



VALIDATION REPORT

CHUANWEI GROUP 24 MW WASTE GAS BASED CAPTIVE POWER PLANT IN CHINA

REPORT No. 2007-0849

REVISION No. 02



VALIDATION REPORT

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Client: Energy Systems International BV	Client ref.: Mr. Zhang Yimeng

Project Name: Chuanwei Group 24 MW Waste Gas Based Captive Power Plant

Country: China

Methodology: ACM0004

Version: 02

GHG reducing Measure/Technology: power generation from waste gas

ER estimate: 180 693 tCO₂e

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 "Chuanwei Group 24 MW Waste Gas Based Captive Power Plant" project in China, as described in the PDD of 5 August 2008, version 6, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0004. DNV thus requests the registration of the project as a CDM project activity.

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Report title: Chuanwei Group 24 MW Waste Gas Based Captive Power Plant in China		
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Key words:

Climate Change

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Validation

Clean Development Mechanism

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Abbreviations

BFG	Blast Furnace Gas
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
DNV	Det Norske Veritas Certification Ltd.
DNA	Designated National Authority
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
LoA	Letter of Approval
MP	Monitoring Plan
NCV	Net Caloric Value
NGO	Non-governmental Organisation
CCPG	Central China Power Grid
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
SEPA	State Environmental Protection Administration
UNFCCC	United Nations Framework Convention on Climate Change



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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the “Chuanwei Group 24 MW Waste Gas Based Captive Power Plant” project in China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host country is China and the Annex I Party is the Netherlands. Both Parties fulfil the participation criteria for CDM and have approved the project and authorized the project participants. The DNA from China has also confirmed that the project assists the country in achieving sustainable development.

The project correctly applies ACM0004 “Consolidated baseline methodology for waste gas and/or heat for power generation”, version 02 of 3 March 2006.

The electricity generated by the utilization of the waste gas from a blast furnace will displace electricity generated by consuming coal and fuel oil in Central China Grid. The project thereby results in reductions 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 emission reductions from the project are estimated to be on the average 180 693 tCO₂e per year over the first 7-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.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV’s opinion that the “Chuanwei Group 24 MW Waste Gas Based Captive Power Plant in China”, as described in the PDD of 5 August 2008, version 6, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0004 version 2. DNV thus requests the registration of the project as a CDM project activity.



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2 INTRODUCTION

Neijiang Xingming Energy Co., Ltd has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the “Chuanwei Group 24 MW Waste Gas Based Captive Power Plant” project in China (hereafter called “the project”). This report summaries the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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).

3.5 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 /12/ 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.



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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.

3.5 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ CDM PDD version 1 dated 3 August 2006 and final version 6 dated 5 August 2008.
- /2/ Emission Reduction Calculation Spreadsheet
- /3/ Approval letter by DNA of China dated 13 December 2006.
- /4/ Approval letter by DNA of the Netherlands dated 4 January 2007.
- /5/ Project feasibility study report, April 2004 and approval letter by the Sichuan Province Economic commission, October 2005.
- /6/ Environmental impact assessment in November 2005 and approval letter by the Environmental Protection Bureau of Sichuan Province on December 2005.
- /7/ Copies of stakeholders consultation questionnaires.
- /8/ The project's operation and management manual.
- /9/ The approval for grid access by Central China Power Grid Company on 27 October 2005.
- /10/ The employment description of the Project
- /11/ Request for payment from instruments suppliers (CCK and Dongfang Kewei Co., Ltd.)
- /12/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF), Validation and Verification Manual, <http://www.vvmanual.info>
- /13/ ACM0004: Consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation, version 2, dated 3 March 2006.
- /14/ CDM Executive Board, "Tool for the demonstration and assessment of additionality", version 03.
- /15/ China Electric Power Yearbook 2001, 2002, 2003, 2004 and 2005
- /16/ China Energy Statistical Yearbook 2000&2002, 2004, 2005
- /17/ 2006 IPCC Guidelines for National Greenhouse Gas Inventories
- /18/ Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or Below issued by the General Office of the State Council,

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decree no. 2002-6.

- /19/ CDM EB, Answer to DNV's request for deviation of Chinese project activities from AM0005, received on 1 December 2005. To be found on <http://cdm.unfccc.int/Projects/Deviations>
- /20/ Notification by NDRC, MOST, Ministry of Finance, Ministry of Construction, General Administration of Quality Supervision, Inspection and Quarantine, State Environmental Protection Administration, Government Offices Administration of the State Council, Administration for Offices Directly under the Central Committee of Communist Party of China on releasing the approval on implementing the Ten Key Energy Saving Programme listed in the "Eleventh Five Year Plan".
(<http://www1.cei.gov.cn/rei/doc/DQZC/200608212199.htm>.)
- /21/ Niu Fu'an. Assessment methodology of BFG power generation project and its generalization prospects. Chinese Energy, 1999 (3): 9~11.
- /22/ Wang Zhengmin. Reasonable utilization and energy saving potential of blast furnace gas. Chinese Energy, 1999 (1): 28~32; Huang Minkun, Peng Xiangyu. Study on steel company's plan of combined-cycle power generation utilizing BFG. Central China Electricity, 2001, 14(1): 14~17
- /23/ Zhang Chuanxiu, Ni Xiaofeng. Social and economic benefits of power generation by BFG. Shanghai Metals, 2004, 26(4)
- /24/ Wang Weixing. The process energy consumption and energy saving potential in Iron and steel Companies. Metallurgy Management, 2005(6):32~34.
- /25/ Lou Mabao. Utilization of Low NCV waste gas. Gas Turbine Technology, 2000, 13 (3): 16~18; Wang Hongtao, Cheng Yanling, Yang Tianzhu. Research of 220 t/ h high temperature and pressure plant boiler with combusting pure BFG. Energy Conservation Technology, 2005, 3(5):422-425.

The main changes between the version of the PDD published for the 30 days stakeholder commenting period and the final version submitted for registration are as follows:

- 1) Version 03 of the "Tool for the demonstration and assessment of additionality" has been applied instead of version 02;
- 2) Description of the identification of the baseline scenario was revised to improve transparency;
- 3) Elaboration on the barrier analysis was revised to improve transparency and logic and additional information on the investment barrier was included;
- 4) The emission factor calculation of the grid was updated to be based on the most recent information according to the "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (ACM0002);
- 5) The boundary of common practice analysis is expanded
- 6) The starting date of the project was revised to be the construction starting date;
- 7) The crediting period was revised;



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- 8) The monitoring plan and the IRR calculation spreadsheet were included in the PDD to improve transparency.

3.5 Follow-up Interviews with Project Stakeholders

	Date	Name	Organization	Topic
/26/	2006-11-11	Mr. Xu Xuankang, General manager Ms. Yang Chunlan, Supervisor of the operation group Mr. Lu Ding, Operational worker	Chuanwei Group 24 MW waste gas based captive power plant	➤ Validation of starting date of the project ➤ Review of project engineering and technical details of the project ➤ Assessment of project additionality
/27/	2006-11-11	Mr. Xie Jianguo, General manager Mr. Zhao bin, Department manager Mr. He Xiaobo, Engineer	Technical Centre of Chuanwei Group	➤ Assessment of project baseline and calculations ➤ Review of monitoring plan ➤ Review of monitoring and verification procedure of the organisation and management structure of the organisation for the project activity.
/28/	2006-11-12	Mr. Ji Xinhua, Vice- manager	Neijiang Xingming Energy Co.,Ltd.	➤ Environmental clearances ➤ Review of the stakeholder consultation process.

3.5 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's positive conclusion on the project design. In order to ensure transparency a validation protocol was customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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



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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 “Chuanwei Group 24 MW Waste Gas Based Captive Power Plant” project 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:

- 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.

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

Validation Protocol Table 2: Requirement checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
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.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a corrective action request (CAR) due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.

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

Figure 1: Validation protocol tables



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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 review was 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, CDM validator	Yue	Ming	DNV China
CDM Validator	Tang	Wilson	DNV China
CDM Verifier	Kuo	Tim	DNV China
Energy sector expert	Lehmann	Michael	DNV Norway
Technical Reviewer (applicant)	Brinks	Hendrik	DNV Norway
Technical Reviewer	Telnes	Einar	DNV Norway

The qualification of each individual validation team member is detailed in Appendix B to this 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 6 dated 5 August 2008.

4.1 Participation Requirements

The project participants are Neijiang Xingming Energy Co., Ltd of China and Energy Systems International B.V. of the Netherlands. The host Party China and the participating Annex I Party the Netherlands meet the requirements to participate in the CDM.

The DNA of China has issued a Letter of Approval (LoA) /2/ on 13 December 2006, authorizing Neijiang Xingming Energy Co., Ltd as project participant and confirming that the project assists in achieving sustainable development.

The DNA of the Netherlands has issued a LoA /3/ on 4 January 2007, authorizing Energy Systems International B.V. as project participant.

The project does not involve public funding, and 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.

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4.2 Project Design

The project involves the installation of two boilers connected to the blast furnace. Based on the energy balance, about 11.95×10^8 m³ BFG per year will be supplied. The steam produced by the boilers will be routed to two 12 MW turbines/generators for the generation of electricity. The project is expected to generate about 190 GWh of electricity per annum, which will displace electricity from the Central China Power Grid (CCPG) to which the project is connected. The electricity generated by the project will be distributed in-house to other plant units.

The project design reflects current good practice and all necessary permits are in place and have been verified during validation. Training records of the operational and maintenance personnel have been presented and found to be in order. The organisation provides for sufficient training of its operational and maintenance personnel and the management system in place have been certified.

The project construction started on 30 June 2004. The project commenced operation and electricity production at the end of July 2006. The lifetime of the project is expected to be 25 years. A renewable crediting period (7 years) is selected, starting on 1 September 2008 or the date of registration, whichever is later.

4.3 Baseline Determination

The project applies the approved consolidated methodology ACM0004 “Consolidated baseline methodology for waste gas and/or heat for power generation”, version 2, dated 3 March 2006. The baseline methodology is applicable since the project involves

- electricity generation by utilisation of waste gases in industrial facilities
- displacement of electricity generated with fossil fuels in the electricity grid
- no fuel switch in the process where the waste heat or the waste gas is produced after the implementation of the project activity

Figure 3 in the PDD clearly shows previous flaring of BFG, and this is also verified by the on-site validation. The project owner has provided the energy balance spreadsheet for the recent three years. The data shows that the project BFG has no increasing trend in the future. The baseline scenario in the absence of the project activity is that electricity generated by the project would have been generated by the operation of grid-connected power plants. In accordance with ACM0004, an ex-ante electricity baseline emission factor is calculated and fixed consisting of the combination of the operating margin (OM) and build margin (BM) emission coefficient (see section 4.6).

The system boundaries can be presented in tabular format:

	GHGs involved	Description
Baseline emissions	CO ₂	The major emission sources. The GHG emission reduction is achieved by replacing the electricity generated by the thermal power plant in the CSPG.
Project emissions	CO ₂	On-site fossil fuel consumption due to the project activity. May be an important



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		emission source, and will be calculated based on the fuels consumed.
Leakage		No leakage

4.4 Additionality

The project additionality is demonstrated by applying the “Tool for the demonstration and assessment of additionality”, version 3.

The project construction started on 30 June 2004. The project owner started considering the CDM in early 2004 and entrusted Chengdu Saiensi Energy Investment & Management Co. Ltd to establish a CDM cooperation pipeline in May 2004. The project was one of the Chinese projects shown at the 2005 Carbon Expo in Cologne, Germany, and one of the candidate CDM projects collected by MOST in early 2005. After that the CERs buyer was introduced to the project owner and an ERPA was signed in June 2006. It is therefore demonstrated that the CDM was considered in the decision making process prior to the project implementation. During the on-site validation the relevant documents have been provided by the project owner and were verified by DNV.

Step 1 – Identification of alternatives to the project activity consistent with current laws and regulations:

- a) The project not undertaken as a CDM project activity
- b) The current situation of surplus BFG being flared would continue and electricity would be provided by the grid
- c) Power generation by existing or new captive power plants on-site, using other energy sources than waste gas and/or heat and/or pressure, such as coal, diesel, natural gas, hydro, wind, etc
- d) A mix of options (b) and (c), in which case the ratio of power generation by the grid and the captive power plant should be specified;
- e) Other uses of the waste gas.

The alternative “Power generation by existing or new captive power plants on-site, using other energy sources than waste gas and/or heat and/or pressure, such as coal, diesel, natural gas, hydro, wind, etc” does not comply with the national legal requirements, and the others are in line with legal and environmental requirements in China. According to the Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135 MW or Below issued by the General Office of the State Council, decree no. 2002-6, construction of coal-fired power plants with unit capacity of equal or less than 135 MW are prohibited in the areas which are covered by the large grids, neither for grid-connected or captive power plants, to avoid resources waste and environmental pollution.

Therefore, a mix of options (b) and (c), in which case the ratio of power generation by the grid and the captive power plant should be specified, is not feasible. Other uses of the waste heat and waste gas are not feasible due to the high toxicity, explosion risk and low caloric value of BFG.

Therefore the alternatives (a) and (b) are realistic and credible alternatives.



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Step 2 – Investment analysis: This step has not been selected.

Step 3 – Barrier analysis: The following barriers have been identified:

Investment barrier

Since the company was hit by the Asian Financial Crisis, the decision-makers of Chuanwei Group clearly recognize the business risks of iron and steel industry. For improving and enhancing the business competitiveness, most of the capital of the Chuanwei Group is invested into the key upstream projects that determine the production cost of iron and steel industry. Under the circumstances, it is pointed out by the decision maker of the Chuanwei Group that from the initial phase of the project it was not considered strategic and the investment in the project should therefore be financed outside the Chuanwei Group as much as possible.

There were also some national macro regulations issuing warnings on the risks of investments in some industries, including the steel industry. The working conference on economic issues held by the central government and No.47 standing conference of State Council have required that macro regulations be imposed on loans to industries such as steel industry. The project needed a capital investment of about 30 million RMB for completion. However, ICBC withdrew the loans previously made to the project. This is demonstrated by the link reference 20 in the PDD, where the announcement was policed by ICBC with the purpose of strictly control loan in industries included in the iron and steel sector. As an iron and steel company, Chuanwei Group faced difficulties in getting loans from banks under these circumstances. The documents mentioned have been provided during the validation. Moreover, since the financial institutions of China are generally unfamiliar with the economic analysis of energy efficiency investment projects, they usually hold conservative attitudes towards such projects and are thus reluctant to provide them with loans. At present, the banks lack experience on risk management as well as methods and mechanisms on management assessment regarding this type of project, which is conceived as the most serious barrier to the financing of the proposed project by domestic commercial banks. In order to solve the financing problem faced by the project, project-specific stocks were issued within staff of the Chuanwei Group and meanwhile equity investment introduced from Neijiang Xingyuan Power Group. However, there currently still exists a capital shortage causing the project owner to request more capital for the investment, which has forced the project to cancel installation of a coal gas tank to store and stabilize the utilization of BFG in the project, and delayed the project construction. This then has resulted in large amounts of blast furnace gas continuing to be flared. This is also verified during the on-site validation. Meanwhile, the unfavorable position of commercial banks to energy efficiency projects also prevented the project from obtaining sufficient loans to continue the construction. The project failed to obtain loan from local bank, which was fatal for the project owner in order to continue the project construction.

Technological barrier

The technology for combusting blast furnace gas solely in boilers is patented in China, and is now being demonstrated and disbursed. However, technical barriers have been encountered during the demonstration of the technology, including: low theoretical combustion



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temperature, large amount of flue gas leading to a series of changes in the convection heat transfer characteristics and difficulties for both ignition and stable combustion. Most project staff will come from former laid-off-workers, who lack the knowledge to operate the quantity of the various instrumentation applied. Hence, before the project is put into production, a comprehensive and intensive training will have to be implemented, which will incur additional investment and operational costs.

DNV reviewed the evidences on the history of prices increasing in China, the delay of payment and the prolonged construction period. According to DNV's experience in China, it is correct that many banks had limited, if any, knowledge about CDM in early 2005 and it was possible that banks were not able to systematically assess CDM related revenues at that time. Therefore, it is understandable that the loan application of the project was rejected even if CDM was considered at that time. Also DNV has confirmed the electricity price by checking the evidence provided during the validation process.

By checking with the certification of the patented technology obtained from the China Patent Database of China Patent Information Center and evidence stated in the updated PDD, it is confirmed by DNV that the patented technology employed by the project related to a boiler with high temperature and pressure for power plants combusting solely blast furnace gas, wherein the hearth is separated by the stays to a combustion chamber and an upper furnace. However, low theoretical combustion temperature, large amount of flue gas leads to a series of changes in the convection heat transfer characteristics and difficulties in both ignition and stable combustion are still significant technological barriers identified to the application of this patented technology.

Referring to the China Galaxy Securities Co., Ltd., *Iron and Steel Industry: to Improve the Giant Enterprises' Value by Resource Integration*, 5 June 2007, it is found by DNV that during the year 2004, which the Project started construction, there were more than 870 iron/steel plants in China and only two among these plants employed this technology at that time according to publicly available data, they are

- 50 MW Pure BFG Based Power Generation Project constructed by Shougang Group in Beijing in 1997;
- 25 MW Pure BFG Based Power Generation Project constructed by Tangshan Iron and Steel Co., Ltd. in Tangshan City in 2000.

Since only two projects employed the pure BFG based power generation technology, the statement in the updated PDD that the number of well trained operators was limited was deemed to be acceptable to DNV.

The above barriers have been confirmed by DNV and are deemed reasonable to prevent the project from implementation in the absence of CDM incentives. These barriers do not apply to the current scenario, which is import of grid power.

The CDM development of the project plays an important role in alleviating investment and technological barriers in the following ways:

First, Chengdu Saiensi Energy Investment & Management Co. Ltd has introduced the equity capital for the project from Neijiang Xingyuan Power Group by convincing the Group to believe that the CDM revenue of the project can ensure to obtain a satisfactory financial return from the project.



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Second, the CDM development of the project attracts attentions including reports of many news media, which resulted in a good reputation of Chuanwei Group and which made the decision-makers of Chuanwei Group to recognize the project. As a result, the capital shortage of the project was solved by the management of Chuanwei Group and the project resumed constructing after almost half year of construction stops.

Third, Chengdu Saiensi Energy Investment & Management Co. Ltd provides long-term technical service for the installation, maintenance and operation of the project under the condition that the CERs sales revenues are granted as the payback guaranty of its service. With technical services provided by Chengdu Saiensi Energy Investment & Management Co. Ltd, a professional energy service company with related experience and the executive unit of NDRC/WB/GEF Energy Conservation Project, the technological barriers faced by the project can be alleviated.

The relevant documents have been provided by the project owner and were verified by DNV.

Step 4 – Common practice analysis: In the updated PDD, activities similar to the projects are identified as BFG power generation projects located in similar iron & steel enterprises, where similar iron & steel enterprises are identified as iron & steel enterprises within the same region, with the same company ownership characteristic and with the similar production scale to the project owner (Chuanwei Group).

BFG CCPP and BFG cogeneration plants are not considered in the common practice analysis. The PDD includes an elaborated justification, supported with documentary evidence, of the essential distinctions between the BFG, BFG CCPP and BFG cogeneration technologies and not considering BFG CCPP and BFG cogeneration is thus in DNV's opinion considered appropriate.

To demonstrate the project activity is not a common practice, the PP has stated the number of iron/steel plants exist in China and how many of these plants use BFG technology and conducted a quantitative analysis accordingly. The related data sources have been confirmed by DNV. Hence in DNV's opinion, the PP has followed the requirements of the methodology ACM0004 and relevant tools in defining the boundary to identify similar activities. Since there is no publicly available statistics regarding technologies applied in each iron and steel plants in China, the PP has to its best knowledge identified similar activities in China. The updated PDD has given a clear justification based on evidence.

In conclusion, it is demonstrated that the project is not a likely baseline scenario and the emission reductions are hence additional to what would otherwise occur.

4.5 Monitoring

The project correctly applies ACM0004. Emission reductions will be measured from the difference in emissions in the baseline scenario and the project scenario. The following data will be monitored to serve this purpose:

- quantity of the auxiliary fuel consumed, measured if used
- Net electricity supplied by the project, measured continuously
- auxiliary electricity consumption, measured continuously.



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The emission factor for the Central China Grid has been determined and fixed ex-ante in accordance with ACM0002 and will remain fixed during the first crediting period.

The above monitoring indicators will give opportunity for real measurements of achieved emission reductions. Details of the data to be collected, the frequency of data recording, format and storage type are described. The algorithms and formulae used are clearly presented and the calculations are without errors.

4.5.1 Parameters determined ex-ante

The following parameters are determined ex-ante:

- Data needed to calculate carbon dioxide emission factor from fossil fuel consumption due to the project activity;
- Data needed to recalculate the operating margin emission factor based on the Simple OM method consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);
- Data needed to recalculate the build margin emission factor consistent with “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (ACM0002);
- Data needed to calculate the emissions factor of the China Central Power Grid

The parameters determined ex-ante for calculating the emission factor is listed in the PDD and the respective underlying calculations were verified by DNV.

4.5.2 Parameters monitored ex-post

The data need to be monitored ex-post is the amount of electricity delivered to the grid and the volume of the auxiliary fuel. The electricity delivered to the grid can be obtained by captive metering equipment. The electricity meter will continuously measure the net electricity and the net electricity generation will be monthly recorded. Receipts from electricity sales will also be obtained for double checking. The data will be kept for 2 years following the end of the crediting period. The volume of the auxiliary fuel is continuously measured by a gas flow meter at the intake pipe and recorded monthly by the project owner.

4.5.3 Management system and quality assurance

The reading of the electricity meter will be recorded at least monthly. The project developer will establish a CDM team that includes the project manager, data report staff and QC staff, who will be in charge of project management, data reporting and quality assurance.

The calibration for the ampere meter will be done every year, and will be carried out by the project owner.

The CDM manual will set out the procedures for tracking information. The paper-based information will be stored by the proposed project owner and Millennium Capital Services.



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4.6 Estimate of GHG Emissions

The direct project emissions may include emissions from the auxiliary fuel gas consumption for the start-up of the proposed project. The project emissions from the combustion of the auxiliary fuel gas will be calculated ex post according to the data measured.

There is no leakage involved in this project activity and leakage calculations are not required according to ACM0004.

The system boundary for determining the combined margin emission coefficient is the Central China grid. The combined margin has been calculated to be 0.97505 tCO₂/MWh. The OM and BM emission coefficients were calculated to be 1.2909 tCO₂/MWh and 0.6592 tCO₂/MWh respectively. The calculations have been checked by DNV. The emission coefficients are determined ex-ante and are fixed for the 7 year crediting period.

Since detailed data to apply option c “dispatch data analysis” is not available for the grid and the generation from low-cost must-run sources are only 37% 36% 33% 32% and 38%, respectively, in the years from 2001 to 2005, the “Simple OM” option has been selected for determining the OM emission coefficient. The OM emission coefficient has been derived from actual generation and fuel data from the years 2003-2005.

For the calculation of the BM emission factor, a value of 343.33 gSCe / kWh (35.82% efficiency) is used to calculate the CO₂ factor following the CDM EB guidance on the applicability of AM0005 and AMS-I.D in China. 343.33 gSCe to produce 1 kWh electricity means 10.0503 MJ thermal energy to produce 3.6 MJ electric energy, that means an efficiency of 36.48%. Therefore, this coal consumption efficiency of 343.33 gSCe/kWh represents an appropriate efficiency level of the best technology commercially available in the CCPG and is thus a conservative proxy for determining the BM.

The capacity additions of 24.6% from the years 2002 to 2005 have been the basis for determining the BM emission factor. By applying the relative capacity addition of different power generation technologies, the BM emission coefficient has been calculated.

The data used to calculate OM is derived from the China Energy Statistical Yearbooks of the years 2004 to 2006. The data used to calculate the BM is derived from China Power Electric Power Yearbooks of the years 2003 to 2006. These are the most recent statistics available at the time of PDD submission.

The GHG calculations are complete and transparent, and their accuracy has been verified.

4.7 Environmental Impacts

An Environmental Impact Assessment (EIA) has been conducted according to Chinese law & regulation. The potential environmental impacts have been sufficiently elaborated in the PDD.

No significant negative environmental impacts are expected from the project activity. The Sichuan Environmental Protection Agency approved the project activity in October 2005.

4.8 Comments by Local Stakeholders

The project developer carried out consultation in November 2005. This included inviting different stakeholders from the local government and the local residents. The survey was conducted through distributing and collecting responses to a questionnaire. The hard copies of the questionnaires were provided by the project owner. A total of 60 questionnaires were



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returned out of 60. The project did not receive any adverse comment and the residents and local government are all very supportive of the project, therefore no mitigating actions were necessary.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD of 3 August 2006 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 28 August 2006 to 26 September 2006.

No comments were received during this period.

APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	CAR 1 OK	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	CAR 1 OK	Approval letter by DNA of China dated 13 December 2006. Approval letter by DNA of the Netherlands dated 4 January 2007.
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. 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	No public funding involved in the project
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	China: National Development and Reform Commission of the

Requirement	Reference	Conclusion	Cross Reference / Comment
			People's Republic of China Netherlands DNA: "Ministry of Housing, Spatial Planning and Environment".
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	China ratified the Kyoto Protocol on 30 August 2002. Netherlands has ratified the Kyoto Protocol on 31 May 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	OK	The Netherlands has a GHG emissions reduction target of -8% of the emissions in the period 2008-2012 relative to 1990.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	OK	Netherlands most recent GHG inventory was submitted on 13 April 2007.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements	CDM Modalities and Procedures §40	OK	Parties, stakeholders and NGOs were invited to provide comments

Requirement	Reference	Conclusion	Cross Reference / Comment
for minimum 30 days, and the project design document and comments have been made publicly available			through the CDM website during a 30 days period from 28 October, 2006 to 26 October, 2006.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	The PDD is in conformance with the CDM-PDD version 03.1.

Table 2: Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity <i>The project design is assessed.</i>					
A.1. Project Boundaries <i>Project Boundaries are the limits and borders defining the GHG emission reduction project.</i>					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The project is sited within Lianjie Town, Weiyuan County, Neijiang City of Sichuan Province, P.R.China. The project site is to the south of the production area of Chuanwei Group and to the north of Chuanwei artificial forest.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The project's system boundaries encompass the proposed power and the Central China Grid, which the proposed project is connected to.		OK
A.2. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.2.1. Does the project design engineering reflect current good practices?	/1/	DR	The project utilises the waste gas of the blast furnace to produce electricity through the installation of two sets of turbines and boilers. Though both of the turbines and boilers are made in China, the technology of combusting blast furnace gas only patented		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			by China's relevant agencies. Thus the project design engineering can reflect current good practices in China.		
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/	DR I	The technology of combusting solely blast furnace gas in boilers is a patented one in China, which is now being demonstrated and popularized. There are no comparable projects within the Central China Grid.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The project technology is not likely to be substituted by more efficient technologies at-least in the crediting period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR I	The project made the initial training and maintenance efforts for proper operation during the crediting period.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/ /8/	DR I	The project made the provisions for meeting training and maintenance needs.		OK
A.3. Contribution to Sustainable Development <i>The project's contribution to sustainable development is assessed.</i>					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/ /5/	DR	Yes. The project has been approved by Sichuan Province Economic Commission on Oct. 2005.		OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/ /3/	DR	The confirmation from DNA of China has not been received.	CAR1	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/ /5/	DR	The LoA from DNA of China has not been received.	CAR1	OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR I	Yes, it will contribute to the sustainable development in the region by reducing pollution and creating employment opportunities.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B. Project Baseline <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Baseline Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/	DR	The project has applied the approved baseline methodology ACM0004 "Consolidated baseline methodology for waste gas and/or heat for power generation".		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The baseline methodology is applicable to projects which utilises waste heat or waste gases for generation of power. Since the project is a waste gas based power generation project this methodology is appropriate for the project.		OK
B.2. Baseline Determination <i>The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i>					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	The baseline has been selected in a transparent manner.		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	Yes.		OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes.		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /18/	DR	Yes. The baseline scenario has been selected taking into account all relevant national or sectoral policies.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	2006 IPCC Guidelines for National Greenhouse Gas Inventories is already available; the calculation should be revised according to it.	CAR2	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	The content of part A in B.2 need to be revised. Some detailed information described in B.3 should be provided	CL1	OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /10/ /11/ /18/ /19/ /20/ /21/ /22/ /23/ /24/ /25/	DR I	The additionality of the project has been demonstrated using the Tool for the demonstration and assessment of additionality. <u>Step 1:</u> in sub-step 1a five alternatives have been selected to analyze, some of them have been excluded based on the reasonable analysis. But some of them should be discussed in the following steps, so they cannot be excluded in sub-step 1a. Therefore, In sub-step 1b and the other steps more alternatives should be included in the discussion. <u>Step 2:</u> This step has not been selected. <u>Step 3:</u> The additionality of the project has been elaborated by decision barrier, technological barrier, investment barrier,	CAR3 CAR4 CAR5 CAR6	OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			safety barrier and human resource barrier. But the content and logic of the analysis need to be revised. Some information supporting the decision barrier is too confused to understand. Safety barrier and human resource barrier seems that they can be combined with other barriers. <u>Step 4:</u> According to the confirmation letter from the China Central Iron & Steel Research Institute, the Project is not a common practice due to its waste gas based power generation technology by combusting solely blast furnace gas in boilers. Therefore, existing waste gas generation projects will not influence the additionality of the Project. But the information of specific projects needs to be provided and analyzed.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	There is no risk to the baseline since the power generated will be directly measured and the emission factor is fixed ex-ante.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes		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 reasonable?	/1/	DR	The starting date of the project activity is in June 2004 and the operating lifetime of the project is 25 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with	/1/	DR	In the PDD, a renewable crediting period of 7 years starting from 20 Feb 2008.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
two possible renewals or fixed crediting period of 10 years with no renewal)?			However, starting crediting period may be modified after the project is to be registered.		
D. Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).</i>					
D.1. Monitoring Methodology <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/ /13/	DR	The project selects the approved consolidated monitoring methodology ACM0004.		OK
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR I	The monitoring methodology ACM0004 is used in conjunction with the baseline methodology and the applicability criteria is the same. Thus this monitoring methodology is appropriate for the project.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/ /8/	DR I	Yes, it complies with parameters established in the approved monitoring methodology.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/ /13/	DR	Yes		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.2. Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	The amount of the auxiliary fuel gas consumed for start-up is monitored directly. The reference of NCV has been identified. But it need to be explained that how to identify EF and OXID of the auxiliary fuel gas.	CL-2	OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	CO ₂ is the only GHG indicator that needs to be accounted for.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Yes, the CO ₂ emissions from the project can be measured from the auxiliary fuel gas consumed.		OK
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/ /13/	DR	Yes		OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Yes		OK
D.3. Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	Leakage determination is not required by ACM0004.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.4. Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Please refer to D.2.1.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/ 15/ /16/	DR I	CO ₂ is the only GHG indicator that needs to be accounted for and it has been considered.		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR I	Yes, the data will be measured by metering equipments and will be cross checked by sales records.		OK
D.4.4. Will the indicators give opportunity for real measurements of baseline emissions?		DR	Yes		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts <i>It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR I	Neither ACM0004 nor the Chinese DNA requires collection and archiving of relevant data concerning environmental, social and economic impacts.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6. Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/ /10/	DR I	Project owner will designate personnel, who will take the overall responsibility for the monitoring emission reductions.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR I	Yes		
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR I	Yes		
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR I	The description of the procedures identified for emergency preparedness for cases, where emergencies can cause unintended emissions, need to be clarified in the monitoring plan.	CL-3	OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR I	Procedure for calibration has been described in the PDD, which will be implemented prior to the operation of the project.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR I	Yes		
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/ /8/	DR	Yes. The procedures for monitoring, measurements and reporting are identified in the PDD.		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR I	Yes. The handling procedures for day-to-day records are described in the PDD.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	The responsibility of dealing with the monitoring data adjustments and uncertainties is identified in the PDD.		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/ /10/	DR	There are supervising procedures for the reported data identified in the monitoring plan.		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	Yes		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	Yes		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Yes		OK
E. Calculation of GHG Emissions by Source <i>It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.</i>					
E.1. Project GHG Emissions <i>The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/ /13/	DR I	Project GHG emissions will be calculated ex post based on the type of auxiliary fuel gas consumed. In PDD the Project GHG emissions is assumed 0.		OK
E.1.2. Are the GHG calculations documented in a	/1/	DR	Ditto		OK

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

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
complete and transparent manner?		I			
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/ /15/ /16/	DR I	Ditto		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR I	Ditto		OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/ /17/	DR	Ditto		OK
E.2.Leakage <i>It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed and estimated ex-ante.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	Leakage calculation is not required under ACM0004.		OK
E.3.Baseline Emissions <i>The validation of ex-ante estimated baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/ /15/ /16/ /17/	DR	According to the ACM0004, the baseline emission is calculated in line with the ACM0002. The baseline emission factor is based on the "combined margin" using the simple OM of ACM0002.		OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for	/1/	DR	Yes		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
baseline emissions?					
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/15/	DR	Yes		OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/16/	DR	A local value of 343.33 gSCe/kWh (35.82% efficiency, explanation see P18) as the coal consumption efficiency for the best available technology used to calculate the CO ₂ factor is conservative.		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/17/	DR	No uncertainties have been addressed in the PDD.		OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Yes		OK
E.4.Emission Reductions <i>Validation of ex-ante estimated emission reductions.</i>					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	Yes.		OK
F. Environmental Impacts <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/		Yes. The impacts on air pollution, waste water, discarded soil, noise, landscape and birds are described in the PDD.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /6/	DR	Yes. The project has been approved by the Environmental Protection Bureau of Sichuan Province in October 2005.		OK

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Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
F.1.3. Will the project create any adverse environmental effects?	/1/ /6/	DR	No significant adverse impacts have been identified		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	No transboundary impacts have been considered.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	No significant impacts have been identified during EIA.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/ /6/	DR	Yes.		OK
G. Stakeholder Comments <i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	/1/ /7/	DR	Relevant stakeholders from the local community and administration have been invited for comments.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /7/	DR	A stakeholder consultation has been carried out through distributing questionnaires.		OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/	DR	Yes. The stakeholder consultation process is in accordance with Chinese EIA regulations.		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	A summary of the stakeholder comments received described on the PDD.		OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	All the comments are positive or neutral for the project activity.		OK

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Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 The LoAs from the DNAs of China and the Netherlands have not been obtained.	A 3.2 A 3.3	The LoAs from the DNAs of China and the Netherlands have been provided for validation.	OK. CAR closed.
CAR 2 <i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i> is already available, the calculation should be revised according to it.	B 2.5 B 3.3	All relevant contents have been revised according to <i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i>	OK. CAR closed.
CAR 3 In the description of additionality, Step 0 need to be added.	B 2.7	Since Step 0 has been removed in <i>Tool for the Demonstration and Assessment of Additionality Version 03</i> , it is not necessary to be added.	OK. CAR closed. It is correct that step 0 was removed, but at the same time, the guidelines for completing the CDM-PDD require that, if the project was implemented prior to the validation, evidence must be presented to show that the CDM was considered in the decision to proceed with the project. The project construction started on 30 June 2004. The project owner started considering the CDM in early 2004 and entrusted Chengdu Saiensi Energy Investment & Management Co. Ltd to establish a CDM cooperation pipeline in May 2004. The project was one of the Chinese projects shown at the 2005 Carbon Expo in Cologne, Germany, and one of the candidate CDM projects collected by MOST in early 2005. After that the CERs buyer was introduced to the project owner and an ERPA was

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
			signed in June 2006. It is therefore demonstrated that the CDM was considered in the decision making process prior to the project implementation. During the on-site validation the relevant documents have been provided by the project owner and were verified by DNV.
CAR 4 According to <i>Tool for the Demonstration and Assessment of Additionality</i>, Some of alternatives in sub-step 1a cannot be excluded directly, and they should be discussed in the following steps. Therefore, In sub-step 1b and the other steps more alternatives should be included in the discussion.	B 2.7	According to <i>Tool for the Demonstration and Assessment of Additionality</i> , alternative a, alternative b and alternative c are involved in sub-step 1b. And alternative a and alternative b comply with the legal and policy requirements in China, therefore they will be discussed in the following step.	OK. After the discussion was revised, it complies with the requirements of <i>Tool for the Demonstration and Assessment of Additionality</i> . CAR closed.
CAR 5 In sub-step 3a the analysis of barriers need to be revised. Some information supporting the decision barrier is too confusing to understand. Safety barrier and human resource barrier seems that they can be combined with other barriers.	B 2.7	All the barriers have been combined into two barriers, financing barrier and technical barrier. The confused description was eliminated and more reliable information was provided.	OK. The discussion has been revised and more information was provided, therefore the analysis of barriers is clear and reliable. CAR closed.
CAR 6 In sub-step 4a common practice analysis need to be revised. The information of specific projects needs to be provided and analyzed.	B 2.7	Sub-step 4a has been revised and the information of specific project was provided and analyzed.	OK. The projects similar to the proposed project have been identified and confirmed to be none; Based on the information provided, the analysis was made. CL closed
CL 1 For the content of PDD, information described in B.2 and B.3 should be revised	B 2.6	Since the PDD Form has been changed to version 3.1, the description has been revised according to the new form.	OK. The description of this part complies with the requirements of the new PDD Form. CL closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
according to PDD form version 3.1			
CL 2 It needs to be explained how to identify EF and OXID of the auxiliary fuel gas within the crediting period.	D 2.1	The data of <i>2006 IPCC Guidelines for National Greenhouse Gas Inventories</i> are applied.	OK. CL closed.
CL 3 The description of the procedures identified for emergency preparedness for cases, where emergencies can cause unintended emissions, need to be clarified in the monitoring plan.	D 6.4	If ammeters fail during operation period, actual net electricity supply by the Project can not be determined directly from ammeters' readings. In such case, the actual net electricity supply by the Project should be determined with reference to the calibration result and etc. according to the <i>Rules of Supplying Electricity Business</i> .	OK. CL closed.

APPENDIX B

CERTIFICATES OF COMPETENCE



CERTIFICATE OF COMPETENCE

Wilson Tang

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:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 13		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes		
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Mindy (Ming) Yue

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-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, 5 January 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Hendrik Brinks

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:	--	JI Verifier:	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 & 12		
Technical Reviewer for (group of) methodologies:			
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS- III.I	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes		

Høvik, 18 July 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director



CERTIFICATE OF COMPETENCE

Einar Telnes

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 6 & 10		
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	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 & 9		
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	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