Report No. AT201-200603, Revision 05

Validation Report

LG Chem Naju Plant Fuel Switching Project

August 30, 2007

Korea CDM Certification Office

KOREA ENERGY MANAGEMENT CORPORATION

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			CDMC06-004
Validation Methodology	1. Desk Review 2. On-site Assessment 3. Review of Corrective Actions 4. Special Review		
Project Participants	LG Chem. Mitsubishi UFJ Securities Co., Ltd.	**Management Representative**	Junji Hatano, Chairman, Clean Energy Finance Committee, Mitsubishi UFJ Securities
Project Title	LG Chem Naju Plant Fuel Switching Project		
Main office	26th Floor, Marunouchi Building 2-4-1, Marunouchi, Chiyoda-ku, Tokyo, 100-6317, JAPAN	**Tel**	
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Project Location	1, Songwal-dong, Naju, Jeollanam-do, Republic of Korea	**Tel**	
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Category	Energy Industries (Sectoral Scope 1)		
Scope	The validation scope for the proposed CDM project includes: - Physical and geographical boundaries of the proposed project; - Legal, institutional, financial and technological aspects of the project; - GHG sources and types to be included within the boundaries; - Time periods to be covered by the project design; - Baseline scenario established; - Monitoring plan; - Environmental impacts caused by the proposed project; and, - Stakeholders' comments		
Objective	The objective of the validation is to assess whether the proposed CDM project conforms to the requirements for CDM projects including Decision 17/CP.7, Modalities and Procedures for a CDM as defined in Article 12 of the Kyoto Protocol and relevant decisions of the CDM executive board by reviewing the project design documentation.		
Validation Criteria	UNFCCC, Kyoto Protocol, Marrakesh Accords, Decision 3, 4/CMP.1, Relevant EB Decisions		
Validation Date	1. Desk Review: 11 August 2006 ~ 16 August 2006 2. On-site Assessment: 24 August 2006 ~ 30 August 2006 3. Review of Corrective Actions: 15 September 2006 ~ 21 September 2006 4. Special Review: 15 May 2007 ~ 14 June 2007		

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1 Summary of the project activity

The LG Chem Naju Plant Fuel Switching Project aims to retrofit boilers which have been producing steam for the production process of petrochemical products, e.g. octanol, in order to allow fuel switching from bunker fuel oil C to natural gas. To this end, the existing boilers will be retrofitted by installing a special type burner for natural gas combustion as well as other necessary minor modification. It is estimated that the project activity will lead to 225,040 metric tons CO_2eq of emission reductions over a 10-year period with an average of 22,504 metric tons CO_2eq per year.

The project activity is expected to contribute to sustainable development in Korea in the following ways:

- Mitigation of GHGs: Natural gas is less carbon intensive than bunker fuel oil C. Therefore switching fuel from bunker fuel oil C to natural gas will reduce GHGs emissions;
- Improvement of environmental condition: Switching fuel from bunker fuel oil C to natural gas which does not contain sulphur, will reduce more than 90% of the emissions of SOx. It is also expected that the emissions of NOx will be reduced by 30~40% through the Project activity.
- Promotion of clean energy usage in local area: At present, while natural gas is used for household fuel in main cities in Korea, natural gas is not supplied to Naju area due to the lack of infrastructure. However, once the natural gas station is established, natural gas will be supplied to Naju area for household fuel, resulting in the improvement of the quality of life in the local area.

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2 Principles

The project design document (PDD) of the LG Chem Naju plant fuel switching project is assessed based on the following principles

2.1 Completeness

The completeness of the PDD is ensured by assessing whether the project proponent has identified all greenhouse gases (GHG) sources directly attributable to the proposed project within the project boundary and indirect GHG emissions outside the project boundary

2.2 Consistency

The consistency of the PDD is ensured by assessing whether major factors used in the project plan such as data, formulae/algorithm and assumptions have been uniformly applied:

- Among potential baseline scenarios;
- Between the project and baseline scenario; and
- Between the baseline and monitoring methodology.

2.3 Accuracy

The accuracy of the PDD is ensured by assessing whether any material errors or omissions made in using data and estimating GHG emissions have been corrected, and uncertainties associated with GHG quantification have been minimized to the extent possible.

2.4 Transparency

The transparency of the PDD is ensured by assessing whether all assumptions, choices and procedures are clearly stated and substantiated such that another party may reach the same conclusions

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2.5 Relevance

The relevancy of the PDD is ensured by assessing whether selection of GHG sources, quantification procedures and potential baselines scenarios have been justified taking into account the requirements for the CDM project and the host country's particular situation.

2.6 Conservativeness

The conservativeness of the PDD is ensured by assessing whether the baseline has been established choosing values of parameters that generate a lower baseline projection and thereby reducing the possibility of over-estimating GHG emission reductions

3 Definitions of non-conformities and observations

3.1 Non-conformities

Non-conformities refer to validation findings that fail to fulfill the validation criteria such as failure to demonstrate additionality, lack of key information and exclusion of significant leakages. Non-conformities are divided into major and minor ones.

- Major non-conformity includes, inter alia:
  - failure to comply with the Modalities and Procedures of CDM projects;
  - occurrence of significant errors in the project baseline and monitoring methodologies
- Minor non-conformity includes, inter alia:
  - unclear data sources and descriptions;
  - minor miscalculation and misstatements

3.2 Observations

Observations include validation findings that are likely to be of non-conformity but with few evidences available at the moment and recommendations for improved documentation, data use, etc.

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Validation Results	**4 Desk review** The desk review has been made mainly during the period from 11 to 16 August 2006 by reviewing documents submitted by the project participants including the Project Design Document and supporting documentation in respect of completeness, consistency, accuracy, transparency, relevance, and conservativeness. The Validation Criteria, against which the project documentation is assessed, include the CDM modalities and procedures determined by the Marrakech Accords and relevant CDM EB decisions, and are specified in the Validation Checklist. The desk review focused mainly on the three aspects below: - Demonstration of the project additionality; - Calculation of baseline and project emissions; and - Coverage of significant factors in the monitoring plan. The scope of desk review depends primarily on the information provided by the project participants and could be extended by using additional reliable information which the Validation Team obtained from other sources. **4.1 Desk review findings** The proposed project appropriately applied the latest version of AMS III. B. Switching Fossil Fuels. In accordance with AMS III. B (version 10), baseline scenario was determined taking into account the host country's specific circumstances. And leakage effects and monitoring plans are consistently and transparently described. In estimating emission reductions, the proposed project used accurately and consistently the formulae given by AMS III. B (version 10). Data used in the formulae was deemed reliable and traceable since they are based on documented evidences including 2006 IPCC Guidelines. In particular, some data used were country and project-specific such that conservative estimation could be achieved.	

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Validation Results	In order to demonstrate the project's addtionality, an investment analysis was undertaken and as a result, it was confirmed that due to higher fuel price and additional costs for new equipment, NPV (Net Present Value) of the proposed project activity would be negative under the baseline scenario, i.e. continuing the current practices using bunker fuel oil C and thus the project would not be financially attractive under the baseline scenario. As for its environmental impacts on the local area, the project design document concluded that the proposed project would have no negative impacts. In addition, the project proponents held a formal meeting to invite stakeholders' comments and discuss social and environmental issues. However, the several items to be further checked have been identified by the desk review as follows: - It is not clearly described how the environmentally friendly technologies would be transferred through the proposed project (see Appendix B. A.4.5~6); - There are not documentary evidences available showing that ODA from Annex I parties is not included in the project investment (see Appendix B. A.4.9); - There is no consideration about the possibility that waste gases which are assumed to continue to be utilized under the project scenario will affect the measurement of the fuel efficiency of bunker fuel oil C and natural gas (see Appendix B. B.2.4); - Calculation of NPV is not transparent in terms of selection of discount rate and determination of consumptions of bunker fuel oil C under the baseline scenario (see Appendix B. B.3.2~3); and - Determination of estimates for consumption of bunker fuel oil C and natural gas is not transparent (see Appendix B. E.1.5, E.1.14).	

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Validation Results	Based on the results of the desk review, the validation team requests the project proponents to provide more documentary evidences and justification in order to ensure the compliance of the project design document with the validation criteria. Additional documents and revised sections of the project design document to be submitted prior to on-site assessment (deadline: 31 August 2006) are: 1) The written approval of voluntary participation from the designated national authorities of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development (see Appendix B. A.3.3~4); 2) Clarification on transfer of environmentally friendly technology (see Appendix B. A.4.5~6); 3) Documented evidences showing that ODA from Annex I parties is not included in the project investment (see Appendix B. A.4.9); 4) Clarifications on the possibility that waste gases which are assumed to continue to be utilized under the project scenario will affect the measurement of the fuel efficiency of bunker fuel oil C and natural gas (see Appendix B. B.2.4); and 5) Clarification on determination of NPV for the proposed project activity, particularly in terms of selection of discount rate and determination of consumptions of bunker fuel oil C under the baseline scenario (see Appendix B. B.3.2~3, E.1.5, E.1.14.	

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5 On-site assessment and interview

On-site assessment has been performed during the period from 24 August to 30 August 2006 by making on-site visits and interviewing relevant persons particularly for the purpose of checking the remaining issues identified at the desk review. The on-site assessment focuses mainly on the three aspects below:

1) Technical description of the project activity including technology transfer;
2) Determination of consumptions of bunker fuel oil C; and
3) Determination and monitoring of fuel efficiency.

The major means of validation is by cross-check between documents and interviews with relevant persons. The key persons interviewed at the on-site assessment are as below:

1) Youk, Jaeo, General Manager, Naju Plant, LG Chem, Ltd.;
2) Park, Tae-Kyu, Manager, Naju Plant, LG Chem, Ltd.

As a result of the on-site assessment, the validation team requests the project entity to take corrective actions against four non-conformities i.e. one Major non-conformity and three Minor non-conformities identified within the deadline, 10 Oct. 2006, as agreed in the Validation Contract.

5.1 On-site assessment findings

In determining NPV of the project activity, a discount rate was deemed appropriate to the host country and relevant sector since it reflects government bond rates and risk premium for the sector and was substantiated by an independent financial expert, JP Morgan. It has also been confirmed that a recent energy efficiency project in LG Chem used this discount rate. Regarding environmental impacts and stakeholders comments, the Validation Team confirmed that a local gas provider will be responsible for construction of pipelines for provision of natural gas to the project site and resulting environmental impacts. In addition, the Validation Team confirmed that there were no negative comments from local stakeholders with regards to the proposed project activity at the meeting with local stakeholders.

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Validation Results	However, the demonstration of project additionality is deemed incomplete and a few issues are weakly substantiated. Consequently the Validation Team has issued one Major non-conformity and three Minor non-conformities as identified at the on-site assessment : 1) Major non-conformity 1: Calculation of NPV is not transparent in that some bunker fuel oil C is being used to pre-heat fuel and atomize steam, but this ancillary use should not be considered in estimating consumptions of natural gas since the new facility does not need such consumptions. Further, O&M costs for bunker fuel oil C and natural gas are weakly substantiated in the project design document and supporting documentation. (see Appendix B. Checklist B.3.2~3); 2) Minor non-conformity 1: The project design document does not have descriptions about technologies or equipments to be employed by the project activity enough to evaluate the level of the technology adopted. (see Appendix B. Checklist A.4.5); 3) Minor non-conformity 2: There are no descriptions about technology transfer through the proposed project activity in the project design document (see Appendix B. Checklist A.4.6); 4) Minor non-conformity 3: An international or national standards for measurement of boiler efficiency should be described in the monitoring plan in order to ensure reliability of monitoring data (see Appendix B. Checklist D.1.2);	

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Observations: the project participants have not yet submitted the written approval of voluntary participation from the designated national authorities of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development and private entities participating in the project have not been authorized by the designated national authorities of the Parties. These issues should be further checked prior to preparation of the preliminary Validation Report.

6 Review of corrective actions

In response to the request for corrective actions against non-conformities identified, the project proponents submitted the revised project documentation to the validation team, of which the validation team made a thorough review during the period from 28 August to 8 September. Corrective actions of the project proponents and conclusions of the validation team are as follows:

1) Major non-conformity 1

A. Corrective Actions: to identify the baseline scenario, the net present value (NPV) for each scenario has been re-calculated taking into account net consumptions of bunker fuel oil C excluding auxiliary use for pre-heating and atomizing, and O&M costs justified in the document.

B. Conclusions: it is concluded that the NPV for each scenario has been properly re-calculated using key values well substantiated and thus sufficiently demonstrates that the scenario A is the most cost-effective scenario.

2) Minor non-conformity 1

A. Corrective Actions: the revised PDD briefly describes what technologies will be employed through the project activity.

B. Conclusions: it is concluded that the section A.2 and A.4.3 of the revised PDD appropriately provide descriptions about the equipment to be newly installed through the project activity.

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3) Minor non-conformity 2

A. Corrective Actions: the revised PDD shows that the new natural gas burner that will be imported from overseas, is expected to enable the transfer of operation and maintenance skills into the host country through the project activity.

B. Conclusions: the validation team concludes that the section A.2 the revised PDD appropriately provide descriptions about what skills will be transferred into the host country through the project activity.

4) Minor non-conformity 3

A. Corrective Actions: the revised monitoring plan describes that the efficiency of natural gas fuel will be measured at a representative load factor (or operation mode), based on the Korean Industrial Standards (KS).

B. Conclusions: The revised monitoring plan sufficiently addresses measurement of the efficiency of natural gas fuel.

7 Receipt of public comments

In accordance with Paragraph 40(c) of the CDM Modalities and Procedures, the project design document of LG Chem Naju Plant Fuel Switching Project had been posted on the UNFCCC CDM website for public comments from 15 May 2007 to 13 June 2007. As a result, no comments were received during that period.

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Validation Results	**8 Issuance of written approvals** The KEMCO Validation Team has received the written approvals from the designated national authorities of the Parties involved in the LG Chem Naju Plant Fuel Switching Project, Japan (issued on 16 October 2006) and Republic of Korea (issued on 20 December 2006), which states the following: 1) The Parties, Japan and Korea approves that their participation in the LG Chem Naju Plant Fuel Switching Project is voluntary 2) The Korean government, the host Party of the LG Chem Naju Plant Fuel Switching Project, confirms the project activity contributes significantly to sustainable development in Korea. 3) The Parties, Japan and Korea authorize the project participants indicated in the PDD to participate in the LG Chem Naju Plant Fuel Switching Project. **9 Special Review** A special review has been conducted on the LG Chem Naju Plant Fuel Switching Project from 15 May to 14 June 2007 because the project participants expressed an intention to change baseline and monitoring methodologies for the project activity into AMS III.B. Switching Fossil Fuels. Accordingly the PDD revised with AMS III.B. (version 10) was re-opened to the public for 30 days as described in Section 7 above, while re-calculated emission reductions and modified monitoring plans in the revised PDD was reviewed with reference to AMS III.B. As a result, it has been concluded that the revised PDD is in full compliance with all the requirements for the CDM without additional major or minor non-conformities	

KEMCO	Validation Report	Contract No. CDMC06-004
Validation Results	**10 Validation opinion** The KEMCO validation team has undertaken validation of the LG Chem Naju Plant Fuel Switching Project which claimed approximately 22,504 CO_2eq ton annually by retrofitting the current boiler into new one using a less carbon-intensive fuel, e.g. natural gas. To ensure the transparency and integrity of the validation, the validation team first had established the validation checklist taking into account UNFCCC, Kyoto Protocol, Marrakesh Accords, Decision 3, 4/CMP.1 and relevant decisions of the CDM executive board. Based on the checklist the validation of the project activity was undertaken in three stages, i.e. desk review (11 Aug. 2006～16 Aug. 2006), on-site assessment (24 Aug. 2006 ~ 30 Aug. 2006), review of corrective actions (15 Sep. 2006 ~ 21 Sep. 2006), and special review (15 May 2007 ~ 14 June 2007). As a result of the desk review and on-site assessment, the Validation Team identified one Major non-conformity and three Minor non-conformities and then requested the project proponents to take corrective actions against them. In response to the request, the project proponents submitted the revised project documentation to the validation team, of which the validation team made a thorough review. Then the team fully agreed that all the significant non-conformities issued had been cleared. In conclusion, the validation team is of the opinion that the LG Chem Naju Plant Fuel Switching Project is in full compliance with all applicable requirements for the CDM by leading to emission reductions additional to what would have otherwise occurred, providing for reliable and measurable emission reductions with the well-established monitoring plan and contributing to sustainable development in Korea through improvement of environmental condition and promotion of clean energy usage in the local area.	

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11 References

Documents and electronic files submitted by the Project Participants

[1] Mitsubishi UFJ Securities, Project Design Document (Version 6.0, 05/06/2007)

[2] Mitsubishi UFJ Securities, Emission Reductions and Financial Analysis Excel Files, Updated in June 2007

[3] JP Morgan, LG Chem, better prospects ahead, March 2005

Documents and websites referred to by KEMCO

[4] http://cdm.unfccc.int/DNA

[5] http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf

[6] http://www.moleg.go.kr (Ministry of Government Legislation, in Korean only)

[7] http://cdm.unfccc.int/methodologies/SSCmethodologies/index.html

[8] Korean Ministry of Environment, Official Announcement on Use of Clean Fuel, Dec. 2001 (in Korean only)

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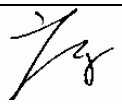
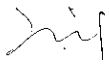
	Role	Name	Organization /position	Scope of Validation	Signature
Validation Team	Team Leader, Lead Validator	Woo, Jae-hak	KEMCO	Sustainable Development, Environmental impacts, Stakeholder comments	
	Lead Validator	Han, Won-hee	KEMCO	Baseline methodology, Monitoring methodology, Estimation of GHG emissions	
	Validator	Han, Seung-ho	KEMCO	Baseline methodology, Monitoring methodology, Estimation of GHG emissions	

Appendix	A. Validation Criteria B. Validation Checklist C. Review of Corrective Actions D. CVs of Validation Team

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Appendix A

Validation Criteria

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REQUIREMENT	Reference	Conclusion	Comments
1. The project shall assist non-Annex I Parties in achieving sustainable development, which shall be confirmed by the host Party in the form of a written approval of voluntary participation.	Kyoto Protocol (KP) Article 12.2, Marrakech Accords(MA) CDM Modalities and Procedures (M&P) paragraph 29	Checked	See Section 8 of this report
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC and lead to real, measurable and give long-term benefits related to the mitigation of climate change.	KP Article 12.2, 5(b)	Checked	See Appendix B. A.4.8
3. The project shall assist Annex I Parties in achieving compliance with part of their emission reduction commitment under Article 3 of the Kyoto Protocol.	KP Article 12.2	Checked	See Appendix B. A.4.8
4. Emission reductions attributable to the project shall be additional to any that would occur in the absence of the project activity.	KP Article 12.5(c), MA CDM M&P paragraph 37(d), 43	Checked	See Review of Corrective Actions No. 1
5. The project activity should lead to the transfer of environmentally safe and sound technology and know-how.	MA Decision 17/CP.7	Checked	See Review of Corrective Actions No. 3
6. Public funding for the project from Annex I Parties shall not result in a diversion of official development assistance	MA Decision 17/CP.7	Checked	See Appendix B.A.4.9
7. Participation in the CDM shall be voluntary, which shall be approved by each party involved	KP Article 12.5(a), MA CDM M&P paragraph 28, 40(a)	Checked	See Section 8 of this report
8. Parties participating in the CDM shall designate a national authority for the CDM	MA CDM M&P paragraph 29	Checked	See Appendix B.A.3.1
9. Parties participating in the CDM shll be a Party to the Kyoto Protocol	MA CDM M&P paragraph 30, 31	Checked	See Appendix B.A.3.2
10. The proposed project activity shall meet the eligibility criteria for small-scale CDM project activities set out in paragraph 6 (c) of decision 17/CP.7	Simplified Modalities and Procedures for Small Scale Projects, paragraph 12a	Checked	See Appendix B.A.4.2

REQUIREMENT	Reference	Conclusion	Comments
11. The proposed project activity shall conform to one of the project categories in appendix B to the Simplified Modalities and Procedures for Small Scale Projects	Simplified Modalities and Procedures for Small Scale Projects, paragraph 12b	Checked	See Appendix B. A.4.3
12. The proposed project activity shall not be a debundled component of a larger project activity, as determined through appendix C to the Simplified Modalities and Procedures for Small Scale Projects	Simplified Modalities and Procedures for Small Scale Projects, paragraph 12c	Checked	See Appendix B. A.4.10
13. The project design document is in conformance with the Small Scale CDM-PDD format	Simplified Modalities and Procedures for Small Scale Projects, Appendix A	Checked	The PDD of the proposed project was prepared in accordance with UNFCCC Small-scale CDM-PDD Format Version 03.
14. The proposed project activity shall use the simplified baseline and monitoring methodologies specified in appendix B to the Simplified Modalities and Procedures for Small Scale Projects for its project category	Simplified Modalities and Procedures for Small Scale Projects, paragraph 14	Checked	See Appendix B. B.2.1, D.2.1
15. Comments by local stakeholders are invited, a sum mary of these provided and how due account was taken of any comments received	Simplified Modalities and Procedures for Small Scale Projects, paragraph 22b	Checked	See Appendix B. G. 1~3
16. An analysis of the environmental impacts of the project activity is carried out and documented if required by the Host Party	Simplified Modalities and Procedures for Small Scale Projects, paragraph 22c	Checked	See Appendix B. F.1.1~3
17. The project activity conforms to all other requirements for CDM project activities in the CDM modalities and procedures that are not replaced by the Simplified Modalities and Procedures for Small Scale Projects	Simplified Modalities and Procedures for Small Scale Projects, paragraph 22f	Checked	See Appendix C. Review of Corrective Actions No. 4
18. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made	Simplified Modalities and Procedures for Small Scale Projects, paragraph 23b,c	Checked	The PDD of the proposed project has been posted for 30 days on the CDM

REQUIREMENT	Reference	Conclusion	Comments
publicly available.			website for public comments from 15 May 2007 to 13 June 2007. As a result, no comments have been received.
19. Emission reductions attributable to the project shall be adjusted for leakage	Simplified Modalities and Procedures for Small Scale Projects, paragraph 30	Checked	See Appendix B. E.1.6
20. The project boundary shall encompass all anthropogenic emissions by sources of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the CDM project activity	Simplified Modalities and Procedures for Small Scale Projects, paragraph 31	Checked	See Appendix B. E.1.1, E.1.6

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Appendix B

Validation Checklist

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KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity *In this section, the project design is assessed including the project purpose, how technology will be transferred and whether public funding from Annex I Parties results in a diversion of official development assistance.*						
A.1. Title of the small-scale project activity *Note:*						
A.1.1. Does the title characterize the project activity clearly and properly?		[1]	Document Review	1. Checked: the project title, LG Chem Naju Plant Fuel Switching Project is clearly described	OK	OK
A.2. Description of the small-scale project activity *Note:*						
A.2.1. Is the purpose of the project activity clearly described?		[1]	Document Review	1. Checked: the proposed project aims to retrofit boilers which have been producing steam for the production process of petrochemical products, e.g. octanol, in order to allow fuel switching from bunker fuel oil C to natural gas.	OK	OK
A.2.2. Is the project in compliance with relevant legislation in the host country?		[1]	Document Review	1. Checked: the proposed project is a simple retrofit without any capacity additions.	OK	OK
A.2.3. Does the project contribute to sustainable development of the host country from environmental, social and economic perspectives?		[1]	Document Review	1. Checked: the proposed project is expected to provide directly to the host country and local areas social and environmental benefits including improvement of air quality and provision of clean energy to local areas as well as reduction of greenhouse gases.	OK	OK
A.3. Project Participants *Note:*						

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A.3.1.	Have Parties participating in the project designated a national authority for the CDM?	[4]	Document Review	1. Checked: both participating Parties, Korea and Japan have designated a national authority for the CDM.	OK	OK
A.3.2.	Is the host country a Party to the Kyoto Protocol?	[5]	Document Review	1. Checked: both participating Parties, Korea and Japan have ratified the Kyoto Protocol.	OK	OK
A.3.3.	Have the project received the written approval of voluntary participation from the designated national authorities of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development?		Document Review	1. To be checked: the project participants have not submitted the written approvals of voluntary participation.	To be checked	OK
A.3.4.	Have a private and/or public entity participating in the project been authorized by the designated national authorities of the Party?		Document Review	Ditto	To be checked	OK
A.4.	**Technical description of the small-scale project activity** *Note:*					
A.4.1.	Is the location of the project activity clearly described?	[1]	Document Review	1. Checked: the project site is located at 1, Songwal-dong, Naju, Jeollannam-do, Republic of Korea.	OK	OK
A.4.2.	Does the project qualify as a small scale CDM project activity in Paragraph 6(c) of decision 17/CP.7 of the Marrakech Accords?	[1]	Document Review	1. Checked: the estimated emission reductions attributable to the proposed project is 22,504 CO_2 ton, less than 60,000 CO_2 ton.	OK	OK
A.4.3.	Does the project activity conform	[1][7]	Document Review	1. Checked: the proposed project belongs to the	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	with one of the project categories defined in Appendix B to the simplified M&P for small scale CDM project activities?			category of III.B/version 10, Switching fossil fuels.		
A.4.4.	Is it justified how the project activity conforms to the project categories?	[1]	Document Review	1. Checked: the proposed project activity will reduce GHG emissions through fuel switching, from bunker fuel oil C to natural gas, in the existing plant. Fuel switching may change efficiency as well. However, the main purpose of the project activity is fuel switching, not energy efficiency.	OK	OK
A.4.5.	Does the project design engineering reflect current good practices?	[1]	Document Review	1. Minor non-conformity 1: the project design document does not have descriptions about technologies or equipments to be employed by the project activity enough to evaluate the level of the technology adopted.	Minor NC	OK
A.4.6.	Are the environmentally safe and sound technology and know how transferred to the host Party through the project?	[1]	Document Review	1. Minor non-conformity 2: there are no descriptions about technology transfer through the proposed project activity in the project design document	Minor NC	OK
A.4.7.	Are the GHGs emissions reductions additional to what would occur in the absence of the project?	[1]	Document Review	1. Major non-conformity 1: demonstration of additionality for the proposed project is not transparent. See Checklist Question B.3.2~3	Major NC	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
A.4.8.	Does the project design clearly and consistently indicate the chosen crediting period, the total estimation of emission reductions for the chosen crediting period?	[1]	Document Review	1. Checked: a total of 225,040 CO_2eq tons is estimated to be reduced over ten years of the crediting period.	OK	OK
A.4.9.	In case public funding from Annex I Parties is involved, does the project provide an affirmation that such funding does not result in a diversion of official development assistance?	[1]	Document Review	1. Checked: it has been confirmed that LG Chem itself invested in the proposed project activity including purchase of a new burner and construction works	OK	OK
A.4.10.	Has the confirmation been provided that the project activity is not a debundled component of a larger project activity?	[1]	Document Review Witnessing	1. Checked: there is no registered small-scale CDM project activity or an application to register another small-scale CDM project activity in the same project category and technology/measure within 1 km of the project boundary.	OK	OK
B. Application of a Baseline methodology *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*						
B.1.	**Title and reference of the project category applicable to the project activity** *Note:*					
B.1.1.	Has the PDD properly referred to the most recent list of the small scale CDM project activity categories in Appendix B of the simplified M&P for small scale	[1][7]	Document Review	1. Checked: the most recent list of the small scale CDM project activity categories has been properly referred to at the CDM website.	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	CDM projects?					
B.2.	**Project category applicable to the project activity** *Note:*					
B.2.1.	Has the PDD justified the choice of the applicable baseline calculation for the project category as provided for in Appendix B of the simplified M&P for small scale CDM project activities?	[1][7]	Document Review	1. Checked: the proposed project is a fuel switching project from bunker fuel oil C to natural gas such that baseline calculation is undertaken in accordance with AMS-III.B. version 10.	OK	OK
B.2.2.	Has the PDD described how the baseline methodology is applied in the context of the project activity?	[1][7]	Document Review	1. Checked: the proposed project activity may lead to efficiency improvement through fuel switching as well as emission reduction. However, the main purpose of the project activity is fuel switching, not energy efficiency	OK	OK
B.2.3.	Has the PDD explained the basic assumptions of the baseline methodology in the context of the project activity?	[1][7]	Document Review	1. Checked: the baseline scenario assumes that Naju plant will continue the current practice of using bunker fuel oil C for production of steam in the future.	OK	OK
B.2.4.	Has the baseline been determined in a transparent and conservative manner?	[1][2]	Document Review	1. Checked: It was found that LG Chem had utilized some waste gases in the boiler for steam generation and would continue to utilize such gases at the same level after commissioning of the project activity. Based on the expert judgment it was concluded the effects that such utilization could make on the measurement of fuel efficiency of bunker fuel oil C and natural gas, would be negligible.	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.2.5.	Has the PDD provided the key information and data used to determine the baseline scenario (variables, parameters, data sources, etc.)?	[1]	Document Review	1. Checked: in accordance with AMS III.B baseline emissions are estimated using ex ante data including annual consumption, net calorific value, fuel efficiency, and CO_2 emission factor of bunker fuel oil C.	OK	OK
B.3.	**Description of how the anthropogenic emissions of GHG by sources are reduced below that would have occurred in the absence of the registered CDM project activity** *Note:*					
B.3.1.	Is it justified that the proposed project activity qualifies to use simplified methodologies?	[1][7]	Document Review	1. Checked: the proposed project is a fuel switching project with its emission reductions of 22,504 CO_2eq tons.	OK	OK
B.3.2.	Is the discussion and demonstration of the additionality of the project activity transparent?	[1][2] [3][7]	Document Review	1. Checked: in determining NPV of the project activity, a discount rate is deemed appropriate to the host country and relevant sector since it reflects government bond rates and risk premium for the sector. It has also been confirmed that a recent energy efficiency project used this discount rate in LG Chem. 2. Major non-conformity 1: calculation of NPV is not transparent in that some bunker fuel oil C is being used to pre-heat fuel and atomize steam, but this ancillary use should not be considered in estimating consumptions of natural gas since the new facility does not need such consumptions. Further, O&M costs for bunker fuel oil C and natural gas are weakly substantiated in the project design document and supporting documentation.	Major NC	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.3.3.	Is it demonstrated that the project activity itself is not a likely baseline scenario (e.g. through demonstrating investment barriers, technology barriers, barriers to prevailing practices, and/or other barriers showing that emissions would have been higher without the project activity)?	[1][2] [3][7]	Document Review	1. Major non-conformity 1: consumption of bunker fuel oil C under the baseline scenario is a major factor that could affect determination of NPV for the project activity. As mentioned in the Checklist Question B.3.2 above, demonstration of additionality for the project activity will require further justification for determination of that significant factor	Major NC	OK
B.3.4.	Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	[1][8]	Document Review Interview	1. Checked: the project design document states that there are no regulations in Korea that requires the use of natural gas, and the validation team has cross-checked it with the official document.	OK	OK
B.3.5.	Is it showed why the emissions in the baseline scenario would likely exceed emissions in the project scenario by analyzing both scenarios?	[1]	Document Review	1. Checked: official documents including such as the 2006 IPCC Guidelines and AMS III.B. version 10 are appropriately used in calculating the baseline emissions.	OK	OK
B.4.	**Description of the project boundary for the project activity** *Note:*					
B.4.1.	Is the project boundary clearly defined?	[1]	Document Review	1. Checked: the project's system boundary includes the boiler and petrochemicals production process.	OK	OK
B.4.2.	Is the project boundary consistent with the guidance for the applicable project category in Appendix B of the simplified M&P for small scale CDM project activities?	[1]	Document Review	1. Checked: the project boundary is consistent with application of the AMS III.B. version 10	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
B.5. Details of baseline and its development *Note:*						
B.5.1.	Has the PDD specified the baseline for the project activity using a methodology specified in the applicable project category in Appendix B of the simplified M&P for small-scale CDM projects?	[1]	Document Review	1. Checked: Annex 3 includes key information for determination of the baseline	OK	OK
B.5.2.	Has the date of completion of the baseline study and the name of person(s)/entity(ies) determining the baseline clearly been stated?	[1]	Document Review	1. Checked: the date of completion of the baseline study is 26 June 2006 and the entity determining the baseline scenario is the Clean Energy Finance Committee, Mitsubishi UFJ Securities Co., Ltd.	OK	OK
B.5.3.	Is contact information clearly provided and is it indicated that the person/entity is a project participant listed in Annex I?	[1]	Document Review	1. Checked: the entity determining the baseline methodology is indicated in Annex 1 to the PDD	OK	OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporal boundaries of the project are clearly defined.*						
C.1. Duration of the project activity *Note:*						
C.1.1.	Has the project's starting date been chosen as the date at which the implementation or construction or real action of the project activity begins?	[1]	Document Review	1. Checked: the starting date of the proposed project activity is 30 September 2006.	OK	OK
C.1.2.	Is the operational lifetime of the project activity clearly defined and	[1]	Document Review	1. Checked: the operational lifetime of the proposed project is 20 years and thus considered as	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	reasonable?			relevant for the project activity.		
C.2.	**Choice of the crediting period and related information** *Note:*					
C.2.1.	In the case of the project started between 1 January 2000 and the date of the registration of the first CDM project activity and has been submitted for registration prior to 31 December 2005, has the PDD provided reliable evidence to demonstrate that?	[1]	Document Review	1. Checked: The proposed project activity will claim no retroactive credits.	OK	OK
C.2.2.	Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two times 7 years or fixed crediting period of max. 10 years)?	[1]	Document Review	1. Checked: the crediting period for the proposed project activity is ten years without renewal.	OK	OK
C.2.3.	Is the assumed crediting time chosen as below the operational lifetime of the project activity?	[1]	Document Review	1. Checked: the crediting period is chosen as below the operational lifetime of the proposed project activity, 20 years.	OK	OK
C.2.4.	Are the starting date and length of the crediting period clearly and properly stated?	[1]	Document Review	1. Checked: the crediting period starts in 1 August 2007 and lasts ten years	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
D. Application of a monitoring methodology and plan *In this section it is assessed whether the monitoring plan is properly established in accordance with the baseline methodology ensuring reliable emission reductions*						
D.1. Title and reference of approved monitoring methodology applied to the project activity *Note:*						
D.1.1. Has the PDD properly referred to the most recent list of the small scale CDM project activity categories in Appendix B of the simplified M&P for small scale CDM projects?		[1][7]	Document Review	1. Checked: the most recent list of the small scale CDM project activity categories, i.e. AMS-III.B. version 10, has been properly referred to at the CDM website.	OK	OK
D.1.2. If a national or international monitoring standard has to be applied to monitor certain aspects of the project activity, has the PDD provided a reference to the source where a detailed description of the standard can be found?		[1][8]	Document Review	1. Minor non-conformity 3: an international or national standards for measurement of boiler efficiency should be described in the monitoring plan in order to ensure reliability of monitoring data	Minor NC	OK
D.2. Justification of the choice of the methodology and why it is applicable to the project activity *Note:*						
D.2.1. Has the PDD justified the choice of the monitoring methodology applicable to the project category		[1][7]	Document Review	1. Checked: the proposed project is a fuel switching project from bunker fuel oil C to natural gas such that the monitoring plan is established in	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	as provided for in Appendix B of the simplified M&P for small scale CDM project activities?			accordance with AMS-III.B. version 10.		
D.3.	**Data to be monitored** *Note:*					
D.3.1.	Does the monitoring methodology reflect good monitoring and reporting practices?	[1][8]	Document Review	1. Minor non-conformity 3: an international or national standards for measurement of boiler efficiency should be described in the monitoring plan in order to ensure reliability of monitoring data	Minor NC	OK
D.3.2.	Does the methodology address possible monitoring errors or uncertainties addressed?	[1]	Document Review	1. Checked: QA/QC procedures to reduce uncertainties about key data have been planned	OK	OK
D.3.3.	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]	Document Review	1. Checked: All key factors including consumptions and fuel efficiency of natural gas will be directly measured.	OK	OK
D.3.4.	Will it be possible to monitor / measure project emissions as described in the monitoring plan?	[1]	Document Review	1. Ditto	OK	OK
D.3.5.	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining the baseline within the project boundary during the crediting period?	[1]	Document Review	1. Checked: The baseline emissions will be estimated from the project emissions monitored.	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
D.3.6.	Will it be possible to monitor / measure baseline emissions as described in the monitoring plan?	[1]	Document Review	1. Ditto	OK	OK
D.3.7.	Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	[1]	Document Review	1. Checked: The proposed project is deemed to lead to no leakages.	OK	OK
D.3.8.	Will it be possible to monitor / measure leakage as described in the monitoring plan?	[1]	Document Review	Ditto	OK	OK
D.4.	**Qualitative explanation of how quality control (QC) and quality assurance (QA) procedures undertaken** *Note:*					
D.4.1.	Are procedures identified for monitoring, taking measurements and reporting?	[1]	Document Review	1. Checked: the project participants will develop and implement a transparent system for the collection, computation and storage of data, including adequate record keeping and data monitoring systems.	OK	OK
D.4.2.	Are procedures identified for training of monitoring personnel?	[1]	Document Review	1. Checked: the operational staff will be trained to enable them to undertake the tasks required by the proposed project activity.	OK	OK
D.4.3.	Are procedures identified for emergency preparedness?	[1]	Document Review	1. Checked: well-defined protocols and routine procedures, with good, professional data entry, extraction and reporting will be encouraged to maximize transparency of data archiving.	OK	OK
D.4.4.	Are procedures identified for calibration of equipment?	[1]	Document Review	Ditto	OK	OK
D.4.5.	Are procedures identified for	[1]	Document	Ditto	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	maintenance of equipment and installations?		Review			
D.4.6.	Are procedures identified for review or checks of reported results/data?	[1]	Document Review	Ditto	OK	OK
D.4.7.	Are procedures identified for internal audits to confirm that the project has been monitored as planned?	[1]	Document Review	1. Checked: implementation of the internal monitoring protocol will be assessed by an independent auditing.	OK	OK
D.4.8.	Are procedures identified for corrective actions?	[1]	Document Review	Ditto	OK	OK
D.5.	**Operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects, generated by the project activity** *Note:*					
D.5.1.	Are the authority and responsibility of project management clearly described?	[1]	Document Review	1. Checked: LG Chem, as a project operator is responsible for the management and operation of the proposed project including accurate and systematic monitoring of the project implementation and operation.	OK	OK
D.5.2.	Are the authority and responsibility for monitoring, measurement and reporting project emission, baseline emission and leakage data over time clearly described?	[1]	Document Review	Ditto	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	D.6. Name of person/entity determining the monitoring methodology *Note:*					
	D.6.1. Is contact information provided and is it indicated that the person/entity determining the monitoring methodology is a project participant listed in Annex I?	[1]	Document Review	1. Checked: the contact information on the entity determining the monitoring methodology is clearly provided	OK	OK
	E. Estimation of GHG Emissions by Sources *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.*					
	E.1. Formulae used *Note:*					
	E.1.1. Does the PDD clearly describe the formulae used to estimate all significant **direct and indirect GHG emissions** within the project boundary for each gas, source, formulae/algorithm, emissions in units of CO_2 equivalent?	[1][2]	Document Review	1. Checked: The project emissions due to combustion of natural gas are estimated properly	OK	OK
	E.1.2. In the case of direct monitoring of emission reductions, are directly estimated emission reductions provided?	[1][2]	Document Review	1. Checked: The proposed project activity requires no direct monitoring of emission reductions.	OK	OK
	E.1.3. Are the project emission calculations documented in a	[1][2]	Document Review	1. Checked: The project emissions due to combustion of natural gas are estimated in a	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	complete and transparent manner?			complete and transparent manner		
E.1.4.	Have conservative assumptions been used to calculate project emissions?	[1][2]	Document Review	1. Checked: the project emissions are estimated using country-specific net calorific values of bunker fuel oil C and natural gas.	OK	OK
E.1.5.	Are uncertainties in the project emissions estimates properly addressed in the documentation?	[1][2]	Document Review	1. Major non-conformity 1: determination of estimates for consumption of bunker fuel oil C and natural gas is not transparent. See Checklist Question B.3.2~3	Major NC	OK
E.1.6.	Does the PDD clearly describe the formulae used to estimate **leakage effects** for each gas, source, formulae/algorithm, emissions in units of CO_2 equivalent?	[1]	Document Review	1. Checked: The proposed project is deemed to lead to no leakages in accordance with the AMS-III.B. version 10	OK	OK
E.1.7.	Are the leakage calculations documented in a complete and transparent manner?	[1]	Document Review	Ditto	OK	OK
E.1.8.	Have conservative assumptions been used when calculating leakage?	[1]	Document Review	Ditto	OK	OK
E.1.9.	Are uncertainties in the leakage estimates properly addressed?	[1]	Document Review	Ditto	OK	OK
E.1.10.	Does the sum of estimated GHG emissions within project boundary and estimated leakage clearly represent the emissions attributable to project activity?	[1]	Document Review	1. Checked: The total emissions due to the proposed project activity are equal to the sum of the project emissions and leakage effects estimated	OK	OK
E.1.11.	Does the PDD clearly describe the formulae used to estimate all **baseline emissions** identified in	[1][2]	Document Review	1. Checked: The baseline emissions are estimated properly	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	the baseline methodology for each gas, source, formulae/algorithm, emissions in units of CO_2 equivalent?					
E.1.12.	Are the baseline emission calculations documented in a complete and transparent manner?	[1][2]	Document Review	1. Checked: The baseline emissions are estimated in a complete and transparent manner	OK	OK
E.1.13.	Have conservative assumptions been used when calculating baseline emissions?	[1][2]	Document Review	1. Checked: The baseline emissions are estimated using country-specific net calorific values of bunker fuel oil C.	OK	OK
E.1.14.	Are uncertainties in the baseline emission estimates properly addressed in the documentation?	[1][2]	Document Review	1. Major non-conformity 1: Determination of estimates for consumption of bunker fuel oil C and natural gas is not transparent. See Checklist Question B.3.2~3	Major NC	OK
E.1.15.	Does difference between emissions from the project activity and baseline emissions clearly represent the emission reductions due to the project activity?	[1][2]	Document Review	1. Checked: the difference between total emissions by the proposed project activity and baseline emissions is equal to the emission reductions attributable to the project activity.	OK	OK
E.2.	**Table providing values obtained when applying formulae above** *Note:*					
E.2.1.	Have all significant values obtained from calculation provided in the Table?	[1]	Document Review	1. Checked: all significant values are provided in Section B.6.2 of the PDD.	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*						
F.1. If required by the Host Party, documentation on the analysis of the environmental impacts of the project activity *Note:*						
F.1.1.	Does the project comply with environmental legislation in the host country?	[1][6]	Document Review	1. Checked: under the Act on Assessment of Impacts of Works on Environment, Traffic, Disasters, etc. the proposed project activity does not require the completion of an Environmental Impact Assessment	OK	OK
F.1.2.	Is the project activity likely to create any adverse environmental effects?	[1]	Document Review	1. Checked: improvement of local air quality are expected by utilizing clean energy through the proposed project activity	OK	OK
F.1.3.	Have the environmental impacts identified been properly addressed in the PDD?	[1]	Document Review	1. Checked: it is expected that there will be no negative environmental impacts associated with the proposed project activity. In addition, it has also been confirmed that a local gas company will be responsible for construction of pipelines for provision of natural gas to the project site and resulting environmental impacts.	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*						
G.1. Brief description how comments by local stakeholders have been invited and compiled *Note:*						
G.1.1.	Is the process clearly described by which comments by local stakeholders have been invited and compiled?	[1]	Document Review	1. Checked: a meeting with local stakeholders was organized by LG Chem, and a total of 17 local inhabitants attended the meeting	OK	OK
G.1.2.	Has an invitation for comments by local stakeholders made in an open transparent manner, in a way that facilitates comments to be received from local stakeholders and allow for a reasonable time for comments to be submitted?	[1]	Document Review	1. Checked: local network and newspaper announcements were used to advertise the meeting and invite local stakeholders	OK	OK
G.1.3.	Has detailed description been provided to stakeholders in a manner which allows the local stakeholders to understand project activity?	[1]	Document Review	1. Checked: at the meeting LG Chem made a presentation on the proposed project activity including description of the project and explanation of its main objectives, explanation of how the project helps to reduce local air pollution	OK	OK
G.1.4.	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder	[1]	Document Review	1. Checked: there is no required local stakeholder consultation process for the proposed project activity.	OK	OK

KEMCO	Small Scale Projects Validation Checklist	Ref.	MoV	Comments	Draft Concl.	Final Concl.
	consultation process been carried out in accordance with such regulations/laws?					
G.2. Summary of the comments received *Note:*						
G.2.1.	Have relevant stakeholders been consulted?	[1]	Document Review	1. Checked: comments from stakeholders were invited at a meeting with local stakeholders	OK	OK
G.2.2.	Is a summary of the comments received provided?	[1]	Document Review	1. Checked: concerns about local temperature and flare stack were raised by stakeholders and accordingly dealt with by LG Chem at the meeting	OK	OK
G.3. Report on how due account was taken of any comments received *Note:*						
G.3.1.	Has due account been taken of any comments received?	[1]	Document Review	1. Checked: there were no negative comments from local stakeholders with regards to the proposed project activity	OK	OK

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Appendix C

Review of Corrective Actions

Non-conformities	Reference	Corrective Actions	Comments
1. Major non-conformity 1: Calculation of NPV is not transparent in that some bunker fuel oil C is being used to pre-heat fuel and atomize steam, but this ancillary use should not be considered in estimating consumptions of natural gas since the new facility does not need such consumptions. Further, O&M costs for bunker fuel oil C and natural gas are weakly substantiated in the project design document and supporting documentation.	Checklist B.3.2~3	NPV for the proposed project was recalculated taking into account net consumptions of bunker fuel oil C excluding auxiliary use for pre-heating and atomizing, and O&M costs justified by the documented evidence.	The validation team concludes that NPV for the proposed project has been properly re-calculated using key values well substantiated and thus sufficiently demonstrates that the proposed project would not be financially attractive under the baseline scenario.
2. Minor non-conformity 1: The project design document does not have descriptions about technologies or equipments to be employed by the project activity enough to evaluate the level of the technology adopted.	Checklist A.4.5	The revised PDD briefly describes what technologies will be employed through the project activity.	The validation team concludes that the section A.2 and A.4.2 of the revised PDD appropriately provide descriptions about the equipment to be newly installed through the project activity.
3. Minor non-conformity 2: There are no descriptions about technology transfer through the proposed project activity in the project design document.	Checklist A.4.6	The revised PDD shows that the new natural gas burner that will be imported from overseas, is expected to enable the transfer of operation and maintenance skills into the host country through the project activity.	The validation team concludes that the section A.2 the revised PDD appropriately provide descriptions about what skills will be transferred into the host country through the project activity
4. Minor non-conformity 3: An international or national standards for measurement of boiler efficiency should be described in the monitoring plan in order to ensure reliability of monitoring data.	Checklist D.1.2	The revised monitoring plan describes that the efficiency of natural gas fuel will be measured at a representative load factor (or operation mode), based on the Korean Industrial Standards (KS).	The revised monitoring plan sufficiently addresses measurement of the efficiency of natural gas fuel.

Appendix D

CVs of Validation Team

KEMCO

Personal History

Name	Woo, Jaehak (Mr.)		
ID No.	621130-1110616	Phone No.	(031) 260 – 4831
Date of employment/ Contract date	1990. 01. 04	Scope of Qualification	Sectoral Scope 1
Classification	☐ Full-time Validator/verifier ■ Full-time Lead Validator/verifier ☐ Part-time Validator/verifier ☐ Part-time Lead Validator/verifier ☐ Technical Expert ☐ Committee member( ) ☐ Others( )		
Organization	Korea Energy Management Corporation	Position	Team Leader, Korea CDM Certification Office

	Description
Educational background	1) 1982-1986 Seoul National University, College of Engineering, Mining and Petroleum Engineering (Bachelor of Science) 2) 1986-1988 Seoul National University, College of Engineering, Mining and Petroleum Engineering (Candidate Master of Science)
Work experience	1) 2006: Undertook validation of Yangyang Renewable Energy Project (3MW Wind power and 1.4MW Hydroelectric power), KOSEP hydroelectric projects, and Durgun and Taishir HPP Projects in Mongolia 2) 2006–Present: Carrying out Corporate GHG Inventory Verification Prototype Project (LG Chem and SK corp.) 3) 2005-Present: Providing support in implementation of national policies for climate change mitigation 4) 2004: Engaged in establishing the plan on national sustainable development in the energy sector as an expert in the National Sustainable Development Committee 5) 1999-2003: Managed resources technology R&D projects 6) 1993-1998: Managed energy efficient technology R&D projects 7) 1990-1992: Managed new and renewable energy technology R&D projects
Certificate	
Training	Completed training course for GHG auditors - Date: 2 Jan. 2006 ~ 6 Jan. 2006 (44 hours) - Training organization: Korea Energy Management Corporation
Publications	
Linguistic abilities	1) Korean: A 2) English: A
Date of preparation : 28 November 2006	

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KEMCO

Personal History

Name	Han, Won-hee (Mr.)		
ID No.	590903-1148434	Phone No.	(031) 260 – 4492
Date of employment/ Contract date	Oct. 5, 1981	Scope of Qualification	Sectoral Scope 1
Classification	☐ Full-time Validator/verifier ■ Full-time Lead Validator/verifier ☐ Part-time Validator/verifier ☐ Part-time Lead Validator/verifier ☐ Technical Expert ☐ Committee member( ) ☐ Others( )		
Organization	Korea Energy Management Corporation	Position	Energy Audit Team Leader, Energy Diagnosis Department

	Description
Educational background	3) 1977-1981 Myung-ji University, Department of Engineering, Chemical engineering major (Bachelor's degree)
Work experience	1) 1981-1998 KEMCO, Kyungnam/Incheon Branch, Energy Audit, DSM Dept. 2) 1998-Present Energy Auditors, Energy Audit Office: ☐ Provided energy consulting on NCC, VCM, PE,PP processes - Samsung Total Petrochemicals co., Ltd (1994) - Honam Petrochemical Corp. (2004) etc. ☐ Diagnosed fugitive emissions from SM, NCC, VCM, EOH, PE, PP processes - Dongbu Hannong Chemicals co., Ltd (1987, 2000) - LG Chemical Daesan plant (2006) etc. ☐ Worked on a project that recovers off-gas(from flaring) and by- product oil as supplementary fuel - Samsung Petrochemical Co., Ltd. (1989, 1994) - Korea Petro Chemical Co., Ltd. (2005) etc. ☐ Performed energy audits on solvent recovery system in film coating process - Saehan Media Co., Ltd. (1992) - LG Chemical Chungju plant (1990) ☐ Performed consulting on the incineration and recovery of residual solvent gas from coating machine in PVC sheet manufacturing process - Hanwha Polymer Co., Ltd. (1998) ☐ Energy audits on the recovery of SF6 gas from high voltage bus duct at power plants - Boryung power plant (2005) - West Incheon power plant (2006)
Certificate	1) Certificate of Chemical Engineer (1st) 2) Certificate of Heat Management Engineer(1st) 3) Certificate of HVAC Professional Engineer
Publications	
Linguistic abilities	Korean: A English: A
Date of preparation : October 23, 2006	

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KEMCO

Personal History

Name	Han, Seung-Ho (Mr.)		
ID No.	710623-1167712	Phone No.	(031) 260 – 4883
Date of employment/ Contract date	March 1, 2000	Scope of Qualification	Sectoral Scope 1
Classification	■ Full-time Validator/verifier ☐ Full-time Lead Validator/verifier ☐ Part-time Validator/verifier ☐ Part-time Lead Validator/verifier ☐ Technical Expert ☐ Committee member( ) ☐ Others( )		
Organization	Korea Energy Management Corporation	Position	GHG Auditor, Korea CDM Certification Office

	Description
Educational background	4) 1990-1994 Yonsei University, Department of Science, Physics (Bachelor's degree) 5) 1995-2000 Seoul National University, Environmental Studies, Urban Planning major(Mater's degree)
Work experience	March 2000 – present: Project Coordinator, GHG Auditor, Korea CDM Certification Office, Korea Energy Management Corporation 1. 2006: Conducted validation of several CDM projects: Yangyang Renewable Energy Project; Durgun and Taishir HPP Projects in Mongolia 2. 2005: Conducted validation of the Gangwon Wind Park Project as a validation team leader 3. 2002～2004: Developed the manual and procedures for a CDM certification. 4. 2001～2004: Performed analysis of GHG reduction potentials for a heat pump project, refinery waste recovery project, wind power project and landfill gas utilization project. 5. 2000～2001: Produced reports on Climate Change and renewable energy policies of developed countries
Certificate	1) Certificate of Environmental Engineer(1st) 2) Environmental Auditor (ISO 14001)
Training	Completion of the training course for environmental auditors (ISO 14001) - Date: 21 Jan. 2002 ～ 25 Jan. 2002 (44 hours) - Training organization: Korean Standards Organization
Publications	1) Master's thesis "A study on GHGs mitigation options through forestry projects"(2000) 2) General Approaches to Validation of CDM Projects (2005) 3) Analysis on Leakage Effects Attributable to CDM Projects (2006) 4) Application of Approved Baseline Methodologies for CDM Projects in Korea-Case Study: Landfill Gas-to-Electricity Projects (2006) 5) Assessment of Data Uncertainty in Verifying Corporate GHG Emissions(2006)
Linguistic abilities	3) Korean: A 4) English: A
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