



Industrie Service

Choose certainty.
Add value.

Validation Report

Carbon Asset Management Sweden AB

VALIDATION OF THE CDM-PROJECT:
ZHUMADIAN ZHONGYUAN GAS-STEAM
COMBINED CYCLE POWER PROJECT IN
HENAN, CHINA

REPORT NO. 1093212

15 December 2008

TÜV SÜD Industrie Service GmbH

Carbon Management Service

Westendstr. 199 - 80686 Munich – GERMANY

Report No.	Date of first issue	Revision No.	Date of this revision	Certificate No.
1093212	22-08-2008	4	15-12-2008	-

Subject: Validation of a CDM Project	
Accredited TÜV SÜD Unit: TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstr. 199, 80686 Munich Germany	TÜV SÜD Contract Partner: TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199, 80686 Munich Germany
Client: Carbon Asset Management Sweden AB Drottninggatan 92-94 111 36 Stockholm Sweden	Project Site(s): Situating in the southeast corner of the Zhumadian City, Henan Province, China. The geographic location of the project is North-west corner: 114°03'39" E, 32°57'31" N South-west corner: 114°03'39" E, 32°57'22" N South-east corner: 114°03'52" E, 32°57'22" N North-east corner: 114°03'52" E, 32°57'31" N
Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China	
Applied Methodology / Version:	AM0029 / version 03
Scope(s): 1	
First PDD Version: Date of issuance: 2007-08-13 Version No.: 2 Starting Date of GSP1 2007-09-05 Starting Date of GSP2 2008-07-24	Final PDD version: Date of issuance: 2008-09-29 Version No.: 7
Estimated Annual Emission Reduction: 858 165 tons CO ₂ e	
Assessment Team Leader: Dr. Sven Kolmetz	Further Assessment Team Members: Xiaoying Chen Lixin Li Caiyang Wu Sandeep Kanda
Summary of the Validation Opinion: <input checked="" type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board. <input type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.	

Abbreviations

AM	Approved Methodology
BM	Build Margin
CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CR / CL	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Green House Gas(es)
GSP	Global Stakeholder Process
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
IRR	Internal Rate of Return
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
NDRC	National Development and Reforms Commission
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

Table of Contents		Page
1	INTRODUCTION	4
1.1	Objective	4
1.2	Scope	4
2	METHODOLOGY	5
2.1	Appointment of the Assessment Team	6
2.2	Review of Documents	7
2.3	Follow-up Interviews	7
2.4	Further Cross-check	8
2.5	Resolution of Clarification and Corrective Action Requests	8
2.6	Internal Quality Control	8
3	FINDINGS	9
3.1	Approval	9
3.2	Participation	9
3.3	Project design document	10
3.4	Project description	10
3.5	Baseline and monitoring methodology	10
3.6	Additionality	12
3.7	Monitoring plan	14
3.8	Sustainable development	14
3.9	Local stakeholder consultation	14
3.10	Environmental impacts	15
4	COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	16
5	VALIDATION OPINION	18

Annex 1: Validation Protocol

Annex 2: Information Reference List

1 INTRODUCTION

1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed project activity against all defined criteria set for the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and will finally result in a conclusion by the executing DOE whether a project activity is valid and should be submitted for registration to the CDM Executive Board (CDM-EB). The ultimate decision on the registration of a proposed project activity rests at the CDM-EB and the Parties involved.

The project activity discussed by this validation report has been submitted under the project title:

Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities the scope is set by:

- The Kyoto Protocol, in particular § 12 and modalities and procedures for the CDM
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions and specific guidance by the EB published under <http://cdm.unfccc.int>
- Guidelines for Completing the Project Design Document (CDM-PDD), and the Proposed New Baseline and Monitoring Methodology (CDM-NM)
- Baselines and monitoring methodologies (including GHG inventories)
- Management systems and auditing methods
- Environmental issues relevant to the sectoral scope
- Applicable environmental and social impacts and aspects of CDM project activity
- Sector specific technologies and their applications
- Current technical and operational knowledge of the specific sectoral scope and information on best practice

The validation is not meant to provide any consulting towards the project participant (PP). However, stated requests for clarifications, corrective actions and/or forwards actions may provide input for improvement of the project design.

Once TÜV SÜD receives a first PDD version, it is made publicly available at the UNFCCC webpage and at TÜV SÜD's webpage for starting a 30 day global stakeholder process (GSP). In case of any request a PDD might be revised (under certain conditions the GSP could be repeated) and the final PDD will form the basis for the final evaluation as presented in this report. Information on the first and the final PDD version is presented in page 1.

The only purpose of a validation is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD cannot be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

2 METHODOLOGY

The project assessment applies standard auditing techniques to assess the correctness of the information provided by the project participants. The assessment is based on the "Clean Development Mechanism Validation and Verification Manual" version 01. The work starts with appointment of team covering the technical scope(s), sectoral scope(s) and relevant host country experience for evaluating the CDM project activity. Once the project is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up actions, resolution of issues identified and finally preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB "climate and energy" before submission to the CDM-EB.

In order to ensure transparency, assumptions are clear and explicitly stated; the background material is clearly referenced. TÜV SÜD developed methodology-specific checklists and protocol customised for the project. The protocol shows, in a transparent manner, criteria (requirements), the discussion of each criterion by the assessment team 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 and any adjustment made to the project design.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below.

Validation Protocol Table 1: Conformity of Project activity and PDD				
Checklist Topic / Question	Reference	Comments	GSP PDD	Final PDD
<i>The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then further sub-divided. The lowest level constitutes a checklist question / criterion.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found in case the comment refers to documents other than the PDD.</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. In some cases sub-checklist are applied indicating yes/no decisions on the compliance with the stated criterion. Any Request has to be substantiated within this column</i>	<i>Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (☑), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CR) is used when the validation team has identified a need for further clarification. Forward action request to highlight issues related to project implementation that require review during the first verification.</i>	<i>Conclusions are presented in the same manner based on the assessment of the final PDD version and further documents including assumptions presented in the documentation.</i>

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Clarifications and corrective action requests	Ref. to table 1	Summary of project owner response	Validation team conclusion
<i>If the conclusions from table 1 are either a Corrective Action, a Clarification or a Forward action Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the issue is explained.</i>	<i>The responses given by the client or other project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the discussion on and revision to project documentation together with the validation team's responses and final conclusions. The conclusions should be reflected in Table 1, under "Final PDD".</i>

In case of a denial of the project activity more detailed information on this decision will be presented in table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	Id. of CAR/CR 1	Explanation of the Conclusion for Denial
<i>If the final conclusions from table 2 results in a denial the referenced request should be listed in this section.</i>	<i>Identifier of the Request.</i>	<i>This section should present a detail explanation, why the project is finally considered not to be in compliance with a criterion with a clear reference to the requirement which is not complied with.</i>

The completed validation protocol is enclosed in Annex 1 to this report.

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy". The composition of an assessment team has to be approved by the Certification Body (CB) ensuring that the required skills are covered by the team. The CB TÜV SÜD operates four qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor (GHG-A)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope linked to the methodology has to be covered by the assessment team.

The validation team was consisting of the following experts:

Name	Qualification	Coverage of technical scope	Coverage of sectoral expertise	Host country experience
Dr. Sven Kolmetz	ATL	☑	☑	☑
Xiaoying Chen	GHG-A	☑	☑	☑

Lixin Li	T	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Caiyang Wu	T	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Sandeep Kanda	GHG-A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Dr. Sven Kolmetz is physicist and head at the department “TÜV Carbon Management Service” located in the head office of TÜV SÜD Industrie Service GmbH in Munich, Germany. Furthermore he is officially authorized expert in the verification of GHG emissions in the framework of the European Emission Trading Scheme. Before entering TÜV SÜD he worked as energy consultant for industrial companies and as consultant for the German Federal Government on instruments for the reduction of GHG emissions.

Xiaoying Chen is an auditor for GHG inventory validation and verification for Scope 1 at TÜV Industrie Service GmbH Beijing Office, P.R.China. She holds a Master Degree in knowledge management from Conservatoire Nationale des Arts et Metiers and has a strong technical background in renewable energies. She has been involved in GHG activities since 2005, starting as a consultant for the development of CDM projects. She has received extensive training in CDM validation and verification processes and participated in several CDM project assessments.

Lixin Li is an auditor trainee for environmental management systems and GHG auditor trainee at Carbon Management Service in Jiangsu TUV Product Service Ltd. He is based in Beijing. In his position he is responsible for the implementation of validation, verification and certifications audits for management systems or CDM, VER and WCD projects. He has received training in the CDM validation process and participated already in more than two dozen of CDM project assessments. Before joining TÜV SÜD he worked as an expert in new and renewable energy, energy saving, energy strategy program fields.

Caiyang Wu is an auditor trainee at the “Carbon Management Service” department of TÜV SÜD Industrie Service GmbH in Munich, Germany. She holds a M.Sc. degree in Renewable Energy and worked as an experienced HVAC engineer before joining TÜV SÜD. She has received training in the CDM validation and verification process and participated in several CDM project assessments.

Sandeep Kanda is an auditor for CDM/JI projects and energy and environment field expert at TÜV SÜD Industrie Service GmbH. He holds a master degree in energy systems engineering and also industrial safety and environmental management. Before joining the TÜV SÜD Industrie Service GmbH he has worked extensively on projects in energy sector, manufacturing industries, chemical industries and metal production. He has carried out energy audits and worked on development of CDM projects and methodologies in the aforementioned sectors.

2.2 Review of Documents

A first version of the PDD was submitted to the DOE in August 2007. The first PDD version submitted by the PP and additional background documents related to the project design and baseline were reviewed to verify the correctness, credibility and interpretation of the presented information, furthermore a cross check between information provided and information from other sources (if available) have been done as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as annex 2 to this report

2.3 Follow-up Interviews

On 28th February, 2008, TÜV SÜD performed physical site inspection and on-site interviews with project stakeholders to confirm relevant information and to resolve issues identified in the first

document review. The list of all persons interviewed in this context and the audit team on-site are indicated in annex 2 to this report.

2.4 Further Cross-check

During the validation process, the audit team also cross checked information provided in the PDD and information from sources other than that provided by the PP. The audit team performed an independent background investigation through search over the internet. Reference(s) to available information related to similar projects or technologies as the CDM project activity has been made. The documentation has also been reviewed against the approved methodology applied to confirm the appropriateness of formulae and correctness of calculations.

2.5 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions and clarifications and any other outstanding issues which needed to be clarified for TÜV SÜD's conclusion on the project design. The CARs and CRs raised by TÜV SÜD were resolved during communication between the PP and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in the validation protocol in annex 1.

The final PDD version that was submitted in September 2008 serves as the basis for the final assessment presented herewith. Changes are not considered to be significant with respect to the qualification of the project as a CDM project based on the two main objectives of the CDM, i.e. to achieve a reduction of anthropogenic GHG emissions and to contribute to a sustainable development.

2.6 Internal Quality Control

As final step of a validation the final documentation including the validation report and the protocol have to undergo an internal quality control by the CB "climate and energy", i.e. each report has to be finally approved either by the head of the CB or the deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one.

After confirmation of the PP the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

3 FINDINGS

The assessment work and the main results are described below in accordance with the VVM reporting requirements. The reference documents indicated in this section and Annex 1 are stated in Annex 2.

3.1 Approval

The project participants are Henan Zhongyuan Gas Power Company Ltd. from People's Republic of China (host country) and Carbon Asset Management Sweden AB from Sweden (Annex-1 country). The letter of approval referenced as No. 980, dated March 2008, from the Chinese DNA and letter of approval dated 10th June 2008, from Swedish DNA has been received [IRL # 29, 41]. TÜV SÜD received these letters from the project participants directly.

The authenticity check of the submitted LoAs has been done by comparison with LoAs of these countries issued for other activities. Further, the Chinese LoA has been double-checked with the CDM project webpage sponsored by the Department of Climate Change, The National Development and Reforms Commission (NDRC) of the People's Republic of China, (<http://cdm.ccchina.gov.cn>), which confirms the approval of this CDM project. Thus TÜV SÜD concludes that the given ones are authentic.

The PDD was first submitted for GSP in September 2007 based on the methodology AM0029, Version 01. Subsequently as the methodology version was updated, therefore a revised PDD was submitted for re-GSP based on current Version 03 of the methodology AM0029. There has been a small change in the project title during the two GSPs as follows:

GSP - Zhumadian Zhongyuan Gas-Steam Combined Cycle Power *Plant* in Henan China

Re -GSP - Zhumadian Zhongyuan Gas-Steam Combined Cycle Power *Project* in Henan China

Furthermore, after checking the provided LoAs, TÜV SÜD confirms that both letters refer to the precise proposed CDM project activity title in line with the title in the final PDD "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China".

Both letters also indicate that each participating Party is a Party to the Kyoto Protocol, and that the participation in the said Project as voluntary. The Host Country Approval letter also confirms that the proposed CDM project activity assists China in achieving sustainable development. Based on the information given in these letters, TÜV SÜD considers the approval as unconditional with respect to these items.

Both LoAs have been issued by the respective Party's DNA, The National Development and Reforms Commission (NDRC) of the People's Republic of China and Swedish Energy Agency, Sweden respectively.

TÜV SÜD considers the requirements of the VVM (§§ 45-48) to be complied with.

The LoA does not specify a version number of the PDD or validation report.

3.2 Participation

The participants of the project activity have been approved by the corresponding Parties, which is confirmed by the issued LoAs.

The means of validation were equivalent to those described in section 3.1 in regard to the approval process of the project activity.

3.3 Project design document

As result of an in-depth review of the submitted documents TÜV SÜD can confirm that the PDD is The PDD is compliant with relevant form and guidance by UNFCCC. The most recent version of the PDD form was used.

TÜV SÜD considers that the guidelines for the completion of the PDD in their most recent version have been followed. Relevant information has provided by the participants in the applying PDD sections. Completeness was assessed through the checklist included in Annex 1 of this report.

TÜV SÜD confirms that the included information sufficiently covers all relevant items, is accurate and provides the reader with a clear understanding of the nature of the project activity.

3.4 Project description

The description of the recent situation, the project activity and the baseline as provided under section A of the PDD has been verified during an on-site visit and by reviewing the supporting documents and back-ground information accessible on publicly available sources. In particular the following information, which is essential for the understanding of the activity, can be confirmed herewith.

The following description of the project as per the PDD could be verified during the on-site audit.

Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Plant (CCPP) is a new peak load plant connected to the Central China Power Grid (CCPG) located in Zhumadian City, Henan Province, China. The designed installed capacity of the Project is 2×377.2MW. The estimated electricity generation is 2640 GWh annually, of which 2584 GWh is delivered to the CCPG and the rest is the auxiliary consumption of the project itself. The geographical and physical boundary of the CCPG is clearly identifiable and information pertaining to the grid emission factor is provided by the Chinese DNA and is publicly available. Natural gas is sufficiently available in the region as validated from the feasibility study report (FSR) prepared for the project activity [IRL # 6]. Thus the future capacity additions may not get constrained by the use of natural gas in the project activity.

The proposed project with natural gas utilization is supposed to substitute potential coal-fired thermal power plants. The estimated annual GHG emission reductions are 858,165 tCO₂e.

The project will lead to sustainable development through generation of relatively clean energy and meeting the peak load demand. Also it would lead to technology transfer of natural gas based combined cycle power technology to the country.

3.5 Baseline and monitoring methodology

3.5.1 Applicability of the selected methodology

The approved methodology AM0029, Version 03 has been applied for the project by the project participant. The project activity meets all the applicability conditions of the approved methodology. The Methodology specific protocol included as Annex 1 documents the assessment process, the result on the compliance check as well as the relevant evidence.

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the proposed project activity. Emission sources which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reduction were not identified.

3.5.2 Project boundary

The Project boundary includes the physical and geographical site of the all power plants connected physically to the Central China Power Grid (CCPG). The project boundary is as per the methodology

and the same has been validated based on the document review and on-site visit

Hence TÜV SÜD confirms that the identified boundary and the selected sources and gases as documented in the PDD are justified for the project activity.

3.5.3 Baseline identification

The list of alternatives presented in the PDD is complete. The baseline scenario for peak load power generation has been identified as sub-critical coal based power plant with peak load regulation function as it is the economically most attractive baseline scenario alternative. Peak regulation function can be realized by sub-critical coal based power plant. It is demonstrated by a publication of official Chinese documents.

An investment analysis has been carried out wherein it has been demonstrated that the levelized cost of power generation is the lowest for the sub-critical coal based power plant. The input values as indicated in the PDD have been validated and found to be supported reasonably by evidences. All documentation is correctly quoted and data is consistently transferred to the calculations. The sectoral/national circumstances are considered reasonable and the baseline methodology has been correctly applied. The input values have been validated based on the feasibility study reports of the respective alternatives [IRL # 6, 43, 44]

3.5.4 Algorithm and/or formulae used to determine emission reductions

3.5.4.1 Baseline emissions

The calculation of the baseline emissions follows the procedures described in the applied methodology. Although, sub-critical coal based power plant has been identified as the most plausible baseline scenario; According to the methodology, the lowest emission factor should be chosen among the three options, which are the build margin (BM), the combined margin (CM) and the emission factor of the identified sub-critical coal based power plant. As the build margin emission factor for the CCPG is the lowest. Therefore this value has been adopted and will be estimated ex-post for emission reduction calculation

The formulae required for the determination of baseline emissions have been correctly presented and applied, enabling a complete identification of parameters to be used and / or monitored. It is confirmed that the calculation for the estimation of baseline emissions has been verified and that the figures presented in the final PDD and excel file deem to be reasonable.

3.5.4.2 Project emissions

The project emissions are calculated in the PDD as the emissions arising from the combustion of natural gas to generate electricity. It is confirmed that the sources for project emissions are correctly identified and that the project emissions calculation is deemed to be reasonable.

3.5.4.3 Leakage

The project activity uses NG and not LNG. Therefore, only fugitive CH₄ emissions associated with fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of natural gas used in the project plant and fossil fuels used in the grid in the absence of the project activity has been considered.

3.5.4.4 Emission Reductions

The emission reduction calculations presented in the final PDD are according to the methodology and are deemed to be conservative.

In summary, the calculation of the baseline emissions; project emissions, leakage and the emission reductions, respectively, can be considered as replicable and correct.

3.6 Additionality

The prior and on-going CDM consideration as well as the demonstration of additionality were applied correctly and demonstrated clearly that this project activity is not a baseline scenario and that the emission reductions hence are additional. The individual steps are discussed below.

3.6.1 Prior consideration of the clean development mechanism

The project start date has been validated as 06th June 2005, as on this date the main equipment import contract between Henan Zhumadian Zhongyuan Gas Power Plant, China National Technical Import and Export Corporation (CNTIC) and Shanghai Electric Group Co. (SEC)-SIEMENS Consortium was signed and came into force [IRL # 15, 52]. The signing of the purchase order has not been considered as the start date as it was conditional.

Since the start date was before the validation, the delay and the CDM consideration was questioned by the audit team. Also the chronology of the events associated with the project was requested. In response to the issue, a record of events since inception date of the project was provided as follows:

Description	Timeline	Supporting Documents	IRL # (Annex 2)
Information about NG based projects and CDM	March 2004	Case study report and internal memo	46
Management decision to consider CDM revenues by way of Board resolution	10 th May 2004	Extract of Board Minutes of Meeting	18
Interaction with CDM consultant (Professor Liu)	3 rd April 2005	Invitation letter	48
The date of contract came into force	6 th June 2005	Letter with confirmed effective date of CONTRACT NO. 04DE01GTA0IXC0015	52
Methodology AM0029 approval	13 th April 2006	UNFCCC website	-
CDM work meetings	14 th August & 17 th November 2006	Emails	49, 50
Emission reduction purchase agreement (ERPA) signing	9 th March 2007	ERPA	51
Draft PDD completion and commercial negotiations	April 2007	Internal communication	-
Commissioning of 1 st unit	June 2007	Operational data	5
GSP upload	5 th September 2007	UNFCCC website	-
Commissioning of 2 nd unit	December 2007	Operational data	5
Natural gas supply guarantee	18 th May 2008	Natural gas sales agreement	53
Re-GSP upload	24 th July 2008	UNFCCC website	-

The documentation submitted as proofs to justify these events demonstrated that the project propo-

nents had considered CDM since the inception of the project and continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

3.6.2 Investment analysis

Investment analysis has been carried out for the project. Benchmark analysis has been opted as the most suitable method for carrying out the investment analysis and the same has been found to be the appropriate analysis method. Following the guidance on the assessment of investment analysis (EB39, Annex 35), the input values for the benchmark analysis have been validated as follows:

Description	Source	Cross-check
Installed capacity	FSR	Contract documents
Total investment	FSR	Other NG based CCPPs in China
Annual operation hours	FSR	Other NG based CCPPs in China and operational data of the power plant for the year 2007 and 2008
Electricity tariff	FSR	Price contract document
Operation & Maintenance (O&M) costs	FSR and with some adjustments (Fuel cost was recalculated as per the price adjustment notice from NDRC / DRC)	Other NG based CCPPs in China
Fuel price	FSR, NDRC letter, NDRC notice and DRC notice	Other NG based CCPPs in China
Tax rates	FSR, Tax laws	Standard tax rates have been used
Life	FSR	Other NG based CCPPs in China
Benchmark	FSR, Document issued by State Power Corporation, dated Sept.10th, 2002, (Document No. GuoDianFa[2002]623)	Other NG based CCPPs in China

The submitted referenced documents have been found to be relevant and consistent with the information provided in the PDD for the investment analysis. Based on the above the input values have been found to be reasonable and correct. Based on the above the input values have been found to be reasonable and correct. The IRR of the project comes out to be 3.86% and is less than the 8% benchmark.

The sensitivity analysis is carried out for 10% variation of the following key parameters- Total investment, Electricity generation (operation hours), Natural gas price, Electricity price and Annual O&M costs. The sensitivity analysis indicated that the project IRR crosses and comes very close to the benchmark with 10% variation of electricity price and operation hours respectively. The justification for the same has been provided as follows:

Electricity price - electricity tariff is under strict control by the state authority;

Operation hours – The Power plant is a peak load plant and the till date operational data does not indicate the operation hours going beyond the stated value [IRL # 59].

TÜV SÜD confirms that the underlying assumptions are appropriate and the financial calculations are correct.

3.6.3 Common practice analysis

Common practice analysis has been carried out on a provincial level. The justification of carrying out the analysis on province basis is based on the varying prices of fuel and electricity between the provinces.

As the project activity is located in Henan province so all the other similar projects in the said province have been discussed. There is no other project occurring in the Henan province without CDM revenues. The common practice has also been cross-checked with the other similar CDM projects in the region.

In light of the above, based on submitted documentation, argumentation and further cross checks from publicly available sources the project activity has been validated as an additional project.

3.7 Monitoring plan

The monitoring plan given in the PDD is as per the methodology. It includes all the parameters to arrive at the ex-post estimation of the project emissions, baseline emissions, leakage emissions and thereby emission reductions.

For project emissions the parameters - natural gas consumption, net calorific value, oxidation factor and emission factor are included.

For baseline emissions the parameters – net electricity generation and parameters to update the build margin emission factor have been included.

For leakage emissions the parameters - CH₄ emission factor for NG, coal and oil has been fixed as the default values given in the methodology.

There were some mistakes in the GSP PDD and they have been corrected in the final PDD. The monitoring plan in the revised final PDD is in accordance with the methodology.

TÜV SÜD confirms that the monitoring plan described in the PDD is in compliance with the requirements in the applied methodology. Furthermore, TÜV SÜD considers the described monitoring procedures as feasible and is confident that the project participants are capable of implementing this plan [IRL # 21, 22, 23].

3.8 Sustainable development

The project will lead to sustainable development through employment generation, generation of relatively clean energy and reducing the electricity peak load gap. The project has received the host country approval letter which indicates that the project will contribute to the sustainable development in China.

3.9 Local stakeholder consultation

Relevant stakeholders have been consulted for the project. The stated information in the PDD has been validated based on the submitted documents.

The comments from the relevant local stakeholders have been invited via distribution of questionnaires [IRL # 16]. The assessment team has reviewed these documents in order to validate the in-

clusion of relevant stakeholders and using the local expertise can confirm that the communication method used to invite the stakeholders can be considered appropriate. The summary of comments presented in the PDD has been cross check with the documentation of the stakeholder consultation and it is found to be complete [IRL # 24].

The relevant comments presented by the local stakeholders have been taken due account by the PP, the same has been cross check with the information obtained during the interviews.

Hence the local stakeholder consultation has been adequately performed according to the CDM requirements. As a result, TÜV SÜD considers the applied process for the local stakeholder consultation as adequate and appropriate.

3.10 Environmental impacts

An environmental impact assessment (EIA) study has been carried out for the project as per the government regulations [IRL # 8]. There are no significant environmental impacts of the project. The same has been validated based on the EIA study submitted for the project. The EIA report has been approved by the China State Environment Protection Administration on 25th May 2004 [IRL # 9].

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on UNFCCC website by installing a link to TÜV SÜD's own website and invited comments by Parties, stakeholders and non-governmental organisations during a period of 30 days.

The following table presents all key information on this process:

webpage: http://www.netinform.de/KE/Wegweiser/Guide2_1.aspx?ID=3687&Ebene1_ID=26&Ebene2_ID=1109&mode=1
Starting date of the global stakeholder consultation process: 2007-09-05
Comment submitted by: Mr. Axel Michaelowa
Issues raised and responses by project proponent and TÜV SÜD: <u>Comment:</u> Doubtful additionality of project <p>According to the PDD, the project began its construction activity on Nov. 1st, 2003. Also according to the PDD, the project proponent learnt firstly the concept of the Clean Development Mechanism (CDM) from the NDRC official CDM Website in April 2003. It is unlikely that a gas power plant is planned within five months. Thus the additionality of the project is seriously in doubt.</p> <p><u>Response by project proponent:</u></p> <ol style="list-style-type: none"> 1. The PDD for the Zhumadian NGCC power project in English version that your DOE received at that time before 29 September 2007, was not finally checked by me, as the PDD developer, and also was not sent to your DOE by me. I was not informed when that PDD was sent to you at that time. 2. In that PDD, "The project began its construction activity on Nov.1st, 2003" was not correct. During the Aug. and Sept., 2007, I had already reminded the another project partner that some information regarding the project progress timing need to be checked and updated, if inconsistent errors are identified, before sending to your DOE for validation. However they did not take care about my reminding. 3. In the revised PDD, version 4 we submitted to your DOE this time, the relevant information are updated, as explained in the CR No.3 in Table 2 Checklist as following: <p>"The actual timeline regarding the implementation, construction and real action of the project activity are as following:</p> <ol style="list-style-type: none"> 1. On 6 June, 2005: the main equipment import contract between Henan Zhumadian Zhongyuan Gas Power Plant, China National Technical Import and Export Corporation (CNTIC) and Shanghai Electric Group Co. (SEC)-SIEMENS Consortium was signed and came into force (Contract No. 04DE01GTA01XC-0015, please refer to CNTIC Document No. G17ZY/11, 06/06/2005); 2. On 10 Aug. 2005: the civil construction work of the project started by pouring down first tank of concrete for the # 1 waste heat boiler of the #1 power unit of the project; 3. In June 2007: #1 power unit put into commercial operation, and then in December 2007: #2 power unit put into commercial operation. <p>According to the definition on the starting date of a project activity as specified in the Glossary of CDM terms (Ver.03), the right starting date of the project activity should be corrected as 6 June, 2005, which has been corrected in Section B.5 and C.1.1 of the revised PDD, Version 4, Page 14 and 52 respectively".</p> <p>Therefore Dr. Axel Michaelowa's comment on "Doubtful additionality of project" could be clearly clarified accordingly</p> <p><u>Response by TÜV SÜD:</u></p> <p>The start date of the project activity and the serious consideration of CDM for the project activity have been validated and are detailed in Chapter 3.</p>

Validation of the CDM Project:

Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Page 17 of 18



webpage:

http://www.netinform.de/KE/Wegweiser/Guide2_1.aspx?ID=5119&Ebene1_ID=26&Ebene2_ID=1611&mode=1

Starting date of the global stakeholder consultation process: 2008-07-24

No comments were received

5 VALIDATION OPINION

TÜV SÜD has performed validation in accordance with the VVM, version 1, (EB44, Annex 3) of the following proposed CDM project activity:

Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan, China.

Standard auditing techniques have been used for the validation of the project. Methodology-specific checklists and protocol customised for the project have been prepared to carry out the audit and present the outcome in a transparent and comprehensive manner.

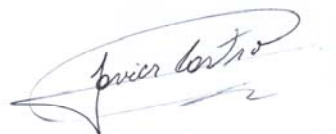
The review of the project design documentation, the subsequent follow-up interviews and the further cross check of references have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria in the protocol. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board.

An analysis as provided by the applied methodology demonstrates that the proposed project activity 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. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions in a measurable and verifiable manner as specified within the final PDD version.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed following the VVM requirements. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 15-12-2008

Munich, 15-12-2008



Javier Castro

Certification Body "climate and energy"
TÜV SÜD Industrie Service GmbH



Sven Kolmetz

Assessment Team Leader

Validation of the CDM Project:

Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan, China



ANNEX 1: VALIDATION PROTOCOL

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
A. General description of project activity				
A.1. Title of the project activity				
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	1	The project title is clearly identified and its location, the technology adopted as well as the energy source used are indicated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.2. Are there any indication concerning the revision number and the date of the revision?	1	For the GSP, version 3, dated on Dec 15 th , 2007, has been delivered. Further for re-GSP, version 5, dated July 01 st , 2008, has been submitted. <u>Corrective Action Request No.1.</u> 1. A revision history of the PDD should be included. 2. Please indicate the date in the following format: DD/MM/YYYY.	CAR1	<input checked="" type="checkbox"/>
A.1.3. Is this consistent with the time line of the project's history?	1,5,6,7,8,9,18	Yes, it is consistent with the time line of the project's history.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2. Description of the project activity				
A.2.1. Is the description delivering a transparent overview of the project activities?	1,2,6-14	The description is delivering a transparent overview of the project activity. The description includes the purpose of the project activity, as well as an explanation how the proposed project activity reduces GHG emissions. The contribution of the project activity to sustainable development is mentioned. Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China (hereafter refers to as the Project or the proposed project) is located in Zhumadian City, Henan Province, China. The designed installed capacity of the Project is	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
		<p>2x377.2MW (rated capacity 2x350MW), which is aimed at electricity generation of 2,640.4000GWh annually with 2,584.4235GWh electricity per year to be delivered to the Central China Power Grid (CCPG) via Henan Provincial grid that the Project is connected to. The Project will consume $522.62 \times 10^6 \text{ Nm}^3$ natural gas per year for power generation, without using other fuels.</p> <p>The Central China Power Grid, under which the proposed project is covered, is dominated by sub-critical coal based power plants. The electricity generated by using natural gas which is clean energy with less carbon content, in the project site, can displace electricity generated by sub-critical coal based power plants which would have been built otherwise. Thus the proposed project activity can reduce CO₂ emissions accrued from the CCPG. The estimated annual GHG emission reductions are 858,165 tCO₂e.</p>		
A.2.2. What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	1,6-14	<p>The project description has been checked during the on-site visit. The power plant has been seen installed (see pictures). Further documents have been delivered:</p> <ul style="list-style-type: none"> • Feasibility report • Approval of feasibility report by NDRC • EIA • Approval of EIA • Application of gas price in west east gas pipeline for generation 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.3. Is the information provided by these proofs consistent with the information provided by the PDD?	1,6-14	The documents are consistent with the description in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.4. Is all information presented consistent	1	All information presented is consistent with details provided by	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
with details provided by further chapters of the PDD?		further chapters of the PDD.		
A.3. Project participants				
A.3.1. Is the form required for the indication of project participants correctly applied?	1	The project participants are Henan Zhongyuan Gas Power Company Ltd. And Carbon Asset Management Sweden AB.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.2. Is the participation of the listed entities or Parties confirmed by each one of them?	1,29,40,41	The participation has been confirmed by the MoC, also the LoA(s) of China and Sweden have been submitted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.3. Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	1	Yes, the information provided is consistent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4. Technical description of the project activity				
<i>A.4.1. Location of the project activity</i>				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1, 7, 19	The GPS data have been delivered and the project can be identified via Google Earth. The project location could be clearly identified according to the PDD. The proposed project is located at the planned industrial zone in the southeast corner of the Zhumadian City, Henan Province, China.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.1.2. How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	1,5,6,7,8,9	The documents indicated in A.2.2. and presented during the on-site visit clearly show that the project proponents can implement the project at this site.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>A.4.2. Category(ies) of project activity</i>				
A.4.2.1. To which category(ies) does the project activity belonging to? Is the category correctly identified and indicated?	1, 2	The category is scope 1, energy industries.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
<i>A.4.3. Technology to be employed by the project activity</i>				
A.4.3.1. Does the technical design of the project activity reflect current good practices?	1, 15, 22, 23,26	Yes, the technical design of the proposed project activity reflects current good practice. The gas turbines will be manufactured by Siemens AG in Germany and Shanghai Steam Turbine Co., Ltd. The steam turbines will be manufactured by Shanghai Steam Turbine Co., Ltd. The boiler is made in China by Wuhan Boiler Manufacture Co. And the generator is from Shanghai Electric Group Co.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input/ information to evaluate its impact on the greenhouse gas balance?	1, 15, 22, 23,26	As there is a displacement of electricity from coal-fired power plants by a gas-fired power plant the impact is obvious. The proposed project activity will definitely reduce GHG emissions. <u>Corrective Action Request No.2.</u> Provide evidence or correct the statement "The conversion efficiency of the state-of-art NGCC units is beyond 58%". <u>Corrective Action Request No.3.</u> The gross output power at full load is indicated as 2 x 402.5 MW whereas the designed installed capacity of the project is stated as 2 x 377.2 MW. Also indicate the capacity of the gas and steam turbines (in MW).	CAR2, CAR3	<input checked="" type="checkbox"/>
A.4.3.3. Does the implementation of the project activity require any technology transfer from annex-I-countries to the host country(ies)?	1, 15, 22, 23,26	The whole set of the F9 grade gas turbine, steam turbine and generator equipment package is manufactured jointly by the consortium of Shanghai Electric Group and Siemens AG in Shanghai and Siemens AG in Germany respectively by using the advanced Siemens technology transfer. The import of the manufacture technology for the main gas turbine equipment and the NGCC power station design constitute as an integrated part of the whole bundled bidding contract for the project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
A.4.3.4. Is the technology implemented by the project activity environmentally safe?	1, 15, 22, 23,26	Yes, the technology implemented by the project activity is environmentally safe.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.5. Is the information provided in compliance with actual situation or planning?	1, 15, 22, 23,26	The compliance with the actual situation and planning has been cross-checked by on-site auditing, desk review of the FSR and technical agreements between the project owner and the equipment suppliers.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.6. Does the project use state of the art technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country?	1, 15, 22, 23,26	The project applied state-of-the-art technology of gas-steam turbines in combined cycle from an international producer, i.e. Siemens AG, which result in a significantly better performance than commonly used technologies in China which are mainly coal-fired power plants.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1, 15,	It can not be expected that there will be a substitution during the lifetime as the equipment is newly ordered.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.8. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	1, 15, 22, 23,26	As the staffs coming from other thermal power plants are quite experienced in operating a power plant, we do not expect extensive training but some basic training for the special requirements of this kind of equipment. The basic training contract is between Henan Zhongyuan Gas Power Company Ltd. and Gas Turbine Power Generation Special Committee, Chinese Society for Electrical Engineering.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.9. Is information available on the demand and requirements for training and maintenance?	22, 23,26	The training agreement of Plant Operation and Maintenance between Siemens and manufacturer was available during the audit. It is part of the equipment contract.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.10. Is a schedule available for the implementation of the project and are there any	1, 5	As the project is already under operation there are no risks for delays.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
risks for delays?				
A.4.4. Estimated amount of emission reductions over the chosen crediting period				
A.4.4.1. Is the form required for the indication of projected emission reductions correctly applied?	1	Yes, the form required for the indication of projected emission reductions has been correctly applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.4.2. Are the figures provided consistent with other data presented in the PDD?	1	<u>Corrective Action Request No.4.</u> The paragraph above the table states that the crediting period is 2008.11 – 2015.9; the same is not consistent with the table. Please correct.	CAR4	<input checked="" type="checkbox"/>
A.4.5. Public funding of the project activity				
A.4.5.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	1, 10	No public funding is involved in the project.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.5.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	1, 10	Yes. The information provided is consistent with the details given in annex 2 of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B. Application of a baseline and monitoring methodology				
B.1. Title and reference of the approved baseline and monitoring methodology				
B.1.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	1, 2	Yes, it has been indicated. AM0029 version 3 has been used in the project and also reference to the "Tool to calculate the emission factor for the electricity system" version 01 and "Tool for the demonstration and assessment of additionality" version 05 has been clearly indicated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.1.2. Is the applied version the most recent one and / or is this version still applicable?	1, 2	Yes, the versions of the applied methodology and the tools are the most recent one.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		GSP PDD	Final PDD
B.2. Justification of the choice of the methodology and why it is applicable to the project activity					
B.2.1.1. Is the applied methodology considered the most appropriate one?	1, 2	Yes, the applied methodology is the most appropriate one.		☑	☑
B.2.2. Criterion 1: construction and operation of a new natural gas fired grid-connected electricity generation plant	1, 5-15	Applicability checklist	Yes / No	CAR5	☑
		Criterion discussed in the PDD?	Yes		
		Compliance provable?	Yes		
		Compliance verified?	Yes		
		Corrective Action Request No.5. Indicate what start-up or auxiliary fuels can be used and also demonstrate that their usage would not be more than 1% of total fuel use, on energy basis.			
B.2.3. Criterion 2: The geographical/ physical boundaries of the baseline grid can be clearly identified and information pertaining to the grid and estimating baseline emissions is publicly available	1, 6,7,8,9, 11,12	Applicability checklist	Yes / No	☑	☑
		Criterion discussed in the PDD?	Yes		
		Compliance provable?	Yes		
		Compliance verified?	Yes		
B.2.4. Criterion 3: Natural gas is sufficiently available in the region or country, e.g. future natural gas based power capacity additions, comparable in size to the project activity, are not constrained by the use of natural gas in the project activity	1, 2, 54, 55	Applicability checklist	Yes / No	CR1, CR2	☑
		Criterion discussed in the PDD?	Yes		
		Compliance provable?	Yes		
		Compliance verified?			
		Clarification Request No. 1. Provide the stated documents – fuel supply special report, contract with gas supplier etc. to prove compliance with the stated criteria. Clarification Request No. 2. How is China Petroleum and Natural Gas Co. Ltd. related to Henan Yunan Gas Pipeline Co.?			

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
B.3. Description of the sources and gases included in the project boundary				
B.3.1. Source: Power generation Gas(es): CO2 Type: Baseline Emissions	1	Boundary checklist	Yes / No	<input checked="" type="checkbox"/>
		Source and gas(es) discussed in the PDD?	yes	
		Inclusion / exclusion justified?	yes	
		Explanation / Justification sufficient?	yes	
		Consistency with monitoring plan?	yes	
B.3.2. Source: On-site fuel combustion Gas(es): CO2 Type: Project Emissions	1	Boundary checklist	Yes / No	<input checked="" type="checkbox"/>
		Source and gas(es) discussed in the PDD?	yes	
		Inclusion / exclusion justified?	yes	
		Explanation / Justification sufficient?	yes	
		Consistency with monitoring plan?	yes	
B.3.3. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by / indication included to the PDD?	1,5	According to methodology AM0029, the spatial extent of the project boundary includes the project site and all power plants connected physically to the baseline grid as defined in "Tool to Calculate the Emission Factor for an Electricity System". Electricity generated by the project will be transmitted to the CCPG..	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario				
B.4.1. Have all technically feasible baseline scenario alternatives to the project activity been identified and discussed by the PDD? Why can this list be considered as being complete? Note: Alternatives to be analyzed shall include, <i>inter alia</i> : 1. The project activity not implemented as a CDM project activity	1	There are four alternative baseline scenarios considered: (a) The project activity not implemented as a CDM project; (b) Power generation using natural gas, but adopting the technology of simple cycle gas turbine is used instead of gas-steam combined cycle unit; (c) Power generation technologies using energy sources other than natural gas; (d) Import of electricity from connected grids, including the possibility of new interconnections.	CR3	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
2. Power generation using natural gas, but technologies other than the project activity 3. Power generation technologies using energy sources other than natural gas 4. Import of electricity from connected grids, including the possibility of new interconnections		<p>This list can be considered to be complete as there are no other realistic possibilities of electricity generation remaining that delivers the same service (peak regulation).</p> <p>Clarification Request No. 3.</p> <p>1. Provide the economic analysis (levelized cost) of Alternative b.</p> <ol style="list-style-type: none"> 1. Provide evidence supporting the statement "Currently, those NG fired power units under operation almost all adopted the NGCC technology". 2. Provide evidence demonstrating that there is no nuclear power construction planned in the CCPG region. 3. The justification "And nuclear power with zero emission is neither taken as baseline alternative, otherwise comparatively the natural gas fired power project would not able to accrue real and measurable emission reduction benefits that is no compliance with basic condition for the CDM eligibility; nor constitute a CDM project option, because the mop of Kyoto Protocol has not agreed with nuclear energy technology option for CDM" is inappropriate. 4. The justification provided for exclusion of Hydro power plants is inappropriate. As per the methodology, the baseline scenario candidates could be other stakeholders within the grid boundary. 5. Clarify what is 'PPCG' as mentioned in "So the PPCG needs for more flexible peak load....". 		
B.4.2. Does the project identifies correctly and excludes those options not in line with regulatory or legal requirements?	1,14	The installation of small coal-fired power plants has been ruled out due to legal restriction. See also B.4.3.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.3. Have applicable regulatory or legal re-	1,14	The notice on strictly prohibiting the installation of fuel-fired gene-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
quirements been identified?		rators with the Capacity of 135MW or below (decree No. 2002-6), General office of the state council has been delivered to the DOE.		
B.4.4. How it is ensured that all relevant power plant technologies that have recently been constructed or are under construction or are being planned (e.g. documented in official power expansion plans) are included as plausible alternatives	1,2	Clarification Request No. 4. As per the methodology, provide evidence to ensure that all relevant power plant technologies that have recently been constructed or are under construction or are being planned (e.g. documented in official power expansion plans) are included as plausible alternatives.	CR4	<input checked="" type="checkbox"/>
B.4.5. Does the PDD present an investment analysis for all baseline scenarios identified in a transparent manner clearly presenting critical techno-economic parameters and assumptions such as capital costs, fuel price projections, lifetimes, the load factor of the power plant and discount rate or cost of capital?	1,6,43, 44	Clarification Request No. 5. 1. Why there is no indication of employee (in Table 1) for the super-critical power plant? 2. Why the water fee for sub-critical power plant (1.0 Yuan/MWh) is higher as compared to the other power plants (0.68 Yuan/MWh)? 3. The comments written in the excel sheets are in Chinese and not English. 4. Provide clearly linked and traceable excel sheet for arriving at the leveled costs.	CR5	<input checked="" type="checkbox"/>
B.4.6. Has sufficient documentary evidences been provided to support the key assumptions of the analysis?	1,6,43, 44	Clarification Request No. 6. The source of data (as indicated below Table 1 in PDD) should be provided.	CR6	<input checked="" type="checkbox"/>
B.4.7. Where there are differences in assumptions, input data and data sources for the investment analysis across the project activity and its alternatives, have the differences been well substantiated?	1	Clarification Request No. 7. Why there is variation in the operating hours for the various alternatives presented in Table 1 of the PDD?	CR7	<input checked="" type="checkbox"/>
B.4.8. Has a sensitivity analysis been per-	1	Yes, the sensitivity analysis has been carried out with reasonable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
formed by reasonably varying critical assumptions (e.g. fuel prices and load factor)?		variation in the critical assumptions.		
B.4.9. Does the sensitivity analysis confirm the pre-selected baseline scenario as the most plausible baseline scenario? If not, has the baseline scenario with the lowest emission rate among the alternatives that are the most financially attractive been selected?	1	Yes, the sensitivity analysis confirms the pre-selected baseline scenario as the most plausible baseline scenario.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.10. Is the emission rate of the selected baseline scenario below that of the project activity?	1	Yes. It is clearly described that the most economic option is the coal fired power plant.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):				
B.5.1. If the starting date of the project activity is before the date of validation, is evidence available to prove that incentive from the CDM was seriously considered in the decision to proceed with the project activity?	1,3,45,46,47,48,49,50,51,52,53	<p><u>Corrective Action Request No.6.</u></p> <p>Include a chronological list of key activities associated with the project activity demonstrating serious consideration of CDM in the decision to proceed with the project activity. Also provide the supporting documents/evidence for the same.</p> <p><u>Clarification Request No. 8.</u></p> <p>When was the decision made to proceed with the project activity? Provide documentary evidence supporting the same.</p> <p><u>Clarification Request No. 9.</u></p> <p>Why was the CDM application process delayed?</p>	CAR6, CR8, CR9	<input checked="" type="checkbox"/>
B.5.2. In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	1,3	The benchmark analysis method (option III) has been adopted in compliance with the additionality tool.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.3. In case of Option III (benchmark analysis): Is the most suitable financial indicator	1,3,6,3	The IRR has been chosen as financial indicator in compliance	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	6,37	with the additionality tool. According to "The Economical assessment method and parameters for capital construction project, the 2nd edition" and "The detailed rules for implementation of the economical assessment method used for electric power project construction (test version)" issued by the Electric Power Planning and Design Institute under the Electric Power Industry Ministry, Document No.:DianGuiJing No.2 (1994)", the benchmark financial internal rate of return, IRR (Without VAT), for power plants was set to be 8% under the full investment condition.		
B.5.4. In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?	1,3,37	The calculation of IRR is done for the project activity without CDM revenues and including revenues from the sale of CERs.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.5. In case of Option II or Option III: Is the analysis presented in a transparent manner including publicly available proofs for the utilized data?	1,3,6,7,30,31,36,37,54,55,56,57,58	All parameters (except electricity bus-bar tariff and fuel price) are taken from the FSR and they are identical. Electricity bus-bar tariff and fuel price are taken from NDRC approved letter. Clarification Request No. 10. Provide the documents shown an the foot notes of Table 3 in the PDD have been delivered during the on-site audit. Clarification Request No. 11. Further clarification is required on the suitability of the input values taken in the investment analysis, as per the guidance of EB 38 paragraph 54. Clarification Request No. 12. How much VAT is paid on the Natural Gas? Provide further justification why it is not adjusted in the VAT payment.	CR10 - 12	<input checked="" type="checkbox"/>
B.5.6. Have other activities in the host country	1,3	There is one similar project indicated in the PDD also located in	CAR7,	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
/ region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?		Henan Province, named Zhengzhou natural gas power plant (2x390MW). <u>Corrective Action Request No.7.</u> Include the complete list of CCPP located in China in the common practice analysis providing the evidence for the same. <u>Clarification Request No. 13.</u> Why the common practice is being restricted to similar type installed capacity?	CR13	
B.5.7. If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be implemented without the CDM component (step 4b)?	1,3	See B.5.5.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.8. Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers?	1,3	The CER will help the project to increase financial reliability and to meet the IRR benchmark.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6. Emissions reductions				
<i>B.6.1. Explanation of methodological choices</i>				
B.6.1.1. Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	1, 2,	The methodology AM0029 is applied in the context of the Project in the following four steps: 1. Calculate the project GHG emissions; 2. Calculate the baseline GHG emissions; 3. Calculate the leakage emissions; 4. Calculate the emission reductions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
B.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	1, 2,5	Regarding the EF_{BL,CO_2} , the lowest emission factor of the three following options should be considered (according to AM0029): 1) BM grid factor 2) CM grid factor (50/50 OM/BM weight) 3) Emission factor of the technology (and fuel) identified as the most likely baseline scenario In the project case, the lowest emission factor is the BM grid factor (option 1). This has been verified during the on-site visit.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Project emissions				
B.6.1.3. Are the formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1, 2,	The project emissions are caused by the burning of natural gas for electricity generation. Hence, the project emissions clearly result by multiplication of the gas volume and the emission factor. Both parameters are completely identified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Baseline emissions				
B.6.1.4. Are the formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1, 2	Yes. All the formulae for baseline emissions correctly presented in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Tool to calculate emission factor for an electricity system				
B.6.1.5. Is the relevant electric power system identified and justified? (step 1)	1,2,3	Yes, the Central China Power Grid (CCPG) has been identified as the relevant electric power system.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.6. Is the choice of options to determine the operating margin justified in a suitable and transparent manner? (step 2)	1,2,3	Yes, the choice of simple OM has been appropriately justified in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
B.6.1.7. Are the formulae required for the determination of the operating margin factor correctly presented, enabling a complete identification of parameter to be used and / or monitored? (step 3)	1,2,3	Yes, the formulae required determination of simple OM has been correctly presented in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.8. Is the cohort of power units to be included in the build margin appropriately identified (step 4)	1,2,3	Yes, the cohort of power units to be included in the build margin has been appropriately identified in the PDD. The reference to the deviation approach agreed during EB-22 has also been adopted.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.9. Are the formulae required for the determination of the build margin factor correctly presented, enabling a complete identification of parameter to be used and / or monitored? (step 5)	1,2,3	Yes, the formulae required determination of BM has been correctly presented in the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.10. Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	1,2,3	It has been stated in the PDD that ex-ante is selected. <u>Clarification Request No. 14.</u> As per the methodology, "If either option 1 (BM) or option 2 (CM) are selected, they will be estimated <i>ex post</i> , as described in "Tool to calculate emission factor for an electricity system". Please clarify and correct accordingly.	CR14	<input checked="" type="checkbox"/>
Leakage				
B.6.1.11. Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1,2	The formulae required for the determination of leakage emissions are correctly presented.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Emission reductions				
B.6.1.12. Are the formulae required for the determi-	1,2	The emission reductions are determined by the difference be-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD																		
nation of emission reductions correctly presented?		tween baseline, project emissions and leakages. They are correctly presented.																				
B.6.2. Data and parameters that are available at validation																						
B.6.2.1. Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?	1,2,3	<u>Corrective Action Request No.8.</u> Not all the parameters with regard to the requirements of the applied methodology have been presented. As the BM has been identified as the lowest emission factor so as per the methodology and the “Tool to calculate the emission factor for an electricity system” the parameters corresponding to the ex-post estimation of BM should be presented in section B.7.1 and not in section B.6.2. Please indicate only those data and parameters that are applicable, the rest may be removed.	CAR8	<input checked="" type="checkbox"/>																		
B.6.2.2.Parameter Title: η_{BL} Option 3: Energy efficiency of the technology, as estimated in the baseline scenario analysis	1,2,3	η_{BL} has been clearly described in the PDD. <table><tr><th>Data Checklist</th><th>Yes / No / NA</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>N/A</td></tr></table> <u>Clarification Request No. 15.</u> As per the “Tool to calculate the emission factor for an electricity system”, the default efficiency specified for a sub-critical coal based power plant is defined is 39%, whereas the value used is 37.54%. This is not conservative and should be revised accordingly.	Data Checklist	Yes / No / NA	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided?	No	Has this value been verified?	No	Choice of data correctly justified?	Yes	Measurement method correctly described?	N/A	CR15	<input checked="" type="checkbox"/>
Data Checklist	Yes / No / NA																					
Title in line with methodology?	Yes																					
Data unit correctly expressed?	Yes																					
Appropriate description of parameter?	Yes																					
Source clearly referenced?	Yes																					
Correct value provided?	No																					
Has this value been verified?	No																					
Choice of data correctly justified?	Yes																					
Measurement method correctly described?	N/A																					

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD																		
B.6.2.3.Parameter Title: COEF_{BL} Option 3: fuel emission coefficient (tCO ₂ e/GJ), based on national average fuel data, if available, otherwise IPCC defaults can be used	1,2	<table><tr><th>Data Checklist</th><th>Yes / No / NA</th></tr><tr><td>Title in line with methodology?</td><td></td></tr><tr><td>Data unit correctly expressed?</td><td></td></tr><tr><td>Appropriate description of parameter?</td><td></td></tr><tr><td>Source clearly referenced?</td><td></td></tr><tr><td>Correct value provided?</td><td></td></tr><tr><td>Has this value been verified?</td><td></td></tr><tr><td>Choice of data correctly justified?</td><td></td></tr><tr><td>Measurement method correctly described?</td><td></td></tr></table> <p><u>Corrective Action Request No.9.</u></p> <p>The parameter COEF_{BL} is not included in the list of parameters that are available at the time of validation (section B.6.2).</p>	Data Checklist	Yes / No / NA	Title in line with methodology?		Data unit correctly expressed?		Appropriate description of parameter?		Source clearly referenced?		Correct value provided?		Has this value been verified?		Choice of data correctly justified?		Measurement method correctly described?		CAR9	<input checked="" type="checkbox"/>
Data Checklist	Yes / No / NA																					
Title in line with methodology?																						
Data unit correctly expressed?																						
Appropriate description of parameter?																						
Source clearly referenced?																						
Correct value provided?																						
Has this value been verified?																						
Choice of data correctly justified?																						
Measurement method correctly described?																						
B.6.2.4.Parameter Title: EF_{NG,upstream,CH4} Emission factor for upstream fugitive methane emissions of natural gas from production, transportation, distribution, and, in the case of LNG, liquefaction, transportation, re-gasification and compression into a transmission or distribution system, in t CH ₄ per GJ fuel supplied to final consumers	1,2	<table><tr><th>Data Checklist</th><th>Yes / No / NA</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>NA</td></tr></table>	Data Checklist	Yes / No / NA	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided?	Yes	Has this value been verified?	Yes	Choice of data correctly justified?	Yes	Measurement method correctly described?	NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Data Checklist	Yes / No / NA																					
Title in line with methodology?	Yes																					
Data unit correctly expressed?	Yes																					
Appropriate description of parameter?	Yes																					
Source clearly referenced?	Yes																					
Correct value provided?	Yes																					
Has this value been verified?	Yes																					
Choice of data correctly justified?	Yes																					
Measurement method correctly described?	NA																					
B.6.2.5.Parameter Title: EF_{CO2,upstream,LNG} Emission factor for upstream CO ₂ emissions due to fossil fuel combustion/electricity consumption associated with the liquefaction, transportation, re-gasification and compression of LNG into a natural gas transmission or distribution	1,2	<p>Since there is no LNG involved in the project, this is not applicable</p> <table><tr><th>Data Checklist</th><th>Yes / No / NA</th></tr><tr><td>Title in line with methodology?</td><td>N/A</td></tr><tr><td>Data unit correctly expressed?</td><td>N/A</td></tr><tr><td>Appropriate description of parameter?</td><td>N/A</td></tr><tr><td>Source clearly referenced?</td><td>N/A</td></tr></table>	Data Checklist	Yes / No / NA	Title in line with methodology?	N/A	Data unit correctly expressed?	N/A	Appropriate description of parameter?	N/A	Source clearly referenced?	N/A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
Data Checklist	Yes / No / NA																					
Title in line with methodology?	N/A																					
Data unit correctly expressed?	N/A																					
Appropriate description of parameter?	N/A																					
Source clearly referenced?	N/A																					

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		GSP PDD	Final PDD
system		Correct value provided?	N/A		
		Has this value been verified?	N/A		
		Choice of data correctly justified?	N/A		
		Measurement method correctly described?	N/A		
B.6.2.6.Parameter Title: GWP_{CH4} Global warming potential of methane valid for the relevant commitment period	1,2	Data Checklist	Yes / No / NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Title in line with methodology?	Yes		
		Data unit correctly expressed?	Yes		
		Appropriate description of parameter?	Yes		
		Source clearly referenced?	Yes		
		Correct value provided?	Yes		
		Has this value been verified?	Yes		
		Choice of data correctly justified?	Yes		
		Measurement method correctly described?	N/A		
B.6.2.7.Parameter Title: EF_{K,upstream,CH4} Emission factor for upstream fugitive methane emissions from production of the fuel type <i>k</i> (coal or oil type) in t CH ₄ per MJ fuel produced	1,2	Data Checklist	Yes / No / NA	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Title in line with methodology?	Yes		
		Data unit correctly expressed?	Yes		
		Appropriate description of parameter?	Yes		
		Source clearly referenced?	Yes		
		Correct value provided?	Yes		
		Has this value been verified?	Yes		
		Choice of data correctly justified?	Yes		
		Measurement method correctly described?	NA		
		Yes, the emission factor for upstream fugitive methane emissions from production of the fuel types - coal and oil has been indicated.			
B.6.3. Ex-ante calculation of emission reductions					
B.6.3.1. Is the projection based on the same procedures as used for future monitoring?	1, 2,	The projection is based on the electricity produced and natural gas used. The estimated figures will be metered after starting of the project.		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?	1, 2,	The calculations are complete and transparent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.3.3. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	1, 2,	<u>Corrective Action Request No.10.</u> The grid emission factors (OM, BM and CM) are not consistent with the latest emission factors indicated by the NCCCC, NDRC. The data may be updated accordingly.	CAR10	<input checked="" type="checkbox"/>
B.6.4. Summary of the ex-ante estimation of emission reductions				
B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	1	Due to the replacement of coal there will be fewer GHG emissions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.2. Is the form/table required for the indication of projected emission reductions correctly applied?	1	Yes. The table required for the indication of projected emission reductions is correctly applied. The table shows the projected project emissions, the baseline emissions as well as leakage emissions and the resulting emission reductions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	1	Yes, the projection is in line with the envisioned time schedule for the project's implementation and the indicated crediting period	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.4.4. Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	1	Yes, the data provided is consistent.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7. Application of the monitoring methodology and description of the monitoring plan				
B.7.1. Data and parameters monitored				
B.7.1.1. Is the list of parameters presented in chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?	1,2,3	Yes, the list of parameters presented is considered to be complete with regard to the requirements of the applied methodology and the tool.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD																								
B.7.1.2. Parameter Title: EG_{PJ,y} Electricity supplied to the grid	1,2	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table> <p>It has been indicated that the electricity supplied to the grid and electricity from grid would be monitored at multiple metering points. Further details on location, accuracy and calibration frequency of these meters have been indicated in section B.7.2.</p> <p><u>Corrective Action Request No.11.</u></p> <p>The values need to be indicated in the tables which have been used to arrive at the emission reductions stated earlier.</p>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	No	Has this value been verified?	No	Measurement method correctly described?	Yes	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes	CAR11	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																											
Title in line with methodology?	Yes																											
Data unit correctly expressed?	Yes																											
Appropriate description of parameter?	Yes																											
Source clearly referenced?	Yes																											
Correct value provided for estimation?	No																											
Has this value been verified?	No																											
Measurement method correctly described?	Yes																											
Correct reference to standards?	Yes																											
Indication of accuracy provided?	Yes																											
QA/QC procedures described?	Yes																											
QA/QC procedures appropriate?	Yes																											
B.7.1.3. Parameter Title: FC_{f,y}	1,2	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes	CR16	<input checked="" type="checkbox"/>								
Monitoring Checklist	Yes / No																											
Title in line with methodology?	No																											
Data unit correctly expressed?	Yes																											
Appropriate description of parameter?	Yes																											
Source clearly referenced?	Yes																											
Correct value provided for estimation?	Yes																											
Has this value been verified?	Yes																											
Measurement method correctly described?	Yes																											

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		GSP PDD	Final PDD																								
		<table><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table>	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes																			
Correct reference to standards?	Yes																												
Indication of accuracy provided?	Yes																												
QA/QC procedures described?	Yes																												
QA/QC procedures appropriate?	Yes																												
		Clarification Request No. 16. Is NG the only fuel to be used in the project activity?																											
B.7.1.4. Parameter Title: NCV_{f,y}	1, 2	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr><tr><td>Correct reference to standards?</td><td>Yes</td></tr><tr><td>Indication of accuracy provided?</td><td>Yes</td></tr><tr><td>QA/QC procedures described?</td><td>Yes</td></tr><tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes	Correct reference to standards?	Yes	Indication of accuracy provided?	Yes	QA/QC procedures described?	Yes	QA/QC procedures appropriate?	Yes		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No																												
Title in line with methodology?	Yes																												
Data unit correctly expressed?	Yes																												
Appropriate description of parameter?	Yes																												
Source clearly referenced?	Yes																												
Correct value provided for estimation?	Yes																												
Has this value been verified?	Yes																												
Measurement method correctly described?	Yes																												
Correct reference to standards?	Yes																												
Indication of accuracy provided?	Yes																												
QA/QC procedures described?	Yes																												
QA/QC procedures appropriate?	Yes																												
B.7.1.5. Parameter Title: OXID_f	1, 2	<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description of parameter?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Measurement method correctly described?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description of parameter?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	Has this value been verified?	Yes	Measurement method correctly described?	Yes		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
Monitoring Checklist	Yes / No																												
Title in line with methodology?	Yes																												
Data unit correctly expressed?	Yes																												
Appropriate description of parameter?	Yes																												
Source clearly referenced?	Yes																												
Correct value provided for estimation?	Yes																												
Has this value been verified?	Yes																												
Measurement method correctly described?	Yes																												

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		GSP PDD	Final PDD
		Correct reference to standards?	Yes		
		Indication of accuracy provided?	Yes		
		QA/QC procedures described?	Yes		
		QA/QC procedures appropriate?	Yes		
B.7.1.6. Parameter Title: $EF_{CO2,f}$	1, 2	Monitoring Checklist	Yes / No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Title in line with methodology?	Yes		
		Data unit correctly expressed?	Yes		
		Appropriate description of parameter?	Yes		
		Source clearly referenced?	Yes		
		Correct value provided for estimation?	Yes		
		Has this value been verified?	Yes		
		Measurement method correctly described?	Yes		
		Correct reference to standards?	Yes		
		Indication of accuracy provided?	Yes		
		QA/QC procedures described?	Yes		
		QA/QC procedures appropriate?	Yes		
B.7.1.7. Parameter Title: $COEF_y$	1, 2	Monitoring Checklist	Yes / No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Title in line with methodology?	Yes		
		Data unit correctly expressed?	Yes		
		Appropriate description of parameter?	Yes		
		Source clearly referenced?	Yes		
		Correct value provided for estimation?	Yes		
		Has this value been verified?	Yes		
		Measurement method correctly described?	Yes		
		Correct reference to standards?	Yes		
		Indication of accuracy provided?	NA		
		QA/QC procedures described?	NA		
		QA/QC procedures appropriate?	NA		
B.7.1.8. Parameter Title: PE_y	1, 2	Monitoring Checklist	Yes / No	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
		Title in line with methodology?	Yes		

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		GSP PDD	Final PDD
		Data unit correctly expressed?	Yes		
		Appropriate description of parameter?	Yes		
		Source clearly referenced?	Yes		
		Correct value provided for estimation?	Yes		
		Has this value been verified?	Yes		
		Measurement method correctly described?	Yes		
		Correct reference to standards?	Yes		
		Indication of accuracy provided?	NA		
		QA/QC procedures described?	NA		
		QA/QC procedures appropriate?	NA		
B.7.1.9. Parameters corresponding to the “ Tool to calculate the emission factor for an electricity system ”	1,2,3	Option 1, the BM has been identified as the lowest emission factor. The BM calculation is based on the sample group m consisting of recent capacity addition comprising of 20% of the total installed capacity. This is in accordance with the deviation approach accepted by the CDM EB. <u>Corrective Action Request No.12.</u> As the BM would be updated ex-post annually, so the description of the parameters should also be accordingly revised, instead of stating the years.		CAR12	☑
B.7.2. Description of the monitoring plan					
B.7.2.1. Is the operational and management structure clearly described and in compliance with the envisioned situation?	1, 2	The management structure is described in a qualitative manner in section B.7.2 of the PDD.		☑	☑
B.7.2.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?	1, 2	Yes. Responsibilities and institutional arrangements for data collection and archiving are clearly provided.		☑	☑
B.7.2.3. Does the monitoring plan provide current good monitoring practice?	1, 2	The monitoring plan provides current good monitoring practice.		☑	☑

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
B.7.2.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	1, 2	Annex 4 informs that "The calibration of meters & metering, the QA/QC procedure and others of the monitoring plan should be carried out with reference to the Power Purchase Agreement of the Project, the Parallel Operation Agreement of the Project and the checking and testing standard and the specification of the monitoring equipments".	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)				
B.8.1.1. Is there any indication of a date when the baseline was determined?	1	The baseline was determined on 01/07/2008	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.2. Is this consistent with the time line of the PDD history?	1	Yes. It is consistent with the time line of the PDD history.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.3. Is the information on the person(s) / entity(ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	1	Global Climate Change Institute (GCCl) of Tsinghua University is responsible for the application of the baseline and monitoring methodology.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.1.4. Is information provided whether this person / entity is also considered a project participant?	1	Global Climate Change Institute (GCCl) of Tsinghua University is not project participant.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C. Duration of the project activity / crediting period				
C.1. Duration of the project activity				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1,52,53	The project's starting date is defined as the date of signing of the main equipment contract (06/06/2005) and the operational lifetime is expected to be 21 years. Both data are reasonable. Clarification Request No. 17. Provide the contract document as referred in the footnote for the	CR17	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
		start date of the project.		
C.2. Choice of the crediting period and related information				
C.2.1. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	1	A renewable crediting period has been chosen. This seems to be reasonable for this kind of project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D. Environmental impacts				
D.1. Documentation on the analysis of the environmental impacts, including trans-boundary impacts				
D.1.1. Has the analysis of the environmental impacts of the project activity been sufficiently described?	1,8,9,1 6,24,2 7	An approved EIA exists (see Annex 2) and the environmental impacts are described for the construction as well as the operational phase. The EIA has been approved on Mar. 25 th , 2004 by the China State Environment Protection Bureau.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	1,8,9,1 6,24,2 7	Yes, as mentioned in D.1.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.3. Will the project create any adverse environmental effects?	1,8,9,1 6,24,2 7	The project uses natural gas as fuel and the main pollutions are exhaust gas, exhaust water, noise from the units operation, no-ash/slag and de-ash waste water discharged from the plant. After taking pollutant disposal measures, the adverse impacts on the environmental due to project construction and operation can be reduced effectively. Hence this project will create no significant adverse environmental effects.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.4. Were trans-boundary environmental impacts identified in the analysis?	1,8,9,1 6,24,2 7	There are no trans-boundary environmental impacts involved with the project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party				
D.2.1. Have the identified environmental impacts been addressed in the project design sufficiently?	1,8,9,16,24,27	During the construction period, the dust-fall is avoided by watering. The daily life waste water will be aggregated and disposed at the disposal station and discharged when reaching the relevant standard. During the operation period, the dry-type low NOx burner is adopted to reduce NOx emissions some other treatments will also be implemented to reduce environmental impacts.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.2. Does the project comply with environmental legislation in the host country?	1,8,9,16,24,27	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E. Stakeholders' comments				
E.1. Brief description how comments by local stakeholders have been invited and compiled				
E.1.1. Have relevant stakeholders been consulted?	1,16,24	In Apr. 2007, the project owner carried out a meeting of the stakeholders who might be affected by the project. Before the meeting two surveys have been accomplished.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	1,16,24	A poster is available during one week for calling residents to attend the local stakeholders' meeting, and the residents' commission is also responsible for gathering the local stakeholders' comments. These have been verified by the auditor.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
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?	1,16,24	There are no regulations that require a stakeholder process.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
E.1.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	1,16,24	The process and the results are described. Some questions have been raised by the stakeholders regarding noise and sewage discharge. Both concerns have been responded to by the project owner in an adequate manner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2. Summary of the comments received				
E.2.1. Is a summary of the received stakeholder comments provided?	16,24	There is a statistical overview over the participants of the process and there are answers to the questions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3. Report on how due account was taken of any comments received				
E.3.1. Has due account been taken of any stakeholder comments received?	16,24	The project owner will take account of these concerns by installing measures to reduce noise emissions during the construction.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F. Annexes 1 - 4				
F.1. Annex 1: Contact Information				
F.1.1. Is the information provided consistent with the one given under section A.3?	1	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.2. Is the information on all private participants and directly involved Parties presented?	1	See F.1.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.2. Annex 2: Information regarding public funding				
F.2.1. Is the information provided on the inclusion of public funding (if any) in consistency with the actual situation presented by the project participants?	1	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.2.2. If necessary: Is an affirmation available that any such funding from Annex-I-countries does not result in a diversion of	1	Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
ODA?				
F.3. Annex 3: Baseline information				
F.3.1. If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?	1	The baseline information consists of the calculation of the grid factors that are used for the calculation of the baseline emissions in chapter B of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.3.2. If additional background information on project data is provided: Is this information consistent with data presented by other sections of the PDD?	1, 2	Yes.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.3.3. Is the data provided verifiable? Has sufficient evidence been provided to the validation team?	1	The provided data are published by the DNA and have been checked with the public available statistical data such as the Chinese Energy Yearbook.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.3.4. Does the additional information substantiate / support statements given in other sections of the PDD?	1	They are the basis for the further calculations.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.4. Annex 4: Monitoring information				
F.4.1. If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?	1	Yes, Annex 4 informs that "The calibration of meters & metering, the QA/QC procedure and others of the monitoring plan should be carried out with reference to the Power Purchase Agreement of the Project, the Parallel Operation Agreement of the Project and the checking and testing standard and the specification of the monitoring equipments".	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.4.2. Is the information provided verifiable? Has sufficient evidence been provided to the validation team?	1	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	GSP PDD	Final PDD
F.4.3. Do the additional information and / or documented procedures substantiate / support statements given in other sections of the PDD?	1	Not applicable.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action re-quests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
CAR1 1. A revision history of the PDD should be included. 2. Please indicate the date in the following format: DD/MM/YYYY.	A.1.2.	<p>The revision history of the PDD has been included in Section A.1 of the revised PDD, Version 4, Page 2. Also the date is indicated in the format: DD/MM/YYYY.</p> <p>Answer: the version and the dates have been revised in the latest PDD.</p>	<p>Response from audit team The version and the date have not been revised. Please re-vise the same.</p> <p>Further response from audit team The version and date of the PDD has been revised. This issue is now resolved. <input checked="" type="checkbox"/></p>
CAR2 Provide evidence or correct the statement "The conversion efficiency of the state-of-art NGCC units is beyond 58%".	A.4.3.2	<p>The efficiency is from an article by a sector expert. The reference is <i>Huang Qili*</i>, "Development Direction for the Electric Power Technologies and Equipment in China", "China's Electric Power Industry Management" Journal, page 38, Issue. 11, 2003: "Since the last half century, the heavy duty gas turbine technology has been developed in the world with the conversion efficiency being increased from 20% to 38% (in 2000) and the capacity of the single gas turbine unit being enlarged from 100MW to 300MW. Nowadays the efficiency of the state-of-art G type 300 MW gas turbine with inlet temperature 1500°C could reach 38.5%, and up to 58%~60% when in combined cycle." */: Huang Qili, Professor, Academician, Chinese Academy of Engineering.</p> <p>The quotation above is included in the footnote 2 in the revised PDD.</p>	<p>Response from audit team The PDD has been revised. The source of the statement has been indicated also the efficiency is verified from the technical specifications of the system. This issue is now resolved. <input checked="" type="checkbox"/></p>
CAR3 The gross output power at full load is	A.4.3.2	<p>The designed installed capacity is as per the feasibility study report. The equipment is 9F grade. In the FSR page 71 and 72 the</p>	<p>Response from audit team Please indicate the capacity of</p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



<p>indicated as 2 x 402.6 MW whereas the designed installed capacity of the project is stated as 2 x 377.2 MW. Also indicate the capacity of the gas and steam turbines (in MW).</p>		<p>capacity for the gas and steam turbines are 243.4MW and 133.8MW respectively. The total designed capacity is 377.2MW. The performance will be subject to the environment, and the output will vary at a range. The maximum output is 402.5MW.</p> <p>Answer: The capacity of the gas and steam turbine has been indicated in the revised PDD separately.</p> <p>The proof for the maximum output is the “technical specifications” in the equipment purchase contract. The reference has been added as a footnote in the PDD and provided to TS.</p> <p>Answer: In the “technical specifications” in the equipment purchase contract, the power output at 100% load under ISO conditions is 402.5MW. The words “under ISO conditions” have been included in the revised PDD. The technical specifications in the equipment purchase contract are the technical specifications provided by the equipment supplier as the contract was signed with the equipment supplier.</p>	<p>the gas and steam turbine separately in the PDD. Provide proof for the stated maximum output (402.5 MW).</p> <p><u>Further response from audit team</u></p> <p>Please refer to your own submitted document ‘Technical specifications in the contract – power output’, the stated values and the statement are not matching. Submit the technical specifications as provided by the equipment supplier.</p> <p><u>Further response from audit team</u></p> <p>The PDD has been revised. This issue is now resolved.</p> <p><input checked="" type="checkbox"/></p>
<p><u>CAR4</u></p> <p>The paragraph above the table states that the crediting period is 2008.11 – 2015.9, the same is not consistent with the table. Please correct.</p>	<p>A.4.4.2</p>	<p>Done, see revised PDD.</p>	<p><u>Response from audit team</u></p> <p>The PDD has been revised. The dates have been corrected. This issue is now resolved.</p> <p><input checked="" type="checkbox"/></p>
<p><u>CAR5</u></p> <p>Indicate what start-up or auxiliary fuels can be used and also demonstrate that their usage would not be more than 1% of total fuel use, on energy basis.</p>	<p>B.2.2</p>	<p>FSR page 36 says the project will not have oil fired back up system, which means the project has no auxiliary fuels.</p> <p>Answer: the explanation has been included in the PDD. The highlighted FSR has been provided.</p>	<p><u>Response from audit team</u></p> <p>Indicate the same in the PDD. Also the stated information in the FSR is not to be found, please highlight and submit the same.</p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



			<p><u>Further response from audit team</u></p> <p>The PDD has been revised indicating that there is no auxiliary fuel involved and the same has been validated based on the information provided in the FSR as 'the project will not have oil fired back up system'. Thus this issue is resolved.</p> <p><input checked="" type="checkbox"/></p>
<p><u>CAR6</u></p> <p>Include a chronological list of key activities associated with the project activity demonstrating serious consideration of CDM in the decision to proceed with the project activity. Also provide the supporting documents/evidence for the same.</p>	B.5.1	<p>The official project starting date is 6 June 2006 (evidence: third-party document confirming the start of the purchase contract for 50% of the total investment)</p> <p>CDM consideration:</p> <p>Chronological list of key activities associated with the project activity demonstrating serious consideration of CDM in the decision to proceed with the project activity :</p> <ol style="list-style-type: none"> 1. The PO got the information of another NG project, Beijing third thermal power plant, which is a case study for CDM by World bank, from Prof. Liu in Tsinghua University in January 2004. The PO informed its departments to study the materials in March 2004 (evidence: study report and internal memo). 2. The PO had a board meeting on 10 May 2004, deciding that the CDM should be seized to improve the low investment income rate (evidence: board meeting minutes). 3. The PO established a CDM work team on 10 May 2004 (evidence: internal memo). 4. On 3 April 2005 the PO invited Prof. Liu to be the CDM con- 	<p><u>Response from audit team</u></p> <ol style="list-style-type: none"> 1. Indicate the chronology and the supporting documents in the PDD. 2. What is PO? 3. Provide the properly named documents (English) in pdf format. 4. The submitted documents do not have any indication of authenticity. 5. Indicate the dates of the purchase order of the key equipments. <p><u>Further response from audit team</u></p> <ol style="list-style-type: none"> 1. The signed contract has been provided. 2. The conditions of the

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



		<p>sultant for the proposed project (evidence: invitation letter).</p> <p>5. On 13 April 2006, the methodology panel approved the methodology at its meeting from 4th to 7th of April 2006 and AM0029 was approved by in May 2006 by the EB.</p> <p>6. Two CDM work meetings for the project were held on 14 of August and 17 November 2006 (evidence: electronic memos from Professor Liu).</p> <p>7. The ERPA got signed on 9 March 2007 (evidence: ERPA).</p> <p>8. The draft version PDD was finished on 5 April 2007. But there was still some information lacking and the commercial negotiations delayed the efficient PDD development (evidence: internal communication between the seller and the buyer).</p> <p>9. The Project was GSP on 5 September 2007.</p>	<p>contract coming into force have been mentioned.</p> <p>3. The project commissioning dates have been mentioned in the revised PDD.</p> <p>4. The chronology has been indicated in the revised PDD.</p> <p>This issue is now resolved.</p> <p><input checked="" type="checkbox"/></p>
<p><u>CAR7</u></p> <p>There are two other similar project activities indicated in the PDD as located in the Henan Province, namely the Henan Zhongyuan Gas Power Plant (2x350MW) and the Zhengzhou natural gas power plant (2x390MW). Both are applying as well as CDM projects.</p> <p>CAR 7</p> <p>Include the complete list of CCPP located in China in the common practice analysis providing the evidence for the same.</p>	B.5.6	<p>The additionality tool version 5 requires the assessment of similar activities operational in the same region. The equipment costs as well as the price of coal, natural gas and electricity differ from province to province. Thus, the Henan province is taken as the geographic area. The following similar plants exist in the Henan Province:</p> <ul style="list-style-type: none"> - Henan Zhongyuan Gas Power Plant (2x350MW) - Zhengzhou natural gas power plant (2x390MW) <p>The first one is the project itself, the second one is registered as a CDM project. See revised PDD.</p> <p>Answer: References and examples showing the difference between the various provinces and "the price of coal, natural gas and electricity are different from province to province":</p> <p>1. http://cdb.serc.gov.cn/UploadImages/20081142072290.doc, showing the electricity sales price for power plants in different</p>	<p><u>Response from audit team</u></p> <p>Provide quantitative indication of the difference between the various provinces and also provide evidence for the statement "the price of coal, natural gas and electricity are different from province to province"</p> <p><u>Further response from audit team</u></p> <p>Please state these differences in the PDD also and indicate the reference document/web-link.</p> <p><u>Further response from audit team</u></p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

		<p>provinces in CCPG are different. For example, the electricity price for coal fired power plants selling electricity in central China region is: in Hubei Province 0.351Yuan/kWh, Hunan Province 0.369Yuan/kWh, Jiangxi Province 0.357Yuan/kWh, Henan Province 0.321Yuan/kWh, Sichuan Province 0.318Yuan/kWh, Chongqing City 0.312Yuan/kWh.</p> <p>2. http://www.coalprice.cn/news/coal_hq/coal_hq/2008-1-14/20081141627056730.htm, showing the coal prices in different provinces are different. For example, in central China region, the coal price in Hunan Province is 338Yuan/ton, in Sichuan Province is 400Yuan/ton, in Henan Province Xuchang City is 370Yuan/ton.</p> <p>3. The natural gas price is composed of the gas field benchmark price and the natural gas transportation price (main pipeline and sub-pipeline). The different location of the projects results in different natural gas price. Thus the projects in different provinces have different natural gas price for power generation. For example, the NG price for power plants in Wuhan City (in Hubei Province, another province is Central China Region) is 1.40Yuan/m³¹ while the NG for the proposed project is 1.29Yuan/m³.</p> <p>Answer: The differences in the PDD and the reference document/web-link have also been indicated in the PDD.</p>	<p>The PDD has been revised. The differences have been indicated in the PDD along with the references. This issue is now resolved.</p> <p><input checked="" type="checkbox"/></p>
<p>CAR 8</p> <p>Not all the parameters with regard to the requirements of the applied methodology have been presented. As the BM has been identified as the</p>	B.6.2.1	<p>The parameters corresponding to the ex-ante estimation of OM and BM are presented in section B.6.2, and the parameter EF_{grid,BM,y} subject to ex-post monitoring and updating is presented in section B.7.1.</p>	<p>Response from audit team</p> <p>The PDD has been revised; the data for ex-ante calculation of emission factors (BM, CM and Baseline fuel) have been</p>

¹ <http://www.wuhan.gov.cn/publish/wuhan/zwpd/gwgg/bmwj/wjj/2006-06-0935974.html>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

lowest emission factor so as per the methodology and the "Tool to calculate the emission factor for an electricity system" the parameters corresponding to the ex-post estimation of BM should be presented in section B.7.1 and not in section B.6.2. Please indicate only those data and parameters that are applicable, the rest may be removed.			stated in Section B.6.2. This issue is now resolved. <input checked="" type="checkbox"/>
<u>CAR9</u> The parameter COEF_{BL} is not included in the list of parameters that are available at the time of validation (section B.6.2).	B.6.2.3	Done.	<u>Response from audit team</u> Please indicate the baseline fuel (Coal) in the table. <u>Further response from audit team</u> The baseline fuel has been indicated as coal in the revised PDD. This issue is now resolved. <input checked="" type="checkbox"/>
<u>CAR10</u> The grid emission factors (OM, BM and CM) are not consistent with the latest emission factors indicated by the NCCCC, NDRC. The data may be updated accordingly.	B.6.3.3	At the time of PDD submission, the NDRC 2007 emission factors were applicable. The EF in the PDD has been revised to be totally consistent with the published NDRC 2007 value. Answer: The emission factors have been updated to be the latest one published by the DNA of China, i.e. NDRC 2008 value. In section B.7 of the PDD it has been stated that since BM is determined as the baseline emission factor, it will be updated ex-post in the CERs calculation and declaration in the following verifications after registration.	<u>Response from audit team</u> Please update the emission factors based on the most recent data available. The 2007 data is not the latest. <u>Further response from audit team</u> Please update the emission factor to the latest. Moreover the emission factor has to be updated ex-post as per the

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



			<p>methodology (since BM is the lowest arrived option).</p> <p><u>Response from audit team</u></p> <p>The PDD has been revised with the latest available values. This issue is now resolved.</p> <p>☑</p>
<p><u>CAR11</u></p> <p>The values need to be indicated in the tables which have been used to arrive at the emission reductions stated earlier.</p>	B.7.1.2	<p>The value for EG pj on p.39 has been included in the table in B.7.1 and EG export and import have been consolidated (meters 1 and 3).</p>	<p><u>Response from audit team</u></p> <p>The PDD has been revised; This issue is now resolved.</p> <p>☑</p>
<p><u>CAR12</u></p> <p>As the BM would be updated ex-post annually, so the description of the parameters should also be accordingly revised, instead of stating the years.</p>	B.7.1.9	<p>In B.7.1 instead of year 2005 we have revised to be "in year y", for m, F Cap Total and Cap Thermal (p.47).</p>	<p><u>Response from audit team</u></p> <p>The PDD has been revised; This issue is now resolved.</p> <p>☑</p>
<p><u>CR1</u></p> <p>Provide the stated documents – fuel supply special report, contract with gas supplier etc. to prove compliance with the stated criteria.</p>	B.2.4	<p>The fuel supply special report is referred from the FSR, in which the FSR design institute refers this. The PO does not have this. However, the Answer letter on the use of natural gas requested by the Henan Zhongyuan gas power plant, from China Petroleum and Natural Gas Co. Ltd. and the natural gas sales agreement between the PO and China Petroleum and Natural Gas Co. Ltd., and the NG transportation agreement between Henan Yunan Gas Pipeline Co. and the PO can demonstrate the gas usage of the proposed project. Evidences will be provided again.</p> <p>Answer: PO is project owner.</p> <p>The documents which are named in English will be submitted</p>	<p><u>Response from audit team</u></p> <p>The PDD has been revised.</p> <ol style="list-style-type: none"> 1. What is PO? 2. Provide the properly named documents (in English) in pdf format. <p><u>Further response from audit team</u></p> <p>Please submit the properly named (in English) documents for better understanding.</p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



		again with this answer to the DOE.	Response from audit team The properly named documents have been re-submitted. This issue is now resolved. <input checked="" type="checkbox"/>
CR2 How is China Petroleum and Natural Gas Co. Ltd. Related to Henan Yunan Gas Pipeline Co.?	B.2.4	China Petroleum and Natural Gas Co. Ltd. is the gas supplier and seller. Henan Yunan Gas Pipeline Co. Ltd. is the NG transportation company. Yunan NG pipeline is the sub line of "the West to East" natural gas transmission pipeline.	Response from audit team This issue is now resolved. <input checked="" type="checkbox"/>
CR3 Provide the economic analysis (levelized cost) of Alternative b. <ol style="list-style-type: none"> 1. Provide evidence supporting the statement "Currently, those NG fired power units under operation almost all adopted the NGCC technology". 2. Provide evidence demonstrating that there is no nuclear power construction planned in the CCPG region. 3. The justification "And nuclear power with zero emission is neither taken as baseline alternative, otherwise comparatively the natural gas fired power project would not able to accrue real and measurable emission reduction bene- 	B.4.1	<ol style="list-style-type: none"> 1. This statement has been taken out from the PDD, please confirm in your validation report by means of your local expertise that single cycle gas-fired power plants are not a realistic alternative baseline scenario. 2. The argumentation has been changed to nuclear power providing base load service and not peak load. Hence, it can not be compared to the project activity. 3. This statement has been taken out. 4. The justification provided for exclusion of hydro power plants is indeed appropriate. Please have your local auditor confirm this by means of his local expertise. 5. It has been corrected to CCPG. <p>Answer: The efficiencies of both the single cycle natural gas power plants and the combined cycle natural gas power plants have been included in the revised PDD as mentioned above and the evidence is listed in a footnote.</p> <p>Why hydropower is excluded from the alternatives have been explained in the PDD "As far as hydro power is concerned, although</p>	Response from audit team The PDD has been revised but the issues are only partly resolved. Provide evidence for the following: <ol style="list-style-type: none"> 1. Efficiency of 39% for single cycle plants 2. Why hydro power cannot provide peak load. Further response from audit team The reference for the single cycle gas fired power plants has been included in the revised PDD. Single cycle gas fired power plants has been eliminated as a baseline alternative because of relatively lower efficiency levels as com-

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

<p>fits that is no compliance with basic condition for the CDM eligibility; nor constitute a CDM project option, because the mop of Kyoto Protocol has not agreed with nuclear energy technology option for CDM" is inappropriate.</p> <p>4. The justification provided for exclusion of Hydro power plants is inappropriate. As per the methodology, the baseline scenario candidates could be other stakeholders within the grid boundary.</p> <p>5. Clarify what is 'PPCG' as mentioned in "So the PPCG needs for more flexible peak load....".</p>		<p>there are Xiao Langdi and San Menxia hydro power stations in Henan provincial power grid, which could undertake part of the peak load capacity, their share is relatively small. While in the southern part of the CCPG, there are rich hydro power resources available, but having limited peak load dispatching capacity, and need long distance transmission of hydro electricity via CCPG.</p> <p>For the Three Gorge hydro power project, its peak load dispatching capacity is comparatively smaller in the Summer than in other seasons, due to influenced by the Summer flood season. Whereas the electricity supply by the Three Gorge Hydro Power Co. is directly and separately controlled by the State Power Grid Co. and the Three Gorge hydro power project usually supplies the electricity to Henan Province for summer base load operation. It will make the peak load dispatching difficult for Henan power grid in the summer season.</p> <p>Furthermore, the hydro resources in Henan Province is very limited, it is very difficult to develop the hydropower station with similar output as the proposed project.</p>	<p>pared to CCPPs</p> <p>Hydropower has been excluded from the baseline because of limited hydro resources giving output equivalent to the project activity.</p> <p>This issue is now resolved.</p> <p>☑</p>
<p>CR4</p> <p>As per the methodology, provide evidence to ensure that all relevant power plant technologies that have recently been constructed or are under construction or are being planned (e.g. documented in official power expansion plans) are included as plausible alternatives.</p>	<p>B.4.4</p>	<p>According to China electric power yearbook 2006 the relevant power plant technologies that have recently been constructed within CCPG include hydro power, fuel-fired power plant, wind power and other generation technologies. (see evidence CR4-1)</p> <p>And the types of the technology of power plants under construction are hydro power, fuel-fired power, wind power, nuclear power, solar and biomass power plants. (see evidence CR4-2)</p> <p>According to the 11th Five-Year Plan for Energy Development of China (see evidence CR4-3), the development of coal fired power plants, wind and hydro power plants, nuclear power plants, solar and biomass power plants are the planned power plant technologies for the 2007-2012. Therefore all relevant power plant technologies that have recently been constructed or</p>	<p>Response from audit team</p> <p>This issue is now resolved.</p> <p>☑</p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



		are under construction or are being planned in the project boundary are hydro power, wind power, nuclear power, solar power, biomass power and fuel-fired power generation technologies. Then the wind power, solar power and biomass power can be excluded because they can not provide similar peak load regulation service and the un-commercialized technology.	
CR5 1. Why there is no indication of employee (in Table 1) for the super-critical power plant? 2. Why the water fee for sub-critical power plant (1.0 Yu-an/MWh) is higher as compared to the other power plants (0.68 Yuan/MWh)? 3. The comments written in the excel sheets are in Chinese and not English. 4. Provide clearly linked and traceable excel sheet for arriving at the leveled costs.	B.4.5	1. The data for Qinbei power plant is from "Case study and PDD study report for Huaneng Qinbei 2×600 MW super-critical coal-fired power plant", in the case study the employee number is not specified; only the labor cost is shown. Thus the calculation directly refers to the labor cost and no employee number is shown in the PDD. 2. The prices of water are different in different regions. The project with 1.0Yuan/MWh is in Hunan and the projects with 0.68Yuan/MWh are in Henan. The prices are referred in the calculation are determined by local authorities. 3. The comments written in the excel sheets are English now 4. The excel sheet is linked and traceable.	Response from audit team This issue is now resolved. The revised excel sheet has been submitted. <input checked="" type="checkbox"/>
CR6 The source of data (as indicated below Table 1 in PDD) should be provided.	B.4.6	1) Feasibility study report on Hunan Datang Huayin Lenshuijiang Jinzhushan 2×600MW sub-critical power project (0100-8001-006-1), May, 2004. 2) Case study and PDD study report for Huaneng Qinbei 2×600 MW super-critical coal-fired power plant, See the second progress report on "The Study on the Methodologies and its Application of Clean Development Mechanism in China", Task II: Case Study, Case I, provided by GCCI, Tsinghua University. Feb. 29, 2004.	Response from audit team This issue is now resolved. The supporting documents have been submitted. <input checked="" type="checkbox"/>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



		<p>3) Feasibility study report on Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China, F2801K-A-01. May, 2004.</p> <p>4) Henan Zhongyuan Gas Power Plant is designed to be a peak loading power plant, for which the main power units are imported, for which the annual operation hour is designed to be 3500h. So the power plant will operate mainly in the peak load period under the CCPG. In summer, the plant will operate in all peak load periods as shown in the typical daily power balance sheet. In winter, the plant will operate partly in the peak load period, partly in the off-peak load period. Also in the electricity balance Table for Henan power grid (2003~ 2010) (Table 2.3.5), the electricity generation by natural gas power plant is based on 3500h/y of its annual utilization hour. Please refer to FSR No. F2801K-A-01, Section 2.3.4 and 2.3.5 (P25) in detail.</p>	
<p>CR7</p> <p>Why there is variation in the operating hours for the various alternatives presented in Table 1 of the PDD?</p>	B.4.7	<p>The operating hours for coal-fired power plants are usually higher because they provide more base-load. These operating hours are from the FSRs and the world bank case study.</p> <p>Answer: Coal-fired power plant can provide both base load and peak load regulation. The operation hours of the power plants in different places are subject to the electricity dispatching needs locally. Since they are from the FSRs and third party study, the data are reliable and reasonable.</p>	<p><u>Response from audit team</u></p> <p>Since the project activity power plant is for providing peak load then the alternatives should also be considered with the same output.</p> <p><u>Further response from audit team</u></p> <p>Since the data for the evaluation of coal based power plants is from the approved FSRs available checked by the local auditors, they have been considered reasonable. Further, the baseline emission factor is</p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

			<p>arrived as the BM of the grid; hence coal as baseline alternative does not have any impact. Thus this issue is resolved.</p> <p><input checked="" type="checkbox"/></p>
<p><u>CR8</u></p> <p>When was the decision made to proceed with the project activity? Provide documentary evidence supporting the same.</p>	B.5.1	<p>The project starting date i.e. date of signature of the main equipment import contract is 6 June 2005. The documentary evidence has been provided to your local colleague and Munich.</p>	<p><u>Response from audit team</u></p> <p>This issue is now resolved. The supporting documents have been submitted.</p> <p><input checked="" type="checkbox"/></p>
<p><u>CR9</u></p> <p>Why was the CDM application process delayed?</p>	B.5.1	<p>Please see CAR 6.</p> <p>Answer: the Chronological list of key activities associated with the project activity has been included in the PDD. The project considered CDM in May 2004. At the same time the project owner established a CDM work team. However the methodology regarding natural gas power project did not come out that time thus the CDM did not have significant progress during the period. Then in April 2005 the PO invited Prof. Liu in Tsinghua University to be the CDM consultant for the proposed project because Prof. Liu is quite famous in China CDM field as he is a leader in CDM studies in China. After the EB approved the natural gas power generation methodology in May 2006, the PDD preparation work started and two CDM work meetings for the project were held on 14 of August and 17 November 2006 with the participation of the project owner and Prof. Liu. After a period of time negotiating with the CERs buyer, the ERPA was signed on 9 March 2007 with Carbon Asset Management AB. In April 2007 the draft version PDD was finished. But there was still some information lacking and the commercial negotiations delayed the efficient PDD development. In September 2007 the</p>	<p><u>Response from audit team</u></p> <p>CAR6 is still not resolved.</p> <p><u>Further response from audit team</u></p> <p>Please give clear indications of the delay in the CDM process.</p> <p><u>Further response from audit team</u></p> <p>The delay in CDM process is attributed to methodology approval.</p> <p><input checked="" type="checkbox"/></p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



		PDD was completed and the project was put on UNFCCC for publish.	
CR10 Provide the documents shown as the foot notes of Table 3 in the PDD.	B.5.5	<p>Feasibility study report on Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China, No. F2801K-A-01, Henan Provincial Electric Power Design Institute, May 2004.</p> <p>Your local auditor has this document. Please have him confirm that he has cross-checked the values in line with the guidance of EB 38 paragraph 54.</p> <p>*1/: i) "NDRC Office's reply letter on price of natural gas used for power generation in Henan, which is pipelined from gas fields in west to east.", Document No.: FaGaiBanJiage [2004]1964, 2004.10.28: The natural gas price was 1.1 Yuan/Nm³ in which 0.48 Yuan component was the gas field benchmark price and 0.62 Yuan component was the natural gas transportation (west to east) price. The VAT is not refundable.</p> <p>ii) "NDRC notice on adjustment of the gas field benchmark price for natural gas pipelined from the West to the East", Document No. Fagaijiage[2005] 439, March 19, 2005: the gas field benchmark price is raised from 0.48 to 0.52 Yuan/Nm³, increasing by 0.04Yuan/Nm³.</p> <p>iii) "Henan DRC notice on the Yunan sub-pipeline natural gas transportation price", document No. [2004]1653, 8 September 2004: the natural gas transportation price from "west to east" pipeline to "Yunan Gas pipeline, Zhumadian City" is 0.15Yuan/Nm³. Answer: The English translation documents in PDF format have been submitted to the DOE.</p>	<p>Response from audit team The PDD has been revised. Provide the properly named documents (in English) in pdf format</p> <p>Further response from audit team The documents have been re-submitted. This issue is now resolved. <input checked="" type="checkbox"/></p>
CR11	B.5.5	All our input values are from FSR or other documents as refer-	Response from audit team

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

<p>Further clarification is required on the suitability of the input values taken in the investment analysis, as per the guidance of EB 38 paragraph 54.</p>		<p>enced. Please have your local colleague confirm that they are in line with the EB guidance and that he has checked them in-depth during the on-site visit in February 2008. Also, these documents have been sent to TS in June.</p> <p>Answer: The sensitivity analysis of the power generation has been included in the PDD.</p> <p>According to the reference in CAR 2 the maximum efficiency can reach 58%-60%, quoted from Prof. Huang Qili, "Development Direction for the Electric Power Technologies and Equipment in China", 《China's Electric Power Industry Management》, page 39, Issue. 11, 2003, and from "Assessment on the Application of Gas Turbine Power Generation Technology" published in 《China Power》, September 18, 2006 (http://www.chinapower.com.cn/article/1046/art1046090.asp). 58.3% is in the normal efficiency range of the gas steam combined cycle NG power plant. Actual efficiency will differ depending on the technology supplier and the environment the equipment located. We refer to the efficiency of natural gas combined cycle power projects in China. The efficiency for Yuyao Electricity Generation Project Using Natural Gas is 51% (registered by CDM EB). The efficiency for Henan Zhengzhou Grid Connected Natural Gas Combined Cycle Power Plant is 57.21% (registered by CDM EB). The efficiency for Fujian Jinjiang LNG Power Generation Project is 54% (requesting for registration by CDM EB).</p> <p>On the right of the sensitivity analysis parameters, there is a percentage 100%. Changing the percentage to 90%, 95%, 105% and 110% you can get the result of the IRR under every variation.</p>	<p>Further justification is required on the following points:</p> <ol style="list-style-type: none"> 1. Why sensitivity analysis has not been carried out for the power generation (operating hours)? 2. The stated annual NG consumption indicates an efficiency of 53.8% only. Justification on the same is required. <p>The calculation of sensitivity analysis is not traceable</p> <p><u>Further response from audit team</u></p> <p>The sensitivity analysis for power generation indicates the IRR reaching close to the benchmark. Further justification is required why this increase in power generation is not possible.</p> <p><u>Further response from audit team</u></p> <ol style="list-style-type: none"> 1. Further justification and evidence is required for the operational hours of the plant. 2. Provide operational
--	--	---	--

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Industrie Service

		<p>Answer: the justification of why this increase in power generation is unlikely has been included in the PDD.</p> <p>Answer:</p> <ol style="list-style-type: none"> 1. Electricity from gas-fired power plants is a relatively expensive source of power in China compared to power from coal-fired power plants which dominate the Chinese power grids. So power from gas-fired plants is generally reserved and delivered to the grid at times of peak demand, this has also been properly considered in the FSR (FSR defines the proposed power plant to be a peak load regulation power plant). Thus the load hours used in the FSR and IRR analysis is the same as the load hours design for natural gas power plants mentioned in the "Thermal Power Engineering Design Reference Cost Index" issued by China Institute of Power Planning and Design (3500Hrs). This value is common practice for natural gas power projects in China, for example, it was applied in the financial analysis in the PDDs for the Sulige Natural Gas plant (http://cdm.unfccc.int/Projects/DB/TUEV-SUED1184339707.46/view) and Yuyao Natural Gas plant (http://cdm.unfccc.int/Projects/DB/DNV-CUK1183455647.94/view). According to the article "the Characteristics and foreground of natural gas power technology"², the operation hours amount to 3500 as a peak load power plant and the operation hours will be less is acting as the back up power plant as the power grid. And 	<p>data of the plant till date subsequent to the commissioning.</p> <p><u>Further response from audit team</u></p> <p>The operational hours of the project activity has been justified based on the operational hours of similar plants in the country. Also the operational data on electricity generation for year 2007 and 2008 gives an indication that the given figure is reasonable. This issue is now resolved.</p> <p>☑</p>
--	--	---	---

² <http://www.chinapower.com.cn/article/1046/art1046081.asp>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



		<p>according to the article “To solve the current problem in the operation of natural gas power plants in China”³, the annual power generation quota set by the power grid is very low and the operation hours for the peak load natural gas power plants are normally 1700-3500 hours.</p> <p>2. The operational data of the plant till date subsequent to the commissioning has been submitted with the answer. Assuming the operation hours for the project is 3500h, the annual power generation should be 2640400MWh and the average monthly generation should be 220033MWh. However, from the operational data of the plant, the maximum power generation per month since operation is 170704.8MWh (May of 2008). The electricity generated is much less than expected / estimated.</p>	
<p>CR12</p> <p>How much VAT is paid on the Natural Gas? Provide further justification why it is not adjusted in the VAT payment.</p>	B.5.5	<p>The VAT for the natural gas is 13%. For the transportation of the natural gas, there is no VAT, the tax is 7%. To calculate the IRR, the price without VAT/tax is used.</p> <p>Answer: both natural gas price and electricity price without VAT/tax are used in the IRR calculation, which is in line with Chinese Accounting Rules.</p>	<p>Response from audit team</p> <p>Although it has been indicated in the PDD that VAT is not refundable. The response to why VAT adjustment has not been made is not given.</p> <p>Further response from audit team</p> <p>Since VAT has not been included in the price of gas for IRR calculation therefore this issue is not relevant now and is resolved.</p> <p><input checked="" type="checkbox"/></p>
CR13	B.5.6	The common practice analysis is not restricted to similar type in-	Response from audit team

³ http://www.oilnews.com.cn/gb/misc/2002-10/18/content_135818.htm

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47



Why the common practice is being restricted to similar type installed capacity?		stalled capacity. All the natural gas power plants in Henan Province have been analyzed and there are only two NG power projects in Henan Province.	<p>Very restrictive interpretation of similar installed capacity has been made.</p> <p><u>Further response from audit team</u></p> <p>The common practice has been carried out including all the natural gas based power plants in the Henan province where the project is located. The province has been considered as the relevant region on account of variation in resources and grid price in the other regions. The PDD has been revised and this issue is now resolved.</p> <p>☑</p>
<p><u>CR14</u></p> <p>It has been stated in the PDD that ex-ante is selected.</p> <p>As per the methodology, "If either option 1 (BM) or option 2 (CM) are selected, they will be estimated <i>ex post</i>, as described in "Tool to calculate emission factor for an electricity system". Please clarify and correct accordingly.</p>	B.6.1.10	In B.7.1 of the PDD, EFBM has already been included as the monitored parameter. It says "This determination will be made once at the validation stage based on an ex ante assessment. If either option 1 ($EF_{grid,BM,y}$) or option 2 ($EF_{grid,CM,y}$) are selected, they will be estimated ex post.	<p><u>Response from audit team</u></p> <p>The PDD has been revised. This issue is now resolved.</p> <p>☑</p>
<p><u>CR15</u></p> <p>As per the "Tool to calculate the emission factor for an electricity sys-</p>	B.6.2.2	Tools says the data is from "Documented manufacturer's specification, or from the utility, the dispatch center or official records if it can be deemed reliable, or default value". 37.54% is from the FSR of the baseline power plant - Hunan Dadang Huayin Len-	<p><u>Response from audit team</u></p> <p>The clarification has been provided. This issue is now re-</p>

Validation Protocol

Project Title: Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China

Date of Completion: 15-12-2008

Number of Pages: 47




tem", the default efficiency specified for a sub-critical coal based power plant is defined is 39%, whereas the value used is 37.54%. This is not conservative and should be revised accordingly.		shuijiang Jinzhushan 2×600MW sub-critical power project, thus should be more prioritized and used.	solved. <input checked="" type="checkbox"/>
CR16 Is NG the only fuel to be used in the project activity?	B.7.1.3	Yes, as confirmed in the FSR. Answer: has been provided to the DOE. Answer: TS is short for TUEV-SUED.	Response from audit team Indicate where in the FSR this is stated. Further response from audit team This issue is now closed. <input checked="" type="checkbox"/>
CR17 Provide the contract document as referred in the footnote for the start date of the project.	C.1.1	The local auditor has the document. It is once more provided.	Response from audit team The document has been provided. This issue is now resolved. <input checked="" type="checkbox"/>

Validation of the CDM Project:


Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan, China




ANNEX 2: INFORMATION REFERENCE LIST

Final Report	15-12-2008	Validation of the CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China"	Page 1 of 4	 Industrie Service
		Information Reference List		


Reference No.	Document or Type of Information																																				
1.	Project Design Document for CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China ", Version 01 to Version 07																																				
2.	Baseline Methodology for Grid Connected Electricity Generation Plants using Natural Gas, AM0029 Version 01 and Version 03																																				
3.	Tool for the Demonstration and Assessment of Additionality, Version 04 and Version 05																																				
4.	Participant list of on-site interview, signed on Feb. 28 th , 2008.																																				
5.	<p>On-site interviews at the project site in Zhumadian, Henan province. P.R China., conducted on Feb. 28th 2008 by auditing team of TÜV SÜD:</p> <p>Validation team:</p> <table> <tr> <td>Mr. Li Lixin</td><td>CDM Auditor trainee, Jiangsu TÜV Product Service Ltd. Beijing Branch</td></tr> <tr> <td>Ms. Chen Xiaoying</td><td>CDM Auditor, Jiangsu TÜV Product Service Ltd. Beijing Branch</td></tr> </table> <p>Interviewed persons:</p> <table> <tr> <td>Mr. Zhou Zhiyong</td><td>CDM project manager, Henan Zhongyuan Gas Power Company Ltd.</td></tr> <tr> <td>Mr. Li Dong</td><td>Project Manager, Henan Zhongyuan Gas Power Company Ltd.</td></tr> <tr> <td>Mr. Liu Deshun</td><td>Deputy Director, Global Climate Change Institute, INET, Tsinghua University.</td></tr> <tr> <td>Ms. Yue Ming</td><td>Technical manager, Carbon Asset Management Sweden AB</td></tr> <tr> <td>Mr. Li Leyong</td><td>Technical experts, Carbon Asset Management Sweden AB</td></tr> <tr> <td>Macro Berggren</td><td>Technical manager, Carbon Asset Management Sweden AB</td></tr> <tr> <td>Mr. Meng Tianchi</td><td>General manager, Henan Zhongyuan Gas Power Company Ltd.</td></tr> <tr> <td>Mr. Gao Kai</td><td>Project manager, Henan Zhongyuan Gas Power Company Ltd.</td></tr> <tr> <td>Ms. Hu Yan</td><td>Project manager, South Henan Gas Company Ltd.</td></tr> <tr> <td>Mr. Li Yongjun</td><td>Project manager, Zhumadian Power Supply Company Ltd.</td></tr> <tr> <td>Mr. Zhang Yaoyuan</td><td>Director, Zhumadian EPB</td></tr> <tr> <td>Mr. Cui Suosheng</td><td>Director, Zhumadian DRC</td></tr> <tr> <td>Mr. Zhang Hongjun</td><td>Stakeholder, Zhou Wan villager</td></tr> <tr> <td>Mr. Li Zhihua</td><td>Stakeholder, Zhou Wan villager</td></tr> <tr> <td>Ms. Zhuang Hua</td><td>Stakeholder, Zhou Wan villager</td></tr> <tr> <td>Ms. Wang Xiaojie</td><td>Stakeholder, Zhou Wan villager</td></tr> </table>	Mr. Li Lixin	CDM Auditor trainee, Jiangsu TÜV Product Service Ltd. Beijing Branch	Ms. Chen Xiaoying	CDM Auditor, Jiangsu TÜV Product Service Ltd. Beijing Branch	Mr. Zhou Zhiyong	CDM project manager, Henan Zhongyuan Gas Power Company Ltd.	Mr. Li Dong	Project Manager, Henan Zhongyuan Gas Power Company Ltd.	Mr. Liu Deshun	Deputy Director, Global Climate Change Institute, INET, Tsinghua University.	Ms. Yue Ming	Technical manager, Carbon Asset Management Sweden AB	Mr. Li Leyong	Technical experts, Carbon Asset Management Sweden AB	Macro Berggren	Technical manager, Carbon Asset Management Sweden AB	Mr. Meng Tianchi	General manager, Henan Zhongyuan Gas Power Company Ltd.	Mr. Gao Kai	Project manager, Henan Zhongyuan Gas Power Company Ltd.	Ms. Hu Yan	Project manager, South Henan Gas Company Ltd.	Mr. Li Yongjun	Project manager, Zhumadian Power Supply Company Ltd.	Mr. Zhang Yaoyuan	Director, Zhumadian EPB	Mr. Cui Suosheng	Director, Zhumadian DRC	Mr. Zhang Hongjun	Stakeholder, Zhou Wan villager	Mr. Li Zhihua	Stakeholder, Zhou Wan villager	Ms. Zhuang Hua	Stakeholder, Zhou Wan villager	Ms. Wang Xiaojie	Stakeholder, Zhou Wan villager
Mr. Li Lixin	CDM Auditor trainee, Jiangsu TÜV Product Service Ltd. Beijing Branch																																				
Ms. Chen Xiaoying	CDM Auditor, Jiangsu TÜV Product Service Ltd. Beijing Branch																																				
Mr. Zhou Zhiyong	CDM project manager, Henan Zhongyuan Gas Power Company Ltd.																																				
Mr. Li Dong	Project Manager, Henan Zhongyuan Gas Power Company Ltd.																																				
Mr. Liu Deshun	Deputy Director, Global Climate Change Institute, INET, Tsinghua University.																																				
Ms. Yue Ming	Technical manager, Carbon Asset Management Sweden AB																																				
Mr. Li Leyong	Technical experts, Carbon Asset Management Sweden AB																																				
Macro Berggren	Technical manager, Carbon Asset Management Sweden AB																																				
Mr. Meng Tianchi	General manager, Henan Zhongyuan Gas Power Company Ltd.																																				
Mr. Gao Kai	Project manager, Henan Zhongyuan Gas Power Company Ltd.																																				
Ms. Hu Yan	Project manager, South Henan Gas Company Ltd.																																				
Mr. Li Yongjun	Project manager, Zhumadian Power Supply Company Ltd.																																				
Mr. Zhang Yaoyuan	Director, Zhumadian EPB																																				
Mr. Cui Suosheng	Director, Zhumadian DRC																																				
Mr. Zhang Hongjun	Stakeholder, Zhou Wan villager																																				
Mr. Li Zhihua	Stakeholder, Zhou Wan villager																																				
Ms. Zhuang Hua	Stakeholder, Zhou Wan villager																																				
Ms. Wang Xiaojie	Stakeholder, Zhou Wan villager																																				

Final Report	15-12-2008	Validation of the CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China"	Page 2 of 4	 Industrie Service
		Information Reference List		

Reference No.	Document or Type of Information
6.	Feasibility Study Report for CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China" issued by Henan Electric Power Survey & Design Institute., dated May 2004.
7.	Approval of FSR of Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China, issued by NDRC(2005-343), dated Mar.8 th . 2005.
8.	EIA of "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China", issued by Science of Environment Protection Institute of Henan, dated Apr. 2004.
9.	EIA Approval of Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China (2004-170), issued by China EPB, dated May. 25 th 2004.
10.	Bank loan agreement signed with China Development bank (4100440222004020189), 1,958,000,000RMB, dated Dec.2 nd 2004.
11.	Approval of get into grid of Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China (ZYDLTSHT002) issued by CCPG, dated Mar. 23 rd 2007.
12.	The price contract with Henan electric power Co. No. ZYDLQTH030 indicating the electricity price for CCPP power, 0.48yuan/kWh (include VAT), dated Mar. 2007.
13.	Approval of get the price administration bureau document No. 2007-434, issued by Henan DRC dated Oct. 18 th 2007.
14.	The business license of Henan Zhongyuan Gas Power Company Ltd. issued by Henan Zhumadian industry and commerce administration, dated Dec, 25 th 2007.
15.	Contract for the turbine trains (CONTRACT NO. 04DE01GTA0IXC0015) between Henan Zhongyuan Gas power Co. Ltd., China National Technical Import & Export Corporation and SEC-LED consortium dated 12 th October 2004
16.	Questionnaires of stakeholders' comments dated Apr. 1 st 2007 to Apr. 30 th 2007.
17.	CERs purchase agreement, signed between Carbon Asset Management Sweden AB and Henan Zhongyuan Gas Power Company Ltd. signed Feb. 2008.
18.	CDM resolution board meeting minutes (2004-5), dated May, 10 th 2004.
19.	Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China General ichnography (1:1000).
20.	CDM consulting contract between Henan Zhongyuan Gas Power Company Ltd. and Accord Global Environment Technology Co., Ltd., dated Nov. 21 st 2007.
21.	Management system list of Henan Zhongyuan Gas Power Company Ltd.
22.	Training contract of Henan Zhongyuan Gas Power Company Ltd. in Jun. 22 nd , 2005.
23.	Training plan for the employee to deal with installation, debugging, running at 2007.
24.	Stakeholder meeting minutes at Apr. 2 nd 2007.

Final Report	15-12-2008	Validation of the CDM project "Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China"	Page 3 of 4	 Industrie Service
		Information Reference List		

Reference No.	Document or Type of Information
25.	The instruction report of Henan Zhongyuan Gas Power Company Ltd. at Jun. 1 st 2007.
26.	Training certification of employee at Feb. 2006.
27.	Qualification of EIA of Science of Environment Protection Institute of Henan, issued by China Environment Protection Bureau at Dec. 21 st 2000.
28.	Qualification of Feasibility Study Report of Henan Electric Power Survey & Design Institute. Issued by Chinese Construction Bureau dated Aug. 12 th 2003.
29.	Letter of Approval for Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China as a Clean Development Mechanism Project by National Development and Reform Commission of China (No.980), dated Mar. 2008.
30.	Application of gas price in west east gas pipeline for generation in Henan province [2004-1964] issued by NDRC, dated Oct. 28 th , 2004.
31.	Application of transfer price in Henan branch of west east gas pipeline price in Henan province [2004-1653] issued by NDRC, at Sep. 8 th , 2004.
32.	The approval of land transfer agreement [2002-119], issued by Zhumadian soil resource bureau, dated May. 16 th 2002.
33.	The evaluation report of construction Land the geological disaster fatalness for construction Land, Jan. 2004 , issued by China Henan Geological & Mineral Resources Construction Engineering (Group) Co. Ltd.
34.	Approval of China Henan Geological & Mineral Resources Construction Engineering (Group) Co. Ltd., issued by the ministry of land resources P.R.C. in Jun.8 th , 2001.
35.	Photos of construction celebration in Sep. 26 th , 2004.
36.	Evidence about benchmark: "The Economical assessment method and parameters for capital construction project, the 2nd edition" and "The detailed rules for implementation of the economical assessment method used for electric power project construction (test version)" issued by the Electric Power Planning and Design Institute under the Electric Power Industry Ministry, Document No.:DianGuiJing No.2 (1994).
37.	IRR calculation sheet "Zhumadian_IRR_ENG-Liyong_LDS-071215", excel-file.
38.	IPCC: Revised 2006 Guidelines for National Greenhouse Gas Inventories
39.	IPCC: 2000, Good Practice Guidance
40.	MoC of Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China, dated Mar. 2008.
41.	Letter of Approval for Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China as a Clean Development Mechanism Project by Swedish Energy Agency of Sweden, dated Jun. 2008.
42.	"Development Direction for the Electric Power Technologies and Equipment in China", China's Electric Power Industry Management Journal, page 38, Issue. 11, 2003

Final Report	15-12-2008	Validation of the CDM project “Zhumadian Zhongyuan Gas-Steam Combined Cycle Power Project in Henan China” Information Reference List	Page 4 of 4	 Industrie Service
--------------	------------	--	----------------	--

Reference No.	Document or Type of Information
43.	Feasibility study report on Hunan Dadang Huayin Lenshuijiang Jinzhushan 2×600MW sub-critical power project, dated May, 2004
44.	Case study for Huaneng Qinbei 2×600 MW super-critical coal-fired power plant by GCCI, Tsinghua University dated 29 th February 2004
45.	World Bank Case study on Gas Steam based combined cycle power project dated 20 th January 2004
46.	CDM case study notice dated 21 st March 2004
47.	CDM work team establishment note dated 10 th May 2004
48.	Invitation letter to Professor Liu for CDM consultancy dated 3 rd April 2005
49.	CDM work meetings dated 14 th August 2006
50.	CDM work meetings dated 17 th November 2006
51.	Emission Reduction Purchase Agreement dated 9 th March 2007
52.	Effective date of <i>CONTRACT NO. 04DE01GTA0IXC0015</i> was confirmed by China National Technical Import & Export Corporation dated 6 th June 2005
53.	Natural Gas sales agreement between Henan Zhongyuan Gas Power Company Ltd. and PetroChina Company Ltd., dated 18 th May 2008
54.	Natural Gas transportation agreement dated 2008
55.	Additional inspection and maintenance cost document dated 21 st June 2004
56.	Additional insurance cost document - letter from China United Property Insurance Company Ltd. dated 4 th March 2004
57.	NDRC notice on adjustment of the gas field benchmark price for natural gas pipelined from the West to the East”, Document No. Fagaijiage [2005] 439, dated 19 th March 2005
58.	Operational data for the power plant for the year 2007 and 2008