transferred to the Grid (5 meters) is on 29/11/2011 and it was valid until 28/11/2014 according to the monitoring plan of registered PDD with 3 years calibration frequency.

	this change. Furthermore, this change does not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.
Conclusion	KFQ confirms that this change in the monitoring plan is completely complied with the requirements of para.284-287 in the Project Standard (v.09.0).

D.7. Changes to the project design of a registered project activity

The PP requires changes to the project design of a registered project activity as described below and this is not required prior approval by the Board as per paragraph 6, Appendix 1 of CDM project standard (v.09).

The description of the changes to the project design

The registered PDD (v.06, dated on 30/06/2010) was registered with the PDD form (version 03) in VVM track. The validation team confirms that the material included in the new form (version 06.0) in VVS track of the revised PDD (v.07, dated on 04/11/2015) is materially the same with the information in the registered PDD as confirmed by document review.

The revised PDD includes the new information regarding the installation of 90kW PV and 144kWh ESS (Energy Saving System) in the Section A.3 based on the actual circumstance of the project activity. The detail on the installation of PV and ESS at the project site is as follows:

The sales of electricity generated from the power plant is followed the rule for regulating electricity market by KPX³ in Korea. KPX has changed their rule on the sales of electricity from total amount basis to net amount basis since 01/01/2010 and thus, the PP needs to minimize the electricity usage for efficient operation of power plant. Accordingly, the relevant activities of saving internal usage of energy had been steadily implemented in the power plant and the PP had decided to install the PV/ESS as a part of the energy saving in the power plant. Thus, PP made a contract with LG CNS for installation of PV/ESS on 04/02/2013 and this PV/ESS system had started up from 01/07/2013.

This system used for only internal plant operation purpose not for sale. The data from this PV/ESS system are separately monitored and controlled by its own monitoring system. The generated electricity by this system is firstly used for the plant operation and the surplus electricity is stored in the ESS. If ESS is fully charged, the excess electricity is transferred to the Grid without cost. Thus, total installed capacity of the PV power plant is same with the registered capacity as a CDM project.

If PP wants to change the effective output capacity or installed capacity of power plant, they need to report and approved by KPX or the relevant government in Korea. However, the installation of this PV/ESS system did not need any permit and therefore their effective output capacity for transmission and sales to the Grid is not changed. In conclusion, approved capacity as per Korean law is still 13.772 MW which is same in the registered PDD.

Accordingly, the validation team could confirm that it is not a change in the effective output capacity as per paragraph 289(a) of PS (v.09.0) even though the additional facility of PV and ESS has been installed at the project site. Thus, the validation team also confirm that it is considered as **'Addition of component or extension of technology' as per paragraph 289(b) of PS (v.09.0).**

The relevant requirements as per paragraph 289 of PS are as follows:

- (a) Changes in the effective output capacity due to increased installed capacity or increased number of units, or installation of units with lower capacity or units with a technology which is less advanced than that described in the PDD

³ Korea Power Exchange

(b) Addition of component or extension of technology

Therefore, the proposed change to the project design is assessed by the validation team as per para. 318~324 of VVS(v.09.0).

Assessment on the changes to the project designi. Assessment on the time and reason the changes occurred

: At the end of 2012, LG CNS had proposed to install additional PV module and small ESS to reduce the electricity usage for plant operation. Because KPX has changed their rule on the sales of electricity from total amount basis to net amount basis since 01/01/2010 and the PP has continued the relevant activities of minimizing the electricity usage for efficient operation of power plant. Thus, as a part of the energy saving in the plant, the PP reviewed their proposal and consequently, PP and LG CNS had signed an agreement to build PV and ESS, together on 04/02/2013. And this PV/ESS had started up from 01/07/2013.

The addition of component regarding the PV/ESS for internal electricity usage was not considered at the time of the CDM registration and it was occurred after the registration date (on 09/12/2010). Thus, the PP proceeded this change as stated above in the revised PDD.

The change to the project design was assessed by the validation team through the document review through the relevant rule of KPX, review report on installation of PV/ESS, design document and interview with the PP as well as on-site inspection.

ii. Assessment on how the changes would impact on the overall operation/ability of the project activity to deliver emission reduction as stated in the PDD

: The validation team could check that the effective output capacity and amount of electricity transferred to the Grid is not increased than that described in the registered PDD. Thus, the validation team confirms that it does not impact the baseline emission of the project.

Assuming the project is installed 90kW PV for the purpose of sale, total installed capacity can be considered as 13.862MW (existing PV of 13.772MW and 90kW of new PV) and still falls in small scale CDM. And the increasing amount of electricity and emission reduction is around 0.65%⁴ of total, which is very slightly increment of the electricity generation compared to the registered PDD.

In an aspect of project emission, the project emission was considered as zero (0) in the registered PDD. Thus, the validation team confirm that it does not impact the project emission of the project.

Assessment on the impact of the change to the project designi. Assessment on the impact of Additionality of the registered CDM project activity

: The additionality of the project activity was established using by 'Tool for the demonstration and assessment of additionality (v.05.2)' and 'Attachment A of Appendix B of the simplified modalities and procedures for small scale CDM project activity'. The additionality of the project activity had demonstrated by improving the investment barrier of the project.

As mentioned above, the applied change of project activity is applicable under the situation of (b) which states – 'Addition of component or extension of technology' and hereby assessed whether may impact the validity of investment barrier established at the time of project registration.

According to the registered PDD and its validation report, KFQ have checked that the NPV of the proposed project activity considering CERs revenue is lower than zero which shows the project has no financially attractive. As per this, the validation team could check that NPV of the project activity is much lower than zero by considering the extra investment cost for installation of PV and even if total electricity cost for plant operation is not considered on NPV analysis, NPV of the project will be still lower than zero. Thus, the validation team confirms that the change has no impact on the additionality of the project activity.

⁴ The increased electricity is calculated as $90\text{kW} \times 3.8 \text{ hr/day} \times 365 \text{ days/yr} = 124.83\text{MWh/yr}$ and the increased Emission reduction is $124.83 \text{ MWh/yr} \times 0.6426 \text{ tCO}_2/\text{MWh} = 80 \text{ tCO}_2\text{e}$.
(3.8 hr/day and 0.6426tCO₂/MWh is referred from the registered PDD.)

- ii. Assessment on the impact of the changes on scale of the project activity
 : The total installed capacity of the project activity is 13.772MW in the registered PDD. As mentioned above, the additional 90kW PV has been installed as the purpose of internal electricity usage for plant operation not for sale and it has an independent from generation system of the registered PDD and its own monitoring system. Thus, the effective output capacity of the project activity, 13.772MW is not change.
 Even considering 90kW PV for the project activity, total installed capacity is 13.862MW (existing PV of 13.772MW and 90kW of new PV) which is still below 15MW and it falls in small scale CDM. Thus, the validation team confirms that the change has no impact on the scale of the project activity.
- iii. Assessment on the impact of applicability and application of approved baseline methodology and later valid version of the applied methodology
 : The project has applied the approved baseline methodology of AMS-I.D (ver.15.0), which is 'Grid connected renewable electricity generation'. The change of the project activity does not lead to change the applied methodology and does not impact the applicability of the methodology, AMS-I.D (ver.15.0). Also, this change does not need to apply the latest version of methodology (AMS-I.D, ver.18.0).
 Thus, the validation team confirms that the change has no impact of applicability and application of the applied baseline methodology and it does not need to change as the later valid version of the methodology.
- iv. Assessment on the impact of the change on the compliance of the monitoring plan with the applied monitoring methodology
 : The project-applied the approved monitoring methodology of AMS-I.D (ver.15.0), which is 'Grid connected renewable electricity generation'. The change of the project activity does not result in revising the monitoring plan.
 According to the monitoring plan of registered PDD, The only parameter to be monitored is 'Net electricity delivered to the grid ($EG_{Tae\text{anPV,MP}}$)' and it needs two meters for imported from the Grid and transferred to the Grid. Although the PV/ESS is included as an addition of component in the project design, it does not need to include in the monitoring plan. Because the amount of generation from this PV/ESS system is not mixed in the amount of generation of the 13.772MW generation system in the registered PDD and is separately monitored by its own monitoring system and the generated power is not sold to the Grid and any invoice/receipt is not issued. Thus, there is no need to monitor the electricity generated from 90kW PV for this project activity.
 Also, the validation team could check that the annual electricity transferred to the Grid⁵ after installation of this PV/ESS system is similar to that of previous system and annual electricity imported from the grid⁶ was decreased. Thus, the validation team could confirm that this PV/ESS does not impact the amount of the electricity generated by the registered project activity.
 Thus, the validation team confirms that the change has no impact the monitoring plan in the registered monitoring plan and thus, no impact on the compliance of the monitoring plan with the applied monitoring methodology.
- v. Assessment on the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan
 : As mentioned above iv) assessment, this change does not impact the registered monitoring plan. Thus, the validation team confirms that the change does not impact the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan,

⁵ The amount of electricity exported to the grid is 19,008MWh in 2012, 19,031MWh in 2013 and 19,081MWh in 2014.

⁶ The amount of electricity imported from the grid is 203Mwh in 2012, 118MWh in 2013 and 59MWh in 2014.

KFQ confirms that the change to the project design by installation of PV and ESS is considered as 'Addition of component' and this change is complied with the requirements of para.288-289 and 292 in the Project Standard (v.09.0).

The detailed assessment on the proposed change is as following:

Means of validation	The validation team reviewed the changes to the project design of a registered CDM project activity are in compliance with the applied methodology (AMS-I.D, ver.15) and the changes complies with the requirements in Project standards(v.09.0).
Findings	<p>KFQ has checked the relevant evidences as for the installation of PV and ESS as well as on-site inspection.</p> <p>The validation team could check that the amount of electricity transferred to the Grid for sale is not increased and also the installed capacity of the project for their business is not changed through the relevant evidences (Declaration of business commencement, Document on the confirmation of plant installation for supporting the FIT(Feed in Tariff), Review report on the installation of Micro-grid for replacement of consumed electricity.</p> <p>Through on-site inspection and data from the ESS, the validation team checked that it is not connected with the Grid for sale and its purpose of installation is an electricity usage for plant operation.</p> <p>Practically, it's not a change in the effective output capacity than that described in the PDD as per paragraph 289(a) of PS (v.09.0) even though the additional facility of PV and ESS has been installed at the project site.</p> <p>Considering 90kW PV installation at the project site, the effective output capacity transferred to the Grid for sale is not changed. Thus, the validation team could confirm that considered as 'Addition of component or extension of technology' as per paragraph 289(b) of PS (v.09.0).</p> <p>In addition to that, this change dose not adversely affects the additionality, scale of project and applicability of applied methodology. Also, this change does not impact the level of accuracy and it is complied with the applied monitoring methodology because no need to monitor the electricity generated from 90kW PV for this project activity.</p>
Conclusion	KFQ confirms that the change to the project design by installation of PV and ESS is considered as 'Addition of component' and this change is complied with the requirements of para.288-289 and 292 in the Project Standard (v.09.0).

D.8. Types of changes specific to afforestation and reforestation project activities

Means of validation	N/A
Findings	N/A
Conclusion	N/A

SECTION E. Internal quality control

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According to KFQ's Procedure for deciding whether to proceed with a request for post-registration changes, the validation opinion were underwent a technical review before being submitted a request for post-registration change. The technical review was performed by technical review team composed of a person qualified in accordance with KFQ's qualification scheme for CDM project validation and verification.

SECTION F. Validation opinion

Korean Foundation for Quality (KFQ) has performed a validation of the post-registration change of CDM project Ref. No. 3874: LG Solar Energy Taeon Photovoltaic Power Plant Project. The validation was performed on the basis of UNFCCC criteria for the CDM and host country criteria, as well as criteria given to provide for the consistent project operation, monitoring and reporting.

The validation is based on the information made available to us and the engagement conditions. The review of the revised PDD, relevant supporting documents and the subsequent follow-up interviews has conducted with sufficient evidences to determine the fulfilment of all stated criteria. In our opinion, post-registration changes of the project activity meet all relevant UNFCCC requirements for the CDM.

Furthermore, we confirm that the revised PDD ensures that;

- (a) The level of accuracy and completeness in the monitoring and verification process is not reduced as a result of the revision.
- (b) It is in accordance with the approved monitoring methodology applicable to the project activity.

Also, we confirm that the proposed changes of project activity do not impact;

- (a) The additionality of the project activity
- (b) The scale of CDM project activity
- (c) The applicability and application of approved baseline methodology under which the project activity has been registered
- (d) The compliance of the monitoring plan with the applied monitoring methodology
- (e) The level of accuracy of the monitoring contained in the registered monitoring plan

The verification team confirms that the revised PDD submitted in the new format (version 06.0) has been verified and other description except the changes dealt in this report is materially the same as the information in the registered PDD.

Therefore, KFQ requests the approval of post-registration changes of the project activity as justified above.

Signed on behalf of the Korean Foundation for Quality

Signature : 

Name : Soon Hong YEOM, Managing Director

Date : 30 December 2015

Appendix 1. Abbreviations

Abbreviations	Full texts
AM	Approved Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction(s)
CL	Clarification Request
CMP	COP/MOP Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol
CO ₂	Carbon dioxide
CO _{2e}	Carbon dioxide equivalent
DOE	Designated Operational Entity
FAR	Forward Action Request
ESS	Energy Storage System
EB	Executive Board
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
KFQ	Korean Foundation for Quality
KPX	Korea Power Exchange
KEPCO	Korea Electric Power Corporation
MoV	Means of verification
MP	Monitoring Plan
MR	Monitoring Report
PDD	Project Design Document
PP	Project participant
PS	Clean Development Mechanism Project Standard
PV	Photovoltaic
QMS	Quality Management System
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers



CERTIFICATE OF COMPETENCE

Name: Sang Yeon PARK

Qualification:

	Validation	Verification
-Lead auditor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
-Auditor	<input type="checkbox"/>	<input type="checkbox"/>
-Technical Expert	<input type="checkbox"/>	<input type="checkbox"/>
-Local Expert	<input type="checkbox"/>	<input type="checkbox"/>

Scopes of Expertise:

Technical Area (TA)

- 1.2 Renewables
- 3.1 Energy demand
- 5.2 Caprolactam, nitric and adipic acid
- 13.1 Solid waste and wastewater

She is approved as the qualification above according to the KFQ's procedure of Qualifying and Maintaining of Auditor on 03 March 2015

Sustainability Management Institute
Yu Shim JEONG

A handwritten signature in black ink, appearing to be 'Yu Shim JEONG'.



CERTIFICATE OF COMPETENCE

Name: Jin Seok CHO

Qualification:

	Validation	Verification
-Lead auditor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
-Auditor	<input type="checkbox"/>	<input type="checkbox"/>
-Technical Expert	<input type="checkbox"/>	<input type="checkbox"/>
-Local Expert	<input type="checkbox"/>	<input type="checkbox"/>

Scopes of Expertise:

Technical Area (TA)

- 1.2 Renewables
- 13.1 Solid waste and wastewater
- 13.2 Manure

He is approved as the qualification above according to the KFQ's procedure of Qualifying and Maintaining of Auditor on 03 March 2015

Sustainability Management Institute
Sang Yeon PARK

A handwritten signature in black ink, appearing to be 'S. Y. Park', written over a horizontal line.



CERTIFICATE OF COMPETENCE

Name: Yu Shim JEONG

Qualification:

	Validation	Verification
-Lead auditor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
-Auditor	<input type="checkbox"/>	<input type="checkbox"/>
-Technical Expert	<input type="checkbox"/>	<input type="checkbox"/>
-Local Expert	<input type="checkbox"/>	<input type="checkbox"/>

Scopes of Expertise:

Technical Area (TA)

- 1.2 Renewables
- 5.1 Chemical Industry
- 5.2 Caprolactam, nitric acid, adipic acid

She is approved as the qualification above according to the KfQ’s procedure of Qualifying and Maintaining of Auditor on 03 March 2015

Sustainability Management Institute
Sang Yeon PARK

A handwritten signature in black ink, appearing to read 'Sang Yeon PARK', with a stylized, sweeping flourish extending from the end.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	Project participant	Monitoring report	Ver. 01 (29/05/2015))	Project participant
			Ver. 02 (04/11/2015)	
			Ver. 02 (04/11/2015)	
2	Project participant	CDM Project Design Document : Version 06 (30/06/2010)	http://cdm.unfccc.int/Projects/DB/KFQ1279887151.04/view	Others
3	KFQ	CDM Validation Report: Report No. 2009-15 (ver.1.1, 09/10/2009)	http://cdm.unfccc.int/Projects/DB/KFQ1279887151.04/view	Others
4	KFQ	CDM Verification Report (#1 st verification): Report No. 2012-40 (ver.1.4, 07/05/2012)	http://cdm.unfccc.int/Projects/DB/KFQ1279887151.04/view	Others
5	Ministry of Trade, Industry & Energy	Business license for power generation	24/12/2007	Project participant
6	Korea Power Exchange (KPX)	Grid connection approval	04/06/2008	Project participant
7	Ministry of Trade, Industry & Energy	Notification of commercial operation (Declaration of business commencement)	25/06/2008	Project participant
8	Renewable Energy center (An affiliated organization of Ministry of Trade, Industry & Energy)	Document on the confirmation of plant installation for supporting the FIT(Feed-in-Tariff)	19/06/2008	Project participant
9	Korea Electric Power Corporation (KEPCO)	Electricity contract	12/06/2008 (site #1,#2) 23/05/2013 (site #1) 17/12/2012 (site #2)	Project participant
10	Project participant and LG CNS	Agreement on the installation of ESS	04/02/2013	Project participant
11	Project participant	- Review report on the installation of Micro-grid(PV/ESS) for replacement of consumed electricity - Data on the simulation of PV/ESS installation (for determination of installed capacity and investment) - A list of construction cost (PV module/inverter and electric work)	08/01/2013 - -	Project participant
12	Korea Electric Power Corporation (KEPCO)	Rules for electricity market operation	07/05/2015 (latest) http://www.kpx.or.kr/KOREAN/servelet/MOController?cmd=view&cd_code=moleg&menu_idx=81&idx=288&type=01&curpage=1&lst_type=&lst_word	other
13	CDM Executive Board	Clean Development Mechanism Validation and Verification Standard, version 09.0.	20/02/2015	Other
		Clean Development Mechanism Project Standard, version 09.0.	20/02/2015	
		Clean Development Mechanism Project Cycle Procedure, version 09.0.	20/02/2015	
		AMS-I.D. version15		
		Tool to calculate the emission factor for an electricity system, version 02.0	-	

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

CL ID	xx	Section no.		Date: DD/MM/YYYY
Description of CL				
N/A				
Project participant response				Date: DD/MM/YYYY
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: DD/MM/YYYY
N/A				

Table 2. CAR from this validation

CAR ID	xx	Section no.		Date: DD/MM/YYYY
Description of CAR				
N/A				
Project participant response				Date: DD/MM/YYYY
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: DD/MM/YYYY
N/A				

Table 3. FAR from this validation

FAR ID	xx	Section no.		Date: DD/MM/YYYY
Description of FAR				
N/A				
Project participant response				Date: DD/MM/YYYY
N/A				
Documentation provided by project participant				
N/A				
DOE assessment				Date: DD/MM/YYYY
N/A				

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