



VALIDATION REPORT

Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation

29 November 2011

Japan Consulting Institute

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CDM Validation Report for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

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Approved by Akio Yoshida, Executive Director	Organizational Unit JCI CDM Center Japan Consulting Institute (JCI)
Client Tepia Corporation Japan, Co., Ltd.	Client ref., Dr. Xuefeng Wen
Project name	Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant
Host Country People's Republic of China	Methodology version ACM0012 version 03.2
Size Large Scale	ER estimate 142,702 t-CO ₂ e / year (average)
GHG reducing Measure/ Technology	Waste gas recovery from coke production and power generation

A summary of the validation process and its conclusions

Japan Consulting Institute (JCI) has performed a validation work of the "Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant". The validation has been performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

- The review of the PDD and the subsequent follow-up interviews have provided JCI with sufficient evidence to determine the fulfillment of stated criteria.
- The host country is the People's Republic of China and the Annex I country is Japan. Both countries fulfil the participation criteria and have approved the project and authorized the project participants. The DNA from the People's Republic of China confirmed that the project assists in achieving sustainable development.
- The project correctly applies ACM0012 "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects", version 03.2 and referenced Tool.
- The total emission reductions from the project are estimated to be on the average 142,702 tCO₂e per year over the fixed crediting period. The starting date of crediting period is from 01/06/2011, or on the date of registration of the CDM project activity, whichever is later. The emission reduction forecast has been checked and it is deemed likely that the stated amount is to be achieved given that the underlying assumptions do not change.
- Adequate training and monitoring procedures have been implemented.
- In summary, it is JCI's opinion that the "Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant" as described in the PDD version 3.2 of "29/11/2011" meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0012 version 03.2.

JCI thus provides a positive opinion that the request for registration to be submitted for the proposed project as a CDM project activity.

Date of revision 29 November 2011	<input checked="" type="checkbox"/> No distribution without permission from the Client or responsible organizational unit <input type="checkbox"/> Limited distribution <input type="checkbox"/> Unrestricted distribution
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**CDM Validation Report for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG)
Based Electricity Generation Plant**

Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CERs	Certified Emission Reductions
CL	Clarification Request
CM	Combined Margin
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DRC	Development and Reform Committee
EB	Executive Board
EIA	Environmental Impact Assessment
ERs	Emissions Reductions
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas
GWP	Global Warming Potential
IRR	Internal Rate of Return
JCI	Japan Consulting Institute
KP	Kyoto Protocol
LoA	Letter of Approval
MP	Monitoring Plan
NDRC	National Development and Reform Committee
NWPG	Northwest Power Grid
OM	Operating Margin
PDD	Project Design Document
PRC	People's Republic of China
SHCM	Shaanxi Haiyan Coke Making (Group) Co., Ltd.
TEPIA	Tepia Corporation Japan, Co., Ltd.
UNFCCC	United Nations Framework Convention for Climate Change
VAT	Value Added Tax
VVM	Validation and Verification Manual

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Appendix A: Validation Protocol

Appendix B: Certificate of Appointment of Validation Team

I. VALIDATION OPINION

Japan Consulting Institute (JCI) has performed a validation of the “Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant”. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided JCI with sufficient evidence to determine the fulfillment of stated criteria.

The host country is People’s Republic of China and the Annex I country is Japan. Both countries fulfill the participation criteria and have approved the project and authorized the project participants. The DNA from People’s Republic of China confirmed that the project assists in achieving sustainable development.

The project correctly applies ACM0012 “Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects”, version 03.2 and referenced “Tool for the demonstration and assessment of additionality ” version 05.2.

The total emission reductions from the project are estimated to be on the average 142,702 tCO₂e per year over the selected 10 years fixed crediting period. The starting date of crediting period is from 01/06/2011, or on the date of registration of the CDM project activity, whichever is later. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is JCI’s validation conclusion that the ” Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant” as described in the PDD version 3.2 of “29/11/2011” meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0012 version 03.2.

JCI thus provides a positive validation opinion that the request for registration to be submitted for the proposed project as a CDM project activity.

II. INTRODUCTION OF CDM VALIDATION

Tepia Corporation Japan, Co., Ltd. has commissioned JCI to perform a validation of the “Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant” in People’s Republic of China (hereafter called “the project”). This report summarizes the findings of the validation of the project, performed 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.

1. Objective of CDM Validation

The purpose of validation is to ensure a thorough, independent assessment of proposed project activities submitted for registration as a proposed CDM project activity against the applicable CDM requirements.

JCI reports the results of its assessment in the validation report. JCI submits this validation report, along with the supporting documents to the CDM Executive Board as part of the request for registration of a project activity as a proposed CDM project activity.

The validation report includes a positive validation opinion as the proposed project activity complies with the applicable CDM requirements.

2. Validation approach

The CDM is a rules-based mechanism. Therefore, it shall be JCI's responsibility to ensure that, in accordance with the Validation and Verification Manual version 01.2 and CDM requirements, these rules are complied with for any project activities requesting registration as a proposed CDM project activity.

During validation, JCI assesses whether the project design of the proposed CDM project activity meets the CDM requirements. For this, JCI, using objective evidence, assesses the completeness and accuracy of the claims and conservativeness of the assumptions made in the project design document (PDD). The evidence used in this assessment is not limited to that provided by the project participants.

In assessing evidence, JCI does not omit evidence that is likely to alter the validation opinion. In the assessment of evidence, JCI uses the acceptable approaches as specified in section II to IV, below, and JCI ensures that the project activity complies with the relevant requirements set out in the CDM modalities and procedures, the applicability conditions of the selected methodology and guidance issued by the CDM EB before submitting a request for registration.

3. VALIDATION METHODS

3.1 Means of validation

JCI applies standard auditing techniques to assess the correctness of the information provided by the project participants, including, where appropriate, but not limited to:

- (a) Document review, involving:
 - (i) Review of data and information to verify the correctness, credibility and interpretation of presented information;
 - (ii) Cross checks between information provided in the PDD and information from sources other than that used, if available, and if necessary independent background investigations
- (b) Follow-up actions (e.g., on site visit and telephone or email interviews), including:
 - (i) Interviews with relevant stakeholders in the host country, personnel with knowledge of the project design and implementation;
 - (ii) Cross-check of information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted from the validation;

- (c) Reference to available information relating to projects or technologies similar to the proposed CDM project activity under validation; and
- (d) Review, based on the approved methodology being applied, of the appropriateness of formulae and correctness of calculations.

3.2 Clarification requests, corrective action requests and forward action requests

If, during the validation of a project activity, JCI identifies issues that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, JCI ensures that these issues are correctly identified, discussed and concluded in the validation report.

JCI raises a corrective action request (CAR) if one of the following occurs:

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

JCI raises a clarification request (CL) if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

JCI raises a forward action request (FAR) during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

JCI resolves or “close out” CARs and CLs only if the project participants modify the project design, rectify the PDD or provide adequate additional explanations or evidence that satisfies the JCI’s concerns. If this is not done, JCI does not recommend the project activity for registration to the CDM Executive Board.

JCI reports on all CARs, CLs and FARs in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD or supporting annexes.

The validation protocol consists of two tables. The different columns in these tables are described as next page.

The completed validation protocol for the proposed project is enclosed in Appendix A to this report.

Validation protocol tables

Table 1: Requirement checklist

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✧ **Requirement:**

The various requirements in Table 1 are checklist questions the project should meet. The checklist is organised in different sections, following the logic of the latest VVM, the PDD Guidelines and the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.

✧ **Reference:**

Gives reference to documents where the checklist question or item is found.

✧ **Check Comment :**

The column is used to elaborate and discuss the checklist question and/or the conformance to the question.

✧ **CAR, CL, FAR :**

- *ID No. of CAR, CL and FAR is described.*
- *Corrective Action Request (CAR) is used due to non-compliance with the checklist question.*
- *Clarification Request (CL) is used when the validation team has identified a need for further clarification.*
- *Forward Action Request (FAR) is used to highlight issues related to project implementation that require review during the first verification of the project activity.*

Table 2: Resolution of Corrective Action and Clarification Requests

✧ **Clarifications and corrective action requests :**

If the conclusions from the draft Validation are either a CAR, a CL or a FAR, these should be listed in this section.

✧ **Ref. to checklist question in Table1 :**

Reference to the checklist question number in Table1 where the CAR, CL or FAR is explained.

✧ **Summary of project owner response :**

The responses given by the project participants during the communications with the validation team should be summarised in this section.

✧ **Validation team conclusion :**

This section should summarise the validation team's responses and final conclusions.

4. STAKEHOLDER CONSULTATION PROCESS

JCI makes the PDD of the project activity under consideration publicly available in accordance with the latest version of the "Procedures For Processing And Reporting On Validation Of CDM Project Activities"*¹.

*¹ <http://cdm.unfccc.int/Reference/Procedures/valid_proc02.pdf>.

During the validation of the project activity, JCI takes into account the comments received and the validation report shall include details of actions taken to take due account of the comments during the validation process.

If comments are not sufficiently substantiated or indicate that the project activity does not comply with the CDM requirements, then JCI requests further clarification from the entity providing the comment. However, JCI is not required to enter into a dialogue with Parties, stakeholders or NGOs that comment on the CDM requirements. If no additional information or substantiation is provided in response to a request for clarification, JCI proceeds to assess the comments as originally provided.

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III. VALIDATION WORK

JCI has carried out the validation work to ensure that the project activity complies with the requirements of paragraph 37 of the CDM modalities and procedures

1. Validation Team

Details of the validation team are shown in below Tables III.1.A. and III.1.B.

Table III.1. A. Validation team member until February 2011

Role/Qualification	Name	Qualified Technical Areas related to the Project	On-site Visit
All relevant issues / Team Leader	SATO Hideyuki	1.1. Gas, Oil, Coal Thermal power 4.1. Waste gas/heat recovery in Manufacturing industries	-
CDM auditor / Team Member	MAKINO Yosei	1.1. Gas, Oil, Coal Thermal power 4.1. Waste gas/heat recovery in Manufacturing industries	On-site Visit

Table III.1. B. Validation team member from March 2011

Role/Qualification	Name	Qualified Technical Areas related to the Project	On-site Visit
All relevant issues / Team Leader	SATO Hideyuki	1.1. Thermal Energy Generation, 4.3. Iron and Steel	-
CDM auditor / Team Member	MAKINO Yosei	1.1. Thermal Energy Generation, 4.3. Iron and Steel	On-site Visit

Details of the technical reviewer is shown in below Tables III.1.C. and III.1.D.

Table III.1. C. Technical Reviewer until February 2011

Name	Qualified Technical Areas related to the Project
OKADA Masaki	1.1. Gas, Oil, Coal Thermal power 4.1. Waste gas/heat recovery in Manufacturing industries

Table III.1. D. Technical Reviewer from March 2011

Name	Qualified Technical Areas related to the Project
YOSHIZAWA Junji	1.1. Thermal Energy Generation, 4.3. Iron and Steel

2. Appointment certificate of the DOE's validation team member

The certificate of appointment of validation team member is attached in Appendix B to this report. As the definition of technical area in JCI has been changed from March 2011, two certificates, the original and revised, are attached.

3. Quality Control within the team of the validation process

The validation report worked out by the team underwent an internal review process for the assurance of being in compliance with the applicable requirement of VVM.

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JCI applies internally established Quality Management Program for the required review process, which is defined as follows;

- 1) Internal Review for the interim check by the internal audit team and the technical reviewer
- 2) The evaluation of the validation work in the CDM evaluation committee consists of outside experts
- 3) Internal review for the final check by the internal audit team and the technical reviewer

The review and evaluation including the technical review are implemented for every validation work by the competent personnel assigned in accordance with JCI's qualification scheme for CDM validation and verification.

4. Desk Review

The following table outlines the documentation reviewed during the validation:

Table III.2. Document list

No.	Title
	<Project related Documents>
/1/	PDD version 1.0, 08/12/2008 “Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant”
/2/	PDD version 3.2, 29/11/2011 “Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant”
/3/	FSR prepared by China Machinery International Engineering, Design & Research Institute in December 2007
/4/	EIA Report prepared by China Coal Science Research Institute, Xi'an Branch in March 2008
/5/	IRR calculation sheet without CER and with CER in excel file
/6/	Minutes of Meeting on CDM on 10 May 2007
/7/	Minutes of Meeting of the Board regarding Preliminary Investment Decision as a CDM project on 16 October 2007
/8/	Minutes of Meeting of the Board regarding Final Investment Decision as a CDM project based on FSR on 28 December 2007
/9/	Application of Project Implementation” with FSR to the Hancheng Economic Development Bureau on 19 February 2008
/10/	Application of construction start to the Hancheng Economic Development Bureau on 6 May 2008
/11/	Answers to the questionnaire” collected from stakeholders during 20 – 31 May 2008
/12/	Application for CDM to NDRC on 31 October 2008
/13/	Submission of PDD for GSC to DOE on 8 December 2008
/14/	Operation Start Approval of Nos. 1 & 2 Transformers by Weinan Electric Power Supply Bureau Dispatching Center on 7 July 2009 (Operation Start)
/15/	Summaries of On-site Assessment on 12 and 13 February 2009
/16/	Outline and Organization of Shaanxi Haiyan Coke Making (Group) Co., Ltd.

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No.	Title
/17/	Monthly electricity consumption in 2008
/18/	Monthly production report in 2008 and annual production records in 2009 and 2010
/19/	Monitoring report of COG by Hancheng City Environment Monitoring Station on 18 November 2007
/20/	Code for design of small-size power plant [GB50049-94]
/21/	Training program for waste gas recovery and power generation prepared on 10 July 2008
/22/	Manual for waste gas recovery and power generation prepared in March 2009
/23/	Certificate on no claim of emission reductions by Hancheng Power Bureau on 28 November 2010
/24/	FSR for the 1.0 million coke production of Shaanxi Haiyan Coke Making (Group) Co., Ltd. prepared by Taizi Chemical Industry Group Design Institute in March 2003
/25/	Financial reports of Shaanxi Haiyan Coke Making (Group) Co., Ltd. in 2008 and 2009
/26/	Design standard for small thermal power plant issued by the Ministry of Construction and National Technology Administration Bureau on 5 November 1994 GB50049-94
/27/	Evidence on the designed life of 16 years (Financial System of Industry and enterprise, http://www.jscl.com/jsclaws/accountlaw/cwzd2.htm)
/28/	Evidence on the self consumption rate (Protection on Electrical System for Plants)
/29/	Evidence on annual operation hours (Repair and maintenance plan, Design Manual of Electricity System edited by Plan and Design Institute of Electrical Industry Ministry)
/30/	Notice on trial implementation of project fund system issued by China State Council [1996] No. 35
/31/	History of Interests of the People's Bank of China (http://test.pbc.gov.cn/publish/zhengcehuobisi/631/1269/12693/12693_.html)
/32/	Northwest Regional Coal-fired Power Plant in 2006 issued by Northwest Electricity Regulatory Bureau (http://xbj.serc.gov.cn/UploadFiles/200812584926663.doc)
/33/	Coal price analysis in September 2007 (http://cache.baidu.com/c?m)
/34/	Hearing Program on Adjustment of Regional Piping Coke Oven Gas Price issued by Liuzhou City Price Bureau in Guangxi Zhuang Autonomous Region on 18 May 2009 (Http://www.lzjg.gov.cn/UploadFile/2009612171257439.doc)
/35/	Major Cities Pipeline Gas Price Statistics in March 2007 issued by Natural Gas & Coal Bed Methane HP (http://www.chinagas.org/tjzl/tjsj/2010-02-04/11720.html)
/36/	New pipeline gas price in Jinan City (http://finance.jrj.com.cn/news/2007-05-01/000002204190.html)
/37/	Thermo power project cost quota design reference index edited by the Power Standard Design Institute in 2005
/38/	Average wage and welfare in Shaanxi Province in 2006 (http://www.china.com.cn/city/zhuanti/shanxi/2007-04/02/content_8047687.htm)
/39/	Audit report of Shaanxi Haiyan Coke Making (Group) Co., Ltd. in 2006
/40/	Notice of adjusted electricity price of Shaanxi Province by the Price Bureau of Shaanxi Province on 11 July 2006 (http://yifan1981.blog.hexun.com/4552541_d.html)
/41/	Notification of Preferential Tax Policy Issues for the Great Western Development issued by the Ministry of Finance of PRC on 30 December 2001 [2001]202

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No.	Title
/42/	National Bureau of Statistic Yearbook 2009, National Static Bureau
/43/	Similar projects survey by the Shaanxi Industrial Technology Research Institute
	<Approval letter >
/45/	Letter of Approval by China DNA on 18 February 2009 (February 2009 in English)
/46/	Letter of Approval by Japan DNA on 24 June 2009
/47/	Approval Letter for EIA Report by Shaanxi Environmental Protection Bureau on 14 April 2008
/48/	Approval Letter of the project (FSR) by Shaanxi Development and Reform Commission on 30 April 2008
/49/	Business Licenses by Local Government
	<Referenced Documents, (Methodology, Guidance, Criteria, etc, of UNFCCC) >
/55/	CDM Validation and Verification Manual (VVM) Version 01.2, CDM EB55 Annex1
/56/	Approved consolidated baseline methodology ACM0012 Version 03.2 “Consolidated baseline methodology for GHG emission reductions from waste energy recovery project ”
/57/	Tool to calculate the emission factor for an electricity system (Version 02)
/58/	Tool for the Demonstration and Assessment of Additionality (Version 05.2)
/59/	Guidelines on the Assessment of Investment Analysis (Version 03.1)
/60/	Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM (Version 03)
/61/	Guidelines for completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodologies (Version 07)
/62/	Guidelines for Objective Demonstration and Assessment of Barriers (Version01)
/63/	Information Note: Previous related to the Appropriateness of Benchmarks for Project Activities Utilizing Waste Heat/Waste Gas for Power Generation, Annex 59 of the 51th CDM-EB
/64/	Tool to determine the remaining lifetime of equipment (Version 01)
/65/	Glossary of CDM terms (version 05)
	<Referenced Documents, (Books, Regulation, Code, of China) >
/70/	China Energy Statistical Yearbook 2005~2007
/71/	China Electric Power Yearbook 2003~2007
/72/	2006 IPCC Guidelines for National Greenhouse Gas Inventories
/73/	China’s Regional Grid Baseline Emission Factors issued by Chinese DNA on 30 December 2008 (http://cdm.ccchina.gov.cn/english/NewsInfo.asp?NewsId=3406)
/74/	Interim Measures for Economical Assessment of Electrical Technological Transformation

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No.	Title
	Project issued in March 2003 by the State Power Corporation of China
/75/	Emission Standards of Air Pollutants for Coke Industry GB16171-1996
/76/	Environmental regulations for air pollution GB3095-1996
/77/	Environmental regulations for air pollution from thermal power plant GB13223-2003
/78/	Environmental regulation for noise control GB12348-90
/79/	Guidance Catalogue for Industrial Structure Adjustment issued on 2 December 2005 by the NDRC, No.40 in 2005 (http://www.sdpc.gov.cn/zcfb/zcfbl/zcfbl2005/t20051222_54304.htm)
/80/	Notification about accelerating coke industry structure adjustment guidance issued by NDRC, [2006] No. 328 (http://www.sdpc.gov.cn/zcfb/cyfz/zcfg/t20060328_64560.htm)
/81/	Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or below issued on 15 April 2002 by the General Office of the State Council (http://www.gov.cn/gongbao/content/2002/content_61480.htm)
/82/	Regulations on the construction of small coal-fired power generation units Temporary Rules on Small-scale Thermal Power Units' Construction Management, August 1997 (http://www.people.com.cn/item/flfgk/gwyfg/1997/220010199708.html)
/83/	Wind Power Engineering – Construction and Acceptance edited by the China Water Supply and Hydropower publisher in March 2009, P9
/84/	China Wind Power Resources Distribution (http://www.se-tech.com.cn/post/82.html)
/85/	Solar: monthly and annual average latitude tilt GIS data at 40km resolution for China from NREL (http://swera.unep.net/typo3conf/ext/metadata_tool/archive/browse/257.pdf?Image=View+Image)
/86/	Economic Difficulties in Biomass Generation (http://www.china-cdt.com/news/comprehensivenews/6970326.html)
/87/	Cost analysis and application prospect of emerging renewable energies (http://ac.agri.gov.cn/ac/ViewContent.do?id=4affaa20110219f101116d279548047d&year)
/88/	Law of the People's Republic of China on Energy Conservation, 28 October 2007 (http://www.gov.cn/ziliao/flfg/2007-10/28/content_788493.htm)
/89/	Assembly of Waste Heat Power Generation Technology for Cement Kiln
/90/	Technical management standards for electricity measurement equipment (DL/T 448-2000)
/91/	<p>Depreciation in PRC</p> <ol style="list-style-type: none"> 1. Pretax Deduction Method for Enterprise Income Tax issued by the State Administration of Taxation on 16 May 2000 2. Implementing regulations for the Law of Enterprise Income Tax of People's Republic of China issued by the State Council on 6 December 2007 and effective from 1 January 2008 (http://www.gov.cn/zwgk/2007-12/11/content_830645.htm) 3. Detailed Rules for the Implementation of the Provisional Regulations on Enterprise Income Tax of the People's Republic of China (Cai Fa Zi [1994] No.3) issued by the Ministry of Finance on 4 February 1994 4. Notification on determination of residual rate for enterprise fixed asset issued by the State Administration of Taxation on 14 September 2005

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No.	Title
	(http://www.wh12366.gov.cn/cms/whgs02/0201more/2005092206.html)
/92/	<p>Taxes in PRC</p> <ol style="list-style-type: none"> 1. Law of Enterprise Income Tax of the People's Republic of China issued as the President Decree on 16 March 2007 and effective from 1 January 2008 (http://www.js-n-tax.gov.cn/Page/StatueDetail.aspx?StatuteID=7488) (http://www.gov.cn/flfg/2007-03/19/content_554243.htm) 2. Interim Statute of Value Added Tax of the People's Republic of China issued by the State Council (No. 134) on 13 December 1993 and effective from 1 January 1994 (http://www.gov.cn/banshi/2005-08/19/content_24733.htm) 3. Provisional Regulations of Education Tax amended by the State Council on 20 August 2005 and effective from 1 October 2005 (http://www.chinacourt.org/flwk/show1.php?file_id=104821) 4. Interim Rules of Additional Tax for City Development of the People's Republic of China issued by the State Council on 8 February 1985 and effective from 8 February 1985 (http://www.gov.cn/banshi/2005-08/19/content_24817.htm)
	<Contract >
/95/	Agreement of CDM consultation with Shanghai Tepia Environmental Protection Co., Ltd. regarding CDM Project Cooperation including PDD Preparation on 21 November 2007
/96/	Construction contract with Jiangsu Huaneng Construction Engineering Group Co., Ltd. on 6 May 2008 [71.5 million Yuan]
/97/	Purchase Agreement of Boilers with Taiyuan Boiler Group Co., Ltd. on 8 May 2008 [6.48 million Yuan] with specification confirmation
/98/	Purchase Agreement of Turbine with Qingdao Jieneng Turbine Co., Ltd. on 9 May 2008 [6.4 million Yuan]
/99/	Purchase Agreement of Generator with Shandong Jinan Generator Manufacturer on 13 May 2008 [3.6 million Yuan]
/100/	ERPA concluded with Tepia Corporation Japan Co., Ltd. on 8 October 2008
/101/	Validation Contract between Tepia Corporation Japan Co., Ltd. and JCI on 10 November 2008
/102/	Purchase Agreement of Water Treatment Equipment with Yiyu Environmental Water Treatment Equipment Co., Ltd on 5 July 2008 [4.95 million Yuan]
/103/	Purchase Agreement of Cabinets with XJ Electric Co., Ltd. on 8 June 2008 [3.0 million Yuan]
/104/	Purchase Agreement of Power Cable with Jiangsu Shangshang Cable Group on 14 August 2008 [1.978 million Yuan]
/105/	Purchase Agreement of Chemical water treatment system and chemical/chlorine feeding equipments with Yixing City Global Water Treatment Equipment Co., Ltd. on 5 July 2008 [1.95 million Yuan]
/106/	Purchase Agreement of Valves with Shanghai Mingzhu Valve Manufacturing Co., Ltd. on 26 July 2008 [1.49 million Yuan]
/107/	Purchase Agreement of Automatic Control Meter for Boiler and Generator with Chongqing Sichuan Instrument Co., Ltd. on 28 July 2008 [0.845 million Yuan]
/108/	Purchase Agreement of Relay and Protection Equipments with XJ Electric Co., Ltd. on 20 July 2008 [0.720 million Yuan]

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No.	Title
/109/	Purchase Agreement of DCS with Zhejiang SUPCON Technology Co., Ltd on 2008 [0.400 million Yuan]
/110/	Purchase Agreement of Cabinets with Xi'an Ronke Capacitance Filter Plant Co., Ltd. on 9 June 2008 [0.340 million Yuan]
/111/	Purchase Agreement of De-aerator/Flash tank/Others with Jiangsu Guangyang Power Environment Protection Equipment Co., Ltd. on 5 July 2008 [0.310 million Yuan]
/112/	Purchase Agreement of Cranes with Henan Xinxiang Mine Crane Co., Ltd. on 21 May 2008 [0.295 million Yuan]
/113/	Purchase Agreement of Compensation Cable with Anhui Tiankang Group Co., Ltd. on 28 August 2008 [0.085 million Yuan]
<Drawings >	
/120/	General arrangement drawings before and after the Project
/121/	Process instrument diagram (PID of the plant)
/122/	Electric single line diagram and related diagrams
/123/	Monitoring points in the system diagram

Major changes of the content from the PDD/1/ to the PDD/2/ are summarized in the below table.

Table III.3. Major Changes in the Content of the PDDs

Subject and section in the PDD	Original content in the PDD/1/	Revised content in the PDD/2/	Issued CAR or CL Relevant tool, guidance, or guidelines applied
Correction of version No. of methodology and tool in section B.1	ACM0012 Ver. 03.1 Emission tool Ver. 01.1	ACM0012 Ver. 03.2 Emission tool Ver. 02 Related description corrected	CAR-2 Para. 70 of VVM/55/
Correction of emission factors and reductions in sections A.2, A.4.4, B.6 and Annex 3	CM: 0.877 tCO ₂ e/MW OM: 1.1225 tCO ₂ e/MW BM: 0.6315 tCO ₂ e/MW ER: 143,635 tCO ₂ e/year	CM: 0.8712 tCO ₂ e/MW OM: 1.1225 tCO ₂ e/MW BM: 0.6199 tCO ₂ e/MW ER: 142,703 tCO ₂ e/year	CAR-3 PDD guidelines (Version 07) /61/
Correction of credit starting date in sections A.4.4, B.6.4 and C.2.2.1	From 01/07/2009	From 01/06/2011	CAR-4 PDD guidelines (Version 07) /61/
Correction of start date of project activity	08/05/2008 (Equipment contract)	06/05/2008 (Construction	CAR-5

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Subject and section in the PDD	Original content in the PDD/1/	Revised content in the PDD/2/	Issued CAR or CL Relevant tool, guidance, or guidelines applied
		contract)	Para. 99 of VVM/55/
Clarification of selection of fcap method	Method 2 selected	Method-3 Case 1 selected. Consequently, monitoring parameters revised.	CL-20 Para. 90 of VVM/55/

5. Follow-up actions (Interviews with relevant stakeholders in the host country)

The on-site visit and interviews with project stakeholder were held from 11 to 13 February 2009 at Hancheng City in Shaanxi Province, China.

The names of interviewees are listed as following table.

Table III.4. List of interviewees

No.	Date	Name	Organization	Topic
/130/	11/02/2009	Mr. Wenxuan Wang, President Mr. Chunxue Wang, Chief of Electricity Generation Factory Mr. Yong Nian Xu Dr. Xuefeng Wen, Director, Ms. Momoko Sakano Mr. Ze Wu, Ms. Xiao Zhen Qiu, Director of CDM Project Center Mr. Long Liang Ms. Ying Yu	Shaanxi Haiyan Coke Making (Group) Co., Ltd. Tepia Corporation Japan Co., Ltd. Shanghai Tepia Environmental Protection Co., Ltd. Shaaxi Industrial Technology Research Institute (Owner's consultant)	<u>Interview with Project Owner</u> ♦ Outline of the company and the Project ♦ Confirmation of the following major items: Timeline Milestone Serious consideration Purchase agreements Input values Common Practice Management/Education/ Training/Maintenance/ Monitoring etc.

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No.	Date	Name	Organization	Topic
/131/	12/02/2009	Mr. Wen Yong Pei Mr. Huai Quo Cao	China Machinery International Engineering, Design & Research Institute	<u>Interview with Design Institute</u> <ul style="list-style-type: none"> ◆ History and Status of FSR ◆ Energy balance ◆ Calculation of the equipment capacity and operating hours ◆ Evidences of the investment costs and the input values for IRR
/132/	12/02/2009	Mr. Ziren Li, Mr. Suo Feng Zhang, Mr. Yikun Wang, Mr. Jiang Feng Wang	Local residents	<u>Interview with local residents</u> <ul style="list-style-type: none"> ◆ Pre-announcement ◆ Positive and/or negative influence on the living conditions ◆ Environmental or ecological issues ◆ Future concerns
/133/	12/02/2009	Mr. Changhong Sun, Vice Director, Mr. Yungzhong Liu	Economic Development Bureau of Hancheng City	<u>Interview with Local DRC</u> <ul style="list-style-type: none"> ◆ Role and responsibility of DRC and ETC ◆ Policy on the coke industry ◆ Approval criteria of the FSR and Project ◆ Positive and/or negative social impacts or concerns of the Project ◆ Application of the construction commencement ◆ Audit after the construction completion
/134/	12/02/2009	Mr. Huiqian Gao, Mr. Wangjun Fen	Environmental Protection Bureau of Hancheng City	<u>Interview with Local EPB</u> <ul style="list-style-type: none"> ◆ Criteria and Regulation of EIA for approval ◆ Positive and/or negative social impacts or concerns of the Project ◆ Application of the construction completion ◆ Acceptance of the project
/135/	13/02/2009	Ms. Sun Jie, Chief Staff of department	Shaanxi Development and Reform Commission	<u>Interview with Province DRC</u> <ul style="list-style-type: none"> ◆ Role and responsibility of DRC and ETC ◆ Policy on the coke industry ◆ Approval criteria of the FSR and Project

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No.	Date	Name	Organization	Topic
				<ul style="list-style-type: none"> ♦ Positive and/or negative social impacts or concerns of the Project ♦ Application of the construction commencement ♦ Audit after the construction completion

IV. VALIDATION FINDINGS

The findings of the validation are stated in the following sections. 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.

Findings issued through the validation

JCI issued the six (6) CARs and the twenty-eight (28) CLs as shown in the Validation Protocol, Appendix A of this report. All CARs and CLs were resolved and closed as shown in the Table 2 of the Appendix A.

Major issues and its resolution process though the CARs and CLs are described in following items according to VVM/55/.

1. Approval

JCI received copies of the two LoAs from the project participants: one is from DNA of People's Republic of China (PRC) issued on 18 February 2009 (February 2009 in English)/45/, and the another is from DNA of Japan issued on 24 June 2009/46/.

JCI has confirmed the approval of the project activity with the website of PRC government related organization as described below.

The website of CDM Information Platform sponsored by and the copyright of the information owned by Department of Climate Change, NDRC, PRC.

JCI also has confirmed the following:

- 1) DNA of PRC approved the Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant.
 - (1) The People's Republic of China is a Party to the Kyoto Protocol on 30th August 2002;
 - (2) Participation is voluntary;
 - (3) The proposed CDM project activity contributes to the sustainable development of the People's Republic of China, Host country
 - (4) It authorizes Shaanxi Haiyan Coke Making (Group) Co., Ltd.
 - (5) as a project proponent in the Project.
 - (6) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.
- 2) Japanese government, as the DNA of Japan, approved the Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant.
 - (1) Japan has ratified the Kyoto Protocol on June 2002;

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- (2) Participation in the CDM is voluntary basis;
- (3) It authorizes Tepia Corporation Japan, Co., Ltd. as a project proponent in the Project, developed under Articles 12.5(a) and 9 of the Kyoto Protocol to the United Nations Framework Convention on Climate Change;
- (4) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.

There found no indication during the validation process that the project uses the official development assistance funding for PRC.

JCI has concluded that the two LoAs are credible and fully comply with the requirements by the CDM.

2. Participation

JCI confirmed that the project participants are Shaanxi Haiyan Coke Making (Group) Co., Ltd. (PRC) and Tepia Corporation Japan, Co., Ltd. (Japan) as being listed in tabular form in section A.3 of the PDD/2/, and also confirmed that this information is consistent with the contact details provided in Annex 1 of the PDD/2/. It is also confirmed that no entities other than those approved as project participants are included in these sections of the PDD.

As described above, the project participants are authorized with the LoAs issued by the relevant DNA as a voluntary participant to the project activity.

3. Project Design Document

Through desk reviews and Q&A sessions with the PDD author, JCI confirmed that the PDD is described based on and referring to the following relevant tools, guidance, guidelines, and manual:

JCI issued the finding of CAR-2 to apply the latest version of the methodology and the relevant tool, and then closed as being resolved.

- (1) CDM VVM (Version 01.2)/55/
- (2) Approved consolidated baseline methodology ACM0012 (Version 03.2)/56/
(Version No. of ACM0012 is changed from 03.1 at GSC to 03.2 at upload for request for registration.)
- (3) Tool to calculate the emission factor for an electricity system (Version 02)/57/
(Version No. of the tool is changed from 01.1 at GSC to 02 at upload for request for registration.)
- (4) Tool for the Demonstration and Assessment of Additionality (Version 05.2)/58/
- (5) Guidelines on the Assessment of Investment Analysis (Version 03.1)/59/
- (6) Guidelines on the demonstration and assessment of prior consideration of the CDM (Version 03)/60/
- (7) Guidelines for completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodologies (Version 07)/61/
- (8) Guidelines for Objective Demonstration and Assessment of Barriers (Version 01)/62/
- (9) Information Note: Previous related to the Appropriateness of Benchmarks for Project Activities Utilizing Waste Heat/Waste Gas for Power Generation, Annex 59 of the 51th CDM-EB/63/

(10) Tool to determine the remaining lifetime of equipment (Version 01)/64/

(11) Glossary of CDM terms (Version 05)/65/

The project design document was described using the CDM-PDD template of the latest version 03 as shown in the PDD/2/, that was confirmed through comparison with the template listed on the UNFCCC website.

As described above, JCI judged that the PDD/2/ is compiled with use of the appropriate format and is described based on appropriate tool

4. Project Description

The context of the PDD/2/ was checked during the on-site assessment conducted from 11 to 13 February 2009 with the following measures:

- 1) Observation of the project site
- 2) Cross-check of the construction work with relevant drawings provided by the project participant
- 3) Interviews with the project participant, relevant organizations/entities, and local stakeholders shown in Table III .4 of section 5 of III.

As the result of the above steps, JCI judges that the descriptions of the PDD/2/ are correct and its context is sufficient, and well outlines the nature and technical aspects of the project activity.

The major features of the project activity described in the PDD/2/ are summarized below:

- Project owner : Shaanxi Haiyan Coke Making (Group) Co., Ltd.
- Production lines : Coke production facilities with production capacity of 1,000 kt/yr
- Project type : Waste gas recovery from coke production and power generation
- Major equipments : 75 t/h Boiler x 2 units, 12 MW Steam turbine x 2 units, 12 MW Generator x 2 units
- Connecting grid : Northwest Power Grid
- Electric generation : 180,000 MWh/year
- Net generation : 163,800 MWh/year
- Estimated emission reductions: 142,702 t-CO₂e/year
- Project lifetime : 16 years (including 1 year construction period)
- Fixed crediting period: 10 years

JCI issued the findings of CL-1 to CL-7 to clarify the timeline, existing/new facilities and energy balance, and then closed as being resolved.

5. Baseline and monitoring methodology

5.1. Applicability of selected methodology to the project activity

JCI judges that application of ACM0012 “Consolidated baseline methodology for GHG emission reduction from waste energy recovery project” Version 03.2/56/ to the project activity is appropriate from the following steps and viewpoints:

Step 1: Document review

JCI has reviewed the FSR/3/, the EIA Report/4/ and the general layout and equipment arrangement drawings before and after the Project/120/, and confirmed that the waste gas recovery facilities for the power generation will be newly introduced to the existing line and the waste gas after the flaring emitted to the atmosphere will be utilized for the power generation.

Step 2: On-site visit on 11 to 13 February 2009/15/

JCI has confirmed that the installation of main equipment has been almost finished and the control units, wirings and piping are under construction. That is, it is observed the waste gas from the coke production is emitted to the atmosphere after the flaring. It is informed the start-up of the proposed project will be at the end of June 2009 by the project owner.

Step 3: Findings of CLs

JCI issued the findings of CAR-2, CL-8 to CL-10 to clarify the methodology applicability of the proposed project, and then closed as being resolved for the CLs.

JCI has not identified the GHG emissions which will contribute more than 1% of the expected average annual emission reductions and which are not addressed in the ACM0012/56/ within the project boundary.

The project activity is to utilize the waste gas from coke production for electric generation, and involves two sets of boiler, and two sets of steam turbine and generator.

The waste gas recovery equipments of the project activities meet the following conditions for the application of the methodology ACM0012, Version 03.2/56/:

1) Type-1 or Type-2:

Type-1 is correctly applied because the project is to utilize all the waste gas as an energy source for power generation and there is no waste gas utilized before implementation of the project.

2) Other conditions:

The proposed project satisfies the following conditions stipulated in the ACM0012 Version 03.2/56/.

- The project activity is not based on the use of waste pressure to generate electricity, and then electricity generated using waste pressure is not measured.
- The electricity generated by the project activity will be exported from the coke production facilities.
- The electricity in the project activity will be exported to the Northwest Power Grid.
- The electricity in the project activity can be generated by the owner of coke producing facilities.
- Regulations do not constrain the coke production facilities that generates waste energy from using fossil fuel prior to the implementation of the project activity.
- The project is new facilities introduced to the existing facilities, but not capacity expansion of the existing coke production facilities.
- The emission reductions are claimed by the generator of electricity using waste energy.
- The energy is exported to the grid and the emission reductions are not claimed by the grid/23/.

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- The credit period is the fixed 10 years shorter than the remaining lifetime of the existing facilities.
 - Waste energy that is released under abnormal operation (e.g. emergencies, shut down) of the plant will not be accounted for.
 - The project is not implemented in a single-cycle power plant (e.g. gas turbine or diesel generator) to generate power.
- 3) Demonstration of use of waste energy in absence of CDM project activity
- During on-site visit on 11 to 13 February 2009, JCI observed that 1)the waste gas is flaring before the release to the atmosphere, 2)the facilities related to the proposed project were under construction, and 3)no equipment for waste gas recovery and utilization had been installed prior to the implementation of the proposed project. JCI has also confirmed that all the waste gas is released to atmosphere prior to the implementation of the proposed project judging from the FSR/3/, the EIA Report/4/, their approvals/47//48/ and the general layout and equipment arrangement drawings before and after the Project/120/.

5.2. Project boundary

JCI confirms that the project boundary is appropriate for this project activity from the following steps and viewpoints:

Step 1: Document review

JCI has reviewed the FSR/3/, the EIA Report/4/, the general layout and equipment arrangement drawings before and after the Project/120/ and the “China’s Regional Grid Baseline Emission Factors” issued by Chinese DNA on 30 December 2008/73/, and confirmed that the waste gas recovery facilities for the power generation will be newly introduced to the existing line and the waste gas after the flaring emitted to the atmosphere will be utilized for the power generation.

Step 2: On-site visit on 11 and 13 February 2009/15/

JCI has confirmed that the installation of main equipment has been almost finished and the control units, wirings and piping are under construction. That is, it is observed the waste gas from the coke production is emitted to the atmosphere after the flaring. It is informed the start-up of the proposed project will be at the end of June 2009 by the project owner.

Step 3: Findings of CL

JCI issued the findings of CL -11 to clarify the emissions for the baseline and project activity, and then closed as being resolved for the CL.

As per ACM0012 Version 03.2/56/, the project boundary is

- (1) The facility where waste energy is generated; Coke production facilities
- (2) The facility where process heat is generated; Boilers, steam turbine and generator
- (3) The facility where electricity is connected to; Northwest Power Grid.

JCI has validated and concluded that the definition of the project boundary is appropriate, namely, during the on-site visit for assessment, has confirmed that the project boundary involves the coke production line, waste gas recovery and power generation facilities: boilers, steam turbines and generators and Northwest China Power Grid

5.3. Baseline identification

JCI confirms that the baseline identification is appropriate for this project baseline from the following steps and viewpoints:

Step 1: Document review

JCI has reviewed the FSR/3/, the EIA Report/4/ and the related documents, and confirmed that the waste gas recovery facilities for the power generation will be newly introduced to the existing line and the waste gas after the flaring emitted to the atmosphere will be utilized for the power generation.

Step 2: On-site visit on 11 and 13 February 2009/15/

JCI has confirmed that the installation of main equipment has been almost finished and the control units, wirings and piping are under construction. That is, it is observed the waste gas from the coke production is emitted to the atmosphere after the flaring.

Step 3: Findings of CL

JCI issued the findings of CL-12 to clarify the context of proposed project to identify the realistic and credible alternatives, and then closed as being resolved for the CL.

In conclusion, JCI has validated and concluded that the baseline scenario for the project activity has complied with the applied methodology/56/ and relevant tools.

JCI has confirmed that the baseline identification of the project was conducted in appropriate manner by confirming of following necessary steps and crucial points.

Step 1: The likely baseline combinations of using waste heat and power supply for the project are the following options:

Combination W2/P6: W2; WECM is released to the atmosphere (for example after incineration) or waste heat is released to the atmosphere or waste pressure energy is not utilized, and P6; sourced grid-connected power plants.

Combination W4/P1: W4; Waste energy is used for meeting energy demand, and P1; proposed project activity not undertaken as a CDM project activity.

Combinations W2/P1 and W4/P6 are not likely baseline scenarios because they are internally inconsistent.

As the proposed project does not involve the heat generation (H) and the mechanical energy (M), the heat generation (H) and mechanical energy (M) alternatives are excluded.

JCI's confirmation for each alternative is as follows:

W1: WECM is directly vented to atmosphere without incineration or waste heat is released to the atmosphere or waste pressure energy is not utilized;

-W1 is not an alternative because JCI has confirmed that the WECM from the coke production facilities is vented to atmosphere after flaring which JCI has observed during the on-site visit, that is, the "Emission Standards of Air Pollutants for Coke Industry GB16171-1996"/75/ stipulates that the waste gas from the coke production facilities is prohibited to release to the atmosphere directly and must be flared before release to the atmosphere.

W2: WECM is released to the atmosphere (for example after incineration) or waste heat is released to the atmosphere or waste pressure energy is not utilized;

-W2 is an alternative because JCI has confirmed the waste gas is released to the atmosphere after incineration, which is evidenced with documents such as the FSR/3/,

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EIA Report/4/, their approvals/47//48/ and the general layout and equipment arrangement drawings before and after the Project/120/.

W3: Waste energy is sold as an energy source;

-W3 is not an alternative because JCI has confirmed through the on-site visit and interviews that W3 is unrealistic and unfeasible. That is, there are no potential users of the waste gas from the coke production facilities and the proposed project is located more than 20 km from the centre of the Hancheng City (residential area).

W4: Waste energy is used for meeting energy demand;

-W4 is an alternative because JCI has confirmed the waste gas recovery from the coke production facilities for the power generation is one of the recommendable investment projects as stipulated in the “Guidance Catalogue for Industrial Structure Adjustment” issued on 2 December 2005 by the NDRC/79/, and is not compulsory.

W5: A portion of the waste gas produced at the facility is captured and used for captive electricity generation, while the rest of the waste gas produced at the facility is vented/flared;

-W5 is not an alternative because JCI has confirmed the proposed project utilizes the waste gas for the power generation exported to the grid but not to the captive use.

W6: All the waste gas produced at the industrial facility is captured and used for export electricity generation.

-W6 is not an alternative because JCI has confirmed the proposed project utilizes some portion of the waste gas which is necessary for its own coke production. In case of neglecting the above some portion used for its own coke production, all the waste gas is seemed to use for export electricity generation, and then W6 is same as W4.

P1: Proposed project activity not undertaken as a CDM project activity;

-P1 is an alternative because JCI has confirmed the waste gas recovery from the coke production for the power generation is one of the recommendable investment projects as stipulated in the “Guidance Catalogue for Industrial Structure Adjustment” issued on 2 December 2005 by the NDRC/79/, but is not compulsory.

P2: On-site or off-site existing/new fossil fuel fired cogeneration plant;

-P2 is not an alternative because JCI has confirmed the proposed project produces the power only but does not produce the steam, which is evidenced with the FSR/3/, the EIA Report/4/ and the PDD/2/.

P3: On-site or off-site existing/new renewable energy based cogeneration plant;

-P3 is not an alternative because JCI has confirmed the proposed project produces the power only but does not produce the steam, which is evidenced with the FSR/3/, the EIA Report/4/ and the PDD/2/.

P4: On-site or off-site existing/new fossil fuel based existing captive or identified plant;

-P4 is not an alternative because JCI has confirmed the fuel-fired power plants of less than 135MW are prohibited for construction in the area covered with the power grid by the “Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or below” issued on 15 April 2002 by the General Office of the State/81/.

P5: On-site or off-site existing/new renewable energy or other waste energy based existing captive or identified plant;

-P5 is not an alternative because JCI has confirmed there is no advantageous renewable energy resources such as wind/83//84/, solar/85/, biomass/86//87/ and waste energy (waste heat and waste pressure) around the project site except the waste gas which the coke production facilities emit. Some hydro power plants in Shaanxi Province are realized, however, they are CDM projects.

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- P6: Sourced grid-connected power plants;
 -P6 is an alternative because JCI has confirmed P6 is the current situation where the electricity is supplied from the Northwest Power Grid.
- P7: Captive electricity generation using waste energy (if project activity is captive generation using waste energy, this scenario represents captive generation with lower efficiency than the project activity);
 -P7 is not an alternative because JCI has confirmed the project activity is not the captive electricity generation and the generation with lower efficiency than the project activity is unrealistic and unconformable with the “Law of the People's Republic of China on Energy Conservation”, 28 October 2007/88/.
- P8: Cogeneration using waste energy (if project activity is cogeneration with waste energy, this scenario represents cogeneration with lower efficiency than the project activity);
 -P8 is not an alternative because JCI has confirmed the proposed project produces the power only but does not produce the steam, which is evidenced with the FSR/3/, EIA Report/4/ and the PDD/2/.
- P9: Existing power generating equipment (used previous to implementation of project activity for captive electricity generation from a captured portion of waste gas) is either decommissioned to build new more efficient and larger capacity plant or modified or expanded (by installing new equipment), and resulting in higher efficiency, to produce and only export electricity generated from waste gas. The electricity generated by existing equipment for captive consumption is now imported from the grid;
 -P9 is not alternative because JCI has confirmed no existing power generation equipment through the observation of the physical site confronted with related documents such as the general layout and equipment arrangement drawings before and after the Project/120/.
- P10: Existing power generating equipment (used previous to implementation of project activity for captive electricity generation from a captured portion of waste gas) is either decommissioned to build a new more efficient and larger capacity plant or modified or expanded (by installing new equipment), and resulting in higher efficiency, to produce electricity from waste gas (already utilized portion plus the portion flared/vented) for own consumption and for export;
 -P10 is not alternative because JCI has confirmed no existing power generation equipment through the observation of the physical site confronted with related documents such as the general layout and equipment arrangement drawings before and after the Project/120/.
- P11: Existing power generating equipment is maintained and additional electricity generated by grid connected power plants.
 -P11 is not alternative because JCI has confirmed no existing power generation equipment through the observation of the physical site confronted with related documents such as the general layout and equipment arrangement drawings before and after the Project/120/.

Step 2: The fuel for Combination W4/P1 (Proposed project without CDM) is the waste heat emitted from the coke production utilizing the coal without any supplemental fuel as same as the present, which is judged to encounter no constraint from the national/sectoral policies. The fuel for Combination W2/P6 (Sourced Grid-connected power plants) is mainly coal according to the actual condition of Northwest Power Grid by the “China Electric Power Yearbook 2003-2007”/71/, which is judged to encounter no constraint from the national/sectoral policies.

Step 3: Based on the result of following analysis in Section 6.3(1), IRR without CDM consideration is lower than the benchmark. Combination W4/P1 is excluded as the alternative.

Step 4: The PDD/2/ has identified that the baseline scenario is Combination W2/P6 (W2; Waste heat is released to the atmosphere, and P6; Sourced Grid-connected power plants), which is one of the two scenarios described in Table 2 of ACM0012 Version 03.2/56/. Therefore, ACM0012 is to be applicable to the proposed project.

JCI has confirmed the followings in accordance with paragraph 87 of VVM/55/,

- (a) all the assumptions and data used by the project participants are listed in the PDD/2/, including their references and sources;
- (b) all documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD/2/;
- (c) assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) relevant national and/or sectoral policies and circumstances are considered and listed in the PDD/2/;
- (e) the approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed project activity.

JCI has further cross-checked the information contained in the PDD/2/ by the similar CDM projects or actual evidences etc. according to paragraph 88 of VVM/55/.

Thus, JCI has confirmed that the PDD/2/ appropriately identified Combination W2/P6 as the most economically attractive baseline scenario through the above argument.

5.4. Algorithms and/or formulae used to determine emission reductions

JCI has validated and concluded that the algorithms and/or formulae including data and values used to determine the emission reductions of the proposed project comply with the methodology ACM0012 Version 03.2/56/ and relevant tool/57/ through the document review, the findings, CL-19 to CL-20, and discussion during the on-site visit.

JCI confirmed that,

- all the assumptions, data and references used in the PDD/2/ are appropriate.
- all the documents and data used in the PDD/2/ are correctly quoted and interpreted.
- all the values used in the PDD/2/ are reasonable.
- the methodology ACM0012 Version 03.2/56/ and relevant tool/57/ have been correctly applied to calculate project emissions, baseline emissions, leakage and emission reductions.
- all the estimates of the baseline emissions can be replicated using the data and values from the PDD/2/
- the options for equations and parameters are correctly selected.
- the fixed ex-ante data and parameters are conservative and appropriate.
- the estimates for the monitored data and parameters are reasonable.

1) Application of baseline and monitoring methodology

JCI has confirmed that the PDD/2/ fully complies with the methodology ACM0012 Version 03.2 /56/, and the relevant tool/57/ based on the baseline scenario selected. The calculations are conducted first to work out the baseline emissions based on the methodology/56/ and then the project emissions, leakage and finally emission reductions based on the methodology/56/and the relevant tool/57/.

JCI has also confirmed that the data and parameters used in the calculations are appropriate and correctly interpreted and applied through cross-checks with comparison of the data of the website of CDM China. Main parameters for the component are summarized in the table “Baseline Information” as per the methodologies/56/ and the relevant tool/57/ is attached at Annex 3 of the PDD/2/.

2) Baseline emission; BE_y

According to the methodology, baseline emissions for the year y ; BE_y is determined as follows:

$$BE_y = BE_{Elec,y}$$

Where,

BE_y = The total baseline emissions during the year y in tons of CO₂

$BE_{Elec,y}$ = The baseline emissions from energy generated by project activity during the year y in tons of CO₂

The baseline emissions from electricity ($BE_{Elec,y}$) generated by waste heat can be calculated as follows:

The project is generation of electricity only, therefore Case 1 activities of Type-1 of the methodology/56/ is applied, therefore

$$BE_{Elec,y} = f_{cap} * f_{wcm} * \sum_j \sum_i (EG_{i,j,y} * EF_{Elec,i,j,y})$$

Where,

$BE_{Elec,y}$ = Baseline emissions due to displacement of electricity during the year y in tons of CO₂.

$EG_{i,j,y}$ = The quantity of electricity supplied to the recipient j by generator, that in the absence of the project activity would have been sourced from i source (i can be either grid or identified source) during the year y in MWh; and

$EF_{Elec,i,j,y}$ = The CO₂ emission factor for the electricity source i ($i=gr$ (grid) or $i=$ is (identified source)), displaced due to the project activity, during the year y in tons CO₂/MWh

f_{wcm} = Fraction of total electricity generated by the project activity using waste energy. This fraction is 1 if the electricity generation is purely from use of waste energy.

f_{cap} = Energy that would have been produced in project year y using waste energy generated in base year expressed as a fraction of total energy produced using waste source in year y . The ratio is 1 if the waste energy generated in project year y is same or less than that generated in base year.

(a) Quantity of electricity; $EG_{i,j,y}$

The project is connected to Northwest Power Grid (NWPG) and supplies the electricity generated by the project, which is described as annual net electric generation; 163,800 MWh/yr in Section III. 4 above.

(b) CO₂ emission factor; $EF_{Elec,i,j,y}$

According to the relevant tool/57/, it is calculated in the following steps:

Step 1. Identify the relevant electric systems

According to the relevant tool/57/, the data published by the DNA of China is selected.

Therefore, in accordance to the latest delineation published by Chinese DNA on 30 December 2008/73/, NWPG is identified as the electric power system, from which the electricity imported in the baseline scenario. In the PDD for GSC/1/, the old Chinese DNA information issued on 18 July 2008 is quoted, however, it is revised and corrected on 30 December 2008. That is, the delineation for the Northwest Power Grid is not changed while the emission factors for the Northwest Power Grid are changed due to the correction on power capacity addition of 20% for the build margin. JCI has confirmed it to be reasonable and correct.

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional)

Based on the actual situation of PRC, only grid power plants are included in the operating margin and build margin emission factor calculation of the project, then Option I is chosen. JCI has confirmed it to be reasonable and correct.

Step 3. Select a method to determine the operating margin (OM)

The simple OM method (option a) is selected, because low-cost/must-run resources constitute less than 50% of total grid generation in average of the five most recent years, and also “Ex ante option” is selected. JCI has confirmed it to be reasonable and correct.

Step 4. Calculate the operating margin emission factor according to the selected method

According to the relevant tool/57/, Option B is used because the conditions for Option A are not available.

The factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and based on the fuel type(s) and total fuel consumption of the project electricity system, but including electricity imports to the grid, which is treated as one power plant.

It is calculated as the generation-weighted average CO₂ emissions per unit net electricity generation (tCO₂/MWh) of all generating power plants serving the system during the three most recent years with reference to the China's Regional Grid Baseline Emission Factors issued by Chinese DNA on 30 December/73/.

As a result, the OM emission factor $EF_{Grid,OM,y}$ is calculated to be 1.1225 tCO₂e/MWh, as shown at page 59 of Annex 3 in the PDD /2/, fully complying with the methodology /56/ and the tool /57/. JCI has confirmed it to be reasonable and correct.

Step 5. Identify the group of power units to be included in the build margin (BM)

According to the relevant tool/57/, Option (b) is used for the sample group of power unit because (a);the information of the five power plants built most recently is not available, and Option 1 is chosen for the terms of vintage of data because it does not require monitoring the emission factor during the crediting period. JCI has confirmed it to be reasonable and correct.

Step 6. Calculate the build margin emission factor

Since for a power unit only data and the fuel types used (coal, oil and gas) is available, Option A2 is chosen.

The factor is the generation-weighted average emission factor of all power units with reference to recent 3 years data of the “China's Regional Grid Baseline Emission Factors” issued by Chinese DNA on 30 December 2008/73/.

As a result, $EF_{grid,BM,y}$ has been correctly worked out to be 0.6199 tCO₂e/MWh complying

with the relevant methodology/56/, and the tool/57/ which are shown at page 62 of Annex 3 in the PDD /2/. JCI has confirmed it to be reasonable and correct.

Step 7. Calculate the combined margin (CM) emissions factor

The weighting of the above operating and build margin emissions factor is 50% in the first crediting period according to the related tool/57/.

JCI has confirmed that CM emission factor is calculated to be 0.8712 tCO₂e/MWh, using the equation in the PDD/2/. The default weight of 50% is applied to both OM and BM emission factors for calculation of CM emission factor for the first crediting period.

JCI has also confirmed that the above calculations can be replicated based on equations in the PDD /2/ and data listed in the Tables in Annex 3 with appropriate data sources.

(c) Fraction of total electricity generated: f_{wcm}

This fraction is 1 because the electricity generated by the project is purely from the waste energy, which has been confirmed by site visit.

(d) Fraction of waste energy by total electricity generated: f_{cap}

After request for registration of the proposed project, JCI has been requested to describe in detail how f_{cap} have been validated following the steps mentioned in ACM0012 v3.2, in particular; (i) why method 1 and 2 was not chosen for calculation of f_{cap} ; (ii) how the value of $Q_{OE,BL}$, sourced from FSR, is conservative given that the methodology requires to estimate the theoretical recoverable energy energy based on manufacturer's specification or technical assessment prepared by qualified/certified external expert. In addition, please provide a spreadsheet on calculation of f_{cap} .

The response of JCI is reported in Issue 4 of V. RESPONSE TO REQUEST FOR REGISTRATION INCOMPLETE of this validation report.

Since there is no historical data available in Method 1, Method 2 was originally selected in the PDD/1/, and then Case-1 in Method 3 is finally adopted to calculate the f_{cap} in the PDD/2/ based on the discussion during the site-visit and CL-20.

For such cases f_{cap} should be the ratio of the maximum theoretical energy recoverable using the project activity waste heat recovery equipment and actual energy recovered under the project activity (using direct measurement). For estimating the theoretical recoverable energy by FSR/3/ is used.

This fraction is 1 in estimating the baseline emission, and the actual value will be monitored within credit period, and JCI has confirmed it to be reasonable.

From above the baseline emission was calculated as follows

$$\begin{aligned} BE_y &= BE_{Elec,y} = f_{cap} * f_{wcm} * \sum_j \sum_i (EG_{i,j,y} * EF_{Elec,i,j,y}) \\ &= 1 * 1 * \sum_j \sum_i (163,800 * 0.8712) \\ &= 142,702 \text{ tCO}_2\text{e/y} \end{aligned}$$

JCI confirms the $EF_{Elec,i,j,y}$ of 0.8712 is correctly calculated through Annex 3 of the PDD/2/ and consistent with “China’s Regional Grid Baseline Emission Factors” issued by Chinese DNA on 30 December 2008. In the PDD for GSC/1/, the old Chinese DNA information

issued on 18 July 2008 is quoted, which is the latest data available at the time of submission of the PDD/1/ to the JCI for validation on 8 December 2008. However, it is revised and corrected on 30 December 2008. That is, the emission factors for the Northwest Power Grid are changed due to the correction on power capacity addition of 20% for the build margin. JCI has confirmed it to be reasonable and correct.

3) Project emissions; PE_y

After request for registration of the proposed project, JCI has been requested to include monitoring parameter $EC PJ,y$ (Additional electricity consumed in year y for project related equipment) in the list of data and parameters to be monitored as required by pg 48 of ACM0012 v3.2 methodology.

The response of JCI is reported in Issue 2 of V. RESPONSE TO REQUEST FOR REGISTRATION INCOMPLETE of this validation report.

The project does not include any of the following emissions.

- (1) combustion of auxiliary fuel to supplement waste gas/heat
- (2) electricity emissions due to consumption of electricity for cleaning of gas before being used for generation of energy or other supplementary electricity consumption
- (3) emissions due to consumption of imported electricity that in the absence of the project activity would have been supplied by captive electricity generated only for Type-2 project activities.

No project emissions are considered according to the methodology/56/.

4) Leakage ; L_y

No leakage is considered according to the methodology/56/.

5) Emission reductions; ER_y

The emission reduction is calculated as follows.

$$\begin{aligned} ER_y &= BE_y - PE_y - L_y \\ &= 142,702 - 0 \\ &= 142,702 \text{ tCO}_2\text{e/y} \end{aligned}$$

JCI has hereby confirmed that:

- (a) All assumptions and data used by the project participants are listed in the PDD/2/, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD/2/;
- (c) All values used in the PDD/2/ are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD/2/.

In conclusion, JCI has validated and concluded that the emission reductions are appropriately worked out complying with the methodology/56/ and the relevant tool/57/, and parameters and data for the calculations are sourced from proper data sources.

6. Additionality of project activity

JCI issued the findings of CAR-5, CAR-6 and CL-13 to CL-18 to clarify the timeline, input values to the investment analysis, etc., and then closed as being resolved for CAR and CLs.

JCI assessed the additionality of the project activity with the following steps as below, complying with VVM/55/ and “Tool for Demonstration and Assessment of Additionality”/58/:

6.1 Prior consideration of CDM

Since the project activity was started on 6 May 2008 as described below, before the date of 02 August 2008 and before the date of publication of the PDD/1/ for GSC, the project participant must demonstrate the prior consideration of the CDM.

1) Timeline of the project

The timeline of major key activity relevant to the prior and serious consideration of CDM are tabulated below, according to the Guideline of CDM prior consideration/60/. And also continuing and real actions to secure CDM status for the proposed project are also tabulated.

As JCI issued the finding of CL-13, the each evidence of the key activity listed in Table VI.1 has been provided.

The main events are explained in the following sections.

Table VI.1. Timeline of major key activity

Date	Key Activity	Evidence
10 May 2007	Meeting on CDM	Minutes of Meeting/6/
16 October 2007	Preliminary Investment Decision as a CDM project	Preliminary decision/7/
21 November 2007	CDM Consultant Agreement” with Shanghai Tepia Environment Protection Co., Ltd. regarding CDM Project Cooperation including PDD Preparation	Consultant agreement/95/
December 2007	FSR prepared by China Machinery International Engineering, Design & Research Institute	FSR/3/
28 December 2007	Meeting of the Board regarding Final Investment Decision as a CDM project based on FSR (Investment Decision)	Minutes of Meeting of the Board/8/
19 February 2008	Application of Project Implementation with FSR to the Hancheng Economic Development Bureau	Application/9/

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March 2008	EIA Report” prepared by China Coal Science Research Institute, Xi’an Branch	EIA Report/4/
14 April 2008	EIA Report approved by Shaanxi Environmental Protection Bureau	EIA Report approval/47/
30 April 2008	Approval of the Project (FSR) by Shaanxi Development and Reform Commission	FSR approval/48/
6 May 2008	Construction Contract with Jiangsu Huaneng Construction Engineering Group Co., Ltd. (Starting date of the project activity)	Construction contract/96/
6 May 2008	Application of construction start to the Hancheng Economic Development Bureau	Construction application/9/
8 May 2008	Purchase Contract of the Boiler with Taiyuan Boiler Group Co., Ltd.	Boiler contract/97/
9 May 2008	Purchase Contract of the Turbine with Qindao Jieneng Steam Turbine Group Co., Ltd.	Turbine contract/98/
13 May 2008	Purchase Contract of the Generator with Shandong Jinan Generator Manufacturer	Generator contract/99/
20 – 31 May 2008	Answers to questionnaire collected from stakeholders	Answers/11/
8 October 2008	ERPA concluded between the Project Owner and Tepia Corporation Japan Co., Ltd.	ERPA/100/
31 October 2008	Application for CDM to NDRC prepared by the Owner	Application form/12/
10 November 2008	Validation Contract between Tepia Corporation Japan Co., Ltd. and JCI	Validation contract/101/
8 December 2008	Submission of PDD for GSC to DOE	Tepia Email
16 December 2008	Start of PDD GSC	UNFCCC Email
18 February 2009	Chinese LoA issued (February 2009 in English)	China LoA/45/
24 June 2009	Japanese LoA issued	Japan LoA/46/
7 July 2009	Commencement of operation	Approval/14/

2) Prior consideration of CDM

The FSR)/3/ prepared in December 2007 by the China Machinery International Engineering, Design & Research Institute conducted a financial analysis that showed financially unattractive. The project participant decided to invest and construct the project activity at the board meeting on 28 December 2007/8/ based on the FSR/3/. The evidence provided to JCI is the minutes of the board meeting/8/ that proposed the implementation of waste gas recovery power generation project with CDM application.

From above timeline JCI has judged that the CDM was seriously considered in the decision to implement the project activity by the project participant. And also JCI has judged that the period of time between the FSR completion and the investment decision was sufficiently short, and so that the decision was made based on the FSR/3/.

Timeline of major key activity relevant to the prior and serious consideration of CDM are tabulated above. All the evidences of events listed have been provided.

3) Project starting date

JCI assesses that the project starting date with following issues.

The project starting date was 6 May 2008 when the Construction Contract was concluded/96/ which is corrected from 8 May 2008 when the major equipment was concluded in the PDD/1/ through the CAR-5.

According to the Glossary of CDM terms/65/ the starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. Furthermore it shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity.

JCI has judged that above project starting date is considered to match with the Glossary of CDM terms/65/.

4) Activities/events to achieve CDM

Key activities and events regarding continuing and real actions taken by the project participant to secure CDM status are tabulated in the above Table VI.1.

JCI has confirmed that all key activities listed in the Table VI.1 are evidenced with documents provided by the project participants.

And also JCI has confirmed that there is about 0.5 years of a gap from CDM decision to start of PDD GSC. And then JCI concludes that continuing and real actions were taken to secure CDM status for the project activity.

In conclusion, JCI has validated and concluded that the above timelines explains the actions/events taken by the project participants are appropriate in achieving CDM.

6.2 Identification of alternative

As described in section 5.3 above, Combination W2/P6 and Combination W4/P1 are remained as the baseline scenarios and Combination W2/P6 is the most economically attractive by the evaluation of comparison of IRR with remaining alternative Scenario W4/P1, which demonstrates that the proposed project activity is not the only alternative amongst the ones considered by the project participants.

6.3 Investment analysis

JCI has validated the PDD/2/ identified that the investment analysis for the Combination W4/P1 is conducted in accordance with the methodology/56/ and the additional tool/58/ appropriately.

JCI has confirmed that the input values in the FSR and PDD are consistent with Guidelines on the Assessment of Investment Analysis/59/.

(1) Benchmark Analysis

Benchmark analysis is applied and the processes are validated with below steps:

1) Application of benchmark analysis

The PDD /2/ selected the benchmark analysis method for investment analysis of the project activity with the following justifications:

a) Tool for the demonstration and assessment of additionality/58/ provides 3 Options for the methods of investment analysis. Options I and II, however, are not applicable, since the project activity aims to obtain revenue from electricity sale in addition to revenue from CERs, and the specified baseline scenario is not an investment project. Only Option III, benchmark analysis, therefore can be applied to the project activity.

b) The PDD selects 8 % as a benchmark of Project IRR after tax for investment analysis. This value is sourced from “Interim Measures for Economical Assessment of Electrical Technological Transformation Project” which was published by the State Power Corporation of PRC in March 2003/74/. This benchmark is used in many power generation projects in PRC and smaller than the coke production sector benchmark of 12%. The proposed project is to utilize the waste gas from the coke production facilities for power generation exported to the Northwest Power Grid. That is, the actual purchased electricity from the grid in 2008 before the implementation of the proposed project is only 28,130 MWh/year/17/ is smaller than the power generation by the proposed project of 180,000 MWh/year.

Therefore, JCI confirms that the applied benchmark of 8 % is suitable for the financial indicator presented in accordance with Information Note, Annex 59 of the 51th CDM-EB/63/.

c) The project owner established the Shaanxi Haiyan Coke Making (Group) Co., Ltd. in December 2001 and started the coke production with 1.0 million ton of coke production capacity with the FIRR after tax of 31.13%, which JCI confirmed from the FSR for the 1.0 million coke production of Shaanxi Haiyan Coke Making (Group) Co., Ltd. prepared by Taizi Chemical Industry Group Design Institute in March 2003/24/. Consequently, JCI has determined that it is reasonable to assume that no investment would be implemented at a rate of return lower than the benchmark of 8 % judging from the above investment circumstances.

d) In accordance with the paragraph 11 of “Guidelines on the Assessment of Investment Analysis”/59/, JCI has confirmed the loan conditions of the proposed project. As for the proposed project, the equity ratio to the static investment is 100 %. JCI has confirmed that the Shaanxi Haiyan Coke Making (Group) Co., Ltd. can invest the proposed project by their own equity judging from the financial reports/25/.

The IRR was calculated to be 5.2 % without CERs revenue, and 14.0 % with CERs revenue. It is, therefore, concluded that the project activity is not financially attractive, of which processes are validated with below steps.

JCI has validated and concluded that the selection of benchmark analysis for investment analysis is appropriate and fully complies with the relevant tool/59/ and VVM/55/.

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(2) Consistency between PDD and FSR (Conformance with para. 113 a) and b) of VVM/55/)

As stated in 6.1 Prior consideration of CDM, JCI has judged that the period of time between the FSR/3/ completion and the investment decision/8/ is sufficiently short, and so that the investment decision was made based on the FSR/3/.

JCI has reviews the validity of the input values for the investment decision by comparing the input values between the FSR /3/ and the PDD /2/.

The following Table IV.2 shows the above comparison of the input values, considering the paragraph 113 a) and b) of VVM/55/.

The detailed validations for the static investment, O&M cost and delivered electricity are described in the following sections 1), 2) and 3) in (3).

As for the IRR, it is discussed in the following section (4).

Table VI.2. Comparison of input value of investment analysis

Parameters	Unit	PDD/1/	PDD/2/	FSR/3/
Installed capacity	MW	24	24	24
Operation hours annually	Hours/y	7,500	7,500	7,500
Static investment	x10 ⁶ Yuan	98.4(*1)	98.4	98.4
Current Capital	x10 ⁶ Yuan	7.65	7.65	7.65
Equity ratio for static invest	%			100%
O&M cost	x10 ⁶ Yuan	29.89	29.89	29.89
Electricity Generated annually	GWh/y			180.0
Delivered electricity	GWh/y	163.8	163.8	163.8
Electricity tariff (including Tax)	Yuan/MW h	300	300	285(*2)
Income Tax	%	25	25	25
Value Added Tax rate	%	17	17	17
City tax plus education tax	%	10	10	10
Project life including on year for construction	years	17	16	16
Time span for IRR calculation	years	17	17	16(*3)

(*1): Although the total investment of 98.4 million Yuan was described in the PDD for GSC/1/, it is corrected to the static investment because the static investment of 98.4 million Yuan is used IRR calculation sheet/5/ and FSR/3/.

(*2): Details are explained at section “(3) 3) Electricity tariff” below.

(*3): In the FSR/3/ the time span for IRR calculation is 16 years including the construction period of 1.0 year. However, the PDDs/1//2/ adopted 1.5 years of the construction period, therefore, the time span results in 17 years in the PDDs/1//2/. JCI conducted the trial calculation for the IRR after tax utilizing 16 years to confirm the effect of the time span, which clarified the IRR rate after tax was changed from 5.2 % to 5.5 %, which is still less than the benchmark of 8%.

After request for registration of the proposed project, JCI has been requested to describe in detail how the parameters used in any financial calculations have been validated in line with

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para 114(a) of VVM v1.2, in particular; (i) depreciation period; (ii) residual value; (iii) tax rates (income tax, VAT and additional education and construction tax).

The response of JCI is reported in Issue 1 of V. RESPONSE TO REQUEST FOR REGISTRATION INCOMPLETE of this validation report.

(3) Cross check (Conformance with para. 113 c) of VVM/55/)

The static investment, the O&M cost, the electricity tariff and the delivered electricity used in the PDD/2/ are validated including the cross-check with the following criteria:

Region: PRC

Industry: Coke making industry

Technology: Waste heat/gas recovery and power generation except CDQ projects which are completely different technology from the proposed project.

Project: Registered CDM projects

Capacity: -50% (12MW) to +50% (36MW) turbine capacity to the proposed project (24MW)

All of the registered projects are derived from the website of UNFCCC CDM regarding the waste heat/gas recovery and power generation in the coke making industry including the iron and steel industry, which includes only 1 project both in Shaanxi Province and in the Northwest Power Grid where the proposed project is located, and total 8 projects in the PRC up to 8 January 2011. The only 1 project in the Northwest Power Grid is too limited for the cross-check reference. Therefore, 8 projects in the PRC are selected as the cross-check references.

Table IV.3 shows the summary of cross check of the proposed project and the 8 registered projects in the PRC including the average, the maximum and the minimum values for the investment per turbine capacity, the O&M cost per turbine capacity, the worker number per turbine capacity, the full load operation hours, internal consumption rate and the tariff.

Table VI.3. Summary of 8 Waste Heat/Gas Recovery Projects in Coke Production Projects in PRC as of 8 January 2011

		Investment / Turbine capacity	O&M cost /Turbine capacity	Worker No./Turbine capacity	Full load operation hours	Internal consumption rate	Tariff without VAT
		Yuan/kW	Yuan/kW	Persons/MW	hrs/y	%	Yuan/ MWh
Project		4,100	1,245	4.8	7,500	9.0	256
PRC 8 projects	Max.	6,344	1,508	8.0	6,500	15.0	356
	Min.	4,333	420	2.5	3,780	3.6	200
	Ave.	5,362	816	4.9	5,611	8.6	288
Ref. Nos.	3500	6,344	736	3.5	6,000	15.0	269
	2818	5,664	916	4.6	6,000	8.0	327
	2515	5,744	536	4.2	6,000	8.3	200
	1721	5,393	1,032	8.0	6,000	8.0	349
	1717	4,333	420	6.0	6,000	6.8	200
	1599	4,667	1,508	6.0	6,500	9.8	317
	1390		567	2.5	3,780	9.0	356
	1155			4.2	4,609	3.6	

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JCI has received 17 contracts such as equipment purchase and construction /96/-/99//102/-/113/ related to the proposed project and their total considerations are 104.3 million Yuan [106%] more than the budget (static investment) of 98,4 million Yuan [100%].

		Date	Contractor	Considerations (Million Yuan)
/96/	Construction	6 May 2007	Jiangsu Huaneng Construction Engineering	71.5 (68.5%)
/97/	Boilers	8 May 2008	Taiyuan Boiler Group	6.48 (6.2%)
/98/	Turbines	9 May 2008	Qingdao Jieneng Turbine	6.4 (6.1%)
/99/	Generators	13 May 2008	Shandong Jinan Generator Manufacturer	3.6 (3.5%)
/102/	Water treatment equipment	5 July 2008	Yiyu Environmental Water Treatment Equipment Co., Ltd	4.95 (4.7%)
/103/	Cabinets	8 June 2008	XJ Electric Co., Ltd.	3.0 (2.9%)
/104/	Power Cable	14 Aug 2008	Jiangsu Shangshang Cable	1.978 (1.9%)
/105/	Chemical water treatment	5 July 2008	Yixing City Global Water Treatment	1.95 (1.9%)
/106/	Valves	26 July 2008	Shanghai Mingzhu Valve	1.49 (1.4%)
/107/	Automatic Control Meters	28 July 2008	Chongqing Sichuan Instrument	0.845 (0.8%)
/108/	Relay and Protection Equipments	30 May 2008	XJ Electric Co., Ltd.	0.72 (0.7%)
/109//110//111//112//113/				1.43 (1.4%)
Total				104.343 (100%) [106%]
Budget (static investment)				98.4 [100%]

Comparison with 8 registered CDM projects in the PRC

The investment index of the proposed project such as the investment per installed turbine capacity (4,100 Yuan/kW, 100%) is within the range (Max.: 6,344 Yuan/kW, Min.: 4,333 Yuan/kW) and lower than the average of the 8 registered projects (5,362 Yuan/kW, 131%), which is conservative from the aspect of IRR calculation.

JCI has validated and concluded the static investment 98,400 thousand Yuan used in the PDD/2/ is appropriate and conservative.

2)O&M cost

The O&M cost in the PDD/2/ is 29,890 thousand Yuan and compositions are shown at the below table, of which details are described at (a) to (f) below.

Compositions	x10 ³ Yuan/y	%	Remarks
(a) Fuel cost	23,160	77.5	165 million Nm ³ /y x 0.14 Yuan/Nm ³
(b) Wage and welfare	1,730	5.8	115 persons x 15,000 Yuan/person/yr

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(c) Repair cost	1,480	5.0	Static investment x 1.5%
(d) Material cost	540	1.8	3 Yuan/MWh x 180,000 MWh
(e) Management cost	280	0.9	2,435 Yuan/person/year x 115 persons
(f) Other cost	2,700	9.0	15 Yuan/KWh x 180,000 MWh
Total	29,890	100.0	

(a) Fuel cost

The estimation of the fuel cost of the waste gas based on the coal cost for the thermal power generation in Shaanxi Province is 0.221 – 0.223 Yuan/Nm³ as shown in the below table, however, the PDD/2/ adopts 0.14 Yuan/Nm³ of the waste gas cost which is conservative from the aspect of IRR calculation.

	Units	Evidence
Average standard coal (7,000kcal/kg) consumption per 1kwh of net thermal power generation in 2006 (Shaanxi province)	366g/kWh	Northwest Regional Coal-fired Power Plant/32/ (http://xbj.serc.gov.cn/UploadFiles/200812584926663.doc .)
Market price of coal (5,000 kcal/kg) at Qinhuangdao Port	435 – 440 Yuan/t at 5,000 kcal/kg (=609 – 616 Yuan/t at 7,000 kcal/kg)	Coal price analysis in September 2007/33/
Coal cost for thermal power generation	0.223 – 0.225 Yuan/kWh	(=366g/kWh x (609 - 616 Yuan/t))
Annual COG amount in the Project	165 million Nm ³ /y	FSR/3/, PDD/2/
Annual net power generation in the Project	163.8 million kWh/y	FSR/3/, PDD/2/
COG consumption per 1kWh in the Project	1.01 Nm ³ /kWh	(=165/163.8)
Evaluated fuel cost of the Project	0.221 – 0.223 Yuan/Nm ³	(=(0.223 – 0.225)/1.01)

Furthermore, the following information is available from the websites. The Liuzhou Iron and Steel Co., Ltd. in Liuzhou City of Guangxi Zhuang Autonomous Region has concluded an agreement in November 2008 to supply the COG at a rate of 1.35 Yuan/Nm³ to the pipeline gas supplying company for household use, which is authorized by the City Price Bureau/34/. The Jigang Group Co., Ltd. in Jinan City of Shandong Province has decided to raise the COG price supplying to the Jinan Hong Kong and China Gas Co., Ltd. from 0.60 Yuan/Nm³ to 0.85 Yuan/Nm³ from May 2007/36/.

Moreover, the below table shows the COG costs estimated in the registered projects in the PRC like the proposed project. The costs vary project by project, however, the waste gas cost 0.14 Yuan/Nm³ of the proposed project is thought to be reasonable and appropriate.

Reference No.	COG
1695	0.52 Yuan/Nm ³
1658	0.4224 Yuan/Nm ³

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1657	0.4 224Yuan/Nm ³
1656	0.4224 Yuan/Nm ³
1609	0.38 Yuan/Nm ³
1608	0.38 Yuan/Nm ³
Project	0.14 Yuan/Nm³
1416	0.075 Yuan/Nm ³
1721	0.075 Yuan/Nm ³
1599	0.0053 Yuan/Nm ³
1671	0.000025 Yuan/Nm ³
1670	0.000025 Yuan/Nm ³

The gas volume of 165 million Nm³/y is derived from 22,000 Nm³/hr and 7,500 hours which are consistent with those in the PDD/2/ and FSR/3/.

JCI has validated and concluded the fuel cost is appropriate and conservative.

(b) Wage and welfare

	Description in FSR/3/ or IRR/5/	Reference data, source or evidence
Number of workers	115 persons	FSR/3/, Training program/21/
Average wage and welfare	15,000 Yuan/person/yr	Shaanxi statistics/38/
Wage and welfare	1,730 x 10 ³ Yuan/year	(= 115 x 15,000)

The average wage and welfare used in IRR calculation/5/ is 15,000 Yuan/person/year which is less than 16,503 Yuan/person/year derived from “Average wage and welfare in Shaanxi Province in 2006”/38/. The index of worker number divided by turbine capacity of the proposed project is 4.8 persons/MW which is within the range of 8 registered CDM projects (2.5 – 8.0 persons/MW) and almost similar to the average (4.9 persons/MW) as shown in Table VI.3.

JCI has validated and concluded the wage and welfare is appropriate and conservative.

(c) Repair cost

	Description in FSR/3/ or IRR/5/	Reference data, source or evidence
Repair cost rate	1.5 % to the static invest.	Interim measures/74/
Static investment	98,400 x 10 ³ Yuan	PDD/2/, FSR/3/, IRR/5/
Repair cost	1,480 x 10 ³ Yuan/year	(= 1.5 % x 98,400)

The repair cost rate used in IRR calculation/5/ is 1.5 % to the static investment of 98,400 thousand Yuan, which is derived from “Interim Measures for Economical Assessment of Electrical Technological Transformation Project”/74/.

JCI has validated and concluded the repair cost is appropriate.

(d) Material cost

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	Description in FSR/3/ or IRR/5/	Reference data, source or evidence
Material cost rate	3 Yuan/MWh	Thermo power project cost quota design reference index/37/
Installed turbine capacity	180,000 MWh	PDD/2/, FSR/3/, IRR/5/
Material cost	5,400 x 10 ³ Yuan/year	(= 3 x 180,000)

The material cost rate used in IRR calculation is 3 Yuan/MWh, which is less than 15 Yuan/MWh derived from “Thermo power project cost quota design reference index”/37/. JCI has validated and concluded the material cost is appropriate and conservative.

(e) Management cost

	Description in FSR/3/ or IRR/5/	Reference data, source or evidence
Management cost of PO	2,435 Yuan/person/year	Audit report for 2006/39/
Number of workers	115 persons	FSR/3/, Training program/21/
Management cost	280 x 10 ³ Yuan/year	(= 2,435 x 115)

The management cost used in IRR calculation/5/ is 2,435 Yuan/person/year which is derived from the management cost divided by the total worker number described in the “Audit report of Shaanxi Haiyan Coke Making (Group) Co., Ltd. in 2006”/39/.

JCI has validated and concluded the management cost is appropriate.

(f) Other cost

The other cost means the O&M cost excluding the fuel cost, the wage and welfare, the repair cost, the material cost and the management cost mentioned above.

	Description in FSR/3/ or IRR/5/	Reference data, source or evidence
Other cost rate	15 Yuan/KWh	Thermo power project cost quota design reference index/37/
Annual generated electricity	180,000 MWh	PDD/2/, FSR/3/, IRR/5/
Other cost	2,700 x 10 ³ Yuan/year	(= 15 x 180,000)

The other cost rate used in IRR calculation/5/ is 15Yuan/kWh which is less than 18 Yuan/kWh stipulated in the “Thermo power project cost quota design reference index”/37/. JCI has validated and concluded the other cost is appropriate and conservative.

Comparison of the O&M cost with 8 registered CDM projects in the PRC

The O&M cost per installed turbine capacity of the proposed project is 1,245 Yuan/kW (100%), which is within the range (Max.: 1,508 Yuan/kW, Min.: 420 Yuan/kW) and higher than the average of 816 Yuan/kW (66%). One of the reasons would be that the proposed

project is recent one influenced by the current inflation in comparison with other registered CDM projects because the O&M cost is composed of inflation sensitive items such as wage and related welfare/funds/insurance, repair cost, material cost and management cost.

JCI has validated and concluded that the O&M cost used in the PDD/2/ is appropriate because each component is evidenced with publicly available evidences and the O&M cost is within the range (Max.: 1,508 Yuan/kW, Min.: 420 Yuan/kW) of the 8 registered CDM project in the PRC.

3) Electricity tariff

Although the electricity tariff of the proposed project including VAT is 285 Yuan/MWh in the FSR/3/, it is changed to 300 Yuan/MWh including VAT in the PDD/1//2/ because of the Notice of adjusted electricity price of Shaanxi Province issued by the Price Bureau of Shaanxi Province on 11 July 2006/40/, which JCI has confirmed and evaluated appropriate and conservative.

Comparison with 8 registered CDM projects in the PRC

The electric price of the proposed project excluding VAT is 256 Yuan/MWh (100%), which is within the range (Max.: 356 Yuan/MWh, Min.: 200 Yuan/MWh) and lower than the average 288 Yuan/MWh (113%) of the 8 registered projects as shown in the Table IV.3. As explained at section 6.3.1) above, the proposed project produces the electricity to the Grid for sale while Reference Nos. 2818 and 1390 are captive power generation projects and 1599 is a project including in-house use of 30%. If such tariffs are excluded, the average of the tariff becomes 255 Yuan/MWh which is similar to that of the proposed project, 256 Yuan/MWh.

JCI has validated and concluded the 300 Yuan/MWh including VAT and 256 Yuan/MWh excluding VAT in the PDD/2/ is appropriate.

4)Delivered electricity

The method to calculate the delivered electricity (MWh/y) in the PDD/2/ is as follows:

$$\begin{aligned} \text{Electricity generated annually (MWh/y)} &= \text{Installed turbine capacity (24.0MW)} \\ &\quad \times \text{Operation hours (7,500hrs/y)} = 180,000 \text{ (MWh/y)} \\ \text{Delivered electricity (MWh/y)} &= \text{Electricity generated annually (180,000MWh/y)} \\ &\quad \times (1 - \text{Internal consumption: 9\%}) = 163,800 \text{ (MWh/y)} \end{aligned}$$

The above figures correspond with those in the FSR/3/, which are compiled by the China Machinery International Engineering, Design & Research Institute qualified by the Ministry of Construction of the PRC.

JCI issued the CL-5 to clarify the turbine capacity, the annual operation hours and the internal consumption, and then closed as being resolved. The installed turbine capacity 24MW is derived from the waste gas enthalpy as described in the PDD/2/ and the CL-5, which JCI has validated and concluded as appropriate. The operation hours of 7,500 hours/y are derived from the unexpected maintenance 420 hours/y and the scheduled maintenance 840 hours/y consisting of the overhaul 30 days and the regular yearly maintenance 15 days in every three years and the twice regular yearly maintenance 15 days in other two years. The total maintenance hours in a year is 1,260 hours (=8,760 – 7,500 hours). The internal consumption of 9 % is derived from the installed capacity of auxiliary facilities such as

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pumps and fans and also the Protection on Electrical System for Plants/28/. The cross-check for such two parameters is conducted in comparison with 8 registered CDM projects in the PRC as below.

Comparison with 8 registered CDM projects in the PRC

As mentioned above, the delivered electricity is determined by three factors such as the installed turbine capacity, the operation hours and the internal consumption. Since the installed capacity is already determined to be 24 MW, the operation hours and the internal consumption are subjected to validation. Therefore, the operation hours and the internal consumption are cross-checked as shown at Table VI.3.

The operation hours of the proposed project is 7,500 hrs/y (100%) which is longer than the average 5,611 hrs/y (75%) of the 8 registered CDM projects, which is conservative from the aspect of IRR calculation.

The internal consumption rate of the proposed project is 9.0 % which is within the range of the 8 registered CDM projects from 3.6 % to 15.0 % and almost equal to the average of 8.6%.

Summarizing the above two factors which determine the delivered electricity, the proposed project is more conservative than the average of the 8 projects in the PRC.

As a summary of the above arguments, the parameters for the IRR calculation are validated appropriate and reasonable complying with the VVM/55/ and Guidelines/59/.

Through validation of all the above IRR calculation process, JCI has concluded that the IRR of the project activity is correctly calculated based on appropriate and reasonable input values and as the IRR is below the benchmark, the project activity is not considered financially attractive.

(4) Sensitivity analysis

Sensitivity analysis has been validated with the following two steps: 1) assessment of (+)/(-)10% variation analysis and 2) assessment of likelihood of variations to reach the benchmark IRR complying.

1) (+)/(-)10% variation analysis is conducted using the following four parameters.

- (a) Static investment
- (b) Delivered electricity
- (c) O&M cost
- (d) Tariff

All the four parameters above are more than 20% of either total project costs or the total revenues in accordance with paragraph 17 of Guidelines on the Assessment of Investment Analysis/59/.

The result shows that within (+) / (-) 10% variation ranges, the IRRs (after tax) for the static investment and the O&M cost do not exceed the benchmark 8%: at (-) 10% of static investment and O&M cost, the IRRs calculated are 6.3% and 7.9% respectively, while the IRRs for the delivered electricity and the tariff exceed the benchmark 8%: at (+) 10% of delivered electricity and tariff, the IRRs calculated are 8.9 %.

Table VI.4.A Sensitivity Analysis

Varying range	(a) Static investment	(b) O&M cost	(c) Delivered Electricity	(d) Tariff
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+10.0%	4.3%	2.3%	8.9%	8.9%
-10.0%	6.3%	7.9%	1.0%	1.0%

2) Assessment of likelihood of variation to reach the benchmark IRR

JCI has conducted to check the likelihood of the four parameters including tariff at the time when the IRR (after tax) is equal to the benchmark, results are shown in Table IV.4.

Table VI.4.B Parameter changes when IRR (after tax) is equal to benchmark

Parameter	(a) Static investment	(b) O&M cost	(c) Delivered Electricity	(d) Tariff
Critical Variation at benchmark 8 %	-22.4%	-10.3%	+7.4%	+7.4%

a) Static investment

As already argued above, the actual static investment 104.3 million Yuan is more than the budget and the investment index of the proposed project such as the investment per installed turbine capacity 4,100 Yuan/kW is lower than the average of the 8 registered projects 5,362 Yuan/kW.

It is unlikely that the static investment would decrease by 22.4% because the recent price inflation such as the investment in fixed assets, raw material, fuel and power and the wage is much rapid as shown in Table IV.5 below.

Table IV.5 Price Inflation in PRC/42/

(Preceding Year=100)

	2004	2005	2006	2007	2008	Average
Investment in fixed assets	105.6	101.6	101.5	103.9	108.9	104.3
Raw material, fuel and power	111.4	108.3	106.0	104.4	110.5	108.1
Wage	114.1	114.6	114.4	118.7	117.2	115.8

b) Annual O&M cost

It is unlikely that the O&M cost would decrease by more than 10.3% throughout 15 years of the operation because evidences for each composition are validated as appropriate and conservative as explained above.

In addition, the O&M cost mainly composes of inflation sensitive items and the recent price inflation such as the raw material, fuel and power and the wage is much rapid as shown in Table IV.5 above.

c) Delivered Electricity

The delivered electricity is determined by the three factors: 1) the installed capacity, 2) the operation hours and 3) the internal consumption. Since the installed capacity was already determined to be 24 MW, the operation hours and the internal consumption are subjected to validation of the likelihood.

The increase of the operation hours from 7,500 hours by 7.4% would not continuously happen throughout 15 years of the operation. As already explained in the above section, the operation hours (7,500 hours) of the proposed project are derived from the unexpected maintenance 420 hours/y and the scheduled maintenance 840 hours/y. That is, even if the unexpected maintenance is not required throughout the whole year, the

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operation hours become 7,920 hours which is longer by 420 hours and 5.6%, which is less than 7.4 %. Furthermore, the actual (calculated) operation hours for the registered CDM projects, all of which are cross-check references above, are investigated from each monitoring report in the website of UNFCCC CDM, which are shown at Table IV.6.

Table IV.6 Actual (Calculated) Operation Hours for Registered CDM Projects

	Registered PDD (Design value)				Monitoring Report		Calculated operation hours (Hrs/y)
	Installed capacity (MW)	Operation hours (Hrs/y)	Delivered electricity (GWh/y)	Internal consumption rate (%)	Period of monitoring	Delivered electricity (GWh)	
	A			B		C	
1721	12 (6 in MR)	6,000	66.24	8.0	21/04/2009 – 25/11/2010	67.657 (584 days)	7,660
1599	15	6,500	87.9	9.8	22/07/2009 – 31/08/2010	97.078 (406 days)	6,450
1390	20	3,780	68.796	9.0	17/02/2008 – 24/08/2008	34.879 (190 days)	3,682
					25/08/2008 – 24/08/2009	66.364 (365 days)	3,646
					25/08/2009 – 24/06/2010	64.174 (304 days)	4,234
1155	12	4,609	53.3	3.6	01/12/2007 – 31/08/2008	57.580 (275 days)	6,607
					01/09/2008 – 31/10/2009	49.287 (365 days)	4,261

Table IV.6 shows that all the calculated operation hours are less than 7,500 hours except Reference No. 1721 of 7,660 hours which has following special aspects as described in the monitoring report as follows:

“Only one of the two initially planned lines has been completed. (Only 6 MW)

Since commissioning, this line has been working according to the expectations without any shut-down period (including overhaul time and downtimes of equipment). Planned maintenance and reparations took place without major problems. However, due to the delay in construction of the second line, the first generator had to temporarily absorb more waste gas than predicted, which led it to over performance compared to the initial design. Consequently the load factor during the first monitoring period was 91%.”

Therefore, the operation hours of 7,500 hours would be the maximum level considering Table IV.6.

The increase of the internal consumption from 9.0 % by equivalent to 7.4% would be unlikely because the internal consumption is derived from the installed capacity of auxiliary facilities such as pumps and fans and it is difficult to decrease it from 9.0 % to a level of 2.3 % (= 100% - (100%-9%) x 1.074).

In summary, JCI has validated and concluded that it is unlikely and unrealistic that the delivered electricity to the grid increases by 7.4 %.

d) Tariff

As already explained in the above section, the tariff is determined based on the Notice of adjusted electricity price of Shaanxi Province issued by the Price Bureau of Shaanxi

Province on 11 July 2006/40/, which JCI has confirmed and evaluated appropriate and conservative.

The tariffs in PRC have been regulated by the government at lower levels to minimize its negative impact on the development of national and local economy.

In addition, it is also unlikely that only the tariff increases by over 7.4% leaving other cost parameters behind and gives positive financial impacts on the financial position. When the tariff increases, other commodity-price-sensitive costs such as the O&M cost would increase prior to increase of the tariff. This means that even if the tariff increases, its positive financial impacts would be limited being off-set to some extent by the cost increase of other parameters.

In summary, JCI has concluded that it is unlikely and unrealistic that the tariff increase by 7.4%.

As the summary of the sensitivity analysis, JCI has validated that the above arguments clearly demonstrated that it is unreality that the IRR may exceed the benchmark within reasonable variations of financial parameters used in the analysis.

JCI, therefore, has concluded that the result of the above investment analysis with use of the benchmark analysis is robust and then the project activity is financially unattractive.

6.4 Barrier analysis

The above investment analysis concludes that the proposed project activity is unlikely financially attractive. Therefore, the barrier analysis has been skipped according to “Tool for the demonstration and assessment of additionality (Version 5.2)” /58/.

6.5 Common practice analysis

Common practice analysis has been validated with below three steps:

1. Criteria for identification
2. Identification of similar activities
3. Analysis of identified similar activities.

1. Criteria for identification

For identification of similar activities, the additionality tool/58/ requires considering criteria:

- 1) Location
- 2) Technology
- 3) Capacity

To comply with these requirements, the PDD/2/ applied the above criteria for identification of similar activities:

- 1) Located in Shaanxi Province

In China, project investment circumstances differ province by province. Each province has own policy and the standard within the province. And general conditions for investment differ province by province, as each province has their own policy on the project investments. Therefore application of the criteria, located in Shaanxi Province is reasonable and appropriate.

2) Technology of coke making lines

Coke making lines are selected as similar technology as the proposed project.

3) Capacity of waste gas/heat recovery and power generation

The capacity of ≤ 36 MW (≤ 150 % of proposed project 24 MW) is selected.

JCI has judged that the criteria above have been specified appropriately with conformance with the relevant tool/58/.

2. Identification of similar activities

Five projects in Shaanxi Province are listed up in Tables B.12 of the PDD/2/ based on the survey of the Shaanxi Industrial Technology Research Institute/43/, which JCI has received and confirmed.

As the waste gas/heat recovery from the coke making lines for the power generation is one of the recommendable investment projects as stipulated in the “Guidance Catalogue for Industrial Structure Adjustment” issued on 2 December 2005 by the NDRC/79/, JCI has surveyed to identify the similar projects through the websites and local experts such as the Shaanxi Coke Chemical Association, Shaanxi Energy Conservation Association, Shaanxi/local DRCs, coke making companies in Shaanxi Province. However JCI has not found out similar projects as publicly available information.

3. Analysis of identified similar activities

Three projects among the five projects surveyed by the institute are emitting the waste gas to the atmosphere, which is the same as the baseline of the proposed project. Another one project applied the CDM projects generating electricity including waste gas from coke production, which JCI has confirmed as an under-validation project through the website of UNFCCC CDM. The last project is enjoying the captive power generation with capacity of 3 MW without CDM, of which main purpose is to provide the electricity for the prime business to ensure the stable operation while the proposed project is to deliver the electricity to the grid for sale.

Accordingly JCI has concluded the above common practice analysis demonstrates that the proposed project is not common practice.

6.6 Conclusion of assessment of additionality

JCI has concluded that the PDD/2/ explains sufficiently and demonstrates clearly that the proposed project is additional and would not be implemented without CDM revenue as followings.

- Serious consideration of CDM prior to the project decision has been taken by the project participant.
- Appropriate actions have been taken and events have been held by the project participant to secure CDM status
- Investment and sensitivity analyses clearly have shown the project activity is not financially viable without CDM revenue.

7. Monitoring plan

JCI has assessed the monitoring plan through the document review, the issues of findings of CL-21 and CL-25 to clarify the accuracy, the positions, the calibration procedure, how to monitor the electricity, etc., and the review of information from similar projects and/or technologies, and then closed as being resolved.

7.1 Compliance with the requirements of the methodology

JCI has confirmed that the monitoring plan of the project is comply with the requirements of the Monitoring Methodology/56/ and feasible to implement within the project design.

7.2 The steps for monitoring arrangements

After request for registration of the proposed project, JCI has been requested to include monitoring parameter $EC_{PJ,y}$ (Additional electricity consumed in year y for project related equipment) in the list of data and parameters to be monitored as required by pg 48 of ACM0012 v3.2 methodology and to indicate how the net electricity $EG_{i,j,y}$ delivered to the grid will be cross checked and verified as required by pg 40 of ACM0012 v3.2 methodology.

The response of JCI is reported in Issues 2 and 3 of V. RESPONSE TO REQUEST FOR REGISTRATION INCOMPLETE of this validation report.

The implementation plan of monitoring of four parameters, ($EG_{i,j,y}$, $Q_{OE,y}$, $EG_{gen,y}$, $EC_{PJ,y}$), described in the PDD/2/ has been validated as follows:

1) Electricity meter for monitoring of the net electricity supplied to the grid:

As described in the PDD/2/, in order to monitor the electricity supplied to the grid by the project, the bidirectional electricity meters with accuracy of 0.2S are installed at the substations (Xiayukou substation and Zhubei substation) to measure both export and import electricity of the project activity. This arrangement is considered sufficient to monitor the planned parameters of $EG_{i,j,y}$ and $Q_{OE,y}$.

Furthermore, the electricity generated $EG_{gen,y}$ with accuracy of 0.2S and the electricity consumed by the project $EC_{PJ,y}$ with accuracy of 0.5S are monitored for the cross check of $EG_{i,j,y}$. And also the sales receipts are used for the verification. Moreover, $fcap$ is calculated based on the above $Q_{OE,y}$ and the $Q_{OE,BL}$ listed at section B.6.2.

JCI has considered that this arrangement satisfies the requirement of the methodology/56/.

2) Organization:

The project owner plans to set up an operational and management scheme to cover entire processes of the monitoring as shown in Fig.B.3 in the PDD/2/.

JCI has confirmed the owner's resolution to the operational and management scheme.

3) Manual and training:

The project owner has prepared the CDM monitoring manual/22/ necessary to implement the monitoring task including calibration and maintenance of the equipment and training of the team.

7.3 JCI's opinion of the project participants ability:

JCI has validated and concluded that the monitoring plan in the PDD/2/ is compliant with the applied methodology/56/ and is feasible within the project design, and that the project participant is able to implement the monitoring plan.

As a summary of the above arguments, JCI has validated and concluded that:

- a) The above monitoring plan is compliant with the relevant methodology/56/ and tool/57/;
- b) The monitoring arrangements described in the monitoring plan are feasible within the project design; and
- c) The project participants have enough ability to implement the monitoring plan.

8. Sustainable development

JCI has confirmed that the LoA issued by China DNA of host party /45/ in which China confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.

The PDD/2/ states the following six points contribute the China's sustainable development by the project.

- 1) Promote the integrated utilization of waste heat resource and reduce the waste of energy resources.
- 2) Increase the supply of power and relieve the local shortage of power partly.
- 3) Displace a part of electricity of NWPG and reduce the local environmental pollution
- 4) Reduce the heat pollution caused by the direct emission of high temperature flue gas.
- 5) Create 115 employment opportunities at the start of operation.
- 6) Support Chinese Western Development Program and contribute to poverty alleviation and anti-poverty.

JCI has validated and concluded that these items are appropriate for contribution of sustainable development of the host Party.

9. Local stakeholder consultation

JCI has assessed the local stakeholder consultation through the document review, the issues of findings of CL-28 to clarify the pre-announcement to the stakeholders, the stakeholder meeting, etc., and then closed as being resolved for the CL.

The outline of the proposed project was pre-announced to the stakeholders and the project owner distributed questionnaires to stakeholders in April 2007 to know the attitude about this project of the related stakeholder and to collect opinions. 45 questionnaire were delivered and 42 were returned which were summarized in the PDD/2/.

In summary, almost of the stakeholders have a supportive attitude and think the project has the positive impact on the local quality of the environment, the local economic development, and the local employment opportunity.

The answered questionnaires from stakeholders were provided with JCI during on-site assessment. And also JCI has confirmed the opinions of residents by the interview with 4 stakeholders/132/.

Based on the above, JCI has validated and concluded that the project activity is supported by local stakeholders, and gives no adverse impacts on local environment, and contributes to the development of local economy and society.

10. Environmental impacts

An Environmental Impact Assessment (EIA) report/4/ was prepared by China Coal Science Research Institute, Xi'an Branch in March 2008 to ensure that the proposed project complies with relevant national, regional and local regulations, and then approved by Shaanxi Environmental Protection Bureau on 14 April 2008/47/.

The EIA report /4/ refers to anticipated environmental impacts by the project activity with suggestions of mitigation measures against pollution of air quality, noise, water quality and solid waste. No significant ecological impact on the local area was anticipated.

JCI has validated and concluded that given the Project Participant takes necessary mitigation measures after the operation has started with the same level before the project implementation, anticipated environmental impacts by the project activity is controlled at a minimum level.

11. Result of stakeholder consultation process

JCI has made the PDD version 1.0, "08/12/2008" of the project activity under consideration publicly available on JCI's climate change website (<http://jci-plant.or.jp/english/030cdm/05project.htm>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from "16/12/2008" to "14/01/2009".

No comments were received.

V. RESPONSE TO REQUEST FOR REGISTRATION INCOMPLETE

Issue 1:

The DOE is requested to describe in detail how the parameters used in any financial calculations have been validated in line with para 114(a) of VVM v1.2, in particular; (i) depreciation period; (ii) residual value; (iii) tax rates (income tax, VAT and additional education and construction tax).

Response of JCI:

(i) Depreciation period

JCI has consulted the related laws and regulations on the depreciation period and found two official documents: one is "Pretax Deduction Method for Enterprise Income Tax" issued by the State Administration of Taxation on 16 May 2000/91.1/ and the other is "Implementing Regulations for the Law of Enterprise Income Tax of People's Republic of China" issued by the State Council on 6 December 2007/91.2/. Both of them stipulate the depreciation period of 20 years or more for the buildings and 10 years or more for the train, ship and machinery facilities while the FSR of the proposed project is completed in December 2007 and the investment decision was made on 28 December 2007. Furthermore, the project operation time (excluding 1.5 years construction period) of the proposed project is 15 years which is described in the PDD/2/. Therefore 15 years of the depreciation period is selected by the proposed project. As the longer depreciation period makes the IRR rate after tax lower, the trial IRR calculation was conducted under the 10 years of the depreciation period. The result shows the IRR rate after tax

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changes from 5.2 % (15 years of the depreciation period) to 5.5 % (10 years) which is still lower than the benchmark of 8%.

JCI has validated and concluded the depreciation period of 15 years selected by the proposed project is appropriate.

(ii) Residual value

JCI has consulted the related laws and regulations on the residual value and found two official documents: one is “Detailed Rules for the Implementation of the Provisional Regulations on Enterprise Income Tax of the People's Republic of China” issued by the Ministry of Finance on 4 February 1994/91.3/ and the other is “Notification on determination of residual rate for enterprise fixed asset” issued by the State Administration of Taxation on 14 September 2005/91.4/. They stipulate the residual values of 5 % or less and of uniform 5 % respectively. Therefore 5 % of the residual value is selected by the proposed project. In accordance with paragraph 4 of the Guidelines on the Assessment of Investment Analysis (Version 05), the trial IRR calculation was conducted under the 20 % of the residual value for confirmation. The result shows the IRR rate after tax changes from 5.2 % (5 % of the residual value) to 5.4 % (20 %) which is still lower than the benchmark of 8%. Furthermore the trial IRR calculation was conducted under the 10 years of the depreciation period and 20 % of the residual value. The result shows the IRR rate after tax changes from 5.2 % (15 years of the depreciation period and 5 % of the residual value) to 6.1 % (10 years and 20 %) which is still lower than the benchmark of 8%.

JCI has validated and concluded the residual value of 5 % selected by the proposed project is appropriate.

(iii) Tax rates (income tax, VAT and additional education and construction tax)

As shown at footnotes 10 to 13 of the PDD/2/, JCI has validated and concluded that 25 % income tax, 17 % VAT, 3 % additional tax for education and 7 % additional tax for city development, which are selected by the proposed project, are appropriate because they are consistent with laws and regulations respectively. That is, the 25 % income tax is consistent with “Law of Enterprise Income Tax of the People's Republic of China” issued as the President Decree on 16 March 2007/92.1/. The 17 % VAT is consistent with “Interim Statute of Value Added Tax of the People's Republic of China” issued by the State Council on 13 December 1993/92.2/. The 3 % additional tax for education is consistent with “Provisional Regulations of Education Tax” amended by the State Council on 20 August 2005/92.3/. The 7 % additional tax for city development is consistent with “Interim Rules of Additional Tax for City Development of the People's Republic of China” issued by the State Council on 8 February 1985/92.4/. Such laws and regulations are still effective at present.

JCI has validated and concluded that such tax rates selected by the proposed project are appropriate.

Issue 2:

The PP/DOE is requested to include monitoring parameter $EC_{PJ,y}$ (Additional electricity consumed in year y for project related equipment) in the list of data and parameters to be monitored as required by pg 48 of ACM0012 v3.2 methodology.

Response of PP/JCI:

PP has included the monitoring parameter $EC_{PJ,y}$ (Additional electricity consumed in year y for project related equipment) in sections B.6.1.2, B.7.1 and B.7.2 of the PDD/2/ as required by pg 48 of ACM0012 v3.2 methodology.

JCI has validated and concluded the $EC_{PJ,y}$ is correctly included in the PDD/2/.

Issue 3:

The PP/DOE is requested to indicate how the net electricity $EG_{i,j,y}$ delivered to the grid will be cross checked and verified as required by pg 40 of ACM0012 v3.2 methodology.

Response of PP/JCI:

PP has included the monitoring parameter $EG_{gen,y}$ (Electricity generated by the proposed project) in sections B.7.1 and B.7.2 of the PDD/2/ for the cross check of the net electricity $EG_{i,j,y}$ delivered to the grid in combination with the $EC_{PJ,y}$. That is, the difference between the $EG_{gen,y}$ and $EC_{PJ,y}$ is a cross check data for the $EG_{i,j,y}$. In addition, PP has added a sentence of “Sales receipts shall be used for verification.” in section B.7.1 of the PDD/2/ for the verification of the $EG_{i,j,y}$.

JCI has validated and concluded the $EG_{gen,y}$ and “Sales receipts shall be used for verification.” are correctly incorporated in the PDD/2/ for the cross check and verification of the net electricity $EG_{i,j,y}$ delivered to the grid.

Issue 4:

The DOE is requested to describe in detail how f_{cap} have been validated following the steps mentioned in ACM0012 v3.2, in particular; (i) why method 1 and 2 was not chosen for calculation of f_{cap} ; (ii) how the value of $Q_{OE,BL}$, sourced from FSR, is conservative given that the methodology requires to estimate the theoretical recoverable energy based on manufacturer's specification or technical assessment prepared by qualified/certified external expert. In addition, please provide a spreadsheet on calculation of f_{cap} .

Response of JCI:

(i) Why method 1 and 2 was not chosen for calculation of f_{cap}

As described in IV. 5.4.2) (d) of this report, since there is no historical data available in Method 1, Method 2 was originally selected in the PDD/1/, and then Case-1 in Method 3 is finally adopted to calculate the f_{cap} in the PDD/2/ based on the discussion during the site-visit and the CL-20. The discussion and the CL-20 have clarified the technical limitations in direct monitoring of waste heat of waste energy carrying medium (WECM) as follows:

- 1) No historical data available in Method 1
- 2) Direct measurable data of electricity, while indirect measurements of waste energy and enthalpy in Method 2, that is, which is derived from the temperature, the pressure and the gas flow in the larger diameter of the waste gas pipe.
- 3) Reliable data of electricity because of direct measurable and accumulative data without any effects caused by the instantaneous operational fluctuation and also by properties of the waste heat/gas which would bring easier damages of the instruments.
- 4) Final output of electricity, while intermediate data of the waste energy and enthalpy in Method 2 and Case-2 of Method 3 which would require a substantial additional instruments and investment.
- 5) Electricity amount calculated by Design Institute qualified and certified
- 6) Generated electricity reducing the CO_2 emission by NWPG, while the intermediate data may not be exactly equal to the CO_2 emission reductions.

Therefore, JCI has validated and concluded that the Case-1 in Method 3 is appropriate for the proposed project.

(ii) How the value of $Q_{OE,BL}$, sourced from FSR, is conservative given that the methodology requires to estimate the theoretical recoverable energy based on manufacturer's

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specification or technical assessment prepared by qualified/certified external expert. In addition, please provide a spreadsheet on calculation of fcap.

As shown in section A.4.3 of the PDD/2/ and the CL-5, the installed capacity of the generator units is calculated under conditions such as the waste gas enthalpy based on the actual monitoring records/19/, the actual coke production records/18/, the boiler specifications/97/, etc. which is summarized in the below table with JCI's Judges.

Based on the above theoretical recoverable energy, 24 MW (=12 MW * 2 units) is selected as the installed capacity although 25 MW is theoretically calculated. And then the electricity delivered to the grid of $Q_{OE,BL}$, 163,800 MWh/year, is correctly estimated using the installed capacity of 24 MW, the operation hours of 7,500 and the auxiliary electricity consumption rate of 9 %, which JCI validated and concluded as appropriate including the crosscheck with the 8 registered CDM projects in PRC (please refer to P36, P41 to P44 of this report). In addition, $Q_{OE,y}$ is estimated as same as $Q_{OE,BL}$ as an ex-ante. Therefore, fcap is 1 as an ex-ante.

JCI has validated and concluded the $Q_{OE,BL}$ of 163,800 MWh/year is conservatively estimated and appropriate.

A spreadsheet on calculation of fcap has been uploaded.

	Unit	Value	JCI's cross check	Judge
Total amount of waste gas	Nm ³ /h	40,000	Monitoring report of COG by Hancheng City Environment Monitoring Station on 18 November 2007/19/	OK
Load factor of normal operation	%	86.5%	Annual coke production records/18/	OK
Re-use in the coke making process	Nm ³ /h	12,600	Monitoring report of COG by Hancheng City Environment Monitoring Station on 18 November 2007/19/	OK
Temperature of smoke gas	deg C	150	FSR P13	OK
Enthalpy of smoke gas	kJ/Nm ³	1,016	Correctly calculated	OK
Enthalpy of COG	kJ/Nm ³	16,614	Enthalpy correctly calculated. Monitoring report of COG by Hancheng City Environment Monitoring Station on 18 November 2007/19/.	OK
COG amount for power generation	Nm ³ /h	22,000	Correctly calculated	OK
Enthalpy of smoke gas per hour	kJ/h	22,344,000	Correctly calculated	OK
Enthalpy of COG burning per hour	kJ/h	365,508,000	Correctly calculated	OK
Burning enthalpy per hour	kJ/h	343,164,000	Correctly calculated	OK
Rated evaporation of two sets of boiler	t/h	150	Purchase agreement/97/	OK
Enthalpy of steam with a medium temperature/medium pressure	kJ/kg	1,075	Correctly calculated	OK
Enthalpy of the boiler feed water with temperature, 150 deg C	kJ/kg	632.2	Correctly calculated	OK
Enthalpy loss of boiler draining	%	2.0%	Confirmed by manufacturer/97/	OK
Enthalpy loss of boiler draining per hour	kJ/h	1,328,400	Correctly calculated	OK
Boilers' efficiency	%	93%	Confirmed by manufacturer/97/	OK
Enthalpy of the overheating steam with temperature, 450 deg C	kJ/kg	3,331.7	Enthalpy correctly calculated	OK
Steam amount of the boilers producing per hour	t/h	117.7	Correctly calculated	OK
Loss and leakage of overheating steam in total	t/h	3.53	Confirmed by manufacturer/97/	OK
Steam amount to turbine and generator	t/h	114.2	Correctly calculated	OK
Unit steam consumption	kg/kWh	4.568	Confirmed with GB50049-1994	OK

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Rated capacity of steam turbines	MW	25.0	Correctly calculated	OK
Rated capacity of steam turbine	MW/unit	12.0	Purchase agreement/98/	OK
Annual operation hours	hrs/year	7,500	Longer than 8 registered CDM projects (P36, P41 to P44 of VR)	OK
Self consumption rate	%	9.0%	Longer than 8 registered CDM projects (P36, P41 to P44 of VR)	OK
Electricity generated	MWh/year	180,000	Appropriate (P36, P41 to P44 of VR)	OK
Electricity delivered to the grid = $Q_{OE,BL}$	MWh/year	163,800	Appropriate (P36, P41 to P44 of VR)	OK
Quantity of actual output = $Q_{OE,y}$	MWh/year	163,800	Appropriate as same as the above	OK
fcap		1.0	Correctly calculated	OK

APPENDIX A: CDM VALIDATION PROTOCOL

(Version 05)

Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

1. INTRODUCTION

This document is prepared as the Validation Protocol on Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant.

The validation protocol is prepared for the following purposes:

- To ensure that, in accordance with the Validation Verification Manual version 01.2 (Annex 1, CDM-EB55, "VVM"), and CDM requirements, these rules are complied with for any project activities requesting registration as a proposed CDM project activity.
- To ensure a thorough, independent assessment of proposed project activities submitted for registration as a proposed CDM project activity against the applicable CDM requirements.
- To assess whether the project design of the proposed CDM project activity meets the CDM requirements, using objective evidence, and to assess the completeness and accuracy of the claims and conservativeness of the assumptions made in the project design document.

The validation protocol is consisted of the following two types of tables, which are effective for the purposes of validation above.

TABLE-1 contains the checklist with questions along with the thematic chapter of VVM.

TABLE-2 shows the corrective actions or clarifications which are requested to be taken in **TABLE-1** and the response from the PP.

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TABLE-1 Requirements Checklist Page 1-1

TABLE-2 Resolution of Corrective Actions and Clarification Requests Page 2-1

2. CLARIFICATION REQUESTS, CORRECTIVE ACTION REQUESTS AND FORWARD ACTION REQUESTS

If, during the validation of a project activity, issues are identified that need to be further elaborated upon, researched or added to in order to confirm that the project activity meets the CDM requirements and can achieve credible emission reductions, these issues shall be ensured that are correctly identified, discussed and concluded in the validation report.

➤ **CAR** : a corrective action request (**CAR**) is raised, if one of the following occurs:

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

➤ **CL** : a clarification request (**CL**) is raised,

if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

➤ **FAR** : a forward action request (**FAR**) is raised,

during validation to highlight issues related to project implementation that require review during the first verification of the project activity.

FARs shall not relate to the CDM requirements for registration.

The CARs and CLs are resolved or "closed out" only if the project participants modify the project design, rectify the PDD or provide adequate additional explanations or evidences that satisfy the requirements. If this is not done, the project activity will not be recommended for registration to the CDM EB.

All CARs, CLs and FARs will be reported on in its validation report. This reporting shall be undertaken in a transparent and unambiguous manner that allows the reader to understand the nature of the issue raised, the nature of the responses provided by the project participants, the means of validation of such responses and clear reference to any resulting changes in the PDD or supporting annexes.


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TABLE-1 REQUIREMENTS CHECKLIST			(OK/No/NA/Tbv)	
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
1.	Approval	Para.44-50 VVM	--	--
	<Requirement to be validated> All Parties involved shall approve the project activity.	Para.44 VVM	--	--
	The LoA (Letter of Approval) s of all parties involved shall be provided together with its information source and route.			
1.1	The LoA shall confirm that: (a) The Party is a Party to the Kyoto Protocol (b) Participation is voluntary (c) The proposed CDM project activity contributes to the sustainable development of the country (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration	Para.45 VVM	OK	CAR-1
2.	Participation	Para.51-54 VVM	--	--
	<Requirement to be validated> All project participants shall be listed in a consistent manner in the project documentation, and their participation in the project activity shall be approved by a Party to the Kyoto Protocol.	Para.51 VVM	--	--
2.1	The project participants shall be listed in tabular form in section A.3 of the PDD, and this information shall be consistent with the contact details provided in annex 1 of the PDD.	Para.52 VVM	OK	
1)	The participation of each project participant shall be approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation.	ditto	OK	CAR-1
3)	No entities other than those approved as project participants shall be included in these sections of the PDD.	ditto	OK	
2.2	The approval of participation shall be issued from the relevant DNA.	Para.53 VVM	OK	CAR-1
3.	Project Design Document	Para.55-57 VVM	--	--
	<Requirement to be validated> The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website. http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html	Para.55 VVM PDDs Forms	--	--
3.1	The PDD shall be in accordance with the applicable CDM requirements for completing PDDs. < http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html > (Refer to the PDD Completeness checklist prepared by JCI)	Para.56 VVM	OK	
3.2	PDD template shall not be altered, that is, shall be completed using the same font without modifying its format, headings or logo. Tables and their columns shall not be modified or deleted. Rows may be added, as needed. 1) If sections of the CDM-PDD are not applicable, it shall be explicitly stated that the section is left blank on purpose.	PDD Guidelines	OK	


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TABLE-1 REQUIREMENTS CHECKLIST			(OK/No/NA/Tbv)	
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
2)	The presentation of values in the PDD should be international standard format.	ditto	OK	
4.	Project Description	Para.58-64 VVM	--	--
	<Requirement to be validated> The PDD shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.	Para.58 VVM	--	--
4.1	Project description in section A.2 of the PDD (Max 1 page) shall be a brief summary of that in A.4.3 and B.3. This shall include: <ul style="list-style-type: none"> ● The purpose of the project activity ● The view of the project participants of the contribution of the project activity to sustainable development. and explain <ul style="list-style-type: none"> ● How the proposed project activity reduces GHG emissions. 	PDD Guidelines	OK	CL-1
4.2	In section A.4.3 of the PDD, a description of how environmentally safe and sound technology and know-how to be used is transferred to the host Party(ies) shall be included. It should also further explain the purpose of the project. <ul style="list-style-type: none"> ● The scenario existing prior to the start of the project, with equipment list and systems in operation ● The scope of project, with equipment list and systems ● The baseline scenario, with equipment list and systems If the baseline scenario is the same as the scenario existing prior to the start of the project, there is no need to repeat, but only state that both are the same. The description of the scenario should include; <ul style="list-style-type: none"> ● A list and arrangement of the main manufacturing technologies, systems and equipment ● The emission sources and the GHG, and existing and forecast energy and mass flows and balances of the systems and equipment ● The types and levels of services 	ditto	OK	CL-1 CL-3 CL-4 CL-5 CL-6 CL-7
4.3	In section A.4.4 of the PDD, <ul style="list-style-type: none"> ● The chosen crediting period shall be indicated. ● The total estimation of emission reductions as well as annual estimates for the chosen crediting period shall be provided.. ● Information on the emission reductions shall be indicated using the decided tabular format. ● International standard format for values shall be used. 	ditto	OK	CAR-4
4.4	If the DOE does not undertake a physical site inspection, it shall be appropriately justified.	Para.62 VVM	Site inspection undertaken	
4.5	If the proposed CDM project activity involves the alteration of an existing installation or process, Does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	Para.63 VVM	OK	
5.	Baseline and monitoring methodology	Para.65-93 VVM	--	--


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
(a)	General requirement	Para.65-67 VVM	--	--
	The baseline and monitoring methodologies selected by the project participants shall comply with the methodologies previously approved by the CDM Executive Board.	Para.65 VVM	--	--
	To ensure that the project activity meets this general requirement, the followings shall be confirmed. (a) The selected methodology is applicable to the project activity; (b) The selected methodology has been correctly applied.	Para.66 VVM	--	--
	It shall also be ensured that the selected methodology is applicable to the project activity and has been correctly applied with respect to the followings: (a) Project boundary (b) Baseline identification (c) Algorithms and/or formulae used to determine emission reductions (d) Additionality (e) Monitoring methodology	Para.67 VVM	--	--
5.	Baseline and monitoring methodology	Para.65-93 VVM	--	--
(b)	Applicability of the selected methodology to the project activity	Para.68-77 VVM	--	--
	<Requirement to be validated> The selected baseline and monitoring methodology previously approved by the CDM Executive Board shall be validated to be applicable to the project activity, including that the used version is valid. Specific guidance provided by the CDM Executive Board in respect to any approved methodology shall be applied.	Para.68 VVM Para.69 VVM	--	--
5.1	The methodology shall be ensured to be correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website. Referring to the UNFCCC CDM web site for the title and reference list as well as the details of approved baseline methodologies, the following contents shall be indicated in section B.1 of the PDD. <ul style="list-style-type: none"> the approved methodology the version of the methodology that is used any methodologies or tools which the approved methodology draws upon and their version 	Para.70 VVM	OK	CAR-2
5.2	The choice of methodology shall be justified and the project participants shall show that the project activity meets each of the applicability conditions of the approved methodology or any tool or other methodology component referred to therein in section B.2 of the PDD.	Para.71 VVM	OK	CL-8 CL-9 CL-10
	The documentation referred to in the PDD and its content shall be correctly quoted and interpreted in the PDD.	ditto	OK	
5.	Baseline and monitoring methodology	Para.65-93 VVM	--	--


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TABLE-1 REQUIREMENTS CHECKLIST			(OK/No/NA/Tbv)	
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
(c)	Project boundary	Para.78-80 VM	--	--
	<Requirement to be validated> The PDD shall correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.	Para.78 VVM	--	--
5.3	The delineation in the PDD of the project boundary shall be correct and meet the requirements of the selected baseline methodology, which shall also be demonstrated by documented evidence and corroborated by a site visit.	Para.79 VVM	OK	CL-11
1)	All emission sources and GHGs required by the methodology shall be included within the project boundary for the purpose of calculating project emissions and baseline emissions, using the standardized table.	ditto	OK	
2)	If the methodology allows project participants to choose whether a source or gas is to be included within the project boundary, the project participants shall justify the choice by supporting documented evidences.	ditto	OK	
3)	In section B.3 of the PDD, a flow diagram of the project boundary shall be described including all the equipment, systems, flows of mass and energy, the emission sources/gases and the monitoring variables.	PDD Guidelines	OK	
4)				
5.	Baseline and monitoring methodology	Para.65-93 VVM	--	--
(d)	Baseline identification	Para.81-88 VVM	--	--
	<Requirement to be validated> The PDD shall identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.	Para.81 VVM	--	--
	Any procedure contained in the methodology to identify the most reasonable baseline scenario, shall be correctly applied. If the selected methodology requires use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario, the methodology on the application of these tools shall be confirmed. In such cases, the guidance in the methodology shall supersede the tool. The each step in the procedure described in the PDD against the requirements of the methodology shall be checked.	Para.82 VVM	--	--
5.4	If the methodology requires several alternative scenarios to be considered in the identification of the most reasonable baseline scenario, it shall be determined whether all scenarios that are considered by the project participants and are supplementary to those required by the methodology, are reasonable in the context of the proposed CDM project activity and that no reasonable alternative scenario has been excluded.	Para.83 VVM	OK	CL-12


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
5.5	It shall be determined whether the baseline scenario identified is reasonable by validating the assumptions, calculations and rationales used, as described in the PDD.	Para.84 VVM	OK	CL-12
	The documents and sources referred to in the PDD shall be correctly quoted and interpreted. All data used to determine the baseline scenario shall be illustrated in a transparent manner, preferably in a table form.	ditto	OK	
5.6	All applicable CDM requirements shall be taken into account in the identification of the baseline scenario for the proposed CDM project activity, including "relevant national and/or sectoral policies and circumstances." (See decision 3/CMP.1, annex, paragraph 45, currently located at http://cdmunfccc.int/Reference/COPMOP/08a01.pdf#page=6 , and EB22, annex 3, "Clarificationson the consideration of national and/or sectoral policies and circumstances in baseline scenarios", currently located at http://cdm.unfccc.int/EB/022/eb22_repan3.pdf .)	Para.85 VVM Para.45 CDM/M&P Annex 3 EB22	OK	CL-12
5.7	The PDD shall provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.	Para.86 VVM	OK	CL-12
5.	Baseline and monitoring methodology	Para.65-93 VVM	--	--
(e)	Algorithms and/or formulae used to determine emission reductions	Para.89-93 VVM	--	--
	<Requirement to be validated> The steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions shall comply with the requirements of the selected baseline and monitoring methodology.	Para.89 VVM	--	--
5.8	The equations and parameters in the PDD shall be correctly applied by comparing them to those in the selected approved methodology.	Para.90 VVM	OK	
	If the methodology provides for selection between different options for equations or parameters, adequate justification shall be provided (based on the choice of the baseline scenario, context of the project activity and other evidence) and the correct equations and parameters shall be used, in accordance with the methodology selected.	ditto	OK	CL-19 CL-20
5.9	The justification shall be given in the PDD for the choice of data and parameters used in the equations.	Para.91VVM	OK	CAR-3
	If data and parameters will not be monitored throughout the crediting period of the proposed CDM project activity but have already been determined and will remain fixed throughout the crediting period, it shall be demonstrated that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions.	ditto	OK	
	If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, it shall be demonstrated that the estimates provided in the PDD for these data and parameters are reasonable.	ditto	OK	


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
5.10	In section B.6.2 of the PDD, Where time series of data is used, where several measurements are undertaken or where surveys have been conducted, detail information shall be provided in Annex 3 of the PDD. The choice for the source of data shall be explained and justified. Clear and transparent references or additional documentation shall be provided in Annex 3 of the PDD.. Where values have been measured, a description of the measurement methods shall be included. More detail information can be provided in Annex 3 .	PDD Guidelines	OK	
5.11	In section B.6.3 of the PDD, a transparent ex-ante calculation of project emissions, baseline emissions and leakage emissions expected during the crediting period and applied all relevant equations in the approved methodology shall be provided and how each equation is applied shall be documented in a manner that enables the reader to reproduce the calculation.	ditto	OK	CAR-3
5.12	In section B.6.4 of the PDD, the results of the ex-ante estimation shall be summarized using the standardized table.	ditto	OK	CAR-4
6.	Additionality of a project activity	Para.94-121 VVM	--	--
	<Requirement to be validated> The PDD shall describe how a proposed CDM project activity is additional. In accordance with paragraph 43 of the CDM M&P “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”. (see decision 5/CMP.1, annex paragraph 18). While specific elements of the assessment of additionality are discussed in further detail in paragraphs 98-121 in VVM, not all elements discussed below will be applicable to all proposed CDM project activities.	Para.94 VVM Para. 43 CDM/M&P	--	--
6.	Additionality of a project activity	Para.94-121 VVM	--	--
(a)	Prior consideration of the clean development mechanism While specific elements of the assessment of additionality are discussed in further detail in Section 6.3 - 6.15 below, not all elements discussed below will be applicable to all proposed CDM project activities	Para.98-104 VVM	--	--
	<Requirement to be validated> If the project activity start date is prior to the date of publication of the PDD for stakeholder comments it shall be demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity.	Para.98 VVM	--	--
6.1	The start date of the project activity, reported in the PDD, shall be in accordance with the “Glossary of CDM terms”. http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM_v03.pdf Latest Glossary of CDM terms	Para.99 VVM	OK	CAR-5


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
	The starting date of a CDM project activity is the date on which the implementation or construction or real action of a project activity begins. In section C.1 of the PDD, the description should contain not only the date, but also a description of how this start date has been determined, and a description of the evidence available to support this start date.	ditto	OK	
	In particular, for project activities that require construction, retrofit or other modifications, the date of commissioning cannot be considered the project activity start date.	ditto	OK	
6.2	It shall be identified whether it is a project activities with staring date on or after 02 August 2008 in accordance with the guidance from the Board, or a project activities with a start date before 02 August 2008. (See: Latest Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM)	Para.100 VVM	NA	
6.3	For a new project activity, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, the DOE shall ensure by means of confirmation from the UNFCCC secretariat that PPs had informed the host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. If such a notification has not been provided by the project participants within six months of the project activity start date, the DOE shall determine that the CDM was not seriously considered in the decision to implement the project activity. (See: Latest Prior consideration of the CDM form, currently located at < https://cdm.unfccc.int/EB/048/eb48_repan62.pdf >, for the standardized form.	Para.101 VVM	NA	
6.4 1)	For an existing project activity with a start date before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, the project participant's prior consideration of the CDM shall be demonstrated by providing the following evidence (preferably official, legal and/or other corporate). In such cases the PP shall provide an implementation timeline of the project in section B.5 of the PDD.	Para.102 VVM	OK	CL-13
2)	Evidence to indicate awareness of the CDM prior to the project activity start date, and evidence to indicate that the benefits of the CDM were a decisive factor in the decision to proceed with the project shall be provided.	ditto	OK	
3)	Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity.	ditto	OK	
4)	Reliable evidence that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.	ditto	OK	
5)	Evidence to support this should include, inter alia, <ul style="list-style-type: none"> • contracts with consultants for CDM/PDD/methodology services, • Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), • Evidence of agreements or negotiations with a DOE for 	ditto	OK	


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
	validation services, <ul style="list-style-type: none"> • Submission of a new methodology to the CDM Executive Board, • Publication in newspaper, • Interviews with DNA, Earlier correspondence on the project with the DNA or the UNFCCC secretariat.			
6.	Additionality of a project activity	Para.94-121VVM	--	--
(b)	Identification of alternatives	Para.105-107 VVM	--	--
	<Requirement to be validated> The PDD shall identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required (e.g., methodology ACM0002).	Para.105 VVM	--	--
6.5	The list of alternatives shall includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity;	Para.106 VVM	OK	CL-14
1)	The list shall contains all plausible alternatives that are considered, on the basis of local and sectoral knowledge, to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity.	ditto	OK	
3)	The alternatives shall comply with all applicable and enforced legislation.	ditto	OK	
6.	Additionality of a project activity	Para.94-121 VVM	--	--
(c)	Investment analysis	Para.108-114 VVM	--	--
6.6	<Requirement to be validated> If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, the PDD shall provide evidence that the proposed CDM project activity would not be: The most economically or financially attractive alternative; or Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).	Para.108 VVM	--	--
6.7	Project participants can show this through one of the following approaches:	Para.109 VVM	--	--
1)	Demonstrate that the proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity;	ditto	NA	
2)	The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative;	ditto	NA	
3)	Financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	ditto	OK	


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TABLE-1 REQUIREMENTS CHECKLIST			(OK/No/NA/Tbv)	
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
6.8	The DOE shall comply with the latest version of the “Guidelines on the Assessment of Investment Analysis” as provided by the CDM Executive Board and with other relevant guidance including the latest guidelines on plant load factors “guidelines for the reporting and validation of plant load factors” (See EB 62, annex 5)	Para.110 VVM Annex 5 EB62	--	--
1)	Project participants should provide spreadsheet versions of all investment analysis. All formulas used in this analysis be readable and all relevant cells be viewable and unprotected.	Annex 5 EB62	OK	CAR-6
2)	The evidences on which input values in the investment analysis are based shall be provided.	ditto	OK	
6.9 1)	All parameters and assumptions used in calculating the relevant financial indicator shall be validated thoroughly, and the accuracy and suitability of these parameters shall be verified using the available evidence and expertise in relevant accounting practices.	Para.111 VVM	OK	CL-15 CL-16 CL-17
2)	Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant.	Annex 5 EB62	OK	
3)	The cost of financing expenditures (i.e. loan repayments and interest) should not be included in the calculation of project IRR.	ditto	OK	
4)	In the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM the investment analysis should reflect the economic decision making context at point of the decision to recommence the project. Therefore capital costs incurred prior to the revised project activity start date can be reflected as the recoverable value of the assets, which are limited to the potential reuse/resale of tangible assets.	ditto	NA	
5)	Only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the results of this variation should be presented in the PDD and be reproducible in the associated spreadsheets.. Where a variable which constitute less than 20% has a material impact on the analysis, this variable shall be included in the sensitivity analysis. As a general point of departure variations in the sensitivity analysis should at least cover a range of +10% and –10%, unless this is not deemed appropriate in the context of the specific project circumstances.	ditto	OK	
6)	Such evidence for the evaluation of investment analysis as invoices, receipts, price indices, feasibility reports, public announcements, audited actual project cost and annual financial reports shall be provided upon request of the DOE.	ditto	OK	
6.10	The suitability of any benchmark applied in the investment analysis:	Para.112 VVM	--	--
1)	In cases where a benchmark approach is used the applied benchmark shall be appropriate to the type of IRR calculated. Local commercial lending rates or weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR. Required/expected returns on equity are appropriate benchmarks for an equity IRR. Benchmarks supplied by relevant national	Annex 5 EB62	OK	


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TABLE-1 REQUIREMENTS CHECKLIST			(OK/No/NA/Tbv)	
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
	authorities are also appropriate if the DOE can validate that they are applicable to the project activity and the type of IRR calculation presented.			
2)	If the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services, a benchmark analysis is not appropriate and an investment comparison analysis shall be used. If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate.	ditto	OK	
3)	The effectiveness of the applied benchmark shall be demonstrated with appropriate evidence.	ditto	OK	
4)	The PPs shall demonstrate that it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, showing previous investment decisions by themselves involved and demonstrating that the same benchmark has been applied, or if there are verifiable circumstances that have led to a change in the benchmark.	Para.112 VVM	OK	
6.11	The Board clarified that in cases where project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, it is required to ensure that: (See paragraph 54 of the report of the meeting of the CDM EB38)	Para.113 VVM Para.54 EB38	--	--
1)	The period of time between the finalization of the FSR and the investment decision shall be sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed;	ditto	OK	CL-15 CL-16 CL-17
2)	The values used in the PDD and associated annexes shall be fully consistent with the FSR, and where inconsistencies occur the appropriateness of the values shall be explained.	ditto	OK	
3)	It shall be confirmed that the input values from the FSR are valid and applicable at the time of the investment decision.	ditto	OK	
6.	Additionality of a project activity	Para.94-121 VVM	--	--
(d)	Barrier analysis Barriers are issues in project implementation that could prevent a potential investor from pursuing the implementation of the proposed project activity. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.	Para.115-118 VVM	--	--
6.12	<Requirement to be validated> If barrier analysis has been used to demonstrate the additionality of the proposed CDM project activity, the PDD shall demonstrate that the proposed CDM project activity faces barriers as below.	Para.115 VVM	--	--


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
1)	(a) Prevent the implementation of this type of proposed CDM project activity; (See Latest guidelines for objective demonstration and assessment of barriers) (b) Do not prevent the implementation of at least one of the alternatives.	ditto	NA	
6.13	Issues that have a clear direct impact on the financial returns of the project activity cannot be considered barriers and shall be assessed by investment analysis. This does not refer to either (a) Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance, or (b) Barriers related to the unavailability of sources of finance for the project activity.	Para.116 VVM	NA	
6.14	The available evidence shall be provided and/or interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) shall be arranged to demonstrate that the barriers listed in the PDD exist.	Para.117 VVM	NA	
1)				
2)	The existence of barriers shall be substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics.	ditto	NA	
6.	Additionality of a project activity	Para.94-121 VVM	--	--
(e)	Common practice analysis	Para.119-121 VVM	--	--
	<Requirement to be validated> For large-scale CDM project activities, <u>unless the proposed project type is first-of-its kind</u> , common practice analysis shall be carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality. This is to confirm that the project activity is not widely observed and commonly carried out in the region..	Para.119 VVM	--	--
6.15	The project participants shall clearly define “activities that are similar to the proposed project activity” in terms of technology and scale and justify the definition in CDM-PDD.	Additional Tool	OK	CL-18
1)				
2)	Screening (selection) criteria for common practice analysis shall be demonstrated with appropriate evidences and justification.	ditto	OK	
3)	The relevant geographical area for undertaking the common practice analysis should in principle be the host country of the proposed CDM project activity. A region within the country could be the relevant geographical area if the framework conditions vary significantly within the country.	ditto	OK	
4)	All the data used in the implementation of common practice analysis and reported in the PDD shall be supported by documentation and the PDD shall clearly state the complete reference of such documentation to enable access to it by a third party.	ditto	OK	
5)	Where documented information may be difficult to access or unavailable, local expert analysis on a common practice shall be provided.	ditto	OK	
7.	Monitoring plan	Para.122-124 VVM	--	--


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
	<Requirement to be validated> The PDD shall include a monitoring plan. This monitoring plan shall be based on the approved monitoring methodology applied to the proposed CDM project activity.	Para.122 VVM	--	--
7.1	<u>Compliance of the monitoring plan with the approved methodology</u> (i)- The list of parameters required by the selected approved methodology shall be identified.	Para.123 VVM	OK	
2)	(ii) The monitoring plan shall contain all necessary parameters, and the means of monitoring described in the plan shall comply with the requirements of the methodology;	ditto	OK	
3)	For each parameter, the following information shall be explicitly described in the standardized table in the PDD. <ul style="list-style-type: none"> ● Source of data ● Value of data applied ● Description of measurement methods and procedures ● QA/QC procedures ● Any comment, if any (Note): Data monitored and required for verification and issuance are to be kept for two (2) years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.	PDD Guidelines	OK	CL-21 CL-22 CL-23 CL-24 CL-25
4)	The operational and management structure that the project operator will implement in order to monitor emission reductions and leakage effects generated by the project activity shall be clearly described in the PDD (section 7.2) including the responsibilities for and institutional arrangements for data collection and archiving.	ditto	OK	
5)	(i) The monitoring arrangements described in the monitoring plan shall be feasible within the project design;	Para.123 VVM	OK	
6)	(ii) The means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, shall be sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.	ditto	OK	
7.2	Relevant further background information, if any, shall be provided in Annex 4 of the PDD.	PDD Guidelines	OK	
8.	Sustainable development	Para.125-127 VVM	--	--
	<Requirement to be validated> CDM project activities shall assist Parties not included in Annex I to the Convention in achieving sustainable development.	Para.125 VVM	--	--
8.1	The letter of approval by the DNA of the host Party shall confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party.	Para.126 VVM	OK	CAR-1
9.	Local stakeholder consultation	Para.128-130 VVM	--	--


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TABLE-1 REQUIREMENTS CHECKLIST		(OK/No/NA/Tbv)		
Sec. in VVM	Requirement	Refer. Para. VVM	Check Comment	ID. No.
	<Requirement to be validated> Local stakeholders shall be invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website. See glossary of CDM terms, currently located at http://cdm.unfccc.int/Reference/Guidclarif/glos_CDM.pdf , for definition of stakeholders.	Para.128 VVM Glossary of CDM terms	--	--
9.1	Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity shall be invited in an open and transparent manner.	Para.129 VVM	OK	
1)	The summary of the comments received as provided in the PDD shall be complete.	ditto	OK	
3)	The project participants shall demonstrate that they have taken due account of any comments received and shall describe/explain this process in the PDD.	ditto	OK	CL-28
10.	Environmental impacts	Para.131-133 VVM	--	--
	<Requirement to be validated> Project participants shall submit documentation to the DOE on the analysis of the environmental impacts of the project activity in accordance with paragraph 37(c) of the CDM modalities and procedures.	Para.131 VVM Para.37(c) CDM/M&P	--	--
10.1	Project participants shall submit documentation to the DOE on the analysis of the environmental impacts of the project activity	Para.131 VVM	OK	CL-26 CL-27
10.2	Project participants shall also provide all references to support documentation of a EIA if required by the host Party	Para.132 VVM	OK	



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CAR	Corrective Action Requests			
CAR-1	Misprints were found in the LoA of China, which shall be corrected. The LoA of Japan shall be also provided with the complete contents.	1 2 8	The LoA of China was reissued. The LoA of Japan has been provided.	OK JCI confirmed the correction of the LoA of China and received the LoA of Japan. The CAR-1 is closed.
CAR-2	The following version Nos. of the methodology and tool should be corrected including related descriptions: ACM0012 (ver 03.1) to (ver 03.2) EF Tool (ver01.1) to (ver02)	5.1	Revised	OK JCI confirmed the revision in the revised PDD. The CAR-2 is closed.
CAR-3	ER calculation shall be revised based on the EF correction for NWPG, on December 30, 2008 by the government of China. CM: 0.877 tCO ₂ e/MW to 0.8712 tCO ₂ e/MW OM: 1.1225 tCO ₂ e/MW to 1.1225 tCO ₂ e/MW BM: 0.6315 tCO ₂ e/MW to 0.6199 tCO ₂ e/MW ER: 143,635 tCO ₂ e/year to 142,703 tCO ₂ e/year	5.13 5.15	Revised	OK JCI confirmed the revision in the revised PDD. The CAR-3 is closed.
CAR-4	The credit starting date of the project activity shall be revised from 01/07/2009 to 01/06/2011 in accordance with the PDD guideline.	4.3 5.16	Revised at A.4.4, B.6.4 and C.2.2.1.	OK JCI confirmed the revision in the revised PDD. The CAR-4 is closed.



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No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CAR-5	The starting date of the project activity shall be revised from 08/05/2008 (Major equipment purchasing contract) to 06/05/2008 (Construction contract) in accordance with the "Glossary of CDM terms".	6.3	Revised	OK JCI confirmed the revision in sections B.5 and C.1 of the revised PDD. The CAR-5 is closed.
CAR-6	Miss calculations, on Income Tax counting and Depreciation (of the 1 st and last year) counting, in the IRR spreadsheets were found, which shall be corrected. (refer to CL-17. 4))	6.11	Revised	OK JCI confirmed the revision of the IRR spreadsheet and of the revised PDD. The CAR-6 is closed.
CL	Clarification Requests			
CL-1	Brief explanation on the current status, i.e. serious consideration of the CDM incentive, construction and operation schedule, of the project shall be clarified. This kind of information is important to understand a whole of the project design and "section C" of PDD.	4	Revised	OK JCI confirmed the revision in the revised PDD. The CL-1 is closed.
CL-2	It is requested to provide the evidences on the gas volume, compositions, calorific value, temperature and pressure of the smoke COG. Do the compositions of the smoke gas meet the regulations? It is also requested to provide the evidence.	4	The data of the smoke gas under regulations are described in FSR and EIA report which were provided by the project owner with supplemental evidences.	OK JCI confirmed all of the data of smoke gas (COG) which meet the local regulations. The CL-2 is closed.



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-3	It is preferable to describe the table showing the lineup of the equipment and system before and after the implementation of the proposed project. It is also requested to provide the general arrangement drawings before and after the implementation of the project.	4	Revised. The general layout and arrangement schematic drawing of the project has been provided. Before the project, the site, where the project locates at, was a coal pile field, and there wasn't a general layout and arrangement schematic drawing.	OK JCI confirmed the addition of the table in the revised PDD and received the layout and drawing. The CL-3 is closed.
CL-4	It is requested to describe the correct units such as Nm ³ /y and MWh/y in the text and tables.	4	Revised	OK JCI confirmed the revision in the revised PDD. The CL-4 is closed.



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No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-5	<p>It is requested to provide the evidences of the followings with calculation sheets:</p> <ol style="list-style-type: none"> 1) Total amount of waste gas: 40,000 Nm³/h 2) Gas for power generation: 22,000 Nm³/h 3) Gas for reuse : 12,600 Nm³/h 4) Gas for no use: 5,400 Nm³/h 5) Electricity to be exported: 163,800 MWh/y 	4	<p>1)and 3)are respectively quoted from the Monitoring report of COG by Hancheng City Environment Monitoring Station on 18 November 2007. The total 27,400 Nm³/h of 2) and 4) is also described in the above report.</p> <p>5) Delivered electricity is calculated as follows: Rated capacity (24MW) x 7500 hr/yr x 91 % = 163.8 GWh/yr. The evidences on 7500 hr/yr and 9%(self consumption rate) are also provided.</p> <p>1. The total amount of waste gas (40,000 Nm³/h) is the maximum value for a working condition of the coke oven when operating under a full load. The average load factor of coke production is 86.5% based on the project owner's experience, which is used for determining capacity of the steam turbine generator.</p> <p>The followings are responses from the design institute:</p> <p><u>(1)Determination of Amount of waste gas for power generation</u></p> <p>The total amount of waste gas (40,000 Nm³/h) is a theoretical value for a working condition of the coke oven when operating under a full load. That is, there will be fewer amount of waste</p>	<p>JCI confirmed the waste gas amounts and the delivered electricity with evidences.</p> <p>1.However, it is requested to describe in the revised PDD the reasons why the 5,400 Nm³/h is not used for the power generation. It is also requested to provide the evidences to calculate the rated capacity of turbine.</p>



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-5 (continued)		4	<p>gas than 40,000 Nm³/h shall be produced if the operation of coke oven is NOT in full load. The average load factor of 86.5% based on the engineering practice of the Project owner's coke production is used to determine the amount of waste gas for power generation.</p> <p>The amount of waste gas with the load factor, 86.5% is equal to 40,000x86.5%=34,600 Nm³/h;</p> <p>Since the waste gas for re-use in the coke making process gas (12,600 Nm³/h) is prior to the other activities, the remained waste gas under load factor, 86.5% is equal to 34,600-12,600=22,000 Nm³/h, which is used as the designed amount of waste gas for power generation.</p> <p>The waste gas of 5,400 Nm³/h shall be directly emitted to atmosphere after incineration under full load performance and functioned as a buffer when the coke oven isn't in full load.</p> <p><u>(2) Determination of steam turbine capacity</u></p> <p>The enthalpy of COG is 16,614 KJ/Nm³; the temperature of smoke gas is 150 deg C</p> <p>The enthalpy of COG burning per hour:</p> $I_{\text{coke,gas}} = 16,614 \times 22,000 = 365.508 \times 10^6 \text{ (KJ/h)}$	



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-5 (continued)		4	<p>The enthalpy of smoke gas with 150 deg C: $I_{150 \text{ deg C}} = 22.344 \times 10^6 \text{ (KJ/h)}$ The burning enthalpy per hour: $I = I_{\text{coke, gas}} - I_{150 \text{ deg C}} = 343.164 \times 10^6 \text{ (KJ/h)}$ The enthalpy loss of boiler draining per hour: $I_s = 150 \times 2\% \times (1075 - 632.2) = 1,328.4 \times 10^3 \text{ (KJ/h)}$ Where, 150= Rated evaporation of two sets of boiler (t/h) 1075=the enthalpy of steam with a medium temperature/medium pressure. 632.2= the enthalpy of the boiler feed water with temperature, 150 deg C The boilers' efficiency $\geq 93\%$, the steam amount of the boilers producing per hour: $M = (I \times 93\% - I_s) / (3331.7 - 632.2) = 118 \text{ (t/h)}$ Where, 3331.7= the enthalpy of the overheating steam with temperature, 450 deg C Taking account of 3.53 t/h loss and leakage of overheating steam in total, 114.17 t/h (2*57 t/h) will be put into the steam turbines and the generators to generate power.</p>	



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-5 (continued)		4	<p>Rated capacity of steam turbines for each is $114.17/4.568=25.0$ MW Where 4.568= the unit steam consumption (kg/kWh) according to the criteria in GB50049-1994 Consequently, specification of N12-3.43 with capacity of 12MW is applicable to the steam turbine. The description on capacity calculation of the steam turbine generator is revised in the revised PDD including correction of related description including Fig. 2 (Fig. A.2).</p>	<p>1'.OK JCI confirmed the maximum and average values of the waste gas, the capacity calculation procedure and the revised description in the revised PDD are appropriate and received the evidences. The CL-5 is closed.</p>



CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion																		
CL-6	<p>It is requested to provide the electricity consumption and generation as follows:</p> <table><tr><td></td><td><Consumption></td><td>< Generation></td></tr><tr><td>Before the project:</td><td>MWh/y</td><td>MWh/y</td></tr><tr><td>After the project:</td><td>MWh/y</td><td>MWh/y</td></tr></table>		<Consumption>	< Generation>	Before the project:	MWh/y	MWh/y	After the project:	MWh/y	MWh/y	4	<p>The consumption and generation are as follows:</p> <table><tr><td></td><td><Consumption></td><td>< Generation></td></tr><tr><td>Before the prj:</td><td>0 MWh/y</td><td>0 MWh/y</td></tr><tr><td>After the prj:</td><td>16,200 MWh/y</td><td>180,000 MWh/y</td></tr></table> <p>1.The actual purchased electricity in 2008 was provided.</p>		<Consumption>	< Generation>	Before the prj:	0 MWh/y	0 MWh/y	After the prj:	16,200 MWh/y	180,000 MWh/y	<p>1.It is also requested to provide the actual purchased electricity amount in 2008 and 2009.</p> <p>2.OK JCI understands the actual purchased electricity in 2008 is only 28,130 MWh/year is smaller than the power generation by the proposed project of 180,000 MWh/year.</p> <p>The CL-6 is closed.</p>
	<Consumption>	< Generation>																				
Before the project:	MWh/y	MWh/y																				
After the project:	MWh/y	MWh/y																				
	<Consumption>	< Generation>																				
Before the prj:	0 MWh/y	0 MWh/y																				
After the prj:	16,200 MWh/y	180,000 MWh/y																				
CL-7	<p>It is requested to clarify additional technological descriptions including the name of equipment manufacturers, especially from the viewpoints of environmentally safe/sound, the state of the art and/or the proven technology in the host country.</p> <p>It is also requested to provide the evidence of the designed life time of 16 years.</p>	4	<p>Revised</p> <p>The evidence was provided.</p>	<p>OK JCI confirmed the revision in the revised PDD and received the evidence.</p> <p>The CL-7 is closed.</p>																		



CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-8	Not only Type-1 but also Type-2 should be clarified at the beginning of section B.2.	5.2	Revised	OK JCI confirmed the revision in the revised PDD. The CL-8 is closed.



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-9	<p>It is requested to confirm the followings at B.2 :</p> <p>1) The first item of "If the project....." should not be applicable to the proposed project.</p> <p>2) The owner of the coke-making company in the fourth item, Shaanxi Haiyan Coke Making (Group) Co., Ltd. in the seventh item and the owner in eighth item are all the same "the project owner" as defined in A.2, and then, all those names should be described uniformly as the project owner, instead.</p> <p>3) For the sixth item, some additional description, on the existing coke production line introducing a new waste heat recovery system, should be needed, and the evidence of the coke production starting date, Jan. 2008, should be necessary.</p> <p>4) The evidence on no claim of emission reductions by the grid should be provided because the electricity generated is supplied to the grid.</p> <p>5) The last item on the table, "This methodology is not applicable to....." should not be applicable to the proposed project. It is preferable to clarify the reason why this item shall be not applicable.</p>	5.2	<p>1) Revised</p> <p>2) Yes, they are the same, and it had been revised in PDD.</p> <p>3) Revised, and the evidence provided.</p> <p>4) Evidence provided (Certificate by Hanguo Power Bureau)</p> <p>5) Revised</p>	<p>1)OK JCI confirmed the revision in the revised PDD.</p> <p>2)OK JCI confirmed the revision in the revised PDD.</p> <p>3)OK JCI received the evidence and also confirmed the revision in the revised PDD.</p> <p>4)OK JCI received the evidence</p> <p>5)OK JCI confirmed the revision in the revised PDD.</p> <p>OK JCI received the evidences and also confirmed the revision in the revised PDD. The CL-9 is closed.</p>



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-10	The last paragraph of B.2 shall be clarified more clearly, stating the reason why the methodology of ACM0012 (Ver. 03.2) is applicable to the proposed project, in order to lead the conclusion based on the various conditions and requirements which are stated in B.2.	5.2	Revised	OK JCI confirmed the revision in the revised PDD. The CL-10 is closed.



CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-11	<p>It is requested to clarify the followings in the Table, which DOE will confirm during the on-site assessment:</p> <p>1)Baseline</p> <p>(1) Fossil fuel consumption in boiler: CO2 There is no heat supply for the proposed project.</p> <p>(2) Fossil fuel consumption in cogeneration plant: CO2 No fossil fuel is used.</p> <p>(3) Generation of steam: CO2 There is no flaring occurred.</p> <p>2)Project Activity</p> <p>(1)Supplemental fossil fuel: CO2 There is no supplemental fossil fuel needed in the proposed project</p> <p>(2)Supplemental electricity No supplemental electricity consumption</p> <p>(3)Electricity import: CO2 No captive electricity is generated</p> <p>(4)Project emissions: CO2 No waste gas cleaning is required</p>	5.7	Revised	<p>OK</p> <p>JCI confirmed the revision in the revised PDD and the actual situations during the on-site assessment with evidences.</p> <p>The CL-11 is closed.</p>



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-12	<p>As for the power generation, the followings are requested:</p> <ol style="list-style-type: none"> 1) As for P2, "Small thermal power plant construction management (Ministry of Electricity, 1997)" should be provided with English translation for the important sentences. 2) As for P5, please clarify the contents more specifically, in detail with evidences to be quoted. 3) AS for P7 and P11, please clarify the sentences in order to understand the context. 	<p>5.8 5.9 5.10 5.11</p>	<p>1) Provided.</p> <p>2) Revised.</p> <p>3) Revised</p>	<p>OK</p> <p>JCI received the evidence and confirmed the revision in the revised PDD.</p> <p>The CL-12 is closed.</p>
CL-13	<p>It is requested to clarify the serious consideration of CDM incentives prior to the start of the Project activity in addition to the FSR approval, PDR approval and the Project approval in the text and the timeline.</p> <p>It is also requested to provide the evidences for the timeline at page 20 and those as listed in the "Milestones" attached.</p>	6.6	Revised with evidences provided	<p>OK</p> <p>JCI received the evidences and confirmed the revision in the revised PDD.</p> <p>The CL-13 is closed.</p>
CL-14	Two combinations of plausible baseline alternatives should be discussed here because the two combinations are listed at Sub-step 1a.	6.8	Revised	<p>OK</p> <p>JCI confirmed the revision in the revised PDD.</p> <p>The CL-14 is closed.</p>



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-15	<p>It is requested to provide the evidences of the followings with calculation sheets if necessary:</p> <p>1) Static investment : 98.4 million Yuan A table of the investment comparison between the budgetary one and the actual one with evidences</p> <p>2) O&M cost : 29.89 million Yuan/y</p> <p>3) Electricity Tariff : 300 million Yuan/MWh</p>	6.12 6.14	<p>1) 16 contracts related the proposed projects are provided and the total amount of the considerations is 104 million Yuan more than the budget.</p> <p>2) The O&M cost consists of 6 items such as fuel cost, wage, repair, material, etc. The detailed information is provided with evidences.</p> <p>3) Notice of adjusted electricity price of Shaanxi Province issued by the Price Bureau of Shaanxi Province on 11 July 2006 is provided as the evidence.</p>	<p>OK</p> <p>JCI received the evidences on the actual investment, the O&M cost and the electricity tariff. JCI validated and concluded that they are appropriate and conservative, which are described in the validation report.</p> <p>The CL-15 is closed.</p>
CL-16	<p>How much uncertainty would be expected on the parameters chosen for the sensitivity analysis?</p> <p>It is requested to justify that the variation range of the “critical parameters” shall reasonably cover the fluctuations expected in the sensitivity analysis.</p>	6.12 6.14	<p>The description is improved according to the Annex 45 of EB 41, Guidance on the Assessment of Investment Analysis (version 2).</p>	<p>OK</p> <p>JCI confirmed the revision of the description in the revised PDD.</p> <p>JCI assesses the likelihood to hit the benchmark in the validation report.</p> <p>The CL-16 is closed.</p>



CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-17	<p>It is requested to provide the explanations on FIRR calculations, which are shown in the spreadsheets, for the following items;</p> <p>1) Tax preference treatment, such as 2 years exemption & 3 years reduction, for the proposed project investment cannot be applied, can it?</p> <p>2) The equity ratio to the static investment is 100%. It is requested to provide the financial report of the PO to show the project can be implemented.</p> <p>3) Total project life is 16 years as described in Table 1 at page 21. However each revenue of the first and last year is just a half, that means the net revenue of the total life span is of 15 years, isn't it ?</p> <p>4) Each depreciation of the first and last year (in the total 16 years) should be just a half, shouldn't it ?</p> <p>Depreciation of each year (total 16 years) is 6.23 million yuan, which seems to be calculated by $(98.40-4.92)/15=6.23$ in the spreadsheet. Which, do you think, is correct 15 or 16 years as the financial calculation basis? (refer to CAR-6)</p>	6.12 6.14	<p>1) No tax preference because the revenue of the proposed project is less than 70% to the total revenue of the PO which is stipulated in the Notification of Preferential Tax Policy Issues for the Great Western Development (attached).</p> <p>2) Financial reports of the PO in 2008 and 2009 were provided.</p> <p>3) Total project life span is 15 years.</p> <p>4) Depreciation of the first and last year had been corrected and the calculation base is confirmed as 15 years.</p>	<p>1) OK JCI confirmed the Notification and the revenue ratio to the total revenue.</p> <p>2) OK JCI confirmed the financial report.</p> <p>3) OK JCI confirmed the project life time is 15 years.</p> <p>4) OK JCI confirmed the revision in the IRR calculation sheet.</p> <p>OK JCI received the evidences and revision in the revised PDD. The CL-17 is closed.</p>



CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-18	It is requested to clarify in detail the selection criteria (coke production, area, installed capacity, etc.) for the similar projects, and the information source shall be provided. This is important to demonstrate that the projects, listed in Table 4, have not been subjectively chosen to be fitted to the context of PDD in this section.	6.18	Revised According to "Tool for the demonstration and assessment of additionality (Ver. 05.2)", the projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc.	OK JCI confirmed the selection criteria were correctly added and the information source was provided. The CL-18 is closed.
CL-19	It is preferable to describe "the equations" and "Where:" clauses exactly the same as those in the methodology (ver. 03.2) and tools. It is requested to check again, especially for the changes of the methodology in Version 03.2.	5.12	Revised according to the newest version of Methodology ACM0012	OK JCI confirmed the revision in the revised PDD. The CL-19 is closed.



CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-20	It is requested to explain the reasons why the Method-2 is selected because there would be some problems to measure waste heat in the cement equipments such as unfavorable measurement conditions and investment.	5.12	As the result of the on-site discussion, Method-3 Case 1 is selected from the following viewpoints: 1)No historical data 2)Direct measurable data 3) Reliable data 4) Final output of Electricity 5) Electricity amount having been calculated by Design Institute 6) Generated electricity reducing the CO ₂ emission by NWPG Therefore, the description related to f_{cap} including parameters listed at B.6.2 and B.7.1 are revised.	OK It is preferable to select Method-3 and Case 1 based on the discussion during the on-site as described at the left. JCI confirmed the revision in the revised PDD. The CL-20 is closed.
CL-21	In the Data/Parameter Table, the accuracy level, as well as the installed positions of electricity meters, shall be clarified.	7	Revised	OK The Data/Parameter Table is correctly revised including the change of f_{cap} type. The CL-21 is closed.



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TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-22	<p>It is requested to clarify more details regarding the responsibility of each member.</p> <p>Following missions, for example, are to be assigned to one of the team members.</p> <ol style="list-style-type: none"> 1) To supervise the project operation related to data monitoring, including negotiations with the grid company 2) To collect financial data such as receipts of electricity sales 3) To calibrate and maintain the meters checking, achieving and managing the data 	7	Revised	<p>OK</p> <p>JCI confirmed the revision in the revised PDD.</p> <p>The CL-22 is closed.</p>
CL-23	All the meters including main and backup should be clarified in the figure.	7	1.Revised	<p>OK</p> <p>JCI confirmed the revision including the description changes related to the two substation supply and the fcap in the revised PDD.</p> <p>The CL-23 is closed.</p>
CL-24	It is requested to clarify how often the monitoring report is prepared and reported.	7	Revised	<p>OK</p> <p>JCI confirmed the revision in the revised PDD.</p> <p>The CL-24 is closed.</p>

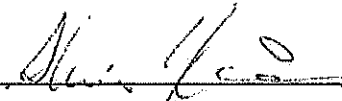
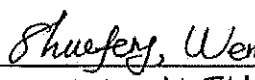


CDM Validation Protocol for Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant

TABLE-2 Resolution of Corrective Actions and Clarification Requests

No. CAR, CL	Clarifications and corrective action requests by validation team	Sec. No. in TABLE-1	Summary of project owner response	Validation team Conclusion
CL-25	It is requested to clarify the following procedures: 1) Training of the manager and engineers 2) Review of reported results/data 3) Internal audit 4) Project performance review 5) Corrective actions in order to provide more accurate future monitoring and reporting	7	Revised	OK JCI confirmed the revision in the revised PDD. The CL-25 is closed.
CL-26	1. It is requested to provide the EIA Report and the approval letter (with requirements if any) with English translation for the important points. 2. It should be clarified, in the PDD, when and by whom the EIA Report was completed.	10	1.The EIA report was provided. 2.Revised	OK JCI received the EIA report and confirmed the revision in the revised PDD. The CL-26 is closed.
CL-27	It should be preferable to clarify the regulations on such as waste energy, air, wastewater, solid wastes, noise, etc. with numerical values and the countermeasures during the construction and after implementation of the Project.	10	Revised	OK JCI confirmed the revision in the revised PDD. The CL-27 is closed.
CL-28	Wasn't the Project pre-announced to the stakeholders? In case the pre-announcement was done, it should be clarified in the PDD how and when it was done.	9	Revised	OK JCI confirmed the revision in the revised PDD. The CL-28 is closed.
FAR	Forward Action Requests			

Appendix B


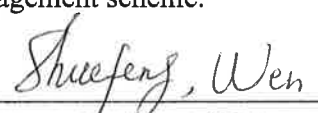
Certificate of Appointment of Validation Team	
Project Title	Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant
Applied Methodology	ACM0012 (Version 03.1) Sectoral Scope 1 and 4
Date: April 1, 2010	
Designated Operational Entity: Japan Consulting Institute (JCI)	
<p>Reflecting the competence criteria of JCI, this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, "F-CDM-REG" adopted at the 24th Meeting of CDM Executive Board, and Validation Procedure established by JCI CDM Center.</p> <div style="text-align: center; margin-top: 20px;"> <p>Signature </p> <p>Akio Yoshida, Executive Director, JCI CDM Center</p> </div>	
Date: April 5, 2010	
Client: Tepia Corporation Japan, Co., Ltd.	
<p>Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.</p> <p>It is also agreed that Mr. Mutsuo KATO of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.</p> <div style="text-align: center; margin-top: 20px;"> <p>Signature </p> <p>(Name) XUEFENG WEN (Title) Director, Tepia Research Inst.</p> </div>	

Validation Team

Validation Team	Name	Assigned Role
Leader	Hideyuki SATO	All relevant issues
Member	Yosei MAKINO	CDM auditor
Technical Reviewer	Masaki OKADA	Energy Industries, Manufacturing industries

Appendix B

Certificate of Appointment of Validation Team

Project Title	Shaanxi Haiyan Coke Making Group 24MW Waste Coke Oven Gas (COG) Based Electricity Generation Plant	
Applied Methodology	ACM0012 (Version 03.2)	
	Sectoral Scope 1 and 4	
Date: March 1, 2011		
Designated Operational Entity: Japan Consulting Institute (JCI)		
<p>Reflecting the competence criteria of JCI, this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, "F-CDM-REG" adopted at the 24th Meeting of CDM Executive Board, and Validation Procedure established by JCI CDM Center.</p> <div style="text-align: right; margin-top: 20px;"> <u>Signature</u>  Akio Yoshida, Executive Director, JCI CDM Center </div>		
Date: March , 2011		
Client: Tepia Corporation Japan, Co., Ltd.		
<p>Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.</p> <p>It is also agreed that Mr. Mutsuo KATO of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.</p> <div style="text-align: right; margin-top: 20px;"> <u>Signature</u>  (Name) XUEFENG, WEN (Title) Director, Tepia Research Inst. </div>		

Validation Team

Validation Team	Name	Qualified Technical Areas related to the Project
Leader	Hideyuki SATO	1.1. Thermal Energy Generation, 4.3. Iron and Steel
Member	Yosei MAKINO	1.1. Thermal Energy Generation, 4.3. Iron and Steel
Technical Reviewer	Junji YOSHIZAWA	1.1. Thermal Energy Generation, 4.3. Iron and Steel