

# POA VALIDATION REPORT

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Korea Environment Corporation

**POA: The program to improve  
energy independence of public  
sewerage system through biogas  
increased efficiency in Korea**

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**SGS Climate Change Programme**

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<b>Date of Issue:</b>		<b>Programme of Activity Number:</b>		
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<b>Programme of Activity Title:</b>				
The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea				
<b>Organisation:</b>		<b>Client / Managing Entity:</b>		
SGS United Kingdom Limited		Korea Environment Corporation		
<b>Publication of POA-DD, CPA-DD Generic and CPA-DD Specific for Stakeholders Consultation</b>				
<b>Commenting Period:</b>		18/11/2011 to 17/12/2011		
First POA-DD Version and Date:		Version 1, dated 11/2010 (The webhosted POA DD mentioned only the year and month of preparation)		
Final POA-DD Version and Date:		Version 18, dated 13/10/2014		
<b>Summary:</b>				
<p>Korea Environment Corporation has commissioned SGS to perform the validation of the Programme of Activity entitled "The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea".</p> <p>Methodology Used: AMS I.C. Version and Date: Version 19, valid from 17/06/2011.</p> <p>The scope of the validation is defined as an independent and objective review of the Programme of Activity design document, the Programme of Activity baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against CDM Validation and Verification Standard (Version 07.0), Kyoto Protocol requirements, CDM POA Executive Board/UNFCCC rules.</p> <p>The report is based on the assessment of the Programme of Activity design document, including the Generic Component project activity design document, undertaken through stakeholder consultations, application of standard auditing techniques including but not limited to document reviews, follow up actions (e.g. site visit, telephone or e-mail interviews) and also the review of the applicable simplified methodology and underlying formulae and calculations.</p> <p>The validation report and the annexes describe a total of 20 findings which include:</p> <ul style="list-style-type: none"> <li>• 19 Corrective Action Requests (CARs);</li> <li>• 01 Clarification Requests (CLs);</li> <li>• 00 Forward Action Requests (FARs);</li> </ul> <p>All findings have been closed satisfactorily. The Programme of Activity will be recommended to the CDM Executive Board for registration.</p>				
<b>Subject:</b>		<b>Document Distribution</b>		
CDM POA Programme of Activity Validation				
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## Abbreviations

AMS	Approved Small Scale Methodology
CAR	Corrective Action Request
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CME	Coordinating/Managing Entity
CL	Clarification Request
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CoP	Conference of the Parties
DOE	Designated Operational Entity
DNA	Designated National Authority
EIA	Environmental Impact Assessment
FAR	Forward Action Request
GHG	Greenhouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
ISHC	International Stake Holder Consultation
KWh	Kilo Watt hour
KECO	Korea Environment Corporation
LA	Lead Assessor
LoA	Letter of approval
LSC	Local Stakeholder Consultation
MGT	Micro Gas Turbine
MoC	Modalities of Communication
MoE	Ministry of Environment
MT	Metric Tons
MW	Mega Watt
MWh	Mega Watt hour
NCV	Net Calorific Value
ODA	Official Development Assistance
POA-DD	Programme of Activity Design Document
PO	Purchase Order
QA/QC	Quality Assurance & Quality Control
SSC	Small Scale
TPH	Ton Per Hour
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation & Verification Standard,

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## 1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Korea Environment Corporation (KECO) to perform a validation of the Programme of Activity entitled "The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea".

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM POA), Validation and Verification Standard (Version 07.0) and host country criteria, as well as criteria given to provide for consistent Programme of Activity operations, monitoring and reporting.

By recovering biogas from sewage treatment facility & generating renewable energy using the recovered biogas, the Programme of Activity will result in reductions of greenhouse gas (GHG) emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the Programme of Activity meets all relevant UNFCCC, CDM POA criteria and all relevant host country criteria of the host country (Republic of Korea) involved. The Programme of Activity correctly applies methodology AMS I.C. version 19. It is demonstrated that the Programme of Activity is not a likely baseline scenario. Emission reductions attributable to the Programme of Activity are hence additional to any that would occur in the absence of the Programme of Activity.

The total emission reductions from the CPA " Installation of co-generation system in sewage treatment plant of Chuncheon (ID:Korea environment corporation – 0001 are estimated to be 12,189.7 tonne of CO<sub>2e</sub> over a 10 year crediting period, averaging 1,218.97 tonne (rounded down to 1,218) of CO<sub>2e</sub> annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The Programme of Activity will hence be recommended by SGS for registration with the UNFCCC along with above referenced CPA.

### Signed on Behalf of the Validation Body by Authorized Signatory



Signature:

Name: Jonathan Hall

Date: 03/11/2014

## 2. Introduction

### 2.1 Objective

Korea Environment Corporation (KECO) has commissioned SGS to perform the validation of the Programme of Activity entitled "The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea" with regards to the relevant requirements for Clean Development Mechanism (CDM POA) Programme of activities. The purpose of a validation is to have an independent third party assessment of the Programme of Activity design. In particular, the Programme of Activity baseline, the monitoring plan (MP) and the Programme of Activity's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the Programme of Activity design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the Programme of Activity and its intended generation of certified emission reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM POA rules and modalities and related decisions by the COP/MOP and the CDM POA Executive Board.

### 2.2 Scope

The scope of the validation is defined as an independent and objective review of the Programme of Activity design document, the Programme of Activity's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for Programme of Activity implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the Programme of Activity design.

### 2.3 GHG Programme of Activity Description

The objective of the POA is to generate thermal and/or electrical energy using biogas at local sewerage treatment plants in the Republic of Korea. In this way, fossil fuel that would have been used in the absence of the POA will be partly or totally substituted by biogas. Therefore, the POA will reduce GHG emissions and help to improve the energy independence of the sewerage treatment plants.

As per the final POA DD<sup>1/</sup> energy independence rate of public sewerage system of Korea is only 0.8%. The remaining 99.2% is supplied from the grid and fossil fuel. This information was checked and confirmed from page number 56 of the "Feasibility study on improving energy independence of public sewerage system"<sup>36/n</sup>, published by the Ministry of Environment of Korea, dated November 2008. The information was accepted by the assessment team as the referred document<sup>36/</sup> is a government published report. This information was further confirmed from the local assessor of the host country. In this situation, the Ministry of Environment of Korea (MoE) set up a plan to enhance the energy independence rate of public sewerage system and reduce GHG emissions<sup>36/</sup>. The plan has a goal to improve the energy independence rate of public sewerage system in the host country, Republic of Korea. This was confirmed by the assessment team from "Feasibility study on improving energy independence of public sewerage system"<sup>36/n</sup> and also the during the validation site visit.

The POA is operated and implemented by KECO. KECO is the "Coordinating/Managing Entity" (hereinafter referred to as "CME" or PP). KECO will promote and introduce this program to local sewage treatment plant (under the municipal communities) and will act as the focal point with the CDM Executive Board in all the aspects relating to validation, verification, registration and issuance of carbon credits generated by the POA. Each municipal community which is a part of the POA will be the project implementer for each CPA. This information was checked by the assessment team from the CME operating manual<sup>19/</sup> and from the MoUs<sup>29/46/</sup> signed by the CME with the CPA implementers (i.e., Chuncheon, Suwon, Changwon City Municipal Communities).

The POA includes two types of CPA-

**Option 1:** Under this Option 1, fuel substitution from fossil fuel to biogas by retrofit of existing heat generating facilities is considered i.e. solid, liquid and gaseous fossil fuels can be switched to biogas.

**Option 2:** The option 2 involves displacing electricity by installing a new biomass co-generation system in the project site.

In this way, fossil fuel that would have been used in the absence of the POA will be partly or totally substituted by biogas. Therefore, the POA will reduce GHG emissions that would have been emitted in absence of the project activity. Each CPA is in charge of constructing operating and managing its energy generating facility. This was confirmed from the CME Operating Manual<sup>19/</sup>, Manual No 1, revision no. 1.2, dated 02/05/2014, and was found to be correct.

## 2.4 The Names and Roles of the Validation Team Members

Assessment Team	Role
C. Muthamil Kumaran	Lead Assessor
Sauvik Banerjee	Sectoral Expert TA 1.1 (Thermal energy generation from fossil fuels and biomass)
A.T. Surendra	Sectoral expert TA 13.1 (Waste handling and disposal)
Blake Park	Local Assessor

Technical Review	Role
Shivaji Chakraborty	Technical Reviewer & Sectoral Expert TA 1.1 (Thermal energy generation from fossil fuels and biomass)
Sameer Rege	Sectoral expert TA 13.1 (Waste handling and disposal)



### 3. Methodology

#### 3.1 Review of CDM -POA-DD, Generic CPA-DD and Additional Documentation

The validation is performed primarily as a document review of the publicly available POA DD<sup>1/</sup> version 01 dated 11/2010, and subsequent version 1.2 dated 28/06/2012, version 1.3, dated 20/08/2012, version 1.4 dated 23/10/2012, version 02 dated 18/03/2013, version 03 dated 10/06/2013 and version 04 dated 25/06/2013, version 05 dated 09/09/2013, version 06 dated 09/10/2013 and version 07, dated 31/10/2013, version 08, dated 18/11/2013, version 09, dated 02/12/2013, version 10 dated 27/12/2013, version 11 dated, dated 15/02/2014, version 12 dated 12/03/2014, version 13, dated 25/04/2014, version 14, dated 03/06/2014, version 15, dated 26/06/2014, version 16 dated 14/07/2014, version 17 dated 29/09/2014 and version 18 dated 13/10/2014 (final version). The assessment is performed by trained assessors using a validation protocol attached as Annex 2 Table 2.

The site visit was performed from 07/06/2012 to 08/06/2012. The site visit results are summarized as a separate checklist as Annex 1 in this report.

#### 3.2 Use of the Validation Protocol

The validation protocol used for the assessment is designed in accordance with the Validation and Verification Standard, Version 7.0. It serves the following purposes:

- it organises, details and clarifies the requirements the Programme of Activity is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation (reporting).

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of Verification (MoV)	Comment	Conclusion/ CARs/CLs
The various requirements are linked to checklist questions the Programme of Activity should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	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 (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CL) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this Programme of Activity is attached as Annex 2 to this report

#### 3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

**A Clarification Request (CL)** is raised if information is insufficient or not clear enough to determine whether the applicable CDM POA requirements have been met

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR is issued, where:

- The Programme of Activity participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- The CDM POA requirements have not been met;
- There is a risk that emission reductions cannot be monitored or calculated.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a CL may result in a CAR. Information or clarifications provided as a result of a CL may also lead to a CAR.

**A Forward Action Request (FAR)** is raised during validation to highlight issues related to Programme of Activity implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM POA requirements for registration.

Corrective Action Requests and Clarification Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to CLs and FARs.

### **3.4 Internal Quality Control**

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team. Findings can be raised at this stage and client must address them within agreed timeline.

## 4. Validation Findings

### 4.1 Approval

The host Party for this project is the Republic of Korea. The Republic of Korea has ratified the Kyoto protocol on 8<sup>th</sup> November 2002. This was checked from the UNFCCC website <http://maindb.unfccc.int/public/country.pl?country=KR>. The CME has submitted to SGS the letter of approval issued by the host country DNA, Ministry of Foreign Affairs and Trade, bearing No. 2012-29 dated 29/10/2012. The authenticity of LoA was further cross checked from the host country DNA by email communication, dated - 13/12/2012 to the DNA team (Hong, Suk Woo/ Yoo, Young Sook) at the email addresses ([environment@mofat.go.kr](mailto:environment@mofat.go.kr), [emchkh@pmo.go.kr](mailto:emchkh@pmo.go.kr), [emchkh@korea.kr](mailto:emchkh@korea.kr)). Since a change in the authorized signatories mentioned in the LoA and the UNFCCC website for Republic of Korea occurred, the assessment team contacted the DNA team for the Republic of Korea directly again ( Mr. JaeWoon Hwang , Mrs. HyunJin Cha ) at the email address ([skueen@pmo.go.kr](mailto:skueen@pmo.go.kr), [skueen@hanmail.net](mailto:skueen@hanmail.net), [climate@mofa.go.kr](mailto:climate@mofa.go.kr) ) on 16/07/2014<sup>/37A/</sup>, to obtain confirmation of the authenticity of the LoA received. In response the Republic of Korea DNA confirmed to the assessment team through their email communication dated 17/07/2014<sup>/37B/</sup> (from the email [skueen@pmo.go.kr](mailto:skueen@pmo.go.kr), [skueen@daum.net](mailto:skueen@daum.net) ; on behalf of [skueen@hanmail.net](mailto:skueen@hanmail.net)) the authenticity of the LoA issued. The assessment team concluded that the LoA<sup>/2/</sup> is authentic and meets the requirements of Para 39 of VVS version 07.0 and thus accepted.

The assessment team has confirmed that the letter of approval<sup>/2/</sup> has been issued by the host country DNA and is valid for the proposed CDM project activity. The LoA<sup>/2/</sup> clearly confirms that the Government of Republic of Korea has ratified the Kyoto Protocol in November, 2002; participation is voluntarily for the project activity and clearly mentions that the project activity contributes to the sustainable development of Republic of Korea. It has been also confirmed that the LoA<sup>/2/</sup> is unconditional with respect to the party to the Kyoto Protocol, voluntarily participation, contribution towards sustainable development and the title of the project activity and thus accepted. This was found to be in accordance with para 37 of the CDM modalities and procedures<sup>/10/</sup>. This was also found to be as per VVS<sup>/7/</sup> version 07.0 paragraphs 39 to 42.

#### Discussions of CARs/CLs:

CAR 01 was raised as follows-

The coordinating/managing entity was requested to submit the letters of approval of its coordination of the POA from the host Party involved.

Responding to this CAR 01, PP has provided the LoA<sup>/2/</sup>, dated 29/10/2012 from the host country DNA for the programme of activity. The LoA<sup>/2/</sup> was issued to the CME and refers to the POA title, which is consistent with that of the POA DD and also with the information available in the UNFCCC website. Further the authenticity of the LoA<sup>/2/</sup> was assessed as described above. Thus, CAR 01 was closed.

#### Validation Opinion

With reference to paragraph 38 of VVS, version 07.0, the assessment team validated and confirmed that the designated national authority (DNA) of the Party indicated as host country in the proposed CDM project activity in the POA DD is Republic of Korea and the DNA has provided a written letter of approval<sup>/2/</sup>, in the name of the project participant as mentioned in the POA DD.

Further the LoA letter was checked for its compliance of paragraph 39 of VVS, version 07.0, and the assessment team concluded that the LoA letter has met the requirements of paragraph 39.

The assessment team also confirmed that the approval is unconditional with respect to paragraph 40 (a) to (d) of VVS version 07.0. The assessment team also confirms that the letter of approval has been issued by the host country DNA and is valid for the proposed project activity under validation.

Furthermore, the authenticity of the LoA was confirmed from the host country DNA by the assessment team as per the requirement of para 41 of VVS, version 07.0, by email communication, dated - 13/12/2012. Since there was a change in the authorized signatories mentioned in the LoA and on the UNFCCC website for

Republic of Korea, the assessment team contacted the DNA team ( Mr. JaeWoon Hwang , Mrs. HyunJin Cha ) at the email addresses ([skueen@pmo.go.kr](mailto:skueen@pmo.go.kr), [skueen@hanmail.net](mailto:skueen@hanmail.net) , [climate@mofa.go.kr](mailto:climate@mofa.go.kr) ) again on 16/07/2014<sup>/37A/</sup>. In response the Republic of Korea DNA confirmed to the assessment team through their email communication dated 17/07/2014<sup>/37B/</sup> (from the email [skueen@pmo.go.kr](mailto:skueen@pmo.go.kr), [skueen@daum.net](mailto:skueen@daum.net) ; on behalf of [skueen@hanmail.net](mailto:skueen@hanmail.net)) the authenticity of the LoA issued.

The validation team confirms that the LoA<sup>/2/</sup> submitted by the PP is in compliance with the requirements of paragraphs 39-42 of the VVS version 07.0<sup>/7/</sup>.

## 4.2 Authorization

The host Party for this project is the Republic of Korea. The Republic of Korea has ratified the Kyoto protocol on 8<sup>th</sup> November 2002.

The CME\* has submitted the host country DNA approval letter<sup>/2/</sup> as mentioned above in section 4.1 of this report. No Annex I Party has been identified in the POA DD<sup>/1/</sup> (final version) and therefore no further Letter of Approval was available. It is observed that the CDM EB has agreed that the registration of a CDM project activity can take place without an Annex I Party being involved at the stage of registration although it should be noted that before CER can be transferred to an Annex 1 Party, a Letter of Approval from Annex 1 Party will need to be submitted. Further, the authenticity of the LoA was confirmed from the host country DNA by the assessment team as per the requirement of para 42 of VVS, version 07.0, by email communication<sup>/37/</sup>, dated – 13/12/2012.

There is only one project participant in the PoA, which is Korea Environment Corporation (KECO), and they have been authorised by the host country DNA, via letter<sup>/2/</sup> dated 29/10/2012. The name of the Project Participant is "Korea Environment Corporation", this has been listed in tabular form in section A.4, of the POA DD<sup>/1/</sup> (final version) and also, this information was found to be consistent with the contact details provided in Appendix 1 of POA DD<sup>/1/</sup> and is also consistent with the DNA approval letter. Thus the project activity meets the requirement as set out in the VVS version 07.0<sup>/7/</sup>, paragraph 46-50.

## Validation Opinion:

The assessment team has confirmed that the project participant for the proposed project activity have been authorized by DNA of Republic of Korea in a letter of approval<sup>/2/</sup>. The project participant is listed in tabular form in section A.4 of the POA DD<sup>/1/</sup> (final version) and this information is consistent with the information provided in the Appendix 1 of the POA DD<sup>/1/</sup> (final version). This is in line with the requirement of paragraph 46-49 of VVS<sup>/7/</sup> version 07.0.

## 4.3 Modalities of Communication and MoC Statement

The corporate identity of the CME has been included in the MoC statement provided by the CME. The assessment team confirms that the MoC<sup>/3/</sup> statement signed by the CME, dated 08/10/2013 has been correctly completed. The assessment team has validated the corporate identity of the project participant and focal point included in the Modalities of Communication (MoC) statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories during the validation site visit. The assessment team directly checked the evidence for corporate & personal identity of the authorised signatory during the validation site visit, and the information was checked with the details provided in the Appendix 1 of the PoA DD and the MoC, and was found to be consistent. Thus the assessment team validated the information provided in the MoC as per the requirement of paragraph 55 (a) of VVS version 07.0.

The assessment team also confirms that-

- a) The latest version (version 02.1) of the form "Modalities of Communication Statement" (F-CDM-MOC) has been used.

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\* For this POA, KECO is the CME and is also the PP. In the report both the terms (CME & PP) has been used interchangeably. Wherever, it has been mentioned as the CME, it refers to KECO, which is also the PP and vice versa.

- b) The information required as per the F-CDM-MOC, including its annex 1 is correctly completed.
- c) The Project Participants authorized signatories signing the F-CDM-MOC correspond to the project participants authorised signatures included in F-CDM-MOC, annex 1.

#### Discussion of CARs & CLs:

CAR 03 was raised requesting the CME to submit the modalities of communication form.

The CME provided the MoC form dated 08/10/2013 correctly filled and duly signed by the authorised signatory of the CME. The MoC form was checked by the assessment team and was found to be correctly filled in. Thus CAR 03 was closed.

#### Opinion:

The assessment team confirms that the validation of the MoC<sup>/3/</sup> document submitted by the CME was done as per paragraphs 54-58 of VVS, Version 07.0, and the MoC<sup>/3/</sup> form has been filled in as per the requirement.

#### 4.4 Programme of Activity Design Document including Programme of Activity Description

Korea Environment Corporation (KECO) has planned and promoted “The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea” (the POA). This POA will support the small scale projects (also micro scale projects), whose total energy generation capacity(thermal and/or electrical) of the project equipment does not exceed 45 MW thermal, to produce heat and/or electricity in public sewerage treatment plants throughout Republic of Korea using biogas captured from anaerobic digestion system. The objective of the POA is to generate thermal and/or electrical energy using biogas at local sewerage treatment plants in Republic of Korea.

Korea Environment Corporation (KECO) is the Co-ordinating/Managing Entity and all the municipal communities that will be a part of the POA are the CPA implementers. This information, as assessed in section 2.3 of this report, was checked by the assessment team from the CME operating manual<sup>/19/</sup> and from the MoUs<sup>/29//46/</sup> signed by the CME with the CPA implementers. The POA DD mentions the unique name of the POA. The title of the POA “The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea” has made the project identifiable by unique name. The name of Project activity was also checked from the UNFCCC website [http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EUT6B/vie\\_w.html](http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EUT6B/vie_w.html) and it was confirmed that the title of the PoA has not changed since the initial webhosted version. It is confirmed that the POA DD was prepared in accordance with the F-CDM-SSC-POA-DD template version 02.0 as available on website [http://cdm.unfccc.int/Reference/PDDs\\_Forms/index.html#gov](http://cdm.unfccc.int/Reference/PDDs_Forms/index.html#gov) . It is to be noted that F-CDM-SSC-POA-DD template version 02.0 has been used by the PP, even though it is not the latest version of the template. This has been accepted by the assessment team in the context that the earlier project submission was incomplete and there is a provision for not applying the latest template in cases of incomplete submission or response to the issues identified in the request for review even after the last day of the eighteenth meeting of Board as checked and confirmed from [https://cdm.unfccc.int/Reference/Guidclarif/old\\_pdd/index.html](https://cdm.unfccc.int/Reference/Guidclarif/old_pdd/index.html) .

The table for mentioning the project participant has been correctly mentioned in the POA DD<sup>/1/</sup>, in section A.4., which is as per VVS<sup>/7/</sup>, version 07.0, Para 47. The proposed CDM POA is located in the Republic of Korea, which was confirmed by undertaking a validation site visit by the assessment team. It was concluded that the project meets the relevant CDM requirements and POA DD was checked against the forms and guidance mentioned on UNFCCC website.

As per the description provided in section A.2 of the POA DD<sup>/1/</sup> (final version), in the first phase of the CPA inclusion process, municipal communities of Chuncheon (ID: Korea environment corporation-0001), Suwon and Changwon will be included; in the second phase the municipal communities of Bucheon, Ansan, Asan, Gunsan and Mungyeong will be included as CPA to the POA (provided all the eligibility criteria set by the CME in section B.2 of the POA DD are met). Each CPA will be provided with a unique ID. After that, 18

additional CPAs located within the geographical boundary of the Republic of Korea are expected to be included in the POA. This was confirmed by the assessment team during validation site visit by interviewing the representatives of the CME.

In the POA DD<sup>/1/</sup>, the CME has included the implementation status of the POA, as per the requirement of paragraph 36 of CDM Project Standard, version 07.0, which was validated by the assessment team as follows-

Date	Timeline	Assessment
25/11/2010	Holding the workshop for the program to improve energy independence of public sewerage system and presentation on P-CDM related to the program	A workshop was organised by KECO, to discuss the possibility of use of green technology in sewerage treatment plants. This was checked by the assessment team from the "Workshop Result Report" <sup>/44/n</sup> , dated 25/11/2010.
17/12/2010	Presentation of the P-CDM related to the program at the workshop for Environmental infrastructure carbon-neutral program	A workshop was organised by KECO, to discuss the possibility of use of green technology in sewerage treatment plants. This was checked by the assessment team from the "Workshop Result Report" <sup>/45/n</sup> , dated 17/12/2010.
29/04/2011	MoU ceremony of The 1 <sup>st</sup> progressing municipal communities ( Chuncheon, Suwon, Changwon )	The MoUs, dated 29/04/2011 for inclusion of the Chuncheon <sup>/29/</sup> , Suwon <sup>/46/</sup> , Changwon City <sup>/46/</sup> municipal communities, between the CME and each individual municipal communities were checked by the assessment team and was found to be acceptable.
03/08/2011	Solicitation of comments from local stakeholders through the KECO website	The CME invited comments from stakeholders through their website, this was checked by the assessment team from the KECO website <sup>/48/</sup> .
25/10/2011	SGS-UK selected as the DOE	The CME selected SGS UK as the validating DoE for carrying out the validation activities of the POA; this was confirmed by the agreement <sup>/49/</sup> signed between SGS UK & the CME, which was received by SGS on 07/11/2011.
20/04/2012	Workshop of The 2 <sup>nd</sup> progressing municipal communities (Bucheon, Ansan, Asan, Gunsan, Mungyeong )	The copy of notice <sup>/50/</sup> (in hard copy format) was circulated to the participating municipal communities for a meeting about the CDM procedures related to energy independence of public sewerage system and it was checked by the assessment team during site visit and was found to be acceptable.

As per the description provided in the section A.6 of the POA DD<sup>/1/</sup>, the POA includes two types of CPA-



**Option 1:** Under this Option 1, Fuel substitution from fossil fuel to biomass by modification including retrofit of existing heat generating facilities is considered i.e. solid, liquid and gaseous fossil fuels can be switched to biogas.

**Option 2:** Under this option 2, a new biomass based co-generation system for production of both heat and electricity will be installed to generate heat and electricity using biogas.

This information was confirmed from the CME Operating Manual<sup>/19/</sup>, dated June 02/05/2014 and was found to be consistent as mentioned in the POA DD<sup>/1/</sup>.

## Discussion of CARs & CLs:

### CAR 02 was raised as follows-

The indicated system/procedure mentioned in the POA-DD<sup>/1/</sup> version 01, to avoid double counting seems to be inadequate in case of including a new CPA that has been already registered as a CPA of another POA (small scale POA).

Responding to this CAR 02, CME added double counting check criteria in section B.2 and also stated that CME will verify possibility of double counting and issue certificate that CPA doesn't involved double counting. The certificate<sup>/11/</sup> regarding no double counting was also checked and was found to be correct. Thus CAR 02 was closed.

### CAR 04 was raised as follows-

- a) The POA-DD did not reveal the exact date of the document in section A.1. CME was requested to put the same in corrected format, as per the template.
- b) The webhosted CPA-DD is for Changwon having title "Efficiency of sewage treatment plant of Changwon", whereas during the site visit CME submitted another CPA-DD for Chuncheon having title "Installation of co-generation system in sewage treatment plant of Chuncheon", the CME was requested to clarify this and this new CPA –DD also does not reveal the exact date of completion of the document in section A.1.
- c) The CME was requested to clarify why the guideline text for completing the F-CDM-SSC-POA-DD form is mentioned throughout the whole POA-DD

The CME was requested to correct the name of the host party in section A.4.1.1 (in version 01 of the POA DD, dated 11/2010, under VVM track, which is also the webhosted PDD) as per Non-Annex I Parties to the Convention.

The CME was requested to indicate if a stakeholder consultation process was required by regulations/laws in the host country.

Addressing the CAR 04, CME provided the following response:

- a) The CME changed the date in section A.1. The POA DD and CPA DD were checked and found that necessary corrections have been made. CAR 04 (a) was closed.
- b) The CME stated that, since Changwon city CPA has unclear future construction design and plan, it won't be appropriate to validate the CPA at the time of validation site visit for the POA (dated 07/06/2012 to 08/06/2012). Instead the CME submitted the CPA DD of Chuncheon city CPA, which was proceeding under punctual construction schedule and accordingly assessment team carried out the validation of the Chuncheon city CPA-DD project site. The CME also revised the exact date of document in section A.1 of the CPA DD. This was checked and was accepted by the assessment team. CAR 04 (b) was closed. This approach was discussed and agreed with UN secretariat during post EB66 conference call and during follow up communication in March 2012.
- c) The CME deleted all the unnecessary guidelines from the POA DD, this was checked and was found to be acceptable by the assessment team. CAR 04 I was closed.

- d) The CME changed host country name “Korea” to “Republic of Korea” in section A.4. (Final version of the POA DD, under VVS track). The POA – DD was checked by the assessment team and found that necessary corrections have been made. CAR 04 (d) was closed
- e) The CME added explanation in the section D.1 that local stakeholder consultation is not required by the law in Korea and submitting related law “Sewerage Act”<sup>12/</sup> Act No. 9334, Jan. 7, 2009 to confirm the statement. Further, the opinion of the local assessor was also taken into account and, the local assessor also confirmed that no such requirements exist in the host country for energy generation projects in sewage treatment plants. This was accepted by the assessment team. CAR 04 was closed.

#### CAR 05 was raised as follows-

1. The CME was requested to submit the details of the technology used to improve the efficiency of the bio-gas recovery and utilization in sewerage treatment system. CME was also requested to provide the remaining lifetime assessment report in line with “Tool to determine the remaining lifetime of equipment”, version 01, EB 50, Annex 15 (latest version).
2. The CME was also requested to include the longitude & latitude for the respective region where the POA will be implemented under section A.4.1.2 of the POA DD (in version 01 of the POA DD, dated 11/2010, under VVM track, which is also the webhosted PDD)
3. It was observed that digester heating has been modified because of difficulties in operation and maintenance because of deteriorated boiler, which means in any case PP will have to replace the system for ease of operation, so this is not a voluntary action. Please justify with proper technical description how the efficiency of digester will increase due to the modification i.e. from direct heating to indirect heating
4. Assessment team found that the project description under section A.4.2 (in version 01 of the POA DD, dated 11/2010, under VVM track, which is also the webhosted PDD) is still not clear in the POA – DD. It is not clear why CME has included the applicable methodology paragraphs for project scenario description, since these methodology paragraphs are meant for baseline identifications. CME was requested to justify.
5. The description for Option 1 & Option 2 type of CPA has been changed, earlier for option 1, it was mentioned as “Fuel substitution from fossil fuel to biogas including retrofit or modification of existing facility”, whereas in the revised POA DD, it is mentioned as “Displacing electricity by installing a new biomass co-generation system” and for Option 2, “Fuel substitution from fossil fuel to biogas including retrofit of existing facility and installation of co-generation system”, whereas in the revised POA – DD, it is mention as “Fuel substitution from fossil fuel to biogas by modification of existing facility and installation of co-generation system ”. The CME was requested to provide justification in this regard.

Also the PP was requested to provide more information on the thermal energy generation equipments, which will be newly installed or retrofitted as a part of the project activity.

6. In section A.2 of the POA DD, the description does not speak transparently on the cogeneration option at all. The CME was requested to clarify as per requirement of VVS, version 05.0 para 64 (version valid at the time of raising the issue).The description in this section was also not clear with regard to the implementation plan of the POA, overall and number of CPAs to be involved in the POA. The CME was also requested to provide evidence to justify that there is no incentive/ regulation to introduce equipment for biogas recovery from sewage and power generation.
7. In section A.3 Part I of the POA DD it was not clear if all CPAs would be implemented and owned by KECO or the CPA’s would be having different CPA implementer. The CME was requested to clarify.

Addressing the CAR 05, CME provided the following response-

1. CME has submitted the technical description of retrofitting equipment and remaining lifetime assessment report. The document was checked and found to be satisfactory.



2. CME added the physical and geographical location boundary of the POA, under section A.5 of the POA DD (final version of the POA DD under VVS track). The revised POA – DD (final version of the POA DD under VVS track) was checked and was found correct.
3. “Difficulties in operation” was mentioned to explain merits and de-merits of each type of boiler and ease of operation is not the main reason or purpose of modification. Main purpose of modification is increase biogas production. Further PP has revised the POA DD accordingly.

It is hard to compare quantitatively between direct heating and indirect heating because of different heating method and system. It can be explained on the basis of effective heating of sludge. It is important to maintain appropriate temperature of sludge in the digester to produce biogas. Main problem of direct heating method is uneven temperature in the digester due to direct steam injection. This means some of sludge near the steam injection remains high temperature and other part of sludge far from steam injection and as a result remains in low temperature. Replacing this method by indirect heating method, sludge will be maintained at an even temperature due to injection of heated sludge. As result, more biogas will be produced from the digester.

4. CME has revised the POA DD, and has included the project description under A.6 of the revised POA DD. This was checked and was found to be correct.
5. CME modified baseline scenario. It has been described in section B.4 of Part 2 POA DD. CME has correctly identified the baseline scenario for both the options under the POA. For Option 1 the baseline has been identified as per para 16 and para 42 of the methodology and, equation 2 has been used. For option 2 PP has correctly used the para 19(i) of the applied methodology AMS IC. The calculation of emission reduction will be calculated as per equation 21 of the methodology AMS IC. This was checked by the assessment team and was found to be correct. Further, CME removed the option 3 type CPA from the POA. The option 1 and 2 are now correctly identified. This was accepted by the assessment team.
6. The CME has revised the section A.2 of the POA DD, which was checked by the assessment team, and was found to be correct.

Further, “Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy” ([http://www.mke.go.kr/language/eng/laws/lawsview.jsp?seq=25&tableNm=E\\_06\\_01#](http://www.mke.go.kr/language/eng/laws/lawsview.jsp?seq=25&tableNm=E_06_01#)), “Act on the Promotion of Saving and Recycling of Resources” (<http://www.moleg.go.kr/english/korLawEng?pstSeq=47557>) & “WASTES CONTROL ACT” (<http://eng.me.go.kr/file.do?method=fileDownloader&attachSeq=984>) was checked by the assessment team. These regulations only promote and encourage generation of energy but they do not mandate implementation of any project to generate energy in sewerage treatment plants. Thus the justification provided by PP was found to be correct. In addition to this the CME has also included the implementation schedule of the POA, which was checked by the assessment team and was found to be correct.

7. The CME has revised the POA DD, this was checked by the assessment team, and the CME has now clearly mentioned that Korea Environment Corporation (KECO) is a public entity and the Coordinating/Managing Entity (CME); local autonomous entities (Municipal Communities) are the CPA implementer. This was checked by the assessment team and was found to be correct.

Thus the issues of CAR 05 were successfully addressed by CME and were closed by the assessment team.

#### CAR 06 was raised as follows-

CME was requested to correctly mention the category (ies) of the programme of activity in line with Appendix B of FCCC/KP/CMP/2005/8/Add.1 in Section E.1 of POA-DD.

PP has incorporated the required information in line with Appendix B of FCCC/KP/CMP/2005/8/Add.1 in the revised POA DD. The revised POA DD has been reviewed and found to be satisfactory. Thus, CAR#06 was closed.

However, later the POA DD was revised from C–M -SSC-POA-DD, version 1.2 to F- CDM-SSC-POA-DD, version 02.0. In this version, the category of the programme of activity is not required to be mentioned under

Section E.1, hence this CAR 06 is not applicable for the revised POA DD (final Version of the POA DD, under VVS track).

CL 07 was raised as follows-

CME was requested to provide a declaration that the technology would not be likely to be get substituted by other or more efficient technologies during the crediting period.

Responding to CL 07, the CME provided the declaration letter that the technology would not likely be changed during the crediting period and the letter has been checked and found to be satisfactory. Thus, CL 07 was closed.

CAR 19 was raised as follows-

1. In section C of the POA DD, the “figure 2: organization chart for POA Management and development”, is not matching with the description provided in “table 3: CME department rules and responsibilities”. In CME organisation for CPA inclusion – Technical Reviewer CME is mentioned first and then comes to Manager CME, but in description, Manager comes first and Manager sends documents to Technical Reviewer. The CME was requested to clarify the inconsistency.
2. The stakeholder’s consultation dates as mentioned in section A.2 is not matching with that of section A.2 of the POA DD. The CME was requested to justify the inconsistency.
3. The CME is requested to check the direction of arrows for the electricity export to the grid in section B.3 option 2. It is showing from Grid to Transformer only, no export has been shown. Further the diagram does not show any onsite electricity consumption. Also the utilisation of thermal energy from Option 2 is not explicitly defined in description. The CME was requested to justify the inconsistency in the project boundary diagram with the description.
4. In section B.5 of the POA DD, under the table 9, the CME was requested to justify why the benefits due to use of thermal energy (cost of the fossil fuel replacements) and use of thermal energy and electricity in co-generation plants has not been considered as input parameter which will be considered to carry out IRR analysis. Further, why the PLF for electricity generation has not been considered as an input parameter to calculate IRR of CPA. The CME was requested to justify.
5. The CME was requested to confirm whether the values referred for the OM, BM & CM calculation was the latest available information at the time of POA DD webhosting, considering that the CME has referred to values for the year 2007, 2008 and 2009, whereas the POA DD was webhosted on 18/11/2011. The CME was requested to clarify in this regard.
6. For parameter Ru – The CME is requested to check the unit and value of parameter. The Tool “Project emission from flaring, version 2.0.0, EB 68, Annex 15 has mentioned Ru as 0.008314472 Pa.m<sup>3</sup>/kmol.K, while “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, version 2.0.0, EB 61, Annex 11 has mentioned the Ru value as 8.314 Pa.m<sup>3</sup>/kmol.K. The PP was requested to refer to the correct value only.
7. For parameter EG<sub>thermal,y</sub> – The consideration of enthalpy of feed water/feed flow which is return to boiler or heater is not mentioned. The CME was requested to clarify how the net thermal energy generation is determined as per the requirement of AMS IC, version 19.
8. The description for the parameter EG<sub>BL,electricity y</sub> states, “Quantity of net electricity supplied to the grid”. The PP was requested to justify, how the electricity that will be consumed in house will be accounted, for which emission reduction will be claimed.
9. The CME was requested to justify, why the parameters 11 and 12 of the AMS IC, version 19, has not been included as monitored parameters.
10. As per POA completion guideline, EB 66, Annex 13, page number 7/13, “Where multiple technologies/measures and/or multiple methodologies are being applied, the demonstration of the application of the POA framework to implement generic CPAs must be done for each of the

combinations of technologies/measures and/or methodologies. Therefore, repeat all of Part II of these guidelines for each of the combination of technologies/measures and/or methodologies.” The CME was requested to justify, why the Part II of the POA DD, has not been repeated for the two options (thermal energy generation and co-generation) of the POA.

Responding to CAR 19, the PP provided the following response-

1. The CME revised the POA DD, section C. This was checked by the assessment team and was found to be correct. Now the description of the figure 2 is matching with Table 3 of the POA DD. Thus the issue was closed.
2. The stakeholder's consultation dates as mentioned in section A.2 is now matching with that of section F of the POA DD. This was checked by the assessment team and was found to be correct. Thus the issue was closed.
3. The heat consuming facility (heat generated from the increased biogas) is sludge drying process. This has been adequately mentioned in the revised POA DD and was found to be correct by the assessment team. Thus the point was closed.
4. The PP has revised the POA DD and two new input parameters have been added, one “consumption of fossil fuel before the project” and the other one is “consumption of fossil fuel after project”. Thus considering the unit price of fossil fuel, which is already an input parameter in the financial analysis, the amount of cost saved due to less use of fossil fuel can be calculated. Thus the point is closed.
5. The CME has revised the emission factor calculation sheet and has adopted the latest available data at the time of POA DD webhosting, i.e., data for the year 2008, 2009 & 2010. This was checked by the assessment team and was found to be correct.
6. For parameter Ru the CME corrected the unit and value of parameter as per the Tool EB 68, Annex 15. This was found to be correct and was closed.
7. The PP has revised the POA DD and the parameter  $EG_{thermal,y}$  is now as per the requirement of the methodology AMS IC, version 19. Thus the point was closed.
8. The CME has revised the section B.7.1 of the POA DD and was found to be correct. Closed.
9. The PP has revised the POA DD and the parameter 11 and 12 of AMS IC, version 19 are now part of the monitoring plan of Option 1 the POA. Thus the point was closed.
10. The PP has provided separate part II for both option 1 and option 2. This was checked by the assessment team and was found to be correct. Thus the issue was closed.

Thus all the issues raised under CAR 19 were adequately addressed by the CME and was closed by the assessment team. For detailed discussion on CAR 19, please refer to Annex 3 of this report.

CAR 20 was raised as follows-

The following issues have been raised against POA DD template and Guidance:

- 1) The CME was requested to justify why the methodology version was not always mentioned wherever the methodology is referred.
- 2) The CME was requested to justify why the font format has been altered (text highlighted and font colour) for e.g., page 5 and page 31 (not limited to these two examples) and Appendix 2 page 89 (text underlined).
- 3) Document layout is showing a blank section at the top of page 74 before Section B.6.2. The CME was requested to take a corrective action.
- 4) POA DD – on page 41 ( above table 12) – version of tool of EF is mentioned as version 3 instead of 4. The CME was requested to address inconsistency.

- 5) Appendix 5 of POA DD is not filled in by the PP. The CME was requested to take a corrective action.
- 6) Information is not consistent with data in Emission Factor(OM, BM, CM) calculation sheet\_G&SI\_140215.xls, for e.g., but not limited to:
  - POA DD page 39 is inconsistent with Tab 4 "OM": 2006 (hydro and total)
  - POA DD page 42 is inconsistent with tab % "BM": cell G7. Also note cell G5 has text hidden in the cell.
 The CME was requested to take a corrective action.

Following the CAR 20, the CME revised the POA DD, and made all necessary correction. The revised POA DD was checked by the assessment team and was accepted. Thus CAR 20 was closed. For more discussion on CAR 20, please refer to Annex 3 of this report.

#### Validation Opinion:

The POA DD<sup>/1/</sup> (final version of the POA DD, under VVS track) satisfies the requirements of paragraphs 234, 236 & 237 of VVS<sup>/7/</sup> version 07.0. The POA DD<sup>/1/</sup> (final version of the POA DD, under VVS track) used as a basis for validation has been prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website. The POA DD<sup>/1/</sup> contains a clear description of the project activity that provides a clear understanding of the precise nature of the project activity. This description was found to be accurate and complete. The information as mentioned in the POA DD, was also confirmed by the assessment team during the site visit process. All details have been consistently mentioned throughout the POA DD<sup>/1/</sup> (final version of the POA DD, under VVS track).

Main changes and reason for revision between the final POA-DD against the first version published for the international stakeholder consultation		
POA-DD no.	Section	Description and reason for changing the information in that section
POA DD Version 01		Webhosted version
POA DD Version 18		Section B.2: Criteria regarding double counting of emission reductions modified in line with CAR 02
		Correction in Version number and date of the POA DD in line with CAR 04
		Correction in the title of the POA, in line with CAR 04.
		Correction in the name of the host party in line with CAR 04.
		Revision in section A.2 of the POA DD to include the implementation schedule of the POA, in line with CAR 05.
		Revision in section A.3 of the POA DD in line with CAR 05.
		Revision in eligibility criteria of the CPAs to be included in the POA in line with CAR 08.
		Revision in section E: Environmental impact, in line with CAR 11.
		Revision in section B.2: Application of methodology in line with CAR 13.
		Revision in section B.3 in line with CRA 13.
		Revision in baseline scenario under section B.4 of the POA DD in line with CAR 14
		Version number of tool updated in line with CAR 15.
		Revision in section B.6.1 of the POA DD in line with CAR 15.
		Revision in section B.6.3 of the POA DD in line with CAR 16.
		Revision in section B.5 of the POA DD, in line with CAR 17
		Revision in section B.7.1 of the POA DD in line with CAR 17
		Revision in section C of the POA DD, in line with CAR 19
		Revision in section A.2 of the POA DD, in line with CAR 19

**Main changes and reason for revision between the final POA-DD against the first version published for the international stakeholder consultation**

	Revision in section B.2 of the POA DD, in line with CAR 19
	Revision in section B.5 of the POA DD, in line with CAR 19
	Revision in section B.3 of the POA DD, in line with CAR 19
	Revision in section B.6.1 of the POA DD, in line with CAR 19
	Revision in section B.6.2 of the POA DD, in line with CAR 19
	Revision in section B.5 of the POA DD, in line with CAR 19
	Revision in section B.6.3 of the POA DD, in line with CAR 19
	Revision in section B.7.1 of the POA DD, in line with CAR 19
	Revision in section B. 7.2 of the POA DD, in line with CAR 19
	Editorial corrections in the POA DD in line with CAR 20
	Revision in section B.2 (Part I) of the PoA DD , section B.5 (Part II) of the PoA DD for the both the option 1 and option 2 of the CPA category regarding clarity in the eligibility criteria relevant to specifications of technology/measure for CPA inclusion in line with CAR 08

**4.5 Criteria for inclusion of Component Project Activities**

The POA-DD established clear eligibility criteria for inclusion of each CPA under the POA, which needs to be met by each CPA. The coordinating/managing entity applies clear and unambiguous criteria for the inclusion of the CPA. The eligibility criteria's stated are verifiable with regards to the applicability of the applied methodology AMS-I.C, geographical boundary, technology used to the CPA, double counting and the host country's regulations. The eligibility criteria will be checked at the CPA level by the managing entity and will be confirmed by the DOE during CPA inclusion. The eligibility criteria has been set as depicted below-

No.	Eligibility criteria as set in the POA DD	Assessment of Eligibility criteria as mentioned in the POA DD
1	The CPA is located within the geographical boundary of the Republic of Korea.	These eligibility criteria will be checked by GPS information and by CPA identification No. This will be checked by DoE during CPA validation for each individual CPA by undertaking a site visit. This eligibility criteria is as per "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities", version 03.0, EB 74, Annex 05.
2	The CPA is not involved in another project that is registered or under validation as a CDM project activity or as a CPA under another POA or as other GHG reduction projects. Also, to avoid double counting and operate POA effectively, each CPA shall be issued its own ID by CME.	CME will provide a confirmation that CPA is not involved in another project or under validation as a CDM project activity or as a CPA under another POA or as other GHG reduction projects. This will also be confirmed from CPA identification Number. This will be checked by the DOE during CPA inclusion validation for each individual CPA. This eligibility criteria is as per EB 74, Annex 05.
3	<ul style="list-style-type: none"> <li>Each SSC-CPA will stay within the small-scale threshold criteria of the Type I. Renewable energy projects.(i.e. &lt; 45 MW<sub>thermal</sub> and/or 15 MW<sub>e</sub>)</li> <li>Option 1 <ul style="list-style-type: none"> <li>The total installed capacity is less than or equal to 45 MW<sub>thermal</sub> .</li> <li>Improved anaerobic digestion through sludge thickener improvement and digester dredging</li> </ul> </li> </ul>	The technical specifications of each CPA will be checked by the CME, and the construction permit from government authority issued to the CPA implementer will also be checked. The construction permit, itself is evidence that the technology used by the CPA, meets the national standard and is acceptable to the host country. This will be checked by DOE during CPA inclusion validation for each individual CPA. This eligibility criteria is as per EB 74, Annex 05.



	<p>etc.</p> <ul style="list-style-type: none"> <li>- Retrofit of existing heat generating facility.</li> <li>- Supplying heat to facilities through fuel substitution from fossil fuel (LNG, Diesel etc.) to biogas.</li> <li>- Renewable energy project of CPA comply with national standards.</li> <li>• Option 2</li> <li>- The total installed capacity is less than or equal to 15 MW<sub>e</sub> and maximum electricity capacity of cogeneration is 5MW<sub>e</sub> for Microscale project activities.</li> <li>- Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>- Displacing use of national electricity by installing a new biogas cogeneration system.</li> <li>- Emission reduction from electricity will be only claimed. Thermal energy will not be claimed.</li> <li>- Renewable energy project of CPA comply with national standards.</li> </ul>	
4	The CPA start date is after POA posting date, 18/11/2011.	The start date of all the CPAs will be confirmed from the date of Purchase or Construction Contract for renewable energy unit, and this will be confirmed that only those CPA whose start date is after the POA start date is included in the POA. This will be checked by DoE during CPA validation for each individual CPA. This eligibility criteria is as per EB 74, Annex 05.
5	The CPA complies with AMS-I.C. ver.19 as described in POA-DD part II section B.2	CME will check and confirm that CPAs meets all applicability criteria of AMS-I.C. and explanation of same will be provided in D.2 of each individual CPA-DD. This will be checked by DoE during CPA validation for each individual CPA. This eligibility criteria is as per EB 74, Annex 05.
6	Additionality check in D.5 of each CPA-DD is either EB 73 Annex 13 (version 5.0.0) "Guidelines for demonstrating additionality of micro scale project activities" or EB 68 Annex 27(version 09.0.0) "Guidelines on the demonstration of additionality of small scale project activities" as per the project scale.	Detailed assessment of documents will be done for additionality and the explanation for the same will be provided in D.5 of each individual CPA-DD. This will be checked by DOE during CPA inclusion validation for each individual CPA. This eligibility criteria is as per EB 74, Annex 05.
7	The CPA has the documentary evidence to check project costs and does not result in a diversion of official development assistance from Annex I country.	CPA implementer will provide declaration regarding the no involvement of public funding or ODA from Annex I parties based on the financing details of the CPA and the explanation for the same will be provided in A.11 of CPA-DD. This will be checked by the DOE during CPA inclusion validation for each individual CPA. This eligibility criteria is as per EB 74, Annex 05.

8	The CPA is a single project which is not a de-bundled component of another large-scale CDM or POA as per the latest guidance given in CDM EB. De-bundling check in A.12 of each CPA-DD and the declaration document by CPA.	CPA implementer will provide a declaration stating that the CPA is not a de-bundled component of another CDM program activity and this will be checked and confirmed by the CME. This will be validated by the DOE during inclusion of the CPA. This eligibility criteria is as per EB 74, Annex 05.
9	CPA of the POA shall meet the small-scale or micro-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA. Electricity generation capacity check in A.5 of each CPA-DD.	These eligibility criteria will be checked from Design report of the CPA to be included and the explanation for the same will be provided in section D.2 & D.5 of CPA-DD. This will be validated by the DOE during inclusion validation of the CPA. This eligibility criteria is as per EB 74, Annex 05.
10	The conditions related to sampling requirements for the POA in accordance with the “ Standard for sampling and surveys for CDM project activities and programme of activities”	The POA does not involve any sampling, hence this is not applicable to this POA. All the CPA will be individually verified. This was checked and confirmed from the POA DD <sup>19/</sup> (final version). Further this was also checked from the CME operating manual <sup>19/</sup> , and the assessment team concluded that the POA does not involve any sampling.
11	Produced heat through this project should be provided to the anaerobic digestion or the sewage sludge drying facility. Also, produced electricity should be used in the plant.	This eligibility criteria is CPA specific and can only be confirmed at the CPA level, thus this will have to be checked from the Design report of the CPA to be included and the explanation for the same will be provided in section A.3 of the CPA-DD. This will be validated by the DOE during inclusion validation of the CPA. This eligibility criteria is as per EB 74, Annex 05.
12	The POA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis.	Local stakeholder's consultation and environmental impact analysis will be done at the POA level, hence no separate such activity is required for the individual CPA.

All the above eligibility criteria have been stated and are verifiable for each CPA. The eligibility criteria can be checked at the CPA level by the managing entity and can be confirmed by the DOE during CPA inclusion. All eligibility criteria are in-line with the annex 5 of EB 74, also thus the requirement of para 241 of VVS, version 07.0 has also been met.

Validation team has checked the management system as mentioned in the CME Operating Manual<sup>19/</sup>. The validation team confirms that the CME has competencies to check the features of potential CPAs of POA and also have competency to check that each CPA meets all requirements and eligibility criteria before submission to the DOE for the inclusion. Based on above assessment, validation team confirms the compliance of para 18 and para19 of Standard, “Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities” annex 5 of EB 74. During the assessment process the following CAR/CLs were raised by the assessment team-

#### **Discussion of CAR/CLs:**

CAR 08 was raised as follows-

CAR 08 was raised asking CME to clarify why all the Eligibility criteria are not completed as per EB63, annex 3, CME was further requested to substantiate that this voluntary coordinated action would not be implemented in the absence of the POA.

Responding to CAR 08, CME has included all the eligibility criteria's as per EB, 63, Annex 3 which was checked by the assessment team and was found to be complete and satisfactory. Also, PP has substantiated with documentary evidence for voluntary coordinated action of implementing the POA. Later the eligibility criteria was updated as per EB 74, Annex 05. This was checked by the assessment team and was found to be correct. Thus, CAR 08 was closed. Please refer CAR 08 in the Findings Overview for further details.

#### CAR 10 was raised as follows-

- a) CME was requested to confirm, why the boundary of the CPA is not being clearly defined for CPA inclusion in the POA –DD.
- b) CME was requested to confirm why they haven't included the conditions to check the start date of the CPA as per the start date definition of CPA (as per EB 70, Annex 07)
- c) CME was requested to confirm why they haven't included the provisions of check for the micro scale or small scale threshold criteria throughout the crediting period?
- d) CME was requested to confirm why they haven't included a criteria to confirm that funding from Annex I parties, does not result in a diversion of official development assistance.

Responding to the CAR 10, CME responded as follows-

- a) CME corrected and defined the boundary of the POA as the geographical boundary of the host country, Republic of Korea. This was checked by the assessment team and was found to be correct.
- b) CME included the conditions to check the start date of the CPA according to the definition of CPA, as per EB 70, Annex 07, which says that the start date of CPA is "the earliest date at which either the implementation or construction or real action of a CDM project activity or CPA begins". This criteria regarding start date was included in section B.2 of part I of the POA DD and section B.5 of part II of POA DD. The revised POA DD was checked by the assessment team and was found to be correct.
- c) CME included the provisions of check for the micro scale or small scale threshold criteria as criteria no 9 in section B.2 of part I of the POA DD and section B.5 of part II of POA DD. This will be checked from the design report of each individual CPA, by the CME. This eligibility will be checked by the validating DoE, during CPA inclusion process. This was checked by the assessment team and was found to be correct.
- d) CME included the criteria to check funding from Annex I parties, (if any) as criteria no 7 in section B.2 of part I of the POA DD and section B.5 of part II of POA DD. The project financing details of each CPA will be checked by the CME, to confirm involvement of official development assistance from Annex I country. This eligibility will be checked by the validating DoE, during CPA inclusion process. This was checked by the assessment team and was found to be correct.

Thus the CAR 10 was closed.

#### CAR 17 was raised as follows-

1. It was unclear to the assessment team, which guideline was followed by the CME for the Eligibility criteria for enrolling the CPA in the POA. CME was requested to mention the guidelines referred in the POA DD, by the CME. If CME has referred to EB 74 Annex 5, then CME was requested to justify how the point no 19 of EB 74, Annex 5 has been addressed with respect to the POA.
2. CME was also requested to clarify, what step has been taken for checking the start date of the CPA. CME was also requested to justify the basis of start date of the POA, with documentary evidences.
3. In section B.2 , Part I of the POA DD, Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities latest version has not been used. The CME was requested to clarify why all eligibility criteria is not included as per the updated guideline, EB 74, Annex 5.
4. In section C, Part I of POA DD, the CPA implementer is different from CME. This is not consistent with section A.3, Part I of the POA DD. The CME was requested to clarify.



5. In section B.6.1, Part II of the POA DD (the generic CPA DD), nomenclature does not match with the tool "Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion". The CME was requested to clarify.
6. In section B.6.1 Part II of the POA DD (the generic CPA DD), emission factor of national grid has been mentioned as  $EF_{grid,CM,y}$ , however, the tool (Tool to calculate baseline, project and/or leakage emissions from electricity consumption) mentions this as  $EF_{EL,j,y}$ . The CME was requested to clarify the inconsistency.
7. In section B.7, Part II of the POA DD (the generic CPA DD), for the parameter  $TDL_y$  the traceability/reference of the National database mentioned in the measurement methods and procedures is not explicitly indicated. The CME was requested to clarify.
8. The CME was also requested to include the steps to calculate the parameter,  $F_{CH4,RG,m}$ , under section B.6.1 of the POA DD, and corresponding monitored parameters related to the calculation of  $F_{CH4,RG,m}$ , under section B.7.1 of the POA DD.
9. CME was requested to justify, why the monitoring parameter, "Temperature in the exhaust gas of the enclosed flare in minute m", (EB 68, Annex 15) was removed from the section B.7.1 of the POA DD, version 08.

Responding to the CAR 17, CME provided the following response-

1. CME clarified that, they have referred to EB 74, Annex 05 for setting the eligibility criteria for enrolling the CPA in the POA. Further CME, also confirmed that, CME Operating Manual<sup>/19/</sup> has been prepared. The Operation Manual includes roles and responsibilities of individual, workforce qualification (for both CME and CPA) and also CPA inclusion process. Thus the point No.19, Annex 5 of EB 74 has been covered by the CME Operating Manual<sup>/19/</sup>. This was checked by the assessment team and was found to be acceptable.
2. CME clarified that start date of CPA will be checked as per eligibility criteria 4, under section B.2 of the POA DD. As per the eligibility criteria number 4 (as mentioned in the section B.2 of part I of the POA DD and section B.5 of the part II of the POA DD) that the start date of the CPA should be after the POA start date, which is 18/11/2011 (POA webhosting date [http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EU\\_T6B/view.html](http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EU_T6B/view.html) ). This was checked by the assessment team and was found correct.

The CME also confirmed that, the POA start date has been considered as the date on which the POA DD was webhosted at the UNFCCC website, i.e., 18/11/2011 ([http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EU\\_T6B/view.html](http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EU_T6B/view.html) ). This start date is also in line with the definition of "start date" POA, as per Glossary of CDM Terms, EB 70, Annex 7 (page number 20/23). Thus this was accepted by the assessment team.

3. The CME has corrected the applicability criteria in the section B.5 of the revised POA DD. All the eligibility criteria have now been fully incorporated in the POA DD. All the eligibility criteria of EB 74, Annex 5, have been included in the section B.2 of the POA DD. This was checked by the assessment team and was found to be correct.
4. The revised POA DD was checked by the assessment team, the CME has corrected the implementing bodies as "Municipal Communities". Further the CME has clarified that KECO is the CME, and each individual municipal communities which are a part of this POA, are the CPA implementer. This was accepted by the assessment team and was found to be correct.
5. The Section B.6.1, Part II of the revised POA DD was checked by the assessment team and was found to be correct.
6. The CME has revised the section B.6.1 of the POA DD and has matched the notation as per the requirement of the tool. This was checked by the assessment team and was found to be correct.
7. The source of the parameter,  $TDL_y$  is national electricity statistics database report<sup>/16/</sup>. The value will be monitored each year and will be used for emission reduction calculation. This database was checked by the assessment team and was found to be correct.

8. The CME has referred to the “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, version 2.0.0 for the calculation of  $F_{CH_4,m}$  (Mass flow of methane in the residual gaseous stream in the minute m). As per the instruction given in the tool to calculate “Project emissions from flaring” the parameter  $F_{CH_4,m}$  has been calculated on dry basis. The CME has chosen option D, out of the six available options given in table 1 of the “Tool to determine the mass flow of a greenhouse gas in a gaseous stream”, version 2.0.0. The revised PDD was checked by the assessment team and was found to be correct.
9. The CME revised the POA DD to include the parameter “Temperature in the exhaust gas of the enclosed flare in minute m”, (EB 68, Annex 15). The revised PDD was checked by the assessment team and was found to be correct.

Thus all the issues raised in CAR 17 were satisfactorily addressed by the CME and CAR 17 was closed.

### Opinion:

The assessment team is of the opinion that CME has correctly identified all the eligibility criteria as per the standard “Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities” EB 74, Annex 05. This was validated as per para 241 of VVS version 07.0.

### 4.6 Applicability of selected methodology to the Programme of Activity

The POA has applied methodology AMS IC, version 19. The POA confirms to the requisite applicability criteria of AMS I.C., version 19<sup>8/</sup>, under sectoral scope -01 (Energy Industries renewable-. Non- renewable sources) and justification for the applicability criteria has been mentioned clearly in the POA DD<sup>1/</sup>. This POA will support the small scale projects, whose total energy generation capacity(thermal and/or electrical) of the project equipment does not exceed 45 MW thermal, to produce heat and/or electricity by using boiler or biomass based co-generation in public sewerage treatment plants throughout the Republic of Korea using biogas captured from anaerobic digestion system.

The assessment of the applicability criteria of the applied methodology AMS IC, version 19, has been assessed as depicted below-

Para	Applicability Conditions as per AMS IC, Version 19	How the eligibility is met as mentioned in POA DD
1	This methodology comprises renewable energy technologies that supply users with thermal energy that displaces fossil fuel use. These units include technologies such as solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass and other technologies that provide thermal energy that displaces fossil fuel.	The POA uses biogas, which is a renewable biomass (non-fossil fraction of an industrial or municipal waste) as per the definition of EB 70, Annex 07, in order to produce electricity and/or thermal energy. The Project activity will displace fossil fuel used for generation of thermal energy and electricity. This was confirmed by the assessment team during the validation site visit. Thus this applicability criteria was matched by the POA.
2	Biomass-based co-generating systems that produce heat and electricity are included in this category. For the purpose of this methodology “Co-generation” shall mean the simultaneous generation of thermal energy and electrical and/or mechanical energy in one process. Project activities that produce heat and power in separate element processes (for example heat from a boiler and electricity from a biogas engine) do not fit under the definition of co-generation project.	<p>The POA includes two types of CPA, as Option 1 and Option 2.</p> <ul style="list-style-type: none"> <li>• Option 1: Fuel substitution from fossil fuel to biogas by retrofit of existing heat generating facility</li> <li>• Option 2: Displacing electricity by installing a new biomass co-generation system</li> </ul> <p>This criteria is applicable only to Option 2 type of CPA. The POA DD has clearly described that the</p>

		Option 2 type CPA will generate thermal energy and electrical energy in one process. The project details of the CPA, under option 2 was also checked from "Fig 7, Project diagram Option 2" of the POA DD. The assessment team is of the opinion that Option 2 type CPA meets the requirement of this eligibility criteria. This criteria will be further checked during CPA inclusion.
3	Emission reductions from a biomass co-generation system can accrue from one of the following activities: (a) Electricity to a grid; (b) Electricity and/or thermal energy(steam or heat) for on-site consumption or for consumption by other facilities(c) Combination of (a) and (b)	This criteria is not applicable to CPA under Option 1, as it generates only thermal energy without electricity generation and is not a co-generation system. This was checked from the description of Option 1 CPA, as mentioned in the POA DD.  This criteria is applicable to CPA under option 2, which involves installation of new co-generation system for the generation of electricity. POA Detailed description will be described in CPA-DD, which will be further assessed by the validating DOE, during the CPA inclusion process for each individual CPA.
4	The total installed/rated thermal energy generation capacity of the Project equipment is equal to or less than 45MW thermal.	The total installed/rated thermal energy generation capacity of each CPA will not exceed 45MW thermal. This was confirmed by the assessment team during the validation site visit. However, this will be further checked from the technical specification of each CPA and will be further assessed by the validating DOE, during CPA inclusion process for each individual CPA
5	For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel shall not exceed 45MW thermal.	This criteria is not applicable to this POA, as it does not involve any CPA which has a co-fired system. Any CPA which has a co-fired system cannot be a part of the POA. However, the baseline scenario of each CPA will be checked during CPA inclusion process.
6	The following capacity limits apply for biomass co-generation un  1. (a) If project activity includes emission reductions from both the thermal and electrical energy components, the total installed energy generation capacity (thermal and electrical) of the project equipment shall not exceed 45MW thermal. For the purpose of calculating this capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy;  (b) If the emission reductions of the co-generation project activity are solely on account of thermal energy production (i.e. no emission reductions accrue from electricity component), the total installed thermal energy production capacity of the project equipment of the co-	This criteria is not applicable to CPA under Option 1, as it generates only thermal energy without electricity generation and is not a co-generation system.  This criteria is relevant only for CPA under option 2. In this type of CPA, under Option 2, the emission reduction claimed will be solely on the account of electrical energy production. Hence only tpoint (c) is relevant here. The total electricity generation capacity will be less than 15 MW. This was checked by the assessment team during the validation site visit. This eligibility criteria will be further checked from the technical specification of each CPA, during the CPA inclusion process.

	<p>generation unit shall not exceed 45MW thermal;</p> <p>(c) If the emission reductions of the co-generation project activity are solely on account of electrical energy production, the total installed electrical energy generation capacity of the project equipment of the co-generation unit shall not exceed 15MW.</p>	
7	<p>The capacity limits specified in the above paragraphs apply to both new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should comply with capacity limits in paragraphs 4 to 6 and should be physically distinct from the existing units.</p>	<p>The total energy generation capacity of a CPA (new and/or retrofit) that will be included as a part of the POA, will be equal to or less than 45 MW thermal. In the case of the installation new facilities, the total capacity of the units added will be equal to or less than 45 MW thermal. This will be checked by the CME from the technical specification of the CPA.</p> <p>CPA implementer will ensure that the proposed project activity is physically distinct from the existing units. This will be further checked by the validating DOE during CPA inclusion process of each individual CPA.</p>
8	<p>Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category.</p>	<p>A CPA under Option 1 will seek to retrofit or modify an existing fossil fuel based heat generating system. Thus this criteria is applicable to CPA under option 1. However, this criteria is not applicable to projects under Option 2, as CPA under option 2 includes installation of new co-generation system.</p> <p>This will be further checked by the validating DOE during CPA inclusion process of each individual CPA</p>
9	<p>New Facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the General Guidelines to SSC CDM methodologies.</p>	<p>This criteria is not applicable to a CPA of Option 1 as these type of CPA is retrofit or modification of existing system.</p> <p>A CPA under Option 2 is a new facility. Hence this criteria is applicable to CPAs under option 2. CME has confirmed that all the CPAs, under option 2 will comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies". This will be further checked during CPA inclusion by the DOE.</p>
10	<p>If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation.</p>	<p>Solid biomass will not be used for the proposed project as fuel. The POA includes only use of biogas generated from sewerage treatment plant. This was confirmed by the assessment team during the validation site visit. Hence this criteria is not applicable to the POA, as it does not involve any solid biomass fuel. This will be further checked during for each individual CPA, during CPA inclusion.</p>
11	<p>Where the project participant is not the producer of the processed solid biomass fuel, the project participant and the producer are bound by a</p>	<p>Solid biomass will not be used for the proposed project as fuel. The POA includes only use of biogas generated from sewerage treatment plant.</p>

	contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions.	This was checked and was confirmed by the assessment team, during the validation site visit. Hence this criteria is not applicable to the POA. This will be further checked during for each individual CPA, during CPA inclusion.
12	If electricity and/or steam/heat produced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into that ensures there is no double-counting of emission reductions.	The steam/heat produced by the CPAs under this POA, will be consumed in house. The electricity generated from co-generation units (under option 2) will either be consumed in house or will be supplied to the grid. This was checked by the assessment team during validation site visit. The electricity and/or steam/heat produced by the POA will not be supplied to any third party. This was confirmed by the CME. Further, this will also be checked from the "no double counting" declaration that will be provided by each CPA, during CPA inclusion process, incase energy is supplied to grid or third party.
13	If the project activity recovers and utilizes biogas for power/heat production and applies this methodology on a stand-alone basis i.e. without using a Type III component of a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions.	The proposed project is related to the activity which is recovery and utilization of biogas from a digester and AMS-I.C methodology on a stand-alone basis has been applied to the proposed project  Therefore, any incremental emissions occurring due to the implementation of the project activity will be taken into account as per the methodological tool, referred in the applied methodology AMS IC. Any incremental emissions will be calculated in CPA-DD, which will be checked for each CPA individually. Thus this criteria is met by the project activity.
14	Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources vided; 2. (a) Charcoal is produced in kilns equipped with methane recovery and destruction facility; or (b) If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the production of charcoal shall be considered. These emissions shall be calculated as per the procedures defined in the approved methodology AMS-III.K.7 Alternatively, conservative emission factor values from peer reviewed literature or from a registered CDM project activity can be used, provided that it can be demonstrated that the parameters from these are comparable e.g. source of biomass, characteristics of biomass such as moisture, carbon content, type of kiln, operating conditions such as ambient temperature.	Charcoal based biomass will not be used for the proposed project as fuel. The POA includes only use of biogas generated from sewerage treatment plant. This was checked and was confirmed by the assessment team during validation site visit. Hence this criteria is not applicable to the POA. This will be further checked during CPA inclusion process for each individual CPA.
15	The following conditions apply for use of this	The proposed project utilizes biogas which is



<p>methodology in a project activity under a programme of activities:</p> <p>a) In the specific case of biomass project activities the applicability of the methodology is limited to either project activities that use biomass residues or processed biomass (e.g. briquette) only or biomass from dedicated plantations complying with the applicability conditions of AM0042.</p> <p>b) In the specific case of biomass project activities the determination of leakage shall be done following the general guidance for leakage in small-scale biomass project activities (attachment C of Appendix B of simplified modalities and procedures for small-scale clean development mechanism project activities; decision 4/CMP.1) or following the procedure included in the leakage section of AM0042;</p> <p>c) In case the project activity involves the replacement of equipment, and the leakage from the use of the replaced equipment in another activity is neglected, because the replaced equipment is scrapped, an independent monitoring of scrapping of replaced equipment needs to be implemented. The monitoring should include a check if the number of project activity</p>	<p>renewable biomass to generate electricity and thermal energy. Thus criteria (a), (b) are not applicable to the POA.</p> <p>As folhe point (c) the proposed project activity does not involve replacement of equipment. It includes either modification or retrofitting of the existing equipment or installation of new co-generation unit.</p> <p>If there is any replacement of existing equipment of any of the CPAs, an independent monitoring of scrapping of replaced equipment shall be implemented by the CME. This will be further checked during CPA inclusion process for each individual CPA. Thus this applicability criteria is met by the proposed POA.</p>
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All the applicability criteria of AMS I.C were checked with respect to the prevailing situation of the POA. The POA as a whole has met all the applicability criteria of AMS IC, version 19, however, as the criteria are specific to a project activity, all the applicability criteria will be separately checked and assessed for individual CPA, during CPA inclusion process, along with all the documentary evidences for each criteria under the methodology, specific to a CPA. A CPA will be a part of this POA, only if it can satisfy all the applicability criteria of AMS IC, version 19 along with other eligibility criteria as defined in section B.2 of part I of POA DD and in section B.5 of part II of the POA DD.

#### Validation Opinion:

As per the requirements of paragraphs 74-78 of VVS version 07.0 and based on the above discussion, that validation team confirms that the POA meets all the applicability conditions and all other stipulations of the selected methodology AMS I.C Version 19. However the applicability criteria will further be validated for each CPA during CPA inclusion process.

#### 4.7 Operational, management and verification plan

Korea Environment Corporation will coordinate the Programme of Activities (SSC-POA) and will support the project operators in implementing the Component Project Activities (CPAs) in Republic of Korea while acting as the focal point for all CDM related activities. All the municipal communities which will be a part of the POA, as CPAs will be the CPA implementers. This was confirmed by the assessment team during the validation site visit.

The CME has developed teams for the operation, management and verification of the POA as detailed in section C: Management system, under part-I of the POA DD<sup>/1/</sup>. The CME has clearly defined roles and responsibilities of the personnel involved in the complete process. This information was checked from the Operational Manual<sup>/19/</sup> (Section 3, page number 10), of the POA prepared by the CME.

The CME will also be responsible for entering in to the contract with CPA implementer, management of records and data associated with each CPA, rights to claim CERs from the CPAs, continuous improvements of the POA management system. This was checked from the MoUs<sup>/29//46/</sup> signed by the CME with the CPA implementers. This shall be checked again by the DOEs at the time of inclusion of any CPAs in the POA in line with the requirement of para 20 of annex 5 of EB 74. This also complies with the requirement of paragraph 230 of VVS version 07.0.

By reviewing this management system procedure mentioned in the POA-DD, the validation team confirms that the CME have the competencies to check the features of potential CPAs and can ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered POA. The operation, management and verification plan was also checked from the CME Operating Manual<sup>/19/</sup>, dated 02/05/2014. Based on above assessment, the validation team confirms that the management system of CME is in line with the requirement of paragraph 19 annex 5 of EB 74. This also complies with the requirement of paragraph 230 of VVS version 07.0.

#### 4.8 Programme of Activity Boundary

The POA will be implemented within the geographical boundary of Republic of Korea. This will be identified for each CPA during CPA inclusion process as a part of eligibility criteria assessment, as defined in section B.2 of the part 1 of POA DD. While choosing the POA boundary the CME has taken into account all the relevant national and sectoral policies related to sewage water and renewable energy. "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy"<sup>/34/</sup>, "Act on the Promotion of Saving and Recycling of Resources"<sup>/33/</sup>, Sewage Act<sup>/41/</sup> are the currently existing national policies that deals with sewage water treatment and renewable energy generation technologies in Republic of Korea. None of the regulation or policy has mandated the use of any particular technology or treatment process to be used in sewage water treatment plants and corresponding energy generation process. This was further confirmed by the SGS local assessor (who is a part of the assessment team) of Republic of Korea. Thus the assessment team confirmed that the CME has taken into consideration all the relevant regulation and policies related to the POA, while determining the project boundary. Thus the assessment team confirmed the compliance of paragraph 236 and 237 of VVS version 07.0.

#### Opinion

The validation team is of the opinion that the POA boundary has been correctly identified in the POA DD<sup>/1/</sup>. The validation of the POA boundary was carried out as per paragraph 236-237 of VVS<sup>/7/</sup> version 07.0 respectively and was found to be in line with the requirement.

#### 4.9 Baseline Selection and Additionality

The baseline scenario of the POA has been chosen as per the applied methodology AMS-I.C<sup>/8/</sup>, Version 19. The objective of the POA is to generate thermal and/or electrical energy using biogas at local sewerage treatment plants in the Republic of Korea. The POA involves two types of CPA, covered under Option 1 and Option 2. The assessment of the baseline scenario as mentioned in the POA DD has been carried out as depicted below:

#### Project type and Baseline scenario:

Option	Description	Baseline Scenario	Assessment
Option 1	Fuel substitution from fossil fuel	Para 16 & 42 are applicable for	Para 16 of AMS IC, Version 19 state that for renewable energy technologies that displace technologies using

	to biogas by retrofit of existing fossil fuel heat generating facility	determination of baseline of the CPAs under Option 1.	<p>fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity, times an emission factor for the fossil fuel displaced.</p> <p>The estimation of baseline emission for the CPA, under option 1 (Fuel substitution from fossil fuel to biogas by retrofit of existing fossil fuel heat generating facility) has been done as per para 42 of AMS IC., using equation (2) of AMS IC, version 19.</p> <p>This has been described under section B.4 of the POA DD, which was checked by the assessment team and was found to be correct.</p>
Option 2	Displacing grid electricity by new biomass co-generation system	The baseline emission shall be calculated as per Baseline scenario for power and heat production paragraph 19(i)	<p>The baseline scenario for Option 2 type of CPA has been identified as per paragraph 19 (i) of AMS ID, version 19.</p> <p>As per para 19 (i), Electricity is imported from a grid and/or produced in a biomass fired cogeneration unit (without a possibility of export of electricity either to the grid or to other facilities); steam/heat is produced in a biomass fired cogeneration unit and/or a biomass fired boiler (without a possibility of export of thermal energy to other facilities). Under this type of CPA, the electricity was imported from the grid, before implementation of the project activity and heat was produced in a biomass fired boiler. This was checked by the assessment team during the validation site visit. Further, the baseline scenario will be assessed for each individual CPA, during CPA inclusion process.</p> <p>The estimation of baseline emission for this type of CPA has been done as per paragraph 21 of methodology AMS I.C (version19).</p> <p>This scenario applies to a project activity that installs a new biomass co-generation system.</p>

The CME has clearly described in the POA DD, that there are no legal or regulatory requirements which are systematically enforced for the proposed POA. This was also checked from the relevant national law, Sewerage Act<sup>12/</sup>, Act no. 9334, January 7, 2009, Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy<sup>34/n</sup>, Act on the Promotion of Saving and Recycling of Resources<sup>33/</sup>. This will also be checked for each individual CPA, during CPA inclusion process. The current baseline scenario therefore will be continued and is the most suitable. This was further confirmed by the assessment during the site visit and subsequent meeting with CME during the site visit.

#### Opinion:

It has been concluded that the approved baseline methodology AMS I.C<sup>8/</sup>, version 19 has been correctly applied to identify the most reasonable baseline scenario and reasonably represents what would occur in the absence of the proposed CDM project activity. The requirement of para 90-97 of VVS, version 07.0 was met by the POA.



#### 4.9.1 *Additionality of Programme of Activity*

The CME has confirmed that the additionality of the POA will be demonstrated at CPA level. The additionality of each CPA is demonstrated by using either of the two approaches-

- a) Approach 1 (Micro-scale) or
- b) Approach 2 (Small-scale) as applicable for the individual CPA.

##### **(a) Approach 1 (Micro-scale)**

As the POA consists of one or more micro-scale projects as CPA, the additionality of the microscale CPA is demonstrated at the CPA level using "Guidelines for demonstrating additionality of micro scale project activities" (EB 73, Annex 13). As per "Guidelines for Demonstrating Additionality of Microscale Project Activities (Version 5.0)", paragraph 8(d) of EB 73 Annex 13: Project activities up to five megawatts that employ renewable energy technology are additional if the project activity employs specific renewable energy technologies/measures recommended by the host country designated national authority (DNA) and approved by the Board to be additional in the host country.

The DNA of Republic of Korea has got the approval of the Board in this regard, according to which grid connected microscale renewable energy technologies of a capacity equal to or less than 5 MW are considered as auto additional. This was checked by the assessment team from the UNFCCC website (<http://cdm.unfccc.int/DNA/submissions/index.html>). As per the Board approval, a microscale CPA, under this POA is auto additional in cases where it comes under Option 2 (Displacing electricity by installing a new biomass co-generation). This additionality demonstration approach was checked by the assessment team, as per the requirement of EB 73, Annex 13 and was found to be correctly adopted in this POA.

##### **(b) Approach 2 (Small-scale)**

As the POA consist of one or more small-scale projects as CPA, the additionality of the small-scale CPA is demonstrated at the CPA level using "Guidelines on the demonstration of additionality of small scale project activities (EB 68, Annex 27, Version 09.0). This additionality approach was checked by the assessment team and was found to be correct. This also establishes that without CDM none of the CPA would come up for implementing emission reduction measures.

The demonstration of additionality using one of the above mentioned approaches has been further discussed under the section 4.9.2 of this report.

#### **Validation Opinion:**

The demonstration of additionality was validated as per para 240 of VVS, Version 07.0. This was found to be in line with the requirement of "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities", EB 74, Annex 05, para 3.1. Thus the assessment team is of the opinion that all the CPAs, under this POA, that can establish their additionality by any of the two approaches as assessed above will be a part of the POA (provided it meets all other eligibility criteria).

#### **4.9.2 *Additionality of Generic CPA***

As per section B.1 of Part I of POA DD, the additionality for CPA is demonstrated by Approach 1 (applicable for microscale projects, using EB 73, Annex 13) or Approach 2 (applicable for small-scale projects, using EB 68, Annex 27) as applicable for the individual CPAs that will be included in the POA.

##### **(a) Approach 1:**

As per paragraph 8(d) of "Guidelines for Demonstrating Additionality of Micro scale Project Activities (Version 5.0)":

Project activities up to five megawatts that employ renewable energy technology are additional if the project activity employs specific renewable energy technologies/measures recommended by the host country designated national authority (DNA) and approved by the Board to be additional in the host country.

The DNA of Republic of Korea has the approval of the Board ([http://cdm.unfccc.int/DNA/submissions/files/2012/0105\\_korea\\_res.pdf](http://cdm.unfccc.int/DNA/submissions/files/2012/0105_korea_res.pdf)) for auto additionality of such projects. This was checked by the assessment team and it was found that biogas projects generating electricity, with a capacity less than 5 MW is considered auto additional as per the recommendation of host country DNA and as approved by the CDM EB. This was also checked from the UNFCCC website (<http://cdm.unfccc.int/DNA/submissions/index.html>). Thus this approach is applicable to micro scale CPAs, that comes under option 2 (Displacing electricity by installing a new biomass co-generation),

## (b) Approach 2:

The CME has referred to EB 68 Annex 27 “Guidelines for Demonstration of Additionality of Small-Scale Project Activities” (Version 09.0) for the demonstration of additionality of small scale CPA under this POA. This was checked by the assessment team from the POA DD<sup>1/</sup> of the POA. As per the POA DD, the CPA shall provide an explanation to show that the project activity would not have occurred anyway due to investment barrier in the respective CPA DD, which will be submitted to DoE during CPA inclusion process. PP has also stated in the POA DD that for demonstrating the investment barrier, Step 2: Investment Analysis of tool “Tool for the demonstration and assessment of additionality (Version 07.0.0)” will be used. With reference to this tool, PP further confirmed that, as the project generates financial benefits other than CDM-related income and there are no other credible and realistic baseline scenario alternatives other than ‘continuation of the current situation’, benchmark analysis will be used to demonstrate additionality. Thus the analysis method to demonstrate additionality was found to be in line with the requirement of paragraph 32 of the “Tool for the demonstration and assessment of additionality”, version 7.0.0 and the choice of benchmark approach was found to be correct as per paragraph 19 of “Guidelines on the assessment of investment analysis” (EB 62, Annex 5).

The Benchmark Analysis for each CPA, under approach 2 would be conducted as follows:

A financial indicator (project IRR or equity IRR) would be chosen for the proposed CPA and justification for its selection would be provided in the CPA DD, which will be validated by the validating DOE during the inclusion of each CPA to this POA. Subsequently, a benchmark would be adopted which is appropriate to the type of financial indicator calculated and could be chosen as either of the following:

## Financial indicator:

Indicator chosen	Benchmark (any one of the below)	Assessment
Equity IRR	a. Default value for the expected return on equity for Republic of Korea as per the “Guidelines on the assessment of investment analysis” (increased by applicable tax rate in case of pre-tax IRR)” b. Cost of equity determined using best financial practices (such as Capital Asset Pricing Model) using data sources which can be clearly validated while properly justifying all underlying factors in accordance with the “Guidelines on the assessment of investment analysis” c. Government/official approved benchmark where such benchmarks are used for investment decisions	All the three types of benchmark value identified in the POA DD for an individual CPA was found to be correct and in line with the paragraph 12 of EB 62, Annex 5. This will be further checked during CPA validation inclusion process. If the Benchmarks supplied by relevant national authorities are used, DOE will validate that they are applicable to the project activity and the type of IRR calculation presented during the CPA inclusion process. Thus this approach was found to be correct by the assessment team.
Project IRR	a. Local commercial lending rates applicable in the country (pre-tax rate used in case of pre-	All the three types of benchmark value identified in the POA DD for an

	<p>tax IRR)</p> <p>b. Weighted Average Costs of Capital (WACC) calculated as:  <math display="block">WACC = \{D/(D+E)\} \{1-T/100\} \text{Cost of Debt} + \{E/(D+E)\} \text{Cost of Equity (tax-rate not applied in case of pre-tax IRR)}</math> <p>Where, Cost of Debt is determined as local commercial lending rate applicable in the country and Cost of Equity is determined from any of the options listed above under Equity IRR.</p> <p>c. Government/official approved benchmark where such benchmarks are used for investment decisions</p> </p>	<p>individual CPA was found to be correct and in line with the paragraph 12 of EB 62, Annex 5. This will be further checked during CPA validation inclusion process. If the Benchmarks supplied by relevant national authorities are used, DOE will validate that they are applicable to the project activity and the type of IRR calculation presented during the CPA inclusion process. Thus this approach was found to be correct by the assessment team.</p>
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The financial indicator chosen and the benchmark identified by CME were found to b“ in line with "Guidelines on the assessment of investment analysis" (EB 62, Annex 5).

### **Determination of Input value**

The input values for project IRR calculation will be valid and applicable at the time of investment decision. As for the time of investment decision, the date is based on the source of funds for project implementation. Therefore, the date of the investment decision may vary for the CPA.

Investment cost may involve the facility construction, utility installation and the equipment purchase, etc. Component associated with facility construction cost are preliminary works, sub and super structure works, etc.

O&M costs may involve wages of supervisors and other staffs etc. Benefits in the project activity result from sludge reduction and the cost saving of sludge cake & its treatment along with saving in fossil fuel consumption. The technical lifetime of renewable energy generation unit is determined by technology provider/manufacturer, expert opinion or default factors from the *“Tool to determine the remaining lifetime of equipment, Version 01”*. This will be further assessed at CPA level, during inclusion of each CPA.

Thus, the assessment team confirms that the approach mentioned in the POA DD for demonstration of additionality of CPA is sufficient and further the additionality and eligibility criteria of each CPA will be assessed individually. During the assessment of additionality of the CPAs, the following CAR/CLs were raised-

#### **CAR 14 (a) was raised as follows-**

- The discussion on the identification of the baseline scenario is not comprehensive and transparently described in the POAPOA DD. The discussion on the pre-project scenario and the project scenario is not transparently discussed in the POAPOA DD for both Option 1 and Option 2 type of CPAs. The CME was requested to justify.
- In case of Option 1 – POAPOA DD should clearly demonstrates the pre-project scenario and the project scenario. Also, the discussion of possible alternative should be discussed separately for both Option 1 & Option 2 types of CPA. The CME was requested to justify compliance.
- The POAPOA DD should cite the specific para/ guidance's of the applied methodology AMS IC, while discussing the baseline scenarios for both Option 1 & Option 2 type of CPA. The CME was requested to justify compliance.
- CME was requested to demonstrate with verifiable evidences that the continuation of current practice is the most plausible baseline scenario compliance.

The response provided by the CME was checked by the assessment team.

- i. In the revised POA/POA DD (in VVS track), CME has clearly described the baseline scenarios of the POA/POA, for both the options (Option 1 & Option 2). This was checked by the assessment team and was found to be correct.

The CME has provided the revised POA POADD (in VVS track) and the baseline scenario has been clearly described in section B.4 of the POA POADD for both the options (Option 1 & Option 2). This was checked by the assessment team and was found to be correct.

CME has used para 16 of AMS IC, Version 19 while determining the baseline scenario for CPA under Option 1 and para 19(j) of AMS IC, Version 19 while determining the baseline scenario of CPA under Option 2. The references for both the options have been mentioned in section B.4 of the POA DD, this was checked by the assessment team and was found to be correct.

- ii. CME has submitted evidence of voluntary action and equipment lifetime assessment report of installed plant (before the project). The document was checked by the assessment team and was found to be correct. Thus CAR 14 (a) was closed.

CAR 14 (b) was raised as follows-

- i. CME was requested to justify the start date of the POA. CME was also requested to provide the evidence to support that incentive from the CDM was seriously considered in the decision to proceed with the POA.
- ii. CME was requested to justify how the simple cost analysis is appropriate in context to the current project activities, since there are source of income apart from CDM revenue. Also, CME was requested to correct and use the terminology for Investment analysis as per the Guidelines on the demonstration of additionality of small-scale project activities (EB 68, Annex 27).
- iii. The CME was requested to justify the key criteria and data for assessing the additionality of a SSC-CPA, that will be included in the POA.
- iv. The CME was requested to kindly justify the paragraphs of AMS I.C, mentioned against option 1 & option 2 under section B.5 of the POA DD.

Responding to the CAR 14 (b), CME provided the following response-

- i. In this POA, CME has substantiated the start date of POA, as per Glossary of CDM terms (EB 70, Annex 7). The start date assumed in this CPA is the POA DD webhosted date, which is 18/11/2011. This was checked from the UNFCCC website (<http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EU/T6B/view.html>). This was found to be in line with the "start date" definition as mentioned in the Glossary of CDM terms (EB 70, Annex 7).

As per the paragraph 12 of Clean Development Mechanism Project Cycle procedure, version 07.0, and paragraph 35 of CDM Project Standard, version 07.0, prior consideration of CDM is not applicable to POAs. However, the CME may notify the host country DNA and the secretariat in writing of the intention to seek the CDM status for the POA, for the purpose of determining the start date of the POA. However, the CME still provided documentary evidences to show that CDM was considered before the starting of the project activity. The prior knowledge of CDM was checked from the "P-CDM Promotion Plan of Energy Independence Project for Sewage Treatment Plants<sup>/38/n</sup>", dated April 2011, issued by Ministry of Environment, Sewerage Division. This was also checked from the Ministry of Environment's notice<sup>/39/</sup> of meeting to discuss P-CDM promotion plan of Energy Independence project for Sewerage Treatment Plant, dated 26/04/2011.

- ii. PP has revised the POA DD and the additionality demonstration has been corrected to investment analysis (considering IRR as financial indicator). All the terminologies used in the investment

analysis, under section B.5 of the POA DD has been corrected and made in line with EB 68, Annex 27. This was checked by the assessment team and was found to be correct.

PP has revised the POAPOA DD and the key criteria for assessing additionality has been included in section B.5 of the POAPOA DD (in VVS track), under table 7. The eligibility criteria, means of validation and corresponding evidences which will be referred to check the eligibility was checked by the assessment team and was found to be correct.

The revised POA POADD was checked by the assessment team. The CME has correctly adopted the AMS IC, version 19 for the identification of baseline. The assessment of the baseline selected has been covered under section 4.9 of this report.

#### CAR 14 (c) was raised as follows-

Information is missing in the POAPOA DD, under section B.5, how the approval of the project activity will help to overcome the identified barriers. Responding to this CAR 14 (c), CME submitted investment analysis to prove additionality. This was accepted by the assessment team and CAR 14 (c) was closed.

Further the following issues were raised as follows-

For Option 3, CME is requested to clarify how the para 19 (h) of AMS I C is applicable for Option 3 of CPA, as mentioned in the POA POADD, since the para 19 clearly state that "Project activities producing both heat and electricity shall use one of the following baseline scenarios:", whereas in case of CPA Option 3, the project will only generate thermal energy and not the electricity.

Also, However, PP was requested to correct the reference of POA POADD in the FO document. The mentioned sections of the POAPOA DD is not there in the revised POA DD, using new template, under VVS track.

Responding to the CAR, CME deleted the option 3 from the POA DD. The remaining two options have been discussed in section B.4 of the revised POA POADD (in VVS track)POA, This was checked by the assessment team and was found to be correct.

Thus all the issues of POA POADD CAR 14 were successfully addressed by CME, this was checked by the assessment team and was found to be correct. Thus POACAR 14 was closed.

#### CAR 18 was raised as follows-

1. In the Economic Analysis sheet, in tab "basic parameter", cell no D33, CME has calculated electricity generated from biogas co-generation in KW/year, which is not the correct unit to calculate electricity generated. CME was requested to take corrective action.
2. CME was further requested to provide the POAPOA DD and generic CPA DD using the latest VVS template as available in UNFCCC website.

Responding to the following CAR 18, CME provided the below response-

1. CME has revised the POAPOA DD and the demonstration of additionality for CPAs under Option 2, has been done as per "Guidelines for Demonstrating Additionality of Micro scale Project Activities (Ver 5.0.0), EB 73, Annex 13, thus economic analysis sheet is not required as the CPA is auto additional. This was checked from the <http://cdm.unfccc.int/DNA/submissions/index.html> and was found that power generation projects using biogas has been recommended by the Republic of Korea DNA as auto additional project.
2. CME submitted the updated POA POADD using the latest VVS template as available in UNFCCC website. This was checked by the assessment team and was found to be correct.

Thus the issues raised under CAR 18 were addressed by CME and was found to be satisfactory. Thus CAR 18 was closed.



## Validation Opinion:

Hence, it has been concluded that the approved baseline methodology AMS I.C., version 19 has been correctly applied to identify the most reasonable baseline scenario and reasonably represents what would occur in the absence of the proposed CDM project activity. The validation of this section was done as per the requirement of para 165-170 of VVS, Version 07.0.

### 4.9.3 Identification of alternatives (if applicable)

The additionality of the CPAs under the proposed POA will be demonstrated as per the requirement of “Guidelines for Demonstrating Additionality of Microscale Project Activities (Version 5.0)” and Guidelines on the demonstration of additionality of small-scale project activities (version 09.0); thus separate step for identification of alternatives as per Additionality Tool is not applicable.

### 4.9.4 Investment analysis (if applicable)

The additionality of the CPAs under the proposed POA will be demonstrated as per the requirement of guidelines for “Demonstrating Additionality of Microscale Project Activities (Version 5.0)” EB 73, Annex 13 and Guidelines on the demonstration of additionality of small-scale project activities (version 09.0).

### 4.9.5 Barrier analysis (if applicable)

Barrier analysis is not applicable here. The additionality of the CPAs under the proposed POA will be demonstrated as per the requirement of guidelines for “Demonstrating Additionality of Microscale Project Activities (Version 5.0)” EB 73, Annex 13 and Guidelines on the demonstration of additionality of small-scale project activities (version 09.0).

### 4.9.6 Common practice analysis

The additionality of the CPAs under the proposed POA will be demonstrated as per the requirement of guidelines for “Demonstrating Additionality of Microscale Project Activities (Version 5.0)” EB 73, Annex 13 and Guidelines on the demonstration of additionality of small-scale project activities (version 09.0); EB68 Annex 27. Thus a separate common practice analysis to demonstrate additionality is not required.

## 4.10 Application of Baseline Methodology and Calculation of Emission Factors

The proposed CDM POA has appropriately adopted the methodology AMS I.C, version 19. This POA includes, CPAs that generate thermal energy and/or electrical energy using biogas to displace fossil fuel use in local sewerage treatment plants. Applied technologies of each CPA are either retrofitting of heat generating equipment or installation of co-generation system. The assessment of applicability of the methodology AMS IC, version 19 has been done under section 4.6 of this report. Thus the methodology AMS I.C, version 19 has been correctly used for the identification of baseline and also for calculation of emission factor. The detailed procedure applied for the calculation of baseline emission, project emission and leakage emission is depicted below-

### Baseline Emissions

**Baseline emission for CPAs that comes under Option 1** (Fuel substitution from fossil fuel to biogas by retrofit of existing heat generating facility):

**Baseline emission for heat production** : Baseline calculation is as per Paragraph 22 of methodology AMS I.C (version 19). For steam/heat produced using fossil fuels the baseline emissions are calculated as follows:

$$BE_{thermal, CO_2, y} = (EG_{thermal, y} / \eta_{BL, thermal}) * EF_{FF, CO_2}$$

$BE_{thermal, CO_2, y}$  : The baseline emissions from steam/heat displaced by the project activity during the year y (tCO<sub>2</sub>)

$EG_{thermal, y}$  : The net quantity of steam/heat supplied by the project activity during the year y (TJ)

$EF_{FF,CO_2}$  : The CO<sub>2</sub> emission factor of the fossil fuel that would have been used in the baseline plant obtained from reliable local or national data if available, alternatively, IPCC default emission factors can be used (tCO<sub>2</sub>/TJ)

$\eta_{BL,thermal}$  : The efficiency of the plant using fossil fuel that would have been used in the absence of the project activity

Here,  $EG_{thermal,y}$  (the net quantity of steam/heat supplied by the project activity during the year  $y$  (TJ), will be monitored as per the provisions of AMS IC, version 19, parameter 7. The monitoring details of this parameter were checked by the assessment team and were found to be correct. The CO<sub>2</sub> emission factor of the fossil fuel that would have been used in the baseline plant ( $EF_{FF,CO_2}$ ) will be monitored as per the "Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion." Efficiency of the existing plant ( $\eta_{BL,thermal}$ ) shall be determined by Methodology AMS I.C paragraph 30 based on condition of CPA and this will be assessed for each individual CPA during the CPA inclusion process.

**Baseline emission for CPAs under Option 2** (Displacing electricity by installing a new biomass ceneration system):

### 3. i) Baseline for electricity production

As per paragraph 21, methodology AMS I.C, "Baseline emissions for supply of electricity to and/or displacement of electricity from a grid shall be calculated as per the procedures detailed in AMS-I.D or AMS-I.F as applicable". To the proposed POA, both AMS-I.D and AMS-I.F are applicable depend on whether the CPA has supplied electricity to grid or CPA has replaced electricity from the grid. If the CPA supplies electricity to grid, the baseline emission will be calculated as per AMS ID, and if the CPA replaces grid electricity consumption then, AMS IF will be applied for the calculation of baseline emission. This was checked and was found to be correct by the assessment team.

As per the paragraph 11, equation (1) AMS I.D, the baseline emission for supplying electricity to grid is calculated as follows-

$$BE_{electricity, CO_2, y} = EG_{BL, electricity, y} * EF_{CO_2, grid, y},$$

$BE_{electricity, CO_2, y}$  : Baseline emissions of electricity generation from the project activity in year  $y$  (t CO<sub>2</sub>)

$EG_{BL, electricity, y}$  : Quantity of net electricity supplied to the grid and/or to the on-site as a result of the implementation of the CPA project activity in year  $y$

$EF_{grid, CM, y}$  : The CO<sub>2</sub> emission factor of the national grid electricity for other system (tCO<sub>2</sub> /MWh)

Here,  $EG_{BL, electricity, y}$  (Quantity of net electricity supplied to the grid and/or to the on-site as a result of the implementation of the CPA in year  $y$  (MWh)) will be monitored as per the provisions of AMS IC, version 19. Further assessment of this monitoring parameter has been carried out in section 4.11 of this report. The CME has calculated the grid emission factor to be applied in this POAPOA, as per the "Tool to calculate the emission factor for an electricity system" version 04.0.0". The emission factor is an ex-ante parameter, the details of the calculation has been assessed below, under a separate heading "Determination of Grid Emissions Factor".

As per the paragraph 14, equation (1) of AMS I.F, the baseline emission for replacing grid electricity in a CPA is calculated as follows-

$$BE_{electricity, CO_2, y} = EG_{BL, electricity, y} * EF_{CO_2, y}$$

$BE_{electricity, CO_2, y}$  : Baseline emissions of electricity generation from the project activity 39 fibreglass 39t CO<sub>2</sub>

$EG_{BL, electricity, y}$  : Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year  $y$  (MWh)

$EF_{CO_2, y}$  : CO<sub>2</sub> emission factor (tCO<sub>2</sub>/MWh)

Here,  $EG_{BL, electricity, y}$  will be monitored as per the provisions of AMS IF. Further assessment of this monitoring parameter has been carried out in section 4.11 of this report.

#### Determination of Grid Emissions Factor:

The CME has referred to “Tool to calculate the emission factor for an electricity system” version 04.0.0, for the calculation of grid emission factor. This tool provides procedures to determine the following parameters:

Parameter	SI Unit	Description
$EF_{grid,CM,y}$	tCO <sub>2</sub> /MWh	Combined margin CO2 emission factor for the project electricity system in year y
$EF_{grid,BM,y}$	tCO <sub>2</sub> /MWh	Build margin CO2 emission factor for the project electricity system in year y
$EF_{grid,OM,y}$	tCO <sub>2</sub> /MWh	Operating margin CO2 emission factor for the project electricity system in year y

The CME has rightly identified the KEPCO grid which covers all area of Korea as the relevant electric power system for electricity emission factor. This was confirmed by the assessment team during the validation site visit. This was also checked from the KEPCO website<sup>/51/</sup>, and the information provided by PP was found to be correct.

Further, the CME has opted only to included the grid power plants for the calculation of emission factor, this was found to be correct and in line with “Tool to calculate the emission factor for an electricity system”, version 04.0 (EB 75, Annex 15).

For the calculation of operating margin (OM) emission factor, the CME has chosen option (a), Simple OM. The gross electricity generation rate by energy sources of the host country (Republic of Korea), the rate of low cost/must run power generation does not exceed 50% of the total grid. The average data of most recent 5 years (2006-2010) shows that the contribution of low cost/must runs resources is 37.78%. This was checked by the assessment team from chapter VI, Power Generation (page number 49) of KEPCO in brief<sup>/54/</sup> 2010 and was found to be correct. This was accepted by the assessment team.

The input values used for the calculation of simple OM emission factor (2008, 2009, 2010 data) and build margin emission factor (2010 data) were checked from the “Statistics of Electric Power in Korea”<sup>/17/</sup>. The calculation steps were checked and were found to be in line with the “Tool to calculate emission factor for an electricity system, Version 4.0.0”. Further PP has applied generation weighted average approach for the calculation of Simple OM. The calculated value of simple OM is 0.6922 tCO<sub>2</sub>/MWh. This approach was found to be correct and conservative by the assessment team. Thus the simple OM calculated and considered in this project activity was accepted by the assessment team.

For the calculation of build margin emission factor, the CME has referred to the “Tool to calculate the emission factor for an electricity system”, version 4.0.0. PP has considered option 1, under Step 5 of the tool. For the calculation of power plants to be included for estimation of build margin EF, power plant capacity additions in the electricity system that comprise 20% (SET≥20%) of the system generation and that have been built most recently has been considered, as SET≥20% has larger generation as compared to SET5 were analysed. As the power plant capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently has higher generation, hence this was considered for estimation of BM EF. The calculated value for the build margin EF is 0.6412(tCO<sub>2</sub>/MWh). This was found to be correct as per the “Tool to calculate the emission factor for an electricity system”, version 4.0.0.

The power plants considered under BM calculation was checked from section 9 (page number 66) of Statistics of Electric Power in Korea<sup>/17/</sup>. Thus the assessment team is of the opinion that CME has correctly



identified the group of power plants to be included for the calculation of the BM emission factor and further the BM emission factor has been correctly calculated.

Further the CME has calculated the weighted average CM emission factor as per equation 14, under paragraph 81 of the “Tool to calculate the emission factor for an electricity system”, version 4.0.0. PP has considered the weightage factor as 0.5 for OM & 0.5 for BM as per the requirement of the “Tool to calculate the emission factor for an electricity system”, version 4.0.0. The combined margin value calculated for this project activity is 0.0.6667 tCO<sub>2</sub>/MWh. The calculation was checked by the assessment team and was found to be correct. The validation team confirmed that the data referred for the calculation of OM and BM is the latest available at the time of PDD submission for validation.

### **Project Activity Emissions**

PP has referred to methodology AMS IC, version 19 for the calculation of project emission. As per the paragraph 45 of AMS IC, version 19, PP has included three types of project emissions involved in the project activity.

1. CO<sub>2</sub> emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion, (version 2).
2. CO<sub>2</sub> emissions from electricity consumption by the project activity using the latest version of the Tool to calculate baseline, project and/or leakage emissions from electricity consumption (version 1).
3. Any other significant emissions associated with project activity within the project boundary. This includes-
  - a. Physical leakage from anaerobic digester due to increased biogas
  - b. Physical leakage from flaring of biogas

Emission associated with physical leakage has been calculated using latest version of the tool to calculate “Project emission from anaerobic digester” (version 1). This was found to be in line with the paragraph 13 of AMS IC, version 19, and was accepted by the assessment team.

### **4. Project emission from fossil fuel consumption**

Ex ante calculation of project emission associated with fossil fuel consumption has been calculated using the “**Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion**”, version 02. PP has correctly used the equation (1) of the “**Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion**”, version 02-

$$PE_{FC,j,y} = \sum FC_{k,j,y} * COEF_{j,y}$$

Where:

$PE_{FC,j,y}$  : CO<sub>2</sub> emissions from fossil fuel combustion in process  $j$  during the year  $y$

$FC_{k,j,y}$  : Quantity of fossil fuel type  $k$  combusted in the process  $j$  during the year  $y$   
(mass or volume unit/yr);

$COEF_{j,y}$  : CO<sub>2</sub> emission coefficient of fossil fuel type  $k$  in the year  $y$  (CO<sub>2</sub>/mass or volume unit)

$K$  : Fuel types combusted in process  $j$  during the year  $y$

For the calculation of  $COEF_{j,y}$  the PP has opted for Option B, and has correctly adopted the equation (4) of the “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”.

$$COEF_{j,y} = NCV_{k,y} * EF_{CO2,k,y}$$

$NCV_{k,y}$  : Net calorific value of fossil fuel type  $k$  (GJ/mass or volume unit)

$EF_{CO2,k,y}$  : CO<sub>2</sub> emission factor of fuel type  $k$  in the year  $y$  (tCO<sub>2</sub>/GJ)

Here, the quantity of fossil fuel combusted in each CPA will be monitored continuously (if any) on site by using digital meters. The accuracy of measuring devices will be  $\pm 5\%$  or better. The measuring instruments will be calibrated as per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. As a QA/QC measure the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should be cross-checked with available purchase invoices from the financial records. The detailed monitoring aspect of this parameter has been further discussed under section 4.11 of this report. Since PP do not have available data, the parameters Net calorific value ( $NCV_{k,y}$ ) of fossil fuel type k (GJ/mass or volume unit) and  $CO_2$  emission factor ( $EF_{CO_2,k,y}$ ) of fuel type k in the year y ( $tCO_2/GJ$ ) will be referred from IPCC default values at the upper limit of uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter<sup>153/</sup> 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories. The detailed monitoring aspect of these two parameters ( $NCV_{k,y}$ ,  $EF_{CO_2,k,y}$ ) also have further been discussed under section 4.11 of this report. The assessment team is of the opinion that the CME has correctly adopted this equation (1) of the **"Tool to calculate project or leakage  $CO_2$  emissions from fossil fuel combustion"**, version 02.

## 5. Project emission from electricity consumption

For the calculation of project emission from electricity consumption has been calculated using the **"Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (version 1)**. CME has referred to the equation (1) of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", version 1-

$$PE_{EC,y} = \sum EC_{PJ,j,y} * EF_{grid,CM,y} * (1 + TDL_{j,y})$$

Where,

$PE_{EC,y}$  : Project emissions from electricity consumption in year y ( $tCO_2/yr$ )

$EC_{PJ,j,y}$  : Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/y)

$EF_{grid,CM,y}$  : The  $CO_2$  emission factor of the national grid electricity for other system ( $tCO_2/MWh$ )

$TDL_{j,y}$  : Average technical transmission and distribution losses for providing electricity in year y

Project emission from electricity consumption in year y ( $tCO_2/yr$ ) is a calculated parameter and will be calculated for each CPA. The quantity of electricity consumed by the project activity includes the electricity consumed by all the newly installed equipment in a CPA. The details of equipments will be checked during CPA inclusion process for each individual CPA. The CME will monitor the electricity consumed by each such equipment where ever monitoring is possible or the energy consumed/day will be calculated as rated power of the equipment multiplied by 24 hrs a day. This approach was found to be correct and conservative by the assessment and was accepted. Further details of the monitoring aspects of this parameter have been included in the section 4.11 of this report. CME has calculated the value  $EF_{grid,CM,y}$ , based on official database "Statistics of Electric Power in Korea"<sup>17/</sup> (2008, 2009, 2010). The emission factor calculation sheet<sup>6/</sup> was checked by the assessment team and was found to be correct. The parameter  $TDL_{j,y}$  is a monitored parameter and has been further discussed under section 4.11 of this report. The assessment team is of the opinion that CME has correctly referred to the equation (1) of "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", version 1, for the calculation of project emission associated with electricity consumption.

## 6. Project emission from Physical leakage

With reference to paragraph 13 of applied methodology AMS IC, version 19, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), has been taken into account as project emissions. The associated emission has been calculated by CME, using the methodological tool **"Project and leakage emission from anaerobic digesters"**, version 01.0.0.

### Step 1: Determination of the quantity of methane produced in the digester ( $QCH_4,y$ )

There are two different procedures to determine the quantity of methane produced in the digester in year  $y$  ( $Q_{CH_4,y}$ ). As this POA, involves micro scale and small scale CPAs, any one of the two options provided in the tool can be used. CME has opted for option 2, which is using of default values. This was checked by the assessment team and was found to be correct.

**Option 2:** Under this option 2, as opted by CME, the flow of the biogas is measured and a default value is used for the fraction of methane in the biogas, as follows, using the equation (2) of the “Project and leakage emissions from anaerobic digesters”, version 01.0.0-

$$Q_{CH_4,y} = Q_{biogas,y} \cdot f_{CH_4,default} \cdot \rho_{CH_4}$$

Where:

$Q_{CH_4,y}$  : Quantity of methane produced in the digester in year  $y$  (t CH<sub>4</sub>)  
 $Q_{biogas,y}$  : Amount of biogas collected at the digester outlet in year  $y$  (Nm<sup>3</sup> biogas)  
 $f_{CH_4,default}$  : Default value for the fraction of methane in the biogas (Nm<sup>3</sup> CH<sub>4</sub> / Nm<sup>3</sup> biogas)  
 $\rho_{CH_4}$  : Density of methane at normal conditions (t CH<sub>4</sub> / Nm<sup>3</sup> CH<sub>4</sub>)

The amount of biogas collected at the digester outlet in year  $y$  (Nm<sup>3</sup> biogas) is a monitored parameter and has been further discussed under section 4.11 of this report. Default value for the fraction of methane in the biogas (Nm<sup>3</sup> CH<sub>4</sub> / Nm<sup>3</sup> biogas) and density of methane at normal conditions (t CH<sub>4</sub> / Nm<sup>3</sup> CH<sub>4</sub>), have been adopted from “Project and leakage emissions from anaerobic digesters”, version 01.0.0 (page number 7). This was checked by the assessment team and was found to be correct. The assessment team is of the opinion that CME has correctly referred to the equation (2) of tool to calculate “Project and leakage emissions from anaerobic digesters”, version 01.0.0, for the calculation of Quantity of methane produced in the digester in year  $y$  (t CH<sub>4</sub>).

## Step 2: Determination of project emissions from electricity consumption ( $PE_{EC,y}$ )

The project emission from electricity has already been discussed above. CME will be referring to “Tool to calculate baseline, project and/or leakage emissions from electricity consumption” (version 1) for this calculation.

## Step 3: Determination of project emissions from fossil fuel consumption ( $PE_{FC,y}$ )

The project emission from fossil fuel consumption has already been discussed above. CME will be referring to “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”, version 02 for this calculation.

## Step 4: Determination of project emissions of methane from the anaerobic digester ( $PE_{CH_4,y}$ )

Project emissions of methane from the anaerobic digester include emissions during maintenance of the digester, physical leaks through the roof and side walls, and release through safety valves due to excess pressure in the digester. These emissions are calculated using a default emission factor ( $EF_{CH_4,default}$ ). CME has correctly referred to equation (4) of the of tool to calculate “Project and leakage emissions from anaerobic digesters”, version 01.0.0,

$$PE_{CH_4,y} = Q_{CH_4,y} \cdot EF_{CH_4,default} \cdot GWP_{CH_4}$$

Where:

$PE_{CH_4,y}$  : Project emissions of methane from the anaerobic digester in year  $y$  (t CO<sub>2</sub>e)  
 $Q_{CH_4,y}$  : Quantity of methane produced in the anaerobic digester in year  $y$  (t CH<sub>4</sub>)  
 $EF_{CH_4,default}$  : Default emission factor for the fraction of CH<sub>4</sub> produced that leaks from the anaerobic digester (fraction)  
 $GWP_{CH_4}$  : Global warming potential of CH<sub>4</sub> (t CO<sub>2</sub> / t CH<sub>4</sub>)

Here quantity of methane produced in the anaerobic digester in year  $y$  (t CH<sub>4</sub>) is a calculated parameter, as shown above under step 1. For the default emission factor for the fraction of CH<sub>4</sub> produced that leaks from the anaerobic digester, CME has referred to the default values mentioned in the tool to calculate “Project and

leakage emissions from anaerobic digesters”, version 01.0.0. The tool has mentioned three default factors-

- 0.028: Digesters with steel fibreglass concrete or fibreglass digesters and a gas holding system (egg shaped digesters) and monolithic construction;
- 0.05: UASB type digesters, floating gas holders with no external water seal;
- 0.10: Digesters with unlined concrete/ferro cement/brick masonry arched type gas holding section; monolithic fixed dome digesters, covered anaerobic lagoon.

The appropriate default value will be chosen for each CPA, if the digester type cannot be identified by manufacturer information, then the factor 0.1 shall be applied. This was found to be in line with the requirement of the applied tool, tool to calculate “Project and leakage emissions from anaerobic digesters”, version 01.0.0, and was accepted by the assessment team. For the parameter Global warming potential of CH<sub>4</sub> (t CO<sub>2</sub> / t CH<sub>4</sub>), PP has adopted an IPCC default value of 25 (for the second commitment period). This parameter has further been discussed under section 4.11 of this report.

### Step 5: Determination of project emissions from flaring of biogas ( $PE_{flare,y}$ )

With reference to the step 5, the CME has mentioned that, if any CPA includes flaring of biogas, then project emissions from flaring of biogas ( $PE_{flare,y}$ ) shall be estimated using the tool, “Project emissions from flaring” (Version 2.0.0). This was found to be correct by the assessment team.

According to methodological tool ““Project emissions from flaring” (Version 2.0.0), the calculation procedures to determine the project emissions from flaring the residual gas ( $PE_{flare,y}$ ) is based on the flare efficiency ( $\eta_{flare,m}$ ) and the mass flow of methane to flare ( $F_{CH_4,RG,m}$ ). The assessment of the project emissions calculation procedure is depicted below:

#### Step.1 - Determination of the methane mass flow rate in the residual gas

This step determines the mass flow of methane ( $F_{CH_4,m}$ ) as kg unit in the residue gaseous stream in the minute “m” as per the guidance given in the “Tool to determine the mass flow of a green house gas in a gaseous stream”.

$F_{CH_4,m}$ , which is measured as the mass flow during minute  $m$ , shall then be used to determine the mass of methane in kilograms fed to the flare in minute  $m$  ( $F_{CH_4,m}$ ). This tool provides procedures to determine the following parameter:

Parameter	SI Unit	Description
$F_{i,t}$	kg/h	Mass flow of greenhouse gas $i$ (CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O, SF <sub>6</sub> or a PFC) in the

The mass flow of a particular greenhouse gas is calculated based on measurements of: (a) the total volume flow or mass flow of the gas stream, (b) the volumetric fraction of the gas in the gas stream and (c) the gas composition and water content. The flow and volumetric fraction may be measured on a dry basis or wet basis. The tool covers the possible measurement combinations, providing six different calculation options to determine the mass flow of a particular greenhouse gas, under table 1 of the tool. In this POAPOA, the CME has applied Option D as the flow of gaseous stream and Volumetric fraction is wet basis. The approach used by the CME was found to be correct, as the tool has suggested six options, and any one option can be used. This was checked and was found to be correct by the assessment team.

#### Option D:

As per the tool, flow measurement on a dry basis is not doable for a wet gaseous stream. Therefore, it is necessary to demonstrate that the gaseous stream is dry to use this option. There are two ways to do this:

- Measure the moisture content of the gaseous stream ( $C_{H_2O,t,db,n}$ ) and demonstrate that this is

- less or equal to 0.05 kg H<sub>2</sub>O/m<sup>3</sup> dry gas; or
- Demonstrate that the temperature of the gaseous stream (T<sub>t</sub>) is less than 60 °C (333.15K) at the flow measurement point.

The CPA will demonstrate that the gaseous stream is dry, by either of the above mentioned ways, this will be checked during CPA inclusion process for each individual CPA.

The mass flow of greenhouse gas *i* (F<sub>i,t</sub>) is determined using the equations (5) & (6) of the tool as shown below. The CME has correctly adopted both the equations as mentioned in the tool. This was checked by the assessment team and was found to be correct.

$$F_{i,t} = V_{t,db} * v_{i,t,db} * \rho_{i,t}$$

$$\rho_{i,t} = \frac{P_t * MM_i}{R_u * T_t}$$

Where:

F <sub>i,t</sub>	= Mals flow of greenhouse gas <i>i</i> in the gaseous stream in time interval <i>t</i> (kg gas/h)
V <sub>t,db</sub>	= Volumetric flow of the gaseous stream in time interval <i>t</i> on a dry basis(m <sup>3</sup> dry gas/h)
v <sub>i,t,db</sub>	= Volumetric Iraction of greenhouse gas <i>i</i> in the gaseous stream in a time interval <i>t</i> on a dry basis (m <sup>3</sup> gas <i>i</i> /m <sup>3</sup> dry gas)
ρ <sub>i,t</sub>	= Density of greenhouse gas <i>i</i> in the gaseous stream in time interval <i>t</i> (kg gas <i>i</i> /m <sup>3</sup> gas <i>i</i> )
P <sub>t</sub>	= Absolute pressure of the gaseous stream in time interval <i>t</i> (Pa)
MM <sub>i</sub>	= Molecular mass of the gaseous gas <i>i</i> (kg/kmol)
R <sub>u</sub>	= Universal ideal gases constant (Pa.m <sup>3</sup> /kmol.K)
T <sub>t</sub>	= Temperature of the gaseous stream in time interval <i>t</i> (K)

The parameter V<sub>t,db</sub> is further calculated using equation 12 of the tool, the assessment team confirmed that the PP has correctly adopted the equation in the POA DD. The equation as per the tool is-

$$V_{t,db} = M_{t,db} / \rho_{t,db}$$

And, the parameter the density of the gaseous stream ( ρ<sub>t,db</sub>) will be determined as per the equation 13 of the applied tool as follows:

$$\rho_{t,db} = \frac{P_t * MM_{t,db}}{R_u * T_t}$$

Where:

V <sub>t,db</sub>	= Volumetric flow of the gaseous stream in time interval <i>t</i> on a dry basis (m <sup>3</sup> dry gas/h)
M <sub>t,db</sub>	= Mass flow of the gaseous stream in time interval <i>t</i> on a dry basis (kg/h)
ρ <sub>t,db</sub>	= Density of the gaseous stream in time interval <i>t</i> on a dry basis (kg dry gas/m <sup>3</sup> dry gas)
P <sub>t</sub>	= Pressure of the gaseous stream in time interval <i>t</i> (Pa)
T <sub>t</sub>	= Temperature of the gaseous stream in time interval <i>t</i> (K)
MM <sub>t,db</sub>	= Molecular mass of the gaseous stream in a time interval <i>t</i> on a dry basis (Kg dry gas/kmol dry gas)

The molecular mass of the gaseous stream (MM<sub>t,db</sub>) is estimated as per equation 3 of the tool as



follows. The assessment team confirmed that the CME has correctly adopted the equation 3 of the tool.

$$MM_{t,db} = \sum_k (v_{k,t,db} * MM_k)$$

Where:

$MM_{t,db}$  = Molecular mass of the gaseous stream in time interval  $t$  on a dry basis(kg dry gas/kmol dry gas)

$v_{k,t,db}$  = Volumetric fraction of gas  $k$  in the gaseous stream in time interval  $t$  on a dry basis( $m^3$  gas  $k/m^3$  dry gas)

$MM_k$  = Molecular mass of gas  $k$  (kg/kmol)

$k$  = All gases, except H<sub>2</sub>O, contained in the gaseous stream (e.g. N<sub>2</sub>, CO<sub>2</sub>, O<sub>2</sub>, CO, H<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NO, NO<sub>2</sub>, SO<sub>2</sub>, SF<sub>6</sub> and PFCs). See available simplification below.

The determination of the molecular mass of the gaseous stream ( $MM_{t,db}$ ) requires measuring the volumetric fraction of all gases ( $k$ ) in the gaseous stream. However as a simplification, the volumetric fraction of only the gases  $k$  that are greenhouse gases and are considered in the emission reduction calculation in the applied methodology must be monitored and the difference to 100% may be considered as pure nitrogen. As the applied methodology does not specify any thing in this regards, hence the simplification as suggested by the tool can be adopted in the POA, this was checked and was confirmed by the assessment team.

## Step. 2 Determination of flare efficiency

The flare efficiency depends on the efficiency of combustion in the flare and the time that the flare is operating. For determining the efficiency of combustion of enclosed flares there is the option to apply a default value or determine the efficiency based on monitored data. For open flares a default value must be applied. As per the requirement of the tool, "Project emissions from flaring" (Version 2.0.0), the time the flare is operating will be determined by monitoring the flame using a flame detector. For the case of enclosed flares, in addition the monitoring requirements provided by the manufacturer's specifications for operating conditions will be met by each CPA.

### Open flare

In the case of open flares, the flare efficiency in the minute  $m$  ( $\eta_{flare,m}$ ) is 50% when the flame is detected in the minute  $m$  (Flame <sub>$m$</sub> ), otherwise  $\eta_{flare,m}$  will be considered as 0%. This was checked by the assessment team from the tool, "Project emissions from flaring" (Version 2.0.0), and was found to be correct.

### Enclosed flare

In the case of enclosed flares, CME has opted for option A: apply a default value for flare efficiency. This was found to be as per the options provided in the tool, "Project emissions from flaring" (Version 2.0.0).

The flare efficiency for the minute  $m$  ( $\eta_{flare,m}$ ) will be considered as 90% when the following two conditions are met to demonstrate that the flare is operating, as mentioned in the tool:

1. The temperature of the flare (TEG <sub>$m$</sub> ) and the flow rate of the residual gas to the flare (FRG <sub>$m$</sub> ) is within the manufacturer's specification for the flare (SPEC <sub>$flare$</sub> ) in minute  $m$ ; and
2. The flame is detected in minute  $m$  (Flame <sub>$m$</sub> ).

Otherwise  $\eta_{flare,m}$  will be considered as 0%. This was found to be as per the options provided in the tool, "Project emissions from flaring" (Version 2.0.0).

For enclosed flares that are defined as low height flares, the flare efficiency in the minute  $m$  ( $\eta_{flare,m}$ ) shall be adjusted, as a conservative approach, by subtracting 0.1 from the efficiency as determined



in Option A or B. For example, the applied should be 80%, rather than 90%, and if for example the measured value was 90%, then the value to be used shall correspond to 89%. This was found to be in line with the requirement of "Project emissions from flaring" and was accepted by the assessment team.

### Step 3: Calculation of project emissions from flaring

For the calculation of project emissions from flaring CME has correctly referred to the equation 15 of the tool, "Project emissions from flaring" (Version 2.0.0):

$$PE_{\text{flare},y} = GWP_{\text{CH}_4} \times \sum_{m=1}^{525600} F_{\text{CH}_4,\text{RG},m} \times (1 - \eta_{\text{flare},m}) \times 10^{-3}$$

$PE_{\text{flare},y}$  : Project emissions from flaring of the residual gas in year  $y$  (tCO<sub>2</sub>e)  
 $GWP_{\text{CH}_4}$  : Global warming potential of methane valid for the commitment period (tCO<sub>2</sub>e/tCH<sub>4</sub>)  
 $F_{\text{CH}_4,\text{RG},m}$  : Mass flow of methane in the residual gas in the minute  $m$  (kg)  
 $\eta_{\text{flare},m}$  : Flare efficiency in minute  $m$

- The PP has adopted the global warming potential of methane valid for the commitment period (tCO<sub>2</sub>e/tCH<sub>4</sub>) as 25, as per the IPCC value (second commitment period). This has been further discussed under section 4.11 of this report. The Mass flow of methane in the residual gas in the minute  $m$  (kg) will be calculated as per "Tool to determine the mass flow of a greenhouse gas in a gaseous stream". Flare efficiency for open flare and enclosed flare will be determined as discussed above, as per the step 2 of "Project emissions from flaring" (Version 2.0.0). this was checked by the assessment team and was found to be correct. Thus the assessment team is of the opinion that PP has correctly mentioned the approach to calculate the project emission flaring in the POA DD.

## 4. Leakage Calculation

None of energy generating equipment is transferred from outside the boundary to the project activity. This leakage is not applicable. All the CPA involves either modification or retrofitting of existing facilities (Type 1) or installation of biomass based co-generation system (Type 2). Thus, as per paragraph 47, methodology AMS I.C, version 19, assessment team confirmed that there is no leakage involved due to transfer of energy generating equipments from outside the project boundary.

- The POA includes, CPAs that involves sewerage treatment facility and collection/processing/transportation of biomass residue doesn't occur where from outside of project boundary to the project site. Thus as per paragraph 48, methodology AMS I.C , version 19, there is no leakage involved due to collection/processing/transportation of biomass residues. This was checked and was confirmed by the assessment team. Further, if there is any leakage emission associated with anaerobic digester, the same will be counted as project or leakage emission depending upon the scenario with respect to each individual CPA, with reference to the tool "Project and leakage emissions from anaerobic digesters". This was accepted by the assessment team. The PP has correctly referred to equation (5) of tool to calculate "Project and leakage emissions from anaerobic digesters" for the calculation of Leakage emissions associated with the anaerobic digester in year  $y$ . This was found to be correct and was accepted the assessment team.

## 5. Emission Reductions

$$ER_y = BE_{\text{total},y} - PE_{\text{total},y} - LE_y$$

Where,

<b>ER<sub>y</sub></b>	Emission reductions in year y (tCO <sub>2</sub> e)
<b>BE<sub>total,y</sub></b>	Baseline emissions in year y (tCO <sub>2</sub> e)
<b>PE<sub>total,y</sub></b>	Project emissions in year y (tCO <sub>2</sub> )
<b>LE<sub>y</sub></b>	Leakage emissions in year y (tCO <sub>2</sub> e)

## Discussion of CARs & CLs:

### CAR 13 was raised as follows-

- The applicability criteria as mentioned in the webhosted POA-DD are not in line with the applied methodology AMS I C, version 19. The CME was requested to justify.
- The project is based on AMS I C, however, as per section E.7.2, on data collection and archiving, AMS IIIH will be used for monitoring data & GHG emission calculation. CME was requested to clarify and transparently demonstrate the justification for the use of AMS III H, in context to current POA.
- CME was requested to justify, how they will ensure the elimination of cross effects of project activities in the CPA under the POA.
- The SSC-CPA boundary is not in accordance with those of the project boundary description as per AMS I C. CME was requested to clarify the same. Moreover, there is not description of project boundary for the POA .POA The CME was requested to justify.

Responding to the CAR 13, the CME provided the following response-

- The CME revised the POA DD, to correct the applicability criteria as mentioned in the applied methodology AMS IC, version 19. The applicability criteria as mentioned in the revised POA – DD are in line with the applied methodology AMS I C, version 19. This was checked and was confirmed by the assessment team.
- In the final revised POAPOA DD, CME has used only the tools referred under the methodology AMS IC, version 19 and Project emissions from flaring (Version 2.0.0), Project and leakage emissions from anaerobic digesters (Version 01.0.0) and “Tool to determine the mass flow of a green house gas in a gaseous stream” (Version 02.0.0) for the calculation of project and baseline emission. AMS III H has not been used in the final POA DD. This was checked by the assessment team and was found to be correct.
- PP has confirmed that there is no cross effects involved. The POA DD has been revised by the CME. The POA includes only one methodology, i.e., AMS IC, version 19 for the calculation of baseline emission. PP has used tools as applicable for the calculation of project and leakage emission. This was checked by the assessment team and was found to be correct.
- PP has provided the revised POA POADD which includes the correct description of the CPA boundary, for both type of CPA (under option 1 and under option 2). This was found to be satisfactory and is in line with the requirement of para 15 of AMS IC, version 19.

Thus all the issues raised under CAR 13 was addressed by the CME, this was checked by the assessment team and POAPOA. CAR 13 was closed.

### CAR 15 was raised as follows-

- CME was requested to justify, why the latest available version of “Tool to calculate the emission factor for electricity system” for calculating emission factor was not referred to in the POAPOA DD. CME was also requested to provide the backup sheet for the analysis of emission factor calculation.
- CME was requested to provide details on leakage emissions associated with the project.
- While describing the baseline emission and project emission calculation, the CME was requested to provide the reference of the specific para of the applied methodology AMS IC. Moreover, the equation described for Option 2 is not found to be in line to the methodology, the CME was requested to clarify. The CME was also requested to include the project emission from the AMS III H component as per para 13 of AMS I C version 19. The emission reduction equation used in the POA DD was found not to be in line with the methodology AMS I C. The CME was requested to clarify.

- iv. The CME was asked to clarify why the following information is not included in the monitoring plan for CPA – In line to the AMS I, version 19, paragraph 51 (c), In case of the project activity involves the replacement of equipment the related information on scrapping should be clearly reflected in the monitoring plan of POA POADD.
- v. The CME has not defined the monitoring/recording frequency of the monitoring parameters inline to the monitoring methodology AMS I C. The CME was requested to justify.
- vi. CME was requested to clarify why COD has been included in the data to be monitored.
- vii. CME was asked to clarify why the parameter “volume of waste water treated in baseline waste water treatment” is included under data & parameter to be monitored.

Responding to the above mentioned CAR 15, the CME provided the below responses-

- i. CME updated the POAPOA DD and included all the latest version of tools in the revised POAPOA DD. PP submitted the emission factor calculation back up sheet, based on the “Tool to calculate the emission factor for electricity system”. PP has calculated the OM, using simple OM approach (weighted average). PP also listed SET 5 unit on the OM/BM calculation sheet. PP compared SET 5-unit and SET $\geq$ 20%, SET $\geq$ 20% is selected due to larger annual electricity generation. The revised POAPOA DD and the emission factor calculation sheet were checked by the assessment team and was found to be correct.
- ii. CME has included the justification for leakage in revised POAPOA DD, under section B.6.1.  
None of energy generating equipment is transferred from outside the boundary to the project activity and the Project is involved in sewerage treatment facility, this project does not involve collection/processing/transportation of biomass residue from outside of project boundary to the project site. Thus leakage is not involved in this POA. This is in line with paragraph 47, methodology AMS I.C, version 19. This was checked by the assessment team and was found to be correct.
- iii. CME has revised the POAPOA DD, baseline emission calculation for CPA under Option 1 has been done using equation 2, as per paragraph 22 of the applied methodology ASM IC, Version 19. For option 2, the baseline emission calculation has been done as per paragraph 21 of AMS IC, Version 19. Further, PP has calculated the project emission using the relevant tools and guidelines as mentioned in the methodology AMS IC and as applicable to the project activity. The list of tools used in the POAPOA has been mentioned in the POAPOA DD, under the section B, Part II of POA POADD. The revised POA POADD and the emission reduction calculation sheet were checked by the assessment team and was found to be correct.
- iv. The CME stated the POA involves only modification and retrofitting of existing equipment and installation of new co-generation unit as part of the project activity in the CPAs to be included in the POAPOA. The CME clarified that related information on scrapping will be done independently (if there is any). This was found to be correct and was accepted by the assessment team.
- v. The monitoring /recording frequency of the monitored parameter is defined in line with the monitoring methodology AMS I C. This was checked by the assessment team and was found to be correct.
- vi. In the revised POA POADD, CME has removed COD, from the list of monitored parameters, as this was not required to be monitored. Any emission involved in the POAPOA will be addressed using relevant tools as mentioned in section B.1 of the POA POADD.
- vii. In the revised POAPOA DD, CME has removed this parameter “volume of waste water treated in baseline waste water treatment” as this was not required to be monitored, and this is in line with the applied methodology AMS IC, version 19.

Thus all the issues of CAR 15 were successfully addressed by the CME and the CAR 15 was closed.

### Opinion:

The assessment team is of the opinion that –

- a) All the assumptions and data used by the project participant are listed in the POA DD, including their references and sources;

- b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the POA DD;
- c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- d) Relevant national and/or sectoral policies and circumstances are considered and listed in the POA DD;
- e) The approved baseline methodology has been correctly applied to identify the most plausible baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed project activity.

The validation of the “baseline methodology and calculation of emission factor” has been done as per the requirement of para 101-103 of VVS version 07.0.

#### 4.11 Application of Monitoring Methodology and Monitoring Plan

The monitoring methodology of AMS I.C., version 19 has been correctly followed in the POA DD, and the required parameters of the monitoring plan are also inline to the applicable methodology. The monitoring methodology applies consistently the choice of the option selected for monitoring both of project and baseline emissions.

The PP has referred the following tools, as a part of the monitoring methodology and monitoring plan in this POA-

- Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion (Version 2)
- Tool to calculate baseline, Project and/or leakage emissions from electricity consumption (Version 1)
- Tool to calculate the emission factor for an electricity system (Version 3.0.0)
- Project and leakage emissions from anaerobic digesters (Version 01.0.0)
- Project emissions from flaring (Version 2.0.0)
- Tool to determine the mass flow of a green house gas in a gaseous stream” (Version 02.0.0)

The detailed steps to calculate baseline, project and leakage emission has been discussed under section 4.10 of this report. Further the assessment of ex-ante parameters considered in the POA has been carried out as depicted below-

#### Assessment of ex-ante parameters:

Parameter	Description	Value	Assessment
$\eta_{BL,thermal}(\%)$	The efficiency of the existing plant using fossil fuel that would have been used in the absence of the project activity	To be determined with respect to each CPA.	This value will be determined according to paragraph 30, methodology AMS I.C based on data from CPA implementer. This was found to be correct by the assessment team and also in line with applied methodology AMS IC, version 19. Further as this parameter will vary from CPA to CPA, hence this value will be CPA specific, and will be checked during CPA inclusion process. This was found to be correct and was accepted by the assessment team.
EF <sub>grid,OM, y</sub> (tCO <sub>2</sub> /MWh)	Operating margin CO <sub>2</sub> emission factor for the project electricity system in year y	0.6922	This “alue is calculated according to "Tool to calculate the emission factor for an electricity system (version 4.0.0)". Applied value was calculated based on ‘Statistics of Electric Power in Korea’ <sup>17/</sup> (2008, 2009, 2010). The emission factor calculation sheet as provided by CME was checked by the assessment team and was found to be correct. Detailed assessment of this parameter has been discussed in section 4.10 of this

			report.
$EF_{grid,BM,y}$ (tCO <sub>2</sub> /MWh)	Build margin CO <sub>2</sub> emission factor for the project electricity system in year y	0.6412	This "alue is calculated according to "Tool to calculate the emission factor for an electricity system (version 4.0.0)". Applied value was calculated based on 'Statistics of Electric Power in Korea' <sup>17/</sup> (2008, 2009, 2010). The emission factor calculation sheet as provided by CME was checked by the assessment team and was found to be correct. Detailed assessment of this parameter has been discussed in section 4.10 of this report.
$EF_{CO_2,y}$	The CO <sub>2</sub> emission factor of the national electricity grid.	0.6667	This "alue is calculated according to "Tool to calculate the emission factor for an electricity system (version 4.0.0)". Applied value was calculated based on 'Statistics of Electric Power in Korea' <sup>17/</sup> (2008, 2009, 2010). The emission factor calculation sheet as provided by CME was checked by the assessment team and was found to be correct. Detailed assessment of this parameter has been discussed in section 4.10 of this report.
$f_{CH_4,default}$ (Nm <sup>3</sup> CH <sub>4</sub> / Nm <sup>3</sup> biogas)	Default value for the fraction of methane in the biogas	0.6	The default value was derived based on reported values from registered projects and research papers (Davidsson, 2007). This is as per the methodological Tool "Project and leakage emissions from anaerobic digesters" (Version 01.0.0). This was checked by the assessment team and was found to be correct.
$\rho_{CH_4}$ (tCH <sub>4</sub> / Nm <sup>3</sup> CH <sub>4</sub> )	Density of methane at normal conditions	0.00067	This value is as per the methodological Tool "Project and leakage emissions from anaerobic digesters" (Version 01.0.0). This was checked by the assessment team and was found to be correct.
$EF_{CH_4,default}$ (tCH <sub>4</sub> leaked / t CH <sub>4</sub> produced)	Default emission factor for the fraction of CH <sub>4</sub> produced that leaks from the anaerobic digester	To be determined with respect to each CPA type of digester	<p>Use the default value corresponding to the type of digester used in the project activity. The digester type shall be identified by manufacturer information. If this is not possible, then the factor 0.1 shall be applied (upper range of the IPCC values).</p> <ul style="list-style-type: none"> <li>• 0.028: Digesters with steel or lined concrete or fibreglass digesters and a gas holding system (egg shaped digesters) and monolithic construction;</li> <li>• 0.05: UASB type digesters, floating gas holders with no external water seal;</li> <li>• 0.10: Digesters with unlined concrete/ferro cement/brick masonry arched type gas holding section; monolithic fixed dome digesters, covered anaerobic lagoon.</li> </ul> <p>This value is as per the methodological Tool "Project and leakage emissions from anaerobic digesters" (Version 01.0.0). This was checked by the assessment team and was found to be correct.</p>
$GWP_{CH_4}$ (tCO <sub>2</sub> e / tCH <sub>4</sub> )	Global Warming Potential of	25	Adopted as per IPCC default data for GWP for CH <sub>4</sub> , for the second commitment period. This was checked with <a href="http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch">http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch</a>



	CH <sub>4</sub>		<a href="#">2s2-10-2.html</a> and found to be correctly adopted and thus accepted.
R <sub>u</sub> (Pa.m <sup>3</sup> /kmol.K)	Universal ideal gases constant	0.008314472	This is constant value. This value has been checked from the EB 68, Annex 15, and assessment team confirmed that this value has been correctly adopted.
MM <sub>i</sub> (kg/kmol)	Molecular mass of greenhouse gas CH <sub>4</sub>	Values have been referred from EB 61, Annex 11. (page no 10)	This is constant value. This value has been checked from the EB 61, Annex 11, and assessment team confirmed that this value has been correctly adopted.
MM <sub>k</sub> (kg/kmol)	Molecular mass of gas k	Values have been referred from EB 61, Annex 11.	This is constant value. This value has been checked from the EB 61, Annex 11, and assessment team confirmed that this value has been correctly adopted.

### Assessment of Monitored Parameters (ex-post):

The monitoring plan provides the procedure for the collection and archiving of all relevant data necessary for estimation or measurement of the emission reductions within the project boundary during the crediting period. The information given for each monitoring variable by the presented table is sufficient to ensure the verification of a proper implementation of the monitoring plan. The CME has included required parameters in monitoring section B.7.1 of POA DD<sup>/1/</sup>. The CME has further defined the following parameters in section B.7.1 of the PDD<sup>/1/</sup>, which was assessed by the assessment team.

Parameter	Assessment
<b>EG<sub>thermal,y</sub></b>	<p>It refers to the net quantity of steam/heat supplied by the project activity during the year y (TJ). Heat generation is determined as the difference of the enthalpy of the steam or hot fluid and/or gases generated by the heat generation equipment and the sum of the enthalpies of the feed-fluid and/or gases blow-down and if applicable any condensate returns. The respective enthalpies should be determined based on the mass (or volume) flows, the temperatures and, in case of superheated steam, the pressure. Steam tables or appropriate thermodynamic equations may be used to calculate the enthalpy as a function of temperature and pressure.</p> <p>In case of equipment that produces hot water/oil this is expressed as the difference in the enthalpy between the hot water/oil supplied to and returned by the plant.</p> <p>In case of equipment that produces hot gases or combustion gases, this is expressed as the difference in the enthalpy between the hot gas produced and all streams supplied to the plant. The enthalpy of all relevant streams shall be determined based on the monitored mass flow, temperature, pressure, density and specific heat of the gas. This parameter will be continuously monitored and will be aggregated monthly and annually. The monitoring of this parameter was found to be in line with the applied methodology AMS IC., version 19.</p>
<b>Q<sub>hot air</sub></b>	Quantity of hot air generated in the project activity will be measured by the CPA implementer using flow meters. Where it is not feasible, spot measurements will be done through sampling with a 90% confidence level and a 10% precision. The CPA implementers shall ensure that the equipment is calibrated either in accordance with the local/national standards or as per the manufacture's specification. If each of these is not available, international standard may be used. The monitoring details of the parameter were found to be in line with the requirement of applied methodology AMS IC, version 19.
<b>Q<sub>steam</sub></b>	Quantity of steam generated in the project activity will be measured by the CPA implementer using flow meters. Monitoring will be continuous, integrated hourly and will be recorded monthly. The CPA implementers shall ensure that the equipment is calibrated either in accordance with the local/national standards or as per the manufacture's specification. If each of these is not available, international standard may be used. The monitoring details of the



	parameter were found to be in line with the requirement of applied methodology AMS IC, version 19.
<b>T</b>	This parameter represents the temperature of hot water/fluid or steam which will be used for calculating enthalpy (heat content) of steam or hot fluid. This parameter will be measured with respect to each individual CPA using calibrated meters as described in the applied methodology AMS IC, version 19,
<b>P</b>	This parameter represents the pressure of hot water/fluid or steam which will be used for calculating enthalpy (heat content) of steam or hot fluid. This parameter will be measured with respect to each individual CPA using calibrated meters as described in the applied methodology AMS IC, version 19,
<b>Q<sub>biogas,y</sub></b>	This parameter refers to the amount of biogas collected at the digester outlet in year y. This will be measured separately for each individual CPA on a continuous basis using flow meters. Data will be aggregated monthly and yearly basis. Measuring instrument will be calibrated as per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3years. The monitoring of this parameter was found to be in line with the requirement of the Methodological Tool "Project and leakage emissions from anaerobic digesters", (Version 01.0.0).
<b>EC<sub>Pj,j,y</sub></b>	This refers to quantity of electricity consumed by project activity in a process j during the year y. This includes the auxiliary consumption of the newly installed co-generation plant and the power consumed by all the newly installed equipment, which is a part of the project activity. Continuous readings will be taken by the CME and will be aggregated monthly and annually. Measuring instrument will be calibrated as per local/national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3 years. In case the monitoring equipment is not present, then the electricity consumed by the project activity will be calculated based on the rated capacity of the newly installed project equipments, considering the conservative operating time i.e. . Operating time will be applied conservatively as 24 hours. Power consumption data for each facility will be applied from list of facilities spec data in A.5 "Technical description" of the respective CPA-DD This approach was found to be correct and conservative by the assessment team and was accepted.
<b>EF<sub>FF,CO2</sub></b> (tCO <sub>2</sub> /GJ)	This parameter represents CO <sub>2</sub> emission factor of fossil fuel type i in year y. The IPCC default values at the upper limit of uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Vol. 2(Energy) of the 2006 IPCC Guidelines on National GHG Inventories <sup>/53/</sup> will be referred for this parameter. The CME has adopted a uniform approach for this parameter. The values provided by the fuel supplier in invoices may not be available in case of all the CPAs. Hence to maintain consistency among the CPAs, the CME has opted for the IPCC default emission factors. The CME has also confirmed that any future IPCC update on this parameter will be considered and will be referred to for emission reduction calculation. This was found to be correct by the assessment team and also in line with "Tool to calculate project or leakage CO <sub>2</sub> emissions from fossil fuel combustion". This was accepted by the assessment team.
<b>TDL<sub>y</sub></b>	This refers to average technical transmission and distribution losses for providing electricity to source j in year y. This will be sourced from national database, "KEPCO in brief_sale" (Serial Number of document 111), part VI Electricity sales, chapter 1, "Transmission & Distribution Loss" ( <a href="http://cyber.kepco.co.kr/kepco/KO/ntcob/list.do?boardCd=BRD_000098&amp;menuCd=FN05030102">http://cyber.kepco.co.kr/kepco/KO/ntcob/list.do?boardCd=BRD_000098&amp;menuCd=FN05030102</a> ). This data will be monitored annually. In the absence of data from the relevant year, most recent figures will be used, but not older than 5 years will be used. The monitoring of this parameter was found to be in line with the requirement of the Methodological tool "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (Version 01).
<b>FC<sub>k,j,y</sub></b>	This refers to quantity of fuel type k combusted in process j during the year y. This will be determined with respect to each CPA. This parameter will be monitored continuously. Measuring instrument will be calibrated as per local/national standard or as per manufacturer's

	<p>specifications. If local/national standards and manufacturer's specification is not available, it will be as per international standard, but at least once in 3years.</p> <p>Where the purchased fuel invoices can be identified specifically for the CDM project, the metered fuel consumption quantities should be cross-checked with available purchase invoices from the financial records. Monitoring of this parameter was found to be in line with the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", version 2.</p>
Flame <sub>m</sub>	<p>This refers to flame detection of flare in the minute <i>m</i>. This will be measured using a fixed installation optical flame detector. The frequency of monitoring is once per minute. Detection of flame recorded as a minute that the flame was on, otherwise recorded as a minute that the flame was off. This was found to be in line with the requirement of "Project Emission from Flaring" (Version 02.0.0).</p>
V <sub>i,t,db</sub>	<p>This parameter refers to volumetric fraction of greenhouse gas <i>i</i> in a time interval <i>t</i> on a dry basis. This parameter will be determined with respect to each CPA on a continuous basis. The QA/QC procedure was checked by the assessment team and was found to be matching EB 61, Annex 11. The purpose of the parameter is to calculate project emission. All the monitoring details of the parameter was checked by the assessment team and, the assessment team is of the opinion that the monitoring of this parameter is in line with the requirement of EB 61, Annex 11.</p>
T <sub>flare,m</sub>	<p>This refers to temperature in the exhaust gas of the enclosed flare in minute <i>m</i>. This will be determined with respect to each CPA. This will be measured using a fixed installation optical flame detector and the equipment will be maintained and calibrated in accordance with manufacturer's recommendations. The monitoring of this parameter was found to be in line with the methodological tool "Project emissions from flaring" (Version 02.0.0). This was checked by the assessment team and was found to be correct.</p>
NCV <sub>i,y</sub>	<p>This is Net calorific value of the fuel <i>k</i> in the year <i>y</i>. This will be determined with respect to fuel <i>k</i> that each CPA used IPCC default emission factors or reliable national data will be referred for the NCV value of each type of fuel used in the CPAs. This was found to be in line with the requirement of the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", this was accepted by the assessment team.</p>
M <sub>t,db</sub>	<p>This is mass flow of the gaseous stream in time interval <i>t</i> on a dry basis. This will be determined with respect to each CPA. This will be measured using gas flow meters. The calibration and frequency of calibration will be according to manufacturer's specifications. Thus the details of the monitoring of this parameter were found to be in line with the requirement of the tool, "Tool to determine the mass flow of a greenhouse gas in a gaseous stream".</p>
T <sub>t</sub>	<p>This is the temperature of the gaseous stream in time interval <i>t</i>. The source of data for this parameter is onsite measurements by CPA implementer and will be measured for each stream. The QA/QC and all the monitoring details of the parameter was found to be in line with the requirement of the tool, "Tool to determine the mass flow of a greenhouse gas in a gaseous stream".</p>
P <sub>t</sub>	<p>This is pressure of the gaseous stream in time interval <i>t</i>, and is measured in Pascal. The source of data for this parameter is onsite measurements by CPA implementer and will be measured for each stream. The QA/QC and all the monitoring details of the parameter was found to be in line with the requirement of the tool, "Tool to determine the mass flow of a greenhouse gas in a gaseous stream".</p>
V <sub>k,t,db</sub>	<p>This is volumetric fraction of gas <i>k</i> in the gaseous stream in time interval <i>t</i> on a dry basis. The source of data for this parameter is onsite measurements by CPA implementer and will be measured for each parameter. The QA/QC and all the monitoring details of the parameter was found to be in line with the requirement of the tool, "Tool to determine the mass flow of a greenhouse gas in a gaseous stream".</p>
NCV <sub>k</sub>	<p>This parameter refers to Net calorific value of biomass type <i>k</i> combusted in the project activity. This will be measured in laboratories according to relevant national/international standard. It will be measure quarterly, taking at least three samples for each measurement. The average</p>

	<p>value will be used for the rest of the crediting period. Further the NCV will be measured based on dry biomass.</p> <p>The consistency of the measurements will be checked by comparing the measurement results with, relevant data sources (e.g. values in the literature, values used in the national GHG inventory) and default values by the IPCC. (If the measurement results differ significantly from previous measurements or other relevant data sources, additional measurements will be conducted). The monitoring details of the parameter were found to be in line with the requirement of applied methodology AMS IC, version 19.</p>
EG <sub>BL,electricity y</sub>	<p>This parameter refers to quantity of net electricity supplied to the grid and/or to the on-site as a result of the implementation of the CPA project activity in year y. This parameter will be measured by electricity meters. This parameter will be continuously monitored, hourly integrated and at least monthly recorded. The measuring instrument will be in compliance with the national standard or as per manufacturer's specifications. If local/national standards and manufacturer's specification is not available, it will be calibrated as per international standard, but at least once in 3 years. The monitoring of this parameter was found to be in line with the applied methodology AMS I.C, version 19.</p>

The monitoring plan completely describes all measures to be implemented for monitoring of all parameter required. The relevant data for a particular CPA will be recorded by the CPA implementer and will be provided to the CME. The data received will be archived electronically for computations of emission reductions on annual basis. Each CPA shall follow all the provision of the POA including those related to monitoring plan.

The assessment team is convinced of compliance of the monitoring plan with the requirements of the monitoring methodology of AMS-I.C (version 19). During the on-site assessment, the validation team interviewed the CME and confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design.

Proper QA/QC has been implemented for monitoring parameters, calibration etc. All the QA/QC procedures adopted are as per the requirement of the applied methodology AMS IC, version 19 and also as per the applied Tools.

#### Opinion:

Validation of the application of monitoring methodology and monitoring plan was done as per paragraph 233 of the VVS, Version 07.0. Validation team is of the opinion that-

- The monitoring plan is in compliance with the requirements of the methodology including applicable tool(s);
- The monitoring arrangements described in the monitoring plan are feasible within the project design; and
- CME is able to implement the described monitoring plan.

#### 4.12 Environmental Impacts

The project activities covered under the POA are based on biogas recovery system and/or renewable energy generation system to public sewage treatment facility. Hence they do not fall under the purview of the EIA notification of the Ministry of Environment, Government of the Republic of Korea notification. The Ministry notification<sup>14/</sup>, dated March 28, 2008, on the requirement of EIA studies states that any project developer in the Republic of Korea needs to file an application to the Ministry of Environment (including a public hearing and an EIA) if the proposed industry or project is listed on a predefined list. Eighteen categories of activity with a certain investment criteria are required to undertake an EIA. However, the proposed project activities do not fall under the list of activities requiring EIA. Thus, no EIA study is required for this type of project activities. This same was confirmed by the Local Assessor during the site visit. This was validated as per the requirement of para 244-245 of VVS, version 07.0.

#### 4.13 Local Stakeholder Comments

Local stakeholder consultation<sup>/47/</sup> of the POA was done at POA level. In Section A.6. of the POA DD, CME clarifies that the project involves retrofit of existing heat generation system and/or installing of co-generation system. There are no significant changes on the process of heat generation system by retrofitting and there are no regulations of enforcement of public hearing or local consultation on modification or retrofitting project in Korea. Thus the project participants considered it appropriate to carry out the local stakeholder consultation at POA level, instead of carrying out at the CPA level. This was found acceptable by the assessment team.

KECO organised and participated in several events to inform a wide range of stakeholders and to receive consultation of stakeholders about the programme, such as

- Participation in the workshop for the program to improve energy independence of public sewerage system and presentation on P-CDM related to the program on 25<sup>th</sup> of Nov 2010 in Jeju Island.
- Presentation of the P-CDM related to the program at the workshop for Environmental infrastructure carbon-neutral program on 17<sup>th</sup> of Dec 2010, in Yongsan District of Seoul.
- The event for the program to improve energy independence of public sewerage system, about how to relate to Programmatic CDM on 29<sup>th</sup> of April 2011. This included ceremony of MOU among stakeholders who will implement the programme held in Chuncheon City.

Participated stakeholders are

- CPA implementers
- Related official workers
- Local resident who interested in P-CDM project
- Business owner/worker/technical experts who works related field

In addition, KECO informed the stakeholders about the program on its website<sup>/48/</sup>. Materials are available and can be downloaded. These include an explanation of the program. No negative comments were received during the entire local stakeholder's consultation process, this was checked from the KECO website<sup>/48/</sup> and also from the workshop documents<sup>/47/</sup>. This was validated as per the requirement of para 246-247 of VVS, version 07.0.

## **5. Comments by Parties, Stakeholders and NGOs**

In accordance with sub-paragraphs 40 (b) and (c) of the CDM POA modalities and procedures, the Programme of Activity design document of a proposed CDM POA Programme of Activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this Programme of Activity.

### **5.1 Description of how and when the POA-DD was made publicly available**

The Programme of Activity Design Document for this Programme of Activity was made available on the UN website

<http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EUT6B/view.html> and was open for comments from 18/11/2011 until 17/12/2011. Comments were invited through the UNFCCC CDM POA homepage.

### **5.2 Compilation of all Comments Received**

No comments were received for the POA.

### **5.3 Explanation of How Comments Have Been Taken into Account**

No comments were received for the POA

## 6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
7 <sup>th</sup> & 8 <sup>th</sup> June 2012	Eun Young kim	Assistant Manager	Project description POA - & CPA, planning & implementation status, Stake holder's consultation, ownership details and Environmental impact of the POA.
7 <sup>th</sup> & 8 <sup>th</sup> June 2012	WonToe Kim	Staff	POA eligibility criteria, project boundary
7 <sup>th</sup> & 8 <sup>th</sup> June 2012	Yeon Ok Jo	Consultant	Baseline, additionality & emission reduction calculation & monitoring plan, QA/QC procedures.



## 7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

Name of document	
/1/ POA DD, Version 01, dated 11/2010 (Webhosted Version) (Web <a href="http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EUT6B/view.html">http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKMQ3TBG57GFX12GCQ3EUT6B/view.html</a> )	link:
POA DD, Version 1.2, dated 28/06/2012	
POA DD, Version 1.3, dated 20/08/2012	
POA DD, Version 1.4, dated 23/10/2012	
POA DD, Version 02, dated 18/03/2013	
POA DD, Version 03, dated 10/06/2013	
POA DD, Version 04, dated 25/06/2013	
POA DD, Version 05, dated 09/09/2013	
POA DD, Version 06, dated 09/10/2013	
POA DD, Version 07, dated 31/10/2013	
POA DD, Version 08, dated 18/11/2013	
POA DD, Version 09, dated 02/12/2013	
POA DD, Version 10, dated 27/12/2013	
POA DD, Version 11, dated 15/02/2014	
POA DD, Version 12, dated 12/03/2014	
POA DD, version 13, dated 25/04/2014	
POA DD, version 14, dated 03/06/2014	
POA DD, version 15, dated 26/06/2014	
POA DD, version 16, dated 14/07/2014	
PoA DD, version 17 dated 29/09/2014	
PoA DD, version 18 dated 13/10/2014 (Final Version)	
/2/ Letter of Authorization, dated 29/10/2012	
/3/ Modalities of Communication, dated 08/10/2013	
/4/ Emission Reduction sheet (Name of file: Evidence_Chuncheon Emission Reduction tool_Final_20140714)	
/5/ Emission Factor Calculation sheet (Name of file: Emission Factor(OM, BM, CM) calculation sheet_G&SI_20140215)	

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

Name of document
/6/ Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities, EB 74, Annex 5.
/7/ Clean Development Mechanism Validation and Verification Standard Version 07.0
/8/ Approved methodological (AMS IC, Version 19)
/9/ Tools used to calculate, determine, demonstrate, estimate, identify and/or test information relating to a CDM project activity i.e. Additionality etc- <ul style="list-style-type: none"> <li>⇒ Tool to calculate the emission factor for an electricity system (Version 4.0.0)</li> <li>⇒ Project emissions from flaring (Version 2.0.0)</li> <li>⇒ Tool to calculate baseline, Project and/or leakage emissions from electricity consumption (Version 1)</li> <li>⇒ Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (Version 2)</li> <li>⇒ Project and leakage emissions from anaerobic digesters (Version 01.0.0)</li> <li>⇒ Tool to determine the mass flow of a green house gas in a gaseous stream" (Version 02.0.0)</li> </ul>
/10/ CDM modalities & procedures ( <a href="https://cdm.unfccc.int/Reference/COPMOP/08a01_abbr.pdf">https://cdm.unfccc.int/Reference/COPMOP/08a01_abbr.pdf</a> )
/11/ Certificate of Double Counting Check format for each individual CPA.
/12/ Sewerage Act, Act No. 9334, Jan. 7, 2009
/13/ Declaration regarding no ODA, dated 25/06/2012
/14/ Environmental Impt Assessment Act of South Korea, ( <a href="http://www.moleg.go.kr/english/korLawEng?pstSeq=52628">http://www.moleg.go.kr/english/korLawEng?pstSeq=52628</a> )
/15/ Enforcement Decree of The Environmental Impact Assessment Act (Presidential Decree No.22449, Oct. 14, 200)
/16/ KEPCO in brief December 2010  ( <a href="http://cyber.kepco.co.kr/kepco/EN/ntcob/list.do?TKEPCO_ID=d1lrTrjMftFGNLxRvBc2j18KKYLXhw2Cvb9BLWWn2hwPnWZz4RdT!-292585451!155782654?boardCd=BRD_000244&amp;menuCd=EN03040203">http://cyber.kepco.co.kr/kepco/EN/ntcob/list.do?TKEPCO_ID=d1lrTrjMftFGNLxRvBc2j18KKYLXhw2Cvb9BLWWn2hwPnWZz4RdT!-292585451!155782654?boardCd=BRD_000244&amp;menuCd=EN03040203</a> )
/17/ Statistics of Electric Power in Korea for the year 2008, 2009, 2010, published by Korea Electric Power Corporation ( <a href="http://cyber.kepco.co.kr/kepco/EN/ntcob/list.do?boardCd=BRD_000245&amp;menuCd=EN03040204">http://cyber.kepco.co.kr/kepco/EN/ntcob/list.do?boardCd=BRD_000245&amp;menuCd=EN03040204</a> )
/18/ Project Design report for Chuncheon Sewage Treatment Plant Energy Independence Project, dated 12/2011.
/19/ CME operating Manual, dated 02/05/2014
/20/ Declaration of No Technology Replacement from both KECO & from Chuncheon Municipal Community dated 15/03/2015
/21/ Declaration of Equipment remaining life time, dated 20/08/2012
/22/ Boiler Maintenance Record
/23/ Equipment remaining lifetime assessment report submitted by the CME, including photographic evidences of existing steam boiler for the Chuncheon CPA ( CPA ID: Korea environment corporation-0001)
/24/ Chuncheon Construction Contract, signed on 10/04/2012, (as per this contract, construction start date is 18/04/2012.)
/25/ Certificate of No de-bundling, dated 25/06/2012, issued by the CME for the Chuncheon CPA ( CPA ID:

Korea environment corporation-0001)
/26/ Declaration stating no ODA is involved, dated 25/06/2012 issued by the CME for the Chuncheon CPA (CPA ID: Korea environment corporation-0001).
/27/ CPA construction schedule, dated 18/04/2012( CPA ID: Korea environment corporation-0001)
/28/ Framework Act on the Construction Industry of Republic of Korea [Enforcement Date: Jun. 30, 2010] [Act No. 9875, Dec. 29, 2009, Partial Amendment]
/29/ "Sewage Treatment Facility Energy Independence Project CDM Development MOU", dated 29/04/2011, for Chuncheon City
/30/ CPA Ownership License details for the Chuncheon CPA, ID: Korea environment corporation-0001, (Permit No- 221-83-06360)
/31/ Co-generation Thermal Energy output details for the Chuncheon CPA, (ID: Korea environment corporation-0001, (Permit No- 221-83-06360)
/32/ Water Quality & Ecosystem Conservation Act of Republic of Korea, (Act No. 8976, Mar. 21, 2008) ( <a href="http://www.moleg.go.kr/english/korLawEng?pstSeq=47543">http://www.moleg.go.kr/english/korLawEng?pstSeq=47543</a> )
/33/ Act on the promotion of saving and recycling of resources of Republic of Korea (Act No. 8957, Mar. 21, 2008) <a href="http://www.moleg.go.kr/english/korLawEng?pstSeq=47557">http://www.moleg.go.kr/english/korLawEng?pstSeq=47557</a>
/34/ Act on promotion of the development, use and diffusion of new and renewable energy of Republic of Korea, (Amended by Act No. 10253, April 12, 2010) <a href="http://www.moleg.go.kr/english/korLawEng?pstSeq=57707&amp;rctPstCnt=3&amp;searchCondition=AllButCsfCd&amp;searchKeyword=energy">http://www.moleg.go.kr/english/korLawEng?pstSeq=57707&amp;rctPstCnt=3&amp;searchCondition=AllButCsfCd&amp;searchKeyword=energy</a>
/35/ Project Flow Chart (from Design Report)
/36/ Feasibility study on improving energy independence of public sewerage system", Ministry of Environment of Korea, November, 2008.
/37/ Email communication with host country DNA, dated 13/12/2012
/37A/ Email communication with host country DNA, dated 16/07/2014
/37B/ Email communication from the host country DNA, dated 17/07/2014
/38/ P-CDM Promotion Plan of Energy Independence Project for Sewage Treatment Plants, dated April 2011, issued by Ministry of Environment, Sewerage Division.
/39/ Ministry of Environment's notice of meeting to discuss P-CDM promotion plan of Energy Independence project for Sewerage Treatment Plant, dated 26/04/2011
/40/ GPS information of Chuncheon City
/41/ Sewage Act, ( <a href="http://www.moleg.go.kr/english/korLawEng?pstSeq=47547">http://www.moleg.go.kr/english/korLawEng?pstSeq=47547</a> )
/42/ The notice for a meeting about the P-CDM to energy independence of public sewerage system issued by the CME to the CPA implementers, dated 20/04/2012
/43/ Construction permit for the Chuncheon CPA, dated 28/09/2012
/44/ Workshop Result Report, dated 25/11/2010
/45/ Workshop Result Report, dated 17/12/2010
/46/ Suwon & Changwon City Municipal Communities MoU with KECO, dated 29/04/2011
/47/ Stakeholder's consultation details of the POA
/48/ KECO website screen shot, showing invitation of comments on the POA ( <a href="http://www.keco.or.kr/kr/open/communityid/1/view.do?p=56&amp;idx=619&amp;f=1&amp;q=">http://www.keco.or.kr/kr/open/communityid/1/view.do?p=56&amp;idx=619&amp;f=1&amp;q=</a> )
/49/ Agreement between SGS UK & CME regarding validation service
/50/ The notice for a meeting about the P-CDM to energy independence of public sewerage system, dated

20/04/2012
/51/ Website of KEPCO, showing National Grid of Republic of Korea ( <a href="http://cyber.kepco.co.kr/kepco/EN/B/htmlView/ENBAHP003.do?menuCd=EN020103">http://cyber.kepco.co.kr/kepco/EN/B/htmlView/ENBAHP003.do?menuCd=EN020103</a> ), last accessed on 16/07/2014
/52/ KEPCO website ( <a href="http://cyber.kepco.co.kr/kepco/EN/ntcob/list.do?boardCd=BRD_000245&amp;menuCd=EN03040204">http://cyber.kepco.co.kr/kepco/EN/ntcob/list.do?boardCd=BRD_000245&amp;menuCd=EN03040204</a> ), last accessed on 16/07/2014
/53/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories ( <a href="http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf">http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf</a> )
/54/ KEPCO in Brief 2010

## A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Programme of Activity Design Document for “The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea”.

It serves as a “**reality check**” on the Programme of Activity that is completed by a local assessor from SGS Korea.

### Annex 1 - Local Assessment Checklist

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
Evidence for start date of project activity	CME has to provide the evidence.	DR	CAR 11 raised and was closed.
Debundling criteria needs to be checked during site visit	This has been checked and found that the project activity is not a debundling component of any other SSC project.	Site visit	No action is required
QA/QC procedure for data monitoring or ISO certificates for the Company (if applicable) and personal training programme, Operation and maintenance procedure and contract	CME has defined the QA/QC procedure.	Site visit/ DR/Interview	No action is required
Proof for media used to invite the local stakeholders and date of stakeholders meeting	CME has provided evidence in support of media used to invite local stakeholder's comments	DR/interview	No action is required
Location of all monitoring meters should be checked during site visit.	CME has shown the respective location of monitoring equipments.	Site visit	No action is required
The chronology of planning and implementation of the	Chronology of implementation has been discussed with PP along with documentary evidences	DR/Interview	No action is required

Issue	Findings	Source/Mean of Verification	Further Action / Clarification / Information Required?
project activity			
Proof for No ODA involved	Undertaking need to be provided by PP	DR	No action is required
Proof for Ownership	Ownership has been discussed with PP	Interviewed	No action is required
Technical specification of the project activity	CME provided the DPR for technical specification	DR/Interview	No action is required
Baseline data to establish a consistent baseline prior to start of the project activity	Baseline data has been provided by CME	DR	No action is required
Evidence against no EIA requirement for the project activity	Evidences has been checked for no EIA requirement for the project	DR/Interview	No action is required



## A.2 Annex 2: Validation Checklist

**Table 1 Participation Requirements for Clean Development Mechanism (CDM) Programme of Activities (Ref POA-DD, Letters of Approval and UNFCCC website)**

Requirement	Means of Validation Reference	Comments	Conclusion/C ARs/ CLs
<p>1. All Parties involved have approved the programme of activity</p> <p>1.1. Has the DNA of each Party involved in the proposed CDM programme of activity in section A.3 of the POA-DD provided a written letter of approval which confirms</p> <p>1.1.1. The country is a Party to the Kyoto Protocol</p> <p>1.1.2. Participation is Voluntary</p> <p>1.1.3. The Host Party confirming that the proposed CDM programme of activity contributes to sustainable development of the country Non-Annex 1 Party shall submit a letter of approval</p> <p>1.1.4. It refers to the precise proposed CDM programme of activity title in the POA-DD being submitted for registration</p>	<p>Annex 3, Clean Development Mechanism, <b>Validation and Verification Standard, Version 7.0 (from this point forwarded referenced as VVS)</b> – para 40 a-d</p> <p>Paragraph 37 CDM Modalities and procedures</p>	<p>As per section A.3 and Appendix-1 of CDM SSC-POA-DD, version 01<sup>1/</sup>, <b>Korea Environment Corporation</b> is the only project participant (as well project coordinate and management Entity) and no other parties are involved in the proposed CDM project activity.</p> <p>The party involved (Host country) i.e. Republic of Korea is a Non-Annex-1 party to the Kyoto Protocol and has ratified the Kyoto protocol on 2002-11-08. Same is verify and crosschecked on UNFCCC-CDM website<sup>2</sup>.</p> <p>However, letter of approval (HCA) is not yet obtained. This will be checked during SV.</p> <p>The coordinating/managing entity shall submit the letters of authorization of its coordination of the POA from host Party involved. Cp. Para 10, EB 55, Annex 38.</p>	<p><del>CAR#01</del> <b>CAR#01</b> <i>closed as the PP submitted the LoA.</i></p>
<p>1.2. If the project participant(s) listed in the POA-DD published at international stakeholder<sup>3</sup> consultation are not included in the POA-DD submitted with request for registration, a letter should be obtained from the withdrawn project</p>	<p>EB 30 Para. 41. EB50 Annex 48 para. 8</p>	<p>As per section A.3 and Appendix-1 of CDM SSC-POA-DD, version 01<sup>1/</sup>, <b>Korea Environment Corporation</b> is the only project participant and no other parties are involved in the proposed</p>	<p><del>Pending to final PDD submission</del> <b>Closed</b></p>

<sup>2</sup> <http://maindb.unfccc.int/public/country.pl?country=KR>

<sup>3</sup> Stakeholders mean the public, including individuals, groups or communities affected, or likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity

Requirement	Means of Validation Reference	Comments	Conclusion/CARs/CLs
participant(s) confirming its voluntary withdrawal from the proposed programme of activity.		CDM project activity.	
1.3. The letter/s of approval are unconditional with respect to 1.1.1 to 1.1.4 above	VVS Para. 41-43	Letter of approval (HCA) is not yet obtained. This will be checked during SV. LoA obtained.	<del>CAR 01</del> CAR 01 closed.
1.4. Are there more than one Party involved in the programme of activity.	EB 55 Annex 38	Only one party is involved on the POA.	Y
1.5. Does the coordinating entity of the POA identify measures to ensure that all CPAs under its POA are neither registered as an individual CDM project activity nor included in another registered POA and that the CPA is subscribed to the POA?	Document Review	The indicated system/procedure in section A.4.2.2 of POA-DD version 01 to avoid double counting seems to be inadequate in case of including a new CPA that has been already registered as a CPA of another POA (small scale POA).  <del>CAR 02 raised.</del> CAR 02 closed.	<del>CAR 02 raised.</del> CAR 02 closed.
1.6. Is the authority and responsibility of the coordinating/management entity clearly described?	EB 74, Annex 5, para 19	Yes, the coordinating/management entity for the POA is Korea Environment Corporation. and responsibility of the coordinating/management entity are clearly described in POA-DD.	Y
1.7. Is the Coordinating Entity a project participant authorized by all participating host countries DNAs involved and identified in the modalities of communication as the entity which communicates with the Board?	EB 55 Annex 38	In compliance with para 11 of EB 55/Annex 38, the modalities of communication with the EB shall be submitted. <del>CAR 03 raised.</del> CAR 03 closed.	<del>CAR 03 raised.</del> CAR 03 closed.
1.8. Are more than one CME involved in the programme	EB 55 Annex 38	KECO is the only CME involved in the programme.	Y
2. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for a minimum of 30 days, and the project design document and comments have been made publicly available	VVS Para. 35-38  Marrakech Accords, CDM Modalities, §40	Information on the global stakeholder process: <i>website:</i> <a href="http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKM3TBG57GFX12GCQ3EUT6B/view.html">http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/ZXAQM4XKM3TBG57GFX12GCQ3EUT6B/view.html</a> <i>Starting date and closing date</i> - 18 Nov 11 - 17	Y

Requirement	Means of Validation Reference	Comments	Conclusion/C ARs/ CLs
		Dec 11 <i>Number of comments received:</i> No comments. <i>How have the comments been addressed?</i> N/A	
3. The POA-DD is in accordance with the applicable CDM requirements for completing POA-DDs.	VVS Para. 63-64  Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	Yes, the POA-DD is in accordance with the applicable CDM requirements for completing POA-DDs. PP has correctly applied the latest template available i.e. CDM SSC-POA-DD Version 02.0 without modifying/adding headings or logo, format or font.	Y
4. The project participants shall submit a completed modalities of communication (MoC) Form	VVS Para 60-62 F_CDM_MOC form available on UNFCCC website	In compliance with para 72 of Project Standard, PP shall submit the modalities of communication (F_CDM_MOC form) with the EB.	Pending CAR#03 CAR 03 closed.

Table 2 POA-DD

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>A. General Description of Programme of activity</b>				
<b>A.1. Project Title</b>				
A.1.1. Does the used project title clearly enable the reader to identify the unique CDM-POA?	VVS Para.63-64 Guidelines for completing a CDM-POA-DD (POA-DD) section A.1	DR	The used project activity title “The program to improve energy independence of public sewerage system through biogas increased efficiency in Korea” is clear and unique and project title has not been changed during the validation process. However, this checklist question will be assessed based on final version of PDD.	<del>Pending to final PDD submission</del> Closed.
A.1.2. Is there an indication of a revision number and the date of the revision?	VVS Para.63-64 POA-DD section A.1	DR	CAR has been raised: CDM-SSC-POA-DD and the submitted CPA-DD does not reveal the exact date of the document in section A.1, only month and year as 11/2010 has been mentioned. The PP was requested to correct the format of the date as per the PoA DD template.  The webhosted CPA-DD is for changwon having title “Efficiency of sewage treatment plant of Changwon”, however the PP did not consider the CPA for the site visit and site visit was conducted for CPA located in Chuncheon City, having title “Installation of co-generation system in sewage treatment plant of Chuncheon”. The CME was requested to clarify this and the this new CPA –DD also does not reveal the exact date of document in section A.1.  For the CPA (of Changwon City) which was already webhosted, Option -1 was considered as the technology. However as per recent developments at the time of validation site visit there were some technology change expected in this CPA . The PP was still finalizing the technology for this CPA and this technology may be beyond the two options covered in this POA and may not be consistent to the technology requirement of PoA-DD. However for the other CPA (Chuncheon City) project plan was	<del>CAR#04</del> CAR#04 closed  For detailed discussion of the CAR, please refer to Annex 3 of this report.

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>finalized and the CPA was consistent to the technology details mentioned in the PoA-DD. Hence the validation site visit took place in this CPA (Chuncheon City). Thus the CAR 04 was closed.</p> <p>This approach was discussed and agreed with UN secretariat during post EB66 conference call and during follow up communication in March 2012.</p>	
A.1.3. Does the POA-DD clearly indicate the completion date of POA-DD	VVS Para.62-63 Guidelines for completing a CDM-POA-DD (POA-DD) section A.1	DR	The POA-DD clearly indicate the completion date of POA-DD.	Y
<b>A.2. Description of the small-scale programme of activities (POA):</b>				
A.2.1. Does the description of the proposed CDM programme of activity as contained in the POA-DD sufficiently cover all relevant elements accurately?	VVS Para.64 POA-DD section A.2 see also A.4, A.4.3 and B.3	DR	<p>Yes, the description in sections A.2, A.4, A.4.3 and B.3 of the proposed CDM programme of activity as contained in the POA-DD version 01 are sufficiently covered all relevant elements.</p> <p>Validation team has assessed the same in the following steps:</p> <p><b>1. General operating and implementing framework of POA</b></p> <p>The CDM programme activities (CPAs) included in the POA will be implemented in several urban local bodies of the republic of Korea. The programme of activities involves the installation of biogas recovery system and biogas power generation system in sewage treatment plants. Thus, the POA will include installation of heating/co-generation equipments in sewage treatment facilities and KECO will lead this program as 'Coordination / Managing Entity' (hereinafter referred to as CME).</p> <p>CAR has been raised:</p>	<p><del>CAR#05</del></p> <p>CAR#05 closed</p> <p>For detailed discussion of the CAR, please refer to Annex 3 of this report..</p>

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p>(i)Pls. submit the details of the technology used to improve the efficiency of the bio-gas recovery and utilization in sewerage treatment system. PP is also requested to provide the remaining lifetime assessment report inline to EB 50, Annex 15.</p> <p><b>2. Policy/measure or stated goal of the POA</b></p> <p>Ministry of Environment of Korea planned to enhance energy independence and reduce GHG emission of public sewerage system. For this purpose, the ministry set up a goal to enhance energy independence rate of public sewerage system to 18% by 2015, 30% by 2020 and 50% by 2030.<sup>4</sup></p> <p>To achieve this goal, Korea Environment Corporation (hereafter KECO) planned activity for introducing renewable energy. The object of the POA is introducing biogas recovery system and biogas power generation system to local sewage treatment plant in Korea. The program will provide a system transforming waste to energy for local sewage treatment plant. In this programme, Korea Environment Corporation will collaborate with each local government to introduce this program to local sewage treatment plant. Several projects were planned as CPAs like below; also more local sewage treatment facilities would be added to the CPA project.</p> <p>The objective of the programme will further assess based on on-site assessment.</p> <p><del>Pending due to site visit.</del> Site visit completed, found Ok.</p> <p><b>3. Confirmation that the proposed POA is a voluntary action by the coordinating/managing entity.</b></p> <p>This POA is a scheme developed by Korea Environment Corporation to introduce the efficiency improvement in biogas recovery and biogas power/co-generation system in local sewage treatment plant in Korea.</p> <p>National/local regulations regarding mandatory enforcements in Korea with respect to</p>	

<sup>4</sup> This policy goal is described in “Basic plan for improving energy independence” by Ministry of Environment of Korea.



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			waste management/local sewage treatment plant/renewable energy generation will be assessed based on on-site assessment. <del>Pending due to site visit.</del> Site visit completed, The assessment team confirmed that the POA is voluntary initiative by the CME. (POA	
A.2.2. Is all information provided consistent and in compliance with the actual situation or planning?	VVS Para.64-69 POA-DD section A.2 see also A.4, A.4.2 and B.3	DR	This will be verified during the site visit. <del>Pending site visit.</del> Site visit completed. Ok.	<del>Pending site visit</del> Site visit completed. Ok.
A.2.3. Is all information provided consistent with details provided in further sections of the POA-DD?	VVS Para.64-69 POA-DD section A.2	DR	Yes, all the information provided is consistent in further sections of POA- DD	Y
<b>A.3. Coordinating/managing entity and participants of SSC-POA:</b>				
A.3.1. Is the table required for the indication of project participants correctly applied?	VVS Para. 46 POA-DD section A.3	DR	Yes, the table required for the indication of project participants in section A.3 of POA-DD is correctly applied. As per section A.4 and Appendix 1 of POA-DD, Korea Environment Corporation is the only project participant and no other parties are involved in the proposed CDM programme activity.	Y
A.3.2. Is all information provided in consistency with details provided by further sections of the POA-DD (in particular annex 1)?	VVS Para. 46 POA-DD section A.3	DR	In section A.4 and Appendix 1 of POA-DD <sup>/1/</sup> , Information about the project participant is included with consistency with each other.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>A.4. Technical Description of the Programme of activity</b>				
<b>A.4.1. Location of the programme of activities</b>				
A.4.1.1. Does the information provided on the location of the programme allow for a clear definition identification of the boundary for the POA in terms of a geographical area, within which all CPAs included in this POA will be implemented?	VVSM Para.69	DR	Yes, section A.5 of POA-DD clearly defined the geographical location of the Programme of activities and states that all CPA as a part of POA would be implemented in several urban local bodies of the Republic of Korea. The boundaries of the Programme of Activity would be national boundaries of the Republic of Korea.	Y
A.4.1.2. Is the consideration of all applicable national and/or sectoral policies and regulations of each host country within the boundary evident and substantiated?		DR	<del>Pending due to site visit.</del> Site visit completed, found Ok	<del>Pending site visit</del> Ok
A.4.1.3. Is/are the Host Party(ies) stated?		DR	Yes, host party (Republic of Korea) is mentioned in section A.4.1.1.	Y
A.4.1.4. Do the project participants possess ownership or licenses which will allow the implementation of the	VVS Para.64--69	DR	PP is requested to submit the ownership or licenses by project owners under local regulations which will allow the implementation of the project at that site / those sites. The CME has submitted the MoUs signed with the each municipal body, which will be a part of the POA. This was checked by the assessment team.	<del>LAG</del> Closed

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
project at that site / those sites?				
A.4.1.5. Is the category(ies) of the programme of activity correctly identified?	VVS Para.64-69	DR	CAR- is raised: Section E.1 of POA-DD shall correctly mention the category (ies) of the programme of activity in line with Appendix B of FCCC/KP/CMP/2005/8/Add.1	<del>CAR#06</del> <del>CAR#06</del> closed. For detailed discussion of the CAR, please refer to Annex 3 of this report.
A.4.1.6. Is all information provided in compliance with actual situation or planning as available by the project participants?	VVS Para.64-69 EB 52 Para. 13	DR	This will be assessed based on on-site assessment. <del>Pending due to site visit.</del> Site visit completed, found Ok	<del>Pending to LAG</del> Closed
A.4.1.7. Is the table required for the indication of projected emission reductions correctly applied?	VVS Para.64-69	DR	NA	NA
A.4.1.8. Is it clearly mentioned if POAs applying more than one technology/ measure or more	Project Standard version 5.0, para 143 & 144.	DR	The POA involves a single methodology and multiple technologies. The Option 1 CPA utilises biogas to produce thermal energy in the boiler and the Option 2 CPA utilises biogas to produce electrical energy in a co-generation system.  PP was requested to provide a declaration that the technology would not be likely to	<del>CAR-07</del> <del>raised.</del>  CAR 07 closed.

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
than one methodology, if so, is the coordinating/ managing entity prepared a generic CPA for each technology/measure, each methodology and each combination			get substituted by other or more efficient technologies during the crediting period.  <del>CAR 07 raised.</del> CAR 07 closed.	For detailed discussion of the CAR, please refer to Annex 3 of this report.
<b>A.4.2. Description of a typical small-scale CDM programme activity (CPA)</b>				
A.4.2.1. Is it unambiguously stated which technology or measures are to be employed by the SSC-CPA?		DR	<p>In section B.2 of POA-DD the proposed technology/measures covered under the POA has been explicitly defined. It is clearly stated that the each CPA will be within the small scale threshold (45 MW<sub>thermal</sub> and /or 15 MW<sub>e</sub>) limit of Type I category. The following two types of technology/measures are covered under the PoA.</p> <p><u>Option 1: Supplying heat to facilities through fuel substitution from fossil fuel to biogas by retrofit of existing heat generating facility</u></p> <p><u>Type of measures:</u></p> <ul style="list-style-type: none"> <li>- Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>- Retrofit of existing heat generating facility is covered under option 1.</li> <li>- Supplying heat to facilities through fuel substitution from fossil fuel (LNG, Diesel etc.) to biogas covered under option 1.</li> </ul> <p><u>Capacity:</u></p> <ul style="list-style-type: none"> <li>-The total installed capacity of the technology/measures covered under option 1 will be less than or equal to 45 MW<sub>thermal</sub>.</li> </ul>	CAR#8 was raised and closed.

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			<p><u>Compliance with testing/certifications:</u></p> <ul style="list-style-type: none"> <li>- Renewable energy project of CPA will comply with national standards.</li> </ul> <p><u>Option 2: Displacing electricity by installing a new biomass co-generation system</u></p> <p><u>Type of measures:</u></p> <ul style="list-style-type: none"> <li>- Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>- Displacing use of national electricity by installing a new biogas cogeneration system.</li> <li>- Emission reduction from electricity will be only claimed. Thermal energy will not be claimed.</li> </ul> <p><u>Capacity:</u></p> <ul style="list-style-type: none"> <li>- The total installed capacity covered under option 2 will be less than or equal to 15 MW<sub>e</sub> and maximum electricity capacity of cogeneration will be less than or equal to 5MW<sub>e</sub> for Micro scale project activities.</li> </ul> <p><u>Compliance with testing/certifications:</u></p> <ul style="list-style-type: none"> <li>- Renewable energy project of CPA comply with national standards.</li> </ul> <p>On the basis of the above technology/measures, CPA will be included in the POA. The specifications of technology/measure including level of service and type of service, performance specifications including compliance with testing/certification defined in the PoA DD for both the options covered under the POA found to be in line with the paragraph 16 (c ) of the guidance EB74, Annex 5.</p> <p><del>The issue was raised in CAR-08. CAR 08 was closed.</del></p>	
A.4.2.2. Is the type and	VVS Para.64-69	DR	Yes, the type and the category of the project activities has been correctly identified and	CAR#8

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
category of project activities correctly identified and indicated?			indicated in the POA DD. <del>The issue was raised in CAR 08. CAR 08 was closed.</del>	was raised and closed.
A.4.2.3. Does the technical design of the project activity reflect current good practices?	VVS Para.64-69	DR	Yes, the technical design as mentioned in the webhosted POA DD reflect the current good practice.	Y
A.4.2.4. Does the implementation of the project activity require any technology transfer from Annex-I- countries to the host country (ies)?	VVS Para.64-69	DR	This will be verified by the assessment team during the site visit. <del>Pending site visit.</del> Site visit done. The assessment team concluded that no transfer of technology from a Annex 1 country to the host country has taken place.	<del>Pending site visit</del> Site visit done, found Ok.
A.4.2.5. Is the technology implemented by the project activity environmentally safe?	VVS Para.64-69	DR	As per the webhosted POA DD, the technology to be implemented in the project activity is environmentally safe, however, same would be verified during the site visit. <del>Pending site visit.</del> Site visit done, found Ok.	<del>Pending site visit</del> Site visit done, found Ok.
A.4.2.6. Is the information provided in compliance with actual situation or planning?	VVS Para.64-69	DR	To be verified during the site visit. <del>Pending due to site visit.</del> Site visit completed. OK	<del>Pending site visit</del> Site visit completed. OK
A.4.2.7. Does the project use state of the art technology and / or	VVS Para.64-69	DR	The project is using the state of art technology, however, same need to be verified during the site visit. <del>Pending due to site visit.</del> Site visit completed. OK	<del>Pending site visit</del> Site visit



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
does the technology result in a significantly better performance than any commonly used technologies in the host country?				completed. OK
A.4.2.8. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	VVS Para.64-69	DR	PP would be providing a declaration that the technology would not be likely to be get substituted by other or more efficient technologies during the crediting period.	<del>CL07</del> CL07 Closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.2.9. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	VVS Para.64-69	DR	The POA DD has indicated that "For effective education and training, the project representative will provide monitoring manual to each CPA implementer. Necessary hours of education/training will be determined according to experience and technical background of each person. Depending on the level of writing internal monitoring report, the project representative will individually decide whether he educates the CPA implementer or not."	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.2.10. Is information available on the demand and requirements for training and maintenance?	VVS Para.64-69	DR	Yes, requisite information would be provided by the CME to each CPA implementer for training and maintenance.	Y
A.4.2.11. Is a schedule available for the implementation of the project and are there any risks for delays?	VVS Para.64-69	DR	No there are no schedule available for the implementation of the project, considering that the project activity is going to be implemented under POA and thus, there are no risk for delays.	Y
A.4.2.12. Are there clear and unambiguous eligibility criteria for the inclusion of a SSCCPA into the POA?	VVS Para.64-69	DR	PP was requested to clarify why all the Eligibility criteria were not complete as per the requirement of Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities	<del>CAR#*8(a)</del> CAR#*8(a) closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.2.13. Does the information provided clearly defined that each CPA has only one host party.	Project Standard version 5.0, para 146 & VVS para 64-69.	DR	The information provided clearly defined that each CPA has only one host party.	Y
A.4.2.14. Is it confirmed by coordinating/	Project Standard version 5.0, para	DR	It is confirmed by coordinating/ managing entity that the CPA is neither registered as a CDM project activity nor included in another registered POA.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
managing entity that the CPA is neither registered as a CDM project activity nor included in another registered POA.	150			
<b>A.4.3. Description of how the anthropogenic emissions of GHG by sources are reduced by a SSC-CPA below those that would have occurred in the absence of the registered POA (assessment and demonstration of additionality of the POA)</b>				
A.4.3.1. Is it evident and clearly documented that the proposed POA is a voluntary coordinated action?	VVS Para 159 VVS Para.72d/102 EB 74, Annex 5	DR	The POA is a voluntary action, this was confirmed by the assessment team.	Y
A.4.3.2. Has it been demonstrated that in the absence of CDM none of the CPA would occur	EB 74, Annex 5 para 7	DR	Yes, POA has outlined the procedures to demonstrate that in the absence of CDM none of the CPA would occur.	Y
A.4.3.3. Are the CPAs included in the POA all microscale projects	EB 74 Annex 5 para 8	DR	The CPA will include small scale as well as micro scale project activities. The one CPA that will be submitted with the POA – DD is a micro scale project, POA”	Y
A.4.3.4. Are the CPAs included in the POA under small scale project activities?	EB 74, Annex 5 para 9	DR	CPAs included in the POA are under micro scale project activities, however, some of the CPA might be small scale project activities and POA –DD has the provision to demonstrate the additionality in case if a CPA is a small scale or in case if it is a microscale project activity, taking into consideration of relevant guidance viz. “Guidelines for demonstrating additionality of renewable energy project ” and “Attachment A to Appendix B of the simplified modalities and procedures for SSC CDM project activities.	Y
A.4.3.5. Are the CPAs	EB 74 Annex 5	DR	No, all the CPAs will be under small scale or micro scale project activity.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
included in the POA under large scale project activities?	para 10			
A.4.3.6. Has the PP demonstrated the additionality as per the relevant additionality-related guidelines, tools	EB 74, Annex 5 para 11	DR	Yes, PP has demonstrated the eligibility criteria for additionality for the CPAs in the POA – DD in order to ensure that the guidance's for additionality , tools etc. Eligibility criteria are not complete as per EB63, annex 3 CAR 08 closed.	<del>Pending CAR#08(a)</del>  CAR 08 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.3.7. Has the CME included all the eligibility criteria in each CPA design documents?	EB 74, Annex 5 para 11	DR	PP is requested to kindly clarify, the inconsistency in the section B.3 of generic CPA – DD, where the eligibility criteria for assessing & demonstrating the additionality  CAR 08 closed.	<del>Pending CAR</del> CAR 08 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.3.8. Is the POA involves combination of technologies /measures/ and /or methodologies?	EB 74, Annex 5 para 12	DR	The POA involves two types of CPA, as shown below-  <b>Option 1:</b> Fuel substitution from fossil fuel to biogas by retrofit of existing heat generating facility. <b>Option 2:</b> Displacing electricity by installing a new biomass co-generation system.  Thus, there are two technologies; one is for generation of thermal energy using biogas and the other one is generation of electricity using biogas. However both the technologies are covered under the same methodology AMS IC.	Y.
A.4.3.9. Is it evident and substantiated that this voluntary coordinated action would not be implemented in the absence of the POA?	VVS Para.100/98	DR	PP is requested to kindly evident and substantiated that this voluntary coordinated action would not be implemented in the absence of the POA. CAR 08 closed.	<del>CAR#8(b)</del> CAR 08 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.3.10. Is it evident and substantiated that in case the POA implements a mandatory policy or regulation this would not be enforced otherwise?	VVS Para.108b	DR	PP is requested to kindly substantiate with documentary evidence and demonstrate the CDM awareness, prior CDM consideration and serious CDM consideration and parallel/continual effort for CDM	<del>CAR#09</del> CAR 09 closed. For detailed discussion of the CAR, please

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
				refer to Annex 3 of this report
A.4.3.11. Is it evident and substantiated that in case the POA implements a mandatory policy or regulation that is enforced the POA will lead to a greater level of enforcement?		DR	Not Applicable	NA
<b>A.4.4. Eligibility Criteria including Operational, management and monitoring plan for the programme of activities (POA)</b>				
A.4.4.1. Has the boundary of the CPA being clearly defined for CPA inclusion?	EB 74, Annex 5 Para 16(a)	DR	PP is requested to clarify, why the boundary of the CPA is not being clearly defined for CPA inclusion in the POA –DD. CAR 10 closed.	<del>CAR#10(a)</del>  CAR 10 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.2. Has the CME included the	EB 74, Annex 5 Para 16(b)	DR	PP is requested to clarify how they will ensure the elimination of double counting of the emission reduction.	<del>Pending CAR#02</del>



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
provisions to avoid double counting of the emission reduction?				CAR 02 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.3. Has the CME clearly included the specifications of technology/measure including the level and type of service	EB 74, Annex 5 Para 16(c)	DR	Yes, the CME has clearly included the specifications of technology/measure including the level and type of service. CAR 14 was raised asking PP to elaborate the project details including base line and pre project scenario, the CAR 14 was satisfactorily addressed by the CME and was closed by the assessment team.	<del>CAR#14</del> CAR 14 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.4. Has the CME included the conditions to check the start date of the CPA as per the start date definition of CPA	EB 74, Annex 5 Para 16(d)	DR	PP was requested to clarify asking, why they haven't included the conditions to check the start date of the CPA as per the start date definition of CPA. CAR 10 was raised.	<del>CAR#10(b)</del> CAR 10 closed. For detailed discussion of the CAR, please

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
				refer to Annex 3 of this report
A.4.4.5. Are there multiple methodologies involved in the POA	EB 74, Annex 5 para 16(e)	DR	No, the POA does not involve multiple methodologies.	Y
A.4.4.6. Has the CME included consideration for the CPAs to meet the requirements of the latest available Standard of Additionality	EB 74, Annex 5 para 16(f)	DR	PP was requested to clarify why they haven't included all the eligibility criteria for the CPA inclusion as per "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities"	<del>CAR#10(e)</del> CAR closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.7. Has the CME included the specific requirements of the conditions of local stakeholder and environment impact analysis for each CPA	EB 74, Annex 5 para 14(g)	DR	PP was requested to clarify why they haven't included the specific requirements of local stakeholder and environment impact analysis in the eligibility criteria as per Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities.	<del>CAR#10(d)</del> CAR closed. For detailed discussion of the CAR, please refer to Annex 3 of

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
				this report
A.4.4.8. Has the CME identified the target group correctly?	EB74, Annex 5 para 14(i)	DR	This is not applicable	NA
A.4.4.9. Has the CME correctly provided the sampling plans and followed the correct guidelines/standards of sampling?	EB 74, Annex 5 para 14(j)	DR	This is not applicable	NA
A.4.4.10. Has the CME included the provisions of check for the micro scale or small scale threshold criteria throughout the crediting period?	EB 74, Annex 5 para 14(k)	DR	PP was requested to clarify why they haven't included all the eligibility criteria for the CPA inclusion as per "Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities"	<del>CAR#10(e)</del> CAR 10 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.11. Has the CME included the provisions of check for debundling in case of each CPA?	EB 74, Annex 5 para 14(l)	DR	Yes, the CME has included the provision to check for the debundling in case of CPA in the POA- DD	Y
A.4.4.12. Has the CME affirmed that funding from Annex I parties,	EB 74, Annex 5 para 14(h)	DR	The CME was requested to clarify why they haven't included the affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance. CAR 10 was raised.	<del>CAR#10(f)</del> CAR 10 closed. For

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
if any, does not result in a diversion of official development assistance				detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.13. Is there a clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies made available to the DOE at the time of validation of the POA	EB 74, Annex 5 para 17	DR	Yes, the roles & responsibilities of personnel involved in the inclusion of CPAs has been defined in the POA- DD	Y
A.4.4.14. Are there records of arrangements for training and capacity development for personnel made available to the DOE at the time of validation of the POA;	EB 74, Annex 5	DR	Yes, PP will provide the records for training & capacity development.	Y
A.4.4.15. Are there established procedures for technical review of inclusion of CPAs	EB 74, Annex 5	DR	CAR 17 was raised as follows-  1. It is unclear as to which guideline has been followed by the PP for the Eligibility criteria for enrolling the CPA in the POA. PP is requested to clearly mention the guidelines referred. If EB 70 Annex 5 has been used then PP is requested to justify	<del>CAR 17 raised.</del> CAR 17 closed. For

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
made available to the DOE at the time of validation of the POA			how the point no 19 of EB 70, Annex 5 has been used ? 2. What about checking the start date of the CPA with POA start date. CPA cannot start before the POA as per the requirement of the guideline, PP is requested to justify how this point have been addressed? 3. What is the basis of start date of the POA, PP is also requested to provide documentary evidences. <del>CAR 17 raised.</del> CAR 17 closed as the CME successfully addressed all the issues. For more details please refer to Annex 3 of this report.	detailed discussion of the CAR, please refer to Annex 3 of this report
A.4.4.16. Is there 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)	EB 74, Annex 5		Yes, procedures are been in place.	Y
A.4.4.17. Records and documentation control process for each CPA under the POA, made available to the DOE at the time of request for inclusion of the CPA		DR	Yes, POA- DD defines the procedures for records and documentation process for each CPA. However, same need to be verifying during the site visit. <del>Pending site visit.</del> Site visit done, found ok.	<del>Pending site visit.</del> Site visit done, found ok

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.4.18. Measures for continual improvement of the POA management made available	EB 74, Annex 5	DR	POA The CME operating manual was checked by the assessment team, the CME has adequately covered the continual improvement procedures in the operating manual, this was checked by the assessment team,	Y
A.4.4.19. Is it checked that the POA document contains provisions that CPAs are to be included in the POA on the basis of confirmation on the eligibility of CPAs, where applicable undertaking sample-based checks in accordance with the approved guidelines/standard from the Board	EB 74, Annex 5		Yes, this was checked and was found Ok.	Y
A.4.4.20. If sampling is involved Does the sampling plan present a reasonable approach for obtaining unbiased reliable estimates of the variables?	EB 74 Annex 5 EB69, Annex 5	DR	No sampling is involved in the POA	NA



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.4.21. Is the population clearly defined, and how well does the proposed approach to developing the sampling frame represent that population?	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA	NA
A.4.4.22. Is the proposed sampling approach clear?	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA	NA
A.4.4.23. Is the proposed sample size adequate to achieve the minimum confidence/precision requirements? Is the ex ante estimate of the population variance needed for the calculation of the sample size	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA	NA

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
adequately justified				
A.4.4.24. Is the sample representative?	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA	NA
A.4.4.25. Is the data collection/measurement method likely to provide reliable data given the nature of the parameters of interest and project, or is it subject to measurement errors?	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA	NA

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.4.26. Are the procedures for the data measurements well defined and do they adequately provide for minimizing non-sampling errors?	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA	NA
A.4.4.27. Does the frame contain the information necessary to implement the sampling approach?	EB 74 Annex 5 EB69 Annex 5	DR	No sampling is involved in the POA.	NA
A.4.4.28. In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA, does the monitoring plan provide a transparent system to ensure that no double accounting occurs and that the status of verification can be determined any time for each CPA?	EB 74 Annex 5 EB69 Annex 5	DR	Yes, procedures are there to ensure that no double accounting occurs and that the status of verification can be determined any time for each CPA.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
A.4.4.29. If the version of methodology/ies applied by the POA is revised or replaced, subsequent to being placed on hold then :Are the eligibility criteria to the requirements of the revised or new methodology/ies with immediate effect and include them in a new version of the POA DD	EB 74 Annex 5		No action is required since the version of methodology applied by the POA is revised without being placed on hold or is withdrawn for the purpose of inclusion in a consolidated methodology.	Y
<b>A.4.5. Public funding of the small-scale project activity</b>				
A.4.5.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	POA-DD A.4.5	DR	This will be checked during the site visit by the assessment team. <del>Pending site visit.</del> Site visit done, found ok.	<del>Pending site visit.</del> Site visit done, found ok.
A.4.5.2. Is all information provided consistent with the details given in remaining sections of the POA-DD (in particular	POA-DD A.4.5	DR	Yes, all information provided is consistent with the details given in remaining sections of the POA-DD.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
annex 2)?				
A.4.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	POA-DD A.4.5	DR	There is no public funding involved in this POA, hence this is not applicable. The declaration letter <sup>/13/</sup> regarding no public funding as submitted by the CME was checked by the assessment team and was accepted.	Y
<b>B. Duration of the programme of activities</b>				
B.1. Starting date of the programme of activities				
B.1.1. Is the programme's starting date clearly defined and reasonable?	VVS Para. 112a-c POA-DD Section D	DR	As per section B.1 of POA-DD, version 01, the starting date of the programme of activities (POA) is chosen as 26/04/2011.  Following CAR 11 was raised:  1. The CME was requested to substantiate the starting date of the programme of activities (POA) with verifiable evidence.	<del>CAR#11(a)</del> CAR 11 was closed. For detailed discussion of the CAR, please refer to Annex 3 of this report.
B.1.2. Is it clear from the information that the start date of any CPA on or after the start date of the POA.	VVS Para. 193 POA-DD Section D	DR	Yes, the start date of the CPA is after the start date of POA.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>B.2. Length of the programme of activities (POA)</b>				
B.2.1. Is the assumed length of the POA clearly defined by the coordinating managing entity and reasonable (max 28 years)?	VVS Para. 112a-c POA-DD Section D	DR	Yes, assumed length of the POA is clearly defined by the coordinating managing entity and reasonable as 28 years.	Y
B.2.2. Does the project's operational lifetime exceed the crediting period.	VVS Para. 112a-c POA-DD Section D	DR	The project's operational lifetime does exceed the crediting period.	Y
<b>C. Environmental Analysis</b>				
<b>C.1. Definition of the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken:</b>				
C.1.1. Is it defined whether the environmental analysis takes place at POA or CPA level?	VVS Para. 134/135/199/200 POA-DD Section E	DR	Yes, in section C.1, it is defined that the environmental analysis takes place at POA level. Requirement of host country regulations for mandatory EIA study for the project type will assess based on on-site assessment and interviews.  However, CAR 11-was been raised:  In section C.1, the conditions mentioned for EIA study for SSC-CPA is contracting with the description provided in section C.3. The CME was requested to clarify.	<del>CAR#11(b)</del> CAR 11 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
C.1.2. Is the choice whether the environmental analysis takes place at	VVS Para. 134/135/199	DR	There are no regulations of enforcement of public hearing or local consultation on modification or retrofitting project in Korea. Therefore the project participants considered appropriate to carry out the local stakeholder consultation at POA level..	Pending to LAC Closed



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
POA or CPA level justified?	POA-DD Section E		This was confirmed by the Local Assessor for the host country,	
<b>C.2. Documentation on the analysis of the environmental impacts of the POA, including transboundary impacts:</b>				
C.2.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	VVS Para. 134/135/199 POA-DD Section E	DR	There are no regulations of enforcement for carrying out Environmental Impact Assessment (EIA) for such kind of projects.. This was confirmed by the Local Assessor for the host country,	Pending to LAC Closed
C.2.2. Has the analysis of the environmental impacts of the project activity been sufficiently described?	VVS Para. 134/135/199 POA-DD Section E	DR	CAR 11 was raised asking the CME to include the details of EIA carried out. The CME confirmed that EIA is not required for this PoA and CAR 11 was closed.	CAR#11(e) CAR 11 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
C.2.3. Will the project create any adverse environmental effects?	VVS Para. 134/135/199 POA-DD Section E	DR	No, the project does not lead to any adverse environmental effects.	Y
C.2.4. Were trans-boundary environmental impacts identified in the analysis?	VVS Para. 134/135/199 POA-DD Section E	DR	There were no trans boundary environmental impacts envisaged in the project activity.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>C.3. Please state whether in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA of the POA:</b>				
C.3.1. Have the identified environmental impacts been addressed in the project design sufficiently?	VVS Para. 134/135/199/200 POA-DD Section E	DR	The project does not lead to any adverse environmental effects.	Y
C.3.2. Does the project comply with environmental legislation in the host country?	VVS Para. 134/135/199 POA-DD Section E	DR	The project does not lead to any adverse environmental effects.	Y
C.3.1. Is, per host country laws/regulations, an environmental impact assessment necessary for a typical CPA?	VVS Para. 134/135/199 POA-DD Section E	DR	As per Host Country regulation environmental impact assessment is not necessary for a typical CPA.	Y
<b>D. Stakeholders' comments</b>				
<b>D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:</b>				
D.1.1. Is there a clear statement whether the stakeholder comments will be invited at POA or CPA level?	VVS Para. 139a POA-DD Section F	DR	Yes, in section D.1 of POA-DD version 01, it is clearly mentioned that the stakeholder comments were invited at POA level prior to the publication of the POA-DD on the UNFCCC website.	Y
D.1.2. Is the choice justified in a clear and reasonable manner?	VVS Para. 139a POA-DD Section	DR	Yes, the choice of accomplishing the local stakeholder consultation process is transparently and clearly justified as the geographical boundary of the POA is the whole country and the POA is coordinated on a national level by the KECO, Hence, the project participant (KECO) considered appropriate to carry out the local stakeholder	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
	F		consultation at POA level.	
D.1.3. If the stakeholder comments will be invited at POA level, is there sufficient information provided, on how comments by local stakeholders were invited?	VVS Para. 139 POA-DD Section F	DR	<p>Yes, the stakeholder comments were invited at POA level and section D.2 provides detailed information on how comments by local stakeholders were invited.</p> <p>The project participant (KECO) organised several events such as workshops, presentations to inform a wide range of stakeholders and to receive consultation of stakeholders about the programme. In addition, the KECO informed the stakeholders about the program on its website as well. Thus, it is confirmed that local stakeholder consultations process covered large group of peoples through different means.</p> <p>However, CAR was raised:</p> <ol style="list-style-type: none"> <li>1. The CME was requested to provide the LINK of the webpage where detailed information's about the POA is available for understanding of stakeholders.</li> <li>2. The CME was requested to provide the English translation of the web site that has been used to invite comments from the local stakeholders.</li> <li>3. The CME was requested to submit all evidences to support the local stakeholder consultation process</li> </ol>	<p><b>CAR#12</b></p> <p>CAR 12 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report</p>
D.1.4. If the stakeholder comments will be invited at POA level, is there a summary of the contents?	VVS Para. 139b POA-DD Section F	DR	As per section D.3 of POA-DD, No comments have been received by KECO following the call for comments on their website.	<del>Pending to</del> <b>LAC</b> Closed
D.1.5. If the stakeholder comments will be invited at POA level, is there sufficient information provided, on how due account was taken of	VVS Para. 139c POA-DD Section F	DR	As per section D.4 of POA-DD, No comments have been received by KECO following the call for comments on their website.	<del>Pending to</del> <b>LAC</b> Closed

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
any comments received?				
<b>D.2. Brief description how comments by local stakeholders have been invited and compiled</b>				
D.2.1. Have relevant stakeholders been consulted?	VVS Para. 139a POA-DD Section F	DR	Yes, this has been done. The related documents were checked by the assessment team.	<del>Pending to LAG</del> Closed
D.2.2. Have appropriate media been used to invite comments by local stakeholders?	VVS Para. 139a POA-DD Section F	DR	Yes, The project participant (KECO) organised several events such as workshops, presentations to inform a wide range of stakeholders and to receive consultation of stakeholders about the programme. In addition, the KECO informed the stakeholders about the program on its website as well. Thus, it is confirmed that local stakeholder consultations process covered large group of peoples through proper media for communications.	Y
D.2.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	VVS Para. 139b POA-DD Section F	DR	There are no regulations of enforcement of public hearing or local consultation on modification or retrofitting project in Korea. Therefore the project participants considered appropriate to carry out the local stakeholder consultation at POA level.. This was confirmed by the Local Assessor for the host country,  However, the stakeholders consultation process has been carried out in the POA Level.	<del>Pending to LAG</del> Closed
D.2.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	VVS Para. 139b/c POA-DD Section F	DR	Yes, local stakeholder consultation process is described transparently in section D of POA-DD, version 01.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>D.3. Summary of the comments received</b>				
D.3.1. Is a summary of the received stakeholder comments provided?	VVS Para. 139b POA-DD Section F	DR	As per section D.3 of POA-DD, No comments have been received by KECO following the call for comments on their website.	<del>Pending to LAG</del> Closed
<b>D.4. Report on how due account was taken of any comments received</b>				
D.4.1. Has due account been taken of any stakeholder comments received?	VVS Para. 139c POA-DD Section F	DR	As per section D.4 of POA-DD, No comments have been received by KECO following the call for comments on their website.  However, same will be assessed based on on-site assessment.	<del>Pending to LAG</del> Closed
<b>E. Application of a baseline and monitoring methodology to a typical SSC-CPA</b>				
<b>E.1. Title and reference of the approved SSC baseline and monitoring methodology applied to SSC-CPA included in the POA</b>				
E.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	VVS Para.72b.86/87/89/92 POA-DD section B.3 EB65 Annex03	DR	Yes, the version, title and the reference number of the applied baseline and monitoring methodology AMS I C, version 19 has been clearly indicated in the POA-DD.	Y
E.1.2. Is the applied version the most recent one and / or is this version still applicable?	VVS Para.81/89/92/90/91 POA-DD section B.3	DR	AMS I C, version -19 is the latest version of the applied methodology considered in the POA – DD.	Y
E.1.3. Is the applied SSC	VVS Para.92/102	DR	AMS I C, version 19 is an approved methodology by the board for use in the POA.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
methodology approved by the board, for use in POA?	POA-DD section B.3			
E.1.4. Is there any specific guidance and or clarification provided by the board on this methodology/tool? If yes, is this correctly applied	VVS Para.92/102 POA-DD section B	DR	Not Applicable.	NA
<b>E.2. Justification of the choice of the methodology and why it is applicable to a SSC-CPA</b>				
E.2.1. Is the applied methodology considered the most appropriate one?	VVS Para.73	DR	The applicability criteria as mentioned in the webhosted POA – DD are not in line with the applied methodology AMS I C, version 19. Thus CAR 13 was raised. However the CME successfully addressed all the issues and CAR 13 was closed.	<del>CAR#13 (a)</del> CAR 13 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
E.2.1. Does the SSC methodology account for leakage in the context of a SSC-CPA?	VVS Para.74	DR	Not applicable.	NA
E.2.2. Is there application of multiple small-scale	EB65 Annex03	DR	The project activity uses a single methodology AMS IC.	Y



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
(SSC) CDM methodologies				
E.2.3. Is the discussion in the POA-DD in conformance with all applicability criteria of the applied methodology?	VVS Para.74-76,77 POA-DD section B	DR	The discussion in the POA-DD is in conformance with all applicability criteria of the applied methodology.	Y
<b>E.3. Description of the sources and gases included in the SSC-CPA boundary</b>				
E.3.1. Does the SSC-CPA boundary include the physical and geographical location where the programme activities take place ?	EB61 Anne21	DR	The SSC-CPA boundary is not in accordance with those of the project boundary description as per AMS I C. PP is requested to clarify. Moreover, there is not depiction of project boundary for the POA. <del>CAR 13 raised.</del>  The CME addressed all the issues raised under CAR 13 and CAR 13 was closed.	<del>CAR#13(c)</del>  CAR 13 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
E.3.2. Are all sources and gases within the boundary considered in a clear manner?		DR	Yes, all the sources and gases within the boundary has been described clearly in the POA	Y
E.3.3. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by /		DR	This will be verifying during the site visit. <del>Site visit pending.</del> Site visit done, found ok.	<del>Site visit pending.</del> Site visit done, found ok.

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
indication included to the POA-DD?				
E.3.4. Are the project's geographical boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	VVS Para.83-85	DR	The project's geo-graphical boundaries and the project's system boundaries (components and facilities used to mitigate GHGs) are clearly defined	Y
<b>E.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:</b>				
E.4.1. Have all technically feasible baseline scenario alternatives to the POA been identified and discussed by the POA-DD? Why can this list be considered as being complete?	VVS Para.72b.87/89/92	DR	<p>CAR 14 was raised as follows-</p> <ul style="list-style-type: none"> <li>i. The discussion on the identification of the baseline scenario is not comprehensive and transparently described in the POA-DD, under section E.4. The discussion on the preproject scenario and the project scenario is not transparently discussed in the POA – DD for scenario 1 &amp; scenario -2..</li> <li>ii. In case of scenario 1 – POA – DD should clearly demonstrate the pre-project scenario and the project scenario. Also , the discussion of possible alternative should be discussed separately for scenario 1 &amp; scenario -2.</li> <li>iii. The POA-DD should cite the specific para/ guidance's of the applied methodology AMS I C, while discussing the baseline scenarios for scenario 1 &amp; 2.</li> <li>iv. Moreover, under section E.4 of POA-DD, it has been mentioned that “The scenario of „Continuation of the current situation”; as discussed in the barrier analysis above represents the choice in the business as usual scenario in the sewage treatment facilities in Korea”, so it is not clear where the barrier analysis came into picture while discussing the identification of baseline scenarios.</li> </ul> <p>the CME was requested to demonstrate with verifiable evidences that the continuation of current practice is the most plausible baseline scenario.</p>	<p><del>7.1</del> CAR 14</p> <p>CAR 14 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report</p>

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
E.4.2. Does project identify correctly and exclude those options not in line with regulatory or legal requirements?	VVS Para.72b.87/89/92	DR	This is not applicable to this POA. This POA involves small scale and micro scale CPAs. The baseline scenario identification is in line with the applied methodology AMS IC.	Y
E.4.3. Have applicable regulatory or legal requirements been identified?	VVS Para.72b.87/89/92	DR	Yes, the applicable regulatory or legal requirements been identified.	Y
E.4.4. Does the POA-DD identify the most likely baseline scenario in absence of the project activity?	VVS Para.72b/97	DR	Yes, the POA-DD identify the most likely baseline scenario in absence of the project activity	Y
E.4.5. Is this identification supported by official and/or verifiable documents (e.g. studies, web pages, certificates, etc)?	VVS Para.97	DR	Yes, this is identification supported by official and/or verifiable documents (e.g. studies, web pages, certificates, etc	Y
E.4.6. Is the identified baseline scenario in line with regulatory or legal requirements?	VVS Para.72b.87/89/92	DR	This has been included in POA DD and was found to be Ok.	Y
<b>E.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of a typical SSC-CPA, included in a registered POA (assessment and demonstration of additionality):</b>				
E.5.1. Are the key criteria and data for assessing additionality of a SSC-CPA that is to be	VVS Para 158 EB 74 Annex 5	DR	The key criteria and data for assessing additionality of a SSC-CPA has been included into the POA clearly and unambiguously stated.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
included into the POA clearly and unambiguously stated?				
E.5.2. Are the key criteria and data for assessing additionality of a SSC-CPA that is to be included into the POA based on the additionality assessment in section E.5.1 of the POA-DD?	EB 74 Annex 5	DR	This has been included in POA DD and was found to be Ok.	Y
E.5.3. Is the choice of the criteria justified, based on the analysis in section E.5.1 of tepee-DD?	VVS Para.100/98	DR	This has been included in POA DD and was found to be Ok.	Y
E.5.4. Does it become evident how these criteria would be applied to assess the additionality of a typical CPA at the time of inclusion?	VVS Para. 118	DR	<p>The CPA planned under this POA is either of microscale or small scale category. The POA - DD, indicated that the additionality for each CPA would be demonstrated through-</p> <p>As per "Guidelines for Demonstrating Additionality of Microscale Project Activities"(Version 5.0)" EB 73 Annex 13</p> <p>Or as per EB 68 Annex 27 "Guidelines for Demonstration of Additionality of Small-Scale Project Activities"(Version 09.0), (whichever is applicable).</p>	Y
E.5.5. Is this information incorporated into the specific CDM-SSC-		DR	Yes the information incorporated into the specific CDM-SSC-CPA-DD is a "real case". CAR 18 was raised as follows-	<del>CAR 18</del> raised. For detailed

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
CPA-DD ("real case")?			<p>3. In the Economic Analysis sheet, in tab "basic parameter", cell no D33, PP has calculated electricity generated from biogas co-generation in KW/year. The calculation should be in kWh/year.</p> <p>4. PP is requested to provide the POA DD and generic CPA DD using the latest VVS template as available in UNFCCC website.</p> <p><del>CAR 18 raised.</del></p> <p>The CME satisfactorily addressed all the issues raised under CAR 18 and CAR 18 was closed.</p>	<p>discussion of the CAR, please refer to Annex 3 of this report</p> <p>CAR 18 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report</p>
E.5.6. If the starting date of the programme activity is before the date of validation, is evidence available to prove that incentive from the CDM was seriously considered in the decision to proceed with the programme activity?	VVS Para.108	DR	<p><i>The start date of POA – DD is prior to the date of validation .</i></p> <p>(i) PP is requested to substantiate the start date of POA .</p> <p><i>(ii) PP is requested to provide the evidence in support of to prove that incentive from the CDM was seriously considered in the decision to proceed with the programme activity</i></p> <p>(iii) PP is requested to kindly justify how the simple cost analysis is appropriate in context to the current project activities, since there are source of income apart from CDM revenue. Also, PP is requested to kindly correct and use the terminology for Investment analysis as per the Attachment A to Appendix B.</p> <p>(iv) PP is requested to kindly justify the key criteria and data for assessing the additionality of a SSC-CPA under section E.5.2 of POA – DD.</p> <p>(v) PP is requested to kindly justify the paragraphs of AMS I C, mentioned against</p>	<p><del>CAR#14(b) raised.</del></p> <p>CAR 14 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report</p>

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			option 1 & option 2 under section E.6.2. Also, please clarify why the PP hasn't considered the estimation of the baseline efficiency in line to AMS I C.  The CME satisfactorily addressed all the issues raised under CAR 14 and CAR 14 was closed..	
E.5.7. Is a complete list of barriers developed that prevents the project activity to occur?	VVS Para 127a EB 50 Annex 13	DR	Not applicable.	NA
E.5.8. Does this list include at least one of the following barriers?	VVS Para. 124	DR	Not applicable.	NA
E.5.9. Does the discussion sufficiently take into account relevant national and/or sectoral policies?	VVS Para. 126a/b	DR	Not applicable.	NA
E.5.10. Is transparent and documented evidence provided on the existence and significance of these barriers?	VVS Para. 126a/b	DR	Not applicable.	NA
E.5.11. Is it appropriately explained how the approval of the project activity will help to overcome the identified barriers?	VVS Para. 126a/b		Not applicable.	NA



Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>E.6. Estimation of Emission reductions of a CPA</b>				
<b>E.6.1. Explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical CPA</b>				
E.6.1.1. Is it explained how the procedures provided in the methodology are applied?	VVS Para. 74/75/76	DR	<p>(a)PP is requested to kindly use the latest available version of “tool to calculate the emission factor for electricity system” as available at UNFCCC website in the POA- DD while determining the emission factor and also to update the relevant steps as per the latest tool. PP is requested to provide the backup sheet for the analysis of emission factor calculation.</p> <p>(b)No information on leakage has been provided as per para 47 &amp; 48 of AMS I C ,in the POA- DD, under section E.6.3</p> <p>(c)While describing the baseline emission and project emission calculation, PP is requested to kindly provide the reference of the specific para of the applied methodology AMS I C. Moreover, the equation described for Option 2 is not found to be in line to the methodology, please clarify. Please also include the project emission from the AMS III H component as per para 13 of AMS I C version 19.The emission reduction equation is found to be not in line with the methodology AMS I C, para 49, please clarify.</p> <p>The CME satisfactorily addressed all the issues raised under CAR 15 and CAR 15 was closed.</p>	<del>CAR 15 raised.</del> CAR 15 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report
E.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	VVS Para. 97	DR	<p>CAR#16(c) In section E.7 (D.7.1) following information has not been clearly described as per CDM SSC POA – DD and CDM – SSC – PDD guideline:</p> <ol style="list-style-type: none"> <li>(1) Measuring methods and procedures, frequency,</li> <li>(2) Specification of measurement equipment to be used(accuracy)</li> <li>(3) Calibration frequency</li> <li>(4) Data archiving etc.</li> </ol>	<del>CAR 16 raised.</del>  CAR 16 closed. For detailed discussion of the CAR,

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
			The CME satisfactorily addressed all the issues raised under CAR 16 and CAR 16 was closed.	please refer to Annex 3 of this report
E.6.1.3. Where there is an option between different equations or parameters, has the methodological choices for the project been explained, have they been properly justified and are they correct?	VVS Para.95,96	DR	Yes. All the methodological choices have been clearly defined.	Y
<b>E.6.2. Equations, including fixed parametric values, to be used for calculation of emission reductions of a SSC-CPA:</b>				
E.6.2.1. Are the formulae required for the determination of emission reductions correctly presented, enabling a complete identification of parameters to be used and / or monitored?	VVS Para. 96	DR	PP was requested to provide emission reduction calculation backup spreadsheet. The CME satisfactorily addressed all the issues raised under CAR 15 and CAR 15 was closed.	<del>CAR 15 raised.</del>  CAR 15 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
E.6.2.1. Are the equations, including fixed parametric values, to be used for calculation of emission reductions of a SSCCPA, completely presented?	VVS Para. 96	DR	Yes, this has been completely presented.	Y
<b>E.6.3. Data and parameters that are to be reported in CDM-SSC-CPA-DD form</b>				
E.6.3.1. Is the list of parameters presented in section considered to be complete with regard to the requirements of the applied methodology?	VVS Para. 99/100	DR	<p>PP is requested to kindly why the following information is not included in the monitoring plan for CPA – In line to the AMS I C, version 19, para 51 (c)” In case of the project activity involves the replacement of equipment “ the related information on scrapping should be clearly reflected in the monitoring plan of POA – DD.</p> <p>f. The monitoring /recording frequency is not defined inline to the monitoring methodology AMS I C.</p> <p>g. PP is requested to clarify why COD has been included in the data to be monitored.</p> <p>h. PP is requested to clarify regarding the flaring system that would be installed at the project site.</p> <p>(i). Please clarify the ex-ante approach for determining the baseline efficiency for the project activities and please demonstrate how the <b><i>ηBL,cogen</i></b> will be determined in accordance with paragraph 28 &amp; 29 of AMS I C, ver 19.</p> <p>j Please clarify why the parameter “volume of waste water treated in baseline waste water treatment “ is included under data &amp; parameter to be monitored</p> <p>The CME satisfactorily addressed all the issues raised under CAR 15 and CAR 15 was closed.</p>	<p><del>CAR 15 raised.</del></p> <p>CAR 15 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report</p>
E.6.3.2. Is all the data derived from official data sources or	VVS Para. 97-100.	DR	Yes, this has been correctly quoted.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
replicable records and have these been correctly quoted?				
E.6.3.3. Is all the data appropriate and correctly applied to the CDM POA-DD	VVS Para. 97-100.	DR	Yes, this has been correctly applied.	Y
<b>E.7. Application of the monitoring methodology and description of the monitoring plan</b>				
<b>E.7.1. Data and parameters to be monitored by each SSC-CPA</b>				
E.7.1.1. Is the list of parameters presented considered to be section B.7.1 considered to be complete with regard to the requirements of the applied methodology?	VVS Para 132a	DR	<p>PP is requested to kindly clarify how the following parameters are in line to the applied methodology AM SI C</p> <p>1.The description of parameter EGthermal, retrofit,y</p> <p>2. The description of parameter EGpj,thermal,y</p> <p>Moreover, it is not clear, how these parameter will be monitored.</p> <p>The CME satisfactorily addressed all the issues raised under CAR 16 and CAR 16 was closed.</p>	<p><del>CAR 16 (a) raised.</del></p> <p>CAR 16 closed. For detailed discussion of the CAR, please refer to Annex 3 of this report</p>
E.7.1.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring of emissions?		DR	Yes, the choices have been consistently applied.	Y

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
<b>E.7.2. Description of the monitoring plan for a SSC-CPA</b>				
E.7.2.1. Is the operational and management structure clearly described and in compliance with the envisioned situation?	VVS Para. 132b	DR	Yes, organisational and management structure has been clearly described in the POA.	Y
E.7.2.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	VVS Para. 132a-b EB61 Annex 21	DR	Yes, the information on the responsibilities and institutional arrangements for data collection and archiving are clearly provided in the POA –DD.	Y
E.7.2.3. Does the monitoring plan provide current good monitoring practice?	VVS Para. 132	DR	The monitoring plan provides current good monitoring practices.	Y
If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	VVS Para. 132a-b EB61 Annex 21	DR	Not applicable.	Y
<b>E.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)</b>				

Checklist Question	Ref. ID	MoV*	Comments	Conclusion/ CARs/CLs
E.8.1. Is there any indication of a date when the baseline was determined?		DR	NA.	NA
E.8.2. Has dd/mm/yyyy format been used to indicate the date?		DR	NA	NA
E.8.3. Is this consistent with the time line of the POA-DD history?		DR	NA	NA
E.8.4. Is the information on the person(s) / entity (ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?		DR	NA	NA
E.8.1. Is information provided whether this person / entity is also considered a project participant?		DR	NA	NA



### A.3 Annex 3: Overview of Findings

#### Findings Overview Summary

	CARs	CLs	FARs
Total Number raised	19	01	00

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	01	Reference:	AU4
<b>Lead Assessor Comment:</b>					
The coordinating/managing entity shall submit the letters of authorization of its coordination of the POA from host Party involved. Cp. Para 10, EB 55, Annex 38					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
Due to Korean DNA approval procedure, DNA approval letter will be issued after submitting draft validation report. KECO, the CME will submit the approval afterward.					
<b>Documentation Provided by Project Participant:</b>					
Korean DNA approval guidelines (Folder : POA-DD evidence _CAR 01-DNA(RoK) Guidelines)					
<b>Information Verified by Lead Assessor:</b>					
N/A					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
The letters of authorization of its coordination of the POA from host Party involved. Cp. Para 10, EB 55, Annex 38 is still pending. Thus, CAR#01 is open.					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
N/A					
<b>Documentation Provided by Project Participant:</b>					
N/A					
<b>Information Verified by Lead Assessor:</b>				<b>Date:</b> 12/09/2012	
N/A					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>					
The letters of authorization of its coordination of the POA from host Party involved. Cp. Para 10, EB 55, Annex 38 is still pending. Thus, CAR#01 is open.					
<b>Project Participant Response:</b>				<b>Date:</b> 06/11/2012	
We got the letters of authorization from DNA on 29 <sup>th</sup> of Oct					
<b>Documentation Provided by Project Participant:</b>					
LOA , No-2012-29, dated – 29/10/2012					
<b>Information Verified by Lead Assessor:</b>					
The LOA has been checked and found to be satisfactory.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 21/11/2012	
PP has provided the LOA for the programme of activity, which has been found to be satisfactory. The authenticity of LoA was further cross checked from the host country DNA by email communication, dated - 13/12/2012. The assessment team concluded that the LoA <sup>/2/</sup> is authentic and meets the requirements of Para 39 of VVS version 05.0 and thus accepted. Thus, CAR#01 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 21/11/2012	

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	02	Reference:	AU4
<b>Lead Assessor Comment:</b>					
The indicated system/procedure in section A.4.2.2 of POA-DD version 01 to avoid double counting seems to be inadequate in case of including a new CPA that has been already registered as a CPA of another POA (small scale POA).					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
Added double counting check criteria in section A.4.2.2. And CME will verify possibility of double counting and issue certificate that CPA doesn't involved double counting.					
<b>Documentation Provided by Project Participant:</b>					
Certificate of double counting check Template (folder: POA-DD evidence _ CAR2-Double counting checklist)					
<b>Information Verified by Lead Assessor:</b>					
The Certificate of double counting check Template provided has been checked.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
PP has provided the document which has been checked and found to be satisfactory. Also , the revised POA – DD has been checked and found to be satisfactory. Thus, CAR#02 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 01/08/2012	

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	03	Reference:	AU4
<b>Lead Assessor Comment:</b>					
In compliance with para 11 of EB 55/Annex 38, the modalities of communication with the EB shall be submitted.					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
MoC document is submitted					
<b>Documentation Provided by Project Participant:</b>					
Modalities of Communication (Folder : POA-DD evidence _CAR 03-MoC)					
<b>Information Verified by Lead Assessor:</b>					
MoC form has been checked					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
The information on contact details viz. Name of the person and the telephone & Fax number is found to be inconsistent with the Annex 1 of the PDD. Moreover, PP is requested to kindly use the complete MOC template forma as available at UNFCCC website and fill the necessary and relevant sections accordingly. PP is requested to kindly clarify and necessary correction is requested in this regard. CAR#03 is open					
<b>Project Participant Response:</b>				<b>Date:</b> 20/08/2012	
Revised contact information in PDD in accordance with MoC which is the latest information.					
<b>Documentation Provided by Project Participant:</b>					
Revised MoC form					
<b>Information Verified by Lead Assessor:</b>					
The revised MoC form has been checked for the compliance inline to the MoC template.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 17/06/2013	
PP has provided the revised MoC form duly and correctly filled which has been checked and found that the MoC form is complete. PP need to revise the MoC as PP has make changes to the Appendix 1 of the POA DD. CAR open					
<b>Project Participant Response:</b>				<b>Date:</b> 21/06/2013	
PP revised contact information in the Appendix1 of POA-DD and CPA-DD. PP send the rewritten MoC.					
<b>Documentation Provided by Project Participant:</b>					
Attachment1-MoC					
<b>Information Verified by Lead Assessor:</b>					
Attachment1-MoC was checked by the assessment team					

<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	
The revised MoC form was checked by the assessment team and was found to be correct. CAR was closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date: 28/06/2013</b>
<b>Lead Assessor Comment:</b>	<b>Date: 24/09/2013</b>
The latest version of MoC form available in UNFCCC website is Version 2.1. Thus PP is requested to provide the MoC as per the latest template. Also it was noticed that MoC letter, dated 25/06/2013, does not contain the signature of the Authorised Signatory is missing from the page no 4 of the MoC. PP is requested to take a corrective action. CAR is reopened.	
<b>Project Participant Response:</b>	<b>Date: 08/10/2013</b>
The latest version of MoC document is submitted	
<b>Documentation Provided by Project Participant:</b>	
The latest version of MoC, dated 08/10/2013	
<b>Information Verified by Lead Assessor:</b>	
MoC, dated 08/10/2013 was checked by the assessment team.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 18/10/2013</b>
The revised MoC, dated 08/10/2013 was checked by the assessment team and was found to be correct. CAR 03 is closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date: 18/10/2013</b>
<b>Closed</b>	

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	04	Reference:	AU4
<b>Lead Assessor Comment:</b>					
(a)CDM-SSC-POA-DD and the submitted CPA-DD does not reveal the exact date of the document in section A.1. This shall be corrected and should be in DD/MM/YYYY format.					
(b)Moreover, the webhosted CPA-DD is for changwon having title “Efficiency of sewage treatment plant of Changwon”, whereas during the site visit PP has submitted another CPA-DD for Chuncheon having title “Installation of co-generation system in sewage treatment plant of Chuncheon” and the this new CPA –DD also does not reveal the exact date of document in section A.1.					
(c) Please clarify why the guideline for filling the CDM-SC-POA-DD form is mentioned throughout the whole POA-DD					
(d)Please correct the name of host party in section A.4.1.1 as per <b>Non-Annex I Parties to the Convention</b> .					
(e)Please provide full form of all acronyms used in the POA-DD.					
(f) In section D.1 of POA-DD, Please indicate if a stakeholder consultation process is required by regulations/laws in the host country					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
(a) Changed the date in section A.1					
(b) Since Changwon CPA has unclear future construction design and plan, it is appropriate to validate Chuncheon CPA-DD project site which proceeding punctual construction schedule and revised the exact date of document in section A.1					
(c) Deleted all the unnecessary paragraph from the PDD form through whole PDD					
(d) Changed host country name “Korea” to “Republic of Korea” in section A.4.1.1					
(e) Added appendix page for Acronyms/Abbreviation end of PDD					
(f) Added explanation in the section D.1 that local consultation is not required by the law in Korea. And submitting related law “Sewerage Act” to confirm					
<b>Documentation Provided by Project Participant:</b>					
(f) Sewerage Act (Folder : POA-DD evidence CAR4-(f)Stakeholder consultation regulation)					

<b>Information Verified by Lead Assessor:</b>					
POA DD, Version 1.2, dated 28/06/2012 was checked by the assessment team.					
Sewerage Act, Act No. 9334, Jan. 7, 2009 was checked by the assessment team.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
<p>(a) Changed the date in section A.1. Ok, the POA – DD has been checked and found that necessary corrections have been done. Closed.</p> <p>(b) Since Changwon CPA has unclear future construction design and plan, it is appropriate to validate Chuncheon CPA-DD project site which proceeding punctual construction schedule and revised the exact date of document in section A.1. The justification provided by the PP is found to be satisfactory. Closed.</p> <p>(c) The CME deleted the entire unnecessary paragraph from the PDD form through whole PDD. The POA – DD has been checked and found that necessary corrections have been done. Closed.</p> <p>(d) The CME changed host country name “Korea” to “Republic of Korea” in section A.4.1.1. The POA – DD has been checked and found that necessary corrections have been done. Closed.</p> <p>(e) The CME added appendix page for Acronyms/Abbreviation end of PDD. The POA – DD has been checked and found that necessary corrections have been done. Closed.</p> <p>(f) The CME added explanation in the section D.1 that local consultation is not required by the law in Korea. And submitting related law “Sewerage Act” to confirm. Ok, the POA – DD has been checked and found that necessary corrections have been done. Closed.</p>					
PP has made the necessary corrections as per the raised issues in the revised POA – DD. The revised POA – DD has been checked and found to be satisfactory. Thus CAR#04 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 01/08/2012	

<b>Date:</b>	10/06/2012	<b>Raised by:</b>	Assessment Team		
<b>Type:</b>	CAR	<b>Number:</b>	05	<b>Reference:</b>	AU4

<b>Lead Assessor Comment:</b>					
<p>i) Pls. submit the details of the technology used to improve the efficiency of the bio-gas recovery and utilization in sewerage treatment system. PP is also requested to provide the remaining lifetime assessment report inline to EB 50, Annex 15.</p> <p>(ii) PP is requested to kindly include the longitude &amp; latitude for the respective region where the POA will be implemented under section A.4.1.2</p>					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
<p>i) Technical description of retrofitting equipment and remaining lifetime assessment report is submitted.</p> <p>ii) Added longitude &amp; latitude of CPA in section A.2</p>					
<b>Documentation Provided by Project Participant:</b>					
<p>Technical description of retrofitting equipment (folder : POA-DD evidence _ CAR5-(i)Design report)</p> <p>Equipment lifetime assessment report(folder : POA-DD evidence _CAR5-(i)Design report)</p>					
<b>Information Verified by Lead Assessor:</b>					
<p>i) POA DD, Version 1.2, dated 28/06/2012 was checked by the assessment team.</p> <p>ii) Technical description of retrofitting equipment and remaining lifetime assessment reported was checked by the assessment team.</p> <p>iii) Technical description of retrofitting equipment (folder : POA-DD evidence _ CAR5-(i)Design report) was checked by the assessment team.</p>					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 12/07/2012	
<p>i. The technical description of the type of CPA that has to be included in the POA , is not clearly described in the POA – DD. From the sentence “However, this method is lower digestive efficiency than indirect heating method and difficulties in operating and maintenance because of deteriorated</p>					

boiler” under section A.4.2.1, page 12, it has been observed that digester heating has been modified because of difficulties in operation and maintenance because of deteriorated boiler, which mean in any case PP will have to replace the system for ease of operation, so this is not a voluntary action. Please justify with proper technical description how the efficiency of digester will increase due to the modification i.e. from direct heating to indirect heating. Moreover, it is not clearly mentioned regarding the technical specification of the new boiler. Also, the steam parameters ( size in TPH, pressure & temperature including the feed water temperature) for the baseline boiler is not mentioned and it is not clear whether the new boiler is a steam generating boiler or hot water generator, since the POA – DD mentioned the inlet warm water having 70° C temperature. PP needs to provide the technical description of baseline boilers & project activity boilers with temperature & pressure for both the Options i.e. Option1 & Option2 in the POA – DD. Thus, CAR#05 is open.

- ii. Added longitude & latitude of CPA in section A.2. The revised POA – DD has been checked and found to be satisfactory. However this is not required as per the F CDM SSC POA DD, version 02.0, hence this has been removed. This was found to be correct and was accepted. Closed.

<b>Project Participant Response:</b>	<b>Date: 22/08/2012</b>
Revised boiler description in section A.4.2.1, - “Difficulties in operation” was mentioned to explain merits and de-merits of each type of boiler. And ease of operation is not the main reason or purpose of modification. Main purpose of modification is increase biogas production. To avoid confusion, we changed sentence. - It is hard to compare quantitatively between direct heating and indirect heating because of different heating method and system. It can be explained effectiveness on sludge. It is important to maintain appropriate temperature sludge in the digester to produce biogas. Main problem of direct heating method is uneven temperature in the digester due to direct steam injection. This means some of sludge near the steam injection remains high temperature and other part of sludge far from steam injection remains low temperature and some of them are maintain appropriate temperature. Replacing indirect heating method, sludge will be more efficiently maintain even temperature due to inject heated sludge. As result, more biogas will be produced from the digester. - Matter of boiler specification, it is not conclusive at the POA level. The main retrofitting focuses on change of heating method. Boiler specification determined according to size of sewage facility and amount of waste water processed in the facility. Each CPA has different boiler specification even though they have same heating method. Specification of Boiler will be demonstrated in the CPA level.	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD, version 1.3, dated 20/08/2012	
<b>Information Verified by Lead Assessor:</b>	
The revised POA DD, version 1.3, dated 20/08/2012 has been checked and found that PP has rephrased the sentence to describe the project activity description.	
<b>Reasoning for not Acceptance</b>	<b>Date: 22/03/2013</b>
<ul style="list-style-type: none"> <li>- The project description under section A.4.2 is still not clear in the POA – DD. It is not clear why PP has included the applicable methodology paras for project scenario description, since these methodology paras are meant for baseline identifications. Open.</li> <li>- Earlier in the POA – DD, only two options are mention, whereas in the revised POA – DD , PP has included three options without citing any reason/justification. Open.</li> <li>- The description for Option 1 &amp; Option 2 has been changed, earlier for option 1, it was mentioned as “Fuel substitution from fossil fuel to biogas including retrofit of by modification existing facility”, whereas in the revised POA – DD, it is mentioned as “Fuel substitution from fossil fuel to biogas in a co-fired system by modification existing facility” and for Option 2, “Fuel substitution from fossil fuel to biogas including retrofit of existing facility and installation of co-generation system”, whereas in the revised POA – DD, it is mention as “Fuel substitution from fossil fuel to biogas by modification of existing facility and installation of co-generation system ”.PP has not provided any justification in this regards.</li> <li>- Also the project description is more on the biogas recovery systems instead of thermal energy generation equipment which is the project activity, thus the project description is itself is not clear considering that the project activity is based on AMS I C, version 19.</li> <li>- The Option 2 of the POA has used two baseline scenarios. Kindly justify how the use of two base line</li> </ul>	



scenarios are in line with the methodology as it states "Project activities producing both heat and electricity shall use one of the following baseline scenarios".

Due to the above reason, CAR#05 is open.

**Project Participant Response:**

**Date:** 28/03/2013

① PP addressed applicable methodology paragraph because of that each option has different applicable baseline scenario. However, section A.4.2 is section for explain project activity, and PP explained baseline scenario in section E.4.

② **PP apologizes for the inclusion of 3rd option without discussion.**

1. In the POA-DD ver.1.3, PP classified project activity as two types, installation of co-generation and retrofit of thermal energy generation facility.

2. In the POA-DD ver.1.4, PP decided that it is appropriate classifying three types options during the responding comment from DOE regarding applicability of baseline scenario. PP concluded that 'heat generating facility' need to be classified into two types 'co-fired system' and 'fossil fuel based system' and this may affect the baseline scenario more applicable to the methodology AMS I.C. Still, basically project activities remained same and classified in detail.

3. And in the POA-DD ver.2.0, project scenario option remained 3 types but responding baseline scenario for each option from the methodology has been changed. Justification of choice of baseline scenario will be explained in the CAR#15.

③ 1. The reason why we deleted "retrofit word" in option1,2 of PDD Ver.1.4 as follows

PP considered "retrofit" in the POA-DD ver 1.3 as "modification to improve energy output" based on AMS.I.C ver19 paragraph 38~41 and only applicable to case of efficiency improvement of thermal energy facility. However PP deleted "retrofit" in the POA-DD ver 1.4 because of proposed project substitute fossil fuel to biomass energy without change of energy output.

Nevertheless proposed project can be considered "retrofit project" and applicable to methodology AMS I.C. refer to paragraph 42. According to clarification SSC-374, EB concluded that retrofit for the biomass fuel use can be considered as "retrofit". Also according to definition of "retrofit" in the Glossary CDM 7.0, PP concluded proposed project as "retrofit" in the POA-DD ver 2.0.

2. The reason why we changed option 1 in POA-DD ver.1.4 as follows

As explained CAR#5②, PP classified "Heat generating facility" to two types, option 1 "co-fired system" and option 3 "fossil fuel based system"

3. Modified Option 1,2,3 in POA-DD. Ver.2.0 as follows

- Explained technical process of generation of thermal energy/electricity from biogas in detail
- Correct the word "retrofit" from modification of existing facility
- Described detailed information on project activity in A.4.2
- Changed order of option 1,3

(Ver 1.4 option1 -> ver 2.0 option3) (Ver1.4 option3 → Ver2.0 option1)

4. Project activities of each option are as follows.

Option 1 : Fuel substitution from fossil fuel to biogas by retrofit of existing fossil fuel heat generating facility

Option 2 : Displacing electricity by installing a new biomass co-generation system

Option 3 : Fuel substitution from fossil fuel to biogas in a co-fired system

#### ④ 1. Explanation of project activity

- In the proposed project, fossil fuel will be substitute to biogas and applied technology is generation of renewable energy(thermal energy). Thus proposed project is applicable to “renewable energy technologies that supply users with thermal energy that displaces fossil fuel use.” Paragraph 1, AMS I.C. Also in case of the project which generates thermal energy using biogas before the project activity, project activity increasing biogas is critical activity to substitute fossil fuel to biogas.

- Explained in detail of technical process of generation of renewable energy(thermal energy/electricity) from the biogas in the section A 4.2.1, POA-DD Ver2.0

#### 2. Explanation of applicability of Methodology AMS I-C. ver.19

Proposed project is to generate thermal energy/electricity using biogas substituted from fossil fuel in all the option 1,2,3. It is applicable to methodology AMS I.C.

(Option 1) Generating thermal energy from biogas by retrofit of existing fossil fuel based facility.

(Option 2) Generating electricity and thermal energy from biogas by installing new co-generation equipment

(Option 3) Generating thermal energy in a co-fired system using increased biogas to substitute fossil fuel. (Biogas ratio↑)

-Registered project similar with option 1,2 project

1. POA 4041, Promotion of Biomass Based Heat Generation System in India

2. POA 6731, Biomass Heat Generation Development Programme of Activities Managed by INTRACO

Since PP focused on explain technology increase biogas production than explain technology generate renewable energy from biogas throughout the POA-DD ver1.1 to ver 1.4, this may cause miscommunication between DOE and PP.

#### ⑤ Revised baseline scenario. POA DD Ver.2.0 doesn't have 2 combination scenario anymore.

#### Documentation Provided by Project Participant:

Revised POA DD, version 02, dated 18/03/2013

Revised CPA DD, version 02, dated 18/03/2013

#### Information Verified by Lead Assessor:

1. The Revised POA – DD, version 02, dated 18/03/2013 has been checked and the assessment team could not find the explanation of project activity under section E.4. Please clarify. Issue open.

(a) Still the scenario mentioned under Option 1 is for Baseline scenario for power & heat, as per the POA – DD, the description for Option 1 refers to only thermal(heat) energy generation and not the power. So, please clarify how the para 19(a) is relevant for option 1. Issue open.

(b) please clarify how the para 19 (h) of AMS I C is applicable for Option 3 of CPA, as mentioned in the POA – DD, since the para 19 clearly state that “Project activities producing both heat and electricity shall use one of the following baseline scenarios:”, whereas in case of CPA Option 3, the project will only generate thermal energy and not the electricity. Issue open.

Ok, explanation is found to be satisfactory. However, still the project baseline selection as per the applied methodology is still not correct, thus the issue is open due to the point no.2 above. Issue open.

2. Ok, PP has revised the POA – DD, and has included the description of the project relevance to the



project technology. Issue closed.	
3. Ok, PP has revised the POA – DD and has made necessary correction for the baseline scenario for Option2, which has been found to be satisfactory. Issue closed.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 07/05/2013</b>
<p>1. The Revised POA – DD has been checked and the assessment team could not find the explanation of project activity under section E.4. Further there is no description of project activity in the revised PDD. Please clarify. Issue open.</p> <p>(a) Still the scenario mentioned under Option 1 is for Baseline scenario for power &amp; heat, as per the POA – DD, the description for Option 1 refers to only thermal(heat) energy generation and not the power. So, please clarify how the para 19(a) is relevant for option 1. Issue open.</p> <p>(b) please clarify how the para 19 (h) of AMS I C is applicable for Option 3 of CPA, as mentioned in the POA – DD, since the para 19 clearly state that “Project activities producing both heat and electricity shall use one of the following baseline scenarios:”, whereas in case of CPA Option 3, the project will only generate thermal energy and not the electricity. Issue open.</p> <p>Ok, explanation is found to be satisfactory. However, still the project baseline selection as per the applied methodology is still not correct, thus the issue is open due to the point no.2 above. Issue open.</p> <p>Revised POA DD was checked and was found to be correct. CAR closed.</p> <p>Revised POA DD was checked and was found to be correct. CAR closed.</p> <p>Thus, CAR#05 is open.</p>	
<b>Project Participant Response:</b>	<b>Date: 10/06/2013</b>
<p>1. PP made a mistake. The Section A.4.2 and E.4 we mentioned before are part of old version of POA DD. The proposed project activity was described in section A.6 of part 1 “Technologies/measures” and section A.1 of Part 2, new POA DD. Baseline scenario, furthermore, is described in B.4 of Part 2 POA DD</p> <p>2. (a) PP misunderstood that baseline scenario has to be chosen in para 19, AMS.I.C(ver.19). That’s why PP chose the para 19(a) as baseline scenario. Now PP modified the baseline scenario is explained in section B “Description of Baseline Scenario” Part 2,POA DD</p> <p>(b) PP deleted the option 3. Because the CPA project which is supposed to be included in our POA as per option 3 was determined as transport fuel project. It would be very tough to be registered on UN. Thus PP decided to remove the option 3 after discussion with the CPA implementor.</p> <p>3. PP modified baseline scenario. It is described in section B.4 of Part2 POA DD.</p>	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD version 3, dated 10/06/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised POA DD version 3, dated 10/06/2013 was checked by the assessment team.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 05/07/2013</b>
<p>1. PP has revised the section A.6 of part 1 “Technologies/measures” and section A.1 of Part 2, new POA DD. Technology description has been included appropriately. This was checked by the assessment team and was accepted.</p> <p>2. (a) PP has correctly identified the baseline scenario for both the options under the POA. For Option 1 the baseline has been identified as per para 16 of the methodology and, equation 2 has been used. For option 2 PP has correctly used the para 19(i) of the applied methodology AMS IC. The calculation of emission reduction will be calculated as per equation 21 of the methodology AMS IC. This was checked by the assessment team and was found to be correct.</p> <p>(b) PP has now removed the option 3 type CPA from the POA. This was checked by the assessment team and was found to be correct.</p> <p>3. PP has adequately addressed the point 2 above, and baseline selection was found to be in line with the applied methodology AMS IC.</p> <p>Thus all the issues of CAR 05 was addressed by CME, and CAR was closed.</p>	

<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date: 05/07/2013</b>
<b>Lead Assessor Comment:</b>	<b>Date: 24/08/2013</b>
<p>1. In section A.2 of the POA DD, the description does not speak transparently on the cogeneration option at all. Please clarify as per requirement of VVS, version 4 para 64. The description in this section is not clear with regard to the implementation plan of the POA overall and number of CPAs to be involved in the POA. Also provide evidence to justify that there is no incentive / regulation to introduce equipment for biogas recovery from sewage and power generation? PP shall clarify.</p> <p>2. In section A.3 Part I of the POA DD it is not clear if all CPAs would be implemented and owned by KECO or the CPA's would be having different CPA implementer. PP shall clarify.</p> <p>CAR is reopened.</p>	
<b>Project Participant Response:</b>	<b>Date: 09/09/2013</b>
<p>1. The explanation that we will estimate only amount of produced electricity as emission reduction and has been added. And further information has been added footnotes No.4. about the explanation of co-generation.</p> <p>2. The roles of CME, CPA implementer have been corrected according to the POA-DD, Section C. (The local autonomous entities which are suit our eligibility criteria will participate, and they will perform possession, operation, management of facility as the CPA implementer.)</p>	
<b>Documentation Provided by Project Participant:</b>	
POA_CAR_05_1_memo1&2_standard of cogeneration_AMS-I C_ver19 POA_CAR_05_1_memo3_Attachment-Workshop Result Report POA_CAR_05_1_memo3_Posting Notice on KECO website for Comments from Stakeholder POA_CAR_05_1_memo3_Prior consideration for UNFCCC(English)	
<b>Information Verified by Lead Assessor:</b>	
POA_CAR_05_1_memo1&2_standard of cogeneration_AMS-I C_ver19 was checked. POA_CAR_05_1_memo3_Attachment-Workshop Result Report was checked. POAPOA	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 24/09/2013</b>
<p>1. Section A.2 of the POA DD was checked, PP has now included the co-generation option in the description..</p> <p>Further, "Act on the Promotion of the Development, Use and Diffusion of New and Renewable Energy" (<a href="http://www.mke.go.kr/language/eng/laws/lawsview.jsp?seq=25&amp;tableNm=E_06_01#">http://www.mke.go.kr/language/eng/laws/lawsview.jsp?seq=25&amp;tableNm=E_06_01#</a> ), "Act on the Promotion of Saving and Recycling of Resources" (<a href="http://www.moleg.go.kr/english/korLawEng?pstSeq=47557">http://www.moleg.go.kr/english/korLawEng?pstSeq=47557</a> ) &amp; "WASTES CONTROL ACT" (<a href="http://eng.me.go.kr/file.do?method=fileDownloader&amp;attachSeq=984">http://eng.me.go.kr/file.do?method=fileDownloader&amp;attachSeq=984</a> ) was checked by the assessment team. These regulations only promote and encourage generation of energy but they do not mandate implementation of any project to generate energy in sewerage treatment plants. Thus the justification provided by PP was found to be correct.</p> <p>However, PP is requested to provide all the documentary evidences for the implementation schedule provided in the POA DD, section A.2. Open.</p> <p>2. Section A.3 of the revised POA DD was checked, PP has now clearly mentioned that Korea Environment Corporation (KECO) is public entity and the Coordinating/Managing Entity(CME) and local autonomous entities as the CPA implementer. However PP is requested to clarify what is "local autonomous entities" and mention the same in the POA DD. Open.</p> <p>CAR is open.</p>	
<b>Project Participant Response:</b>	<b>Date: 09/10/2013</b>
<p>1. The evidence has been added.</p> <p>2. This has been changed to "Municipal communities"</p>	
<b>Documentation Provided by Project Participant:</b>	
1. POA_memo2_20101125 Workshop Result Report	

2. POA_memo4_20110429 MOU document_Changwon municipal 3. POA_memo4_20110429 MOU document_Suwon municipal 4. POA_memo5_20120420 Workshop of the 2nd report	
<b>Information Verified by Lead Assessor:</b>	
1. Holding the workshop for the program to improve energy independence of public sewerage system and presentation on P-CDM related to the program, dated 25/11/2010 & 26/11/2010 was checked by the assessment team (middle of page 2 of '1.POA_memo2_20101125 workshop result report.pdf'). 2. MOU ceremony of The 1st progressing municipal communities (Changwon), dated 29/04/2011 (last page of '2.POA-memo4_20110429 MOU document_changwon municipal.pdf'.) was checked by the assessment team. 3. Workshop of The 2nd progressing municipal communities (Bucheon, Ansan, Asan, Gunsan, Mungyeong ), dated 20/07/2012 was checked by the assessment team. 4. The revised POA DD was checked by the assessment team. As PP has not revised the date and version number of the POA DD, since the last submission, assessment team has assumed this current version as version 06, dated 09/10/2013 (email date).	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 18/10/2013</b>
The documentary evidence for workshop, 17/12/2010 could not be traced. PP is requested to provide the documentary evidence for this event. CAR open. Workshop of the 2 <sup>nd</sup> progressing municipal communities (Bucheon, Ansan, Asan, Gunsan, Mungyeong ) is dated 20/07/2012. PP is requested to take a corrective action. CAR open. PP has not updated the POA DD version and date. PP is requested to maintain consistency and update the date and version number of POA DD. Open. CAR is open.	
<b>Project Participant Response:</b>	<b>Date: 31/10/2013</b>
1. The date has been confirmed. 2. The date has been confirmed. 3. The version and date have been updated.	
<b>Documentation Provided by Project Participant:</b>	
POA_memo4_20120420 Workshop of the 2nd report POA_memo3_Attachment-Workshop Result Report	
<b>Information Verified by Lead Assessor:</b>	
POA_memo4_20120420 Workshop of the 2nd report POA_memo3_Attachment-Workshop Result Report POA DD version 07, dated 31/10/2013	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 13/11/2013</b>
1. The documentary evidence provided by the CME was checked and was found to be satisfactory. CAR closed. 2. The documentary evidence provided by the CME was checked and was found to be satisfactory. CAR closed. 3. The revised POA DD was checked by the assessment team, PP has now revised and corrected the POA DD version and date. CAR closed.	
<b>Acceptance and Close out by Lead Assessor:</b> <b>closed</b>	<b>Date: 13/11/2013</b>

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	06	Reference:	AU4
<b>Lead Assessor Comment:</b>					
Section E.1 of POA-DD shall correctly mention the category (ies) of the programme of activity in line with Appendix B of FCCC/KP/CMP/2005/8/Add.1					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
Corrected category of the programme of activity in section E.1					
<b>Documentation Provided by Project Participant:</b>					
Revised POA DD, version 1.2, dated – 28/06/2012					
<b>Information Verified by Lead Assessor:</b>					
The revised POA DD, version 1.2, dated – 28/06/2012 has been checked for section E.1.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
PP has incorporated the required information in line with Appendix B of FCCC/KP/CMP/2005/8/Add.1 in the revised POA - DD. The revised POA - DD has been reviewed and found to be satisfactory. Thus, CAR#06 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 01/08/2012	

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CL	Number:	07	Reference:	AU4
<b>Lead Assessor Comment:</b>					
PP would be providing a declaration that the technology would not be likely to be get substituted by other or more efficient technologies during the crediting period.					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
Submitted declaration document stated that the technology would not be likely to be get substituted by other or more efficient technologies during the crediting period.					
<b>Documentation Provided by Project Participant:</b>					
Declaration document by CME(KECO) (folder : POA-DD evidence CL7-Declaration)					
<b>Information Verified by Lead Assessor:</b>					
The declaration letter has been checked					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
PP has provided the declaration letter that the technology would not likely be changed during the crediting period and the letter has been checked and found to be satisfactory. Thus, CL#07 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 01/08/2012	

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	08	Reference:	AU4
<b>Lead Assessor Comment:</b>					
(a)PP is requested to clarify why all the Eligibility criteria are not complete as per EB63, annex 3					
(b)PP is requested to kindly evident and substantiated that this voluntary coordinated action would not be implemented in the absence of the POA					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
(a) Revised eligibility criteria in accordance with EB63, annex 3 in section A.4.2.2 of the POA DD, version 1.2, dated 28/06/2012					
(b) There are no enforcement of renewable energy utilization including recovery of biogas on law "Sewerage Act"					
<b>Documentation Provided by Project Participant:</b>					
(b) SEWERAGE ACT, official document on prior consideration (folder : POA-DD evidence _CAR8- (b)Evidence of voluntary coordinated action)					
<b>Information Verified by Lead Assessor:</b>					
(a) The revised POA – DD, POA DD, version 1.2, dated 28/06/2012 for eligibility criteria and SEWERAGE ACT, official document for voluntary coordinated action has been checked.					

<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 01/08/2012	
PP has included all the eligibility criteria's as per EB, 63, Annex 3 which has been checked and found to be complete and satisfactory. Also, PP has substantiated with documentary evidence for voluntary coordinated action of implementing the POA. Thus, CAR#08 was closed.		
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 01/08/2012	
<b>Lead Assessor Comment:</b>	<b>Date:</b> 22/09/2014	
<p>1. The PoA-DD (pg. 6) under Section B.2 has mentioned that CPAs will be included in the PoA if they apply one of the following technology combinations: Improved anaerobic digestion and generate electricity through cogeneration or improved anaerobic digestion and biogas-operated boiler. PP is requested to define explicitly the eligibility criteria for CPA inclusion under section B.2 (page 6), considering the option 1 and option 2 technology types as specified and use consistent terminology with respect to the option 1 and option 2 defined in the PoA DD. [e.g. in page 6 (point 3 in the table) the PP defines the option 1 as "Improved anaerobic digestion and operated boiler (and burner etc) by biogas (biogas will replace fossil fuel)" however in page 5, option 1 has been defined as ".....retrofit of existing heat generating facility"].</p> <p>2. As per paragraph 16(c) (pls refer foot note 6 also) under EB74 Annex 5 the specification of technology/measure shall include information's such as type, capacity and other key features of the design systems. The PP is requested to explicitly define the same in the PoA DD for both the options 1 &amp; 2.</p>		
CAR is reopened.		
<b>Project Participant Response:</b>	<b>Date:</b> 29/09/2014	
<p>1. (PoA-DD Page 4) A.6 Technologies/measures: PP had described technical improvement(efficiency) method of sludge digester (through sludge thickener improvement, digester dredging, replacing the digester mixing facilities and digester heating system replacement)</p> <p>(PoA-DD Page 6) The eligibility criteria were explicitly defined for CPA inclusion under section B.2 (page 6). And also, the explanations for eligibility criteria were revised considering consistent terminology. In addition, the eligibility criteria for CPA inclusion were separately explained depending on option 1 and option 2.</p> <p>2. (Page 6) B.2. Eligibility criteria for inclusion of a CPA in the PoA</p> <p>- Described project type: PP had added a description for type. (Type I. Renewable energy projects)</p> <p>- Described type of service for option1 and option2 are as follow:</p> <p>According to paragraph 16 (c), EB74, annex5, the explanation included the level and type of service, performance specifications including compliance with testing/certification as follow.</p>		
	Option 1	Option 2
Level of service	-The total installed capacity is less than or equal to 45 MW <sub>thermal</sub> .	-The total installed capacity is less than or equal to 15 MW <sub>e</sub> and maximum electricity capacity of cogeneration is 5MW <sub>e</sub> (Microscale project).

Type of service	<ul style="list-style-type: none"> <li>-Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>-Retrofit of existing heat generating facility.</li> <li>-Supplying heat to facilities through fuel substitution from fossil fuel (LNG, Diesel etc.) to biogas.</li> </ul>	<ul style="list-style-type: none"> <li>- Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>- Displacing use of national electricity by installing a new biogas cogeneration system.</li> <li>-Emission reduction from electricity will be only claimed. Thermal energy will not be claimed.</li> </ul>
Performance Specification including compliance with testing/certification	- Renewable energy project of CPA comply with national standards.	

1. (PoA-DD Page 4) A.6 Technologies/measures: PP had described technical improvement(efficiency) method of sludge digester (through sludge thickener improvement, digester dredging, replacing the digester mixing facilities and digester heating system replacement)

(PoA-DD Page 6) The eligibility criteria were explicitly defined for CPA inclusion under section B.2 (page 6). And also, the explanations for eligibility criteria were revised considering consistent terminology. In addition, the eligibility criteria for CPA inclusion were separately explained depending on option 1 and option 2.

2. (Page 6) B.2. Eligibility criteria for inclusion of a CPA in the PoA

- Described project type: PP had added a description for type. (Type I. Renewable energy projects)

- Described type of service for option1 and option2 are as follow:  
According to paragraph 16 (c), EB74, annex5, the explanation included the level and type of service, performance specifications including compliance with testing/certification as follow.

	Option 1	Option 2
Level of service	-The total installed capacity is less than or equal to 45 MW <sub>thermal</sub> .	-The total installed capacity is less than or equal to 15 MW <sub>e</sub> and maximum electricity capacity of cogeneration is 5MW <sub>e</sub> (Microscale project).
Type of service	<ul style="list-style-type: none"> <li>-Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>-Retrofit of existing heat generating facility.</li> <li>-Supplying heat to facilities through fuel substitution from fossil fuel (LNG, Diesel etc.) to biogas.</li> </ul>	<ul style="list-style-type: none"> <li>- Improved anaerobic digestion through sludge thickener improvement and digester dredging etc.</li> <li>- Displacing use of national electricity by installing a new biogas cogeneration system.</li> <li>-Emission reduction from electricity will be only claimed. Thermal energy will not be claimed.</li> </ul>



Performance Specification including compliance with testing/certification	- Renewable energy project of CPA comply with national standards.
<b>Documentation Provided by Project Participant:</b>	
Revised PoA DD Version 17 dated 29/09/2014	
Revised CPA DD Version 17 dated 29/09/2014	
<b>Information Verified by Lead Assessor:</b>	
Revised PoA DD Version 17 dated 29/09/2014	
Revised CPA DD Version 17 dated 29/09/2014	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 01/10/2014</b>
<p>1. The PP has defined explicitly the eligibility criteria for CPA inclusion under section B.2 (page 6), considering the option 1 and option 2 technology types as specified and used consistent terminology with respect to the option 1 and option 2 defined in the revised PoA DD. Closed.</p> <p>2. As per paragraph 16(c) of EB74 Annex 5 the specification of technology/measure i.e. type, capacity have been included for both option 1 and 2. However the PP mentioned for option 2 that "The total installed capacity is less than or equal to 15 MW<sub>e</sub> and maximum electricity capacity of cogeneration is 5MW<sub>e</sub> (Microscale project)" which is not explicit. PP can clarify whether their intention is to state that "The total installed capacity is less than or equal to 15 MW<sub>e</sub> and maximum electricity capacity of cogeneration is 5MW<sub>e</sub> for Microscale project activities"? The PP is requested to explicitly define the same in all relevant sections of PoA DD and CPA DD. OPEN</p> <p>CAR is open.</p>	
<b>Acceptance and Close out by Lead Assessor: Open</b>	<b>Date: 08/10/2014</b>
<b>Project Participant Response:</b>	<b>Date: 13/10/2014</b>
<p>PoA-DD and CPA-DD are modified.(PoA-DD : 6, 21, 62 page, CPA-DD: 17 page)</p> <p>The total installed capacity is less than or equal to 15 MW e and maximum electricity capacity of cogeneration is 5MW e (Microscale project).</p> <p>-&gt; The total installed capacity is less than or equal to 15 MW e and maximum electricity capacity of cogeneration is 5MW e for Microscale project activities.</p> <p>The total installed capacity is based on the condition of the microscale project that mentioned demonstration of additionality of 19 page of CPA-DD.</p>	
<b>Documentation Provided by Project Participant:</b>	
Revised PoA DD Version 18 dated 13/10/2014	
Revised CPA DD Version 18 dated 13/10/2014	
<b>Information Verified by Lead Assessor:</b>	
Revised PoA DD Version 18 dated 13/10/2014	
Revised CPA DD Version 18 dated 13/10/2014	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 17/10/2014</b>
<p>1. The PP explicitly mentioned about the capacity threshold of the micro scale project activities in all relevant sections of the PoA DD and CPA DD.</p> <p>CAR is closed.</p>	
<b>Acceptance and Close out by Lead Assessor: Closed</b>	<b>Date: 17/10/2014</b>
<b>Date:</b>	10/06/2012
<b>Raised by:</b>	Assessment Team
<b>Type:</b>	CAR
<b>Number:</b>	09
<b>Reference:</b>	AU4
<b>Lead Assessor Comment:</b>	
PP is requested to kindly substantiate with documentary evidence and demonstrate the CDM awareness, prior CDM consideration and serious CDM consideration and parallel/continual effort for CDM	



<b>Project Participant Response:</b>	<b>Date:</b> 27/06/2012
Submitted official document of prior consideration of CDM project. P-CDM project has been considered since 2008 and reflected 'Feasibility Study on Energy Independence Plan for Public Sewage Treatment Plants(2008)'.	
<b>Documentation Provided by Project Participant:</b>	
Official document on prior consideration of P-CDM (folder : POA-DD evidence _CAR9-Evidence_Prior Consideration for CDM) Feasibility Study on Energy Independence Plan for Public Sewage Treatment Plants(2008) (folder : POA-DD evidence _CAR9-Evidence_Prior Consideration for CDM)	
<b>Information Verified by Lead Assessor:</b>	
The document provided by PP has been checked	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 01/08/2012
PP has substantiate with documentary evidences in support of the CDM awareness, prior CDM consideration and serious CDM consideration which has been checked and found to be satisfactory. Thus, CAR#09 was closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 01/08/2012

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	10	Reference:	AU4
<b>Lead Assessor Comment:</b>					
(a)PP is requested to clarify, why the boundary of the CPA is not being clearly defined for CPA inclusion in the POA –DD.					
(b) PP is requested to kindly clarify why they haven't included the conditions to check the start date of the CPA as per the start date definition of CPA					
(c ) PP is requested to kindly clarify why they haven't included the consideration for the CPAs to met the requirement of the latest available standard of additionality					
(d) PP is requested to kindly clarify why they haven't included the specific requirements of the conditions of local stakeholder and environment impact analysis for each CPA					
(e) PP is requested to kindly clarify why they haven't included the provisions of check for the micro scale or small scale threshold criteria throughout the crediting period?					
(f) PP is requested to kindly clarify why they haven't included the affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
(a) Added boundary section in the eligibility criteria in section A.4.2.2					
(b) Added start date checking section in the eligibility criteria in section A.4.2.2					
(c) Revised additionality section in the eligibility criteria in section A.4.2.2 and revised additionality demonstration process in section E.5.1					
(d) Stated in section D.1 for the stakeholder consultation and stated E.1 for the environmental impact assessment					
(e) Added micro scale or small scale threshold criteria section in the eligibility criteria in section A.4.2.2					
(f) Submitted declaration document that project doesn't funding from Annex I parties.					
<b>Documentation Provided by Project Participant:</b>					
(f)Declaration by CME(KECO) (folder : POA-DD evidence _CAR10-(f)Declaration of ODA not involved)					
<b>Information Verified by Lead Assessor:</b>					

(a) The boundary of the CPA is being clearly defined for CPA inclusion in the POA –DD. Ok. Closed	
(b) Included the conditions to check the start date of the CPA as per the start date definition of CPA. Ok, Closed	
(c) Included the consideration for the CPAs to met the requirement of the latest available standard of additionality. Ok, closed	
(d) Included the specific requirements of the conditions of local stakeholder and environment impact analysis for each CPA. Ok, closed	
(e) Included the provisions of check for the micro scale or small scale threshold criteria throughout the crediting period?. Ok, closed	
(f) Included the affirmation that funding from Annex I parties, if any, does not result in a diversion of official development assistance. Ok, closed	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 01/08/2012
The revised POA – DD, version 1.2, dated 28/06/2012 has been checked and found that PP has take care of the raised issues and has included the required information in the POA – DD. Thus CAR#10 was closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 01/08/2012

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	11	Reference:	AU4
<b>Lead Assessor Comment:</b>					
(a)The starting date of the programme of activities (POA) needs to be substantiated by verifiable evidence in compliance CDM-Glos-05, Page 28.					
(b) In section C.1, the conditions mentioned for EIA study for SSC-CPA is contracting with the description provided in section C.3. Pls. clarify the same.					
(c)No the POA does not describe the analysis of the environmental impacts of the project activity under section C.2 of POA – DD					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
(a) Starting date of POA is date of MOU with CPA participants. Submitted MOU document.					
(b) Revised statement in section C.1 of the POA DD, version 1.2, dated 28/06/2012					
(c) As described in section C.1, environmental analysis is not required in this project. Thus this section doesn't describe any document on the environmental impact analysis. EIA regulation is submitted.					
<b>Documentation Provided by Project Participant:</b>					
(a) MOU document (folder : POA-DD evidence _CAR14-(b)(i)The starting date of POA)					
(b) Revised statement in section C.1 of the POA DD, version 1.2, dated 28/06/2012 was checked.					
(c)EIA regulation (folder : POA-DD evidence _ CAR14-(c)EIA regulation)					
<b>Information Verified by Lead Assessor:</b>					
(a) The document provided for substantiating the start date of POA is not signed or having seal of both the parties and also the exact date is not coming clear. Moreover, the document is local language, so requesting you to kindly provide a English translation version of the same. Open.					
(c) In section C.1, the conditions mentioned for EIA study for SSC-CPA is corrected making it in line with the description provided in section C.3.					
(d) As described in section C.1, environmental analysis is not required in this project. Thus this section doesn't describe any document on the environmental impact analysis. EIA regulation is submitted.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	

- (a) The document provided for substantiating the start date of POA is not signed or having seal of both the parties and also the exact date is not coming clear. Moreover, the document is in local language, so requesting you to kindly provide a English translation version of the same. Open.

Thus, CAR#11 is open.

<b>Project Participant Response:</b>	<b>Date:</b> 20/08/2012
(a) Submitted English translated version. As per seal matter, red rectangle mark on document is Korean seal. It is official protocol using red seal instead of personal sign at the contract in Government agency. Please check this fact with Korean SGS office.	
<b>Documentation Provided by Project Participant:</b>	
English translated version for proof of start date of POA	
<b>Information Verified by Lead Assessor:</b>	
The English translated version of proof of start date of POA has been checked for the proof of start date of POA.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	
The start date of POA is 18th of November, 2011. This is the date of publication of the POA-DD for global stakeholder consultation. This was found to be in line with definition of POA start date as mentioned in EB 70, Annex 4.. Thus, CAR#11 was closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 21/11/2012

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	12	Reference:	AU4
<b>Lead Assessor Comment:</b>					
<div>4. Pls. provide the LINK of the webpage where detailed information's about the POA is available for understanding of stakeholders.</div> <div>5. Please also provide the English translation of the web site that has been used to invite comments from the local stakeholders.</div> <div>6. Kindly submit all evidences to support the local stakeholder consultation process</div>					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
<div>1. Added webpage link in the section D.2</div> <div>2. Added English translation version of website in section D.2</div> <div>3. Submitted local stakeholder consultation document</div>					
<b>Documentation Provided by Project Participant:</b>					
3.Document on local stakeholder consultation including “notice”, ”webhosting page”, ”workshop”, “presentation material” (folder : POA-DD evidence _CAR12-(3)Local stakeholder consultation)					
<b>Information Verified by Lead Assessor:</b>					
<div>1. The LINK of the webpage where detailed information's about the POA is available for understanding of stakeholders. Ok, closed</div> <div>2. The English translation of the web site that has been used to invite comments from the local stakeholders has been provided. Ok, closed</div> <div>3. All evidences to support the local stakeholder consultation process has been checked. Ok, closed.</div>					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
Local stakeholder consultation of the POA is done at POA level. As described in Section A.6 of the POA DD., this project involves retrofit of existing heat generation system and/or installing of co-generation system. There are no significant changes on the process of heat generation system by retrofitting. For such type of projects there are no regulations of enforcement of public hearing or local consultation in Korea. This information was also confirmed from the local assessor of the host country. Therefore the project participants considered appropriate to carry out the local stakeholder consultation at POA level.					

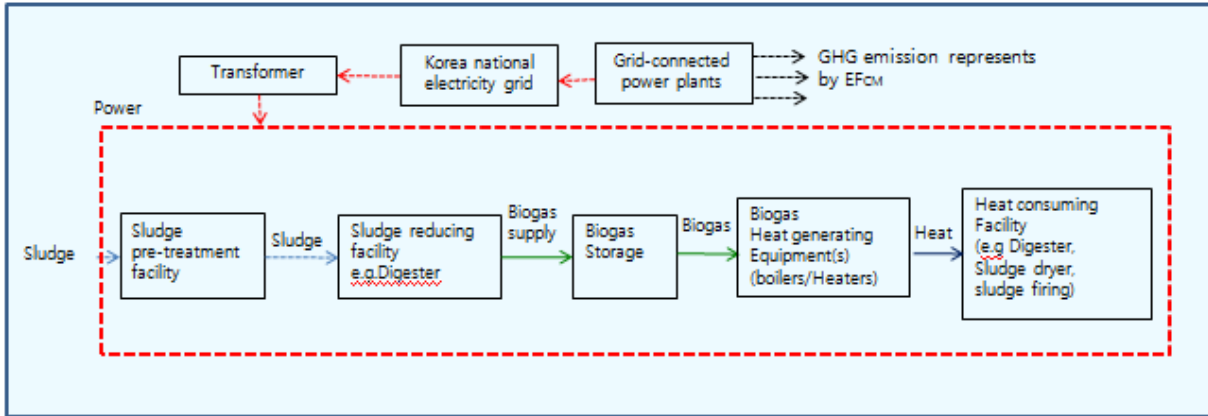
For this process, the CME had publicly webhosted the project details in the website. This was checked from the CME's website. Further, the PP had also carried out workshops on dated 25<sup>th</sup> of Nov 2010, 17<sup>th</sup> of Dec 2010 & 29<sup>th</sup> of April 2011. The related documentary evidences were checked by the assessment team, and the assessment team is of the opinion that the CME has carried out the stake holder's consultation process as per the requirement of paragraph 65-69 of the CDM Project Standard, version 6.0, Thus, CAR#12 was closed.

**Acceptance and Close out by Lead Assessor:** **Date:** 01/08/2012

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	13	Reference:	AU4
<b>Lead Assessor Comment:</b>					
<p>(a)The applicability criteria as mentioned in the webhosted POA – DD are not in line with the applied methodology AMS I C, version 19.</p> <p>(b)The project is based on AMS I C, however, as per section E.7.2, on data collection and archiving , AMS IIIH will be used for monitoring data &amp; GHG emission calculation. PP is requested to kindly clarify and transparently demonstrate the justification for the use of AMS III H, in context to current POA. Moreover, PP is requested to kindly justify, how they will ensure the elimination of cross effects of project activities in the CPA under the POA.</p> <p>(c) The SSC-CPA boundary is not in accordance with those of the project boundary description as per AMS I C. PP is requested to clarify. Moreover, there is not depiction of project boundary for the POA.</p>					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
<p>(a) Revised applicability criteria in accordance with <b>Methodology AMS I C, version 19</b></p> <p>(b) Revised ‘4. data collection and archiving’ in section E.7 and demonstrated justification for the use of AMS III H in section E.6.2</p> <p>“ In the methodology AMS I.C paragraph 45 stated that “Any other significant emissions associated with project activity within the project boundary” should be included in the project activity. Though methodology AMS I.C doesn’t specified project emission related to sewage treatment facility. Since the project activity is occurring sewage treatment facility and involved biogas recovery system, methodology AMS III.H Methane recovery in wastewater treatment is fairly applicable and contains project emission calculating equations for this project activity. Thus AMS III.H is implemented in this section”</p> <p>(c) Revised project boundary POA, CPA DD and added flow chart in section A.4.2.1 in POA DD.</p>					
<b>Documentation Provided by Project Participant:</b>					
Revised POA DD, version 1.2, dated – 28/06/2012					
<b>Information Verified by Lead Assessor:</b>					
<p>(a)The applicability criteria as mentioned in the revised POA – DD, version 1.2, dated – 28/06/2012 are in line with the applied methodology AMS I C, version 19.closed.</p> <p>(b)The justification for the use of AMS III H, in context to current POA has been checked. Closed. Moreover, PP is requested to kindly justify, how they will ensure the elimination of cross effects of project activities in the CPA under the POA. Open</p> <p>(c) the depiction of project boundary for the POA is insufficient, since PP has demonstrated the project boundary for Scenario 1 and not for scenario 2.Open</p>					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
<p>Following issues are still open –</p> <p>(b)PP is requested to kindly justify, how they will ensure the elimination of cross effects of project activities in the CPA under the POA. Open</p> <p>(c) the depiction of project boundary for the POA is insufficient, since PP has demonstrated the project boundary for Scenario 1 and not for scenario 2.Open</p> <p>Thus, CAR#13 is open.</p>					

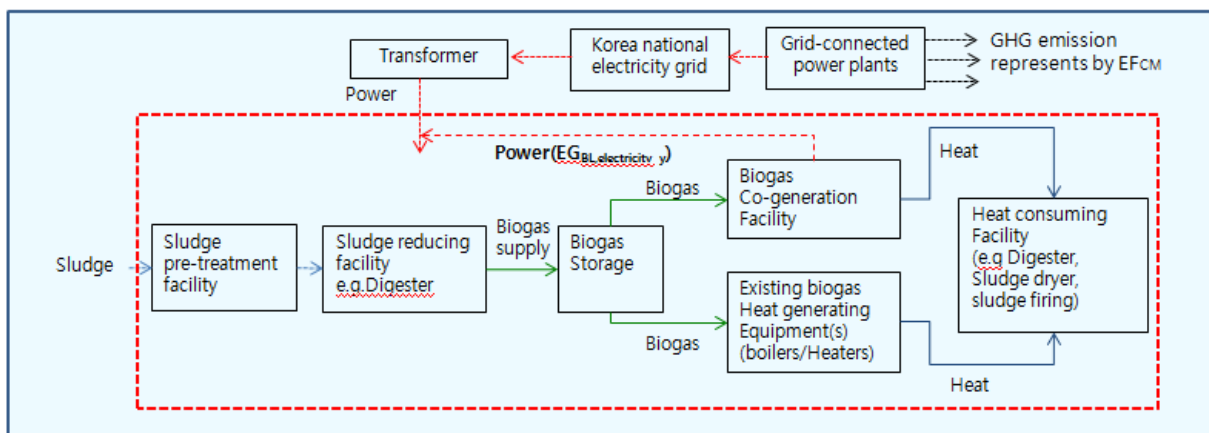
<b>Project Participant Response:</b>		<b>Date:</b> 20/08/2012
(b) In the Project design document, AMS I.C applied only baseline scenario & emission calculation and <u>AMS III.H applied only project emission calculation.</u> According to Methodology AMS I.C, section <b>project emission</b> , paragraph 45, addressed 4 type of project emission. Comparison between AMS I.C and AMS III.H are as follows		
AMS I.C	AMS III.H	
45 •CO2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the .Tool to calculate project or leakage CO2 emissions from fossil fuel combustion	29 (i) CO2 emissions on account of power and <b><u>fuel</u></b> used by the project activity facilities (PE <sub>power,y</sub> );	
45 •CO2 emissions from electricity consumption by the project activity using the latest version of the .“ Tool to calculate baseline, project and/or leakage emissions from electricity consumption,,	29 (i) CO2 emissions on account of <b><u>power</u></b> and fuel used by the project activity facilities (PE <sub>power,y</sub> );	
45 •Any other significant emissions associated with project activity within the project boundary;	29 (vi) Methane emissions from the decay of the final sludge generated by the project activity treatment systems (PE <sub>s, final, y</sub> ); 29(vii) Methane fugitive emissions due to inefficiencies in capture systems (PE <sub>fugitive, y</sub> ); 29 (vii) Methane emissions due to incomplete flaring ( PE <sub>flaring, y</sub> )	
45 •For geothermal project activities, project participants shall account for the following emission sources, where applicable: fugitive emissions of carbon dioxide and methane due to release of non-condensable gases from produced steam; and carbon dioxide emissions resulting from combustion of fossil fuels related to the operation of the geothermal power plant.	Not applicable.	
As result, AMS III.H cover all the project emission and also cover <b>significant emissions</b> mentioned AMS I.C but not specified detailed information. So there are no cross effect on project activity.		
(c)Revised depiction of project boundary in E.3		
<b>Documentation Provided by Project Participant:</b>		
Revised POA – DD, version 1.3, dated 20/08/2012		
<b>Information Verified by Lead Assessor:</b>		
(b) The justification on the cross effect has been checked		
(c) The revised POA – DD, version 1.3, dated 20/08/2012 has been checked for the project boundary description for scenario 2 .		
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>		Date – 12/09/2012
(b) PP has justified the cross effects which is found to be satisfactory. However, as in the final version of the POA DD, the CME is using only one methodology, i.e., AMS IC, version 19, hence there is no possibility of cross effect in the POA.		
(c) The revised POA – DD include the project boundary description for scenario 2 , however, the project boundary does not include all the equipment/facilities that will be utilising the electricity generated by the gas turbine. Moreover, the depiction of the boiler for generating the steam/hot water is not clear in the project activity diagram. This CAR#13 is open.		

<b>Project Participant Response:</b>	<b>Date:</b> 08/11/2012
(c) Revised POA-DD, version 1.4, dated 23/10/2012,Project Boundary in section E.3 has been revised.	
<b>Documentation Provided by Project Participant:</b>	

Revised POA-DD, version 1.4, dated 23/10/2012	
<b>Information Verified by Lead Assessor:</b>	
The revised POA – DD, version 1.4, dated 23/10/2012 has been checked for the changes in the project boundary.	
<b>Reasoning for not Acceptance</b>	<b>Date: 22/03/2013</b>
<p>The project boundary for Scenario 3 is not clear in the POA – DD, since the project boundary depiction reflect that the thermal energy is use in sewage treatment equipment using thermal energy and not in the digester, whereas in all other Scenarios, thermal energy is use in digester.</p> <p>Moreover, the project description is not correct for scenario 1 &amp; scenario 2. Refer to CAR#05.</p> <p>Thus, CAR#13 is open.</p>	
<b>Project Participant Response:</b>	<b>Date: 28/03/2013</b>
<p><b>1. The reason why thermal energy consumer equipments are different as follows</b></p> <p>In the option 1,2 of POA-DD Ver.1.4, PP depicted with heat consumer facility as digester in the project boundary, and in the option 3 depicted heat consumer facility as sludge dryer. This may cause confusion and it was revised. In the POA-DD Ver2.0, PP changed specific equipment (such as digester, sludge dryer) to 'heat consumer facility' in the project boundary depiction. Detailed heat consumer facility will be addressed in the each CPA-DD.</p> <p><b>2. The project boundary of Option 1,2,3 in POA-DD ver.2.0</b></p> <p>Proposed project boundary include four groups, "sludge pre-treatment facility" "sludge reducing facility" where biogas generated and "biogas heat generating equipment" and "heat consumer facility"</p> <ol style="list-style-type: none"> <li>1. sludge pre-treatment facility: pre-treatment to improve efficiency of sludge reducing.</li> <li>2. sludge reducing facility: Sludge is reducing by generating biogas. (i.e., digester)</li> <li>3. biogas heat generating equipment or co-generation: Generating thermal energy and/or electricity from biogas</li> <li>4. heat consumer facility: Consuming generated heat to heat the digester or dry sludge and so on.</li> </ol> <p><b>3. Explanation of the project boundary for each Option in section E.3, POA-DD ver.2.0,</b></p> <p><u>(1) Option 1</u></p> <ul style="list-style-type: none"> <li>- Thermal energy : Retrofit the fossil fuel based thermal energy generation facility. Generating thermal energy using biogas substitute fossil fuel. Send generated thermal energy to thermal energy consumer facility.</li> <li>- Electricity*: Imported from national grid</li> </ul>	
	
<p><u>(2) Option 2</u></p> <ul style="list-style-type: none"> <li>- Thermal energy: Installing biogas fired co-generation equipment and generating thermal energy and send to thermal energy consumer facility.</li> <li>- Electricity*: Electricity from the co-generation will be consumed on-site and deficient electricity will be</li> </ul>	

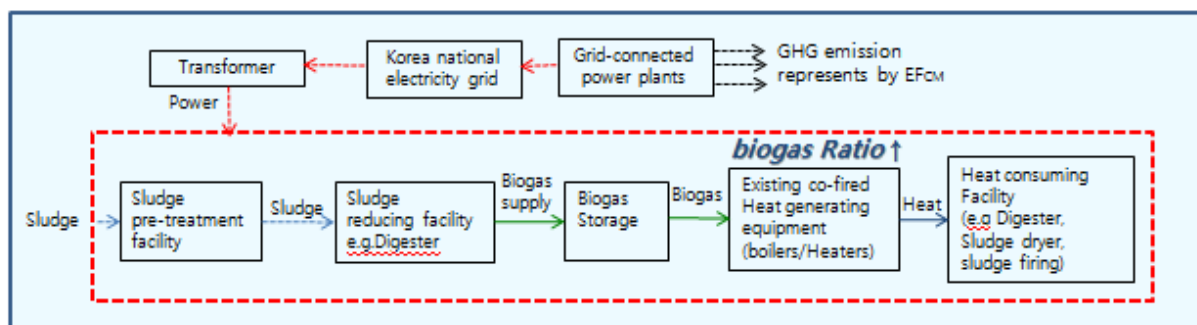


imported from the national grid.



### (3) Option 3

- Thermal energy: Thermal energy using biogas substituted from fossil fuel in a co-fired system will be sent to thermal energy consumer facility.
- Electricity\*: Imported from national grid.



\* Project electricity consumption (PE) in option 1,2,3 will be calculated with additional facility due to project activity.

#### Documentation Provided by Project Participant:

Revised POA – DD, version 03, dated 10/06/2013

#### Information Verified by Lead Assessor:

Revised POA – DD version 03, dated 10/06/2013 has been checked for the project boundary description.

#### Reasoning for not Acceptance

Date: 10/06/2013

PP has provided the revised POA – DD which includes the correct description of the project boundary which has been found to be satisfactory. In the final version of the POA DD, the CME has opted for only first two types of CPA (Option 1 and Option 2). The third option the CME has withdrawn voluntarily. This was checked from the final version of the POA DD and was accepted by the assessment team. Thus, CAR#13 was closed.



Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	14	Reference:	AU4
<b>Lead Assessor Comment:</b>					
CAR#14(a)					
<div><div>i.</div><div>The discussion on the identification of the baseline scenario is not comprehensive and transparently described in the POA-DD, under section E.4. The discussion on the preproject scenario and the project scenario is not transparently discussed in the POA – DD for scenario 1 &amp; scenario -2..</div></div> <div><div>ii.</div><div>In case of scenario 1 – POA – DD should clearly demonstrate the pre-project scenario and the project scenario. Also , the discussion of possible alternative should be discussed separately for scenario 1 &amp; scenario -2.</div></div> <div><div>iii.</div><div>The POA-DD should cite the specific para/ guidance’s of the applied methodology AMS I C, while discussing the baseline scenarios for scenario 1 &amp; 2.</div></div> <div><div>iv.</div><div>Moreover, under section E.4 of POA-DD, it has been mentioned that “The scenario of „Continuation of the current situation”; as discussed in the barrier analysis above represents the choice in the business as usual scenario in the sewage treatment facilities in Korea”, so it is not clear where the barrier analysis came into picture while discussing the identification of baseline scenarios.</div></div> <div><div>v.</div><div>PP need to demonstrate with verifiable evidences that the continuation of current practice is the most plausible baseline scenario.</div></div>					
CAR14(b)					
The start date of POA – DD is prior to the date of validation .					
(i)PP is requested to substantiate the start date of POA .					
(ii) PP is requested to provide the evidence in support of to prove that incentive from the CDM was seriously considered in the decision to proceed with the programme activity.					
(iii) PP is requested to kindly justify how the simple cost analysis is appropriate in context to the current project activities, since there are source of income apart from CDM revenue. Also, PP is requested to kindly correct and use the terminology for Investment analysis as per the Attachment A to Appendix B.					
(iv) PP is requested to kindly justify the key criteria and data for assessing the additionality of a SSC-CPA under section E.5.2 of POA – DD.					
(v) PP is requested to kindly justify the paragraphs of AMS I.C, mentioned against option 1 & option 2 under section E.6.2. Also, please clarify why the PP hasn’t considered the estimation of the baseline efficiency in line to AMS I C.					
CAR#14(c)					
Information is missing in the POA – DD, under section E.5, how the approval of the project activity will help to overcome the identified barriers					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
(a)					
<div><div>i.</div><div>Revised baseline scenario in section E.4</div></div> <div><div>ii.</div><div>Revised baseline scenario in section E.4</div></div> <div><div>iii.</div><div>Revised baseline scenario in section E.4</div></div> <div><div>iv.</div><div>Revised alternative scenario in section E.4.</div></div> <div><div>v.</div><div>Submitted evidence of voluntary action and equipment lifetime assessment report of installed plant(before the project). This indicates that even though CPA is operating facility with capable/appropriate equipment, voluntarily implementing P-CDM project.</div></div>					
(b)					
<div><div>i)</div><div>Submitted date of MOU with CPA implementers</div></div> <div><div>ii)</div><div>Submitted evidence of prior consideration</div></div>					

<ul style="list-style-type: none"> <li>iii) Simple cost analysis term was spelling mistake. Revised terms from simple cost analysis to IRR, NPV analysis</li> <li>iv) Revised in section E.5.2</li> <li>v) For the efficiency of plant before the project, default value 100% was applied due to lack of information about degradation of plant. And for the efficiency of co-generation, calculated in accordance with methodology AMS I.C paragraph 29. Calculation sheet and evidence is submitted</li> </ul> <p>(c) Submitted investment analysis to prove additionality</p>	
<b>Documentation Provided by Project Participant:</b>	
<ul style="list-style-type: none"> <li>(a) Evidence of voluntary action (folder : POA-DD evidence _ CAR8-(b)Evidence of voluntary coordinated action) Equipment lifetime assessment report (folder : POA-DD evidence _CAR5-(i)Design report)</li> <li>(b) (i) MOU document (folder - CAR14-(b)(i)The starting date of POA) (ii) Consideration of CDM incentives (folder - CAR14-(b)(ii) Evidence_ Consideration of CDM incentives)</li> <li>(c) Investment analysis(folder - CAR14-(c) Investment analysis)</li> </ul>	
<b>Information Verified by Lead Assessor:</b>	
<p>CAR#14(a)</p> <ul style="list-style-type: none"> <li>i. Revised baseline scenario in section E.4. Open</li> <li>ii. Revised baseline scenario in section E.4 Open</li> <li>iii. Revised baseline scenario in section E.4Open</li> <li>iv. Revised alternative scenario in section E.4. OK closed</li> <li>v. Submitted evidence of voluntary action and equipment lifetime assessment report of installed plant(before the project). This indicates that even though CPA is operating facility with capable/appropriate equipment, voluntarily implementing P-CDM project. The document has been checked. OK closed</li> </ul> <p>CAR#14(b)</p> <ul style="list-style-type: none"> <li>i) Submitted date of MOU with CPA implementers. The document has been checked.</li> <li>ii) Submitted evidence of prior consideration. The document has been checked.</li> <li>iii) Simple cost analysis term was spelling mistake. Revised terms from simple cost analysis to IRR, NPV analysis .OK closed</li> <li>iv) Revised in section E.5.2</li> <li>v) For the efficiency of plant before the project, default value 100% was applied due to lack of information about degradation of plant. And for the efficiency of co-generation, calculated in accordance with methodology AMS I.C paragraph 29. Calculation sheet and evidence is submitted Ok. closed</li> </ul> <p>CAR#14(c) Submitted investment analysis to prove additionality. Ok. Closed</p>	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 01/08/2012
<p>CAR#14(a) is open for the following issues</p> <ul style="list-style-type: none"> <li>i. Still the description of baseline scenario is not clearly mentioned in the POA – DD for Option 1 &amp; Option 2. Moreover, the PP has mentioned the approaches for estimating the baseline emissions for Option 1 &amp; Option2 instead of mentioning the baseline scenario as per para 19 of AMS I C version 19. Open</li> <li>ii. Still PP has not included the discussion of possible alternative, separately for scenario 1 &amp; scenario -2. Also, PP has not included the discussion on the ruling out of the possibility for the alternative “Autonomously installation high efficiency equipment in sewage treatment facilities without being registered as a CDM project activity. “Open</li> </ul>	

- iii. The POA-DD should cite the specific para/ guidance's of the applied methodology AMS I C, while discussing the baseline scenarios for scenario 1 & 2. Open, due to comment i. above. Open

CAR14(b) is open for the following issues

(i) PP has substantiate the start date of POA , however, a translated version of the document is required. Also, the document is not signed or authorised seal/ endorsement is not found in the document. Open

(ii) PP has provided the evidence in support of to prove that incentive from the CDM was seriously considered in the decision to proceed with the programme activity. however, a translated version of the document is required. Also, the document is not signed or authorised seal/ endorsement is not found in the document. Open

(iv) PP is further requested to kindly justify the key criteria and data for assessing the additionality of a SSC-CPA under section E.5.2 of POA – DD. However, the POA – DD mentioned that. Investment Comparison Analysis has been used for demonstrating additionality , so PP is requested to justify the use of Investment comparison analysis inline to EB 62, annex 5, para 19 for Option 2 where one of the alternative is supply of electricity from the grid. Also, please clarify how the financial indicator viz. IRR/NPV has been used for Investment comparison analysis, considering that fact that these financial indicators are meant for benchmark analysis.

Thus, CAR#14 is open

#### Project Participant Response:

Date: 20/08/2012

(a) i. Revised section E.4

ii. Revised section E.4

iii. Revised section E.4

(b) i. Submitted English translated version. As per seal matter, red rectangle mark on document is Korean seal. It is official protocol using red seal instead of personal sign at the contract in Government agency. Please check this fact with Korean SGS office.

ii. Submitted English translated version

iv. Revised section E.5.2

#### Documentation Provided by Project Participant:

(b) i Chuncheon-Keco MOU\_ translated.(folder : POA\_ CAR11-14(b)(i)-Start date POA)

li Attachment\_P-CDM Promotion Plan\_translated, Official document-P-CDM Promotion Plan\_translated ( folder : POA \_ CAR14-(b)(ii)Evidence of incentive from the CDM)

#### Information Verified by Lead Assessor:

Revised POA DD section E.4 has been checked for the following information

CAR#14(a) for the following issues

- i. the description of baseline scenario in the POA – DD for Option 1 & Option 2. Moreover, the mentioned approaches for estimating the baseline emissions for Option 1 & Option2 instead of mentioning the baseline scenario .Issues is open.
- ii. the discussion of possible alternative, separately for scenario 1 & scenario -2. Also, the discussion on the ruling out of the possibility for the alternative “Autonomously installation high efficiency equipment in sewage treatment facilities without being registered as a CDM project activity. “issues is still open
- iii. The POA-DD for the specific para/ guidance's of the applied methodology AMS I C, while discussing the baseline scenarios for scenario 1 & 2. Open, due to comment i. above. Open

CAR14(b) is open for the following issues

(i) PP has substantiate the start date of POA , however, a translated version of the document is required. Also, the document is not signed or authorised seal/ endorsement is not found in the document. Closed.

(ii) PP has provided the evidence in support of to prove that incentive from the CDM was seriously considered in the decision to proceed with the programme activity. however, a translated version of the document is required. Also, the document is not signed or authorised seal/ endorsement is not found in the document.

<p>closed</p> <p>(iv) PP is further requested to kindly justify the key criteria and data for assessing the additionality of a SSC-CPA under section E.5.2 of POA – DD. However, the POA – DD mentioned that. Investment Comparison Analysis has been used for demonstrating additionality, so PP is requested to justify the use of Investment comparison analysis inline to EB 62, annex 5, para 19 for Option 2 where one of the alternative is supply of electricity from the grid. Also, please clarify how the financial indicator viz. IRR/NPV has been used for Investment comparison analysis, considering that fact that these financial indicators are meant for benchmark analysis. Closed.</p> <p>Thus, CAR#14 is open</p>	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	Date – 12/09/2012
<p>CAR#14(a) is open for the following issues</p> <p>i. Still the description of baseline scenario is not clearly mentioned in the POA – DD for Option 1 &amp; Option 2. the project activity dose not involves retrofitting/ modifying the existing facility i.e. Boilers which are for renewable energy generation, but only the biogas generating component are retrofitted. Please clarify how the modification/ retrofitting of the biogas generation system i.e. digester, sludge generating system etc are included under the applied methodology AMS IC version 19. Moreover, for the option 2, there are no scenarios defined in the applied methodology</p> <ul style="list-style-type: none"> <li>The description of the typical CDM programme activity (CPA) under section A.4.2 is not comprehensive. The project activity is applying AMS I C for thermal energy generation including electricity generation, however, under this section it has been mentioned that “proposed small scale CDM Programme Activity (CPA) will consist of biogas recovery system and biogas utilization system to public sewage treatment facility in Korea”.</li> <li>The SSC 374 is meant for the project which involve retrofit of the energy generation equipment i.e. Boiler etc., and not the retrofit of the fuel generating source i.e. biogas generator etc. Moreover, SSC 374 dose not allowed fuel switch in case of retrofitting “AMS I C is not applicable to the described situation and equations 7 and 8 are aimed to cover cases where an existing renewable energy generation equipment is retrofitted to increase its energy generation efficiency and is not meant to cover fuel switch”</li> <li>The baseline scenario description does not provide information on the amount of Biogas and fossil fuel used in the baseline i.e. fuel mixed ratio used in baseline for both Option 1 &amp; Option 2. Please clarify. Refer page 38.</li> </ul> <p>AMS I C, version 19, does not have any provision of modification including the retrofitting of existing system i.e. biogas generation system and it does not include any retrofit of the boiler which is the main renewable energy system. Please clarify how the description of baseline scenario is in line to the methodology. Moreover, the baseline scenario is not fitting with any scenario as outline in the applied methodology AMS I C version 19, since the baseline system is a co-fired boiler ( i.e. fossil fuel and biogas are used) and methodology does not have any provision of co-fire system w.r.t the project system. Please clarify. Applied methodology does not have the provision for Option 2, since the Baseline scenario for power and heat production as mentioned in the applied methodology AMS IC version 19, does not include the baseline co-fire system for thermal energy and baseline electricity import. Hence, this methodology is not applicable for the project activity. Clarification is requested why PP has used AMSI C version 19.</p> <p>Please clarify how AMS IC paragraph 19(a) is applicable for Option 1 of the POA – DD. refer page 38.</p> <ul style="list-style-type: none"> <li>The project description mentioned that “increased biogas will be used in boiler”, however, here it has been mentioned that “or to dry sludge or other equipment/facilities”, however, the use of biogas to dry sludge or other equipment / facilities is not clearly mentioned while discussion the project technology, project description. Refer page 39.</li> <li>PP has used AMS I F for calculation of baseline electricity calculation, so PP is requested to kindly justify, how AMS I F, is applicable to the project activity.</li> </ul> <p>ii. the discussion of possible alternative, separately for scenario 1 &amp; scenario -2. Also, the discussion on the ruling out of the possibility for the alternative “Autonomously installation high</p>	

efficiency equipment in sewage treatment facilities without being registered as a CDM project activity. As per AMS IC which does not talk about any efficiency improvement of biogas system as per the alternative 1 & alternative 2 which mention that the installation of high efficiency sewage treatment facility and whereas, the project activity is a fuel switch in a co-fire system in baseline, so these alternatives are not found to be appropriate. Please clarify. Refer page 37 of POA DD

iii. The POA-DD for the specific para/ guidance's of the applied methodology AMS I C, while discussing the baseline scenarios for scenario 1 & 2. Open, due to comment i. above. Open

- Thus, CAR#14 is open.

#### Project Participant Response:

Date: 08/11/2012

(a) i. Our project does not applying AMS I.C paragraph 38~41 because of that modification involves with biogas production system. However, generating thermal energy and electricity using increased biogas in result of modification and/or retrofitting of existing facility such as digester, sludge treatment equipment is renewable energy technology (paragraph 1. AMS I.C). Thus AMS I.C is applicable to the project.

- Revised section 4.2 description. Our project involves biogas recovery system and biogas utilization system in public sewage system. But main project activity is generation of thermal energy and electricity using increased biogas (i.e. renewable energy) by modification of existing facility.
- Deleted sentence SSC 374 because of irrelevant to the project.
- Fuel mix ratio is depending on each CPA condition. Addressed range of fuel mix ratio (5%~50%) in the POA-DD section E.4
- Main purpose of modification is increasing biogas production **to substitute the fossil fuel to biogas** and install/replace **renewable energy generation equipment** such as biogas based co-generation, biogas based thermal energy producing equipment to use increased biogas. This corresponds to the Methodology AMS I.C. Revised baseline scenario in the POA –DD.

As per option 1, existing boiler is co-fired system and using both biogas and fossil fuel. In the project, fossil fuel in the co-fired system will be replaced to biogas by project activity. This scenario corresponds to methodology AMS I.C paragraph 19(h) "Electricity and/or thermal energy produced in a co-fired system".

- As addressed above, main project activity is using renewable energy to generate thermal energy and/or electricity by modification. This fits the main scenario of the methodology AMS I.C. But there are few problems because of complexity of this project. Thus we combined 2 scenarios in the methodology AMS I.C. 19(h), 19(e).

In the option 2, we applied combined scenario of paragraph 19(e) and 19(h) due to electricity is imported from grid and thermal energy produced from co-fired system. In case of 19(e), only electricity will be applied using AMS I.D or AMS I.F from the original scenario 19(e) "Electricity is imported from a grid and/or produced in an on-site captive power plant using fossil fuels (with a possibility of export to the grid); steam/heat is produced from biomass" In case of 19(h) only thermal energy will be applied from the original scenario 19(h) "Electricity and/or thermal energy produced in a co-fired system"

- Revised option 1 baseline scenario to paragraph 19(h).
- Added new option 3 and described in section A4.2, E.4. Option 3 is replacing fossil fuel to biogas in a fossil fuel based system by modification of existing facility. In this option, fossil fuel based facility is thermal energy production equipment inside the project boundary such as sludge dryer.
- Based on paragraph 21, methodology AMS I.C, "Baseline emissions for supply of electricity to and/or displacement of electricity from a grid shall be calculated as per the procedures detailed in AMS-I.D or AMS-I.F as applicable" project can choose appropriate methodology between AMS I.D and AMS I.F. Each CPA has option of choice between AMS I.D and AMS I.F and it will be decided CPA level according to AMS I.D "Table 2: Applicability of AMS-I.D, AMS-I.F and AMS-I.A based on project type" as appropriate.

ii. Revised alternative 1,2,3 as increasing biogas production amount instead of installing high efficiency



Check section E.4	
iii. Added Option 3 and addressed detailed baseline scenario paragraph. Please check section4, 6	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD, version 02, dated 18/03/2013 was checked by the assessment team	
<b>Information Verified by Lead Assessor:</b>	
Revised POA DD, version 02 dated 18/03/2013 was checked by the assessment team	
<b>Reasoning for not Acceptance</b>	<b>Date: 22/03/2013</b>
<p>CAR#14(a) is open for the following issues</p> <p>The revised POA – DD has been reviewed and found that PP has included one more baseline option i.e. option 3, according to which “Fuel substitution from fossil fuel to biogas in a fossil fuel based system by modification of existing facility” which was earlier not include the POA – DD including the initial webhosted POA – DD. Moreover, the under page 13 of POA – DD, it has been mentioned that after modification “Producing thermal energy to dry sludge cake. Co-fired system using both fossil fuel and biogas”, which is not found to be correct.</p> <p>It is noteworthy that still the description of baseline scenario is not clearly mentioned in the POA – DD for Option 1 &amp; Option 2. the project activity dose not involves retrofitting/ modifying the existing facility i.e., Boilers which are for renewable energy generation, but only the biogas generating component are retrofitted. PP has failed to clarify how the modification of the biogas generation system i.e. digester, sludge generating system etc are included under the applied methodology AMS IC version 19 under para 1. Moreover, for the option 2, there are no scenarios defined in the applied methodology AMS I C, version 19. Thus, project failed to meet the applicability criteria.</p> <ul style="list-style-type: none"> <li>The description of the typical CDM programme activity (CPA) under section A.4.2 is not clearly represented in particular what modification will be undertake to increase the thermal energy generation by renewable source, instead only the modification of sewage system and sewage related systems modification has been detailed which is not in accordance with the applied methodology, since any modification included should be done with the thermal energy generation equipment and not the source of energy generation systems/equipments Moreover, in the baseline steam has been used to heat the digester directly , whereas in the project scenario for option -1, warm water has been used indirectly for digester heating. Thus, PP has failed to demonstrate how the thermal energy generation in the baseline and project are comparable.</li> </ul> <p>Still the justification provided by PP is not convincing since, AMS I C, version 19, does not have any provision of modification of existing system i.e. biogas generation system and it does not include any retrofit of the boiler which is the main renewable energy system. Thus, PP fails to clarify how the description of baseline scenario is in line to the methodology including the applicability of the methodology para 1.</p> <p>Applied methodology does not have the provision for Option 2, since the Baseline scenario for power and heat production as mentioned in the applied methodology AMS IC version 19, does not include the baseline co-fire system for thermal energy and baseline electricity import. Hence, this methodology is not applicable for the project activity.</p> <p>The project description mentioned that” increased biogas will be used in boiler” , however, here it has been mentioned that “or to dry sludge or other equipment/facilities”, however, the use of biogas to dry sludge or other equipment / facilities is not clearly mentioned while discussion the project technology, project description. Refer page 39.</p> <ul style="list-style-type: none"> <li>PP has used AMS I F for calculation of baseline electricity calculation, so did not provide any justification, how AMS I F, is applicable to the project activity.</li> </ul> <p>iv. The alternatives to each of the options are not clearly demonstrated in the POA – DD. Thus, CAR#14 is open .</p>	
<b>Project Participant Response:</b>	<b>Date: 28/03/2013</b>
<p>① 1. The reason why the Option 3 was included as follows:</p> <p>As explained CAR#05, PP need to include 3<sup>rd</sup> option to classify from “heat generating facility’ to ‘co-fired system’ and ‘fossil fuel based system’ after web hosting. But it is not significant change but specify. And according to EB50 annex 48 (Procedures for processing and reporting on validation of CDM project activities), proposed project doesn’t need to redo GSC.</p>	

## 2. Explanation of POA-DD ver1.4, 13 page

- In the option 3 (ver.2.0 option1) "producing thermal energy to dry sludge cake" means that biogas will be combusted in the burner designed to dry sludge cake which is retrofitted to biogas fired system to replacing fossil fuel (LNG). This is case of certain CPA and PP revised to general description "retrofit of existing fossil fuel heat generating facility" in the POA-DD ver2.0. section 4.2.1.
  - In the POA-DD ver 1.4, PP understood "co-fired system" as system that have capability to use both fossil fuel and biogas, even if not using it at the same time. PP realized that it was mistake. In the option 1 POA-DD ver 2.0 (=option1 ver 1.4), PP include both 100% biogas fired system and co-fired system by retrofitting. That means option 1's system fired 100% fossil fuel before the project but after retrofit system will be changed 100% biogas fired system and also co-fired system using both biogas and fossil fuel. And difference is that compare to option 3 is that option 3 increase co-firing fuel fossil ratio (biogas vs. fossil fuel), but not retrofit thermal energy generation equipment.
  - And fossil fuel consumption will be monitored and calculated as project emission.
- (Additional) DOE commented that AMS I.C doesn't have provision on co-fire system. However refer to case of SSC 157, it is possible to claim emission reduction on fossil fuel substitution by retrofit of fossil fuel fired system to biogas fired system. Proposed project is applicable to AMS I.C.
- Also applied equation (2) AMS I.C on both 100% biogas fired case and co-fired case.

### (Reference)

- ① (SSC\_517, Answer by the SSC WG, Query 2) paragraph 42(of AMS.I.C ver. 18 ) applies for **co-firing project activity**(cogeneration or **non-cogeneration project activity**) whose **baseline could be with or without co-firing**
- ② (SSC\_517, Answer by the SSC WG, Query 1) The group is of the opinion that if the baseline for such project activity is solely fossil fuel fired unit, the author may explore equation 1 and equation 2 of AMS.I.C for estimating baseline emissions **while fossil fuel used in the project activity is taken into account under project emissions.**

## ② 1. Explanation of the project activity

Proposed project is generating renewable energy using biogas. Since PP focused on explains retrofit of sludge treatment facility than explain generation of renewable energy from biogas throughout the POA-DD ver1.1 to ver 1.4, this may cause miscommunication between DOE and PP.

## 2. Explanation of applicability of Methodology AMS I.C. ver.19

Proposed project is generating thermal energy/or electricity using biogas substituted from fossil fuel in all the option 1,2,3. It is applicable to methodology AMS I.C.

- (Option 1) Generating thermal energy from biogas by retrofit of existing fossil fuel based facility.
- (Option2) Generating electricity and thermal energy from biogas by installing new co-generation equipment
- (Option 3) Generating thermal energy in a co-fired system using increased biogas to substitute fossil fuel. (Biogas ratio↑)

## 3. Further explanation for Option 3

'Fuel substitute in a co-fired system by increasing biogas production ratio' is applicable to AMS I.C.

### (Reasoning)

- AMS.I.C ver.18 paragraph 42(For the co-fired systems, baseline emissions calculated as per paragraph 31 shall be compared with the baseline emissions calculated as per paragraph 41...)(③ SSC WG 31<sup>st</sup>) is based on 'co-fired' Project Activity. [①SSC 517]
- In case of Co-fired(baseline) -> Co-fired(Project Activity), the base premise is that fuel substitution in a co-fired system can be considered as project activity.
- Thus, AMS.I.C include fuel substitution in a co-fired system as project activity.



- In the revision process of methodology AMS I.C ver 18, the reason why paragraph 42 was deleted is that paragraph 35, ver19 can cover contents of paragraph 42, ver18. [③ SSC WG 31<sup>st</sup>]
- "Increase of biogas" is not exactly technology generating thermal energy, however fuel substitution in a co-fired system can occur by result of "Increase of biogas. Thus it is applicable to Paragraph 1 'other technologies that provide thermal energy that displaces fossil fuel', AMS.I.C ver 19

**(Reference)**

- ① **(SSC\_517, Answer by the SSC WG, Query 2)** paragraph 42(of AMS.I.C ver. 18 ) applies for **co-firing project activity**(cogeneration or **non-cogeneration project activity**) whose **baseline could be with or without co-firing**
- ② **(SSC\_517, Answer by the SSC WG, Query 1)** The group is of the opinion that if the baseline for such project activity is solely fossil fuel fired unit, the author may explore equation 1 and equation 2 of AMS.I.C for estimating baseline emissions **while fossil fuel used in the project activity is taken into account under project emissions.**
- ③ **(SSC WG 31<sup>st</sup> Meeting Report, paragraph 13(Revision of AMS.I.C) )** : taking into account the numerous submissions made, the SSC WG agreed to recommend a revision, as contained in annex 5. The proposed revisions simplify the monitoring requirement for the quantity of biomass used, its NCV and moisture content, the procedure to cross-check the measurements (e.g. biomass consumption and energy output). The revision also expands the baseline scenarios for co-generation project activities.

**4. The baseline scenario for Option 2**

PP misunderstood existing facility as co-fired system in POA-DD ver 1.3 because fossil fuel was used for in case of biogas deficiency(as back up fuel). However now PP considered existing facility is biogas fired system and fossil fuel was back up fuel. In the option 2 existing biogas fired system will be replace to co-generation system and co-generation facility will generate thermal energy and electricity. Thus option 2 is applicable paragraph 19(i), AMS I.C. (Electricity imported from a grid and heat produced in a biomass fired boiler). Revised in POA-DD ver 2.0

**③ 1. Explanation of project activity to increase thermal energy**

what modification will be undertake to increase the thermal energy generation by renewable source.

Below project activity will be done by CPA implementers to generate thermal energy from biogas.

(Option 1) Generating thermal energy from biogas by retrofit of existing fossil fuel based facility.

(Option2) Generating electricity and thermal energy from biogas by installing new co-generation equipment

(Option 3) Generating thermal energy in a co-fired system using increased biogas to substitute fossil fuel. (Biogas ratio↑)

Proposed project option 1,2,3 is generating thermal energy from biogas by substitute fossil fuel, and it is applicable to AMS. I.C ,

**2. Explanation of modified heating digester system**

- Technology heating the digester (direct steam injection to heated sludge injection) is one method among the technology to increase biogas. It is not directly affect baseline scenario.

- To respond the comment from DOE, there are no calorific energy difference between direct steam injection and heated sludge injection. But heated sludge injection has higher efficiency during the heating the digester than direct steam injection. PP doesn't considered efficiency and that is conservative approach.

**④ 1. Applicability of Methodology AMS-I.C ver.19**

AMS.I.C doesn't have paragraph on modification of biogas production system. But to substitute fossil fuel to biogas in a thermal energy generating system, biogas increasing technology is critical. And proposed project include project renewable energy technology generating thermal energy from biogas by substitution of fossil

fuel. Thus proposed project is applicable to paragraph 1 “renewable energy technologies that supply users with thermal energy that displaces fossil fuel use.”, AMS I.C.

## 2. Explanation of applicability of Methodology AMS-I.C for each Option

- In case of option 1, option 2 in POA-DD Ver.2.0, Option 1,2 beside “increased biogas in the existing facility”, also include “retrofit of existing fossil fuel heat generating facility”, “ by installing a new biomass co-generation system” as project activity. Thus option 1,2 is applicable to AMS I.C.

- In case of option 3, POA-DD Ver.2.0, retrofit of sludge treatment facility to increase biogas production(increase renewable energy) in a co-fired system is applicable to AMS I.C based on methodology revision history (ver.18->ver.19) and SSC 517.

In the methodology AMS.I.C ver.18, paragraph 42(For the co-fired systems, baseline emissions

calculated as per paragraph 31 shall be compared with the baseline emissions calculated as per paragraph 41...) [(3) SSC WG 31<sup>st</sup>] connote that ‘co-fired’ can be project activity. (It can be checked on [SSC WG 31<sup>st</sup>]

that AMS I.C ver19 also cover co-fired->co-fired scenario)

Methodology AMS I.C include “(Pre-PA)co-firing→(PA)co-firing”, in this case, it is hard to consider the technology generating thermal energy, it can be easily assumed that fossil fuel substitution in a co-fired system. Thus co-fired. Thus, fossil fuel substitution by increase of biogas by retrofit is applicable to paragraph 1 “other technologies that provide thermal energy that displaces fossil fuel.”

### ⑤ 1. The baseline scenario for Option 2

PP misunderstood existing facility as co-fired system in POA-DD ver 1.3 because fossil fuel was used for deficiency of biogas(as back up fuel). However now PP considered existing facility is biogas fired system and fossil fuel was back up fuel. In the option 2 existing biogas fired will be replace to co-generation and co-generation facility will generate thermal energy and electricity. Thus option 2 is applicable paragraph 19(i), AMS I.C. (Electricity imported from a grid and heat produced in a biomass fired boiler). Revised in POA-DD ver 2.0

### ⑥ 1. Explanation of project activity which described on Page 39

Sentence “or to dry sludgy or other equipment/facilities” in POA- DD ver1.4 is an example of “Heat consumer facility”. “Heat consumer facility” includes digester, sludge dryer and other heat consumer facilities.

## 2. Explanation of Project activity in POA-DD ver.2.0

PP revised the expression “heat consumer facility” in section E.3 which include the digester, sludge dryer and other heat consumer facility. Detailed facility will be addressed at each CPA-DD.

### ⑦ 1. The reason why AMS.I.F methodology is applied as follows

PP used AMS. I.F according to paragraph 21 AMS I.C “Baseline emissions for supply of electricity to and/or displacement of electricity from a grid shall be calculated as per the procedures detailed in AMS-I.D10 or AMS-I.F as applicable”

In option 2, electricity generated from co-generation facility will be used on-site or export to national grid depends on each CPA condition. Thus PP include both calculation options(AMS I.D, AMS I.F) in the POA-DD ver 2.0 and appropriate methodology will be applied for each CPA according to table 2, AMS I.D

**Table 2: Applicability of AMS-I.D, AMS-I.F and AMS-I.A based on project types**

		AMS-I.A	AMS-I.D	AMS-I.F
1	Project supplies electricity to a national/regional grid		√	
2	Project displaces grid electricity consumption (e.g. grid import) and/or captive fossil fuel electricity generation at the user end (excess electricity may be supplied to a grid)			√

3	Project supplies electricity to an identified consumer facility via national/regional grid (through a contractual arrangement such as wheeling)		√	
4	Project supplies electricity to a mini grid <sup>17</sup> system where in the baseline all generators use exclusively fuel oil and/or diesel fuel			√
5	Project supplies electricity to household users (included in the project boundary) located in off grid areas	√		

⑧ CAR#14 has been closed in a Draft validation report. Though, PP revised project activity and baseline scenario in section E.4 POA-DD ver 2.0.

⑨ Proposed project is generate thermal energy/electricity from biogas by substitute fossil fuel and this satisfies applicability criteria of methodology AMS I.C. PP revised baseline scenario in POA-DD ver 2.0 and changed emission reduction sheet.

#### Documentation Provided by Project Participant:

Revised POA DD, version 02, dated 18/03/2013

#### Information Verified by Lead Assessor:

For Option 3, please clarify how the para 19 (h) of AMS I C is applicable for Option 3 of CPA, as mentioned in the POA – DD, since the para 19 clearly state that “Project activities producing both heat and electricity shall use one of the following baseline scenarios:”, whereas in case of CPA Option 3, the project will only generate thermal energy and not the electricity. Issue open

PP has revised the POA – DD version 02, dated 18/03/2013 which has been checked for the raised issue and found to be satisfactory. Ok, issue closed.

PP has revised the POA – DD version 02, dated 18/03/2013 which has been checked for the raised issue and found to be satisfactory Ok, issue closed.

PP has revised the POA – DD version 02, dated 18/03/2013 which has been checked for the raised issue and found to be satisfactory Ok, issue closed.

PP has revised the POA – DD version 02, dated 18/03/2013 which has been checked for the raised issue and found to be satisfactory Ok, issue closed.

PP has revised the POA – DD version 02, dated 18/03/2013 which has been checked for the raised issue and found to be satisfactory Ok, issue closed.

PP has revised the POA – DD version 02, dated 18/03/2013 which has been checked for the raised issue and found to be satisfactory Ok, issue closed.

#### Reasoning for not Acceptance or Acceptance and Close Out:

Date: 07/05/2013

For Option 3, please clarify how the para 19 (h) of AMS I C is applicable for Option 3 of CPA, as mentioned in the POA – DD, since the para 19 clearly state that “Project activities producing both heat and electricity shall use one of the following baseline scenarios:”, whereas in case of CPA Option 3, the project will only generate thermal energy and not the electricity. Issue open

The justification provided by PP was found to be acceptable. However, PP is requested to correct the reference of POA DD. The mentioned sections of the POA DD is not there in the revised one using new template. Hence PP is requested to revise the same in the response. CAR open.

Thus, CAR#14 is open.

#### Project Participant Response:

Date: 10/06/2013

1. PP deleted the option 3. Because the CPA project which is supposed to be included in our POA as per option 3 was determined as transport fuel project. It would be very tough to be registered on UN. Thus PP decided to remove the option 3 after discussion with the CPA implementor. PP modified baseline scenario. It is described in section B.4

2. PP modified the reference what you requested. The reference is as follows.

2-1. “2. Explanation of POA-DD ver1.4, 13 page”

This is case of certain CPA and PP revised to general description “retrofit of existing fossil fuel heat generating facility” in the POA-DD ver2.0. section 4.2.1. => the POA-DD ver2.0. Section A.6.

<p>2-2. "2. Explanation of Project activity in POA-DD ver.2.0"</p> <p>PP revised the expression "heat consumer facility" in section E.3 which include the digester, sludge dryer and other heat consumer facility. Detailed facility will be addressed at each CPA-DD. =&gt; the POA-DD ver2.0. Section B.3.</p>	
<p>2-3. "1. The reason why AMS.I.F methodology is applied as follows"</p> <p>PP used AMS. I.F according to paragraph 21 AMS I.C "Baseline emissions for supply of electricity to and/or displacement of electricity from a grid shall be calculated as per the procedures detailed in AMS-I.D10 or AMS-I.F as applicable. =&gt; AMS.I.D ver17 or AMS.I.F ver02</p>	
<p>2-4. "CAR#14 (8) has been closed in a Draft validation report. Though, PP revised project activity and baseline scenario in section E.4 POA-DD ver 2.0." =&gt; the POA-DD ver2.0. Part II Section B.4.</p>	
<p><b>Documentation Provided by Project Participant:</b></p>	
<p>Revised POA DD, Version 3, dated 10/06/2013</p>	
<p><b>Information Verified by Lead Assessor:</b></p>	
<p>Revised POA DD, Version 3, dated 10/06/2013 was checked.</p>	
<p><b>Reasoning for not Acceptance or Acceptance and Close Out:</b></p>	<p><b>Date:</b> 13/06/2013</p>
<p>1. CME has now removed the option 3 type CPA in the revised POA DD. This was checked by the assessment team and was found to be correct. CAR closed.</p> <p>2. PP has corrected the POA DD appropriately. CAR closed.</p>	
<p>CAR 14 closed.</p>	
<p><b>Acceptance and Close out by Lead Assessor:</b></p>	<p><b>Date:</b> 13/06/2013</p>

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	15	Reference:	AU4
<b>Lead Assessor Comment:</b>					
<p>(a)PP is requested to kindly use the latest available version of “tool to calculate the emission factor for electricity system” as available at UNFCCC website in the POA- DD while determining the emission factor and also to update the relevant steps as per the latest tool. PP is requested to provide the backup sheet for the analysis of emission factor calculation. Also, in section B.6.3, please provide the exact source from where the value is taken for <math>EF_{grid,CO_2}</math> .</p>					
<p>(b) No information on leakage has been provided as per para 47 &amp; 48 of AMS I C ,in the POA- DD, under section E.6.3</p>					
<p>(c) While describing the baseline emission and project emission calculation, PP is requested to kindly provide the reference of the specific para of the applied methodology AMS I C. Moreover, the equation described for Option 2 is not found to be in line to the methodology, please clarify. Please also include the project emission from the AMS III H component as per para 13 of AMS I C version 19.The emission reduction equation is found to be not in line with the methodology AMS I C, para 49, please clarify.</p>					
<p>(d) PP is requested to provide emission reduction calculation backup spreadsheet</p>					
<p>(e) PP is requested to kindly clarify why the following information is not included in the monitoring plan for CPA – In line to the AMS I C, version 19, para 51 (c)” In case of the project activity involves the replacement of equipment “ the related information on scrapping should be clearly reflected in the monitoring plan of POA – DD.</p>					
<p>(f) The monitoring /recording frequency is not defined inline to the monitoring methodology AMS I C.</p>					
<p>(g) PP is requested to clarify why COD has been included in the data to be monitored.</p>					
<p>(h). PP is requested to clarify regarding the flaring system that would be installed at the project site.</p>					
<p>(i).Please clarify the ex-ante approach for determining the baseline efficiency for the project activities and please demonstrate how the <math>\eta_{BL,cogen}</math> will be determined in accordance with paragraph 28 &amp; 29 of AMS I C, ver 19.</p>					

(j) Please clarify why the parameter “volume of waste water treated in baseline waste water treatment” is included under data & parameter to be monitored

<b>Project Participant Response:</b>	<b>Date:</b> 27/06/2012
<p>(a) Revised <math>EF_{grid, CM, y}</math> in section E 6.3 and submitted back-up calculation sheet</p> <p>(b) Revised leakage emission in section E.6.2</p> <p>(c) Revised emission calculation description in section E.6.2</p> <p>(d) Emission reduction calculation sheet is submitted</p> <p>(e) Added monitoring plan in section E 7.2</p> <p>(f) Revised monitoring /recording frequency in section E.6.3</p> <p>(g) COD has been included due to project methane emission from biogas release in capture systems</p> <p>(h) Revised emission calculation description in section E.6.2</p> <p>(i) Submitted co-generation efficiency calculation document</p> <p>(j) <math>Q_{ww,y}</math> has been included due to project methane emission from biogas release in capture systems and shall be monitored depend on CPA condition</p>	
<b>Documentation Provided by Project Participant:</b>	
<p>(a) Back up sheet for electricity emission factor calculation (folder : POA-DD evidence_CAR15-(a)Backup sheet for the electricity emission factor calculation)</p> <p>(d) GHG emission reduction calculation sheet (folder : POA-DD evidence_CAR15-(d)GHG emission reduction calculation sheet)</p> <p>(i) co-generation efficiency calculation document (folder : POA-DD evidence_CAR15-(i) Co-generation efficiency)</p> <p>Project design report (folder : POA-DD evidence _CPA15 Project design report)</p>	
<b>Information Verified by Lead Assessor:</b>	
<p>(a) Still PP hasn't use the latest available version of “tool to calculate the emission factor for electricity system” as available at UNFCCC website in the POA- DD while determining the emission factor and also the relevant steps are not updated as per the latest tool. Also, PP has not provided the backup sheet for the analysis of emission factor calculation. Also, in section B.6.3, PP is requested to include OM &amp; BM as data &amp; parameter available at the time of validation. Open.</p> <p>(b) Information on leakage has been provided as per para 47 &amp; 48 of AMS I C ,in the POA- DD, under section E.6.3. Ok, closed.</p> <p>(c), the equation described for Option 1 &amp; 2 is not found to be in line to the methodology para 19 (a) &amp; 19(h), please clarify. Open.</p> <p>(d) PP is requested to provide revised emission reduction calculation backup spreadsheet. Open due to point (c) above.</p> <p>(e) PP clarified the following information on the monitoring plan for CPA – In line to the AMS I C, version 19, para 51 (c)” In case of the project activity involves the replacement of equipment “ the related information on scrapping should be clearly reflected in the monitoring plan of POA – DD. Ok, closed.</p> <p>(f) The monitoring /recording frequency is defined in line to the monitoring methodology AMS I C. Ok, closed.</p> <p>(g) PP clarified on the inclusion of COD in the data to be monitored. Ok, closed.</p> <p>(h). PP is requested to clarify regarding the flaring system that would be installed at the project site. Still POA – DD does not provide information on the flaring system whether it will be a open flare or closed flare and how the project emission would be taken into account in for the flaring system. Open.</p> <p>(i).PP clarified on the ex-ante approach for determining the baseline efficiency for the project activities and demonstrated how the <math>\eta_{BL,cogen}</math> will be determined in accordance with paragraph 28 &amp; 29 of AMS I C, ver</p>	



19.Ok, closed.	
(j) PP clarified on the inclusion of parameter “volume of waste water treated in baseline waste water treatment “ is included under data & parameter to be monitored. Ok, closed.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 01/08/2012
<p>Following points are still open</p> <p>(a) Still PP hasn't use the latest available version of “tool to calculate the emission factor for electricity system” as available at UNFCCC website in the POA- DD while determining the emission factor and also the relevant steps are not updated as per the latest tool. Also, PP has not provided the backup sheet for the analysis of emission factor calculation. Also, in section B.6.3, PP is requested to include OM &amp; BM as data &amp; parameter available at the time of validation. Open.</p> <p>(c), the equation described for Option 1 &amp; 2 is not found to be in line to the methodology para 19 (a) &amp; 19(h), please clarify. Open.</p> <p>(d) PP is requested to provide revised emission reduction calculation backup spreadsheet. Open due to point (c) above.</p> <p>(g) PP is requested to clarify why COD has been included in the data to be monitored.</p> <p>(h). PP is requested to clarify regarding the flaring system that would be installed at the project site. Still POA – DD does not provide information on the flaring system whether it will be a open flare or closed flare and how the project emission would be taken into account in for the flaring system. Open.</p> <p>Thus, CAR#15 is open.</p>	
<b>Project Participant Response:</b>	<b>Date:</b> 20/08/2012
<p>(a) Revised E 6.2</p> <p>⇒ Electricity emission factor was calculated latest version(02.2.1). However few phrase from last PDD version remained unupdated. Revised few sentences in accordance with latest tool 02.2.1.</p> <p>(c) Revised in section E 4.</p> <p>(d) Submitted revised calculation sheet</p> <p>(h) Added extra criteria in section A.4.2.2 Eligibility, No 21</p>	
<b>Documentation Provided by Project Participant:</b>	
(d) OM, BM calculation sheet_0810 (folder : POA_ CAR15-(a) back-up sheet for emission factor)	
<b>Information Verified by Lead Assessor:</b>	
<p>The revised POA - DD version 1.3, dated – 20/08/2012 has been checked for the corrections.</p> <p>The emission factor spreadsheet has been checked for the emission factor calculation steps &amp; approaches.</p> <p>OM, BM calculation sheet_0810 (folder : POA_ CAR15-(a) back-up sheet for emission factor) was checked.</p>	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date –</b> 12/09/2012
<p>(a) The emission factor calculation is open due to following points -</p> <ul style="list-style-type: none"> <li>- While determining the low cost /must run under step 3 method a) Simple OM, PP has also included coal/ gas/oil based power plants, however, since PP is considering option B, PP need to follow approach (b) “Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known;”</li> <li>- In the POA PP has considered Option B under “Step 4” for Simple OM (a), whereas in the POA – DD, the equations referred to Option A is used for calculating simple OM. Please clarify this discrepancies. -</li> <li>- The OM calculation is not correct in the emission factor calculation spreadsheet in accordance to the tool to calculate emission factor for an electricity system. Also, PP is using the simple average for OM , whereas as per tool , weightage average of OM has to be used. Please clarify.</li> <li>- In the Emission factor calculation spreadsheet and in the POA – DD for BM calculation, PP should list the name and the year of installation of the 5 units that has been build recently as per SET5-units as per the tool. Also, the calculation approach as per Option 2 (c) is not correct. Please clarify.</li> </ul>	

(c), the equation described for Option 1 & 2 is not found to be in line to the methodology, please clarify. Pending due to CAR# 14 above. Open. -

(d) PP is requested to provide revised emission reduction calculation backup spreadsheet. Open due to point (c) above.

(g) PP is requested to clarify why COD has been included in the data to be monitored. Open. –

Thus, CAR#15 is open.

**Project Participant Response:**
**Date: 08/11/2012**

(a) – We selected (a) simple OM, option A. Please check POA DD, version 1.4, dated 23/10/2012

- Revised description, PP choose (a) simple OM, option A in step 4.
- Revised description, PP choose (a) simple OM, option A in step 4.
- Revised CM value simple average to weightage average.
- In the listed power plants on the sheet “step 5\_BM data”, top five plants is recently built power plants. We coloured top five recently built power plants

(c) Submitted revised emission calculation sheet,

(d) Revised emission calculation sheet,

(g) COD parameter have been removed due to change of project emission calculating tool.

**Documentation Provided by Project Participant:**

(d) OM, BM calculation sheet\_0810 (folder : POA\_ CAR15-(a) back-up sheet for emission factor)

(c)(d), Emission calculation sheet(folder : POA\_ CAR15-(c) Emission calculation sheet)

**Information Verified by Lead Assessor:**

Revised POA DD, version 1.4, dated 23/10/2012 was checked

The revised emission factor calculation sheet has been checked.

**Reasoning for not Acceptance**
**Date: 22/03/2013**

The OM calculation is not correct in the emission factor calculation spreadsheet in accordance to the tool to calculate emission factor for an electricity system. Also, PP is using the simple average for OM , whereas as per tool , weightage average of OM has to be used.

In the Emission factor calculation spreadsheet and in the POA – DD for BM calculation, PP should list the name and the year of installation of the 5 units that has been build recently as per SET5-units as per the tool. Also, the calculation approach as per Option 2 (c) is not correct

The equation described for Option 1 & 2 is not found to be in line to the methodology,. Pending due to CAR# 14 above.

The details of the following parameters as mentioned in the monitoring parameter tables of the CPA DD is not matching with POA DD, PP to justify-

**NCV**<sub>cofire,, y</sub>, **EG**<sub>cofire,PJ,y</sub>, **EC**<sub>PJ,, y</sub>, **Q** *biogas, y*,

Thus, CAR#15 is open.

**Project Participant Response:**
**Date: 28/03/2013**

PP revised OM/BM calculation sheet. OM is now calculated weightage average.

PP listed set5 unit on the OM/BM calculation sheet. PP compared SET5-unit and SET≥20%, SET≥20% is selected due to larger annual electricity generation. Thus option 2 (c) is correct.

\* For your information, PP revised electricity data to 2007~2009 year data to adjust data to match with project start date(18th of November, 2011). 2007~2009 electricity data is most recent data at the year 2010 which is first PDD was wrote.

1.PP revised equation of each option 1,2,3. The application of Equation is below.

Option	Baseline Scenario	Equation
Option1	AMS.I.C para42	AMS.I.C para22 (Thermal) equation(2)
Option2	AMS.I.C para19(i)	AMS.I.C para 34 (Electricity) para21, AMS.I.D, AMS.I.F
Option3	AMS.I.C para19(h)	AMS.I.C para 35 (Thermal) "baseline for co-fired system"



Due to change of baseline scenario and equation in the POA-DD ver 2.0, monitoring parameters are also changed. PP revised all parameters.	
<b>Documentation Provided by Project Participant:</b>	
CAR#15 folder - OM/BM sheet	
<b>Information Verified by Lead Assessor:</b>	
The revised POA – DD ver 2.0 & revised OM/BM sheet has been checked for the necessary corrections as per the raised issues.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 07/05/2013
PP has made the necessary correction in the POA DD, which has been found to be satisfactory. The equation described for Option 3 is not found to be in line to the methodology,. Pending due to CAR# 14 above. Thus, CAR#15 is open.	
<b>Project Participant Response:</b>	<b>Date:</b> 10/06/2013
3. PP eliminated option 3 after discussion with a CPA implementer.	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD, Version 3, dated 10/06/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised PDD, Version 3, dated 10/06/2013 was checked by the assessment team.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 17/06/2013
PP has removed the option 3 type CPA from the POA. This was checked and was found to be acceptable. CAR closed.	
In the table to calculate GWpch4, PP has mentioned that Global Warming Potential of CH4, “25 for the first commitment period”. PP to confirm, whether it is first commitment period or second commitment period. CAR open.	
<b>Project Participant Response:</b>	<b>Date:</b> 21/06/2013
Considering the responses of DOE. DOE respond : PP meant that first commitment period is credit period for the proposed project activity. Thus pp mentioned first commitment period in POA DD	
But now pp clearly understand commitment period mean which is Kyoto Protocol commitment period; therefore pp modified the word from first to second in POA DD	
And it was revised to the second period.	
<b>Documentation Provided by Project Participant:</b>	
Revised PDD, version 4.0, dated 25/06/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised PDD, version 4.0, dated 25/06/2013 was checked by the assessment team.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	
PP has now corrected the commitment period in the revised POA DD, Version 4.0, dated 25/06/2013. This was checked by the assessment team and was found to be correct. CAR closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 28/06/2013

Date:	10/06/2012	Raised by:	Assessment Team		
Type:	CAR	Number:	16	Reference:	AU4
<b>Lead Assessor Comment:</b>					
<p>CAR#16 (a)</p> <p>PP is requested to kindly clarify how the following parameters are in line to the applied methodology AM SI C</p> <p>1.The description of parameter EG<sub>thermal, retrofit,y</sub></p> <p>2. The description of parameter EG<sub>pj,thermal,y</sub></p> <p>Moreover, it is not clear, how these parameter will be monitored.</p> <p>CAR#16 (b)</p> <p>Annex – 4 of POA – DD mentioned that KECO is having a manual of monitoring process. PP is requested to kindly provide the same</p> <p>CAR#16(c)</p> <p>In section E.7 (D.7.1) following information has not been clearly described as per CDM SSC POA – DD and CDM – SSC – PDD guideline:</p> <ul style="list-style-type: none"> <li>(5) Measuring methods and procedures, frequency,</li> <li>(6) Specification of measurement equipment to be used(accuracy)</li> <li>(7) Calibration frequency</li> <li>(8) Data archiving etc.</li> </ul>					
<b>Project Participant Response:</b>				<b>Date:</b> 27/06/2012	
<p>(a) 1. Revised in section E.6.3</p> <p>2. Revised in section E.6.3</p> <p>(b) CME operating manual is submitted</p> <p>(1) Revised in section E.6.3</p> <p>(2) Revised in section E.6.3</p> <p>(3) Revised in section E.6.3</p> <p>(4) Revised in section E.6.3</p>					
<b>Documentation Provided by Project Participant:</b>					
(i) (b) CME operating manual (folder : POA-DD evidence_CAR16-(b)CME operating manual)					
<b>Information Verified by Lead Assessor:</b>					
<p>(a) 1. Revised in section E.6.3. open</p> <p>2. Revised in section E.6.3Open</p> <p>(b) CME operating manual is submitted. Ok, the document has been checked and accepted. Closed.</p> <p>(1) Revised in section E.6.3 Ok, the document has been checked and accepted. Closed.</p> <p>(2) Revised in section E.6.3 Ok, the document has been checked and accepted. Closed.</p> <p>(3) Revised in section E.6.3 Ok, the document has been checked and accepted. Closed.</p> <p>(4) Revised in section E.6.3 Ok, the document has been checked and accepted. Closed.</p>					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 01/08/2012	
<p>CAR#16 (a)</p> <p>PP is requested to kindly clarify how the following parameters are in line to the applied methodology AMS I C</p> <p>1.The description of parameter EG<sub>thermal, retrofit,y</sub></p> <p>2. The description of parameter EG<sub>pj,thermal,y</sub></p> <p>Moreover, it is not clear, how these parameter will be monitored. Open, due to CAR#15 above.</p> <p>Thus, CAR#16 is open.</p>					
<b>Project Participant Response:</b>				<b>Date:</b> 20/08/2012	
<p>1. After revising baseline scenario and equation, EG<sub>thermal, retrofit,y</sub>, EG<sub>pj,thermal,y</sub> are no longer necessary parameter in this POA. So we deleted the parameters.</p>					

<b>Documentation Provided by Project Participant:</b>	
POA DD, version 1.3, dated 20/08/2012	
<b>Information Verified by Lead Assessor:</b>	
The revised POA DD, version 1.3, dated 20/08/2012 has been checked for the corrections.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 12/09/2012
The issues are open since still the baseline identification is not correct. Thus, CAR#16 is still open.	
<b>Project Participant Response:</b>	<b>Date:</b> 08/11/2012
Revised baseline scenario in section E.4	
<b>Documentation Provided by Project Participant:</b>	
Revised POA – DD, version 1.4, dated 23/10/2012	
<b>Information Verified by Lead Assessor:</b>	
The revised POA DD, version 1.4, dated 23/10/2012 has been checked	
<b>Reasoning for not Acceptance</b>	<b>Date:</b> 22/03/2013
The issues are open since still the baseline identification is not correct. Thus, CAR#16 is open	
<b>Project Participant Response:</b>	<b>Date:</b> 28/03/2013
Set the parameter and explained refer to baseline and baseline calculation in the responses of the CAR #15.	
<b>Documentation Provided by Project Participant:</b>	
The revised POA DD, version 02, dated 18/03/2013	
<b>Information Verified by Lead Assessor:</b>	
The revised POA DD, version 02, dated 18/03/2013 has been checked	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 07/05/2013
The issues are open since still the baseline identification is not correct. Thus, CAR#16 is open	
<b>Project Participant Response:</b>	<b>Date:</b> 10/06/2013
PP delete baseline scenario for option 3. It is described in section B.4	
<b>Documentation Provided by Project Participant:</b>	
Revised PDD, Version 3, dated 10/06/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised PDD, Version 3, dated 10/06/2013 was checked by the assessment team.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 10/06/2013
PP has removed the option 3 type CPA from the POA. This was checked and was found to be acceptable. CAR closed.	
<b>Acceptance and Close out by Lead Assessor:</b>	<b>Date:</b> 10/06/2013

Date:	22/03/2013	Raised by:	Assessment Team		
Type:	CAR	Number:	17	Reference:	POA – DD/AU4
<b>Lead Assessor Comment:</b>					
10. It is unclear as to which guideline has been followed by the PP for the Eligibility criteria for enrolling the CPA in the POA. PP is requested to clearly mention the guidelines referred. If EB 74 Annex 5 has been used then PP is requested to justify how the point no 19 of EB 74, Annex 5 has been used ?					
11. What about checking the start date of the CPA with POA start date. CPA cannot start before the POA as per the requirement of the guideline, PP is requested to justify how this point have been addressed?					
12. What is the basis of start date of the POA, PP is also requested to provide documentary evidences.					
<b>Project Participant Response:</b>				<b>Date:</b> 28/03/2013	
1. PP made operation manual for CME and CPAs. Operation manual include roles and responsibilities, personnel qualification for both CME and CPA and also inclusion process. Operation manual can cover No.19, Annex 5 of EB 74. PP submitted operation manual					
2. If you see the Eligibility criteria No. 4 POA-DD ver 2.0, Part II B.5, PP check CPA's start date with evidence of "Purchase or Construction Contract date for renewable energy unit"					
3. Start date of POA is first day of public comment period document. PP referenced updated [Glossary CDM terms version 7.0 and EB70 annex2 para159] "start date : In the context of a CDM POA, the date on which the coordinating/managing entity officially notifies the secretariat and the DNA of their intention to seek the CDM status or <u>the date of publication of the POA-DD for global stakeholder consultation</u> in accordance with the relevant CDM rules and requirements." . PP submitted evidence of POA start date					
<b>Documentation Provided by Project Participant:</b>					
CAR#17 folder- 1. Operation manual					
CAR#17 folder- 3. Start date evidence (GSC date webpage)					
<b>Information Verified by Lead Assessor:</b>					
The revised POA – DD version 2.0, dated 18/03/2013 has been checked for the said correction. Also, PP has provided the operating manual & start date evidence for PoA – DD which has been checked.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 07/05/2013	
PP has satisfactorily justified the raised concerns w.r.t to the eligibility criteria and same has been included in the POA – DD along with the evidences which has been found to be satisfactory. Thus, CAR#17 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 07/05/2013	
<b>Lead Assessor Comment:</b>				<b>Date:</b> 24/08/2013	
1. In section B.2 , Part I of the POA DD, Demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities latest version has not been used					
a) Eligibility criteria are not as per para 16 of EB 74 Annex 5. Please clarify. Please clarify why all eligibility criteria is not included as per the guideline.					
b) Condition on double counting has not been considered properly. Please clarify as per requirement of para 16 b of EB 74 Annex 5					
c) The applicability criteria laid down are generic and does not indicate any specific requirement at the CPA level. All the applicability criteria must refer to specific criteria. PP is requested to clearly demonstrate the applicability criteria as per the requirement of EB 74 Annex 5 para (a)-(l). Please clarify.					
2. Section B.5, Part II of the POA DD (the generic CPA DD), has not been updated as per EB 74, Annex 5. PP shall clarify.					
3. In section C, Part I of POA DD, the CPA implementer is different from CME. This is not consistent with section A.3, Part I of the POA DD. Please clarify. What guideline has been referred to while coming to the management system has to be clarified clearly in this section of the POA DD.					
4. In section B.6.1, Part II of the POA DD ( the generic CPA DD), nomenclature does not match with the tool "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion". Please clarify					
5. In section B.6.1 Part II of the POA DD ( the generic CPA DD), emission factor of national grid has					

been mentioned as EF grid,CM,y, however, the tool (Tool to calculate baseline, project and/or leakage emissions from electricity consumption) mentions this as EF EL,j,y. Please clarify this inconsistency.

6. In Section B.7, Part II of the POA DD, for parameters mentioned in this section the frequency of archiving has not been clearly defined. Please clarify.
7. In section B.7, Part II of the POA DD ( the generic CPA DD), for the parameter TDLy the traceability/reference of the National database mentioned in the measurement methods and procedures is not explicitly indicated. PP shall clarify.

CAR is reopened.

**Project Participant Response:**
**Date: 09/09/2013**

1. The programmers of activities latest version has been updated.
  - a) This has been corrected according to the eligibility criteria from EB 74 Annex 5 para16.
  - b) The explanation that to avoid double counting and operate POA effectively, each CPA shall be issued its own ID by CME has been added. And for the future CPA-DD will check that.
  - c) The standard of additionality has been clearly through this sentence "additionality could be proved through economic analysis, micro scale".
2. SECTION B.5 has been updated according to the EB 74 Annex 5 para 16.
3. This has been explained in Car 5.2.
4. Nomenclature in B.6.1 has been matched the tool.
5. EF grid.c.y has been corrected as EF EL,j,y from the tool.
6. Data frequency of archiving has been explained in the Monitoring frequency.
7. TDL y national database is brief report which is provided KEPCO. And the their link address and additional comments that it will be updated annually have been added.

**Documentation Provided by Project Participant:**

POA\_CAR\_17\_1\_memo8\_EB74\_ANNEX05\_para16

**Information Verified by Lead Assessor:**

Revised POA DD, version 05, dated 09/09/2013

**Reasoning for not Acceptance or Acceptance and Close Out:**
**Date: 24/09/2013**

1. PP has not included all the eligibility criteria as per EB 74, Annex 5. PP is requested to include all the applicable criteria under section B.2 of the POA DD. Further, PP is requested to correct the criteria no 5, 7, 11 & 12 as per EB 74, Annex 05. Open.
2. PP is requested to correct the section B.5 after correcting B.2 of the POA DD. Open.
3. PP has mentioned that KECO is the CME and "local autonomous bodies" are the CPA implementer. However PP is requested to clarify which body or organisation has been indicated by "local autonomous bodies". Open.
4. The Section B.6.1, Part II of the revised POA DD was checked by the assessment team and was found to be correct. Closed.
5. In Section B.6.2 there are now two parameters as EF<sub>CO2</sub>, one as the CO<sub>2</sub> emission factor of the national grid electricity and the other one as CO<sub>2</sub> emission factor of fuel type i in the year y. PP is requested to justify the inconsistency. Open.
6. PP is requested to confirm if the flow meter & electronic power gauge is capable of archiving data for the entire crediting period+2 years. Open.
7. Please put the exact name of the document, serial number and year of publishing, as there are number of documents as "KEPCO in brief" in the link provided by PP. Open.

CAR is open.

**Project Participant Response:**
**Date: 09/10/2013**

1. The eligibility criteria as per EB 74. Annex 5 has been corrected clearly.
2. It has revised as per B.2.
3. This has been revised to "Municipal communities".
5. It has been corrected.
6. The date archiving measurement methods has been explained.

7. The exact name and link of the brief has been added. And the evidence has been added.	
<b>Documentation Provided by Project Participant:</b>	
POA DD, version 5.0, dated 09/09/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised POA DD. As PP has not revised the date and version number of the POA DD in the last submission, assessment team has assumed this current version as version 06, dated 09/10/2013 (email date).	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 18/10/2013</b>
<p>1. PP has corrected the applicability criteria. However, the criteria included as #5, in section B.2 of the POA DD, is still not clear. Further, criteria (c) of the methodology AMS III H, has not been fully covered under this criteria #5 of the POA DD. PP is requested to justify.</p> <p>Further, as the applicability criteria has been revised, CME is requested to submit the revised POA Manual, incorporating all the changes. CAR open</p> <p>2. This point is open due to the above point (1). CAR open.</p> <p>3. The revised POA DD, version 5.0, dated 09/09/2013 was checked by the assessment team, PP has corrected the implanting bodies as "Municipal Communities". This was accepted by the assessment team. closed.</p> <p>4. Already closed.</p> <p>5. The section B.6.2 of the POA DD was checked by the assessment team and was found to be correct.</p> <p>6. PP is requested to confirm if the flow meter &amp; electronic power gauge is capable of archiving data for the entire crediting period+2 years, as in section B.7.1, PP has mentioned that "Data will be archived by the flow meter or Paper records by CPAs implementer". Further, "Data will be achieved by Paper records during 2 years" is not clear. CAR open.</p> <p>7. The documentary evidence provided by PP was checked and was found to be acceptable. closed.</p> <p>8. PP has included the BM &amp; OM, however the year considered for OM &amp; BM emission factor (2008, 2009, 2010) is not matching with the CM emission factor (2007,2008,2009). PP to take corrective action. CAR open</p> <p>9. PP is also requested to include the steps to calculate the parameter, <math>F_{CH_4, RG, m}</math>, under section B.6.1 of the POA DD, and corresponding monitored parameters related to the calculation of <math>F_{CH_4, RG, m}</math>, under section B.7.1 of the POA DD. CAR open</p> <p>CAR is open</p>	
<b>Project Participant Response:</b>	<b>Date: 31/10/2013</b>
<p>1.It has been revised more clearly.</p> <p>2.It has been revised.</p> <p>6.This has been explained more clearly.</p> <p>8.The year considered for OM&amp;BM emission factor has been matched with the CM emission factor.</p> <p>9.The steps to calculate the parameter has been explained.</p>	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD, version 07, dated 31/10/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised POA DD, version 07, dated 31/10/2013 was checked by the assessment team.	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date: 13/11/2013</b>
<p>1. PP has corrected the applicability criteria in the section B.5 of the POA DD, version 7, dated 31/10/2013. The criteria 16 (c) of section 3.2.1 of EB 74, Annex 5 has now been fully incorporated. All the eligibility criteria of EB 74, Annex 5, has been included in the section B.2 of the POA DD. This was checked by the assessment team and was found to be correct.</p> <p>The revised CME manual was also checked by the assessment team and was found to be correct. CAR closed.</p> <p>2. PP has revised the section B.5 of part II of the POA DD. This was checked by the assessment team and was found to be correct. CAR closed.</p> <p>3. Already closed.</p> <p>4. Already closed.</p> <p>5. Already closed.</p>	



6. PP has revised the POA DD, section B.7.1, this was checked by the assessment team and was found to be correct. CAR closed.
7. Already closed.
8. PP has considered the year considered for OM & BM emission factor. CAR closed.
9. PP has mentioned that  $F_{CH_4,m}$  shall be determined on a dry basis. However has opted for Option F, which is based on measurement on wet basis. PP is requested to justify the inconsistency. Also, the PP has not included the equation 10 of the tool, while mentioning the equations to calculate  $F_{CH_4,RG,m}$ . Further,  $v_{k,t,wb}$  has not been included as monitored parameter. CAR open.
10. CME was requested to justify, why the monitoring parameter, "Temperature in the exhaust gas of the enclosed flare in minute m", (EB 68, Annex 15) was removed from the section B.7.1 of the POA DD. CAR open.

**Project Participant Response:**
**Date: 18/11/2013**

- We have determined take Option F when we make The Preliminary and working design report . cause we have considered Volumetric fraction of biogas is H<sub>2</sub>O 5.4%(vol).

**Documentation Provided by Project Participant:**

POA DD, version 8.0, dated 18/11/2013

**Information Verified by Lead Assessor:**

POA DD, version 8.0, dated 18/11/2013 was checked by the assessment team.

**Reasoning for not Acceptance or Acceptance and Close Out:**
**Date: 25/11/2013**

9. PP is requested to justify, how the option F is relevant to this POA, considering the fact that, the POA has referred to EB 68, Annex 15, and as per the requirement of EB 68, Annex 15,  $F_{CH_4,m}$  shall be determined on a dry basis.

Further, the justification provided by the CME is not acceptable, because the "The Preliminary and working design report" is only for the Chuncheon CPA, not for the entire POA. The CME is requested to justify, how the reference of the "The Preliminary and working design report" of one single CPA is relevant to the whole POA in this case of monitoring the parameter  $F_{CH_4,m}$ . OPEN

10. The monitoring parameter, "Temperature in the exhaust gas of the enclosed flare in minute m", (EB 68, Annex 15) is as per the requirement of EB 68, annex 15. PP is requested to justify, if this parameter is not monitored, then how efficiency of the enclosed flaring will be determined, since for Option A for determining the enclosed flaring efficiency, this parameter TEG,m needs to be monitored. The CME is required to justify. OPEN

**Project Participant Response:**
**Date: 02/12/2013**

9. The requirement of EB 68, Annex 15,  $F_{CH_4,m}$  has been determined on a dry basis. So the Measurement options modified to option D. And data and parameters to be monitored also has been changed.

10. Temperature monitoring parameter has been added,

**Documentation Provided by Project Participant:**

Revised POA DD, version 9.0, dated 02/12/2013

**Information Verified by Lead Assessor:**

Revised POA DD, version 9.0, dated 02/12/2013 was checked by the assessment team.

**Reasoning for not Acceptance or Acceptance and Close Out:**
**Date: 05/12/2013**

9. The CME has referred to the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream", version 2.0.0 for the calculation of  $F_{CH_4,m}$  (Mass flow of methane in the residual gaseous stream in the minute m).

As per the instruction given in the tool to calculate "Project emissions from flaring" the parameter  $F_{CH_4,m}$  has been calculated on dry basis. The CME has chosen option D, out of the six available options given in table 1 of the "Tool to determine the mass flow of a greenhouse gas in a gaseous stream", version 2.0.0. The revised PDD was checked by the assessment team and was found to be correct. Closed.

10. The revised PDD was checked by the assessment team and was found to be correct. Closed.

**Acceptance and Close out by Lead Assessor:**
**Date: 05/12/2013**



<b>Lead Assessor Comment:</b>	<b>Date:</b> 23/12/2013
1. The PP is requested to explain why some of the text are being highlighted and also requested to clarify why some text are in red colour font in the POA DD. The PP is requested to maintain the consistency of the font size, colour etc throughout the POA DD.	
CAR is reopened.	
<b>Project Participant Response:</b>	<b>Date:</b> 27/12/2013
1. We removed all highlighting and made all text black. Also, we checked the front size and made them uniform as per PDD template.	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD, version 10.0, dated 27/12/2013	
<b>Information Verified by Lead Assessor:</b>	
Revised POA DD version 10 dated 27/12/2013	
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>	<b>Date:</b> 01/01/2014
The font size, colours are consistent now in the revised POA DD Version 10 dated 27/12/2013. CAR is closed.	
<b>Acceptance and Close out by Lead Assessor: Closed</b>	<b>Date:</b> 01/01/2014

Date:	22/03/2013	Raised by:	Assessment Team		
Type:	CAR	Number:	18	Reference:	POA – DD/AU4
<b>Lead Assessor Comment:</b>					
<div>1. In the Economic Analysis sheet, in tab “basic parameter”, cell no D33, PP has calculated electricity generated from biogas co-generation in KW/year. The calculation should be in kWh/year. CAR open.</div> <div>2. PP is requested to provide the POA DD and generic CPA DD using the latest VVS template as available in UNFCCC website.</div>					
<b>Project Participant Response:</b>				<b>Date:</b> 28/03/2013	
<div>1. The proposed project is demonstrated for additionality as per “Guidelines for Demonstrating Additionality of Microscale Project Activities(Ver 4.0), EB68, Annex 26.para2,(d),( v ). Thus economic analysis method for proving additionality no longer required. Comment is not applicable.</div> <div>2. Submitted VVS version POA DD, CPA-DD.</div>					
<b>Documentation Provided by Project Participant:</b>					
VVS version POA DD, CPA-DD, Version 02, dated 18/03/2013					
<b>Information Verified by Lead Assessor:</b>					
The Revised POA – DD version 2.0, dated 18/03/2013 in VVS format has been checked.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 07/05/2013	
PP has made necessary corrections in the revised POA – DD in respect to the additionality argument which has been found to be satisfactory. Moreover, PP has provided the revised POA documents in VVS templates. Hence, CAR#18 was closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 07/05/2013	

Date:	31/01/2014		Raised by:	Assessment Team	
Type:	CAR	Number:	19	Reference:	POA – DD/AU4

**Lead Assessor Comment:**

1. In section C of the POA DD, the “figure 2: organization chart for POA Management and development”, is not matching with the description provided in “table 3: CME department rules and responsibilities”. In CME organisation for CPA inclusion – Technical Reviewer CME is mentioned first and then comes to Manager CME, but in description, Manager comes first and Manager sends documents to Technical Reviewer. Please clarify the inconsistency.
2. The stake holder’s consultation dates as mentioned in section A.2 is not matching with that of section A.2 of the POA DD. The CME is requested to justify the mismatch.
3. It is not clear how the increase in Biogas usage is determined - in cases where the sewerage plant has already been using biogas and generating thermal energy, then only the incremental biogas use (after the implementation of the project activity) will be eligible for emission reduction claim. But how this incremental thermal energy generation is determined for option 1 CPAs. The CME is requested to justify.
4. For sixth applicability criteria (under section B.2, table 4) it is not confirmed which option of a, b, or c is considered for CPA having option 2 as section A.2 of POA DD mentioned to account only electricity produced in co-generation system for emission reductions. The CME is requested to correctly specify the appropriate option out of the three and justify the same in the PDD.
5. Under section B.5 of the POA DD, the procedure to check de-bundling has not been done as per EB 54, Annex 13. The CME is requested to justify.
6. The CME is requested to check the direction of arrows for the electricity export to the grid in section B.3 option 2. It is showing from Grid to Transformer only, no export has been shown. Further the diagram does not shows any onsite electricity consumption. Also the utilisation of thermal energy from Option 2 is not explicitly defined in description. The CME is requested to justify the inconsistency in the project boundary diagram with the description.
7. In section B.5 of the POA DD, under the table 9, the CME is requested to justify why the benefits due to use of thermal energy (cost of the fossil fuel replacements) and use of thermal energy and electricity in co-generation plants has not been considered as input parameter which will be considered to carry out IRR analysis. Further, why the PLF for electricity generation has not been considered as an input parameter to calculate IRR of CPA.
8. It is not clarified in the POA DD if  $NCV_{i,y}$  and  $EF_{CO_2,i,y}$  has followed conservative approach as per tool EB41 Annex 11. It is not clear how sources are determined as per preferential orders The CME is requested to justify. Further NCV of biogas has not been included as a monitored parameter. The CME is requested to justify.
9. The CME is requested to confirm whether the values referred for the OM, BM & CM calculation was the latest available information at the time of POA DD webhosting, considering that the CME has referred to values for the year 2007, 2008 and 2009, where as the POA DD was webhosted on 18/11/2011. The CME is requested to clarify in this regard.
10. For parameter Ru – The CME is requested to check the unit and value of parameter. The Tool EB 68, Annex 15 has mentioned Ru as  $0.008314472 \text{ Pa.m}^3/\text{kmol.K}$ , while EB 61, Annex 11 the Ru value

is  $8.314 \text{ Pa.m}^3/\text{kmol.K}$ . The PP is requested to refer to the correct value only.

11. Please clarify why the complete table including all rows is not mentioned for the parameters  $R_u$ ,  $MM_i$ ,  $MM_k$ . Please clarify this as per para 14 of EB 66, Annex 13.
12. For parameter  $EG_{\text{thermal,y}}$  – The consideration of enthalpy of feed water/feed flow which is return to boiler or heater is not mentioned. Please clarify how the net thermal energy generation is determined as per the requirement of AMS IC, version 19.
13. The description for the parameter  $EG_{\text{BL,electricity y}}$  states, “Quantity of net electricity supplied to the grid”. The PP is requested to justify, how the electricity that will consumed in house will be accounted, for which emission reduction will be claimed.
14. The CME is requested to justify, why the parameters 11 and 12 of the AMS IC, version 19, has not been included as monitored parameters.
15. In Fig 11 of POA DD – only electric power measurement has been shown. The CME is requested to justify, who will be responsible for monitoring of heat energy generation?
16. As per POA completion guideline, EB 66, Annex 13, page number 7/13, “Where multiple technologies/measures and/or multiple methodologies are being applied, the demonstration of the application of the POA framework to implement generic CPAs must be done for each of the combinations of technologies/measures and/or methodologies. Therefore, repeat all of Part II of these guidelines for each of the combination of technologies/measures and/or methodologies.” The CME is requested to justify, why the Part II of the POA DD, has not been repeated for the two options (thermal energy generation and co-generation) of the POA.
17. The CME is also requested to submit the revised version of the operating manual, after incorporating the change.

**Project Participant Response:**
**Date:** 15/02/2014

1. In order of responsibility in “table 3” has been matched with the “Figure 2”
2. It has been corrected.
3. It has been corrected that in case that the sewerage plant is already been using biogas and generating thermal energy for operation use, thermal and/or electrical energy from produced biogas, not only increased biogas, shall be considered to calculate emission reductions. And it will be monitored according to the monitoring plan.
4. It has been corrected.
5. It has been corrected according to EB 54, Annex 13.
6. It has been corrected.
7. Produced thermal energy will continue to be used for heat boiler as before. So it does not have any benefits.
8. It has been corrected.
9. It has been update(2008~2010)
10. It has been corrected. And EB 68, Annex 15 is lasted version.
11. It has been corrected.
12. It is a parameter that mentioned in AMS IC.

13. It has been corrected.

14. It has been corrected.

15. It has been corrected.

16. In this case, there are only one applied methodologies, AMS IC, so it does not need to considered combinations of technologies/measures and/or methodologies/.

17. The English version of CDM Operational Manual will be submitted.

**Documentation Provided by Project Participant:**

POA DD, version 11, dated 15/02/2014

**Information Verified by Lead Assessor:**

POA DD, version 11, dated 15/02/2014 was checked.

**Reasoning for not Acceptance or Acceptance and Close Out:**

**Date:** 26/02/2014

1. The POA DD, section C was checked by the assessment team and was found to be correct. Now the description of the figure 2 is matching with Table 3 of the POA DD. Closed.
2. The stake holder's consultation dates as mentioned in section A.2 is now matching with that of section F of the POA DD. This was checked by the assessment team and was found to be correct. closed.
3. The CME is requested to justify, how the whole biogas can be claimed for emission reduction, in cases where the sewerage plant has already been using biogas and generating thermal energy. The PP may refer to AMS IC, version 19. CAR open.
4. The sixth applicability criteria (under section B.2, table 4) of the POA DD have been revised by the CME. This was accepted by the assessment team and was closed.
5. The CME has modified the section B.5, however the revised section is not legible. The CME is requested to kindly address. Open.
6. Won't the heat generated in the project activity be heating the existing digesters and other facilities also? Why "new heat consuming facility" has been mentioned in the figure 6 (option 1)? Open.
7. The response provided is not clear enough. In the POA DD, the CME states that the CPA will replace use of fossil fuel (the Option 1 CPA is titled "Fuel substitution from fossil fuel to biogas by retrofit of existing fossil fuel heat generating facility". Is so, then why the cost of fossil fuel saving has not been considered as an input parameter in the investment analysis. Open.
8. The CME has not addressed the point fully.  $NCV_{i,y}$  and  $EF_{CO2,i,y}$  are monitored parameters. However these two has been shown as ex-ante parameters in the POA DD. The PP is requested to clarify. Open. Further, the CME has not yet justified why the NCV of biogas has not been considered as a monitored parameter. Open.
9. The CME is requested to provide the emission factor calculation sheet. Open.
10. For parameter Ru the CME corrected the unit and value of parameter as per the Tool EB 68, Annex 15. Closed.
11. The purpose of data for the parameters  $R_u$ ,  $MM_i$ ,  $MM_k$  is not explicit in POA DD . Open.
12. The parameter  $EG_{thermal,y}$  is not as per the applied methodology. The measurement method & procedures are still not as per the applied methodology. Please clarify how the net thermal energy generation is determined as per the requirement of AMS IC, version 19. Open.
13. The CME has revised the section B.7.1 of the POA DD and was found to be correct. Closed.
14. The point 14 has not been addressed by the PP. Open
15. The CME has revised the PDD & corrected the fig 11 of the POA DD, this was checked by the assessment team and was found to be correct. Closed.
16. However the CME is requested to justify, the correctness of the approach considering the fact that the project involves two different technologies, one for thermal energy and other being the co-generation technology. Open.
17. The point 17 has not been addressed. The CME is requested to submit the revised version of the operating manual, after incorporating the changes. Open.  
CAR is open.

Project Participant Response:	Date: 12/03/2014
<p>➤ Option 1.</p> <p>&lt; Existing project &gt;</p> <p>- Before</p> <pre> graph LR     B1[Biogas] --&gt; Bo1[Boiler]     Bo1 --&gt; T1[Thermal]     T1 --&gt; D1[Digester]         </pre> <p>- After</p> <pre> graph LR     B2["Biogas (produced amount up)"] --&gt; Bo2["Boiler (existing)"]     Bo2 --&gt; T2[Thermal]     T2 --&gt; D2[Digester]     B2 --&gt; NB[New Boiler]     NB --&gt; T3[Thermal]     T3 --&gt; SD[Sludge dryer etc.]         </pre> <p>- CDM considered</p>	
<p>5.</p> <p>➤ Option 1.</p> <p>&lt; Existing project &gt;</p> <p>- Before</p> <pre> graph LR     B1[Biogas] --&gt; Bo1[Boiler]     Bo1 --&gt; T1[Thermal]     T1 --&gt; D1[Digester]         </pre> <p>- After</p> <pre> graph LR     B2["Biogas (produced amount up)"] --&gt; Bo2["Boiler (existing)"]     Bo2 --&gt; T2[Thermal]     T2 --&gt; D2[Digester]     B2 --&gt; NB[New Boiler]     NB --&gt; T3[Thermal]     T3 --&gt; SD[Sludge dryer etc.]         </pre> <p>- CDM considered</p>	
<p>Both option1 and option2 are green field project. Therefore it doesn't need calculated increased amount of biogas. Option1 will be considered emission reduction as per fuel substitution. And option2 will be considered emission reduction as per displacing (or producing) electricity.</p> <p>6. Closed</p> <p>7. The diagram has been replaced to be legible.</p> <p>8. A digester has been deleted. And the diagram has been corrected.</p> <p>9. The saving of fossil fuel cost due to increased generation of biogas can be calculated multiply "Unit price of fossil fuel" by "Annual estimated consumption"</p> <p>10. It has been replaced.</p> <p>11. The emission factor calculation sheet has been provided.</p> <p>12. Closed.</p> <p>13. It has been corrected.</p> <p>14. It has been corrected.</p> <p>15. Closed.</p> <p>16. It has been corrected.</p> <p>17. Closed.</p> <p>18. It has been explained above.</p> <p>19. CDM Operational Manual has been corrected as per POA</p>	
<b>Documentation Provided by Project Participant:</b>	
Revised POA DD, version 12	
<b>Information Verified by Lead Assessor:</b>	

Revised POA DD, version 12 dated 12/03/2014 was checked by the assessment.

**Reasoning for not Acceptance or Acceptance and Close Out:**

**Date: 25/03/2014**

3. The finding was raised asking the CME to clarify-

How the increased biogas production or increased thermal energy production will be measured, if there is a CPA, which was using biogas to generate thermal energy even in the pre-project scenario as well. This point remained unaddressed. The CME did not clarify, can there be any CPA with this type of scenario. If yes, how the increased thermal energy that will be generated will be monitored to claim emission reduction.

The response provided by the PDD, is not consistent with the POA DD. Under section A.6 of the POA DD, the CME has mentioned that, "Under this Option1, Fuel substitution from fossil fuel to biomass by modification including retrofit of existing heat generating facilities is considered i.e. solid, liquid and gaseous fossil fuels can be switched to biomass fuels."

Now the CME is stating that the Option 1 is also a green field project, thus contradicting the description of Option 1 CPA. The project scenario is very confusing, as the CME is not able to provide a clear and precise description of the scenario before the implementation of the project and after the implementation of the project. Changing the project description is not acceptable.

Further the description provided above by the PP also contradicts the "Sewage Treatment Facility Flow Chart (Option 1, thermal energy)" as checked from the Project Design Report, as submitted by the CME, in an earlier submission.

This point remained open, due to lack of clarity and inconsistent description. The PP is requested to provide a clear and precise description of both Option 1 and Option 2 CPA showing the pre project scenario and project scenario in block diagrams, and include it in relevant section of the POA DD. OPEN.

4. Already closed.
5. The section B.5 was found to be correct. Closed.
6. The point was not adequately addressed by the CME. The point was why the CME has stated in the figure 6, that "New thermal Consuming Facility". The CME is requested to clarify, what will be the end use of the heat? Is it only in the new facilities or in the plant as a whole? OPEN.
7. The input parameter "Annual Estimated Consumption of Fossil Fuel" referred in the POA DD, is the estimated amount of fossil fuel that will be used in the project activity. But the finding was raised asking the CME to clarify, why the parameter, "amount of fossil fuel that is being replaced" by the project activity. OPEN.
8. The point again was not addressed fully. The parameter  $EF_{CO_2,i,y}$  is still shown as a ex-ante parameter. Further, the CME has not yet justified why the NCV of biogas has not been considered as a monitored parameter. OPEN.
9. The emission factor sheet was checked by the assessment team.
  - a) The Calorific value considered in the sheet is not matching with the "STATISTICS OF ELECTRIC POWER IN KOREA". The CME is requested to justify, the mismatch. OPEN.
  - b) Further, the CME is requested to mention the source from where the CO2 emission factor of the fuel has been considered, in the ER sheet. OPEN.
  - c) In the "BM data" tab, there are number of comments by the CME, the CME is requested to kindly clarify. OPEN.
  - d) Further, there is some info in the tab "OM data 2010", (from cell E03 to K03) including "#REF!" error; the CME is requested to clarify. OPEN.
  - e) All the data in the BM sheet (year of operation of plants), could not be verified from the "Statistics of Electric Power in Korea". The information which could not be verified has been inserted as comments in the BM sheet. The CME is requested to provide source of information for those data. OPEN.
10. Already closed.
11. The purpose of data for the parameters  $R_u$ ,  $MM_i$ ,  $MM_k$  has now been mentioned in the POA DD, under section B.7.1. This was checked and was found to be correct. CLOSED.



12. The point remained open, as the CME did not address it. The parameter  $EG_{thermal,y}$  is not as per the applied methodology. The measurement method & procedures are still not as per the applied methodology. Please clarify how the net thermal energy generation is determined as per the requirement of AMS IC, version 19. OPEN.
13. Already closed.
14. The CME is requested to justify, why the parameters 11 and 12 of the AMS IC, version 19, has not been included as monitored parameters. OPEN
15. Already closed.
16. The response provided by the CME could not be accepted, as it was not in line with EB 66, Annex 13. 16.As per EB 66, Annex 13, page number 7/13, "Where **multiple technologies/measures** and/or multiple methodologies are being applied, the demonstration of the application of the POA framework to implement generic CPAs must be done for each of the combinations of technologies/measures and/or methodologies. Therefore, repeat all of Part II of these guidelines for each of the combination of technologies/measures and/or methodologies." The CME is requested to justify, why the Part II of the POA DD, has not been repeated for the two options (thermal energy generation and co-generation) of the POA. OPEN
17. The operating manual is incomplete. The CME has till date submitted 3 copies of operating manual. Except the first one none are complete manual. The CME is requested to submit the revised version of the manual in complete. OPEN.

CAR is open.

#### Project Participant Response:

Date: 02/05/2014

3. In the POA-DD, it is calculated by (increasing biogas amount by project activity = expected total biogas amount after improvement/repair - present existing anaerobic digester's biogas amount before the improvement/repair).

After the actual project operation, the formula [ increasing biogas amount = total measured produced biogas amount in project scenario - existing anaerobic digester's biogas amount in pre project scenario] and the result's  $PE_{CH_4,v}$  derived from only increasing biogas amount will be used to estimate the project's leakage value.

Only the increase in Biogas amount will be considered for the project emission. The facilities' retrofit will cause the amount of biogas to increase. The produced biogas in the existing facilities is caused by the components of the existing leakages making the need to consider project emission unnecessary.

For Option 1, instead of fossil fuel for pre-project scenario, the produced biogas will be used by utilizing heat supplied facilities in the project activity. So, the amount of produced biogas will be measured and recorded by instruments.

The explanation was supplemented and corrected in the POA-DD's contents.

(Page 5 - project's option. Option 1's content and additional corrections and explanations.)

Option2, all of produced biogas is delivered to biogas co-generation facility. Thus co-generation facility produces both electricity and thermal energy using biogas. Generated electricity will be claimed as emission reduction. However, thermal energy generated by co-generation facility will not be claimed.

6. The thermal consuming facility which is described in Figure 6 refer to sludgy drying facility using fossil fuel in the pre-project scenario. However, the heat for sludge drying facility will be supplied using biogas from this project in the project scenario. As explained again for clarity, the end use of the heat will be for sludge drying facility, which has been used as a component part of the plant. The fossil fuel of the sludge drying facility will be partly replaced by the generated biogas. The diagram in figure 6 was corrected in the POA-DD to describe the above explanation.

7. There are two types of parameters which uses in both economic analysis and fossil fuel. Those two types of parameters are (1) Consumption of fossil fuel before project and (2) Consumption of fossil fuel after project as corrected in the POA-DD.

First, the economic fossil fuel reduction through this project's operation. It could be calculated by difference between the amount of consumption of fossil fuel before and after the project.

Second, the amount of fossil fuel to be used in this project's operation. It would be same as the

consumption of fossil fuel after the project.

The Economic parameter which is described in page 28(table 9) has been explained by two type of parameters as above.

8. 1) The Parameter of NCV Biogas was reflected in the POA-DD monitored parameter.

2) The EF CO<sub>2</sub>.i.y parameter was moved as a monitored parameter.

9. The unnecessary memos in the Emission factor sheet have been deleted. And the evidence of each part has been attached. (Folder which named evidence emission factor\_20140404). This evidence is applied to each parts by statistics of electric power of Korea and KEPCO in Brief.

a) Fuel Consumption and Caloric Consumption was used as value of evidence.(Statistics of Electric Power in KOREA)

Net caloric value was calculated based on the Caloric consumption.

b) CO<sub>2</sub> Emission Factor source : IPCC default value at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol.2 (Energy) of the 2006 IPCC Guidelines on National GHG.

c) The previous memos written by CME in Korean language are not so important. Thus, Memo in "BM data" tab was all deleted.

d) Incorrect formula in "OM data" tab was deleted.

e) CME appended the evidence of BM sheet.

12. The measurement of parameter EG<sub>thermal,y</sub> was explained in the Measurement methods and procedures of B.7.1 Data and parameter to be monitored by each generic CPA. The steam/heat which supplied by circulating is calculated using the enthalpy difference the beginning and the end.

There are two way to supply hot air/steam using Biogas,

1. Direct heating system
2. Indirect heating system

EG<sub>thermal,y</sub> can be calculated using parameter (about Q<sub>hot air/steam</sub>, temperature, pressure).

The parameter (about Q<sub>hot air/steam</sub>, temperature pressure) has been added in B.7.1 Data and parameters to be monitored by each generic CPA of POA-DD Part II \_Option 1.

14. POA-DD has been written to include AMS I-C, parameter P and T in Section B.7.1, POA DD.

16. Option1 and option2 have been separately written in Part II \_Option 1 and Part II \_Option 2 each.

17. The Operational manual has been corrected as follows

#### Documentation Provided by Project Participant:

POA DD, version 13, dated 25/04/2014

#### Information Verified by Lead Assessor:

POA DD, version 13, dated 25/04/2014 was checked by the assessment team.

#### Reasoning for not Acceptance or Acceptance and Close

Date: 13/05/2014

#### Out:

1. Already closed.
2. Already closed.
3. (i) In this CPA (Option 1), the in the baseline scenario also the PP used to utilise biogas (renewable resources.). In the baseline scenario the produced biogas was used to heat the digester and the sludge drying was done by heat energy generated from fossil fuel. In the project scenario, the fossil fuel will be replaced by increased biogas. Thus this is a case of "project activities that involve the addition of renewable energy units at an existing renewable energy production facility, where the existing and new units share the use of common and limited renewable resources". The PP is requested to justify, why the paragraph 36-38 of AMS IC, version 19 was not referred for the calculation of net increased in thermal energy.

The approach adopted by the PP as of now, was not found to be in line with the applied methodology AMS IC, version 19. OPEN.

(ii) Further, under part II. Generic component project activity: Option 1, the PP has mentioned Option 1 as green field project. The PP is requested to justify, how this component is a green field, considering this is a retrofit project. This point was raised earlier also, but PP did not address. This point remained Open. OPEN.

(iii) Also the description of Option 1 CPA is not consistent in the POA DD. The PP is requested to clarify the inconsistency. PP should clearly mention, whether steam will be generated in boiler, or hot gases will be generated in a burner or combustion chamber, or whether both can be used as a part of the POA in the CPA description. The PP is also requested to maintain consistency in the POA DD. OPEN.

(iv) While mentioning the equation to calculate  $MM_{t,db}$ , the PP has not shown any simplification step. The PP is requested to justify. OPEN.

(v) The PP has not justified why leakage under EB 66, Annex 32 is not applicable in the POA. The PP is requested to mention the same in the POA DD. OPEN.

(vi) For the parameter " $EC_{PJ,y}$ ", the PP did not mention any thing on how the running time or operation time of the equipments will be determined. OPEN.

4. Already closed.
5. Already closed.
6. The heat consuming facility (heat generated from the increased biogas) is sludge drying process. This has been adequately mentioned in the revised POA DD and was found to be correct by the assessment team. Thus the point was closed.
7. The PP has revised the POA DD and two new input parameters have been added, one "consumption of fossil fuel before the project" and the other one is "consumption of fossil fuel after project". Thus considering the unit price of fossil fuel, which is already a input parameter in the financial analysis, the amount of cost saved due to less use of fossil fuel can be calculated. Thus the point is closed.
8. The PP has revised the POA DD, and the revision was found to be in line with the methodological requirements. Closed.
9. The emission factor sheet was checked and was found to be correct. Closed.
10. Already closed.
11. Already closed
12. The PP has revised the POA DD and the parameter  $EG_{thermal,y}$  is now as per the requirement of the methodology AMS IC, version 19. Closed.
13. Already closed.
14. The PP has revised the POA DD and the parameter 11 and 12 are now part of the monitoring plan of Option 1 the POA. Closed.
15. Already closed.
16. The PP has now provided separate part II for both option 1 and option 2. This was checked by the assessment team. However under point 6 of Section B.7.2 of the POA DD, Part II (Option 1), the "monitoring plan" mentioned is not correct, as it mention about electricity, however, the option 1 is for thermal energy generation. The PP is requested to clarify. OPEN.

Further the PP is requested to correctly fill up the section B.7.2 of part II of POA DD for option 2 type CPA as well. OPEN.

17. The operational manual was checked by the assessment team and was found to be correct. However the PP is requested to put date and version number in the Operational Manual.

**Project Participant Response:**
**Date: 28/05/2014**

3.

3-1 We understand that the AMS I-C Para 36~38 are applied in the condition that new thermal energy generating facility addition, retrofit or modification to the existing thermal energy generating facility using the renewable resource.

In the pre-project scenario, the existing thermal energy generating facility using biogas is indicating the heating facility for heating sludge reducing facility. There is only one existing facility for renewable energy generation in pre-project scenario, which is the heating facility for heating sludge reducing facility. If heating facility for heating sludge reducing facility was considered in these paragraphs, it is not retrofitted or modified and surely, there is no increasing thermal energy. And also, PP will not claim emission reduction for this facility. So, this can be excluded in this consideration.

In addition, the other thermal generating facility in pre-project scenario was not using biogas but using fossil

fuel. Thus, this can be also excluded in this consideration.

As explained again for clarification, our Option 1 project is to change the existing fossil fuel usage thermal generating facility to biogas usage thermal generating facility. This was consistently explained in POA-DD.

Before project activity, biogas was only used for heating of anaerobic digester facility.

For the biogas used in the heating process in anaerobic digestion facility (Sewage treatment facility) the emission reduction is not required.

Thus, we want to justify that paragraphs 36~38 in AMS IC do not have to be considered and included in the POA.

3-2 Option 1 project is for retrofit or modification. So the description of greenfield project is deleted.

3-3 In the Option 1, the biogas is used in the boiler or burner etc. Thus, the burner is added in the content of POA-DD. Also, proper corrections were done in the POA-DD for consistency of the documents.

3-4 Underlying methodology is EB68 Annex15 Methodological tool "Project emission from flaring". This simplification is applied to only case of enclosed flare option B in step 5.2 "Determination of flare efficiency.

3-5 Leakage calculation formula is added in the POA-DD as per EB66 Annex 32. And removed the inconsistent part in the POA-DD.

3-6 The electricity consumption by project activity is measured differently for two cases, one is when the electronic power gauge is installed, and the other is when no electronic power gauge is installed. If gauge was installed, the actual amount of electricity usage will be used for value of  $EC_{PJ,j,y}$ . If gauge was not installed, the actual amount of electricity usage will be calculated using the following formula.

Operating time (conservatively as 24 hours) \* Power consumption data for each facility (the list of facilities spec data in A.5 "Technical description" of the CPA-DD)

The contents of the measurement methods and procedures for  $EC_{PJ,y}$  in section B.7.1. were corrected considering above explanations.

In case of the operating time of co-generation system, as referring the previous closed responses for CARs raised before, the operating time of the co-generation will be measured in the monitoring room.

16. Monitoring plan in section B.7.2 for Option 1 is modified to satisfy the condition of Option 1.

And also for Option2, monitoring plan was fully explained in the section B.7.2. Also, proper corrections were done in the POA DD for consistency of the documents.

17. Version and date of operational manual is revised.

**Documentation Provided by Project Participant:**

POA DD version 14, dated 03/06/2014

**Information Verified by Lead Assessor:**

POA DD version 14, dated 03/06/2014 was checked by the assessment team.

**Reasoning for not Acceptance or Acceptance and Close Out: Open**

**Date: 12/06/2014**

1. Already closed.
2. Already closed.
1. (i) The justification provided by the PP was checked by the assessment team. Para 37 is not applicable as the project does not involve any "addition of new energy production unit", it only involves modification of burner for fuel switch purpose. Para 38 is also not applicable to the project activity, since it talks only about "retrofit or modify an existing facility for renewable energy generation". The CPA under option 1 in this POA, even though involves minor modification in the

digester, it also involves modification of the fuel burning and fuel supply system, as the project is basically fuel switch from fossil fuel to biogas. Hence the baseline scenario for Option 1 type of CPA is covered only by paragraph 42 of the applied methodology. This was clearly mentioned in the POA DD and was checked by the assessment team and was found to be correct. The point is closed.

- (ii) The Option 1 CPA is not a Greenfield project; the PP has revised the POA DD accordingly. The revised POA DD version 14 was checked by the assessment team and was found to be correct. Closed.
- (iii) The PP confirmed that, there can be use of both steam and hot gases as heating medium under this POA. The POA DD was revised and was found to be correct. Closed.
- (iv) The PP has added the simplification steps as per "Tool to determine the mass flow of a greenhouse gas in a gaseous stream" under section B.6.1 of the POA DD. This was checked by the assessment team and was closed.
- (v) The PP has added the justification for not considering the leakage component (as per EB 66, Annex 32) under section B.6.1 of the POA DD. This was checked and was found to be correct by the assessment team. However, why the PP deleted the other leakage component part (it was there in the earlier POA DD) which is required to be mentioned as per AMS IC, version 19. OPEN.
- (vi) The justification regarding monitoring of the parameter  $EC_{PJ,Y}$  was found to be correct by the assessment team and was accepted. Closed.

16. The PP has modified the section B.7.2 of part II of POA DD for both Option 1 CPA and Option 2 CPA. This was checked by the assessment team and was found to be correct. CAR closed.

17. The PP has revised the Operating Manual, dated 02/05/2014 which was checked by the assessment team and was found to be correct. Closed.

18. In the "monitoring plan" description under section B.7.2. of the POA DD (in page number 87), the PP is also requested to include the monitoring aspects of CPAs which involves only onsite electricity consumption. OPEN.

19. Please update your documentation reference to Validation and Verification Standard Version 7 (version 6 will no longer be valid as of 25<sup>th</sup> June 2014). OPEN.

CAR is Open

**Project Participant Response:**

**Date: 26/06/2014**

3.(v) The deleted part was restored.

18. The monitoring aspects of CPAs which involves only onsite electricity consumption was added in the "monitoring plan" description under section B.7.2. of the POA DD.

19. VVS was unmentioned in POA-DD. Thus, there is nothing to correct or update for this issue.

**Documentation Provided by Project Participant:**

POA DD, version 15, dated 26/06/2014

**Information Verified by Lead Assessor:**

POA DD, version 15, dated 26/06/2014 was checked by the assessment team.

**Reasoning for not Acceptance or Acceptance and Close Out:**

**Date: 30/06/2014**

3. (v) The POA DD, version 15, dated 26/06/2014 was checked by the assessment team and was found to be correct. Closed.

18. The PP has revised the section B.7.2 of the POA DD and was found to be correct. Closed.

19. The POA D was checked and the response provided by the PP was found to be correct. Closed.

**Acceptance and Close out by Lead Assessor: Closed**

**Date: 30/06/2014**



Date:	11/07/2014	Raised by:	UK completeness Check		
Type:	CAR	Number:	20	Reference:	POA DD template and guidance
<b>SGS UK Comment:</b>					
The following issues have been raised against POA DD template and Guidance:					
<div><div>1) Methodology version is not always mentioned wherever the methodology is referred</div><div>2) Font format has been altered (text highlighted and font colour) for e.g., page 5 and page 31 (not limited to these two examples) and Appendix 2 page 89 (text underlined)</div><div>3) Document layout is showing a blank section at the top of page 74 before Section B.6.2.</div><div>4) POA DD – on page 41 ( above table 12) – version of tool of EF is mentioned as version 3 instead of 4. Please address inconsistency.</div><div>5) Appendix 5 of POA DD is not filled in by the PP. Please mention NA, if not relevant.</div><div>6) Information is not consistent with data in Emission Factor(OM, BM, CM) calculation sheet_G&amp;SI_140215.xls, <u>for e.g., but not limited to:</u><div><div>■ POA DD page 39 is inconsistent with Tab 4 “OM”: 2006 (hydro and total)</div><div>■ POA DD page 42 is inconsistent with tab % “BM”: cell G7. Also note cell G5 has text hidden in the cell.</div></div></div></div>					
<b>Project Participant Response:</b>				<b>Date:</b> 14/07/2014	
1. The version about methodology and tool was displayed in PoA-DD and CPA-DD					
2. Font format (text highlight and font colour) has been fixed.					
3. A blank section at the top of page 74 before Section B.6.2 was deleted.					
4. Tool version on page 43 was revised.(version 03.0.0 -> version 04.0.0)					
5. NA was shown in the Appendix 5 of PoA-DD.					
6.- PoA-DD has been revised inconsistency with EF calculation sheet. - PP could not find hidden cell in G5 of EF sheet and a local assessor also confirmed that sheet is clear to review it.					
<b>Documentation Provided by Project Participant:</b>					
PoA DD version 16, dated 14/07/2014					
<b>Information Verified by Lead Assessor:</b>					
PoA DD version 16, dated 14/07/2014 was checked by the assessment team.					
<b>Reasoning for not Acceptance or Acceptance and Close Out:</b>				<b>Date:</b> 14/07/2014	
1. The version of methodology and tool has now been consistently mentioned throughout the PoA DD & CPA DD. Closed.					
2. The PP has revised the PoA DD & the font format (text highlight and font colour) has been fixed. Closed.					
3. The PoA DD has been revised and the blank page has been removed by the PP. Closed.					
4. The version of emission factor tool has been updated to 4.0.0. Closed.					
5. The Appendix 5 has been filled up by the PP in the revised PoA DD. Closed.					
6. The correction was checked and was found to be correct. Closed.					
<b>Acceptance and Close out by Lead Assessor:</b>				<b>Date:</b> 15/07/2014	
Closed					



## A.4 Annex 4: Team Members Statements of Competency

### Statement of Competence

Name: Muthamil  
Kumaran

#### Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	

#### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	x
Technical Area(s): TA 1.2 Energy generation from renewable energy sources	
<b>2. Energy Distribution</b>	
Technical Area(s):	
<b>3. Energy Demand</b>	
Technical Area(s):	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	
Technical Area(s):	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 06/02/2012

## Statement of Competence

Name: **Sauvik Banerjee**

### Status

- Lead Assessor	<b>x</b>	- Expert	<b>x</b>
- Assessor	<b>x</b>	- Financial Expert	
- Local Assessor	<b>India</b>	- Technical Reviewer	

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	<b>x</b>
Technical Area(s): TA 1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
<b>2. Energy Distribution</b>	
Technical Area(s):	
<b>3. Energy Demand</b>	
Technical Area(s):	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	
Technical Area(s):	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: **Siddharth Yadav** Date: **02/08/2013**

## Statement of Competence

Name: A.T.  
Surendra

### Status

- Lead Assessor		- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	
Technical Area(s):	
<b>2. Energy Distribution</b>	
Technical Area(s):	
<b>3. Energy Demand</b>	
Technical Area(s):	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	x
Technical Area(s): TA 13.1: Waste handling and disposal	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 27/03/2012

## Statement of Competence

Name: Blake Park

### Status

- Lead Assessor		- Expert	
- Assessor		- Financial Expert	
- Local Assessor	Republic of Korea	- Technical Reviewer	

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	
Technical Area(s):	
<b>2. Energy Distribution</b>	
Technical Area(s):	
<b>3. Energy Demand</b>	
Technical Area(s):	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	
Technical Area(s):	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 11/04/2014

## Statement of Competence

Name: Shivaji  
Chakraborty

### Status

- Lead Assessor	x	- Expert	x
- Assessor	x	- Financial Expert	
- Local Assessor	India	- Technical Reviewer	x

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	<b>x</b>
Technical Area(s):	
TA 1.1 Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
TA 1.2 Energy generation from renewable energy sources	
<b>2. Energy Distribution</b>	<b>x</b>
Technical Area(s): TA 2.1 Electricity distribution	
TA 2.2 Heat distribution	
<b>3. Energy Demand</b>	<b>x</b>
Technical Area(s): TA 3.1 Energy Demand	
<b>4. Manufacturing</b>	
Technical Area(s):	
<b>5. Chemical Industry</b>	
Technical Area(s):	
<b>6. Construction</b>	
Technical Area(s):	
<b>7. Transport</b>	
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	
Technical Area(s):	
<b>9. Metal Production</b>	
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	
Technical Area(s):	
<b>12. Solvent Use</b>	
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	
Technical Area(s):	
<b>14. Afforestation and Reforestation</b>	
Technical Area(s):	
<b>15. Agriculture</b>	
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 19/09/2012

## Statement of Competence

Name: Sameer Rege

### Status

- Lead Assessor	<input type="checkbox"/>	- Expert	<input checked="" type="checkbox"/>
- Assessor	<input type="checkbox"/>	- Financial Expert	<input type="checkbox"/>
- Local Assessor	<input type="checkbox"/>	- Technical Reviewer	<input type="checkbox"/>

### Scopes of Expertise

<b>1. Energy Industries (renewable / non-renewable)</b>	<input type="checkbox"/>
Technical Area(s):	
<b>2. Energy Distribution</b>	<input type="checkbox"/>
Technical Area(s):	
<b>3. Energy Demand</b>	<input type="checkbox"/>
Technical Area(s):	
<b>4. Manufacturing</b>	<input type="checkbox"/>
Technical Area(s):	
<b>5. Chemical Industry</b>	<input type="checkbox"/>
Technical Area(s):	
<b>6. Construction</b>	<input type="checkbox"/>
Technical Area(s):	
<b>7. Transport</b>	<input type="checkbox"/>
Technical Area(s):	
<b>8. Mining/Mineral Production</b>	<input type="checkbox"/>
Technical Area(s):	
<b>9. Metal Production</b>	<input type="checkbox"/>
Technical Area(s):	
<b>10. Fugitive Emissions from Fuels (solid, oil and gas)</b>	<input type="checkbox"/>
Technical Area(s):	
<b>11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride</b>	<input type="checkbox"/>
Technical Area(s):	
<b>12. Solvent Use</b>	<input type="checkbox"/>
Technical Area(s):	
<b>13. Waste Handling and Disposal</b>	<input checked="" type="checkbox"/>
Technical Area(s): <i>TA 13.1: Waste handling and disposal</i>	
<b>14. Afforestation and Reforestation</b>	<input type="checkbox"/>
Technical Area(s):	
<b>15. Agriculture</b>	<input type="checkbox"/>
Technical Area(s):	

Approved Member of Staff by: Siddharth Yadav Date: 12/04/2013