



VALIDATION REPORT

SIHWA TIDAL POWER PLANT CDM PROJECT IN REPUBLIC OF KOREA

REPORT No. 2005-1537

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DET NORSKE VERITAS



VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “*Sihwa tidal power plant CDM project*” (hereafter called “the project”) in *Republic of Korea* on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is DNV’s opinion that the project, as described in the project design document of *November 18, 2005 (version 2)*, meets all relevant UNFCCC requirements for the CDM and correctly applies the approved baseline and monitoring methodology *ACM0002*. Hence, DNV requests the registration of the “*Sihwa tidal power plant CDM project*” as CDM project activity.

Report No.: 2005-1537	Subject Group: Environment	Indexing terms <table border="1"> <tr> <td rowspan="3"> Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism </td> <td>Service Area Verification</td> </tr> <tr> <td>Market Sector</td> </tr> <tr> <td>Energy Sector</td> </tr> </table>		Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification	Market Sector	Energy Sector
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Date of this revision: 2006-02-28	Rev. No.: 03	Number of pages: 11	© 2002 Det Norske Veritas AS All rights reserved. This publication or parts thereof may not be reproduced or transmitted in any form or by any means, including photocopying or recording, without the prior written consent of Det Norske Veritas AS.				



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Appendix A Validation Protocol

***Abbreviations***

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N ₂ O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change



1 INTRODUCTION

Korea Water Resources Corporation (KOWACO) has commissioned Det Norske Veritas Certification Ltd. (DNV Certification) to validate the Sihwa tidal power plant CDM project in Republic of Korea. This report summarises the findings of the validation, performed on the basis of UNFCCC criteria for CDM projects, requirements contained in the applied methodology ACM 0002 as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation team consists of the following personnel:

Mr. Santhosh Jayaram	DNV Certification, India	Team Leader and CDM auditor
Mr. Kim Young-Keun	DNV Certification, Korea	CDM auditor
Mr. Einar Telnes	DNV Certification Oslo	Technical verifier and Energy sector expert

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0002 /6/. The validation team has, based on the recommendations in the Validation and Verification Manual /5/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 Description of Proposed CDM Project

The Sihwa tidal power plant will generate electricity by utilizing the sea water when it is coming into Sihwa Lake, which is an artificial lake made by the tide embankment. The plant will be located in Jaggungarisum, which is an island in Ansan-city, Gyeonggi province, Republic of Korea.

The project will be equipped with 10 turbine generators (25.4 MW) each of straight inflow bulb type. It is expected to generate 552.7 GWh a year and will be connected to the grid.



This project is the first tidal power project in Korea and primarily aims at reducing GHG emissions. As a result of the project, it is estimated that 315440 tCO₂/annum will be mitigated.

2 METHODOLOGY

The validation consists of the following three phases:

- I a desk review of the project design and the baseline and monitoring methodology
- II follow-up interviews with project stakeholders
- III the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /5/. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the “*Sihwa tidal power plant CDM project*” is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation criteria or where a risk to the fulfilment of project objectives is identified. **Corrective Action Requests (CAR)** are issued, where:

- i) mistakes have been made with a direct influence on future project performance or results;
- ii) CDM requirements have not been met; or
- iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The validation team may also use the term **Clarification (CL)**, which would be where additional information is needed to fully clarify an issue.



Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). A request for Clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request , these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation protocol tables



2.1 Review of Documents

The Project Design Document (PDD) dated 22 August 2005 and 18 November 2005 /1/ submitted by KOWACO as well as additional background calculations /2/ related to the project design and baseline were assessed. The Environmental Impact Assessment (EIA) /3/ was reviewed at site.

2.2 Follow-up Interviews

Follow-up interviews were performed between October 17-24, 2005 in Korea with representatives from KOWACO and consultants ECOEYE CO., LTD. and representatives of the DNA of Korea and Korea Electric Power Corporation (KEPCO).

The main topics of the interviews are summarised in Table 1

Table 1 Interview topics

Interviewed organisation	Interview topics
KOWACO And Ecoeye. Co., Ltd. (Consultant)	<ul style="list-style-type: none"> ➤ Technology applied and operational lifetime ➤ Provisions for training, operation and maintenance ➤ Monitoring and reporting procedures ➤ Additionality ➤ Baseline methodology ➤ Estimated emission reductions and emission factors applied ➤ Stakeholder consultation process and environmental impacts ➤ Legal compliance
KEPCO	<ul style="list-style-type: none"> ➤ Clarifications pertaining grid. ➤ Assumptions in baseline determination
DNA of Korea	<ul style="list-style-type: none"> ➤ Sustainable development policies and the criteria

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design. The initial validation identified Three *Corrective Action Requests* and nine requests for *Clarification*. The Corrective Action Requests and requests for Clarification were presented to the project participants in DNV's draft validation report of 05/12/2005 (rev. 2) were resolved during communications between the Client and DNV. To guarantee the transparency of the validation process, the concerns raised and responses given are documented in the validation protocol in Appendix A.

Since modifications to the Project design were necessary to resolve DNV's concerns, the Client decided to revise the PDD and resubmitted the PDD (Version_02, 18/11/2005). After reviewing the revised PDD, DNV issued this final validation report and opinion.



3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised PDD of 18 November 2005 and revised calculation work sheets (Baseline_Cal_2005_PDD(2)_20051118(E).xls).

3.1 Participation Requirements

The project participants are Korea Water Resources Corporation (KOWACO) and Ecoeye Co., Ltd.(Consultant). The Party involved, i.e. Republic of Korea as host Party meets the requirements to participate in the CDM. The project is approved by the DNA of Korea /4/. No Annex I Party is yet identified.

The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Korea.

3.2 Project Design

The Sihwa tidal power plant will generate electricity by utilizing the sea water when it is coming into Sihwa lake, which is an artificial lake made by the tide embankment. The project will be equipped with 10 turbine generators with a capacity of 25.4 MW, each of straight inflow bulb type. The project is expected to generate 552.7 GWh a year and will be connected to the grid.

The project is the first tidal power plant in Korea. The primary aim of the project is to reduce GHG emissions by capacity addition to the grid, which is dominated by fossil fuel based power generators, presently representing 62.5% of the Korean generation. The advantage of the project will be improvement in the water quality of the Shihwa Lake by increased sea/inner water circulation.

The technology applied is deemed current good practice and is not expected to be replaced within the crediting period.

Starting date of the project was 31 December 2004. The operational lifetime of the project is estimated around 30 years and a renewable crediting period of 7 years starting on 1 July 2009 is selected.

3.3 Project Baseline

The project applies the approved baseline methodology ACM0002, (Version 4, dated 28 November 2005), "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".



The project's application of the methodology and the discussion and determination of the chosen baseline is transparent. The project uses Simple OM for calculation of OM emission factor since the rate of low cost/ must run power generation constitute an average of 42.84% of the total grid generation in the recent 5 years. Dispatch data analysis is not used for calculating OM since hourly dispatch data are not available. The project uses option 2, estimating BM emission factor each year based on the most recent information. Capacity additions in the system that comprise 20% of the system generation and that have been built most recently have been considered since this sample group comprises the larger annual generation. For calculation of emission factor both BM and OM have been weighted equally (default 50%).

The methodology is analysed for applicability as given below.

1. The electricity capacity addition is through tidal sources.
2. The project does not involve switching from fossil fuel to renewable energy. It is a green field project.
3. The geographic and system boundaries of the grid can be clearly defined and information on the characteristics of the grid is available.

It is verified that the estimation of baseline emissions is conservative.

3.4 Additionality

The additionality of the project is demonstrated using the tool for the demonstration and assessment of additionality, dated 22 October 2004.

Step 0: Not applicable since the starting date of project is 31st December 2004 and the crediting period would start from 01/07/2009, which is assumed after registration of project.

Step 1: The alternatives discussed are base-load 1000 MW and 1400 MW Nuclear power plants and 500 MW and 800 MW bituminous coal power plants since these are the standard capacities for conventional power plants.

Step 1.a requires identifying realistic and credible alternatives available to project participant or similar project developers. KOWACO is one of sub-organizations of Ministry of Commerce, Industry and Energy (MOCIE). MOCIE considers and decides national level energy policy including hydro, nuclear, coal power plant and hence the alternatives discussed as nuclear and coal based power plants are realistic and credible.

Step 1.b. The alternatives discussed will comply with applicable legal and regulatory requirements.

Step 2:

2.a: Investment comparison analysis is used.

2.b: The unit cost of service (termed as net generation cost, unit: won/KWh) is identified as financial indicator for investment comparison analysis. The net generation cost is calculated using the formula used by KEPCO.

2.c: The net generation cost is the highest at 87.75 won/KWh compared to all other alternatives. It is at least 135% more than the alternatives.

2.d: The sensitivity analysis is carried out in terms of 50% increase/decrease in fuel costs, discount rates of 6%, 7% and 8% and also 10% increase/decrease in construction cost. The results clearly indicate that the project remains less financially attractive compared with other alternatives.



Step 3: Not selected.

Step 4: No similar activities can be observed, since there are no other tidal power plant installed in Republic of Korea.

Step 5: The project will result in reduction of GHG emissions. There is also a financial benefit due to revenue from CERs (higher IRR). The registration of the project can also provide motivation for further developments in renewable energy segment in the host country.

It is the validation team's opinion that there is an investment barrier enough to prevent the project from happening without the financial support from the CDM. The project is also unique in the host country considering that this is the first tidal project.

3.5 Monitoring Plan

The monitoring methodology is consistent with the approved ACM0002. The justification for the applicability is same as that of the justification given for baseline applicability.

The monitoring plan provides detailed information related to the collection and archiving of all relevant data needed to determine baseline emissions. There are no project emissions and leakages envisaged in this project.

The baseline indicators that will be monitored are:

1. Electricity supplied to grid.
2. Emission factor (OM, BM and combined)
3. Details of fuel (quantity, net calorific value, emission factor coefficient)
4. Electricity generation of each plant in the grid.
5. Name of plants contributing to OM and BM calculations.

Item 2, 3, 4 & 5 will be monitored each year for estimating BM.

For item 1, the monitoring equipment used will be a bidirectional meter, which will aid in monitoring the net electricity exported. The procedures are available for calibration and maintenance of monitoring equipment.

The authority and responsibility for registration, monitoring, measurement and reporting are described. Procedures are identified for monitoring, measurements and reporting, for day-to-day records handling, for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance, for project performance reviews and for corrective actions. These are brought out in a separate procedure as response to the clarification 3 requested by the validation team.

3.6 Calculation of GHG Emissions

The relevant GHG emission will be only CO₂.

There are no project emissions and leakages envisaged in this project.

In terms of correctness and transparency of formulas and factors used for estimating the GHG emissions was verified and clarifications were requested. These clarifications have attended to and were verified by the validation team.



3.7 Environmental Impacts

There is a requirement for an Environmental Impact Assessment (EIA) by the host part and the same is complied, the EIA was approved on 2005-03-18. The EIA covers the environmental impacts in detail and has details of the monitoring requirements.

3.8 Comments by Local Stakeholders

The relevant government agencies like Ministry of Environment, Ministry of maritime affairs and fisheries, representatives of Gyeonggi Province, Hwaseong-city, Ansan city and Siheung city as well as citizens living near the Sihwa Lake were consulted. The key stake holder comments and actions initiated against these key comments are provided in the PDD, which are verified and found satisfactory as part of the site visit and interviews.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of August 22, 2005 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from September 16, 2005- October 15, 2005. No comments were received.



5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the “Sihwa Tidal Power Plant CDM Project” located at Gyeonggi Province, Republic of Korea towards criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The validation consisted of the following three phases: i) a desk review of the project design documentation (September-October 2005), ii) follow-up interviews with project stakeholders (October 2005) and iii) the resolution of outstanding issues and the issuance of the draft validation report and opinion (December 2005). The validation of the initial project design documentation raised several minor issues and changes to the documentation were provided in an updated project design document.

The project correctly applies ACM0002 and the determination of the baseline is transparent. There are no local regulations/programs that constrain the project. An Investment comparison analysis of the project without CER revenues sufficiently demonstrated that the project would not occur in the absence of CDM benefits and that emission reduction attributable to the project are thus additional.

By establishing the tidal power plant, the project results in the reduction of CO₂ emissions that are real, measurable and give long-term benefits. The project is likely to achieve the estimated amount of emission reductions of approximately 315 440 tCO₂e per year.

The key parameters for determining baseline emissions and thus emission reductions are monitored, i.e. the net electricity supplied to grid by the project. This net electricity supplied is multiplied with an emission factor monitored ex post and calculated as an average of Build margin and Operating margin.

The total emission reductions from the project are estimated to be on the average 315 440 tCO₂e per year over the selected 7 year crediting period. The emission reduction forecast has been checked and is deemed likely that the state amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV’s opinion that the “Sihwa tidal power plant CDM project” in Republic of Korea, as described in the PDD of date November 18, 2005 (Version 2), meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM 0002. DNV thus requests the registration of the project as a CDM project activity.



REFERENCES

Documents provided by the project proponent that relate directly to the project:

- /1/ *Project Design Document (PDD) for CDM Activity – Sihwa Tidal Power Plant CDM Project, Version_01, August 22, 2005 (PDD_Shihwa_ver01_050823_.pdf).*
Version_02, November 18, 2005 (PDD_Shihwa_ver02_final_060328_.pdf)
- /2/ *Calculation work sheets.*
Emission Factor Calculation Sheet_english_050822.xls (along with PDD version 1)
Baseline_Cal_2005_PDD(2)_20051118(E).xls (along with PDD version 2)
- /3/ *Approved EIA report – titled Environmental Impact Assessment (EIA) Report on Sihwa Lake Tidal Plant Construction, dt. 18, March 2005.*
- /4/ *Host country approval letter – Issued by Government of the Republic of Korea, No. 2006-2, dt. 25, January 2006.*

Background documents related to the design and/or methodologies employed in the design or other reference documents:

- /5/ *International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): Validation and Verification Manual. <http://www.vvmanual.info>*
- /6/ *ACM0002 Version 4, Dated 28 November 2005, Approved methodology for "Grid connected electricity generation from renewable sources"*

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

- /7/ *Interview on 21st October 2005*
 - 1. Mr. JEONG-SOO KIM, Sec.Chief, Water Resources Development Dept.(KOWACO)
 - 2. Mr. HAN JOONG KIM, Asst. Manager, Water Resources Development Dept.(KOWACO)
 - 3. Mr. HAN-YOUNG CHO, Civil Engineer, Water Resources Development Dept.(KOWACO)
 - 4. Mr. JAY-HEUNG KIM, Sec.Chief, Water Resources Development Dept.(KOWACO)
 - 5. Mr. TAI-YOUNG CHO, Asst. Manager, Energy Business Dept.(KOWACO)
- /8/ *Interview on 20th October 2005*
 - 1. Mr. YONGGI PARK, Manager, Tidal Power Plant Construction Sec.(KOWACO)
 - 2. Mr. KI-CHEOL KIM, Asst. Manager, Tidal Power Plant Construction Sec.(KOWACO)
- /9/ *Interview on 20th and 21st October 2005*



1. Mr. MOON G. LEE, Consultant, ECOEYE CO., LTD.

2. Mr. DANNY PARK, Consultant, ECOEYE CO., LTD.

/10/ Interview on 17th October 2005

Mr. SOON-CHUL PARK, Expert Advisor, Republic of Korea DNA.

Interview on 24th October 2005

Mr. GYU-HYEONG KIM, Deputy Director, Republic of Korea DNA.

/11/ Interview on 24th October 2005

1. Mr. JEONGCHAE KIM, Asst. Manager, Management Evaluation Team, KEPCO.

2. Mr. KIM, KWANG-KYU, Asst. Manager, Management Evaluation Team, KEPCO.

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	Annex I party has not been identified yet.	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	OK	Written approval by the DNA of Republic of Korea, including a confirmation that the project assists in achieving sustainable development, has not yet been received.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I	Decision 17/CP.7	OK	No public funding

Requirement	Reference	Conclusion	Cross Reference / Comment
shall not be a diversion of official development assistance			from Parties in Annex 1 involved.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	Republic of Korea: Environment Cooperation Division, Ministry of Foreign Affairs and Trade.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	--	Republic of Korea ratified the protocol on 8 November 2002. Annex I party has not been identified yet.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	--	Annex I party has not been identified yet.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	--	Annex I party has not been identified yet.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1

Requirement	Reference	Conclusion	Cross Reference / Comment
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	OK	The PDD was be made publicly available on www.dnv.com/certification/climatechange and Parties, stakeholders and NGOs will through the CDM website be invited to provide comments during the 30 day period from 16 September 2005 to 15 October 2005. No comments were received
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/ /8/	DR I	<p>This project is located in the Sihwa Lake, an artificial lake made by tide embankment near Jaggungarisum, an island in Ansan-city, Gyeonggi Province, Republic of Korea.</p> <p>The Mean sea level in the PDD is not correct, the correct data to be incorporated in PDD.</p>	OK CL1	OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/ /8/	DR I	Yes, the project system boundaries include the all components and facilities of Sihwa tidal power plant project and for baseline determination the boundary will include all power plants connected physically to the electricity system of Korea Electric Power Corporation.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A.2. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.2.1. Does the project design engineering reflect current good practices?	/1/ /7/	DR I	Yes. The project design engineering includes one-way-flow, bulb turbine generators, which have good energy efficiency, low head drop and larger capacity of 25.4 MW each. The selection of the turbine-generators is based on comparison of various alternatives available.		OK
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /7/ /11/	DR I	This is the first tidal power plant in the Republic of Korea.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/ /7/	DR I	No, Considering the project technology currently employed and an operational life time of not less than 30 years, it will not be substituted by other or more efficient technologies within the project period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/ /7/	DR I	Yes, Since this is the first project in Republic of Korea, the project will require extensive initial training and maintenance efforts in order to work as presumed during the project period		OK
A.2.5. Does the project make provisions for meeting	/1/	DR	Yes, as part of the project contract itself; the equipment supplier should train people for		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
training and maintenance needs?	/7/	I	operation and maintenance.		
A.3. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/ /7/	DR I	Yes. The project appears to be in line with relevant legislation. For the Project, KOWACO has obtained approvals from the Ministry of Commerce, Industry and Energy and Ministry of Construction and Transportation. The project also appears to be in line with the host country plans on development and use of renewable energy.		OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/ /4/	DR I	The project is likely to be in line with the host country CDM requirements. However, written confirmation that the project meets the host country specific CDM requirements and assists in achieving sustainable development has not yet been obtained.	CAR-1	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/ /4/	DR	Comments reserved till comments of A.3.2 are clarified.	CAR-1	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /7/ /8/	DR I	The project will have all inherent benefits of a renewable energy project. Apart from GHG emission reduction, the project will not have any emissions to air as compared to thermal power plants. The project will also have social benefits in terms of employment and improved infrastructure in the local area. The power plant also has potential to attract tourists, which will also have a		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			economic benefit to the local area.		
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/ /6/	DR	Yes, the project uses the approved consolidated methodology ACM 0002 (Version 4, dated 28 November 2005), "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /6/	DR	ACM 0002 is the baseline methodology most applicable for this project since the project is a renewable grid-connected power generation project. The capacity addition is through tidal sources.		OK
B.2. Baseline Determination <i>The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen	/1/ /6/	DR I	Yes, application of the methodology and the discussion and determination of the chosen		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
baseline transparent?	/9/ /11/		<p>baseline are transparent.</p> <p>The project uses Simple OM for calculation of the OM emission factor since the rate of low cost/ must run power generation constitute an average of 42.84% of the total grid generation in the recent 5 years.</p> <p>Dispatch data analysis is not used for calculating OM since hourly dispatch data is not available.</p> <p>The project uses option 1, estimating BM emission factor ex-ante based on the most recent information available on plants already built at the time of PDD submission. Capacity additions in the system that comprises 20% of the system generation and that have been built most recently have been considered since this sample group comprises the larger annual generation.</p> <p>For calculation of emission factor both BM and OM have been weighted equally (default 50%).</p>		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/ /9/	DR I	<p>It is not clear, whether selecting option 1 for calculation of BM emission factor will result in a conservative estimate. The Figure 4 of PDD, very clearly brings out the fossil fuel based energy generation coming down in future. So the selection of Option 1 where an ex ante estimate to be used for the first crediting period may not be conservative. If established conservative, the ex-ante estimation has to be done for the period just prior to the start of crediting period.</p>	CL2	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			Also data in Figure 4 in PDD and the data shown in worksheet baseline EF of excel sheet are not consistent for year 2003.	CL3	
B.2.3. Has the baseline been established on a project-specific basis?	/1/ /9/ /11/	DR I	Yes, the baseline is the Korean National Grid, which is applicable to the project. OM calculations uses data from 2001, 2002 and 2003 and BM calculations uses data from year 2003 but methodology requires most recent information (recent 3 years in case of OM)at the time of PDD submission. Since KEPCO has published the data for 2004, the same to be used.	CL4	OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /11/	DR I	Yes.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/ /9/	DR I	Yes, the baseline is determined using the data from KEPCO.		OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/ /7/	DR I	Yes, Without the finance from CERs , the capacity additions for electricity would have been the conventional power plants.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /6/ /7/ /9/	DR I	Yes, it is demonstrated that the project itself is not a likely baseline scenario. It is demonstrated using the tool for the demonstration and assessment of additionality, dated 22 October 2004. Step 0: Since the starting date of project is 31 st December 2004 and the crediting period would start from 01/07/2009, which is		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>assumed as a date after registration of project, the step 0 is not applicable to the project.</p> <p>Step 1: The alternatives discussed are base-load 1000 MW and 1400 MW Nuclear power plants and 500 MW and 800 MW bituminous coal power plants since these are the standard capacities for conventional power plants. Step 1.a requires identifying realistic and credible alternatives available to project participant or similar project developers. KOWACO is one of sub-organizations of Ministry of Commerce, Industry and Energy (MOCIE). MOCIE considers and decides national level energy policy including hydro, nuclear, coal power plant. Step 1.b. The alternatives discussed will comply with applicable legal and regulatory requirements.</p> <p>Step 2: 2.a: Investment comparison analysis is used. 2.b: The unit cost of service (termed as net generation cost, unit: won/KWh) is identified as financial indicator for investment comparison analysis. The net generation cost is calculated using the formula used by KEPCO.</p>		

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			<p>2.c: The net generation cost is the highest at 87.75 won/KWh compared to all other alternatives. It is at least 135% more than the alternatives.</p> <p>2.d: The sensitivity analysis is carried out in terms of 50% increase/decrease in fuel costs, discount rates of 6%, 7% and 8% and also 10% increase/decrease in construction cost. The results clearly indicate that the project remains less financially attractive compared with other alternatives.</p> <p>Step 3: Not applicable.</p> <p>Step 4: No similar activities can be observed, since there is no other tidal power plant installed in Republic of Korea.</p> <p>Step 5: The project will result in reduction of GHG emissions.</p> <p>There is also a financial benefit due to revenue from CERs (higher IRR).</p> <p>The registration of the project can also provide motivation for further developments in renewable energy segment in the host country.</p>		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	There are no major risks envisaged in the baseline identified.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Table 5, data source to be provided in PDD Table 6, data source to be provided in PDD	CL-5	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/ /7/	DR I	The starting date of the project is not clearly defined, only the month is given as January 2005. During interviews the proof provided to establish the starting date indicates 31 st December 2004 as starting date. Correction requested. The operational life time is defined approximately 30 years.	CAR-2 OK	OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/ /7/	DR I	Renewable crediting period of seven years with two possible renewals is selected. The starting date of first crediting period will be 01/07/2009, the commissioning of the plant is expected to begin at least 3 months before this date.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D. Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
D.1. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/ /6/	DR	Yes, the project uses the approved consolidated methodology ACM 0002, (Version 4, dated 28 November 2005), "Consolidated monitoring methodology for zero emissions grid-connected electricity generation from renewable sources".		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/ /6/	DR	ACM 0002 is the baseline methodology most applicable for this project since the project is a renewable grid-connected power generation project. The capacity addition is through tidal sources.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/ /6/	DR	Yes, except the following. The 3 rd column of the PDD template "source of data" missing in PDD. The 6 th column of the template given in ACM 0002 is also missing.	CL-6	OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	No project emissions envisaged, hence not applicable.		OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	Not Applicable.		--
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Not Applicable.		--
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	Not Applicable.		--
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Not Applicable.		--
D.3. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /7/	DR I	No leakage envisaged, hence not applicable. It was also confirmed that there is no additional submergence of land and vegetation due to this project.		OK
D.3.2. Are the choices of leakage indicators reasonable?	/1/	DR	Not Applicable.		--
D.3.3. Will it be possible to monitor / measure the	/1/	DR	Not Applicable.		--

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
specified leakage indicators?					
D.3.4. Will the indicators give opportunity for real measurements of leakage effects?	/1/	DR	Not Applicable.		--
D.4. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/ /6/	DR	Yes, the monitoring plan provide for collection and archiving of all relevant data necessary for determining baseline emissions as per ACM 0002.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes, the baseline indicators that will be monitored are: 1. Electricity supplied to grid. 2. Emission factor (OM, BM and combined) 3. Details of fuel (quantity, net calorific value, emission factor coefficient) 4. Electricity generation of each plant in the grid. 5. Name of plants contributing to OM and BM calculations.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/ /7/	DR I	Yes, the electricity supplied will be a direct measurement using a bidirectional meter. The indicators used for calculation of emission factor will be monitored from data from KEPCO and calculated using IPCC default values. NCVi – it is confirmed during interviews that local value will be considered hence	OK CL-7	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			reference to IPCC default values in comments column of table D.2.1.3 to be removed.		
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?	/1/	DR	Yes.		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /3/	DR	Yes, they are included in the approved EIA dt 2005-03-18.		OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/ /3/	DR	Yes.		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/ /3/	DR	Yes.		OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/ /3/	DR	Yes.		OK
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR	Yes, it is described. The operational and management structure is described.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and	/1/	DR	No, the authority and responsibility for registration, monitoring, measurement and	CAR-3	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
reporting clearly described?	/7/		reporting is not clearly described.		
D.6.3. Are procedures identified for training of monitoring personnel?	/1/ /7/	DR I	Yes, trainings are identified for the monitoring personnel. Apart from the training programmes mentioned in the PDD, the organisation has plans to conduct training programmes with intend to build the capacities for sustained monitoring.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergencies envisaged which can cause unintended emissions.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Yes, the meters monitoring the electricity supplied to the grid will calibrated on installation and re-calibrated every two years.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Yes, the meters shall be authorised through the formal certifying process.		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	No.	CAR-3	OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	No.	CAR-3	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	No.	CAR-3	OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	No.	CAR-3	OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	No.	CAR-3	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	No.	CAR-3	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	No.	CAR-3	OK
E. Calculation of GHG Emissions by Source <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
E.1. Predicted Project GHG Emissions <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	No project emissions envisaged, hence not applicable.		OK
E.2. Leakage <i>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR I	No leakage envisaged, hence not applicable. Refer comments in D.3.1		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
E.3. Baseline Emissions <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/ /9/ /11/	DR I	Yes, the data used is supplied by KEPCO.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	Yes, the baseline boundary covers all projects producing electricity in the national grid. The relevant GHG is only CO ₂ .		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/ /9/	DR I	Data provided in work sheet Generation(2003) cell L 315 and BM factor cell E 37 are not consistent. – The values of total supplied electricity to grid in 2003 are not consistent. The justification during interviews was that the co-generation power plants were not included in the calculation for conservativeness. The same shall be documented transparently.	CL-8	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/ /9/ /11/	DR I	The IPCC default values are used emission factors for fuels. Fraction of carbon oxidised is also taken as IPCC default values. But the value of 0.98 for coal is a global average; this is dependant on coal and can go down to 0.91. During interviews it was indicated by officials of KEPCO, the exact values are unavailable, and a study is in progress and	OK CL-9	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			results are awaited. Till such time a more conservative fraction shall be considered and on publication of result the value can be corrected.		
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	The uncertainties can result from the weighting between OM and BM assumed in emission factor calculation. To address the same the default figure of 50% weight is considered.		OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	No project emissions envisaged, hence not applicable.		OK
E.4.Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	Yes, The project will result in reduction of about 315440 t CO ₂ per annum.		OK
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /3/		Yes, in the approved EIA report.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /3/	DR	Yes. The EIA was approved on 2005-03-18.		OK
F.1.3. Will the project create any adverse	/1/	DR	During commissioning of the project, there		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
environmental effects?	/3/		will be a diffusion of pollutants to the sea. To reduce the effect there will be a gradual increase in power generation as part of commissioning.		
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /7/	DR I	There are no transboundary environmental effects envisaged.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	Yes, refer F.1.3.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	Yes. As of now it does comply.		OK
G. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	/1/ /7/	DR I	Yes, the relevant government agencies like Ministry of Environment, Ministry of maritime affairs and fisheries, representatives of Gyeonggi Province, Hwaseong-city, Ansan city and Siheung city as well as citizens living near the Sihwa lake were consulted.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /7/	DR I	Yes, The EIA report was submitted to the government agencies and consultation with citizens was through public display of EIA report (8 places) and two public hearings.		OK
G.1.3. 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?	/1/ /7/	DR I	Yes.		OK
G.1.4. Is a summary of the stakeholder comments	/1/	DR	Yes. Only the main comments are referred		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
received provided?	/7/	I	in PDD.		
G.1.5. Has due account been taken of any stakeholder comments received?	/1/ /7/	DR I	Yes. The manner in which due account was taken for main comments is given in PDD.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 A written confirmation that the project meets the host country specific CDM requirements and assists in achieving sustainable development has not yet been obtained.	A.3.2	Project approval from DNA submitted.	OK
CAR 2 The starting date of the project is not clearly defined, only the month is given as January 2005. During interviews the proof provided to establish the starting date indicates 31 st December 2004 as starting date. Correction requested.	C.1.1	Revised PDD as indicates 31st December 2004 as starting date (See PDD, C1.1).	OK
CAR 3 The authority and responsibility for registration, monitoring, measurement and reporting clearly described Procedures not identified for monitoring, measurements and reporting. Procedures not identified for day-to-day records handling. Procedures not identified for dealing with possible monitoring data adjustments and uncertainties. Procedures not identified for review of reported results/data Procedures not identified for internal audits of GHG project compliance with operational	D.3.2 D.5.7 D.5.8 D.5.9 D.5.10 D.5.11	Prepared new procedure covered all CAR 3 issues.	The actual monitoring will commence only after the project is commissioned. Verified the submitted planned procedure and found adequate, but can be subject to change after commissioning. OK.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
<p>requirements as applicable.</p> <p>Procedures not identified for project performance reviews.</p> <p>Procedures not identified for corrective actions.</p>	<p>D.5.12</p> <p>D.5.13</p>		
<p>CL 1</p> <p>The Mean sea level in the PDD is not correct, the correct data to be incorporated.</p>	A.1.1	Revised the PDD(See PDD, A 4.1.4)	OK
<p>CL 2</p> <p>It is not clear, whether selecting option 1 for calculation of BM emission factor will result in a conservative estimate. The Figure 4 of PDD, very clearly brings out the fossil fuel based energy generation coming down in future. So the selection of Option 1 where an ex ante estimate to be used for the first crediting period may not be conservative. If established conservative, the ex-ante estimation has to be done for the period just prior to the start of crediting period.</p>	B.2.2	Revised the PDD. The BM will be updated in accordance with option 2(See PDD, page 12).	OK
<p>CL 3</p> <p>Data in Figure 4 in PDD and the data shown in worksheet baseline EF of excel sheet are not consistent for year 2003.</p>	B.2.2	Revised the PDD (See PDD, page 11). The facility capacity unit of graph in PDD was wrong. It is changed.	OK
<p>CL 4</p> <p>OM calculations uses data from 2001, 2002 and 2003 and BM calculations uses data from year 2003 but methodology requires most recent information (recent 3 years in case of OM) at the time of PDD submission. Since KEPCO has published the data for</p>	B.2.3	Revised the excel sheet data (See the baseline_cal_2005).	OK

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
2004, the same to be used.			
CL 5 Table 5, data source to be provided in PDD Table 6, data source to be provided in PDD	B.2.9	Revised the PDD (See PDD, Table 5, 6).	OK
CL 6 The 3 rd column of the PDD template "source of data" missing in PDD. The 6 th column of the template given in ACM 0002 is also missing.	D.1.3	Revised PDD. The 6 th column of the template given in ACM 0002 is prepared. Source of data is mentioned at comment column because of template is different between PDD and ACM 0002.	OK
CL 7 NCVi – it is confirmed during interviews that local value will be considered hence reference to IPCC default values in comments column of table D.2.1.3 to be removed.	D.4.3	Removed reference to IPCC default values (See PDD, table D.2.1.3).	OK
CL 8 Data provided in work sheet Generation(2003) cell L 315 and BM factor cell E 37 are not consistent. – The values of total supplied electricity to grid in 2003 are not consistent. The justification during interviews was that the co-generation power plants were not included in the calculation for conservativeness. The same shall be documented transparently.	E.3.3	Revised PDD (See PDD, the bottom of page 11).	OK
CL 9 Fraction of carbon oxidised is also taken as IPCC default values. But the value of 0.98 for coal is a global average; this is dependant	E.3.4	A conservative approach after a study is finished will be used. (See PDD, Page 9).	OK

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
on coal and can go down to 0.91. During interviews it was indicated by officials of KEPCO, the exact values are unavailable, and a study is in progress and results are awaited. Till such time a more conservative fraction shall be considered and on publication of result the value can be corrected.			

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