



VALIDATION REPORT

2*6MW COKE OVEN GAS POWER GENERATION PROJECT IN XIANGCHENG COUNTY IN CHINA

REPORT No. 2007- 9156

REVISION No. 03



VALIDATION REPORT

DET NORSKE VERITAS
CERTIFICATION AS

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Approved by: Michael Lehmann, Technical Director	Organisational unit: Climate Change Services
Client: First Climate AG	Client ref.: Marcello Balasini

Project Name: 2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County
Country: China
Methodology: ACM0004
Version: 2
GHG reducing Measure/Technology: Waste Heat Recovery for power generation
ER estimate: 64 558 tCO₂e per year

Size

- ☒ Large Scale
☐ Small Scale

Validation Phases:

- ☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues

Validation Status

- ☐ Corrective Actions Requested
☐ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that the "2*6MW Coke Oven Gas Power Generation Project in Xiangcheng County", as described in the PDD version 13 of 30 March 2009, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria, and correctly applies the approved baseline and monitoring methodology ACM0004 version 02. DNV therefore requests the registration of the above indicated project as a CDM project activity.

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Report title: 2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County		
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Key words:

Climate Change
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VALIDATION REPORT

Abbreviations

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



VALIDATION REPORT

TABLE OF CONTENTS

1	EXECUTIVE SUMMARY – VALIDATION OPINION	1
2	INTRODUCTION	2
2.1	Objective	2
2.2	Scope	2
3	METHODOLOGY	3
3.1	Desk Review of the Project Design Documentation	3
3.2	Follow-up Interviews with Project Stakeholders and Site Visit	5
3.3	Resolution of Outstanding Issues	5
3.4	Internal Quality Control	7
3.5	Validation Team	7
4	VALIDATION FINDINGS	8
4.1	Participation Requirements	8
4.2	Project Design	8
4.3	Baseline Determination	9
4.4	Additionality	10
4.5	Monitoring	15
4.6	Estimate of GHG Emissions	17
4.7	Environmental Impacts	18
4.8	Comments by Local Stakeholders	18
4.9	Comments by Parties, Stakeholders and NGOs	18

Appendix A: Validation Protocol

Appendix B: Validation Team Certificates of Competence



VALIDATION REPORT

1 EXECUTIVE SUMMARY – VALIDATION OPINION

*Det Norske Veritas Certification AS (DNV) has performed a validation of the “2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County”, China. The validation was conducted on the basis of UNFCCC requirements for the CDM and host Party 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 DNV with sufficient evidence to determine the fulfillment of stated criteria.

The host Party is China and the Annex I Party is Switzerland. Both Parties fulfill the participation criteria and have approved the project and authorized the project participants. DNA of China has confirmed that the project assist in achieving sustainable development.

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

The project correctly applies ACM0004 version 2 “Consolidated baseline & monitoring methodology for waste gas and/or heat and/or pressure for power generation”

By generating energy from waste gas the project will displace fossil fuel based grid electricity. The project results in reduction of CO₂ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total mission reductions from the project are estimated to be on the average 64 558 tCO_{2e} per year over the fixed 10-year crediting period. 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.

*In summary, it is DNV’s opinion that the “2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County”, as described in the PDD version 13 of 30 March 2009 meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria, and correctly applies the approved baseline and monitoring methodology ACM0004 version 02. Therefore, DNV requests the registration of the above indicated project as a CDM project activity.*



VALIDATION REPORT

2 INTRODUCTION

First Climate (Switzerland) AG (formerly known as Factor Consulting + Management AG) has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County”, located in Henan Province, China (hereafter called “the project”). This report summarises 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.

2.1 Objective

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

2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords, and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology ACM0004. The validation team has, based on the recommendations in the Validation and Verification Manual /4/ employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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



VALIDATION REPORT

3 METHODOLOGY

The validation consisted of the following three phases:

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

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

Documentation reviewed during the validation:

- /1/ “2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County” PDD, version 3 of 12 June 2007, Version 12.1 of 11 July 2008 and final Version 13 of 30 March 2009.
- /2/ Letter of Approval ref. N. 695 issued by DNA of China on November, 2007.
- /3/ Letter of Approval ref. G514-3487 issued by Swiss DNA the 13th August 2008.
- /4/ International Emission Trading Association (IETA) & the World Bank’s Prototype Carbon Fund (PCF): *Validation and Verification Manual*.
- /5/ ACM0004, version 2, Consolidated Baseline and Monitoring Methodology for waste gas and/or heat and/or pressure for power generation.
- /6/ ACM0002, version 6, Consolidated Baseline and Monitoring Methodology for grid-connected electricity generation from renewable sources.
- /7/ Minutes of the 33 meeting of the CDM EB dated the 27 July 2007.
- /8/ The feasibility study report for Coke Oven Gas Power Generation Project in Xiangcheng County dated September 2005 approved by Henan Province Development and Reform Commission the 25 January 2006.
- /9/ EIA Report approved by Henan Environmental Protection Bureau the 21 May 2006.
- /10/ External Training Agreement of May 2007.
- /11/ Questionnaires filled by participants to the stakeholder meeting of the 28 April 2007.
- 12/ COG Purchase Agreement with ShouShan coke plant dated 29 July 2005.
- /13/ Project Activity Construction Permission approved by Henan Province Development and Reform Commission indicating the starting date of the project activity the 1st June 2006.
- /14/ Minutes of the Xiangcheng Mingyuan Fuel Gas Thermoelectricity Co., Ltd board of directors meeting of 30 May 2005 where it has been decided to apply for CDM.
- /15/ Letter of Loan Intend with Xiangcheng County Ziyun Rural Credit Cooperation of 13 October 2006.



VALIDATION REPORT

- /16/ IRR Analysis Spreadsheet.
- /17/ China Energy Statistical Yearbook, 2006.
- /18/ China Electricity Power Yearbook 2004, 2005, 2006.
- /19/ China NDRC: China's Regional Grid Baseline Emission Factors, 9 August 2007.
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf>.
- /20/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories.
- /21/ Renewable resource data published in www.newenergy.org.cn.
- /22/ Annex 3 of Minutes of 22 meeting of the CDM EB dated the 25 November 2005.
- /23/ Certification issued by the Commercial Registry of Canton Zurich the 4th of July 2008 relative to Factor Consulting change of name.
- /24/ <http://www.jste.gov.cn/cyfb/cyfg/101416290.htm>
- /25/ page 67 of "Methods and Parameters for Economic Assessment of Construction Project"
- /26/ page 69 of "Methods and Parameters for Economic Assessment of Construction Project"
- /27/ <http://xiangcx.smehen.gov.cn/gongqiu/show.aspx?Id=125>
- /28/ pag. 34-35 of the Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects
- /29/ page 90 of the FSR
- /30/ <http://www.xcjgxxw.com/jggl/jggl36.htm>
- /31/ pag. 14 of the FSR
- /32/ COG purchasing agreement signed between ShouShan Coking Plant and the PP on the 29 July 2005.
- /33/ Turbine-generator Unit Purchasing Contract signed on the 1 March 2006
- /34/ Boiler Purchasing Contract signed on the 27 April 2006
- /35/ Turbine-generator Unit Installation Contract Signed on the 28 November 2006
- /36/ Power Purchase Agreement signed on the 28 March 2007

Main changes in the PDD, between the version published for the stakeholder commenting period (version 2) and the final version submitted for registration are due to DNV clarification requests and updating the EF figures given by Chinese DNA and to requests for review raised by the EB.



VALIDATION REPORT

3.2 Follow-up Interviews with Project Stakeholders and Site Visit

	Date	Name	Organization	Topic
/37/	17/18 October 07	Mr. LIU Zhixiao	Mingyuan fuel gas thermoelectricity Co., ltd	Project additionality Project approval status
/38/	17/18 October 07	Mr. ZHANG Yongfeng	Mingyuan fuel gas thermoelectricity Co., ltd	Stakerholder consultation process
/39/	17/18 October 07	Mr. HUANG Rushun	Mingyuan fuel gas thermoelectricity Co., ltd	Project additionality Project approval status (EIA,
/40/	17/18 October 07	Mr. TANG Shaoying	Mingyuan fuel gas thermoelectricity Co., ltd	Project technology Project monitoring plan
/41/	17/18 October 07	Mr. LI Shaoran	Mingyuan fuel gas thermoelectricity Co., ltd	Project financials IRR analysis & FS
/42/	17/18 October 07	Mr. JIA Huichao	Research Institute of Environmental Sciences Zhengzhou University	Project background information
/43/	17/18 October 07	Mr. Yan Qishe	Research Institute of Environmental Sciences Zhengzhou University	Project background information

3.3 Resolution of Outstanding Issues

The objective of this phase of the validation was to resolve any outstanding issues which needed be clarified prior to DNV positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in a transparent manner the criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the “2*6 MW Coke Oven Gas Power Generation Project in Xiangcheng County” is enclosed in Appendix A to this report.

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

VALIDATION REPORT

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

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities		
Requirement	Reference	Conclusion
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) of risk or non-compliance with stated requirements or a request for Clarification (CL) where further clarifications are needed.</i>

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
<i>The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.</i>

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

Figure 1: Validation protocol tables



VALIDATION REPORT

3.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical reviews were performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Team leader / GHG auditor	Zamarron	Francisco	Italy
CDM validator	Covarrubias	Elfride	Italy
CDM validator	Qing Xing	Sequoia A	China
Sector expert	Lehmann	Michael	Oslo
Technical reviewer	Chandrashekara	Kumaraswamy	India

The qualification of each individual validation team member is detailed in Appendix B to this report.



VALIDATION REPORT

4 .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.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation version 12.1 of the 11th of July 2008 /1/.

4.1 Participation Requirements

The project's host Party is China and the participating Annex-I Party is Switzerland. Both the participating Parties, China and Switzerland, fulfill the requirements for participating in a CDM project activity. China ratified the Kyoto Protocol on 30 August 2002 and has established the DNA, National Development and Reform Commission (NDRC). Switzerland ratified the Kyoto Protocol on 9 July 2003 and has established DNA, Federal Office for the Environment FOEN, Climate Unit. The project participants are Xiangcheng Mingyuan Fuel Gas Thermoelectricity Co., Ltd (as the project owner) from China and First Climate (Switzerland) AG (formerly known as Factor Consulting + Management AG (as the CER buyer) of Switzerland.

DNA of China, NDRC has issued a Letter of Approval (LoA) on November 2007 /2/, authorizing Xiangcheng Mingyuan Fuel Gas Thermoelectricity Co., Ltd as a project participant and confirmed that the project assists in achieving sustainable development. FOEN of Switzerland has issued a Letter of Approval (LoA) the 13 August 2008 /3/, authorizing First Climate (Switzerland) AG (formerly known as Factor Consulting + Management AG) as a project participant.

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

4.2 Project Design

The project activity involves the installation and operation of Coke Oven Gas (COG) based power plant, utilizing excess coke oven gas from the Shoushan Coking Plant, located in Xuchang City, Xiangcheng County of Henan Province of the People's Republic of China. The geographical coordinates of the proposed project activity are 113°29' east longitude and 33°50' north latitude. The total installed capacity of the power plant is 12 MW and is expected to generate approximately 72 000 MWh per year at a load factor of 68%. Net electricity of 66 240 MWh, expected to be produced by the proposed project, will be supplied to the Central China Power Grid. DNV was able to confirm the same against the approved feasibility study report /8/.

The main project components are two recovery boilers of 40 t/h steam production capacities and two turbines - generator units of 6 MW each. The project activity will utilize nearly $7.86 \cdot 10^7 \text{ Nm}^3$ of coke oven excess gas for power generation which would otherwise be flared and vented into atmosphere. The generated electricity will be delivered to Shoushan transformer station with two 10 kV outlets, and finally to the CCPG which is mainly dominated by fossil-fuel fired power capacity.



VALIDATION REPORT

The project is estimated to result in an average annual GHG emission reduction of 64 558 tCO₂ during the crediting period. The added advantage of the project will be in terms of energy conservation, employment generation and environmental wellbeing.

The start date of the project activity has been identified as 1 June 2006 which is the date of construction permit, approved by Henan Province Development and Reform Commission /13/. The expected operational lifetime of the project is 20 years and a fixed crediting period of 10 years has been chosen with the starting date of the first crediting period as 1 June 2008.

4.3 Baseline Determination

The project applies the approved baseline methodology ACM0004, version 02, “Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation”. The baseline methodology is appropriate to the project activity as it utilizes waste coke oven gas for generating electricity and delivers the same to Central China Power Grid. The project is a newly built COG power plant and does not involve fuel switching as coke oven gas is the by-product in the coke generation process.

The project proponent has identified and discussed the following alternatives:

Scenario A - the proposed activity, without support of CDM:

An investment analysis has demonstrated that the IRR of the project without CDM revenue is 8.70% which is lower than the benchmark of 12%. The benchmark has been chosen in accordance with the stipulation in the “Economic Evaluation Method and Parameter of Construction Projects v.3” for the coking industry. Hence, it is deemed that financial barriers prevent this scenario to happen. For further details please refer to section 4.4 of this report.

Scenario B: The electricity is supplied by the China Central Power Grid;

This scenario is in compliance with Chinese laws and regulations and the scenario and identified barriers do not prevent it from happening. Consequently, in the absence of the project activity, the equivalent electricity generated by the project would have been produced by the CCPG.

Scenario C – Existing or new captive power generation on-site:

Chinese regulations prohibit the establishment of thermal power plants with installed capacity lower than 135 MW in urban districts and also thermal units under 100 MW are strictly controlled by authorities. Considering that the project foresees a capacity equal to 12 MW, this scenario has been excluded. The project participant has also considered the alternative of using renewable resources (hydro, wind, biomass, solar). The hydro and wind based options for power generation has been eliminated from being a baseline scenario, due to scarcity of the resources in the region. In addition, the solar and biomass based power generation has been excluded from the baseline scenario due to the higher unit investment cost required for implementation of these projects. DNV was able to confirm this against the Chinese data published in www.newenergy.org.cn /21/ and expected costs of the project activity in the Feasibility Study /8/.

Scenario D: A mix of scenarios B & C:

This scenario has not been taken into consideration as scenario C is not feasible.

Scenario E: Other uses of the waste heat and waste gas:

VALIDATION REPORT

This scenario is not considered as a possible baseline option due to the unavailability of local industrial facility that could utilize the waste coke oven gas (COG). The residential area is located far from the COG generation site and due to the high content of carbon monoxide in COG, it is not suitable for the use in residential areas.

Therefore, Scenario B, electricity supplied by the CCPG, has been selected as the baseline scenario for the project activity. The electricity delivered to the grid by the project would have otherwise been generated by the operation of power plants connected to the CCPG with the respective amount of tCO₂e emissions. The project will therefore displace such quantity of emissions.

The project boundary includes the coke production facilities where the waste gas is generated, the steam turbine generation system with its auxiliary system and all power plants connected to the China Central Power Grid.

	GHGs involved	Description
Baseline emissions	CO ₂	Emissions from equivalent to the amount of electricity displaced by the project activity in CCPG.
Project emissions	NA	The project activity does not involve any auxiliary fuel consumption.
Leakage	NA	No leakage to be considered as per the methodology.

4.4 Additionality

The additionality of the project has been established using the “Tool for the demonstration and assessment of additionality”, version 3 approved by the CDM-EB. The project activity primarily demonstrates the additionality through the investment analysis and barrier analysis.

DNV requested and assessed evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity.

The following table shows the chronological events related to implementation, construction or real action of the project:

No.	Date	Event
1	30 May 2005	Board decision on CDM development
2	29 July 2005	COG purchasing agreement signed between ShouShan Coking Plant and the PP.
3	September 2005	Feasibility Study Report (FSR) completed by the officially accredited Henan Provincial Engineering Consulting Company.
4	25 January 2006	FSR Approval issued by the Henan Provincial Development and Reform Committee
5	21 May 2006	EIA Approval issued by the Henan Provincial



VALIDATION REPORT

		Environmental Protection Bureau
6	1 March 2006	Turbine-generator Unit Purchasing Contract signed
7	27 April 2006	Boiler Purchasing Contract signed
8	1 June 2006	Construction Permission issued by Henan Provincial Development and Reform Committee
9	27 August 2006	Construction Contract signed
10	13 October 2006	Letter of Loan Intent signed
11	28 November 2006	Turbine-generator Unit Installation Contract Signed on the 28 November 2006
12	28 March 2007	Power Purchase Agreement signed on the 28 March 2007

According to the description of EB 41 on “start date of the project activity”, the start date of the project should be “the project participant has committed to expenditures related to the implementation or related to the construction of the project activity”.

Considering this recent EB’s requirement, DNV acknowledges that the project start date should be 1 March 2006, which is the date when the PP signed the Turbine-generator Unit Purchasing Contract /33/. DNV verified the signed contract during the validation process, and can confirm that project participant would have to pay 10% of the total cost as down payment upon signing the contract. Thus this can be a clear commitment for project participant concerning this project.

DNV also verified that the COG Purchasing Agreement was signed on 29 July, 2005 /32/. This agreement does not contain any penalty or bidding clauses constraining the PP to implement the project, and therefore DNV believes that it cannot be considered as the project starting date. The same reason applies for other dates listed above, including the FSR approval date or board decision on CDM development date.

Step 1: Identification of project activity alternatives.

The five alternatives identified for the project activity are:

- (A) The proposed activity, without support of CDM
- (B) The electricity is supplied by the China Central Power Grid;
- (C) Existing or new captive power generation on-site
- (D) A mix of scenarios B & C
- (E) Other uses of waste gas or waste heat

Apart from the third alternative, all the other alternatives comply with all applicable laws and are thus possible baseline scenarios.

DNV confirms that there is a regulation from NDRC stating that for new coking plant or expansions after 1 January 2005, the COG should be utilized. The Shoushan Coking Plant has been planned in 2003 and commissioned in 2006. The construction permission was issued on 3 April 2004 which is before the publication of the NDRC regulation. Therefore, it is deemed that the regulation does not apply to this coking plant.

However, as detailed in section 4.3, only scenario A and B are considered realistic and credible alternatives and need to be discussed below.



VALIDATION REPORT

Step 2: Investment Analysis:

Benchmark analysis has been applied to demonstrate the existence of barrier to the first possible alternative as identified above. The proponent has carried out the IRR analysis based on the tariff structure, investment cost and cost of production /8/.

DNV analysed the suitability of using 8% as project IRR benchmark for this project activity. While the 8% benchmark has been widely used in the Power Sector according to “Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects”, it is DNV opinion that such a benchmark is not suitable for this project activity for the following reasons:

1. Although the electricity generated by the project activity is exported to the grid and thus appears to be comparable to any other power project, the risk profile of the project is different when looking at the fuels used to feed the plant. This project differs from power generation projects fed with conventional power plants due to the following:
 - The power capacity of this project (12 MW) is based on the amount of COG produced by the ShouShan Coking Plant, which is the only supplier for this project. This low power capacity makes this project more similar to the small scale projects with a higher risk profile, while the large scale power generation projects fed with conventional fuels have a lower risk profile.
 - The electricity generation of this project relies on the amount of waste gas generated during the coke production which is subject to large fluctuations due to:
 - The volatility of the Coke market and the over capacity of Coke production in China /24/;
 - Malfunctions and shut-downs in coke production due to technical problems (According to the historical data of the ShouShan Coking Plant in 2007, as verified by DNV, the amount of hours lost in production due to technical problems were near 1200 hours).
2. The main Chinese reference for project IRR benchmark determination is the “Methods and Parameters for Economic Assessment of Construction Project” issued by National Development and Reform Commission and Ministry of Construction P. R. China. This methodology requires /25/ that “projects exposed to higher risk level can appropriately employ higher Benchmark IRR when selecting the minimum acceptable IRR”. For the reasons listed in point 1 above, this project has a higher risk profile than conventional power plants so a higher project IRR benchmark can be selected. As a reference, the IRR Benchmark in the “Methods and Parameters for Economic Assessment of Construction Project” for the coking sector is 12% and the 12% benchmark was applied in the project’s FSR when assessing the economic viability of the project.

DNV acknowledges that the initially selected benchmark of 12% in the FSR study is not considered suitable, the 8% benchmark for conventional power plants contemplated is, in DNV’s opinion and for these reasons stated above, not suitable for this project activity as it does not properly reflect the real risk profile for this project activity.



VALIDATION REPORT

The alternate benchmark of long-term lending rate of domestic commercial banks, plus 2-3 percentage point, as proposed by the project participants, is calculated the same way as the 8% benchmark included in the *Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects* of 2003, but applies more recent lending rates.

In the Project Participant's response to the Request for Review of this project, it is explained in detail how the updated benchmark for the power sector applying 2005 lending rates according to the Interim Rules results in an alternative benchmark of 10 %.

Moreover, according to the "Methods and Parameters for Economic Assessment of Construction Project" /26/ , when selecting Financial Benchmark IRR, the below guidelines should be followed:

1. For projects financed by the government, the sectorial benchmark IRR issued by the national administrative departments must be employed in project financial analysis;
2. For private enterprise financed projects, the employed benchmark IRR can be the minimum acceptable IRR calculated by the investor himself or the sectoral benchmark IRR issued by the national administrative departments in project financial analysis. In case the minimum acceptable IRR calculated by the investor himself is utilized, the benchmark IRR can be higher, equal to or lower than the sectoral benchmark IRR.

DNV could confirm that the investor for this project activity is a private investor without any government financing /27/. Hence, if the investor decides to use the "Interim Rules on Economic Assessment of Electrical Engineering Retrofit Projects" for calculating the minimum acceptable IRR applicable to the project, the investor shall consider /28/ the long-term lending rate of domestic commercial banks, plus 2-3 percentage points as the benchmark for the project activity.

DNV has checked lending rates in China from 2002 to 2006 published by the National People's Bank of China (PBC) resulting in an average loan interest rate for the period of 7.96%. Considering the additional 2-3 % contemplated in the "Interim Rules" the resulting benchmark range will be 9.96% - 10.96%. Therefore, the alternate project benchmark of 10% proposed by the Project Participant is deemed to be a reasonable and adequate benchmark for this project activity. Based on this benchmark, the project activity with an IRR of 8,7 % is financially unattractive.

DNV was able to verify the financial indicators from the Feasibility Study Report (FSR) of the project activity /8/ done by an independent entity appointed by the DNA of China. The consideration of the price for COG has been justified as follows:

Market price for purified COG can be up to 0.80 RMB/Nm³ (<http://finance.jrj.com.cn/news/2007-05-01/000002204190.html>). However the cost of supplying, purifying and utilizing the COG is often prohibitively expensive while the demand for COG remains limited. The COG purchase price specified in the gas supply agreement is the result of negotiations between the coking plant and the PPs. The COG price is actually quite low in comparison with the maximum market price stated above, especially when taking



VALIDATION REPORT

into account that it will remain fixed for a period of 15 years without adjustment for inflation. Giving the COG away for free would not be rational for the coking plant as this would mean giving away the right to a potentially valuable resource at no cost. Therefore it is deemed that a COG purchasing price, considered at 0.075 RMB/Nm³ (and as specified in the COG purchasing agreement) is reasonable and acceptable.

The 62 500 USD per year reported under the item “power and fuel costs” of the financial analysis is the annual cost the project owner has to pay for the use of industrial water. In fact the description used for this cost item in the spreadsheet is not adequate.

According the FSR /29/, the annual amount of water needed for the project activity is 500,000 tons, and the contemplated water price is 6.94 RMB per MWh of gross electricity produced. The expected annual gross electricity produced by the project activity is 72,000 MWh, therefore, the annual cost for industrial water is:

$$6.94 \text{ Yuan RMB} * 72,000 \text{ MWh/a} = 499,680 \text{ RMB} / 8 \text{ RMB/USD} = 62,500 \text{ USD /a}$$

Which is the amount reported in the financial analysis.

DNV has checked all the above parameters, in particular that the water price used by the designer in the FSR of 1 RMB per ton of industrial water ($6.94 \text{ RMB/MWh} * 72000 \text{ MWh/a} / 500,000 \text{ t/a} = 1 \text{ RMB/t}$) is in line with Xuchang prefecture industrial water price /30/.

For the plant load factor and other parameters, DNV refers to the FSR. The FSR was prepared by Henan Provincial Engineering Consulting Company in September 2005, which is an independent consulting company. The FSR were verified and approved by Henan Provincial Development and Reform Committee on the 25 January 2006 and can thus be considered as information provided by independent and recognized sources.

According to the FSR, the installed capacity had been chosen based on the maximum hourly COG flow rate at normal operation of coking plant, which is 13,100 Nm³ of COG per hour /31/ and assuming a Net Calorific Value of 17,900 kJ/Nm³. The Load Factor instead is determined considering the electricity production of the turbines at full capacity by the expected number of annual operational hours (6,000 hours per year) contemplated in the FSR. The number of operational hours has been estimated taking into consideration: the malfunction rate and shut-downs of upstream facilities in Coking plant, the regional power grid load intake (as the local grid may at times refuse the power generated by the project, the market demand of coke product and an uncertainty factor.

All the above parameters have been verified by DNV during the validation process and are deemed to be reasonable.

A + /- 10% sensitivity analysis has also been performed in order to check influence of the following factors used during the IRR calculations (without CDM contributions):

- Total investment,
- Annual operation costs,



VALIDATION REPORT

- Electricity Price

This sensitivity analysis confirms that project faces significant economic and financial barriers even with a hypothetical 10% variation on:

- Reduction in the total investment costs; IRR equal to 10.23%,
- Reduction in the annual operation costs; IRR equal to 10.34%,
- Increase the grid price; IRR is equal to 11.67%.

The project IRR will equal the benchmark if the raw COG price is decreased by 42.8%. This is unlikely to happen as the raw COG price is fixed in the COG purchase agreement until the end of 2020. It has also been demonstrated that the project IRR equals the benchmark IRR of 12% only if the investment costs and operation costs are decreased by 20% or electricity feed-in tariff is increased by 11%. Given the current rising trends of inflation rates in China and the fact that the PP has already signed a PPA with a fixed tariff for twenty years, it is deemed unlikely that project activity will cross the benchmark without the aid of CDM revenues.

Sept 3: Barrier analysis:

Investment barrier: It has been addressed that as the project activity requires a large amount of initial investment and the project proponent being new in the field, has had to encounter constraints in raising capital from the market. Taking into consideration the CDM revenue and subject to CDM registration, Xiangcheng Country Ziyun Rural Credit Corporation approved the loan to the project proponent. DNV was able to verify the argument from the Letter of Loan intention, dated 13 October 2006 / 15/.

Step 4: Common Practice Analysis:

It has been stated that among the existing 60 coking plants in Henan province, most of the coking plants generate excess coke oven gas that are flared or vented into the atmosphere. The proponent has analysed all COG power plant with waste gas recovery systems of similar capacity in the province operating since 2000. It has been verified that there are only three other gas recovery systems installed apart from the project activity. The main difference between the proposed project activity and the three similar projects is that the proposed project activity is implemented by an independent COG to power plant. The electricity generated by the proposed project activity will be delivered to CCPG, while power generation from these similar COG power generation projects is used to satisfy the needs of coking plants themselves. Compared to the other captive COG power plants, the proposed project activity has an additional cost of the main raw material (purchasing COG) and compared with the above large enterprises, the PP of the proposed project as a small investor, has difficulties to overcome the investment barriers mentioned above, and also financially weaker than the above large private enterprises.

4.5 Monitoring

The proposed project applies the approved monitoring methodology, ACM0004 “Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation”, version 02 /5/. The selected monitoring methodology is applicable for the project.

VALIDATION REPORT

The combined margin emission factor is determined *ex-ante* based on the most recent information available. Given that the emission factor is calculated *ex-ante* and according to the monitoring methodology ACM0002, version 6 /6/ the only data to be monitored is the electricity supplied to the grid by the project. As the project activity does not involve auxiliary fuel consumption, project emission has been neglected as per the methodology. It has been verified that the net power exported to the CCPG grid will be monitored continually and recorded on daily basis and archived each month by the project owner. Electricity meters of accuracy level of $\pm 0.2\%$ will be used for monitoring and will be calibrated as per the stipulated procedures for technical administration of electricity metering equipment (DL/T448-2000). Data from the backup meter will be used for ensuring the amount of electricity supplied to the grid.

Details of the data to be collected, the frequency of data recording and its format are clearly described in the monitoring plan. The authority and responsibility for project management, monitoring, measurement, review and reporting has been established. Data collected will be kept for two years after the completion of crediting period. Detailed monitoring plan developed by the project proponent has been provided and verified by DNV.

4.5.1 Parameters determined *ex-ante*

The parameters used emission reduction calculations that are available *ex ante* include:

- Data needed to calculate the operating margin emission factor, based on the choice of the method to determine the operating margin (OM), consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);
- Data needed to calculate the build margin emission factor consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);

The parameters determined *ex-ante* for calculating the emission factor are listed in the PDD and were verified by DNV.

EF_{OM} and EF_{BM} factors have been taken from the notification on determining baseline emission factor of China’s Grid published on the official web site of the Chinese DNA on 9 August 2007.

4.5.2 Parameters monitored *ex-post*

The parameters monitored *ex-post* are:

- The total electricity generated by the project activity,
- The auxiliary electricity utilized by the project activity within the project boundary
- The net electricity delivered to the CCPG

4.5.3 Management system and quality assurance

The monitoring plan submitted clearly describes the authority and responsibility of overall project management, the procedures for training of the operating personnel; calibration; internal review; corrective and preventive actions. CDM manager has been identified as the responsible person for tracking and supervising proposed project activity and will be supported by technical and financial team of the enterprise.



VALIDATION REPORT

4.6 Estimate of GHG Emissions

The proposed project is a grid connected COG power plant and displaces the equivalent amount of electricity in the Central China Power Grid. Thus as per the methodology ACM0004, version 2, baseline emission factor is calculated in accordance with the procedures prescribed in the approved baseline methodology ACM0002 version 06. The electricity baseline emission factor is determined *ex-ante* as a combined margin consisting of the weight average of the operating margin emission factor (EF_{OM}) and the build margin emission factor (EF_{BM}). Operating margin (OM) emission factor and Build Margin (BM) emission factor has been sourced from the data published by Chinese DNV, NDRC, on 9 August 2007¹.

Simple OM: Due to the non availability of dispatch data and load duration curve at power plant level, simple OM has been selected. Simple OM emission factor calculation method is applicable as the low-cost must-run projects are lower than 50% (36.76% in 2001, 35.98% in 2002, 34.43% in 2003, 38.37% in 2004, and 38.56% in 2005) of the total Central China Power Grid generation. The “*ex-ante* vintage data” is employed for the OM calculation of the project. The EF_{OM} for 2003, 2004 and 2005 are calculated, and the three year average is calculated as a full generation weighted average of the emission factors, consequently the Operating Margin Emission Factor is 1.2899 tCO₂e/MWh. The operating margin emission factor (EF_{OM}) is calculated *ex-ante* and will not be reviewed in the first crediting period of the project activity.

Build Margin: The *ex-ante* BM emission factor is determined as the most recent information available on plants already built – a sample of group of plants at the time of PDD submission (5 plants most recently built, or the power plant capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently).

Because plant specific fuel consumption and electricity generation data is not publicly available in China, the EB guidance on the request for deviation titled “Application of AM0005 and AMS-I.D in China” has been applied as follows:

- The capacity additions from the years 2002 to 2005 is chosen which represents 24.60% of total installed capacity/18/
- The weight of installed capacity additions for thermal power plant is accounted for 69.52% of total installed capacity additions /17/.
- The standard coal consumption of 336.66 gce/kWh is used to determine the BM emission factor, which is deemed conservative. The coal consumption efficiency of 35.82% is defined as the best technology commercially available in China by the DNA of China /19/.
- The local net calorie value of each kind of fuel, the local carbon content of each kind of fuel and the IPCC 2006 default value of carbon oxidization factor are used to calculate the BM /20/.

The calculated build margin emission factor (EF_{BM}) is 0.6592 tCO₂e/MWh.

Thus the combined baseline emission coefficient for the Central China regional grid has been estimated *ex-ante* to be 0.9746 tCO₂e/MWh.

¹ <http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File1364.pdf>



VALIDATION REPORT

The difference between the grid emission factor in the PDD submitted for registration (0.9746tCO₂/MWh) and that published for global stakeholder consultation (0.96813 tCO₂/MWh) is due to the fact that the official primary data the Emission Factor is sourced from was updated on the 9th of August of 2007. The change is therefore the result of a clarification request (CL8) raised during the validation process.

As the proposed project does not have any provision for auxiliary fuel consumption during the start up, project emission is considered to be zero and neglected as per ACM0004, version 2. Leakage is not considered as per the methodology.

4.7 Environmental Impacts

Environment Impact Assessment for the proposed project has been conducted and is approved by Henan Environmental Protection Bureau on 21 May 2006 /9/. DNV was able to verify the EIA report and the letter of approval. No major environmental impacts associated to the project activity have been identified.

4.8 Comments by Local Stakeholders

A project consultation meeting was held at Mingyan Fuel Gas premises on the 28 of April 2007 in order to collect the opinions from local stakeholders. Thirty-one people consisting of local governmental civil servants, inhabitants and social organization representatives, attended the meeting. Questionnaires /11/ were distributed among them and opinions sought from the participants attending the meeting

The conclusions reported in the PDD are in line with the contents of the questionnaires filled by the participants. DNV has been able to verify the distributed questionnaires and the feedback from the local stakeholders. No adverse comments were received.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD was made publicly available on climate change website (<http://www.dnv.com/certification/climatechange/index.asp>) on the 5 July 2007. Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 6 July 2007 to 4 August 2007.

Yang Qingqing, Green Life Association have made two comments to the PDD during the consultation period. The comments received (in unedited form) and the project participant responses are given here below:



VALIDATION REPORT

Comment by: [Yang Qingqing, Green Life Association](#)

Inserted On: 2007-07-06

Subject: coke oven gas is required by law to be used

Comment: page 9, scenario 5, Other uses of the waste COG:

PDD states no other uses are available. However, according to Chinese regulation, coke oven gas from coke plant must be utilized. It can not be vented or flared.

Therefore, coke oven gas utilization is a baseline scenario. If there is no other utilization than the project available, the project is the baseline. If there is other utilization option, that utilization option will be the baseline, and the project actually replaced the baseline utilization activity as well as the baseline energy demand.

Client's response to stakeholder's comments:

Since the commissioning of the coking facility in late 2006, the excess COG gas has been flared into the atmosphere. Although there is a national regulation (which come into effect in January 2005), requiring the re-use of the excess gas, the regulation has not been enforced. As it has been indicated in the common practice analysis, most of the coking plants in Henan Province do not have COG utilization system in place. According to official governmental sources (www.hndrc.gov.cn/fgwj), at present there are about 60 coking plants in Henan province, most of these coking plants make the excess coke oven gas flared and vented into atmosphere according to official governmental documents.

How DNV has considered the comments received in its validation:

Project proponent's response to the above comment is acceptable in light of the data available from the official source and the arguments for common practice provided in the revised PDD. Though the national regulation on utilization of COG from coking plant was introduced but the regulation has not been enforced. Further, the 76th notification of the National Regulation NDRC 2004 which regulates COG use came into effect the 1st of January 2005. So according to Annex 3 of EB22 /22/ this regulation can be considered as E- and does not need to be taken into consideration in developing a baseline scenario. As explained in section 4.4, the Shoushan Coking Plant has been planned in 2003 and commissioned in 2006. The construction permission was issued in April 03 2004 which is before the publication of the NDRC policy. Therefore, it is deemed that the regulation does not apply to this coking plant.



VALIDATION REPORT

Comment by: Yang Qingqinq, Green Life Association
 Inserted On: 2007-07-06
 Subject: project starting date
 Comment: <http://www.freshpower.cn/Newshtml/9837.html>

<http://www.freshpower.cn> 2004-12-16

The project started construction in 2004/11/29. While PDD says project decided to apply CDM in May 2005.

What more, take in count ACM0004 was not in effective until July 2005. This is doubtable that the project owner even knows CDM by when they actually started project construction. The validator should pay much attention on examining evidences provided by the project owner. EB should also pay attention to such case.

The project is owned by several shareholders. major shareholders (Wohushan coke plant, Hongyuan coke plant and Ziyun coke plant) are also the coke oven gas provider to the project. So the cost showing in the PDD for purchasing coke oven gas actually goes in the three coke plants company as the income. project IRR is meaningless because major shareholders can manipulate the COG price in paper. The right way to calculate IRR should be counting COG price as free.

I also noticed that Wohushan coke plant, Hongyuan coke plant and Ziyun coke plant were new coke plants started operate in 2004. It further proved the purpose of the project is to consume the coke oven gas from their parent companies and make their parents be legally running.

Client's response to stakeholder's comments:

As indicated in the construction permit the starting date of the project activity is June 1 2006. Even though ACM0004 was not in effect until July 2005. However, when the CDM consultants, Zhengzhou University, explained the CDM concept to the project owner, they used the AMS-II.B (valid since 2003) and NM0107 (public available in 2005). The project considered CDM in May 2005 as demonstrated in the minutes of the board of directors.

HongYuan coke plant and ZiYun coke plant are not shareholders of the proposed project. WoHuShan coke plant is a minor shareholder of the proposed project but it does not supply COG to the proposed project. The Project Participant has signed a COG supplying contract with Shou Shan coke plant. Therefore COG cost must be accounted for IRR calculation.

How DNV has considered the comments received in its validation:

Project proponent's response to the comment is acceptable in light of the feasibility study report provided and the proof of construction permit provided to DNV. In China, the date of construction permit is taken as the start date of the project, the start date of the project activity specified in the revised PDD is found to be acceptable. Prior to July 2005, proponent has considered applying AMS-II.D and NM0107 for the proposed project.



VALIDATION REPORT

It has also been verified that the coke oven gas supplier is not the shareholder of the proposed project and thus the proponent has to buy coke oven gas from the supplier. DNV was able to verify this from the COG purchase agreement with ShouShan coke plant /12/.

APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
About Parties		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	CAR-1 OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	CAR-1 OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK

Requirement	Reference	Conclusion
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK.
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK
About forecast emission reductions and environmental impacts		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30	CDM Modalities and Procedures §40	OK Consultation period: from

Requirement	Reference	Conclusion
days, and the project design document and comments have been made publicly available.		6 July to 4 August 2007
Other		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

Table 2 Requirements Checklist

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
A. General Description of Project Activity <i>The project design is assessed.</i>						
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>						
A.1.1. Are the project’s spatial boundaries (geographical) clearly defined?		/1/	DR, I	The Project consists of a 2*6MW Coke Oven Gas Recovery System installed at Shoushan Coking Plant in Xuchang City, Henan Province , in the People’s Republic of China.		OK
A.1.2. Are the project’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?		/1/	DR, I	The Project system boundary is China Central Power Grid (CCPG) to which the Project is connected. CCPG includes Jiangxi, Henan, Hubei, Hunan, Chongqing, Sichuan Power Grids. The projects system boundaries also include the source of waste gases, WHR boilers, its auxiliaries and power generation units which are connected to the electrical grid		OK
A.2. Participation Requirements <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>						

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	The Parties involved are the People's Republic of China (Host) and Switzerland (Annex 1). Project participants are Henan Xichuan Cement Co. (Project Owner) and First Climate (Switzerland) AG (formerly known as Factor Consulting + Management AG) (CER buyer)		OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/	DR	LoA from Swiss DNA ref. G514-3487 issued the 13th August 2008 LoA from China DNA ref. N. 695 issued on November, 2007 The Chinese and the Swiss DNAs have not issued the Letter of Approvals (LoA) for the project activity yet.	CAR-1	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	China ratified the Kyoto Protocol on 30/08/2002 and Switzerland on 9 July 2003 China's DNA: National Development and reform Commission (NDRC) Switzerland's DNA: Federal Office for the Environment FOEN, Climate Unit		OK
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR, I	There is no public funding involved in the project. During the validation no information has been found indicating that the project can lead to a diversion of official development assistance funding towards China		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.3. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/1/	DR	The project design and engineering reflects good practice through the use of COG for the generation of power.		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR	Yes. The technology used significantly results in reduction in GHG emissions caused by coal fired boiler. And the technology is not commonly used in China.		OK
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	Provisions for training and plant maintenance are made in separate documents to the monitoring plan		OK
A.4. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/	DR	The Chinese and the Swiss DNAs have not issued the Letter of Approvals (LoA) for the project activity yet. Chinese Letter of Approval was obtained in November 2007.	CAR-1	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR,I	The project can contribute to foster the local economic growth by improving the local energy generation infra-structure and generating employment during both construction and operation of the recovery system.	OK	OK
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/	DR	The project activity applies baseline methodology ACM0004, version 02, “Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation”		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/	DR	The baseline methodology is applicable for the project as: : 1) it displaces electricity generation with fossil fuels in the electricity grid 2) no fuel switch is done in the process		OK
B.2. Baseline Scenario Determination <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and</i>					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<i>whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>						
B.2.1. What is the baseline scenario?		/1/	DR	Baseline scenario is the import of equivalent power from CCPG.		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?		/1/	DR	The PP has not included motivations on why biomass, solar, etc could not be the baseline Apart from the baseline scenario, other five alternatives have been identified: Scenario A - The proposed activity, without support of CDM Scenario B: The electricity is supplied by the China Central Power Grid Scenario C – Existing or new captive power generation on-site Scenario D: A mix of scenarios B & C Scenario E: Other uses of the waste heat. Financial Barriers prevent Scenario A from happening Scenarios C & D are not feasible due to Chinese Regulations. There are no other uses available for the waste heat. Scenario B is the baseline scenario.	CL-7	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR	Baseline scenario has been determined applying Methodology ACM 0004		OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR,I	Assumptions made are conservative from a emission reduction point of view.		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR,I	Main relevant national and sector policies, regulations and department rules have been considered		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR,I	Baseline determination has been done with using China Electric Power Yearbook 2006 with last available data (2005).		OK
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	There are no significant risks to the baseline		OK
B.3. Additionality Determination <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/	DR	The project additionality has been assessed applying the “Tool for demonstration and assessment of additionality”, version 3		OK

B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/	DR	The steps of the “Tool for demonstration and assessment of additionality” have been illustrated in the PDD. <u>Investment Analysis</u> IRR sensitivity study conducted shows that project IRR without CDM revenue is, in the most optimistic scenario, lower than the benchmark ratio. <u>Barrier analysis:</u> The identified barriers are related to financial barriers. No particular assumptions have been made. <u>Common practice analysis:</u> No particular assumptions have been made.		OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/	DR,I	In the PDD there is little factual evidence supporting the claim that access to loan financing could be gained subject to CDM registration IRR Analysis has been provided In the PDD there is little factual evidence supporting the claim that access to loan financing could be gained subject to CDM registration The PDD does not contain motivation	CAR-2 CL2 CL3	OK OK OK

			supporting the claim that the project activity is additional even though flaring of excess of coke oven gas is not permitted in Chinese Environmental Legislation and a recovery system has to be installed in any case Main barrier is related to difficulties to gain access to Chinese loan market. A letter of Loan Intention has been signed by project owner subject to CDM registration. The project activity can be considered additional on the basis of the number of similar projects in the area at the moment of CDM consideration by project owner		
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/	DR	The PP decided to apply for CDM in May 2005, being the project starting date, according to EB 33 indications, June 2006 as stated in the construction permission.		OK
B.4. Calculation of GHG Emission Reductions – Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR,I	According to methodology ACM0004, there are not project emissions.		OK

B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/	DR	NA		OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/	DR	NA		OK
B.5. Calculation of GHG Emission Reductions – Baseline emissions <i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	State clearly in the PDD whether the EF has been calculated and then fixed ex-ante or it has been directly sourced from the official Chinese DNA website. In the last case indicate data of publication in the web and Annex 3 of PDD is not needed In the BM calculations, the EF thermal and EF_{BM,y} calculation is not working out to be correct, as per the formula and values stated in Annex 3 Baseline emissions are calculated as the net electricity produced by the renewable source (the project activity) times the CEPG emission factor. The electricity baseline emission factor 0,9746 tCO₂/MWh is determined ex-ante as a combined margin,	CL-8 CL-9	OK

			consisting of the weight average of the operating margin emission factor 1,2899 tCO ₂ /MWh and the build margin emission factor 0,6592 tCO ₂ /MWh taken from the notification on determining baseline emission factor of China's Grid published on the official web site of the Chinese DNA on August 9 th 2007.		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	All assumptions made are conservative		OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	Estimation of uncertainty is not required either in methodology ACM0004 or in Chinese DNA, NDRC, requirements		OK
B.6. Calculation of GHG Emission Reductions – Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	According to ACM0004 methodology potential sources of leakages cannot be considered.		OK
B.7. Emission Reductions <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and	/1/	DR	Yes		OK

give long-term benefits related to the mitigation of climate change.					
B.8. Monitoring Methodology <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	According to the monitoring plan, the meters to be installed are ammeters (Amperes measurement) without indicating how power generation / consumption (Watts measurement) will be measured The Monitoring plan is documented according methodology ACM004	CL 4	OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/	DR	Data Management (point 6 Section B.7.2) contemplates to keep the records for two years after the crediting period		OK
B.9. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	Project emissions are stated to be zero, since no auxiliary source is used in the project. Explain the arrangement made for emergency situations According to methodology ACM0004, there are not project emissions.	CL 10	OK

B.10. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	In the PDD there is not a clear definition of: - the required accuracy of the meters (in the PDD reference is made to a generic “National Electricity Industry Relevant Standards”) - the acceptance criteria to be used when conducting internal metering checks (no definition of the max tolerable error between the main meter and back up meter) - the meters maintenance procedures the operative instructions to be used in case of meters malfunctioning	CL-5	OK
			In section B.7.1 PDD states EGgen as electricity produced to grid, while in section B.7.2 states it to be total electricity generated by the project. It is not clear which one of the two is correct	CL-11	
			EGgrid-in should be included in the monitoring plan, since its stated it will be compared with EGy to take the lower of the two.	CL-12	
			The meth requires the monitored data EGy considered for ER calculation to be cross-checked with receipts. This is not addressed	CL-13	

			in this project. The monitoring data will be archived in the form of electronic format at the end of each month, all the electronic files will backup with CD or disk, and the file will be printed out.		
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	The data to be monitored is: EG_{GEN}: total amount of electricity generated by the project activity EG_{grid-in}: the net amount of electricity delivered to CCPG generated by the project activity EG_{AUX}: the amount of electricity consumed on-site		OK
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	All the above parameters will be metered		OK
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	In the PDD there is not a clear definition of: - the required accuracy of the meters (in the PDD reference is made to a generic “National Electricity Industry Relevant Standards”) - the acceptance criteria to be used when conducting internal metering checks (no definition of the max tolerable error between the main	CL-5	OK

			meter and back up meter) the meters maintenance procedures the operative instructions to be used in case of meters malfunctioning Meters will conform to Specs for Technical Administration of Electricity Metering Equipment (DL/T448-2000)		
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	In the PDD there is not a clear definition of: - the required accuracy of the meters (in the PDD reference is made to a generic “National Electricity Industry Relevant Standards”) - the acceptance criteria to be used when conducting internal metering checks (no definition of the max tolerable error between the main meter and back up meter) - the meters maintenance procedures the operative instructions to be used in case of meters malfunctioning Meters accuracy has been described and indications have been provided in case of errors	CL-5	OK
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	Monthly controls are adequate		OK

B.10.7. Is the registration, <i>monitoring, measurement and reporting</i> procedure defined?	/1/	DR	The CDM manager will collect all the required data in both writing and electronic format at a monthly basis and stored them in duplication manner to ensure availability of the data upon request.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Yes, maintenance will be done according to Procedures for Technical Administration of Electricity Metering Equipment (DL/T448-2000)”		OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	This has been addressed in the Monitoring Plan		OK
B.11. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	No leakages to be considered under this methodology		OK
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by	/1/	DR	Monitoring of sustainable development indicators is not required by the Chinese		OK

legislation in the host country?			DNA. The environmental impacts are identified in the EIA that was approved on 24 July 2007.		
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	Chinese DNA, NDRC, and ACM002 methodology does not require collection and archiving of data related to environmental, social and economic impacts.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	Chinese DNA, NDRC, and ACM002 methodology does not require monitoring of sustainable development indicators.		OK
B.13. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR	Authority and responsibility are described in PDD.		OK
B.13.2. Are procedures identified for training of monitoring personnel?	/1/	DR	An external training agreement entered into by the PP has been verified		OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	In the PDD there is not a clear definition of: - the required accuracy of the meters (in the PDD reference is made to a generic “National Electricity Industry Relevant Standards”) - the acceptance criteria to be used when conducting internal metering	CL-5	OK

			checks (no definition of the max tolerable error between the main meter and back up meter) the meters maintenance procedures the operative instructions to be used in case of meters malfunctioning The procedure addresses the event of malfunctions of the measurement equipment		
B.13.4. Are procedures identified for review of reported results/data?	/1/	DR	The monitoring plan includes procedures for results / data review		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	The procedure addresses the event of malfunctions of the measurement equipment		OK
C. Duration of the Project/ Crediting Period <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/	DR	The project has started in January 2006. Operational lifetime of the project activity is 20 years. The first crediting period from May 2008 to May 2018.	OK	OK
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	Yes	OK	OK
D. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided</i>					

<i>to the validator.</i>					
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR,I	The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant. The PDD contains a brief summary of the conclusions of the approved EIA relative to the plant. Main Impacts are: air emissions, waste water and noise. COG cooling treatment, water effluent neutralisation treatment and mufflers are the planned measures to mitigate these impacts.	CAR-3	OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR,I	The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant. EIA has been carried out and has been approved by the Yunnan Province Environmental Protection Bureau on the 21 May 2006.	CAR-3	OK
D.1.3. Will the project create any adverse environmental effects?	/1/	DR,I	The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant. No	CAR-3	OK
D.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant.	CAR-3	OK

			No		
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant. The Environmental Impacts have been addresses in Section D of the PDD.	CAR-3	OK
D.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant. Yes, as stated in China DNA LoA	CAR-3	OK
E. Stakeholder Comments <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/1/	DR,I	The PDD does not describe: how the public consultation meeting have been properly announced the number of questionnaires that have been distributed to the local population why the number of responses received is considered a representative number Yes relevant stakeholders have been consulted as it is explained in PDD	CL-6	OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR,I	The PDD does not describe: how the public consultation meeting have	CL-6	OK

			been properly announced the number of questionnaires that have been distributed to the local population why the number of responses received is considered a representative number Yes appropriate media have been used as explained in PDD		
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR,I	Chinese DNA, NDRC has not particular requirements for the CDM Stakeholder Consultation Process .		OK
E.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR,I	A summary of the stakeholder comments are described in the PDD		OK
E.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR,I	Answer to the stakeholder comments has been given by PP		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1 The Chinese and the Swiss DNAs have not issued the Letter of Approvals (LoA) for the project activity yet.	A.2.2 / A.4.1	Chinese DNA LoA has been obtained Swiss DNA LoA has been obtained	Chinese DNA issued project LoA on November 2007 and Swiss DNA has issued the LoA on the 13th of August 2008. The LoAs have been verified by DNV. OK. CAR 1 is closed
CAR 2 The complete IRR Analysis for the project activity has not been submitted yet	B.3.3	The IRR Analysis has been submitted	The complete IRR Analysis has been submitted and DNV has verified that is in line with the FS approved by local authorities. OK. CAR 2 is closed
CAR 3 The Environmental Impact Assessment for the specific project and the respective approval by Chinese authority has to be provided by the project participant.	D.1	The approved EIA has been submitted	The EIA approved by local authorities has been submitted and DNV has verified that PDD reports its conclusions. OK CAR 3 is closed
CL 1 A description of the main changes introduced in version 9 respect version 3 have not been reported in the PDD. The main project development milestones (e.g. when the project owner has decided to apply for CDM, application date for a loan specific for the project activity, construction starting date, etc.) have not been reported in the PDD. The annual average amount reported in table A.4.4	C.1.1 B.13.2	The PDD has been reviewed (ver. 10) and additional clarifications introduced As per EB 33, the project start date is the earliest of the following dates: construction permission, commissioning or the first activity performed in the project. For the specific case of the project is the date stated in the construction permission.	The main changes correspond to DNV's requests of clarifications and updating of the grid emission factor in line with data provided by Chinese DNA. The main project milestones are reported in the PDD. OK CL1 is closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
is not correct			
CL 2 In the PDD there is little factual evidence supporting the claim that access to loan financing could be gained subject to CDM registration	B.3.3	The Barrier analysis has been carried out to support the Financial Analysis. Additional explanations have been reported in the PDD and further evidence has been done with the letter of Loan Intention	Financial Analysis and Letter of Loan Intention have been provided and verified. OK CL 2 is closed
CL 3 The PDD does not contain motivation supporting the claim that the project activity is additional even though flaring of excess of coke oven gas is not permitted in Chinese Environmental Legislation and a recovery system has to be installed in any case	B.3.3	At present there are about 60 coking plants in Henan province, the vast majority of these coking plants make the excess coke oven gas flared and vented into atmosphere (see official report from the Government at website indicate at Footnote 9 of the PDD). The complete list of COG recovery systems (with and without CDM registration) installed in the last five years in the province of Henan are reported in the PDD and clearly shown why they are different from the proposed project.	The project participant has indicated official sources where results that venting and flaring are common practice. Besides the project participant has obtained all the required clearances. OK. CL 3 is closed.
CL 4 According to the monitoring plan, the meters to be installed are ammeters (Amperes measurement) without indicating how power generation / consumption (Watts measurement) will be measured	B.8.1 / B.9.4	The PDD (Section B7.2) has been reviewed (ver.10) and additional clarifications introduced	It has been verified that § B 7.2 of the PDD has been corrected. OK. CL 4 is closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 5 In the PDD there is not a clear definition of: - the required accuracy of the meters (in the PDD reference is made to a generic “National Electricity Industry Relevant Standards”) - the acceptance criteria to be used when conducting internal metering checks (no definition of the max tolerable error between the main meter and back up meter) - the meters maintenance procedures - the operative instructions to be used in case of meters malfunctioning	B.3.3 / B.9.5	The PDD (Section B7.2) has been reviewed (ver. 10) and additional clarifications introduced	It has been verified that § B 7.2 of the PDD has been corrected. OK. CL 5 is closed
CL 6 The PDD does not describe: how the public consultation meeting have been properly announced the number of questionnaires that have been distributed to the local population why the number of responses received is considered a representative number	E.1.1 / E.1.2	The PDD (Section E.1 & E.2) has been reviewed (ver. 10) and additional clarifications introduced	It has been verified that § E.1 and E.2 of the PDD have been corrected. OK. CL 6 is closed
CL 7 The PP has not included motivations on why	B.2.2	It has been revised to take biomass and solar into consideration.	It has been verified that § B.5 of the PDD have been corrected.

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
biomass, solar, etc could not be the baseline		Please see step 1 of the revised PDD.	OK. CL 7 is closed
CL 8 Data source for grid emission factor is requested.	B.5.1	The PDD has been revised to as directly sourced from the Chinese DNA website for the OM&BM calculation. Annex 3 has been revised as well. Please see B.6.1 and Annex 3 of the revised PDD	It has been verified that § B.6 of the PDD have been corrected. OK. CL 8 is closed
CL 9 In the BM calculations, the EF thermal and EF _{BM,y} calculation is not working out to be correct, as per the formula and values stated in Annex 3	B.5.1	The PDD has been revised to as directly sourced from the Chinese DNA website for the OM&BM calculation. Annex 3 has been revised as well. Please see B.6.1 and Annex 3 of the revised PDD	It has been verified that § B.6 of the PDD have been corrected. OK. CL 9 is closed
CL 10 Project emissions are stated to be zero, since no auxiliary source is used in the project. Explain the arrangement made for emergency situations	B.9.1	Please see B.6.1 of the revised PDD	It has been verified that § B.6.1 of the PDD have been corrected. OK. CL 10 is closed
CL 11 In section B.7.1 PDD states EG _{gen} as electricity produced to grid, while in section B.7.2 states it to be total electricity generated by the project. It is not clear which one of the two is correct	B.10.1	The term EG _{gen} is specified as “Total electricity generated by the project activity in year y” Please see B.7.1 of the revised PDD	It has been verified that § B.7.1 of the PDD have been corrected. OK. CL 11 is closed

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CL 12 EG _{grid-in} should be included in the monitoring plan, since its stated it will be compared with EGy to take the lower of the two.	B.10.1	The parameter EG _{grid-in} is included in the monitoring plan. Please see the B.7.2 of the revised PDD	It has been verified that § B.7.1 & B.7.2 of the PDD have been corrected. OK. CL 12 is closed
CL 13 The methodology requires the monitored data EGy considered for ER calculation to be cross-checked with receipts. This is not addressed in this project.	B.10.1	Electricity sale invoice is included in the monitoring plan. Please see B.7.2 point 4 of the revised PDD	It has been verified that § B.7.2 of the PDD have been corrected. OK. CL 13 is closed

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Sequoia (Qingxing) A

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 4 January 2008

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services



CERTIFICATE OF COMPETENCE

Elfride V. Covarrubias

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

<i>GHG Auditor:</i>	Yes		
<i>CDM Validator:</i>	Yes	<i>JI Validator:</i>	--
<i>CDM Verifier:</i>	--	<i>JI Verifier:</i>	--
<i>Industry Sector Expert for Sectoral Scope(s):</i>	--		

Høvik, 4 January 2008

Michael Lehmann

Michael Lehmann

Technical Director, International Climate Change Services



CERTIFICATE OF COMPETENCE

Francisco Zamarron

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1

GHG Auditor:	Yes		
CDM Validator:	--	JI Validator:	--
CDM Verifier:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Kumaraswamy Chandrashekara

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJ1-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 4 & 5		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJi-i1)

GHG Auditor:	Yes		
CDM Validator:	Yes	JI Validator:	--
CDM Verifier:	Yes	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	AM0027	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0030	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	AM0031	Yes
ACM0004, ACM0012	Yes	AM0032	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	AM0035	Yes
ACM0007	Yes	AM0038	Yes
ACM0008	Yes	AM0041	Yes
ACM0009, AM0008, AMS-III.B	Yes	AM0034	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	AM0043	
AM0009, AM0037	Yes	AM0046	
AM0013, AM0022, AM0025, AM0039, AMS-III.H, AMS-III.I	Yes	AM0047	
AM0014	Yes	AMS-II.A-F, AM0044	Yes
AM0017	Yes	AMS-III.A	Yes
AM0018	Yes	AMS-III.E, AMS-III.F	Yes
AM0020	Yes		
AM0021, AM0028, AM0034, AM0051	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 5 February 2007

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