



**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)**

<b>Title and reference number of the project activity</b>	K-water hydropower IX
<b>Process track</b>	<input type="checkbox"/> Prior approval <input checked="" type="checkbox"/> Issuance <input type="checkbox"/> Renewal of crediting period
<b>Version number of the validation report on PRCs</b>	Version 02.0
<b>Completion date of the validation report on PRCs</b>	26/05/2017
<b>Type(s) of PRCs</b>	<input type="checkbox"/> Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline <input checked="" 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 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
<b>Version number of PDD to which this report applies</b>	Version 05.0
<b>Project participant(s)</b>	Korea Water Resources Corporation (K-water)
<b>Host Party</b>	Republic of Korea
<b>Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)</b>	Sectoral scope : 1 - Energy industries (renewable / non-renewable sources)
<b>Name of DOE</b>	Korea Testing & Research Institute(KTR)
<b>Name, position and signature of the approver of the validation report on PRCs</b>	CHO Seong-hun, Director 

**SECTION A. Executive summary**

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Korea Water Resources Corporation (hereafter called “K-water”) has commissioned Korea Testing & Research Institute (hereafter called “KTR”) to validate the post-registration change of CDM project (title of the project activity : K-water hydropower IX).

“K-water hydropower IX” is a bundled renewable energy power generation project installing and operating a new run-of-river hydropower plant at five sites (Dalseong, HapcheonChangnyeong, ChangnyeongHaman, Seungchon and Juksan) where a weir is located.

The electricity generated from the hydropower plants is transmitted to the grid of Korea Electric power Corporation (hereafter called “KEPCO”) which exclusively manages the national grid in Republic of Korea.

Dalseong hydropower plant having an installed capacity of 2,856kW is located in Gyeongsangbuk-do. HapcheonChangnyeong and ChangnyeongHaman hydropower plants are located in Gyeongsangnam-do and have an installed capacity of 5,000kW respectively. Seungchon hydropower plant having an installed capacity of 800kW is located in Gwangju city. And Juksan hydropower plant having an installed capacity of 1,220kW is located in Jeollanam-do.

As the total capacity of hydropower plants in the bundled CDM project activity is 14.876MW, the project activity is fall into type I (renewable energy project) and small scale project for which installed capacity is less than 15MW.

This report summarizes the findings of the validation of the post-registration changes, performed on the basis of UNFCCC criteria, as well as criteria given to provide consistent project operations, monitoring and reporting.

The objective of a validation is to provide a thorough and independent third party assessment of the post –registration changes. In particular, the changes’ compliance with relevant UNFCCC criteria is validated in order to confirm that the changes meet the applicable CDM requirements and the identified criteria.

The validation consists of the following three phases:

- i) Objective review of the revised PDD and other relevant documents,
- ii) Following up interviews with PP,
- iii) Resolution of outstanding issues and issuance of the final post-registration changes validation report and opinion.

The first output of the validation process is a list of Clarification Requests, Corrective Actions Requests, and Forward Actions Requests (CLs, CARs and FARs), presented in Appendix 4. Taking into account this output, the PP revised its project design document.

In summary it is KTR’s opinion that the project correctly applies the baseline and monitoring methodology AMS-I.D. ver.17 and meets all relevant UNFCCC requirements for the CDM.

The KTR thus requests CDM-EB to approve the post-registration changes addressed for the CDM project activity.

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

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**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	LEE	Bongjae	KTR	X	X	X	X
2.	Validator	ER	SHIN	Woochul	KTR	X	X	X	X

**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	KIM	Kihong	KTR
2.	Approver	IR	CHO	Seonghun	KTR

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

>> The revised PDD<sup>/02/</sup> submitted by K-water and additional background documents related to the project design and monitoring plan were reviewed by using KTR internal Quality procedures. Furthermore, the validation team used additional documentation from third parties such as host party legislation, technical reports referring to the basic condition, and technical data.

**C.2. On-site inspection**

Duration of on-site inspection: 13~15/03/2017				
No.	Activity performed on-site	Site location	Date	Team member
1.	Implementation and Operation of the CDM project activity based on registered Monitoring Plan and physical features of the project activity as per registered PDD <sup>01/</sup> .	Dalseong,	13/03/2017	Bongjae LEE Woochul SHIN
		HapcheonChangnyeong, ChangnyeongHaman,	14/03/2017	
2.	Information flows for generating, aggregating and reporting the monitoring parameters	Seungchon and Juksan	15/03/2017	
3.	Competency of operational personnel, monitoring personnel and calibrating agencies			
4.	Data collection procedures			
5.	Calibration performance and monitoring practices followed for monitoring equipment's used in the project activity			
6.	Quality Control and Quality Assurance procedures against the approved monitoring plan			
7..	Calibration and assumptions made in determining the GHG data and emission reduction			
8.,	Compliance with CDM criterion and relevant guidance with respect to MP			
9.,	Level of accuracy (Materiality) of the monitoring activity			

**C.3. Interviews**

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	KIM	Byeongkak	K-water (Dalseong)	13/03/2017	- General aspects of the project - Changes made since the previous validation - Quality management system - Involved personnel and responsibilities - Technical equipment and their operation - Monitoring and measuring instruments - Calibration procedures - Records of metering	Bongjae LEE Woochul SHIN
2	KANG	Myoungsik	K-water (HapcheonChangnyeong)	14/03/2017		
3	CHOI	Junho	K-water (ChangnyeongHaman)	14/03/2017		

4	PARK	Seunggyu	K-water (Seungchon, Juksan)	15/03/2017	equipment - Maintenance of Facility	
5	KIM	Deogje	K-water (Headquarter)	13~15/03/2017	- Training and practice of the operational personnel	
6	JO	Jeonghong		13~15/03/2017	- Implementation of the MP - Monitoring data management - GHG calculation - Data collection procedures	

#### 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	-	-	-
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	-	-	-
Changes to the project design of a registered project activity	-	-	-
Types of changes specific to afforestation and reforestation project activities	-	-	-
Others (please specify)	-	-	-
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>

### SECTION D. Validation findings

#### D.1. Compliance with PDD form

<b>Means of validation</b>	The validation team has determined whether the PDD has been completed using the valid version of the applicable PDD form. The validation team has checked whether all the sections of the PDD follow the guidelines provided in the template itself.
<b>Findings</b>	There is no CAR/CL raised in this section.
<b>Conclusion</b>	<p>The validation team conducted the document review on the following document to validate whether the revised PDD is compliance with the PDD form.</p> <ol style="list-style-type: none"> <li>UNFCCC website for the latest form for the revised PDD<sup>/02/</sup></li> <li>CDM-SSC-PDD-FORM (ver. 0.8.0)<sup>/06/</sup> and Attachment: Instructions for filling out the PDD form for small-scale CDM project activity<sup>/06/</sup>.</li> </ol> <p>The following is confirmed:</p> <ol style="list-style-type: none"> <li>The PDD is completed using the valid version of PDD at the time of submission and the PP used the appropriate template (i.e. small scale)</li> <li>All the information has been correctly transferred from the registered PDD (ver.04)<sup>/01/</sup>.</li> <li>The PDD is in compliance with the instruction provided in the template.</li> <li>As per the requirement of the PRC, both clean<sup>/02/</sup> and track change versions<sup>/02/</sup> of the PDD are submitted for validation.</li> </ol>

	The validation team has concluded that the PDD has been completed using the valid version of the applicable PDD form and that the guidelines given in the template itself has been properly followed.
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## 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	The validation team conducted the document review and on-site inspections to validate the compliance with following documents : Registered PDD <sup>/01/</sup> Revised PDD <sup>/02/</sup> PS (ver. 09.0) <sup>/03/</sup> .		
Findings	There is no CAR/CL raised in this section.		
Conclusion	1. Geographic Location (Clause A.2.4, Figure A.1)		
	<p>In case of Juksan, the PP changed the photograph that presents geographical location of Juksan hydropower plant in figure A.1 of the revised PDD because the geographical location of Juksan site (34.973441N°, 126.631345E°) was wrongly marked in the registered PDD.</p> <p><b>Validation opinion :</b> The validation team checked the completion report for the site<sup>/16/</sup> and reviewed the satellite image though the google map to confirm that the geographical location is accurately indicated in the revised PDD. Hence, the validation team concluded that this is acceptable. With reference to above, it has been confirmed that this correction does not affect the project activity and does not require prior approval by the CDM EB as per Appendix 1 of PS (ver.9.0).</p>		
	2. Monitoring Organization (Clause B.7.3)		
	Clause of PDD(ver.05)	Registered monitoring plan	Permanent changed from registered monitoring plan
	B.7.3 (1) Monitoring Organization	As shown in the figure, each Operation & Maintenance Team of the plant will observe monitoring system's operation and transmission of overall data to the Integrated Operations Center of the project. Integrated Operations Center of the project will take the responsibility for electrical engineering work and safety management including repair and calibration of the watt-hour meter. And the Green Energy Dept of Head office will monitor data of electricity supplied to KEPCO grid from the power house on site and 'Power Generation Total	As shown in the figure, each Part of Operation & Management Team of the plant will observe the monitoring system's operation and transmission of overall data to the Central Nakdonggang Weir Office for Dalseong, Southern Nakdonggang Office for HapcheonChangnyeong and ChangyeongHaman, Yeongsangang Weir Office for Seungchon and Juksan. The Central Nakdonggang Weir Office, Southern Nakdonggang Office and Yeongsangang Weir Office will take responsibility for electrical engineering work and safety management including repair and calibration of the watt-hour meter. The New & Renewable Energy Department of Head office will monitor data

	Information System' which is the database systems owned by K-water. Title of the Dept., Regional Headquarters and Team may be altered in accordance with a reorganization plan of K-water. And corresponding responsibility and authority of each division of K-water also may be altered after confirmation of consolidated operating procedures.	of electricity supplied to KEPCO grid from the power house on site and the 'Power Generation Total Information System' which is the database systems owned by K-water. The title of the Department, Regional Headquarters and Team may be altered in accordance with a reorganization of K-water. The corresponding responsibility and authority of each division of K-water also may be altered after confirmation of consolidated operating procedures.
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**Validation opinion :**  
**- Monitoring Organization**  
As a result of the re-organization of K-water effective from 22/11/2016, The title of Department and center has been changed as follows :

Title Before re-organization	Title After re-organization
Green Energy Dept	New & Renewable Energy Department
Integrated Operations Center	Central Nakdonggang Weir Office for Dalseong, Southern Nakdonggang Office for HapcheonChangnyeong and ChangyeongHaman, Yeongsangang Weir Office for Seungchon and Juksan

These changes in titles of monitoring organization have been reflected in the revised PDD accordingly.  
However, the structure of the monitoring organization and responsibilities related to the CDM project activity remain unchanged.  
However, the structure of the monitoring organization and responsibility related to the CDM project activity remains unchanged.  
The validation team checked the re-organization rules of K-water<sup>/10/</sup> and its Internal official letter dated 22/11/2016<sup>/11/</sup> and found it consistent with the revised PDD.  
Hence, the validation team concluded that this is acceptable.

With reference to the finding above, this correction falls under section 1 of appendix 1 of PS ver.9.0<sup>/03/</sup>, which do not require prior approval by the EB.

3. Installation of meters (Clause B.7.3)

Clause of PDD(ver.05)	Registered monitoring plan	Permanent changed from registered monitoring plan
B.7.3 (3) Installation of meters	The watt-hour meters for measuring the amount of electricity both exported to the grid and imported from the grid are installed respectively. The auxiliary power consumed for the power house is supplied internally from the generated electricity during the generator's operation. Otherwise, the auxiliary power is supplied from KEPCO grid when the generator is stopped.	In the case of Dalseong, ChangnyeongHaman, Seungchon and Juksan hydropower plants, the watt-hour meters for measuring the amount of electricity both exported to the grid and imported from the grid are installed respectively as shown in Figure B.6. The auxiliary power consumed for the power house is supplied internally from the generated electricity during the generator's operation. Otherwise, the auxiliary power is supplied from KEPCO grid when the generator is stopped.

			In the case of HapcheonChangnyeong hydropower plants, the watt-hour meters for measuring the both amount of electricity exported to the grid and imported from the grid are installed in two lines separately, respectively as shown in Figure B.7. The auxiliary power consumed for the power house is supplied from KEPCO grid all the time regardless of the generator's operation.
	<p>According to the registered PDD, the watt-hour meter measuring exported electricity to the grid and the watt-hour meter measuring electricity imported from the grid in HapcheonChangnyeong hydropower plant are installed on the same line which is connected to the KEPCO grid. However, the PP found that the registered PDD was not in line with the related evidence such as the design report<sup>/13/</sup>, and the completion report<sup>/14/</sup> reflecting actual installation, i.e., meters installed on two separate lines. Therefore, the PP revised the PDD to reflect the actual installation of meters.</p> <p><b>Validation opinion :</b>  <i>- Installation of meters</i>  The validation team checked the related evidence such as the design report and the Completion Report as follows:  Review of the plant diagram for HapcheonChangnyeong hydropower plant provided in the design report<sup>/13/</sup> issued on 09/2010 during construction planning stage revealed that the watt-hour meter for exported electricity and the watt-hour meter for imported electricity are designed to be installed on two separate lines connected to the KEPCO grid.  Review of the completion report<sup>/14/</sup> issued on 12/2012 also revealed that those meters are installed on two separate lines in the HapcheonChangnyeong hydropower plant as indicated in the design report.  Hence, the team concluded that this correction is appropriate and acceptable.</p> <p>Hence, the team concluded that this correction is acceptable.  With reference to the finding above, this correction falls under section 1 of appendix 1 of PS ver.9.0<sup>/03/</sup>, which do not require prior approval by the EB.</p>		

#### 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

Means of validation	<p>The validation team conducted document review and on-site inspections to validate compliance with the revised PDD (ver.5) in accordance with following:</p> <ul style="list-style-type: none"> <li>● Registered PDD (ver.04)<sup>/01/</sup></li> <li>● Appendix 1 of PS (ver.9.0)<sup>/03/</sup></li> <li>● VVS (ver.9.0)<sup>/05/</sup></li> <li>● AMS-I.D. (ver.17.0)<sup>/04/</sup></li> </ul>
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Findings	There is no CAR/CL raised in this section.		
Conclusion	1. EG <sub>export,y</sub> (Clause B.7.1.)		
	Data/Parameter	Registered monitoring plan	Permanent changed from registered monitoring plan
	Measurement methods and procedures	Continuously measured and hourly recorded by the watt-hour meter	Continuously measured by the watt-hour meter and recorded monthly by the person in charge of CDM in New & Renewable Energy Department.
	QA/QC procedures	Measuring equipment - The watt-hour meter shall be set up transparently in accordance with 'Measures act' <sup>/08/</sup> and 'Rules on the operation of electric utility market' <sup>/09/</sup> . - The watt-hour meter shall be calibrated regularly in accordance with 'Measures act' <sup>/08/</sup> , 'Rules on the operation of electric utility market' <sup>/09/</sup> and 'General guidelines to SSC CDM methodologies' <sup>/07/</sup> . - The amount of electricity supplied to the grid will be cross-checked by receipt of electricity sales. - The allowable error of data measured by the watt-hour meter must be within ±0.5%.	Measuring equipment. - The watt-hour meter shall be set up transparently in accordance with the 'Measures act' <sup>/08/</sup> and the 'Rules on the operation of the electricity market' <sup>/09/</sup> . - The watt-hour meter shall be calibrated regularly in accordance with the 'Measures act' <sup>/08/</sup> , the 'Rules on the operation of electric utility market' <sup>/09/</sup> and the 'General guidelines to SSC CDM methodologies' <sup>/07/</sup> . - The amount of electricity transmitted to the grid will be electrically measured and transferred to KPX and K-water, in order to be cross checked by both entities. - The allowable error of data measured by the watt-hour meter must be within ± 0.5%.
<b>Validation opinion :</b> <b>- Measurement methods and procedures:</b> With reference to recording frequency, by reviewing the desk review and interviewing the staff from the New & Renewable Energy Dept., the validation team confirmed the actual data management process as follows: First, the watt-hour meters installed at the sites measures continuously. Second, the measured data are transferred to KPX hourly and 'Power Generation Total Information System' of K-water daily. Third, the measured data of the 'Power Generation Total Information System' of K-water is monthly recorded in the K-water's spreadsheets by the staff in charge of CDM in the New & Renewable energy department. Even though recording frequency from hourly to monthly has been changed, the team found that this is still within the applied methodology AMS-I.D (ver.17.0) <sup>/04/</sup> , which required recording on a monthly basis. Hence, this change falls under section 5(g) of the appendix of PS (ver.9.0) <sup>/03/</sup> , which does not require prior approval by the EB.  <b>- QA/QC procedures:</b> The means to double-check the recorded data has been changed from invoice of electricity sales to the data of KPX. This change is necessary because the KPX receipt of electricity sales provides the information on the amount of electricity for the whole K-water plants and does not provide the information on the amount of electricity for each plant. The data of electricity generation has been wirelessly transmitted to the KPX system hourly and K-water system daily respectively. In accordance with the 'Rules on the operation of electric utility market' <sup>/09/</sup> , these are			

cross checked by two entities to confirm the amount of electricity generated. Therefore, the measured data on the amount of the electricity is cross checked against the data electronically transferred to KPX and K-water. The validation team confirmed that the change in cross-checking method does not deteriorate the quality of data and complied with the approved methodology. Thus, it is acceptable.

## 2. EG<sub>import,y</sub> (Clause B.7.1.)

Data/Parameter	Registered monitoring plan	Permanent changed from registered monitoring plan
Measurement methods and procedures	Continuously measured and monthly recorded by the watt-hour meter of KEPCO.	Continuously measured by the watt-hour meter of KEPCO and monthly recorded by the person in charge of CDM in New& Renewable Energy Dept.

### **Validation opinion :**

#### *- Measurement methods and procedures:*

In line with the CDM QA/QC procedures<sup>/15/</sup> of K-water and Clause B.7.3(1. Monitoring Organization) of revised PDD<sup>/02/</sup>, amount of imported electricity is recorded by the person in charge of CDM in New& Renewable Energy Dept. This is a change in the monitoring plan to clarify the responsibility and the role for recording of the data on the amount of imported electricity. As this change is to define the responsibility and the role more clearly, it is accepted.

## 3. Data recording (Clause B.7.3(4).)

Data/Parameter	Registered monitoring plan	Permanent changed from registered monitoring plan
B.7.3 (4) Data recording	<p><u>Electricity exported to the grid</u> The data will be continuously measured and hourly recorded by the watt-hour meter. And also, the data of electricity exported to KEPCO grid are hourly recorded on KPX and 'Power Generation Total Information System' of K-water.</p> <p><u>Electricity imported from the grid</u> The data will be continuously measured and monthly recorded by the watt-hour meter. And also, the data of electricity imported from KEPCO grid are monthly checked by receipt of KEPCO.</p>	<p><u>Electricity exported to the grid</u> The data will be continuously measured by the watt-hour meter and recorded monthly by the person in charge of CDM in New &amp; Renewable Energy Department. In addition, the data of electricity exported to KEPCO grid are transferred hourly to KPX and transferred daily to the 'Power Generation Total Information System' of K-water from KPX.</p> <p><u>Electricity imported from the grid</u> The data will be measured continuously by the watt-hour meter and recorded monthly by the person in charge of CDM in the New &amp; Renewable Energy Department. In addition, the data of electricity imported from KEPCO grid are checked monthly by receipt of KEPCO.</p>

### **Validation opinion**

In line with the CDM QA/QC procedures<sup>/15/</sup> of K-water and Clause B.7.3 (1. Monitoring Organization) of revised PDD<sup>/02/</sup>, Amount of exported/imported electricity is recorded by the person in charge of CDM in New& Renewable Energy Dept.

	<p>This is a change in the monitoring plan to clarify the responsibility and the role for recording of the data on the amount of imported electricity.</p> <p>As this change is to define the responsibility and the role more clearly, it is accepted.</p> <p>The validation team concluded that:</p> <ul style="list-style-type: none"> <li>- For the amount of electricity supplied to the grid, recording frequency from hourly to monthly has been changed, the validation team found that this is still within the applied methodology AMS-I.D (ver.17.0)<sup>04/</sup>, which required recording on a monthly basis</li> </ul> <p>Furthermore, The means to double-check the recorded data has been changed from receipt of electricity sales to the data of KPX.</p> <p>This change in cross-checking method does not deteriorate the quality of data and complied with the approved methodology</p> <ul style="list-style-type: none"> <li>- In the registered PDD(ver.4.0)<sup>01/</sup>, it states that the amount of exported/imported electricity will be continuously measured and monthly recorded by the watthour meters. However, the person in New&amp; Renewable Energy Department records the data monthly. Therefore, the registered PDD (ver.4.0)<sup>01/</sup> has been revised reflecting actual monitoring plan in line with the internal K-water QA/QC procedures<sup>15/</sup> accordingly</li> </ul> <p>This is a change in the monitoring plan to define the responsibility and the role more clearly</p> <ul style="list-style-type: none"> <li>- Proposed changes do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan and still within applied methodology AMS-I.D. (ver.17)<sup>04/</sup>.</li> </ul> <p>With reference to the findings above, these changes fall under appendix 1 of PS ver.9.0<sup>03/</sup>, which do not require prior approval by the EB.</p>
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#### D.7. Changes to the project design of a registered project activity

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

#### 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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Internal quality control within the team is assured through a technical review process that takes place after the on-site assessment and after closure of findings. The internal quality control in the validation process affects the final decision

When performing the technical review, the reviewer ensures that:

The validation activity has been performed by the technical team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project, which includes project design, baseline, additionality, MPs and emission reduction calculations, internal quality assurance systems of the PP, as well as the project activity, closure of CARs and CLs during the validation exercise, review of sample document.

The finalized validation opinion will be accepted for further processing such as uploading via the UNFCCC interface.

### SECTION F. Validation opinion

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KTR has performed a validation of post-registration changes of K-water hydro power IX project, CDM Registration Reference Number 7326.

The validation was performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.


The validation consists of the following three phases: i) desk review of the project related document and additional background documents for the PRC; ii) following-up interviews with the PPs; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. KTR has performed the review of the revised project design document, relevant additional information and the subsequent following-up interviews with sufficient evidence to determine the fulfilment to stated criteria. In our opinion, the post-registration changes meet all relevant UNFCCC requirements for the CDM. KTR thus requests approval of post-registration changes addressed for the project activity.

## Appendix 1. Abbreviations

Abbreviations	Full text
AMS	Approved small scale methodologies
CA	Corrective Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board
CER	Certified Emission Reduction
CL	Clarification Request
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
COP	Conference of the Parties
COP/MOP	The Conference of the Parties serving as the meeting of the Parties to the Protocol
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
ER	External Resource
ER	Emission Reduction
FAR	Forward Action Request
IPCC	Intergovernmental Panel on Climate Change
IR	Internal Resource
KEPCO	Korea electric power corporation
KP	Kyoto Protocol
KPX	Korea power exchange
KTR	Korea Testing & Research Institute
K-Water	Korea Water Resources Corporation
MOC	Modalities of Communication
MP	Monitoring Plan
PDD	Project Design Document
PP	Project Participant
PS	Project Standard
VVS	Clean Development Mechanism Validation And Verification Standard

## Appendix 2. Competence of team members and technical reviewers

Certificate for Achievement



한국화학융합시험연구원  
K O R E A   T E S T I N G   &   R E S E A R C H   I N S T I T U T E

### Certificate of Authorization

**Name** : LEE, Bongjae

**Date of Birth** : August 6<sup>th</sup>, 1978

**Certificate Number** : 2016CDM - 002


We, KTR, hereby certify that above mentioned person is qualified for the technical areas specified below in compliance with Appendix 2 of CDM Accreditation Standard Ver 6.0 and Quality System of the KTR CDM.

**Scope of Authorization :**


CODE	TECHNICAL AREA	STATUS
1.1	Thermal energy generation	Lead Validator/Verifier
1.2	Renewables	Lead Validator/Verifier
3.1	Energy demand	Lead Validator/Verifier
4.1	Cement and lime production	Lead Validator/Verifier
13.1	Solid waste and waste water	Lead Validator/Verifier

**Valid until : July 20<sup>th</sup>, 2019**

**July 21<sup>th</sup>, 2016**



**한국화학융합시험연구원장**  
Korea Testing and Research Institute







한국화학융합시험연구원

K O R E A   T E S T I N G   &amp;   R E S E A R C H   I N S T I T U T E

# Certificate of Authorization

Name : SHIN, Woochul  
 Date of Birth : January 10<sup>th</sup>, 1957  
 Certificate Number : 2014CDM - 014

We, KTR, hereby certify that above mentioned person is qualified for the technical areas specified below in compliance with Appendix 2 of CDM Accreditation Standard Ver 6.0 and Quality System of the KTR CDM.

## Scope of Authorization :

CODE	TECHNICAL AREA	STATUS
10.1	Fugitive emissions from oil and gas	Part-time Validator/Verifier
11.1	Emissions of fluorinated gases	Part-time Validator/Verifier
11.2	Refrigerant gas production	Part-time Validator/Verifier

Valid until : December 27<sup>th</sup>, 2017

December 28<sup>th</sup>, 2014



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 Korea Testing and Research Institute





K O R E A T E S T I N G &amp; R E S E A R C H I N S T I T U T E

# Certificate of Authorization

Name : KIM, Kihong  
 Date of Birth : February 26<sup>th</sup>, 1979  
 Certificate Number : 2014CDM - 006

We, KTR, hereby certify that above mentioned person is qualified for the technical areas specified below in compliance with Appendix 2 of CDM Accreditation Standard Ver 6.0 and Quality System of the KTR CDM.

## Scope of Authorization :

CODE	TECHNICAL AREA	STATUS
1.2	Renewables	Lead Validator/Verifier
4.1	Cement and lime production	Lead Validator/Verifier
13.1	Solid waste and waste water	Lead Validator/Verifier

Valid until : December 27<sup>th</sup>, 2017

December 28<sup>th</sup>, 2014



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### Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	K-water	Registered PDD(ver.04)	N/A	PP
2	K-water	Revised PDD (ver. 05) with clean version, Revised PDD (ver. 05) with tracking version,	N/A	PP
3	UNFCCC CDM	PS version 9.0	N/A	Other
4	UNFCCC CDM	AMS-I.D ver.17	N/A	Other
5	UNFCCC CDM	VVS version 9.0	N/A	Other
6	UNFCCC CDM	CDM-SSC-PDD-FORM ver.08.0	N/A	Other
7	UNFCCC CDM	General guidelines to SSC CDM methodologies	N/A	Other
8	Korean Agency for Technology and Standards	Measures Act	N/A	Other
9	KPX	Rules on the operation of the electricity Market	N/A	Other
10	K-water	re-organization rules of K-water on 22/11/2016	N/A	PP
11	K-water	Internal official letter dated on 22/11/2016	N/A	PP
12	K-water	line diagrams (HapcheonChangnyeong site)	N/A	PP
13	K-water	Design Report (HapcheonChangnyeong site)	N/A	PP
14	K-water	CompletionReport (HapcheonChangnyeong site)	N/A	PP
15	K-water	CDM QA/QC procedure	N/A	PP
16	K-water	CompletionReport (Juksan site)	N/A	PP

## 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				