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# VALIDATION REPORT

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## TONGCHENG KAIDI BIOMASS POWER PROJECT IN CHINA

REPORT No. 01 997 9105048647

REVISION No. 03

# VALIDATION REPORT

Date of first issue: 2009-01-23	Project No.: 153107028	<i>TÜV Rheinland Japan Ltd.</i>
Approved by:  Dr. Manfred Brinkmann	Organisational unit: Industrial Services Energy and Environment Technology	<i>Shin Yokohama Daini Center Bldg., 3-19-5, Shin Yokohama Kohoku-ku, Yokohama 222-0033</i>
Client: Camco International Limited	Client ref.: Ms Madeleine Rawlins	

**Project Name:** Tongcheng Kaidi Biomass Power Project  
**Country:** China  
**Methodology:** ACM0006  
**Version:** 09  
**GHG reducing Measure/Technology:** Renewable energy / Biomass Residue  
**ER estimate:** 106,573 tCO<sub>2e</sub> /year

## Size

- ☒ Large Scale  
☐ Small Scale

## Validation Phases:

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

## Validation Status

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

In summary, it is TÜV Rheinland's opinion that Tongcheng Kaidi Biomass Power Project in China, as described in the PDD of version 04, 31 March 2010 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria applies the baseline and monitoring methodology ACM0006 (version 09). TÜV Rheinland thus requests the registration of the Project as a CDM project activity with the UNFCCC.

Report No.: 01 997 9105048647	Date of this revision: 2010-10-25	Rev. No. 03
Report title: Tongcheng Kaidi Biomass Power Project		
Work carried out by: Sequoia A, ZHU Jiang		
Work verified by: Dr. Manfred Brinkmann		

## Key words:

Climate Change  
Kyoto Protocol  
Validation  
Clean Development Mechanism

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## Abbreviations

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CL	Clarification request
CO <sub>2</sub>	Carbon dioxide
CO <sub>2</sub> e	Carbon dioxide equivalent
DNA	Designated National Authority
ECPG	East China Power Grid
EF	Emission Factor
EIA	Environmental Impact Assessment
EPB	Environmental Protection Bureau
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MP	Monitoring Plan
NCV	Net Calorific Value
NDRC	National Development and Reform Commission
NGO	Non-governmental Organisation
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
UNFCCC	United Nations Framework Convention on Climate Change
SCE	Standard coal equivalent

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Appendix A: Validation Protocol

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## 1 EXECUTIVE SUMMARY – VALIDATION OPINION

The validation team assigned by the DOE (TÜV Rheinland Japan Ltd.) has performed a validation of the “Tongcheng Kaidi Biomass Power Project” in P.R.China on the basis of UNFCCC criteria for Clean Development Mechanism (CDM) projects according to Article 12 of the Kyoto Protocol and subsequent decisions of the CDM Executive Board with regard to CDM modalities and procedures and the application of approved methodologies. The validation report and the validation protocol summarize the findings of the validation.

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

The Validation has been executed in the following steps so far:

- Project desk review (PDD Version 01, 27 August 2008)
- Public stakeholder comment process(25 September 2008 to 24 October 2008)
- On-site visit with stakeholder interviews(12 to 14 November 2008)
- Issue of checklist with corrective action requests (CARs) and clarification requests (CLs) and the draft validation report & protocol (Version 00, 23 January 2009)
- Desk review of revised PDD (version 04, 31 March 2010)
- Review of proposed correction and clarifications
- Issue of the final validation report & protocol

The host country of the proposed project is P.R.China. The Letter of Approval (LoA) of voluntary participation, including confirmation by China’s DNA National Development & Reform Commission (NDRC) that the project assists them in achieving sustainable development has been received.

According to the revised PDD, the project activity is bilateral CDM-project, with United Kingdom of Great Britain and Northern Ireland identified as the Annex I party, the LoAs from which have also been provided.

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

The project applies approved consolidated baseline and monitoring methodology ACM0006 “*Consolidated methodology electricity generation from biomass residues*” .

And also the project applies the tools as follows:

- “*Combined tool to identify the baseline scenario and demonstrate additionality*”. (Version 02.2)
- “*Tool for the demonstration and assessment of additionality*”(Version 05.2)
- “*Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion*”

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(Version 02)

- *“Tool to calculate baseline, project and/or leakage emissions from electricity consumption”* (Version 01)

The total emission reductions from the project are estimated to be on the average 106,573 tCO<sub>2</sub>e /year over the first crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate monitoring procedures have been implemented according to the monitoring methodology ACM0006. Project operational staff's training records is available to the Audit Team.

The project proponent has resolved all Corrective Action Requests and Clarification Requests as stated in the Validation Report and the Validation Protocol, which has resulted in a revision of the PDD. In summary, it is TÜV Rheinland's opinion that the Tongcheng Kaidi Biomass Power Project in P.R.China as described in the PDD of version 04, 31 March 2010 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and applies the baseline and monitoring methodology ACM0006. TÜV Rheinland thus requests the registration of the Project as a CDM project activity.

## 2 INTRODUCTION

Camco International Limited has commissioned TÜV Rheinland to perform a validation of the project Tongcheng Kaidi Biomass Power Project in China (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

### 2.1 Objective

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

### 2.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodology. The validation team has, based on the recommendations in the

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Validation and Verification Manual employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

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## 3 METHODOLOGY

The validation consists of the following three phases:

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

The following sections outline each step in more detail.

### 3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ Camco International Limited, Project Design Document for the “Tongcheng Kaidi Biomass Power Project”, version 04, 31 March 2010
- /2/ Camco International Limited, Project Design Document for the “Tongcheng Kaidi Biomass Power Project”, version 01, 27 August 2008
- /3/ The National Development and Reform Commission of the People’s Republic of China, Letter of Approval, January 2009
- /4/ The Secretary of State for Environment, Food and Rural Affairs , Letter of Approval for Camco International Limited, 13 February 2009
- /5/ The Secretary of State for Environment, Food and Rural Affairs, Letter of Approval for Camco Carbon Limited, 13 February 2009
- /6/ CDM Executive Board, ACM0006 “*Consolidated methodology electricity generation from biomass residues*”, Version 09
- /7/ CDM Executive Board, Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2
- /8/ CDM Executive Board, Tool for the demonstration and assessment of additionality, Version 5.2
- /9/ CDM Executive Board, Tool for calculation of emission factor for electricity systems ,Version 02
- /10/ CDM Executive Board, Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion ,Version 02
- /11/ CDM Executive Board, Tool to calculate baseline, project and/or leakage emissions from electricity consumption ,Version 01
- /12/ CDM Executive Board, Clean Development Mechanism Project Design Document Form (CDM-PDD), Version 03



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- /13/ CDM Executive Board, Guidelines For Completing The Project Design Document (CDM-PDD) And the Proposed New Baseline And Monitoring Methodologies (CDM-NM), Version 7, Annex 12 EB41 Report
- /14/ CDM Executive Board, Clean Development Mechanism Validation and Verification Manual, Version 01.1
- /15/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Feasibility Study Report for Tongcheng Kaidi Biomass Power Project(2×12MW), April 2008
- /16/ Development and Reform Commission of Anhui Province, Approval for Tongcheng Kaidi Biomass Power Project Phase 1 (2×12MW), 22 April 2008
- /17/ Science Consulting Center of Anhui Province, Environmental Impact Assessment for Tongcheng Kaidi Biomass Power Project(2×12MW), October 2007
- /18/ Environment Protection Bureau of Anhui Province, Approval of EIA for Tongcheng Kaidi Biomass Power Project (2×12MW), 16 January 2008
- /19/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Biomass Availability Report, March 2008
- /20/ Agriculture Bureau of Tongcheng City, The Plantation Area and Crop Yield Data
- /21/ State Council Office, Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135MW or below, June 2002
- /22/ Camco International Limited, IRR Calculation Sheet,
- /23/ Camco International Limited, Emission Reduction Calculation Sheet,
- /24/ National Development and Reform Commission of P.R.China, Notification on Determining Baseline Emission Factor of China's Grid, 30 December 2008
- /25/ China Renewable Energy Law, 1 January 2006
- /26/ Wuhan Kaidi Electric Power Engineering Co., Ltd. & Jiangxi Jianglian Energy and Environment Inc., 65t/h Boiler Components Purchasing Contract, 27 November 2007
- /27/ Wuhan Kaidi Electric Power Engineering Co., Ltd. & Nanjing Steam Turbine Co., Ltd., Steam Turbines Purchasing Contract, 6 November 2007
- /28/ Wuhan Kaidi Electric Power Engineering Co., Ltd. & Nanjing Steam Turbine Co., Ltd., Generators Purchasing Contract, November 2007
- /29/ Anhui Grid Consultation Co., Ltd., Assessment Letter for Paralleling Design for Tongcheng Kaidi Biomass Power Project ([2007]285)
- /30/ Wuhan Kaidi Investment Holding Ltd.,CDM Monitoring & QC Manual, 4 September 2008;  
Tongcheng Kaidi Green Energy Development Co., Ltd., Staff Training Plan for Tongcheng Kaidi Biomass Energy Plant, October 2008;

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- Tongcheng Kaidi Biomass Energy Plant, Meeting Notes for Plant CDM Developing, 24 February 2009
- /31/ Merchants Bureau of Tongcheng City, Introduction Letter Regarding No Other Biomass Project Existing in Tongcheng City (*tongzhaohan [2009] 10*), 10 February 2009
  - /32/ 135MW Notice on Strictly Prohibiting the Illegal Installation of coal-fired Generators with the Capacity of 135MW or below issued by the General Office of the State Council, Guo Ban Fa Ming Dian decree No. 2002-6
  - /33/ Electricity Dispatching Department of State Power Co., Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects, March 2003
  - /34/ Science Consulting Center of Anhui Province, Stakeholder Interview Records for Tongcheng Kaidi Biomass Power Project, September 2007; Stakeholder Interview Information Poster, available at : [http://www.tongcheng.gov.cn/zwgk/news\\_view.php?id=11480&ty=957](http://www.tongcheng.gov.cn/zwgk/news_view.php?id=11480&ty=957), assessed by the Audit Team on 31 March 2009
  - /35/ Central Southern China Electric Power Design Institute of China Power Engineering Consulting, Introduction for Life Span of Industry Boilers in Tongcheng, 4 February 2009; Senior Engineer Qualification Certification for Ms.ZHU Yuqin
  - /36/ China Standard Press, Application Manual of Boiler Strength Calculation, December 1998
  - /37/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Analysis for ‘Heat Distribution of Tongcheng Kaidi Biomass Project’ (*kaidigongchenghan[2009]011*), 8 February 2008
  - /38/ Environment Protection Bureau of Tongcheng City, Introduction of Local Biomass Uncontrolled Burning (*tonghuanhan [2009] 5*), 10 February 2009
  - /39/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Introduction Letter Regarding the Operation Hour (*kaidigongchenghan [2009]046*), 20 March 2009
  - /40/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Introduction Letter Regarding the Electricity Tariff Defined in the ‘FSR for Tongcheng Biomass Project’ (*kaidigongchenghan [2009]015*), 8 February 2009
  - /41/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Introduction Letter Regarding the Biomass Cost for Tongcheng Kaidi Biomass Power Project (*kaidigongchenghan [2009]017*), 8 February 2009
  - /42/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Introduction Letter Regarding the Project Operation Life (*kaidigongchenghan [2009]016*), 8 February 2009
  - /43/ Electric Power Engineering Supervising Co., Ltd. of Anhui Province, Construction Approval Form (*M107-J1-AHTC-002-2008-TJ*), 9 May 2008
  - /44/ Wuhan Kaidi Investment Holding Ltd., Board Resolution Regarding Applying CDM Activity for Biomass Projects (*konggu dongzi [2007] 12*), 21 September 2007

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- /45/ Wuhan Kaidi Electric Power Engineering Co., Ltd. & Henan Installation Group Co., Ltd., Construction Contract of Main Buildings & Project Installation, 10 May 2008
- /46/ Tongcheng Kaidi Green Energy Development Co., Ltd. & Camco International Ltd., CDM Consultation Agreement, 1 November 2007
- /47/ National Development and Reform Commission, Renewable Energy Electricity Tariff and Cost Management Trial Regulations (*fagaijiage [2006] 7*), 4 January 2006
- /48/ Enterprise Incoming Tax Law of People's Republic of China
- /49/ Ministry of Finance P.R.China & State Administration of Taxation, Notice on Value Added Tax Policy Regarding Resource Multiutilization and Other Products, 24 June 2003
- /50/ Tongcheng Kaidi Green Energy Development Co. Ltd., Clarification Letter Regarding the Relationship Between Tongcheng Kaidi Green Energy Development Co. Ltd., and Tongcheng Kaidi Agriculture Waste Recycling Co., 5 February 2009;  
Tongcheng Kaidi Green Energy Development Co. Ltd., Shareholders Meeting Notes, 10 June 2007;  
Business License for Tongcheng Kaidi Agriculture Waste Recycling Co
- /51/ Administrative Commission of the Tongcheng Economic Development Area, Introduction of the Boilers in Tongcheng Economic Development Area (Ref No.: Tong Guan Han [2009] No.7), 12 Feb. 2009.
- /52/ Administrative Commission of the Tongcheng Economic Development Area, Supplementary explanation on the heat supply in the Tongcheng Economic Development Area (Ref No.: Tong Guan Han [2010] No. 3), 25 Feb. 2010.
- /53/ China Statistic Year Book, 2004 to 2008
- /54/ Related Questions Research on Biomass Generation Using Agriculture and Forest Residue in China, HUANG Jintao, Journal of Shenyang Institute of Engineering (Natural Science), Vol14 No11, Jan. 2008
- /55/ Records and logbook of biomass residue purchased by the Project in Oct., Nov. and Dec. 2009.
- /56/ Administrative Commission of the Tongcheng Economic Development Area, Letter of confirmation that Tongcheng Kaidi Biomass Power Project as heat supply source for Tongcheng Economic Development Area (Ref No.: Tong Guan Han [2010] No. 4), 25 Feb. 2010.
- /57/ Calculation Regarding Auxiliary Consumption rate of the project plant.
- /58/ List of CDM projects registered in China based on ACM0006 by Nov. 2009.
- /59/ Spreadsheet of levelized cost calculation.
- /60/ FANLing, CAO Qin, GUTao, YUQian, Comparison of Environmental Impact and Operation Cost of Mini Type Gas-fired Boiler( Oil-fired Boiler) with Coal-fired boilers,[J] Arid Environmental Monitoring, 2004(03)

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- /61/ Wuhan Kaidi Electric Power CO., LTD. Annual Reports for year 2004, 2005 and 2006.
- /62/ ZHANG Yan-li, WANG Fei, ZHAO Li-xin, SUN Li-ying, the operating model, existing problems and development strategies for China's straw storage and transportation system, Renewable Energy Resources, Vol.27 No.1, Feb. 2009
- /63/ China Electric Power Yearbook 2003 to 2007.
- /64/ China Energy Statistical Yearbook 2005 to 2007.
- /65/ Pricing Bureau of Anhui Province, Tariff Approval of Tongcheng Kaidi Biomass Power Project (Ref No.: Wan Jia Shang Han [2009] No. 42, 19 Mar. 2009.
- /66/ Hubei Yinhe Accounting Inc., the Accounting Report for the Construction of Tongcheng Kaidi Biomass Power Project (Ref No.: EYinHeShenZi [2010] No. 092), 25 Oct. 2010.
- /67/ Wuhan Kaidi Electric Power Engineering Co., Ltd., Introduction Letter Regarding the Salary and Welfare Defined in the 'FSR for Tongcheng Kaidi Biomass Power Project' (Ref No.: Kaikigongchenghan [2010] No. 18), 26 Mar. 2010.
- /68/ Medium and Small Scale Cogeneration Construction Design Handbook, China Electric Power Press, Apr. 2006.
- /69/ Fossil Fuel Power Plant Cost Indicator Guidance (priced at level of 2007), General Institute of Electric Power Design, Mar. 2008.

Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration:

- Changes related to the CAR and CL identified in the TÜV Rheinland's draft validation report to the Project;
- Methodology applied to the project activity is updated from version 6.2 to version 09;
- Annex I party is changed from *Netherlands* to *United Kingdom of Great Britain and Northern Ireland* by the project proponent;
- Project participate from Annex-I party is changed from *Camco International* to *Camco International Limited* and *Camco Carbon Limited* by the project proponent
- Changes related to the questions from incomplete submission for registration through completeness check.
- Changes of the baseline emissions determination due to no claim of heat displacement.

### 3.2 Follow-up Interviews with Project Stakeholders

Date	Name/Title	Organization	Topic
/i/ 2008-11-12	- LV Jianhuai /Director	Carbon Asset Management	- Project Management

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		<ul style="list-style-type: none"> <li>- HAO Jin /Manager</li> <li>- ZHANG Zhenquan / Manager</li> </ul>	Centre, Wuhan Kaidi Electric Power Co., Ltd.	<ul style="list-style-type: none"> <li>- Technical issues</li> <li>- Approval status by the host country</li> <li>- Sustainable development issues</li> <li>- Investment risks and barriers</li> <li>- Additionality</li> <li>- Monitoring plan</li> <li>- Training plan</li> <li>- Environmental impacts</li> <li>- Stakeholder process</li> <li>- Financial source</li> <li>- CDM incentive consideration</li> </ul>
/ii/	2008-11-12	<ul style="list-style-type: none"> <li>- SUN Li/ Project Manager</li> <li>- LIU Ya'nan/ Project Assistant</li> </ul>	Camco International Limited	<ul style="list-style-type: none"> <li>- PDD discussion</li> <li>- Baseline discussion</li> <li>- Emission reduction discussion</li> <li>- Monitoring discussion</li> </ul>
/iii/	2008-11-12	<ul style="list-style-type: none"> <li>- ZHAO Huaguo/ Vice Director</li> </ul>	Development and Reform Bureau of Tongcheng City	<ul style="list-style-type: none"> <li>- Local energy supply condition</li> <li>- Positive or negative impact brought by the Project</li> <li>-</li> </ul>
/iv/	2008-11-12	<ul style="list-style-type: none"> <li>- ZHANG Shigao/Vice Director</li> </ul>	Environmental Protection Bureau of Tongcheng City	<ul style="list-style-type: none"> <li>- Local environmental condition</li> <li>- EIA approval status</li> <li>- Environmental impacts during project construction and protection measures applied</li> <li>-</li> </ul>
/v/	2008-11-12	<ul style="list-style-type: none"> <li>- MIAO Zhongxue/Vice Section Chief</li> </ul>	Grain Bureau of Tongcheng City	<ul style="list-style-type: none"> <li>- Biomass availability</li> <li>-</li> </ul>
/vi/	2008-11-12	<ul style="list-style-type: none"> <li>- PAN</li> </ul>	Economic	<ul style="list-style-type: none"> <li>- Project background</li> </ul>

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		Laibing/ Vice Secretary	Development Zone of Tongcheng City	- Project implementation - Contribution to the SD of the Project
/vii/	2008-11-12	- YIN Bensheng/ Director	Merchants Steamship Company of Anhui Tongcheng City	- Contribution to the SD of the Project
/viii/	2008-11-12	- LIANG Daquan/ Vice Director - RU Zhifang/ General Manager	Tongcheng Kaidi Green Power Development Co., Ltd.	- Project technology discussion
/ix/	2008-11-12	- WANG Zhiliang - HU Yuanzhi	Kaidi Holding Co., Ltd	- Project financial condition
/x/	2008-11-12	- LV Changsheng/ General Manager	Changsheng Rice Co.,	- Husk supply condition
/xi/	2008-11-12	- ZHANG Kechang/ Director	Shunxing Rice Co.,	- Husk supply condition
/xii/	2008-11-12	- NI Hong/ Administration Manager	Tianhong Garment Co.,	- Heat consuming condition - Boiler condition
/xiii/	2008-11-12	- XIE Yingmiao/ Administration Manager	Anhui Danfeng Electronics Material Co., Ltd.	- Heat consuming condition - Boiler condition

### 3.3 Resolution of Outstanding Issues

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

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

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The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Tongcheng Kaidi Biomass Power Project is enclosed in Appendix A to this report.

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

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

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



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

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

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

**Figure 1 Validation protocol tables**



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### 3.4 Internal Quality Control

The final validation report underwent technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with TÜV Rheinland's qualification scheme for CDM validation and verification.

### 3.5 Validation Team

Role/Qualification	Last Name	First Name	Affiliation of Team Members
Team Leader	A	Sequoia (Qingxing)	TÜV Rheinland (Shanghai) Co., Ltd.
Team Member/ MEng	ZHU	Jiang	TÜV Rheinland (China) Ltd.
Technical Reviewer PhD	Brinkmann	Manfred	TÜV Rheinland Japan Ltd.

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### 4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design shall be documented and described in the revised and resubmitted project design documentation.

#### 4.1 Approval and Participation

The below table summarizes the project participants and parties involved. The authenticity of the letter of approval from host country has been validated by checking on Chinese DNA's website. The authenticity of the letter of approval from Annex I country United Kingdom of Great Britain and Northern Ireland has been checked by making a comparison to the LoA issued by International Climate Change, to the latest registered CDM project. These LoA(s) are regarded as valid and meeting the requirements.

<b>Project participants</b>	<i>1. Tongcheng Kaidi Green Energy Development Co., Ltd</i>	<i>2. Camco International Limited</i>	<i>3. Camco Carbon Limited</i>
<b>Parties involved</b>	<i>P.R.China (host)</i>	<i>United Kingdom of Great Britain and Northern Ireland</i>	<i>United Kingdom of Great Britain and Northern Ireland</i>
<b>Ratification status of the parties</b>	China ratified the Kyoto Protocol on 30 August 2002.	United Kingdom of Great Britain and Northern Ireland, the Annex I party, ratified the Kyoto Protocol on 31 May 2002	
<b>APPROVAL</b>			
LoA received	Yes	Yes	Yes
Date of LoA	<i>Jan. 2009</i>	<i>13 Feb. 2009</i>	<i>13 Feb. 2009</i>
Reference to document	<i>Ref./3/</i>	<i>Ref./4/</i>	<i>Ref./5/</i>
LoA received from	<i>The project participants</i>	<i>The project participants</i>	<i>The project participants</i>
Validation of authenticity	<i>All approved CDM projects by DNA of China NDRC will be published on:</i>	<i>The Audit Team made a comparison between the LoA of the Project with that of the latest registered CDM</i>	<i>The Audit Team made a comparison between the LoA of the Project with that of the latest registered CDM</i>

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	<i>'<a href="http://cdm.ccc hina.gov.cn/">http://cdm.ccc hina.gov.cn/</a>'. The Project is indicated as approved by China DNA, source: '<a href="http://cdm.ccc hina.gov.cn/web/NewsInfo.asp?NewsId=3284">http://cdm.ccc hina.gov.cn/web/NewsInfo.asp?NewsId=3284</a>'</i>	<i>project as UK as the Annex I party and no doubts were found.</i>	<i>project as UK as the Annex I party and no doubts were found.</i>
Validity of LoA	<i>Valid</i>	<i>Valid</i>	<i>Valid</i>
<b>PARTICIPATION</b>			
Party is party to Kyoto Protocol	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Voluntary participation	<i>Yes</i>	<i>Yes</i>	<i>Yes</i>
Diversion of official development aid towards host country	<i>No</i>		
Project contribution to SD	<i>Yes</i>	<i>N/A</i>	<i>N/A</i>

### 4.2 Project Design Document

The Project Design Document is based on the currently valid PDD template /12/ and is completed in accordance with the applicable guidance document/13/

### 4.3 Project Description

Based on the project Feasibility Study Report/15/ (FSR), the proposed project, located at Tongcheng Economic Development Area, Tongcheng City, is to utilize the biomass material (mainly consists of rice husk) as the fuel for two sets of 65t/h Circulating Fluidized Bed (CFB) boiler and two units of 12 MW steam turbine and 15 MW generator. There are three operational conditions for the steam turbine generator unit as the following. 1) Rated operation condition, 12MW power generation and 15t/h heat supply. 2) Maximum condensing condition, 15MW power generation and 0t/h heat supply. 3) Maximum extraction condition, 6.59MW power generation and 45t/h heat supply. The install configuration is confirmed by the Audit Team by reviewing the project approval/16/ and the CFB and steam turbine generator's purchasing contract /26//27//28/. By the time of on site assessment, the CFB and the workshop was under construction.

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To be in line with relevant requirements in Page 6 and 7 of the applied methodology, the situation of the project activity and baseline scenario has been documented in the PDD, and validated as follows:

- *For each power plant that was operating at the project site during the most recent three years prior to the start of the project activity: the type and capacity of the power plant, types and quantities of fuels have been used in the power plant during the most recent three years prior to the start of the project activity and whether the plant continues operation after the start of the project activity;*
- Not applicable. It was confirmed by the Audit Team during the site visit that the project activity is a Greenfield project and there is no power plant that was operating at the project site.
- *For each boiler or other heat generation equipment that was operating at the project site during the most recent three years prior to the start of the project activity: the type and capacity of the boiler, types and quantities of fuels have been used in the boiler during the most recent three years prior to the start of the project activity and whether the boiler continues operation after the start of the project activity;*
- Not applicable. It was confirmed by the Audit Team during the site visit that the project activity is a Greenfield project and there is no boiler or heat generation that was operating at the project site.
- *For each boiler or power plant installed under the project activity: the type and capacity of boilers and/or power plants and which types and quantities of fuels are planned to be used;*
- Specification of the boilers and power plant of the project activity, including steam turbines and generators, have been documented in the PDD version 04, 31 March 2010, which are all from Equipment Purchasing Contracts/26//27//28/. Fuels that might be used in the project activity include the start-up diesel and the diesel consumption for forklifts at collections sites and project site. Quantities of the fuels have been documented in PDD version 04, 31 March 2010 and used for calculation of project emissions due to on-site consumption of fossil fuels.
- *For each new boiler or power plant that would be installed in the absence of the project activity: the type and capacity of the new boilers and/or power plants and which types and quantities of fuels would be used.*
- For off-site new boilers that would be installed in the absence of the project activity, the type, location and capacity of the boiler, types and quantities of fuels which would be used, were evidenced by the Administration Committee of Tongcheng Economic Development Area/51//52/, and the authenticity of the information were confirmed by the Audit Team as well. Relevant information has been provided in the PDD version 04, 31 March 2010.

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- For off-site boilers that were operating at the Tongcheng Economic Development Area, the type, capacity and location of the boiler, type and quantities of fuels have been used in the boiler during the most recent three years prior to the start of the project activity, were evidenced by Administration Committee of Tongcheng Economic Development Area /51//52/, and the authenticity of the information were confirmed by the Audit Team. Relevant information has been provided in the PDD version 04, 31 March 2010.

The biomass residues utilized in this proposed project will be mainly rice husk, rice straw, cotton straw, and oil seed rape straw, which is from the FSR/15/. The rice husk will be packed and stored temporarily at the rice mills. Some collection sites will be set up near to the resources for the straws to be processed and stored, then transported to the plant according to the dispatch schedule. Part of straws will be transported to the project plant directly as well.

<i>Starting date of project</i>	<i>Expected project operational lifetime</i>	<i>Crediting period</i>
<i>06 November 2007</i>	<i>20 Years as applied in the financial analysis</i>	<i>7 Years</i>

The project annual net generated electricity amount is expected to be 126,720MWh. The project will East China Power Grid (ECPG) connect with at the 220kv Tongcheng Substation through 110kv transmission line/29/. According to the interview with local governor/vi/ that the enterprises located at Tongcheng Economic Development Area depend on installation the fossil fired boilers of their own to meet their heat demand. The Project is expected to deliver 541,602GJ annually of heat to those off-site heat consumers located in the Tongcheng Economic Development Area.

All the training records /30/ have been provided by the project proponent and verified by the Audit Team. It shows that the project operational staffs have received theory, practice and management training.

In Audit Team's opinion, the project description is accurate and complete.

### 4.4 Baseline and Monitoring Methodology

#### 4.4.1 Applicability of the selected methodology to the project activity

The Project activity applies the ACM0006, Version 09, The compliance of the Project is presented as follows:

- The main fuel consumed by the project is biomass residues, which can be evidenced by the project FSR. According to the FSR/15/, except some small part of diesel will be used for project start up, no other fossil fuel is expected to be consumed by the project.
- Only biomass from local agricultural residues will be used by the project, not from production process.

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3. All biomass residues won't be stored more than one year. The rice husks are directly bought from the rice mills and transported to the plant and the straws are directly bought from the farmers at the temporary storage stations.
4. According to the FSR/15/ and on site assessment, it can be confirmed except for transportation of biomass and mechanical pre-treatment biomass, no-significant energy quantities will be used.

Moreover, for the indicative applicability of different scenarios, the proposed project activity meets the requirement of Scenario 2 because of the following,

1. The proposed project activity is a Greenfield project.
2. The proposed project activity is a cogeneration project.
3. The baseline scenario of Power generation is identified as P4.
4. The baseline scenario of Biomass usage is identified as B1 and B3.
5. The baseline scenario of Heat supply is identified as H6.

The following tools are employed for the proposed project activity, "Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2", "Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion, Version 02", "Tool to calculate baseline, project and/or leakage emissions from electricity consumption, Version 01" and "Tool to calculate the emission factor for an electricity system, Version 02". The Audit Team have verified and can confirm the project activity meets each of the applicability conditions of these tools.

### 4.4.2 Project Boundary

During on site assessment, the Audit Team could confirm the project location. The physical project boundary also includes the means of biomass residues transportation, the power system of the project, the sites where the biomass residues would have been left decay or dumped and the biomass collection sites where the straws will be pre-treated. The biomass residues transportation means is the trucks. The grid system boundary includes all the power plants connecting to the ECPG, which geographical range includes Shanghai Power Grid, Jiangsu Power Grid, Zhejiang Power Grid, Anhui Power Grid, and Fujian Power Grid. The project has included the CH<sub>4</sub> both in project and baseline emissions as required by the methodology. The Audit Team can confirm that the identified boundary and the selected sources and gases are justified for the project activity.

The heat users are not included in the spatial extent of the project boundary. Emissions from fossil fuel heat boilers, which are supposed to be baseline emissions, are not included in the baseline emissions of the proposed project as well. The Audit Team can confirm this is consistent with applied methodology.

The emissions sources included in the project boundary are identified as the following table.

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	<b>GHGs involved</b>	<b>Description</b>
<b>Baseline emissions</b>	<i>CO<sub>2</sub>, CH<sub>4</sub></i>	<i>CO<sub>2</sub> is the main emission source from fossil fired power plants in ECPG. CH<sub>4</sub> is the main emission source from uncontrolled burning or decay of biomass</i>
<b>Project emissions</b>	<i>CO<sub>2</sub>, CH<sub>4</sub></i>	<i>CO<sub>2</sub> is the main emission source from on site biomass treatment or boiler start up or biomass transportation. CH<sub>4</sub> is the main emission source from biomass combustion for electricity or heat generation.</i>
<b>Leakage</b>	<i>Not involved</i>	<i>Leakage is excluded in the PDD by demonstration that there is an abundant surplus of the biomass residue in the region of the project activity which is not utilized. See discussion in section 4.4.4 of this report.</i>

### 4.4.3 Baseline Identification

The baseline of the Project is identified by applying the approved consolidated monitoring methodology ACM0006, version 09. The baseline scenario of the project is in compliance with scenario 2 as indicated in Table 2 of ACM0006, version 09. A detailed account of the how scenario 2 is selected has been given in the PDD. The Audit Team has examined it by on site assessment, interviewing the local stakeholders and documents review.

<i>The approved baseline methodology applicable to the project</i> - explicit criteria - implicit criteria (e.g. available scenarios, applicability of formulas for BE/PE/LE calculations)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>As discussed in Section 4.4.1, the compliance of the methodology has been justified in the PDD and verified by the Audit Team.</i>
<i>PDD includes all assumptions and data used by project participants</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>All assumptions regarding the power generation, heat supplying and biomass disposal are included in the PDD.</i>
<i>All the references and documents used are relevant for establishing the baseline scenario</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>All the references and documents used are correctly quoted and conservatively</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	



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<i>interpreted in the PDD</i>		
<i>All relevant policies / regulations considered are listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>Regulation like 'Notice on Strictly Prohibiting the Illegal Installation of coal-fired Generators with the Capacity of 135MW or below issued by the General Office of the State Council/21/' is clearly listed in the PDD.</i>
<i>Identified potential baseline scenarios reasonably represent what would/could occur in the absence of the proposed project activity</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<p>Yes.</p> <ul style="list-style-type: none"> <li>- For power generation, it is confirmed by the Audit Team during on site assessment and interview with the local government officer/iii/ that the project is a green-field one installed at where no power generation occurs before. Without the project, power would be purchased from ECPG.</li> <li>- For heat supplying. By interviewing the local government officer Mr.PAN Laibing/vi/ from Economic Development Zone and Mr.ZHAO Huaguo/iii/ from Development and Reform Bureau of Tongcheng City and the heat consumer /xii/xiii/ at the Tongcheng Economic Development Area, the, and by heat supplying condition introduction letter issued by Wuhan Kaidi Electric Power Engineering Co., Ltd./37/ the Audit Team can confirm that there is no district heat supplying network. Heat supplying has always been installing fossil fired boilers.</li> <li>- For biomass disposal, it is evidenced by interviewing the officer Mr. ZHANG Shigao/iv/ from Environment Protection Bureau of Tongcheng City and</li> </ul>



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		<i>the officer Mr.PAN Laibing/vi/ from Grain Bureau of Tongcheng City that dumping or uncontrolled burning has always been a common phenomenon. It is also evidenced by the local merchant's bureau/31/ that except the project, there is no other biomass processing plants.</i>
<i>The baseline scenario selection is appropriate and determined according to the methodology</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>'Combined tool to identify the baseline scenario and demonstrate additionality, Version 02.2' is applied to determine the baseline scenario.</i>
<i>The approved methodology used is applicable to the identified baseline scenario</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

To the Audit Team's opinion, the baseline scenario is determined according to the methodology and is reasonable.

### 4.4.4 GHG Emission Reductions

The GHG emission reductions calculation is based on the methodology ACM0006, version 09. The emission reduction  $ER_y$  by the project during a given year  $y$  is the difference between the emission reductions through substitution of electricity generation with fossil fuels ( $ER_{\text{electricity},y}$ ), the emission reductions through substitution of heat generation with fossil fuels ( $ER_{\text{heat},y}$ ), baseline emissions due to the natural decay or burning of anthropogenic sources of biomass residues ( $BE_{\text{biomass},y}$ ), project emissions ( $PE_y$ ), emissions due to leakage ( $L_y$ ).  $CH_4$  emission has been concluded both in project boundary and project baseline.

The Audit Team has verified the emission reductions calculation by document review of the ER spreadsheet/23/ and the "Notification on Determining Baseline Emission Factor of China's Grid"/24/, released at '<http://cdm.ccchina.gov.cn/>' on 30 December 2008.

<i>All assumptions made for estimating GHG are listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>All data used by project participants are listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>Their references and sources are also listed in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

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<p><i>Formulas, parameters, values are complete, accurate, transparent and conservative</i></p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<ol style="list-style-type: none"> <li>1. For <math>ER_{heat,y}</math> <ul style="list-style-type: none"> <li>- Emission reductions due to heat displacement are not claimed by the proposed project, which is confirmed by the Audit Team conservative.</li> </ul> </li> <li>2. For <math>ER_{electricity,y}</math> <ul style="list-style-type: none"> <li>- The grid emission factor OM and BM was calculated according to the Version 02 of the "Tool to calculate the emission factor for an electricity system", and data used in the calculation are from relevant yearbooks/63//64/, which is confirmed by the Audit Team consistent with the requirements of the tool and emission factor published by Chinese DNA/24/.</li> </ul> </li> <li>3. For <math>BE_{biomass,y}</math> <ul style="list-style-type: none"> <li>- The project proponent applies the max moisture content for rice husk and straw/23/ to approach the dry biomass residue amount to calculate the smallest emission reduction, which is conservative.</li> <li>- The project proponent applies the emission factor value accordingly with the methodology ACM0006, version 09</li> </ul> </li> <li>4. For <math>PE_y</math> <ul style="list-style-type: none"> <li>- Carbon dioxide emissions from combustion of fossil fuels for transportation of biomass residues to the project plant (<math>PET_y</math>); the project proponent applies the IPCC default value for emission factor of the vehicles in the PDD, the audit team was able to confirm that the calculation is correct and conservative.</li> <li>- Carbon dioxide emissions from on-</li> </ul> </li> </ol>
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		<p>site consumption of fossil fuels (<math>PEFF_y</math>): Two combustion processes are considered in the calculation, one is from the start-up diesel consumption and the other is from the diesel consumption for using forklifts, the emission factor is referred from IPCC default value and is conservative.</p> <ul style="list-style-type: none"> <li>- <math>CO_2</math> emissions from electricity consumption (<math>PE_{EC,y}</math>): the project proponent calculated this value exactly following "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"(Version 02) . According to the ACM0006 Version 09, page 29, The on-site electricity consumption attributable to the project activity (<math>EC_{PJ,y}</math>) should include all electricity consumption that is consumed by the project activity (e.g. for mechanical treatment of the biomass), except for auxiliary electricity consumption by the project plant (e.g. for pumps, vans, etc)." This means that auxiliary consumption (12%) required to maintain operation of the power plant is dealt with in the net quantity of electricity generation, whereas the electricity consumption from biomass preparation (1,857MWh) is dealt with in the calculation of project emissions."</li> <li>- Methane emission from Biomass residues combustion (<math>PE_{biomass,CH_4,y}</math>): the project proponent applies the <math>CH_4</math> emission factor referred to IPCC default value described in the methodology and is conservative.</li> </ul> <p>5. For <math>L_y</math></p> <p>6. The project proponent applies</p>
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		<i>option L2 of the methodology ACM0006, version 09 and the leakage is expected to be zero. The biomass availability amount can be evidenced by the Biomass Availability Report/19/ and Agriculture Bureau of Tongcheng City /20/</i>
<i>All the references and documents used are correctly quoted and conservatively interpreted in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	-
<i>Methodology has been applied correctly to calculate project emissions, baseline emissions, leakage emissions and emission reductions</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>All formulas are applied accordingly with the methodology.</i>
<i>All the emissions of baseline emissions can be replicated using information provided in the PDD</i>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<i>All the applied data is listed out in section B.6 and Annex 3 of the PDD. The baseline emissions can be replicated.</i>

The emission reduction calculation sheet/23/ has been assessed by the Audit Team. The project is expected to achieve emission reduction amount of 106,573 tCO<sub>2</sub>e /year during the first crediting period. As discussed above, the heat supplying network has not been finalized by the time of on site assessment and emission reductions due to heat supply will not be claimed by the Project Participants, which is confirmed by the Audit Team conservative.

### 4.5 Additionality

The additionality of the project is demonstrated by applying “*Combined tool to identify the baseline scenario and demonstrate additionality, version 02.2*”.

#### 4.5.1 CDM Consideration

Regarding the project starting date, the Audit Team determine that by desk review and on site assessment. The project got approval on 22 April 2008 /16/. On 6 November 2007, the steam turbines purchasing contract was signed /27/. On 10 May 2008, the Construction Contract was signed /45/. Among the above activities, date 6 November 2007 is considered to be the earliest date of project real action since the cost of steam turbines constitute significantly of the project investment.

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The proposed project is one of a batch of projects of Wuhan Kaidi Investment Holding Ltd. (the parent company of the project owner). The Wuhan Kaidi Investment Holding Ltd. planned to develop and invest 12 biomass to power generation projects<sup>1</sup> using the same equipments and technology. The proposed project was included in the 12 biomass projects. Within these 12 biomass projects, FSRs for first three pilot projects Jianli Kaidi Biomass, Yueyang Kaidi Biomass and Yiyang Kaidi biomass to power generation projects, UNFCCC Numbers of which are 3044, 3065 and 3072, were finalized respectively in September 2007, June 2007 and August 2007. Key technical and financial parameters of these three projects have been documented in the table B-5 of the PDD version 04, 31 March 2010. As these three projects are also validated by the same DOE as the proposed project, the audit team can access the FSRs of these three projects. The audit team can confirm the parameters in FSRs of these three projects have been accurately documented in table B-5 of the PDD version 04, 31 March 2010. Based on the input values from FSRs, The financial analysis of these 3 pilot projects shows without CER revenue, IRR of Jianli Kaidi Biomass, Yueyang Kaidi Biomass and Yiyang Kaidi biomass to power generation projects are respectively 3.03%, 4.83% and 5.28%. The authenticity of the parameters and correctness of IRR calculation have been confirmed by the audit team, which are documented in the Validation Reports of these three projects.

Based on the financial analysis of 3 pilot projects (Jianli Kaidi Biomass, Yueyang Kaidi Biomass and Yiyang Kaidi biomass to power generation projects, UNFCCC Numbers of which are 3044, 3065 and 3072), whose FSRs had been completed before 21 Sep. 2007 (FSRs were completed respectively in September 2007, June 2007 and August 2007), the Board of the project investor Wuhan Kaidi Investment Holding Ltd. issued a resolution/44/ on 21<sup>st</sup> Sep. 2007 to indicate that CDM activities would be applied for all invested biomass projects. It is clearly indicated in the Board Resolution that IRRs of the three pilot projects were all far below the sectoral benchmark without carbon revenue, and CER revenue makes these three projects financially attractive. Considering utilization of same technology and equipments, the Board deemed other nice projects would, in common sense, face the same financial barriers as prior three pilot projects already faced, and decided to develop other nine biomass projects as CDM project to make them financially attractive. The Board Resolution was checked by the Audit Team and considered authentic and reasonable.

Real actions were taken by purchasing the equipments for the 12 projects in Nov. 2007/27/, which is confirmed as the starting date of the proposed project.

To determined project specific profiles, the FSR of the Project was finalized in April 2008/15/, which reconfirms that CDM incentive is necessary for developing the proposed project. The Project is considered financial unattractive without CER revenue in the financial analysis of the FSR/15/ and is suggested to apply CDM activity to conquer the financial difficulty. In section 4.8 of the financial analysis of the FSR it is stipulated that to apply CDM activity for the project would be the key factor for the project's implementation.

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<sup>1</sup> Which are all being submitted for registration to UNFCCC EB by Jan. 2010.

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The audit team checked the FSRs and equipment purchasing contracts of the three pilot projects and the proposed projects. Key technical profiles of the four projects are listed in the table below:

<b>Parameters</b>	<b>Jianli Biomass Power Project</b>	<b>Kaidi Biomass Power Project</b>	<b>Hunan Yueyang Kaidi Biomass Power Project</b>	<b>Hunan Yiyang Kaidi Biomass Power Project</b>	<b>The proposed project</b>
UNFCCC No.	3044	3065	3072		
Installed capacity	24MW	48MW	48MW	24MW	
Capacity per unit	12MW	12MW	12MW	12MW	
Power generation technology	Biomass residue combustion for power co-generation (electricity and heat) by circulating fluid bed (CFB) boilers with medium temperature and sub-high pressure.				
Model of Boilers	KG65-450/5.29-FSWZ- I				
Manufacture of Boilers	Jiangxi Jianglian Energy and Environmental Protection Co., Ltd				
Model of Steam Turbines	C12-4.90/0.981-12/435				
Manufacture of Steam Turbines	NanJing Steam Turbine(Group) Co., Ltd				
Model of Generator	QFJ-15-2				
Manufacture of Generators	NanJing Steam Turbine(Group) Co.				
Fuel type	Biomass (rice husks and straws)				

As shown in the table, key technical indicators of the four biomass for power generation projects, including project scale and unit scale, fuel type, fuel combustion technology (CFB) and power generation equipments are comparable and almost the same.

As shown in the table B-5 of the PDD version 04, 31 March 2010, IRR (3.65%) of the proposed project reflects the same financial unattractive as the three pilot projects, which was estimated at the time of investment decision in the Board Resolution. Thus the audit team considers it is plausible that the board of the project investor made the decision to develop the proposed project as a CDM project, by extrapolating conclusion from the FSRs of the three pilot projects to the proposed project and other subsequent projects.

On 1 November 2007, the project owner signed CDM Consultation Agreement/46/ with Camco International Ltd. The PDD was made publicly available in Sep. 2008. Therefore it is confirmed by the Audit Team that CDM was seriously considered in the decision to implement the project and the continuing and real actions were taken to secure CDM status for the project by the project participants.

<b><i>Starting date of project</i></b>	<b><i>Justification of and evidences (references) on</i></b>	<b><i>Date of CDM consideration</i></b>
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	<b>the starting date of project</b>	
6 November 2007	/16//26//27//28/	21 September 2007/44/, the board of the project investor

### 4.5.2 Alternatives

The project proponent applies ‘*Consolidated methodology electricity generation from biomass residues*’, Version 09’ to define all plausible baseline alternatives.

For Power generation, eleven alternatives are identified and the Audit Team have verified the elimination process as the following table.

Alternatives	Selection in the PDD	DOE’s opinion
<b>P1</b> The project not undertaken as a CDM project activity.	<b>Yes.</b> Despite the fact that this alternative is economically unattractive, as analysed in step3, this alternative is a plausible scenario for further analysis.	The alternative is realistic and credible.
<b>P2</b> The continuation of power generation in an existing biomass residue fired power plant at the project site, in the same configuration, without retrofitting and fired with the same type of biomass residues as (co-)fired in the Project.	<b>No.</b> Since the proposed project is a greenfield project and there is no existing biomass residues fired power plant at the project site, therefore this alternative is excluded.	During the site visit, the Audit Team can confirm that there is no existing biomass residue fired power plant at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.
<b>P3</b> The generation of power in an existing captive power plant, using only fossil fuels.	<b>No.</b> Since there is no existing captive power plant, using fossil fuels near the project site, therefore this alternative is excluded.	During the site visit, the Audit Team can confirm that there is no existing captive fossil fuel fired power plant at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.
<b>P4</b> The generation of power in the grid	<b>Yes.</b> This alternative is a plausible scenario for further analysis.	The alternative is realistic and credible.
<b>P5</b> The installation of a new biomass residue fired	<b>No.</b> Since biomass power plants	Based on the results of the common practice analysis,



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power plant, fired with the same type and with the same annual amount of biomass residues as the Project, but with a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant Industrial sector) than the Project plant and therefore with a lower power output than in the Project case.	including the lower efficiency ones are not common practice in the local area. There is no on-grid installed capacity from Biomass Power plant before 2007 in Anhui Province. Therefore, this alternative is excluded.	the biomass residue fired power plant is not common in local industrial sector. The alternative can be eliminated.
<b>P6</b> The installation of a new biomass residue fired power plant that is fired with the same type but with a higher annual amount of biomass residues as the Project and that has a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant Industrial sector) than the Project. Therefore, the power output is the same as in the Project	<b>No.</b> Since biomass power plants are not common practice in the local area. There is no on-grid installed capacity from Biomass Power plant before 2007 in Anhui Province. Therefore, this alternative is excluded.	Based on the results of the common practice analysis, the biomass residue fired power plant is not common in local industrial sector. The alternative can be eliminated.
<b>P7</b> The retrofitting of an existing biomass residue fired power, fired with the same type and with the same annual amount of biomass residues as the Project, but with a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant Industrial sector) than the Project plant and therefore with a lower power output than in the Project case.	<b>No.</b> Since the proposed project is a greenfield project and there is no existing biomass residues fired power plant at the project site, therefore this alternative is excluded.	During the site visit, the Audit Team can confirm that there is no existing biomass residue fired power plant at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.
<b>P8</b> The retrofitting of an existing biomass residue	<b>No.</b> Since the proposed project is	During the site visit, the Audit Team can confirm that



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<p>fired power that is fired with the same type but with a higher annual amount of biomass residues as the Project and that has a lower efficiency of electricity generation (e.g. an efficiency that is common practice in the relevant Industrial sector) than the Project.</p>	<p>a greenfield project and there is no existing biomass residues fired power plant at the project site, therefore this alternative is excluded.</p>	<p>there is no existing biomass residue fired power plant at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.</p>
<p><b>P9</b> The installation of a new fossil fuel fired captive power plant at the project site</p>	<p><b>Yes.</b> This alternative is a plausible scenario for further analysis.</p>	<p>The alternative is realistic and credible.</p>
<p><b>P10</b> The installation of a new single- (using only biomass residues) or co-fired (using a mix of biomass residues and fossil fuels) cogeneration plant with the same rated power capacity as the project activity power plant, but that is fired with a different type and/or quantity of fuels (biomass residues and/or fossil fuels). The annual amount of biomass residue used in the baseline scenario is lower than that used in the project activity.</p>	<p><b>No.</b> Firstly, since biomass cogeneration plants (including single-or co-fired cogeneration plants) are not common practice in the local area. There is no on-grid installed capacity from Biomass Cogeneration plant before 2007 in Anhui Province.  Secondly, there are no other biomass resources identified in the biomass availability report and as such no other viable biomass fuel options available. It is financially unattractive to use some biomass types that are not identified in the biomass availability report.  Thirdly, the <i>Renewable Energy Electricity Tariff and Cost Management Trial Regulations</i> (fagaijiage [2006] 7) issued by NDRC of China in 2006 stipulates that “ if the energy consumption from the fossil</p>	<p>Based on the results of the common practice analysis, the biomass cogeneration plant is not common in local industrial sector. The Validation Team can confirm the biomass availability report and the referred national regulation are authentic. Potential use of other types of biomass and or displacement of part of the biomass by co-firing fossil fuels are therefore deemed unlikely. The alternative can be thus eliminated.</p>

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	<p>fuel of a co-fired( using a mix of biomass residues and fossil fuels) power plant exceeds 20% of the total energy consumption, the project should be taken as a ordinary fossil fuel fired project”, which means the tariff of the project within the first 15 years since commissioning will be only the bus-bar tariff for Anhui Province(0.371RMB/KWh including VAT)without 0.25RMB/KWh as the subsidy. Thus, it is not financially feasible to build new co-fired biomass power project in the region at present.</p> <p>Therefore this alternative is excluded.</p>	
<b>P11</b> The generation of power in an existing fossil fuel fired cogeneration plant co-fired with biomass residues, at the project site.	<p><b>No.</b> Since there is no existing fossil fuel fired cogeneration plant co-fired with biomass residues near the project site, therefore this alternative is excluded.</p>	During the site visit, the Audit Team could confirm that there is no existing fossil fuel fired cogeneration plant co-fired with biomass residues at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.

According to the reasonable analysis, only P1, P4 and P9 are remained. However, P9 cannot meet the requirement of the regulation *Notice on Strictly Prohibiting the Installation of Fuel-fired Generators with the Capacity of 135MW or below/32/*. Finally, the realistic and credible alternatives of Power generation are P1 and P4. In Audit Team's opinion, the list of alternatives for power generation is complete.

For Heat generation, ten alternatives are identified and the Audit Team have verified the elimination process as the following table.

Alternatives	Selection in the PDD	DOE's opinion
<b>H1</b> The Project not undertaken as a CDM project activity.	<p><b>Yes.</b> Despite the fact that this alternative is economically</p>	

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	unattractive, as analyzed in Step3, this alternative is a plausible scenario for further analysis.	
<b>H2</b> The proposed project activity (installation of a cogeneration power plant), fired with the same type of biomass residues but with a different efficiency of heat generation ( e.g. an efficiency that is common practice in the relevant industrial sector)	<b>No.</b> Since at present the technology of biomass cogeneration in China is just started and it is not common practice in China no matter lower efficiency or higher efficiency, therefore this alternative is excluded.	Based on the results of the common practice analysis, the biomass residue fired power plant is not common in local industrial sector. The alternative can be eliminated.
<b>H3</b> The generation of heat in an existing captive cogeneration plant, using only fossil fuels.	<b>No.</b> Since there is no fossil fuel fired cogeneration plant or any other cogeneration plant at or around the project site.	During the site visit, the Audit Team can confirm that there is no existing captive fossil fuel fired cogeneration plant at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.
<b>H4</b> The generation of heat in boilers using the same type of biomass residues.	<b>No.</b> Since there is no heat boiler using biomass residues in the local area, while using small coal-fired boiler is common practice to meet the process heat demand for the plants in the industrial park, besides, it is not feasible for the individual enterprise to be equipped with expertise on the biomass collection or biomass-boiler operation.	It is common that coal-fired boilers are always preferable option in order to supply heat for industrial process in China. Furthermore, collection of biomass residues and operation of biomass residues fired boilers is too difficult for individual enterprise. The alternative can be eliminated.
<b>H5</b> The continuation of heat generation in an existing biomass residue fired cogeneration plant at the project site, in the same configuration, without retrofitting and	<b>No.</b> Since there is no biomass residue fired cogeneration plant at or around the project site. Therefore, therefore this alternative is excluded.	During the site visit, the Audit Team can confirm that there is no existing biomass residue fired cogeneration plant at the project site, and the proposed project is a

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fired with the same type of biomass residues as in the Project.		Greenfield type. The alternative can be eliminated.
<b>H6</b> The generation of heat in boilers using fossil fuels.	<p><b>Yes.</b> As discussed in section A4.3, existing heat demand is met by fossil-fuel fired boilers.</p> <p>In the absence of the proposed project, the industrial process heat will continue to be met the individual small fossil fuel fired boilers.</p> <p>Therefore, this alternative is a plausible scenario for further analysis.</p>	<p>Generation of heat in boilers using fossil fuel is widely used in China, which is confirmed by the Audit Team.</p> <p>Therefore this alternative is realistic and credible.</p>
<b>H7</b> The use of heat from external sources, such as district heat.	<p><b>No.</b> Since there is no district heat supply in the local area, heat sources from external sources such as district heating do not exist. Besides, there is no plan to build district heat system in Tongcheng City</p>	During the site visit, the Audit Team can confirm that there is no district heat supply in the local area. The alternative can be eliminated.
<b>H8</b> Other heat generation technologies (e.g. heat pumps or solar energy).	<p><b>No.</b> Since the heat consumers for the project are those enterprises located in the industrial park. They require a huge amount of qualified steam, therefore neither solar energy nor heat pumps are feasible heat supply alternatives that could meet the quality nor the quantity of the process heat needed in the industrial park.</p>	It is common that coal-fired boilers are always preferable option in order to supply heat for industrial process in China. The heat pumps and solar energy can not provide similar services, high temperature steam and the relevant pressure. The alternative can be eliminated.
<b>H9</b> The installation of a new single- (using only biomass residues) or co-fired (using a mix of biomass residues and fossil fuels) cogeneration	<p><b>No.</b> Firstly, since biomass cogeneration plants (including single-or co-fired cogeneration plants) are not common practice in the local area.</p>	Based on the results of the common practice analysis, the biomass cogeneration plant is not common in local industrial sector. The Validation Team can

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<p>plant with the same rated power capacity as the project activity power plant, but that is fired with a different type and/or quantity of fuels (biomass residues and/or fossil fuels). The annual amount of biomass residue used in the baseline scenario is lower than that used in the project activity.</p>	<p>There is no on-grid installed capacity from Biomass Cogeneration plant before 2007 in Anhui Province.</p> <p>Secondly, there are no other biomass resources identified in the biomass availability report and as such no other viable biomass fuel options available. It is financially unattractive to use some biomass types that are not identified in the biomass availability report.</p> <p>Thirdly, the <i>Renewable Energy Electricity Tariff and Cost Management Trial Regulations (fagaijiage [2006] 7)</i> issued by NDRC of China in 2006 stipulates that “ if the energy consumption from the fossil fuel of a co-fired( using a mix of biomass residues and fossil fuels) power plant exceeds 20% of the total energy consumption, the project should be taken as a ordinary fossil fuel fired project”, which means the tariff of the project within the first 15 years since commissioning will be only the bus-bar tariff for Anhui Province(0.371RMB/KWh including VAT)without 0.25RMB/KWh as the subsidy. Thus, it is not financially feasible to build new co-fired biomass power project in the region at present.</p> <p>Therefore this alternative is excluded.</p>	<p>confirm the biomass availability report and the referred national regulation are authentic. Potential use of other types of biomass and or displacement of part of the biomass by co-firing fossil fuels are therefore deemed unlikely. The alternative can be thus eliminated.</p>
<p><b>H10</b> The generation of power in an existing fossil fuel fired cogeneration plant co-fired with</p>	<p><b>No.</b> Since there is no existing fossil fuel fired cogeneration plant co-fired with biomass residues</p>	<p>During the site visit, the Audit Team could confirm that there is no existing fossil fuel fired</p>

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biomass residues, at the project site.	near the project site, therefore this alternative is excluded.	cogeneration plant co-fired with biomass residues at the project site, and the proposed project is a Greenfield type. The alternative can be eliminated.
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According to the reasonable analysis, the realistic and credible alternatives of Heat generation are H1 and H6. In Audit Team's opinion, the list of alternatives for heat generation is complete.

For the use of Biomass residues, eight alternatives are identified for rice husk and straws respectively and the Audit Team have verified the elimination process as the following table.

Alternatives	Selection for Rice husk	Selection for Straws ( <i>Including Rice straw, Oil seed rape straw, Cotton Straw</i> )	DOE's opinion
<b>B1</b> The biomass residues are dumped or left to decay under mainly aerobic conditions. This applies, for example, to dumping and decay of biomass residues on fields.	<b>Yes.</b> The availability of the rice husk which has been investigated by the FSR institute with support from the local authorities shows that 7,200tons of the rice husk are used for other purposes which only takes up 5% of the total available rice husk generated in the region (143,100 tons), with the rest (95%) left to decay under mainly aerobic conditions or burnt in an	<b>Yes.</b> The availability of the straws which has been investigated by the FSR institute with support from the local authorities shows that 28,200 tons of the straws were used for other purposes which only takes up 5% of the total available straws generated in the region (614,400tons), with the rest (95%) left to decay under mainly aerobic conditions or burnt in an uncontrolled manner without utilizing it.	The Audit Team has checked the scenario by references to official documents from local agriculture bureau on biomass residues' supplying capacity attached in the biomass residue availability report/19/ and Introduction of Local Biomass Uncontrolled Burning/38/ by the Environmental Protection Bureau of Tongcheng City, and by site visit inspection and interview with both local government and farmers. It can be confirmed that the biomass residues are dumped or left to decay under mainly aerobic conditions, or burnt in an uncontrolled manner without utilizing it for

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	<p>uncontrolled manner without utilizing it.</p> <p>The rice mills have limited room for the rice husk and they have to burn it or dump it to leave room for the rice.</p> <p>Therefore, this alternative is a plausible scenario for further analysis.</p>	<p>The local farmers have to get rid of a huge amount of straws in order to keep the land free for the next season's planting, so they burn the straw in the field.</p> <p>Therefore, this alternative is a plausible scenario for further analysis.</p>	<p>energy purposes.</p> <p>Therefore this alternative is realistic and credible.</p>
<p><b>B2</b> The biomass residues are dumped or left to decay under clearly anaerobic conditions. This applies, for example, to deep landfills with more than 5 meters. This does not apply to biomass residues that are stock-piled or left to decay on fields.</p>	<p><b>No.</b></p> <p>It is common that the biomass residues are dumped or left to decay under mainly aerobic conditions and burned in an uncontrolled way outside in the fields. In China, landfill plant only collects and processes the residential waste which does not cover the waste from agricultural and industrial sector, like the rice husk.</p>	<p><b>No.</b></p> <p>It is common that the biomass residues are dumped or left to decay under mainly aerobic conditions and burned in an uncontrolled way outside in the fields. In China, landfill plant only collects and processes the residential waste which does not cover the waste from agricultural and industrial sector, like the straws.</p>	<p>The Biomass residues are produced in the rural area where there are no landfill services. The alternative can be eliminated.</p>
<p><b>B3</b> The biomass residues are burnt in an uncontrolled manner without utilizing it for energy purposes.</p>	<p><b>Yes.</b></p> <p>As for Alternative B1.</p> <p>This alternative is a plausible</p>	<p><b>Yes.</b></p> <p>As for Alternative B1.</p> <p>This alternative is a plausible scenario</p>	<p>Please refer to the opinions for alternative B1.</p> <p>The alternative is realistic and credible.</p>



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	scenario for further analysis.	for further analysis.	
<b>B4</b> The biomass residues are used for heat and/or electricity generation at the Project site	<b>Yes.</b> This alternative is a plausible scenario for further analysis.	<b>Yes.</b> This alternative is a plausible scenario for further analysis.	The alternative is that of the proposed project, which is realistic and credible.
<b>B5</b> The biomass residues are used for power generation, including cogeneration, in other existing or new grid-connected power plants	<b>No.</b> Using biomass to generate electricity or heat is not common practice in this region: near the project site, there are no existing power plants (including) cogeneration projects or boilers which are using rice husks to generate energy. Besides, confirmed by Tongcheng City Investment Promotion Bureau, there will be no other biomass power plant except the proposed project and there will be no other biomass energy projects in Tongcheng City.	<b>No.</b> Using biomass to generate electricity or heat is not common practice in this region: near the project site, there are no existing power plants (including) cogeneration projects or boilers which are using straws to generate energy. Besides, confirmed by Tongcheng City Investment Promotion Bureau, there will be no other biomass power plant except the proposed project and there will be no other biomass energy projects in Tongcheng City.	During the site visit, the Audit Team can confirm that there is no existing biomass residue fired power plants or cogeneration plants at the project site. Furthermore, the Audit Team has verified the Confirmation Letter Regarding No Other Biomass Project Existing in Tongcheng City/31/, issued by Merchants Bureau of Tongcheng City on 10 February 2009, and can confirm there are no plans about new biomass residues fired power plant other than the proposed project activity in Tongcheng City. The alternative can be eliminated.
<b>B6</b> The biomass residues are used for heat generation in other existing or new boilers at other sites.	<b>No.</b> As for Alternative B5.	<b>No.</b> As for Alternative B5.	During the site visit, the Audit Team can confirm that there is no existing biomass residue fired boilers for heat generation at the project site. Furthermore, the Audit Team has verified the Confirmation Letter Regarding No Other



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			Biomass Project Existing in Tongcheng City/31/, issued by Merchants Bureau of Tongcheng City on 10 February 2009, and can confirm there are no plans about new biomass residues fired boilers other than the proposed project activity in Tongcheng City. The alternative can be eliminated.
<b>B7</b> The biomass residues are used for other energy purposes, such as the generation of biofuels	<p><b>No.</b> There are no projects using biomass residues like rice husk for other energy purposes at the project site now or in Tongcheng City's development plan.</p> <p>Besides, due to the high cost in the biofuels projects, the biofuel industry in China just started development and the biomass used for the biofuels are crops or non-crops plants mainly including the broomcorn, cassavas, sweet potato, Coptis chinensis, hairy chestnut, tung tree, palm oil or waste cooking oil and/or waste fat from biogenic origin. The biomass residues used in</p>	<p><b>No.</b> There are no projects using biomass residues like straws for other energy purposes at the project site now or in Tongcheng City's development plan.</p> <p>Besides, due to the high cost in the biofuels projects, the biofuel industrial in China just started development and the biomass used for the biofuels are crops or non-crops plants mainly including the broomcorn, cassavas, sweet potato, Coptis chinensis, hairy chestnut, tung tree, palm oil or waste cooking oil and/or waste fat from biogenic origin. The biomass residues used in the proposed project are not</p>	The official letter from the Merchants Bureau of Tongcheng City was provided by the project proponent and assessed by the Audit Team. It is confirmed by the local government that except the Project, there is no others projects are planned to apply the local biomass resource. The alternative can be eliminated.

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	the proposed project are not common raw material to produce biofuel.	common raw material to produce biofuel.	
<b>B8</b> The biomass residues are used for non-energy purposes, e.g. as fertilizer or as feedstock in processes (e.g. in the pulp and paper Industrial)	<b>No.</b> Around 7,200 tons of rice husk within the collection radius are used as feedstuff, which only accounts for 5% of the total rice husk availability and according to the leakage analysis in Section B.6.1, the rice husk is quite abundant surplus, the project will not change the use of rice husk as feedstuff.	<b>No.</b> Around 28,200 tons of the straws within the collection radius are used as household fuel, feedstuff and fertilizer which only accounts for 5% of the total straws availability and according to the leakage analysis in Section B.6.1, the straws are quite abundant surplus, the project will not change the use of straws as their non-energy uses as household fuel, feedstuff and fertilizer.	The relevant data are sourced from Biomass Availability Report /19/, which has been verified by the Audit Team. The alternative can be eliminated.

According to the reasonable analysis, only B1, B3 and B4 are remained not only for rice husk but also for straws. In Audit Team's opinion, the list of alternatives for the use of biomass residues is complete.

The result is identified as the two combined scenarios. One is the project not undertaken as a CDM project activity, i.e. combination of P1 and H1 and B4.

The other is the combination of P4, H6 and B1/B3, i.e. the Scenario 2, exporting electricity from the grid; generating heat from fossil fuel fired boilers; and dumping biomass residues to naturally decay or burnt in an uncontrolled manner without utilizing it for energy purposes.

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### 4.5.3 Investment analysis

Investment analysis is applied in the PDD to demonstrate that the Project is not the most economically or financially attractive or economically feasible one. And the project will benefit from selling electricity to the grid and heat to its neighbor so a benchmark analysis is applied in the PDD.

For the Project, a Project IRR of 8% has been selected as the benchmark rate according to the “*Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects*” /33/, which has been verified by the Audit Team. The Audit Team confirmed in Section 2, Appendix B of this Rule that a Project IRR of 8% (after tax) is applied by power industry or power transmission & dispatching industry, and the Audit Team also confirmed in Page 13 of this Rule that the Rule is applied by cogeneration projects as well. In the financial analysis of the FSR/15/, Project IRR of 8% is also applied as the benchmark. By cross-checking the biomass to power projects registered in UNFCCC up to date of Nov. 2009, 8% benchmark were widely used and applicable to investment analysis for all fifteen China projects, as well as four cogeneration projects (No. 0778, 0811, 0825 and 1293). Therefore the Audit Team can confirm the benchmark is selected suitable for the financial analysis.

According to the financial analysis, the IRR (after tax) of total investment of the Project is only 3.65% without the CERs revenues, which shows the Project can not be considered financially attractive. However, if the Project could be registered as a CDM project, the IRR may reach 10.58%.

Moreover, a sensitivity analysis, covering a fluctuation range of 10%, is discussed with regards to Static total investment, Electricity Tariff, Heat Price, Operational Hours and Biomass Residue Cost. The sensitivity analysis shows that without the income from CERs sales the IRR of the Project is still lower than the benchmark.

As per the discussion in Section 4.5.1 of this report, the investment decision of the proposed project was made in Sep. 2007, based on the financial analysis of three pilot projects. The FSR of the proposed project was finalized in Apr. 2008. Values from the FSR of the proposed project were selected as input to the investment analysis in the PDD. To the audit team’s opinion, whereas the three pilot projects are highly comparable to the proposed project in technology, equipments and financial indicators, the input values in FSRs of the proposed project reflect more accurately the Project’s characteristics and actual situation. Thus the audit team considered that use of the input values from the FSRs of the proposed project in investment analysis is reasonable.

The Audit Team has assessed the IRR calculation sheet/22/. The Audit Team compared the input value in the IRR calculation sheet and confirmed that all values are quoted from the FSR. The FSR was developed by Wuhan Kaidi Electric Power Engineering Co., Ltd., which is certified to compile design reports for power projects with the highest grade A issued by Ministry of Construction P.R.China. The FSR was approved/16/ by local authority on 22 April 2008. As discussed above, the project starting date is considered to be 6 November 2007, hence to the Audit Team’s opinion, the period of time between the finalization of the

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FSR and the investment decision is sufficiently short and it is unlikely input values would have materially changed. The main input data in the IRR are cross checked and validated by the Audit Team as below.

### **Interest taken into account in the calculation of income tax**

In the original version of the IRR calculation that was submitted for registration, the interest was not taken into account as cost in the calculation of income tax. This is in accordance with the FSR and the FSR follows the guidance in Methods and Parameters Guidance for construction projects<sup>2</sup>. However the latest version of “*Guidelines on the Assessment of Investment Analysis*”, which was released in EB51 in December 2009, and was not available at the time of submission of this project activity, indicates that the income tax after interest should be used for project IRR calculation.

A CAR (CAR15, please refer to Appendix A, Table 3) was raised that the PP is requested to re-calculated the IRR to comply with this new guidance. The PP has updated the IRR calculation spreadsheet, which is in accordance with the requirement of this guidance. Thus the CAR was closed, and income tax is now calculated after interest payments in accordance with the actual project situation.

The updated project IRR is 3.65%, which is still below the benchmark and continues to be below the benchmark when a sensitivity analysis is undertaken at +/- 10% for the Static total investment, Equivalent Operational Hour at full load, Tariff, Heat Price, Biomass Cost and Total O&M Cost.

The audit team has checked the updated IRR spreadsheet and can confirm that actual interest payable has been taken into account in the calculation of income tax and the investment analysis. Therefore the revised IRR calculation fully complies with EB51 Annex 58 – Guidance on the assessment of investment analysis (Version 03) and the calculations are confirmed to be correct.

Furthermore, to be in accordance with paragraph 11 of the “Guidance on the assessment of investment analysis” (Version 03) and EB requirements, the Audit Team cross-checked the debt-equity ratio and the interest rate with public sources and Annual Reports of 2006, 2005, 2004 for Wuhan Kaidi Electric Power Co., Ltd/61/. Authenticity of these reports were confirmed by the Audit Team.

From the reports, following data from years 2004 to 2006 were observed:

1. The interest rates on long term loans were between 5.76% and 6.30%;
2. The debt-equity ratio is between 34% and 42%;

Interest rates used in the investment analysis are 7.59% for long term loans and 6.84% for working capitals, which are both from and consistent with approved FSR. These loan interest

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<sup>2</sup> Methods and Parameters for the Economic Appraisal of Construction Projects Version 3, National Development and Reform, Commission, published by China Planning Publisher, 2006

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rates are cross-checked against rates published by the People's Bank of China<sup>3</sup> by the Audit Team. The Audit Team can confirm that actual interest rates in years 2004 to 2006 and the rate estimated in FSR in 2008 are corresponding to synchronized interest rates published (for year 2007, i.e., 7.11% to 7.83%). Thus the interest rate used in the investment analysis can be confirmed reasonable.

In IRR calculation process, considering fixed equity-debt rate and payback period, a lower interest rate results in a higher profits and consequently higher income taxes. Given that the income taxes but not interest payments are considered as cost in the calculation of the project IRR, higher income taxes result in lower project IRR. As a conclusion, a lower interest rate results in a lower project IRR. That means the project IRR calculated with the higher interest rate of 7.59% is higher than that calculated with long-term interest rates (>5 years) available in the 3 years prior (2004-2006). Therefore, a higher interest rate used in the investment analysis can be confirmed by the Audit Team reasonable and conservative.

70% of total investment comes from debt estimated in FSR, which is higher than actual loan rate of 34% - 42% from 2004 to 2006. Based on fixed interest rate and pay-back period, a deduction of project IRR was made that a lower proportion of debt will result in less interest payments, which consequently result in more profit and more tax payments. This again would lead to a lower project IRR. A higher debt ratio of 70% is therefore conservative. Therefore, a higher loan rate used in the investment analysis can be confirmed by the Audit Team more conservative.

In conclusion the actual interest payable has now been taken into account in the calculation of income tax in the IRR calculation and the interest rate and the debt ratio in the IRR calculation which are from FSR are considered conservative.

Due to reasons mentioned above, the IRR of the project is corrected as 3.65%, which can be confirmed by the Audit Team credible.

### **Project Output**

The project installation is 24 MW. The Audit Team can confirm that by reviewing the project's FSR and the approval/16/.

#### **i) Auxiliary Consumption Rate**

The Net Power Generation Output is 126,720 MWh, excluding 12% auxiliary consumption, and this is expected based on the 6,000 operation hour of the Project. By comparing the auxiliary consumption of 15 already registered biomass projects by Nov. 2009 from 'http://UNFCCC.int'/58/, the Audit Team found out the auxiliary consumption is between 8% to 21%, with an average of 12.9%. The proposed project's auxiliary consumption rate is 12%, sourced from the approved Feasibility Study Report. In Audit Team's opinion, the value 12%, from the Feasibility Study Report, is reasonable.

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<sup>3</sup> <http://www.pbc.gov.cn/detail.asp?col=460&ID=2483>.

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The audit team confirms that Circulating Fluidised Bed boilers, due to the operation of the blowers, generally have a higher self-consumption rate than, for example, grate fired boilers. Additionally, according to an investigation report from Kushan Municipal Development and Reform Commission<sup>4</sup>, the auxiliary consumption rate of the operational biomass power generation projects in China is 12%. The report states that, for biomass power plants “the auxiliary consumption rate is 12%, much higher than the self consumption rate of the fossil fuel power units, which is at a level of 6%”.

Based on the above, the Audit Team was able to confirm, by cross check with registered CDM projects and by the public reference from independent party reference, that a 12% auxiliary consumption rate is appropriate for the project activity.

### ii) Operation Hours

The operation hour is based on the *Introduction Letter Regarding the Operation Hour*, issued by Wuhan Kaidi Electric Power Engineering Co., Ltd. /39/, and the *equipment availability rate, generation load rate and Backup ration for load or accident*. The scheduled equipment maintenance days are 54 days and a corresponding *equipment availability rate* is 0.852. The average load factor is 0.9 depending on the type of biomass and the *Backup ration for load or accident* is expected to be 0.1. The result of the annual operation hours is 6045 hours. Thus the project annual operation hour is expected to be 6000. To the Audit Team’s opinion, this value is approached in a scientific way.

There are 15 biomass power plants by Nov. 2009, which were registered as CDM projects and applying the methodology ACM0006 in China, for which the operational hours range within 5500hrs and 6,500hrs per year (i.e., five projects with 5500hrs, four projects with 6000hrs and three with 6,500hrs). The project under validation ranges well within this field and is not unusual as compared to the other projects. For details, please see the reference /58/.

Only the project #2230 assumes a significantly higher amount of operating hours. Whereas the reason for this exceptionally high availability is not traceable without detail knowledge of that project, it should be noted that both projects cannot be directly compared due to the different technology (fluidized bed vs. grate) applied and fuels used (rice husk in the project activity).

The audit team was able to verify that the operational hour was unlikely to increase by 24 % ( 7,424 hours) to reach the benchmark. Since the proposed project has not completely operational yet and there are no similar projects operational within the investor’s companies when the project was designed, the audit team has checked the operating hours of the biomass project against the actual operation status in China. It was confirmed by the audit team through 13 monitoring reports of the registered CDM projects (CDM project reference no.0778, 0811, 0819, 0825, 1032, 1263, 1293, 1375 and 1546) that the average annual operating hour (auxiliary consumption deducted) was 3,863 hours, which is much lower than

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<sup>4</sup> Energetically facilitate the development of biomass power generation industry to actively explore new ways of ecological civilization-building, Kushan Municipal Development and Reform Commission.  
<http://www.dpc.ks.gov.cn/xxnr.jsp?ID=884>

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that (5280 hours deducting the auxiliary consumption) of the project activity. Considering the PP may have less operational experience and face technical problems at starting period of the project, which is considered a common sense, the audit team checked four periodic monitoring report of three projects (CDM project reference No. 0778, 0811 and 0819) the average annual operation hour is 4,266 hours, which are still much lower than that (5280hours with auxiliary consumption deducted) of the project activity.

As a result, the operation hour of the project activity was confirmed by the Audit Team conservative and not been underestimated. Therefore the suitability of this parameter was confirmed by the Audit Team. The audit team can also confirm it is unlikely the operation hour to increase 24% to reach the benchmark.

The audit team can also confirm that the emission reduction from electricity is calculated correctly according to the methodology as follows:

$$ER_{electricity,y} = EG_y \cdot EF_{electricity,y}$$

Where,  $EG_y$  is Net quantity of increased electricity generation as a result of the Project.

$EG_y$  = Net Power Generation

= Installed Capacity x Equivalent Operational Hours at full load x (1-auxiliary consumption rate)

= 24MW x 6000h x (1-12%)

= 126,720MWh

### Output in different operational conditions

Given that different operational condition may lead to a difference in power output and heat output, it is compared in PDD that project IRR under these two different operation conditions.

a) Maximum condensing condition; and

b) Maximum extraction condition based on the technical specification of the steam turbines

The result of this comparison is shown in the table below, calculation of which was verified by the Audit Team.

Operational Conditions	Power Capacity (MW)	Steam Extracted (t/h)	IRR (%)
Rated	2 x 12	2 x 15	3.65
Maximum Condensing	2 x 15	0	2.28
Maximum Extraction	2 x 6.59	2 x 45	6.80



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It can be confirmed that even in extreme conditions the project IRRs will remain below the benchmark (8%) and thus the project is considered still not financially attractive.

### **Project Investment**

The project static total investment is 244,830,000 RMB. The value is consistent with that of the FSR. The Audit Team referred to the project's approval /16/, on which the project total investment is 256,620,000 RMB, which incorporates the static total investment of 244,830,000 RMB and the interest of raised from the construction period based on the financial analysis of the FSR. Financial analysis in the FSR was evaluated by sector experts designed by the local government before the project got approval. To the Audit Team's opinion; the project total investment is reasonable.

The Audit Team cross-checked 15 relevant biomass for power generation projects registered on the UNFCCC web site before November 2009/58/. The result shows an average ratio of total investment/annual power supply of the 15 registered projects shows an average of 1.95RMB/kWh, and that the range the factor was between 1.50 RMB/kWh and 2.31RMB/kWh. The ratio total investment/annual power supply of the project is 2.02 RMB/kWh, which is about the average level. To the Audit Team's opinion; the project total investment is considered reasonable.

The Audit Team checked the accounting report for the construction of the proposed project activity. This report was issued by a third-party accounting firm/66/ and released by two Certified Public Accountants. The authenticity of the report can be confirmed by the audit team. In the report, it is clearly audited that the actual static investment for the proposed project has been 245,670,000RMB till Sep. 2010, which is larger than that estimated in the FSR (244,830,000) RMB.

Thus the audit team was also able to verify that the static total investment is unlikely to drop by 26% to reach the benchmark.

The audit team can also verify that the capital cost for the heat pipeline and distribution network to the consumers has not been included in the capital cost for this project. This has been checked by the audit team in the detailed breakdown of investment cost in the Feasibility Study Report and associated spreadsheets<sup>5</sup>. From this breakdown it can be concluded that the heat pipeline capital cost was not considered in the investment decision.

### **Electricity Tariff**

The tariff rate of 0.621 RMB/kWh (including VAT) in the investment analysis is from the approved FSR, which is equivalent to 0.531 RMB/kWh excluding VAT. The tariff of 0.621 RMB/kWh (including VAT) is derived from the tariff from fossil fuel plants in 2006 plus the biomass subsidy of 0.250 RMB/kWh. As no other regulations were observed by the audit team for the tariff determination, this tariff was still valid at the time of decision making (Nov. 2007). The investment decision was made on the basis of the tariff rate in the FSR hence it is appropriate to apply this tariff rate in the investment analysis.

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<sup>5</sup> Pages 11 – 26, Feasibility Study Report for Tongcheng Kaidi Biomass Power Project, Volume 3, Apr. 2008



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Additionally, the audit team has further performed validation on the suitability of the tariff rate as below:

**(i) Cross-check the tariff rate against the government regulation regarding tariff rate for biomass power plants**

The tariff for biomass power plants in China are set according to the *Renewable Energy Electricity Tariff and Cost Management Trial Regulations (fagaijiage [2006] 7) /47/* issued by the National Development and Reform Commission of China in 2006. This document states that the tariff within the first 15 years since commissioning is calculated by 0.25RMB/KWh plus the on-grid tariff for coal-fired power plants with de-sulphurisation units installed in year 2005. Furthermore, this document also states that the actual tariff of the biomass project should be priced and approved by the provincial government in accordance with the national regulation. After 15 years' operation, this tariff subsidy is cancelled.

In 2005, the tariff rate for fossil fuel fired power plants in Anhui Province was 0.369<sup>6</sup> RMB/kWh. According to the *Renewable Energy Electricity Tariff and Cost Management Trial Regulations*; the tariff for biomass should be 0.619 RMB/kWh including VAT (0.369 RMB/kWh +0.25 RMB/kWh). This tariff rate is applicable for every year of the first 15 years. After this, the subsidy is cancelled and the project will revert to a standard tariff for fossil fuel power plants.

In 2006, the tariff rate for fossil fuel fired power plants in Anhui Province was 0.371 RMB/kWh. The FSR applied the tariff rate for fossil fuel plants in 2006 plus the subsidy of 0.25 RMB/kWh. This is equal to 0.621 RMB/KWh. This reflects the trend of tariff rate at the decision making time. In the audit team's opinion, applying the higher tariff rate of 2006 in the investment analysis is conservative and hence it is appropriate.

**(ii) Cross check with approved tariff rate of the project activity**

As mentioned in the regulation on tariff rate for biomass power plants, the tariff rate was approved the Pricing Bureau of Anhui province. The audit team confirms that the tariff approved by the Pricing Bureau of Anhui Province for the project is 0.619 RMB/KWh (0.369 RMB/KWh +0.250 RMB/KWh)/65/. This is the actual tariff obtained by the project and is consistent with the regulation. As the tariff for the project has been approved, it is unlikely of tariff to increase 19% to reach the benchmark.

Thus the Audit Team can confirm the tariff used in the proposed project is reasonable and conservative.

### Heat generation

The audit team checked the heat generation designed in the FSR. The designed working temperature and pressure of the steam are separately 0.981MPa and 280.5°C. The audit team checked relevant workbooks and can confirm the designed enthalpy for the steam,

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<sup>6</sup> <http://scjc.scpi.gov.cn/flfg-content.asp?id=1296>

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3008.9kJ/kg, is reasonable. For the proposed project in rated condition, that the heat extraction is 15t/h for each unit, the annual heat generation by the project was calculated as:  
 $3008.9\text{kJ/kg} * 15\text{t/(h*unit)} * 2\text{ units} * 6000\text{h} = 541,602\text{ GJ}$

The operation hour for the project has been justified as above. Thus the audit team can confirm the heat generation for the project was calculated in a scientific way, and is deemed appropriate.

### Heat Price

The heat price is 29.85 RMB/GJ (excluding VAT), sourced from the approved Feasibility Study Report.

As mentioned above, the power plant is still not fully commissioned. It would therefore be inappropriate to start to deliver heat until the power generation is stable. Furthermore, the heat pipeline has not yet been built and this is confirmed by interview with the project owner in March 2010 by the audit team. Thus there are no actual invoices for the audit team to cross check the heat price. However, the audit team has validated the heat price by cross-checking with similar projects and official documents.

#### i) Cross Check with Similar Projects

The audit team has cross checked the heat price applied in the investment analysis with the heat price applied in similar projects. There were three registered biomass cogeneration CDM projects in China that apply investment analysis at the time of submission of the final validation report and PDD to request registration. These projects (#811, # 825 and #1293) assume heat prices excluding VAT of 30 RMB/GJ, 17 RMB/GJ and 25 RMB/GJ. These are comparable to the heat price applied in this project activity and indeed the project activity can be compared to the highest tariff applied in any registered project activity.

#### ii) Cross Check with Official Document from the Administration Committee of Tongcheng Economic Development Area:

The audit team assessed the heat price by cross-checking the heat price with official document which was issued by the Administration Committee of Tongcheng Economic Development Area/56/. This document clearly states that the heat selling price for the Tongcheng Kaidi Biomass Power Project should not be higher than 30RMB/GJ (excluding VAT) in consideration of the consumer's procurement cost of heat.

This price is the price at the generation site and does not include the pipeline cost and the transmission losses. The heat pipeline capital cost is born by the local government.

Therefore the audit team can confirm that the heat price 29.85 RMB/GJ (excluding VAT) is appropriate and following a crosscheck with other registered projects and government document, it is also deemed to be conservative.

#### iii) Cross checked with levelised cost analysis

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A levelised cost analysis of heat supply from small coal-fired boiler was performed by the project participant/59/. The purpose of the levelised cost analysis undertaken by the PP was to provide additional substantiation as to the heat price applied in the investment analysis.

The levelised cost analysis for the independent small coal fired boiler heat generation illustrates whether or not it is feasible to purchase heat from the proposed project from the heat users' point of view. If the purchase price of heat is higher than the levelised cost of generation heat, the existing heat users will continue to run their own small coal-fired boilers to meet their heat demand. At the same time, it also reflects whether or not the project owner will be able to sell the heat at that price.

The spreadsheet for the levelised cost calculation was provided. The levelised cost was calculated based on 6 t/h coal-fired boilers as these are common practice boilers for heat generation in China/60/. The audit team has conducted an assessment of the data sources of the input values. In the audit team's opinion, the data source of input parameters is from independent parties hence is reliable and credible.

The audit team has rechecked all calculated assumptions and has found one error in the calculation spreadsheet. Thus A CAR (CAR16, please refer to Appendix A, Table 3) was raised. This error relates to the total O&M cost, which in the PDD omitted the Ash and sediments treatment fees. The O&M cost in the PDD was 350,625 RMB and this has been corrected to 422,625 RMB. The error has now been corrected in the spreadsheet and the CAR is therefore closed. This has minimal impact on the levelised cost, but for clarity the cost rises from 31 RMB / GJ to 31.5 RMB/GJ.

The audit team also recalculated the levelised cost by using the provided input data, and came to the same outcome. Therefore, the audit team can conclude that the calculation of levelised cost is correct.

What is more, the IRR would only pass the benchmark when the heat tariff increases by more than 47% to 44RMB/GJ, which shows that heat price is not a sensitive indicator.

### **iv) Heat pipeline investment**

The audit team interviewed local government officials during the on site assessment in March 2009. The government officials stated that they agreed to construct the pipeline for transporting steam for heat users. This verbal assurance has since been documented in the official document of Administration Committee of Tongcheng Economic Development Area issued in February 2010/56/.

The official papers/52//56/ also point out that in order to build a "green, environmental friendly, attractive industrial park, the Administration Committee of Tongcheng Economic Development Area is willing to build a district heating system through the proposed project to meet the heat demand of consumers in Tongcheng Economic Development Area". The official paper also states that to provide better infrastructure for the development area, the local government will bear the capital cost on the heat pipeline for transporting steam to the independent heat users within the development area.

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### **Biomass consumption**

The biomass consumption used by the proposed project is assumed to be 97,800t straws and 87,900t rice husks annually. The value is consistent with that of FSR. The audit team checked the approval of the project and /16/ and can confirm the biomass consumption in the FSR is consistent with the approval. Generally, project design in the FSR was evaluated by sector experts designed by the local government before the project got approval. Thus, to the Audit Team's opinion; the project biomass consumption is reasonable.

### **Biomass Cost**

The biomass cost is assumed to be 240 RMB/t in FSR, and based on the clarification/41/ by Wuhan Kaidi Electric Power Engineering Co., Ltd This value is a reflection of the fact that in order to get the biomass from the fields to the power plant including collection cost, agent cost for collection, transportation, handling and storage.

#### **i) Confirmation of the biomass procurement model**

Project business model for biomass procurement is clearly indicated in the PDD, which is sourced from approved FSR/15/ and Biomass Availability Report/19/. The Audit Team has checked the biomass residue collection part of these two reports, and can confirm the business model is consistent with that described in the FSR and Biomass Availability Report. The Audit Team also checked the document "*The operating model, existing problems and development strategies for China's straw storage and transportation system, Renewable Energy Resources, Vol.27 No.1, Feb. 2009*"/62/, and can confirm the business model for biomass procurement used in the design of the project activity is a common practice in China. Cost due to collection cost from farmers, transportation & storage, labor, overhead, margin for the agent and rough process, which is derived from the biomass procurement model, is considered by the Audit Team reasonable.

The Audit Team can also confirm that only once biomass residues are used as a fuel, market will be created for the waste residues and opportunity for agent. In case of baseline scenario, biomass residues remain wasted in the absence of the project activity, since no market will be established if biomass residues has no other purpose of use (which has been demonstrated in PDD and confirmed by the Audit Team in 4.5.2 of this report). The biomass purchase cost results from the project activity and reflects the cost to the project activity to purchased biomass for the power plant. Hence, the Audit Team can confirm it is reasonable to include a purchase price for the biomass residues in the financial analysis but the price is not applicable to the baseline scenario due to the large amount of surplus biomass residues will remain left to decay in the baseline scenario.

#### **ii) Check of the biomass cost**

Biomass cost was determined based on the project business model, and the breakdown of biomass cost for the project is clearly described in the document "Introduction Letter

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Regarding the Biomass Cost Defined in the ‘FSR for Tongcheng Biomass Project’ issued by the FSR design institute/41/, which is shown below:

- i. *Cost from farmers/field to the collection site: 105RMB/ton*, including the collection cost at the field (labor cost) and transportation cost from field to the collection sites and storage.
- ii. *Cost incurred at the collection site: 70RMB/ton*, including the land utilization cost, pre treatment cost, labor cost, biomass residues loss, agent margin/agent cost.
- iii. *Cost from the collection site to the power plant for power generation: 65RMB/ton*, including the transportation cost, the labor cost (loading and unloading), and the biomass loss.

The total biomass cost is 240 RMB/tonne, which is consistent with that estimated in approved FSR.

The Audit Team validated the document, and confirm the authenticity of the document. The breakdown of the biomass cost is logically consistent with the business model described above.

The Audit Team also cross-checked the biomass cost breakdown by above mentioned published research report /62/, which shows a typical biomass cost under this biomass procurement model:

- i. *Cost from the farmer to the collection site: 150RMB/ton*
- ii. *Cost incurred at the collection site: 105RMB/ton*
- iii. *Cost from the collection site to the power generation: 35RMB/ton*

The total costs from this third party report are 290 RMB/tonne compared to 240 RMB/tonne used in the investment analysis for the project activity. Therefore, the Audit team considers the biomass cost applied in the investment analysis of the project is plausible and conservative.

### iv) Cross Check of Biomass Costs with Invoices for the Project

The audit team has also cross-checked the total biomass cost using purchase records as well as the settlement log book. The audit team can thus confirm that the cost of rice husks and straws were 280RMB/t to 320RMB/t (delivered price to plant) in October, November and December 2009/55/. Thus, the Audit Team considers the biomass cost assumed in the IRR calculation and PDD is consistent with actual purchasing costs. Based on the above discussion, the biomass cost is unlikely to decrease 17% to reach the benchmark.

### O&M Cost

The annual O&M cost is sourced from and consistent with the FSR **Error! Reference source not found.** of the proposed project, which is confirmed by the Audit Team.

The audit team has cross-checked breakdown of key components of the annual O&M cost as the table below:

Components	Percentage of the O&M cost	Opinions of the audit team
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Fuel Expenditure (Biomass cost)	75.1%	Please see above the descriptions on the biomass cost.
Employee expenditure	9.4%	The Introduction Letter Regarding the Salary and Welfare Defined in the 'FSR for Tongcheng Kaidi Biomass Power Project' has been cross-checked by the audit team/67/. It is clearly indicated in the letter that the actual employee expenditure in 2009 has exceeded that estimated in the FSR.
Repairs and maintenance	10.6%	The audit team cross-checked the 'Medium and Small Scale Cogeneration Construction Design Handbook'/68/. The handbook is applicable to the cogeneration projects with an installed capacity below 50MW of a single unit. It is clearly indicated on page 1,241 of the handbook that repairs and maintenance cost for the cogeneration projects installed with domestic equipments are 2.5% of the Fixed Assets Investment, which is as same as that used in the investment analysis of the Project.
Other O&M expenditure	3.0%	The audit team cross-checked the 'Fossil Fuel Power Plant Cost Indicator Guidance' (priced at 2007 level)/69/. It is clearly indicated on page 127 of the guidance that other O&M expenditures for fossil fuel power plant with capacity of 300MW is 12RMB/kwh. Considering the proposed project is only 24MW biomass power plant, the smaller installed scale makes the cost higher than the larger scale, therefore, the Other O&M expenditures of 12.5RMB/kWh used in the investment analysis of the Project is reasonable.
Total	98.2%	

Totally 98.2% of the O&M cost has been cross-checked by the audit team, and the audit team considers the O&M cost applied in the investment analysis is appropriate and reasonable. Based on the above discussion, the O&M cost is unlikely to decrease 13% to reach the benchmark.

### Tax Rate

The enterprise tax rate is 25%, the VAT for electricity tariff is 17%, and 13% for heat price. The Audit Team confirms that they are consistent with relevant host country's regulations /48//49/.



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### Ash revenue

The value of ash generated by the project is not considered in the financial analysis of the FSR. The audit team can confirm no deal would happen between the plant and the entity collecting the ash during site visit, as effective component in the ash would be low and unsteady, and the economic value of the ash is too low to make it possible to sell the ash as a product at a profitable price. The audit team also checked the IRR calculation sheet, and can confirm if the venue of ash is considered in the financial analysis, only the price of ash reaches 398RMB/t can make the IRR of the project reach the benchmark, which is considered by the audit team greatly unlikely. Thus the audit team can confirm the ash revenue not considered in the financial analysis is reasonable and appropriate.

### 4.5.4 Barrier analysis

No barrier except the financial difficulty is expected by the project proponent in the PDD.

### 4.5.5 Common practice analysis

A common practice analysis is made in the PDD. The relevant geographical boundary is defined as the ECPG, where the electricity of the Project is delivered to. The region is justified as the biomass type and availability varies greatly within China. According to the '*Combined tool to identify the baseline scenario and demonstrate additionality, version 02.2*', the relevant geographical area should include preferably ten facilities that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity. In China, different provinces have different available resources and different electricity tariffs. ECPG is composed of several provinces and the region selection is appropriate.

In this area, seven projects in operation and fifteen projects under construction are identified within the 15MW to 100MW. All identified projects are either registered as CDM activities or applying CDM activity. The data source is from NDRC and verified by Audit Team. Therefore, the proposed project activity is not common.

In conclusion, the assessment of the arguments presented above is deemed to sufficiently demonstrate that the project is not a likely baseline scenario, and that emission reductions resulting from the project are additional.

## 4.6 Monitoring

The project applies approved monitoring methodology ACM0006, version 09. The data monitored and the monitoring interval and frequency is in compliance with the methodology. The monitoring method has been clearly described in section B.7.1 of the PDD and examined by the Audit Team to be appropriate. The project investor has issued the CDM Monitoring & QC Manual/30/for training the monitoring staff. In Audit Team's opinion, the project owner is capable of implementing the project monitoring job.

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### 4.6.1 Parameters determined ex-ante

The Audit Team has examined the following parameters that determined ex-ante by document review:

- The baseline grid emission factor is determined ex-ante, based on the most recent information available as published by Chinese DNA, and is calculated as a combined margin, consisting of the weighted average of the OM and BM emission coefficients; The data source are listed clearly in Annex 3 of the PDD;
- $TDL_{j,y}$ , the average technical transmission and distribution losses for providing electricity to source  $j$  in year  $y$ , is determined ex-ante as 20%. The electricity consumed due to the project activity is transmitted from the ECPG and is complies with scenario A of '*Tool to calculate baseline, project and/or leakage emissions from electricity consumption, Version 01*'. The value applied is the default value as indicated in the tool and is appropriate.

### 4.6.2 Parameters monitored ex-post

The Audit Team has examined the following parameters that determined ex-post by document review and on site assessment:

- The biomass residues dry amount transported to the site and the biomass residues dry amount disposed by the project will be monitored by the weight meters installed on site and corrected by the moisture content measured;
- The net calorific value of biomass residue. The monitoring methods and frequency is in line with the methodology;
- The moisture value of biomass residue. The monitoring methods and frequency is in line with the methodology;
- The average round trip distance from the biomass residue site and the project site. During on site assessment, the Audit Team understood that the biomass residues will be transported from several sites, i.e., the rice factories or the collection site set up by the project owner. Since the collection sites planning are not determined by the time of on site assessment, it is described in the PDD clearly that the longest distance would be applied by the project proponent;
- The number of truck trips for the transportation of biomass. Every truck trips will be counted and recorded in the log books according to the interview with project owner/viii/.
- Average CO<sub>2</sub> Emission Factor for transportation of biomass with trucks during year  $y$ . The appropriateness of the data will be reviewed annually.
- The fossil fuel combusted in the plant or combusted on site due to the project activity. According to the FSR, fossil fuel is needed to start the boiler. During on site assessment, the Audit Team was explained that the forklift machine at collections sites and project site use fossil fuel also. Their consuming amount shall be recorded.
- The net calorific value of the fossil fuel combusted in the plant or on site due to the project activity. The monitoring methods and frequency is in line with the methodology;
- CO<sub>2</sub> emission factor for fossil fuel combusted in the plant or on site due to the project activity. The appropriateness of the data will be reviewed annually.
- Net generated electricity by the project and the on site electricity consumed attributable to the project activity during year  $y$ .
- Quantity of available biomass residues of type  $k$  in the region and quantity of biomass residue type  $k$  that are utilized in the defined geographical region will be monitored



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annually by Surveys or statistics from local agricultural bureau or other official public resource.

The accuracy and calibration frequency for all monitoring meters has been correctly quoted in the PDD.

### 4.6.3 Management system and quality assurance

A CDM team will be set up by the project owner to carry out the monitoring implementation. As discussed above, all the monitoring staff will be trained against with the CDM Monitoring & QC Manual/30/. The monitoring responsibilities lie on the CDM project director and CDM project manager. The data collection follow has been clearly described in the PDD. The diagram indicating the monitoring position and parameters are also inserted in the PDD. The meters accuracy level, monitoring frequency and monitoring erroneous handling procedures are discussed in the PDD. All important indicators for controlling and reporting of project performance are incorporated in the monitoring plan.

### 4.7 Sustainable Development

During on site interview with local officers/iii/ introduced to the Audit Team that the Project will bring positive effects to the local community. First of all, the Project can help to dispose the abundant biomass residues and the project will contribute to alleviate the environment pollution caused by uncontrolled burning of biomass residues. Secondly, the project is located in a development area, where there is no central heat distribution/37/. Heat consumers there have to install the fossil fired boilers of their own. The implementation of the project will displace these boilers and to meet the heat demand in the community. In this way, the project will contribute to form a better business environment there by providing clean heat source to meet the enterprises demand. Thirdly, the project will meet the energy demand and provide clean and renewable energy to the grid. Finally, implementation of the project can bring more job opportunities for the local people to increase their incoming.

### 4.8 Environmental Impacts

An EIA /17/ has been finalized on October 2007 and got approval/18/ by Environmental Protection Bureau of Anhui Province on 16 January 2008. The environment impacts has been described in Section D.1 of the PDD. According to the EIA, no significant environmental impacts are expected. During on site interview with Mr. ZHANG Shigao/iv/, the vice director from Environment Protection Bureau of Tongcheng City, no complaints are received for the construction of the Project. The EIA has been performed in accordance with all relevant local regulations.

### 4.9 Local Stakeholder Consultation

In the EIA/17/ the affected area of the Project is described to be Tongcheng City, including the development area. This is also confirmed by interviewing officer/iv/ from local Environment Protection Bureau. The stakeholder survey is incorporated in the EIA.

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The local stakeholder survey was carried out in September 2007/34/. Officer/iv/ from local Environment Protection Bureau introduced to the Audit Team that before the stakeholder interview started, the local stakeholders were informed by means of published posters and launched news on local government website. These means are described clearly in section 12.1 of the EIA.

Totally 100 questionnaires were distributed and 100% collected. The survey results and statistics analysis are presented in section E.2 of the PDD. The survey demonstrates that the local community are supportive to the project. The implementation of the project could benefit the local in aspects of environment protection and better business environment for the local industry area zone. The local stakeholder consultation process of the project is adequate.

### **4.10 Comments by Parties, Stakeholders and NGOs**

The PDD of Version 01, 27 August 2008 was made publicly available on UNFCCC website (<http://cdm.unfccc.int/Projects/Validation/DB/LPDVCCVPX2EFSJRF2OU40YBERJQ32O/view.html>) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 25 September 2008 to 24 October 2008.

No comments were received.

## **APPENDIX A**

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### **CDM VALIDATION PROTOCOL**

## VALIDATION REPORT

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

Requirement	Reference	Conclusion
<b>About Parties</b>		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	<del>CAR 1</del> OK
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	<del>CAR 1</del> OK
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto	CDM Modalities and Procedures §31b	OK

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Requirement	Reference	Conclusion
Protocol Article 5 and 7.		
<b>About additionality</b>		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	<del>CAR-6</del> <del>CAR-7</del> <del>CAR-8</del> <del>CAR-9</del> <del>CAR-10</del> <del>CL-2</del> <del>CL-3</del> <del>CL-4</del> <del>CL-5</del> OK
<b>About forecast emission reductions and environmental impacts</b>		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
<b>For large-scale projects only</b>		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
<b>About stakeholder involvement</b>		
13. Comments by local stakeholders shall be invited, a summary of these provided and	CDM Modalities and Procedures §37b	OK

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Requirement	Reference	Conclusion
how due account was taken of any comments received.		
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	OK
<b>Other</b>		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	<del>CAR-6</del> <del>CAR-7</del> <del>CAR-8</del> <del>CAR-9</del> <del>CL-2</del> <del>CL-3</del> <del>CL-4</del> <del>CL-5</del> OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

## VALIDATION REPORT

**Table 2 Requirements Checklist**

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
* MoV = Means of Verification, DR= Document Review, I= Interview						
A. General Description of Project Activity						
The project design is assessed.						
A.1. Project Boundaries						
Project Boundaries are the limits and borders defining the GHG emission reduction project.						
A.1.1. Are the project’s spatial boundaries (geographical) clearly defined?		/1/	DR I	<p>The project is located in Southwest of Tongcheng Economic Development Area, Anhui Province.</p> <p>The Audit Team searched the project location according to the geographic coordinate presented in the PDD and it turned out not matching the location indicated in the map inserted in section A.4.1.4 of the PDD. Hence please further substantiate the exact location of the Project in the PDD and provide relevant evidence.</p>	CL4	OK (Refer to Table 3)
A.1.2. Are the project’s system boundaries (components and facilities used to mitigate GHGs) clearly defined?		/1/	DR I	<p>Yes.</p> <p>The power plant, the means for transportation of biomass residue, East China Power Grid (ECPG) and the site where biomass residue would have been left for decay or dumped is</p>		OK

## VALIDATION REPORT

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			defined as project system boundary.		
<b>A.2. Participation Requirements</b> <i>Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.</i>					
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	Tongcheng Kaidi Green energy Development Co., Ltd. is the project participant from the Host Party (P.R. China). Camco International Limited is the project participant from the Annex I Party (Netherlands).		OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/3/ /4/ /5/	DR	No. The letters of approval from the DNAs of China and Netherlands have not been provided.	CAR-1	OK (Refer to Table 3)
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation		DR	Yes. China ratified the Kyoto Protocol on 30 August 2002. Netherlands ,the Annex I party, ratified the		OK



## VALIDATION REPORT

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
- Designated a National Authority			Kyoto Protocol on 31 May 2002 Both of them are voluntary participation. DNA of China is National Development and Reform Commission. Netherlands DNA is Ministry of Housing, Spatial Planning and the Environment.		
A.2.4. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	/1/	DR I	The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards China.		OK
<b>A.3. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.</i>					
A.3.1. Does the project design engineering reflect current good practices?	/1/ /26/ /27/	DR	The project design engineering reflects current good practice. The FSR of the Project was finalized by Wuhan Kaidi Electric Power Engineering Co., Ltd., which was ranked a Class A engineering company in P.R. China. The FSR was approved by DRC of Anhui Province on 22 April 2008.		OK (Refer to Table 3)

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				Based on the FSR, both the boilers and the turbines are 'sub-high pressure type' instead of 'high-pressure type'. Please make corrections in the PDD.	<del>CAR-2</del>	
A.3.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /15/	DR I		<p>The Project use advanced domestic technology. The biomass is directly combusted in a CFB boiler to generate steam, which will be used to drive steam turbine for electricity generating and heat providing.</p> <p>As per "Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)" version 7, please add description of scenario prior to the start of implementation of the Project in Section A.2 of the PDD.</p>	<del>CAR-3</del>	OK (Refer to Table 3)
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/ /30/	DR I		Please specify the provisions made for meeting project operator's training and project's maintenance needs in the PDD and provide all the relevant documents.	<del>CAR-4</del>	OK (Refer to Table 3)

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>A.4. Contribution to Sustainable Development</b> <i>The project's contribution to sustainable development is assessed.</i>						
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?		/1/ /3/	DR	Not yet. The LoA from the DNA of China has not been provided.	<del>CAR-1</del>	OK (Refer to Table 3)
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?		/1/	DR I	Yes. The Project will create the following other environmental and social benefits :  <ul style="list-style-type: none"> <li>- The Project helps to promote the comprehensive utilization of resources and mitigating emissions caused by decay or uncontrolled fire of the biomass residues;</li> <li>- By purchasing the biomass from local farmers to increase the local residents incoming;</li> <li>- Providing tens of permanent job opportunities;</li> <li>- Decreasing the GHG emission from the fossil-fuel fired power plants as well as</li> </ul>		OK

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				the emission of SO <sub>x</sub> , NO <sub>x</sub> and dust.		
<b>B. Project Baseline</b> <i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>						
<b>B.1. Baseline Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>						
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/ /6/	DR		The Project applies ACM0002-“Consolidated methodology electricity generation from biomass residues”.  Please apply the latest tool relied in the Methodology ACM0006 (version 06.2) in the PDD.	CAR-5	OK (Refer to Table 3)
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/ /6/	DR I		Yes. The applicability criteria in the baseline methodology are fulfilled as: - Only biomass from local agricultural residues will be used by the Project. Only a small amount of diesel will be used to help start-up of the boilers. - All biomass residues won't be stored		OK

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			<p>more than one year. The rice husks are directly bought from the rice mills and transported to the plant and the straws are directly bought from the farmers at the temporary storage stations.</p> <ul style="list-style-type: none"> <li>- There will be a small amount of energy consumption during the preparation of the biomass residues. Except for that, the proposed project will not have significant consumption of fossil fuels.</li> </ul>		
<b>B.2. Baseline Scenario Determination</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>					
B.2.1. What is the baseline scenario?	/1/	DR	The baseline is determined as the combination of P4, H6 and B1 or B3, i.e., exporting electricity from the grid; generating heat from fossil fuel fired boilers; and dumping biomass residues to naturally decay or burnt in an uncontrolled manner.		OK
B.2.2. What other alternative scenarios have been	/1/	DR	For power generation, nine alternatives are		OK

## VALIDATION REPORT

<b>CHECKLIST QUESTION</b>		<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
* MoV = Means of Verification, DR= Document Review, I= Interview						
considered and why is the selected scenario the most likely one?		/31/ /38/ /39/		<p>identified totally. P1 and P4 remain.</p> <p>For heat generation, eight alternatives are identified totally.</p> <p>It is to be demonstrated and evidenced further how to eliminate Alternative H2, H4 and H7.</p> <p>Lifetime of current boilers should be discussed and evidenced during the baseline determination.</p> <p>For the use of biomass residues, where the project activity uses different types of biomass residues, the baseline scenario should be identified for each type of biomass residue separately.</p> <p>It is to be demonstrated and evidenced further how to eliminate Alternative B7 for all types of biomass residues used here.</p> <p>It is to be clarified how the rice husk is dealt with, as per the EIA of these rice plants.</p>	<del>CL-2</del>  CAR-6   CAR-7   <del>CL-3</del>  <del>CL-4</del>	(Refer to Table 3)
B.2.3. Has the baseline scenario been determined according to the methodology?		/1/ /6/	DR	“Combined tool to identify the baseline scenario and demonstrate additionality” is		OK (Refer

## VALIDATION REPORT

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
			<p>used here according to the Methodology.</p> <p>Step 1. Identification of alternative scenarios See B.2.2 above.</p> <p>Step 2. Barrier analysis No specific barriers are identified.</p> <p>Step 3. Investment analysis During the IRR calculation, it is to be clarified and evidenced further how to determine the tariff, the price of biomass residues and the annual operational hours.</p> <p>For the sensitivity analysis, “Biomass Purchase Price” is to be put into the analysis.</p> <p>Step 4. Common practice analysis Please define the relevant geographical area, as per the requirement of “Combined tool to identify the baseline scenario and demonstrate additionality”.</p>	<p><del>CL-5</del></p> <p><del>CAR-8</del></p> <p><del>CAR-9</del></p>	<p>to Table 3)</p>

## VALIDATION REPORT

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Ditto		OK
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	Ditto		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/	DR	Ditto		OK
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	Ditto		OK
<b>B.3. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /6/	DR	The additionality of the project is demonstrated by applying the “Combined tool to identify the baseline scenario and demonstrate additionality”.		OK
B.3.2. Are all assumptions stated in a transparent and	/1/	DR	See B.2		OK



## VALIDATION REPORT

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conservative manner?	/6/				
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /6/	DR	See B.2		OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/ /15/ /26/ /44/ /45/ /47/	DR	<p>The CDM incentive has already been considered in the FSR.</p> <p>As per “Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)” version 7, please provide two timelines in Section B.5 of the PDD, with one indicating the Project implementation and the other indicating the efforts tried for applying the Project as a CDM activity.</p>	CAR 40	OK (Refer to Table 3)
<b>B.4. Calculation of GHG Emission Reductions – Project emissions</b>  <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					

## VALIDATION REPORT

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /6/	DR	Project emissions include three parts: 1. CO2 emissions from transportation of biomass residues to the Project site (PET <sub>y</sub> ), 2. CO2 emissions from on-site consumption of fossil fuels due to the Project (PEFF <sub>y</sub> ), 3. CO2 emissions from consumption of electricity (PEE <sub>C,y</sub> ) 4. Methane emission from Biomass residues combustion.		OK
B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/ /6/	DR	The transport distance is to be clarified further during the calculation about transportation emission.	<del>CL-6</del>	OK (Refer to Table 3)
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/ /6/	DR	Ditto	<del>CL-6</del>	OK (Refer to Table 3)
<b>B.5. Calculation of GHG Emission Reductions – Baseline emissions</b> <i>It is assessed whether the baseline emissions are stated</i>					

\* MoV = Means of Verification, DR= Document Review, I= Interview  
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## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview		Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
<b>Leakage</b> <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>						
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?		/1/ /6/ /23/	DR	<p>The practical and economical available biomass residues amount shall be further clarified and evidenced.</p> <p>The relationship between the fuel-supplied company and the client company is to be clarified further.</p>	<del>CL-7</del>  <del>CL-8</del>	OK (Refer to Table 3)
B.6.2. Have conservative assumptions been used when calculating the leakage emissions?		/1/ /6/ /23/	DR	Ditto	<del>CL-9</del>  <del>CL-10</del>	OK (Refer to Table 3)
B.6.3. Are uncertainties in the leakage emission estimates properly addressed?		/1/ /6/ /23/	DR	Ditto	<del>CL-11</del>	OK (Refer to Table 3)

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
				CL-12	
<b>B.7. Emission Reductions</b> <i>The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.</i>					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/ /6/ /23/	DR	The emission reductions are measurable, and give long-term benefits. The project is estimated to reduce on an average of CO <sub>2</sub> emissions of 106,573 tCO <sub>2</sub> e /year during the crediting period.		OK
<b>B.8. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/ /6/	DR	The project applies the methodology ACM0006.  The monitoring frequency for all monitored data is to be added in section B.7.1 of the PDD, as per the guidance of monitoring methodology ACM0006 (Version 06.2).	<del>CAR</del> 13	OK (Refer to Table 3)
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs,	/1/ /6/	DR	It is to be clarified that all monitored data required for verification and issuance will be	<del>CL</del> 13	OK (Refer

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
for this project activity, whichever occurs later?			kept for two years after the end of the crediting period or the last issuance of CERs, which ever occurs later.		to Table 3)
<b>B.9. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ /6/	DR	Yes		OK
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/1/ /6/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.9.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/1/ /6/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.9.4. Is the measurement equipment described and deemed appropriate?	/1/ /6/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/ /6/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.9.6. Is the measurement <i>interval</i> identified and deemed appropriate?	/1/ /6/	DR	The monitoring frequency for all monitored data is to be added in section B.7.1 of the PDD, as per the guidance of monitoring methodology ACM0006 (Version 06.2).	<del>CAR</del> 13	OK (Refer to Table 3)
B.9.7. Is the <i>registration, monitoring, measurement and reporting</i> procedure defined?	/1/ /6/	DR	Yes		OK
B.9.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/ /6/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/ /6/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
<b>B.10. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.</i>					



## VALIDATION REPORT

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B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes		OK
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	The description of how to monitor data 'Q <sub>y</sub> ' in section B.7.1 and B.7.2 contradicts to each other. Please clarify how it will be monitored.	<del>CL</del> 14	OK (Refer to Table 3)
B.10.4. Is the measurement <i>equipment</i> described and deemed appropriate?	/1/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.10.5. Is the measurement <i>accuracy</i> addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.10.6. Is the measurement <i>interval</i> for baseline data identified and deemed appropriate?	/1/	DR	The monitoring frequency for all monitored data is to be added in section B.7.1 of the PDD, as per the guidance of monitoring methodology ACM0006 (Version 06.2).	<del>CAR</del> 13	OK (Refer to Table

## VALIDATION REPORT

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					3)
B.10.7. Is the registration, <i>monitoring, measurement and reporting</i> procedure defined?	/1/	DR	Yes.		OK
B.10.8. Are procedures identified for <i>maintenance</i> of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Yes. In compliance with the monitoring methodology ACM0006.		OK
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Yes		OK
<b>B.11. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	The leakage is claimed zero by the project proponent. However, this shall be further clarified.	CL7	OK (Refer to Table 3)
B.11.2. Are the choices of project leakage indicators reasonable and conservative?	/1/	DR	Ditto	CL7	OK (Refer to

## VALIDATION REPORT

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					Table 3)
B.11.3. Is the measurement method clearly stated for each leakage value to be monitored and deemed appropriate?	/1/	DR	Ditto	CL-7	OK (Refer to Table 3)
<b>B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts</b> <i>It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.</i>					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/17/ /18/	DR I	Monitoring of sustainable development indicators is not required by the Chinese DNA. The environmental impacts are identified in the EIA that was approved		OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	Chinese DNA, NDRC, does not require collection and archiving of data related to environmental, social and economic impacts. The environmental impacts will be monitored by local environmental authority.		OK
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/	DR	Ditto		OK

## VALIDATION REPORT

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<b>B.13. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1/	DR	The authority and responsibility of overall project management described in section B.7.2 of the PDD does not match the monitoring structure illustrated in the PDD. Please re-describe the monitoring management system on the base of the monitoring structure so that the functions and responsibility for each function of the monitoring structure can be transparently addressed.	<del>CAR</del> 14	OK (Refer to Table 3)
B.13.2. Are procedures identified for training of monitoring personnel?	/1/	DR	Please identify the procedures for training of monitoring personnel in Section B.7.2 of the PDD.	<del>CAR</del> 4	OK (Refer to Table 3)
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No such information in the PDD	<del>CL</del> 15	OK (Refer to Table

## VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
					3)
B.13.4. Are procedures identified for review of reported results/data?	/1/	DR	Yes.		OK
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	Yes		OK
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1/ /43/	DR	The project starting date is defined as 25 January 2008, the date when key equipment purchase contract was signed, the operational lifetime of the project is stated as 20 years, which is to be evidenced.	CL 16	OK (Refer to Table 3)
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1/	DR	The start of crediting period is chosen by the project proponent and reasonable.		OK
<b>D. Environmental Impacts</b> <i>Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					

## VALIDATION REPORT

<b>CHECKLIST QUESTION</b> * MoV = Means of Verification, DR= Document Review, I= Interview	<b>Ref.</b>	<b>MoV*</b>	<b>COMMENTS</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	Yes. The impacts are properly described.		OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /17/ /18/	DR	The EIA has been approved by Local EPB		OK
D.1.3. Will the project create any adverse environmental effects?	/1/ /17/ /18/	DR	There is no significant adverse environmental effect.		OK
D.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /17/ /18/	DR	There are no transboundary environmental impacts foreseen for the project.		OK
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/ /17/ /18/	DR	Yes. The impacts are properly described in PDD.		OK
D.1.6. Does the project comply with environmental legislation in the host country?	/1/ /17/ /18/	DR I	Yes		OK
<b>E. Stakeholder Comments</b> <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been</i>					

## VALIDATION REPORT

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<i>taken of any comments received.</i>					
E.1.1. Have relevant stakeholders been consulted?	/1/ /17/ /35/	DR I	Yes. The summary of comments received is included in the PDD.		OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /17/ /35/	DR	It is to be clarified.	<del>CL</del> 17	OK (Refer to Table 3)
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/ /17/ /35/	DR	Yes		OK
E.1.4. Is a summary of the stakeholder comments received provided?	/1/ /17/ /35/	DR	Yes. The summary of the stakeholder comments received is described in the PDD.		OK
E.1.5. Has due account been taken of any stakeholder comments received?	/1/ /17/ /35/	DR	Yes.		OK



## VALIDATION REPORT

**Table 3 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR 1 The letters of approval from the DNAs of China and Netherlands have not been provided.	A.2.2 A.4.1	PPs are becoming three (Camco Carbon Limited is added). Besides, Camco Carbon Limited and Camco International Limited have applied for Letters of approval from UK instead of Netherlands; please refer to PDD Section A3 for the revision. The letters of approval from DNAs of China and UK have been provided to the auditor.	All the relevant LoA(s) have been received and verified by the Audit Team. The LoA (s) received are authentic.  The CAR is therefore resolved and closed.
CAR 2 Based on the FSR, both the boilers and the turbines are 'sub-high pressure type' instead of 'high-pressure type'. Please make corrections in the PDD.	A.3.1	The relevant content is corrected.	OK The CAR is therefore resolved and closed.
CAR 3 As per "Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)" version 7, please add description of scenario prior to the start of implementation of the Project in Section A.2	A.3.2	The scenario existing prior to the start of implementation of the project activity is the generation of power in the grid, generation of heat in coal-fired boilers and the biomass residues are dumped or left to decay under mainly aerobic conditions. The latter applies to, for	The scenario existing prior to the implementation of the project has been discussed with regard of power generation, heat generation and biomass disposal.  The CAR is therefore resolved and

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
of the PDD.		example, dumping and decay of biomass residues on fields or burnt in an uncontrolled manner without utilizing it for energy purposes. Please refer to Section A 2 and A 4.3 in the PDD.	closed.
CAR 4 Please specify the provisions made for meeting project operator's training and project's maintenance needs in the PDD and provide all the relevant documents.	A.3.3 B.13.2	The training plan of the project associated with CDM is added in the PDD Section B7.2. For detailed training plan associated with CDM, please refer to the CDM monitoring and quality control manual, draft version, issued in September 2008 by the project owner (electronic version, the original hardcopy has been shown to the auditor during site visit).  For the detailed training plan associated with the operation of the power plant, please refer to the "Tongcheng Biomass Power plant Training Plan" issued in October 2008 by the project owner.  There is some training about the power	All the training records regarding the operation staffs of the project have been provided by the project proponent. It is clear that the operation staffs have been received both the theoretical training and practical training. Regarding the monitoring staffs' training, the project proponent provides the CDM monitoring and quality control manual which meet the monitoring requirements in the monitoring methodology.  The CAR is therefore resolved and closed.

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		plant operation and CDM have already been made, please see the attached training records for the power plant operation and CDM.	
CAR 5 Please apply the latest tool relied in the Methodology ACM0006 (version 06.2) in the PDD.	B.1.1	<p>The latest tool relied in the Methodology ACM0006 (Version06.2) is used in the PDD. Please refer to Section B.1</p> <p>As the methodology applied to the project upgrades from version 06.2 to version 09, the latest tool still applied to the methodology.</p>	<p>The methodology applied to the Project upgrades from version 06.2 to version 09, the latest tool relied in the ACM0006 version 09 is correctly applied in the PDD.</p> <p>The CAR is therefore resolved and closed.</p>
CAR 6 For baseline determination about the heat generation, lifetime of current boilers should be discussed and evidenced during the baseline determination.	B.2.2	The current boilers' lifetime are discussed in Section A 4.3 and B.6.1, which is confirmed by Tongcheng City Business Development District Administration Bureau and by the Senior Engineer Zhu Yuqing from Central Southern China Electric Power Design Institute of China Power Engineering Consulting Group. Please refer to Section A 4.3 and B.6.1 in the	The project proponent refers the statement of Ms.ZHU Yuqin, the senior engineer from Central Southern China Electric Power Design Institute of China Power Engineering Consulting, that for industry boilers applied the designed life span is 30 years. And if the quality of the boiler passes the local Quality Management Bureau's yearly quality checking, those industry boilers

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		PDD.	<p>could be used more than 25 years. Besides that, the project proponent demonstrates that based on section 2.2, Manual of Boiler Strength Calculation, the pressure bearing components designed life span is 30 years.</p> <p>Furthermore, the current boiler' owners, capacity, model, fuel utilized and Predicted date of replacement are all described in the Section A 4.3 which refers to the statement of Tongcheng City Business Development District Administration Bureau. The current boilers are all coal-fired boilers which will be replaced when the proposed project begins to provide heat to them and their remaining lifetimes are all covering the first crediting period.</p> <p>The CAR is therefore resolved and closed.</p>
CAR 7 For the use of biomass residues, where the	B.2.2	Each type of the biomass is discussed in the baseline scenario determination,	OK The CAR is therefore resolved and

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
project activity uses different types of biomass residues, the baseline scenario should be identified for each type of biomass residue separately.		please refer to PDD Section B.4	closed.
CAR 8 For the sensitivity analysis, please put the 'Biomass Purchase Price' into the analysis.	B.2.3	It is added; please refer to PDD Section B.4 and the IRR calculation spreadsheet attached.	OK The CAR is therefore resolved and closed.
CAR 9 For common practice analysis Please define the relevant geographical area, as per the requirement of "Combined tool to identify the baseline scenario and demonstrate additionalty".	B.2.3	<p>ECPG is selected as the relevant geographical boundary of the project activity, which covers Shanghai City, Jiangsu Province, Zhejiang Province, Anhui Province and Fujian Province and includes more than 10 biomass residues power plants that are implemented or underway.</p> <p>In China, the investment environment for each region is different. Specifically in terms of available resources, labor costs and electricity tariffs, these can vary significantly in different parts of China, even different province of China.</p>	OK. The CAR is therefore resolved and closed.

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>Therefore, it is not appropriate to consider activities in the whole of China and ECPG is selected as the appropriate geographical scope for the common practice analysis.</p> <p>The biomass combustion power generation Industrial in China is quite new. Until 2006, no grid-connected biomass combustion power generation or cogeneration project with similar installed capacity (15-100MW) as the proposed project has been developed in China and the first similar biomass combustion generation power plant in China is the Shandong Shanxian Biomass Power Plant Project which was registered as CDM projects in year 2007.</p> <p>The similar projects operational and underway (grid-connected biomass power projects (15-100MW)) in are all applying for</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		CDM in ECPG, therefore, the proposed project is not common practice and it is additional. Please refer to PDD page38-42.	
<b>CAR 10</b> As per “Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)” version 7, please provide two timelines in Section B.5 of the PDD, with one indicating the Project implementation and the other indicating the efforts tried for applying the Project as a CDM activity.	B.3.4	Two timelines with one indicating the project implementation and the other indicating the efforts tried for applying the Project as a CDM activity are added in Section B.5	The correction is to the Audit Team’s satisfaction and the timelines shows clearly that CDM was a serious consideration in the decision to proceed with the project.  The CAR is therefore resolved and closed.
<b>CAR 11</b> Data of five most recent years data regarding accounted percentage of low-cost/ must run resources in ECPG is discussed in the PDD but does not match that indicated in the Annex 3 of the PDD. Please make corrections.	B.5.1	The data are checked and corrected and it is now accurate and consistent with each other.	OK The CAR is therefore resolved and closed.
<b>CAR 12</b>	B.5.1	The BEbiomass,y is calculated strictly	OK



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
For BE <sub>biomass,y</sub> calculation, please demonstrate in the PDD which steps are taken and how they are justified strictly follow the requirements stipulated in the latest version of methodology ACM0006.		following the requirements in ACM0006 in two steps , please refer to Section B.6.1 in the PDD.	The CAR is therefore resolved and closed.
CAR 13 The monitoring frequency for all monitored data is to be added in section B.7.1 of the PDD, as per the guidance of monitoring methodology ACM0006 (Version 06.2).	B.8.1 B.9.6 B.10.6	The monitoring frequency for all monitored data is added in section B.7.1 in the PDD.	<p>The Audit Team has reviewed the monitoring frequency for all the monitored data in B.7.1 and the correction is to the Audit Team's satisfaction.</p> <p>The correction is suitable to the upgraded methodology ACM0006 version 09 as well.</p> <p>The CAR is therefore resolved and closed.</p>
CAR 14 The authority and responsibility of overall project management described in section B.7.2 of the PDD does not match the monitoring structure illustrated in the PDD. Please re-describe the monitoring	B.13.1	The authority and responsibility of CDM monitoring management is reorganized and rewritten in the Section B7.2	The Audit Team has reviewed the corrected authority and responsibility of CDM monitoring management and confirmed that the functions and responsibility for each function of the monitoring structure is transparently

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
management system on the base of the monitoring structure so that the functions and responsibility for each function of the monitoring structure can be transparently addressed.			addressed.  The CAR is therefore resolved and closed.
CAR 15 The interest payable is to be considered as cost in the calculation of income tax, to be in accordance with EB51/Annex 58/paragraph 11.		The IRR calculation sheet and relevant part in investment analysis in PDD has been revised and updated.	The CAR is therefore resolved and closed.
CAR 16 Error in the calculation of levelized cost of 6t/h coal fired boiler for heat supply in spreadsheet is to be corrected.		The error of calculation of levelized cost of 6t/h coal fired boiler for heat supply has been corrected in the spreadsheet. The error relates to the total O&M cost, which in the PDD omitted the Ash and sediments treatment fees. The O&M cost in the PDD was 350,625 RMB and this has not been corrected to 422,625 RMB. Therefore the levelized cost was changed from 31 RMB / GJ to 31.5 RMB/GJ.	The data source of the levelized cost has not been changed and deems reliable and credible. The calculation error has been rectified in the calculation spreadsheet, and considered by the Audit Team correct.  The CAR is therefore resolved and closed.

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 1</p> <p>The Audit Team searched the project location according to the geographic coordinate presented in the PDD and it turned out not matching the location indicated in the map inserted in section A.4.1.4 of the PDD. Hence please further substantiate the exact location of the Project in the PDD and provide relevant evidence.</p>	A.1.1	<p>The geographical coordinates of the plant is 116°57'12" east longitude 31°02'44" north latitude, which is from the EIA approval of the project.</p>	<p>OK</p> <p>The CL is resolved and closed.</p>
<p>CL 2</p> <p>For baseline determination about the heat generation, it is to be demonstrated and evidenced further how to eliminate Alternative H2, H4 and H7.</p>	B.2.2	<p>H2 is excluded, since at present the technology of biomass cogeneration in China is just started and it is not common practice in China no matter lower efficiency or higher efficiency, therefore this alternative is excluded.</p> <p>H4 is excluded since there is no heat boiler using biomass residues in the local area, while using small coal-fired boiler is common practice to meet the process heat demand for the plants in the industry park. Besides, it is not feasible for the individual enterprise to</p>	<p>OK</p> <p>The CL is resolved and closed.</p>

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>be equipped with expertise on the biomass collection or biomass-boiler operation.</p> <p>H7 is excluded since during the validation site visit on November 12<sup>th</sup>, 2008, Tongcheng City officials attended and confirmed that there is no district heat supply in the local area, heat sources from external sources such as district heating do not exist and there are no future plans for district heating in Tongcheng City.</p> <p>Please refer to Section B.4 in the PDD.</p>	
<p>CL 3</p> <p>For baseline determination about the use of biomass residues, it is to be demonstrated and evidenced further how to eliminate Alternative B7 for all types of biomass residues used here.</p>	B.2.2	<p>Please see the PDD Section B.4 about the baseline analysis and the letter from Tongcheng City Investment Promotion Bureau about the clarification on no biomass power plant except the proposed project or biomass energy project in Tongcheng City or under plan, besides, due to the high cost in the biofuels projects, the biofuel industry in</p>	<p>The official letter from Tongcheng City Investment Promotion Bureau was provided by the project proponent and assessed by the Audit Team. It is confirmed by the local government that except the Project, there is no others projects are planned to apply the local biomass resource.</p>

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		China just started development and the biomass used for the biofuels are crops or non-crops plants mainly including the broomcorn, cassavas, sweet potato, Coptis chinensis, hairy chestnut, tung tree, palm oil or waste cooking oil and/or waste fat from biogenic origin, not including the biomass types what will be used in the project.	The CL is therefore resolved and closed.
CL 4 It is to be clarified how the rice husk is dealt with, as per the EIA of these rice plants.	B.2.2	Rice husk is suggested not to be burned uncontrollably, but to be utilized some how by the EPC of Tongcheng City. However, most of the rice husk is uncontrolled burned or dumped to decay, which is common practice in the local area. The proposed project will realize the utilization of the rice husk and reduce the air pollution caused by uncontrolled burning of rice husk, which is agreed and supported by EPC of Tongcheng City. Please refer to the letter from EPC of Tongcheng City on clarification about the rice husk uncontrolled burning phenomenon.	The local environment protection bureau explained that the common practice in Tongcheng City regarding disposal of rice husk is uncontrolled burning. During on site assessment, the Audit Team has interviewed several rice manufacturing plants' management and confirmed that the rice husk was dealt with uncontrolled burning or dumping.  The CL is therefore resolved and closed.

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
<p>CL 5</p> <p>During the IRR calculation, it is to be clarified and evidenced further how to determine the tariff, the price of biomass residues and the annual operational hours.</p>	B.2.3	<p>The project owner made the investment decision based on the FSR and all the input values used in the investment analysis were taken from the FSR for the project carried out by the FSR Institute, which is certified to compile design reports for power projects with the highest grade A issued by Ministry of Construction P.R.China. In accordance to Chinese procedures, assumptions and data sources for the economic evaluation are based on relevant national standards and criteria. Furthermore, all the data in the FSR was assessed by designated independent experts and finally approved by the DRC of Anhui Province. Therefore, the values are considered to be reliable and suitable.</p> <p>The references from the FSR writing institute on explaining how the tariff, the price of biomass residues and the</p>	<p>The Audit Team confirms that the key inputs of the IRR are referred from the FSR, which is the foundation for the project implementation. The electricity's tariff is according the <i>'Renewable Energy Electricity Tariff and Cost Management Trial Regulations (fagaijiage [2006] 7)'</i>.</p> <p>The biomass cost is based on the purchasing price plus the biomass operation cost such as transportation, uploading and unloading, etc.</p> <p>The operational hour is estimated taking considerations of the reliability of the CFB boiler, the fuel quality and risk, the maintenance period when the equipment has to be stopped , the existing similar projects' operational conditions,etc.</p> <p>The biomass energy technology is in an early stage in China and the annual</p>

\* [http://www.gov.cn/gzdt/2006-07/01/content\\_325201.htm](http://www.gov.cn/gzdt/2006-07/01/content_325201.htm)

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>annual operational hours are determined in the FSR are attached and they are&lt;Introduction on the biomass cost used in the FSR&gt;,&lt;Introduction on the tariff used in the FSR&gt;,&lt;Introduction on the operational hour 's calculation and assumption for Kaidi Biomass Power projects&gt;.</p> <p><b><u>For Tariff:</u></b> According to Renewable Energy Electricity Tariff and Cost Management Trial Regulations (fagaijiage [2006] 7 issued by NDRC of China in 2006, for biomass power plant, the tariff within the first 15 years since commissioning is calculated by 0.25RMB/KWh plus the benchmark for the on-grid tariff of coal-fired power plants with de-sulphurisation units installed. After 15 years' operation, the tariff would be cancelled. The benchmark on-</p>	<p>operation hour estimation is reasonable which can be evidenced by registered CDM biomass project.</p> <p>The CL is therefore resolved and closed.</p>

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>grid tariff (with de-sulphur subsidy) for Anhui Province is 0.371RMB/KWh including VAT*, which is used after 15 years' operation. 0.621RMB/KWh( 0.621=0.371+0.250) including VAT is used within the 15 years' operation.</p> <p><b><u>For Biomass Price:</u></b> The biomass Cost is estimated based on investigation on the local labour cost, transportation cost and pre-treatment cost, for detailed information, please refer to the attached &lt;Introduction on the biomass cost used in the FSR&gt;.</p> <p>It can also be found that for the 11 registered CDM projects available on the UNFCCC website at the time of writing (31/12/2008) that the average static biomass cost in China is 238RMB/t which is very similar to the biomass cost of the proposed project</p>	



## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>(240RMB/t).</p> <p>Additionally, it can be seen that the biomass cost in the ECPG area where the project located was 300-350 RMB/ton in 2006.</p> <p>Therefore, the biomass cost in the FSR should be considered to be appropriate and conservative.</p> <p><b><u>Operational Hours–</u></b>  The investment analysis assumes 6000 hours as the equivalent operational hours at full load. It does not assume that the plant will only operate for 6000 hours, but rather that the project will not run at full capacity for 100% of the time.  The project owner is facing risk on the Reliability of the CFB boiler:  The CFB boiler is designed by the project owner and manufactured by domestic manufacturer. All the facilities</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>in fuel feeding system are also domestic equipments. Although Wuhan Kaidi Power Engineer Co. Ltd has done a lot of research on the CFB biomass fired boiler, this new technology still needs to be tested and debugged during a long-term operation, and there's still relatively great potential technology risks, like inadequate steam output, dust depositing, unbalanced fluidization, serious corrosion of heating surfaces etc.</p> <p>The project owner is facing risk on the fuel quality: The straws contain considerable elements of K, Na, and Cl, resulting in a high risk of dust depositing, blockages and erosion. Moreover, the content of SiO<sub>2</sub> in rice husk ash is higher than 85%, which will cause serious wear and tear of heating surface. Although some mitigation measures are taken, potential risks still exist. Besides, biomass</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>residues are seasonal fuels, not only the amount but also some characteristics (such as water content) always fluctuate seasonally. Additionally, the residues may rot during storage and the calorific value will decrease. Any changes in the quantity and quality of biomass could lower the generator operating hour, or even stop production.</p> <p>The project owner is lacking of operational experience: The technology is relatively new to the project owner. Having no experience in operation and maintenance and thus no skilled workers will affect the efficiency and smooth operation of the plant. Also, because the feeding system of biomass power plants is much more complicated than that of normal coal-fired power plants, there are a number of resulting technology difficulties. Until now, nearly all relevant equipment in the operating biomass power plants in</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>China are imported. However, all the devices of feeding system employed in this project are domestically manufactured. Considering that there's no mature Industrial and market of supporting devices and service, a higher frequency of incidents that require maintenance as well as longer maintenance periods would be expected.</p> <p>In addition to the explanations above, the project owner has made a comparison of similar biomass projects in operation. Zhongjieneng Suqian Biomass project is considered as a comparable project since it is a publicly available grid connected biomass residues project using CFB boilers and it is located in the southern area of China. The monitoring reports of this project covering almost 1.5 years shows that its operational hours are considerably less than</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>6000 hours.</p> <p>Also by way of comparison, looking at the 11 registered CDM projects in China available on the UNFCCC website at the time of writing (31/12/2008), it can be seen that the operational hours at full load used by these projects is between 5500h and 6500h and therefore 6000 can be considered to be reasonable.</p> <p>Therefore, the operational hour at full load in FSR is reasonable. Please refer to Section B.4 for detailed information.</p> <p>Therefore, the operational hour at full load in FSR is reasonable. Please refer to Section B.4 for detailed information.</p> <p><b><u>Biomass Cost</u></b>–</p> <p>The biomass cost is estimated based on investigation on the local labour cost, collection cost, transportation cost and</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>pre-treatment cost by the FSR writing institute and the project owner with the support from the local authorities.</p> <p>It is reported that the typical biomass cost in the ECPG area where the project located was 300-350 RMB/ton in 2006, whereas, the project assumes 240 RMB/ton.</p> <p>Additionally, it can be found that for the 11 registered CDM projects available on the UNFCCC website at the time of writing (31/12/2008) that the average static biomass cost in China is 238RMB/t( please see Table B-6 in the PDD) which is very similar to the biomass cost of the proposed project (240RMB/t).</p> <p>Besides, the experience from the other early biomass projects in China shows that when the farmers realize the biomass residues could be a product,</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>they would start to bargain fiercely and even when there is a surplus in supply it has been shown that the price will increase dramatically.</p> <p>For example, the first biomass co-firing project in China, Shiliquan Biomass co-firing power plant, which was put into commission on December 2005 in Shandong Province, a biomass cost of 100RMB per tonne was assumed in the FSR. After commissioning, the price rose to 400RMB. The same situation happens for the registered project - "<a href="http://cdm.unfccc.int/Projects/DB/TUE V-SUED1166630587.15/view">http://cdm.unfccc.int/Projects/DB/TUE V-SUED1166630587.15/view</a>"</p> <p>Zhongjieneng Suqian Biomass Power Plant Project, which is located in Jiangsu Province. For this project, the average purchasing price in early 2008 is more than 300RMB/ton, nearly twice as the price in the survey done in year 2006.</p>	

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		Therefore, the biomass cost in the FSR is reasonable. Please refer to Section B.4.	
CL 6 The transport distance is to be clarified further during the calculation about transportation emission.	B.4.2 B.4.3	The farthest collection sites will not be farther than 60km away from the project site. Therefore, 120km is used as the average double round transportation distance which is conservative. The real average transportation distance will be monitored ex-post since the project owner begins to collect biomass residues. Please refer to PDD Section B.6.3 and the Emission Reduction calculation spreadsheet	The biomass collection sites are still under planning. At this phase, the longest transportation distance is applied in the PDD, which is conservative. It is also described in the PDD, after the construction of biomass collection sites are completed, the actual transportation distance will be monitored and applied.  The CL is therefore resolved and closed.
CL 7 The practical and economical available biomass residues amount shall be further clarified and evidenced.	B.6	The biomass residue availability report was done by the FSR writing institute with support from the local authorities. The plantation area and crop yield data are provided by Tongcheng City Agriculture Bureau, which has been provided to auditor.	Besides the biomass availability report the project proponent provides the biomass amount information from Tongcheng City Agriculture Bureau and the copies of Letter of Intent for the rice husk selling. The practical and economical available biomass residues



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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>The Rice Husk amount is from the rice millers who have signed Letter of Intent for selling rice husk unused to the project. The loss rates for straws and rice husk are experienced data commonly used. The consumption amount other than the project are done by surveys on the local farmers and rice millers and confirmed by the Agriculture Bureau of Tongcheng City.</p> <p>Please refer to PDD Section B.6.1 and the Emission Reduction calculation spreadsheet.</p>	<p>amount is approached and evidenced from a reliable official source.</p> <p>The CL is therefore resolved and closed.</p>
<p>CL 8</p> <p>The relationship between the fuel-supplied company and the client company is to be clarified further.</p>	B.6	<p>The client company is Tongcheng Kaidi Green energy Development Co., Ltd( In the following, the client company) which is the project owner; The fuel supply company is Tongcheng Kaidi Biomass Residues Collection Co., Ltd (In the following, the fuel supply company) which is 100% invested by the client company. The decision on</p>	<p>OK</p> <p>The CL is therefore resolved and closed.</p>

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		building and investing on the fuel supply company was made on the first shareholder meeting of the client company. The shareholder meeting minutes of the client company and the business liscence of the fuel supply company are attached.	
CL 13 It is to be clarified that all monitored data required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs, which ever occurs later.	B.8.2	All the monitored data required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs, which ever occurs later. This has been added in the PDD, please refer to Section B7.2	OK The CL is therefore resolved and closed.
CL 14 The description of how to monitor data 'Q <sub>y</sub> ' in section B.7.1 and B.7.2 contradicts to each other. Please clarify how it will be monitored.	B.10.3	Net heat generation is determined as the difference of the enthalpy of the steam generated by the project cogeneration plant minus the enthalpy of the feed-water and any condensate return.  There will be meters including flow meter, pressure meter(in case of superheated steam) and temperature	OK The CL is therefore resolved and closed.

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		<p>meter installed at power plant site when the project begins supplying heat to monitor the steam generated and the feed-water and any condensate return. If it is not feasible to monitor the feed-water and any condensate return, the respective enthalpies will be determined with a temperature of 40°C and a pressure of 0.1Mpa and the same mass of the steam generated.</p> <p>The project owner will prepare backup procedures to deal with any errors occurred to the meters. In case of any errors happens, the heat supplied to the users by the proposed project shall be determined by the project owner and the users jointly.</p> <p>Please refer to Section B.7.1 and B.7.2 in the PDD.</p>	
CL 15 Provide procedures for emergency preparedness for cases where emergencies can	B.13.3	The procedures for emergency and the error handling are added, please refer to PDD section B 7.2	The procedures for erroneous monitoring handling and emergency preparedness are discussed in the PDD.

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
cause unintended emissions.			Conservative means will be applied for erroneous monitoring handling; while for emergency preparedness will be detailed in the Operation Manual.  The CL is therefore resolved and closed.
CL 16 The project starting date is defined as 25 January 2008, the date when key equipment purchase contract was signed, the operational lifetime of the project is stated as 20 years, which is to be evidenced.	C.1.1	The starting date of the project is 06/11/2007, which is the earliest key equipment purchase date. The key equipment purchase agreements are provided. The timelines are listed in the Section B.5  According to <Economic appraisal guidelines for fossil fuel power plant >, D.1.1, 20 years is used as the operational lifetime when appraise the power plant, which is commonly used in the biomass power plants in China. Besides, fixed assets residues recovery is considered in IRR calculation.	OK The CL is therefore resolved and closed.
CL 17	E.1.2	There are two ways to invite the local	The local stakeholders' interview was

## VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
It is to be clarified which medias are used to invite comments by local stakeholders.		<p>stakeholders to give comments on the projects:</p> <p><b>(1) By website and posters</b>  A summary of the project's introduction, EIA , questionnaire, contact information of the project was published on the Tongcheng City Government website:  <a href="http://www.tongcheng.gov.cn/zwgk/news_view.php?id=11480&amp;ty=957">http://www.tongcheng.gov.cn/zwgk/news_view.php?id=11480&amp;ty=957</a> and the main roads near the project site to invite the local stakeholder to give comments on the project.</p> <p>.</p> <p><b>(2) By questionnaires</b>  The project owner carried out the investigation stakeholders in Questionnaire. Questionnaire was implemented by filling the stakeholder comments investigation form. 100 copies questionnaires were distributed to the farmers and local residents and all of the questionnaires are filled and collected.</p>	<p>incorporated in the EIA, which was approved by Environment Protection Bureau of Anhui Province. The interviewed stakeholders were those from the villages that affected by the Project as indicated in the EIA. Before the interview was taken, appropriate means were applied to inform the stakeholders, which were confirmed by interview Mr.ZHANG Shigao/iv/, the Vice Director from Environmental Protection Bureau of Tongcheng City.</p> <p>The CL is therefore resolved and closed.</p>

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## VALIDATION REPORT

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
		Please refer to Section E.1. in the PDD	

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## VALIDATION REPORT

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## Qualification

A, Qingxing (Sequoia) /

### Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level:  
(Qualifikationsstufe)

Auditor

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:  
(EAC Branchen)

CDM 01 – Energy industries (renewable – / non-renewable sources)  
CDM 04 – Manufacturing industries

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

2008/05/20

Valid to:  
(Gültig bis)

2011/05/19

Remarks:

Limitations:  
CDM 4 b) (Process Industries)

Languages:

Chinese  
English

### Experience Exchange

Date

Location

Remarks

Accreditation(s)

### Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next Monitoring:  
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

### History of scope allocation

Date: 2008-05-20  
Change: EAC CDM, CDM added  
By: Manfred Brinkmann  
Reason:

### History

Created: 2008/05/19 18:35:31 Sequoia A/Shg/Chn/TUV



Modified: 2010/09/13 16:07:36 Manfred Brinkmann/Jpn/TUV

## Qualification

Zhu, Jiang /

### Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level:  
(Qualifikationsstufe)

Auditor

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☐ yes

EAC Scopes:  
(EAC Branchen)

CDM 01 – Energy industries (renewable – / non-renewable sources)

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

2009/03/09

Valid to:  
(Gültig bis)

2012/03/08

Remarks:

Languages:

Chinese  
English

### Experience Exchange

Date

Location

Remarks

Accreditation(s)

### Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next Monitoring:  
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

### History of scope allocation

Date: 2009-03-08  
Change: EAC CDM added  
By: Manfred Brinkmann  
Reason:

### History

Created: 2008/03/20 14:56:52 Daxun Li/Bj/Chn/TUV  
Modified: 2008/03/20 14:57:07 Daxun Li/Bj/Chn/TUV

## Qualification

Brinkmann, Manfred /

## Emission Trading United Nations Framework Convention on Climate Change

Auditor No.:  
(AuditorenRegNr)

Appointed:  
(Zugelassen)

☒ ja

Qualification Level:  
(Qualifikationsstufe)

Lead Auditor

External:  
(Externer)

☐ ja

Add. reviewer:  
(Zusätzlicher Prüfer)

☒ yes

EAC Scopes:  
(EAC Branchen)

CDM 03 – Energy demand  
CDM 04 – Manufacturing industries  
CDM 05 – Chemical industry  
CDM 10 – Fugitive emissions from fuels (solid; oil and gas)  
CDM 11 – Fugitive emissions from production and consumption of  
halocarbons and sulphur hexafluoride  
CDM 12 – Solvents use  
CDM 01 – Energy industries (renewable – / non-renewable sources)  
CDM 06 – Construction  
CDM 13 – Waste handling and disposal

Add. qualification:  
(zus. Qualifikation)

First Appointment:  
(Erstberufung)

2004/03/03

Valid to:  
(Gültig bis)

2013/03/03

Remarks:

Languages:

German  
English  
French

## Experience Exchange

Date

Location

Remarks

Accreditation(s)

## Monitoring

Latest Monitoring:  
(letzte Beurteilung)

Next Monitoring:  
(nächste Beurteilung)

Remarks:

[View / Edit Monitoring](#)

## History of scope allocation

Date: 2004-03-05  
Change: EAC CDM, CDM added  
By: Klaus-Dieter Fritsch  
Reason:  
  
Date: 2004-03-03  
Change: EAC CDM, CDM, CDM, CDM, CDM, CDM added  
By: Klaus-Dieter Fritsch  
Reason: Qualification is based on the applicant's ISO 14001 auditor qualification.

## History

Created: 2003/12/11 14:27:13 –  
Modified: 2010/04/02 11:36:57 Manfred Brinkmann/Jpn/TUV