VALIDATION REPORT

VALIDATION OF THE
Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project

REPORT NO. 09-002

REVISION NO. 03

KOREA ENVIRONMENT CORPORATION

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FINAL VALIDATION REPORT

Date of first issue: 24-08-2009	Project No: EC09-005
APPROVED BY: Lee Seon-woo GHG Certification Cneter manager Signature	Organizational unit: Korea Environment Corporation (Keco)
Client: Hangzhou Carbon Trade Environment Engineering Co., Ltd.	Client ref: Tina Wang

Summary:

▸**A project title**: Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project

▸**Host Country**: People's Republic of China

▸**Investor Country**: Switzerland

▸**A brief description of the validation project**: This project has been developed by Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd. The objective of the project is to reduce Greenhouse Gases by utilizing waste gas generated during the course of three hard and one soft carbon black production lines. The generated electricity by the project will displace the electricity purchased from the North China Power Grid (hereinafter refer to as NCPG) and the remaining will be transmitted to the NCPG.

▸**Size**: Large

▸**Methodology**: ACM0012(ver 03.2), "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects"

▸**Emission Reduction Estimate**: Total estimated reduction is 1,872,160 tCO_2e (for the crediting period ten (10) years), and the annual average estimated reduction is 187,216 tCO_2e over the crediting period.

▸**The scope of validation**: This is the final validation report prepared on the basis of the UNFCCC criteria. Validation has been concurrently prepared by a desk review based on the project documents provided by the project participant and cross-checks with an on-site visit, interviews with stakeholders and relevant documents.

▸**The applicability of the methodology and criteria used for validation:** Methodology ACM0012 is applicable to the project which belongs to Type-1 while satisfying several conditions mentioned in the methodology.

▸**Any restrictions or uncertainties related to the validation**: None

▸**Main conclusions and corrective action requests**: Based on the desk review and feedback from the project participants, twelve (12) Corrective Action Requests and thirty (30) Clarification Requests were raised by Keco and those requests have been corrected by the project participants.

▸**Summary of the validation status and opinion**:

☐ Corrective Action Requested
☐ Clarification requested
☑ Full approval and submission for registration
☐ Rejected

As a result of validation, it is Keco's opinion that the project, "Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project", meets all the matters relevant to UNFCCC CDM requirements, host country' s criteria, and the baselines and monitoring methodology ACM0012(Version 03.2) have been correctly applied. Keco therefore requests the registration of the project as a CDM project activity.

Work carried out by: Lee Seon-gyoo (Team leader) Park Beom-woong (Team member) Jeong Dong-hee (Technical Expert) Kang Hee-kyung (Observer) Yu In-sik (Observer)	Service area: Validation
Work carried out by: Ryu Nam-yong Independent technical reviewer Signature	Sectoral scope of CDM project activity 1- Energy industries 4- Manufacturing industries
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Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CL	Clarification Request
CM	Combined Margin
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA	Environmental Impact Assessment
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	Greenhouse Gas(es)
GWP	Global Warming Potential
IRR	Internal Rate of Return
Keco	Korea Environment Corporation
LoA	Letter of Approval
MP	Monitoring Plan
NCPG	North China Power Grid
NDRC	National Development and Reform Committee
NGO	Non Governmental Organization
ODA	Official Development Assistance
OM	Operating Margin
PDD	Project Design Document
PP	Project Participant
VVM	Validation and Verification Manual
UNFCCC	United Nations Framework Convention on Climate Change
WECM	Waste Energy Carrying Medium

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1. INTRODUCTION

Keco has been commissioned as a DOE to validate a CDM project, Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project(hereinafter referred to as "the project"), by Hangzhou Carbon Trade Environment Engineering Co., Ltd. This report summarizes the findings of the validation of the project to prove that the project meets all the relevant requirements based on the UNFCCC criteria.

1.1. Objective

The purpose of the validation is to ensure a thorough and independent assessment of the project activities submitted for registration as a proposed CDM project activity against the applicable CDM. The validation has been performed to confirm general description, baseline selection, additionality, calculation of emission reductions, monitoring plan, crediting period, environmental impacts and stakeholder's comments on a basis of the Kyoto Protocol, CDM rules, modalities, related decisions by the COP/MOP, CDM Executive Board, and host country criteria. This report includes a result of its assessment.

1.2. Scope

The scope of the validation is an independent and objective review on the project design document(PDD) and other relevant documents. The PDD has been 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 ACM0012(ver. 03.2). Keco has employed a risk-based approach in the validation, 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 clients. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3. Names and Roles of the Validation Team Members

This is a brief description of validation team members and a technical expert.

- ✓ Lee Seon-gyoo (Team leader)
- ✓ Park Beom-woong (Team member)
- ✓ Jeong Dong-hee (Technical Expert)
- ✓ Kang Hee-kyung (Observer)
- ✓ Yu In-sik (Observer)

2. METHODOLOGY

Standard auditing techniques(following CDM Validation and Verification Manual, version01.2) have been applied to assess the correctness of the information provided by the PPs.

The validation consisted of the following three phases.

(a) Document review,
  (i) Review of data and information
  (ii) Cross-checks between information provided in the PDD and information from sources other than that used
(b) Follow-up actions (i.e. on-site visit, telephone, email interviews)
  (i) Interview with relevant stakeholders in the host country
  (ii) Cross-checks of information provided by interviewed personnel
(c) Resolution of outstanding issues and the issuance of the final validation report and opinion

The validation serves the following purposes.

(a) It organizes, details and clarifies the requirements the project is expected to meet
(b) It documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of couple of tables. The different columns in these tables are described at Figure1.
The findings established during the validation can either be seen as a non-fulfillment of validation protocol criteria or where a risk to the fulfillment of project objectives is identified. Corrective Action Requests(CARs) are issued, where:

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

Clarification requests(CLs) have been raised where information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	**Reference**	**Conclusion**	**Cross reference/Comment**
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to check-list questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the check-list question or item is found.	Explains how conformance with the check-list question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the check-list question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the check-list question (See below). **Clarification(CI)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests				
Draft report clarifications and corrective action requests by Validation team	**Ref. to checklist question in table 2**	**Summary of project participants responses**	**Review by DOE**	**Conclusion**
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	Corrective Action or a Clarification #1 It should address the corrective action or a clarification from project participants	DOE review comment #1 This section should summarise the way of review (based on relevant document, statistical data, sectoral experience) by DOE about responses of project participants. In case of non-closure additional corrective action or clarification and DOE review comment should be added such as #2 or #3.	This section should summarise the validation team's conclusion.

Figure1. Validation protocol tables (See also Appendix A to this report)

2.1. Documents Review

The Project Design Document(PDD) has been submitted by the project participants(PPs) and additional documents were reviewed. Followings are the documentation reviewed during the validation.

Documents provided by the PPs directly related to the project:

〈1〉 PDD [ver 02], "Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project" dated 15 July 2009
〈2〉 PDD [ver 03] dated 10 Nov 2009
〈3〉 PDD [ver 03] dated 30 Jan 2010
〈4〉 PDD [ver 03.1] dated 29 Mar 2010
〈5〉 PDD [ver 03.2] dated 11 Jun 2010
〈6〉 PDD [ver 03.3] dated 23 July 2010
〈7〉 PDD [ver 03.4] dated 2 Aug 2010
〈8〉 PDD [ver 03.5] dated 15 Aug 2010
〈9〉 Approval of land use, Wuhai city land resource bureau, dated 7 March 2008
〈10〉 Approval of project site selection, Wuhai city planning bureau , dated 28 February 2008
〈11〉 Approval of water utilization, Wuhai city water resource bureau, dated 21 January 2008
〈12〉 Internal decision documents by the board of directors, chairman for the project, dated 3 June 2008
〈13〉 Main equipment (Phase 1-boiler) purchase agreement of the project and technical specification, dated 28 August 2008
〈14〉 CDM consultancy agreement between project owner and consulting firm(Hangzhou Carbon Trade Environment Engineering Co., Ltd), dated 15 June 2008
〈15〉 Approval letter for "Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project" from Inner Mongolia autonomous region Development and Reform Committee, dated 7 June 2009
〈16〉 EIA approval letter by Environmental Protection bureau of Inner Mongolia Autonomous region, dated 18 December 2008
〈17〉 Electricity wire diagram of "Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project" in FSR, dated May 2008
〈18〉 Approval letter for grid connection, Inner Mongolia Autonomous region power grid company, dated 30 July 2008
〈19〉 Commitment letter between holding company of project participants and consulting company (Hangzhou Carbon Trade Environment Engineering Co., Ltd), dated 19 November 2007
〈20〉 NDRC notification for prior consideration, dated 12 January 2009
〈21〉 Main equipment (Phase 1-Turbines and Generators) purchase agreement of the project and technical specification, dated 28 August 2008
〈22〉 ERPA between project owner and buyer (Visol S.A), dated 18 November 2008
〈23〉 A written approval letter from the DNA of China, dated 15 July 2009

〈24〉 A written approval letter from the Federal Office for the Environment of Switzerland, dated 23 October 2009

〈25〉 Electricity purchase contract between Mongolia Wuhai Black Cat Carbon Black Co., Ltd and Inner Mongolia Autonomous region power grid, 26 September, 2009.

〈26〉 Explanation from Xian Datang power design Institute related with boiler ignition program, dated 26 August 2009

〈27〉 A certificate of business registration for Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 07 April 2009

〈28〉 Overview of supply and demand of carbon black in asia from chemical information website, http://info.chem.hc360.com/2009/03/11083755524-2.shtml, dated 11 Mar 2009

〈29〉 Chinese carbon black industry status and future trends from chemical information website, http://info.chem.hc360.com/2008/10/08100043349.shtml, dated 8 Oct 2008

〈30〉 Internal electricity consumption by power generation equipments, dated 10 November 2009

〈31〉 Clarification for Monitoring team of Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 22 July 2009

〈32〉 China Statistical Year Book 2006, 2007, 2008, 2009, published by national bureau of statistics of China, http://www.stats.gov.cn/english/

〈33〉 Average salary of staff and workers and related index in Inner Mongolia Autonomous region published by bureau of statistics of Inner Mongolia Autonomous region, http://www.nmgtj.gov.cn/Html/zgpjgzhzs/2009-8/21/0982118524550.shtml

〈34〉 Operational lifetime of steam turbine and generator from equipment manufacturers, dated 15 September 2009.

〈35〉 Operational lifetime of boiler from equipment manufacturers, dated 10 September 2009.

〈36〉 Installation restriction of under 135 MW capacity power plant published by the Central People's Government of the People's Republic of China, dated 15 April 2002, http://www.gov.cn/gongbao/content/2002/content_61480.htm

〈37〉 Prevention and control of atmospheric pollution law of China, http://www.envir.gov.cn/law/air.htm

〈38〉 Specification of 3,000Kw waste gas power generation plant published by Research and design institute of Zhongxiang group at China chemical industry environmental protection Association, dated 14 August 2008, http://www.cciepa.org.cn/newsshow.asp?newsid=1430&name=%BB%B7%B1%A3%25.

〈39〉 Main equipment (Phase 2-boiler) purchase agreement of the project and technical specification, dated 5 May 2009

〈40〉 Main equipment (Phase 2-boiler) technical specification, dated 25 April 2009

〈41〉 Main equipment (Phase 2-Turbines and Generators) purchase agreement of the project, dated 5 May 2009

〈42〉 Power house operation and management procedure of Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 20 May 2009

〈43〉 Training plan of employee and record of each training, Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 5 March 2009
〈44〉 China electric power yearbooks 2006-2008
〈45〉 China Energy Statistical Yearbook 2006-2008
〈46〉 Test report of metering device from Inner Mongolia Wuhai electric Power Bureau electric energy measurement center, dated 5 January 2010
〈47〉 Technical specification of metering device published by Changsha Weisheng Electronics Co., Ltd
〈48〉 2009 Baseline emission factors for regional power grids in China published by China NDRC, dated 2 July 2009
〈49〉 Material balance process diagram of hard and soft Carbon Black from EIA report, September 2008
〈50〉 Evidence of stakeholder meeting - meeting minute, dated 10 July 2008
〈51〉 Evidence of stakeholder meeting - actual questionnaires and results report of stakeholder investigation, dated 20 July 2008
〈52〉 The quantity of waste gas per carbon black production from China lubber industry association, dated 17 September 2009
〈53〉 Daily record of waste gas from Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 29 June 2010
〈54〉 Reference of the assessed tariff in FSR from Wuhai city Development And Reform Committee for Wuahi Junzheng Energy Chemical Industry company grid-connect tariff, dated 13 July 2007
〈55〉 Reference of the assessed tariff in FSR from Wuhai City Development And Reform Committee for Wuhai Haishen thermoelectricity company grid-connect tariff, dated 3 April 2007
〈56〉 Feasibility Study Report published by Xi'an Datang Electric Power and Research Institute, dated May 2008
〈57〉 Waste gas recovery system equipment maintenance plan published by Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd., dated September 2009
〈58〉 List of Letters of Approval and Authorization (LoAs) for CDM projects issued by the Swiss Designated National Authority, dated 7 Feb 2011, http://www.bafu.admin.ch/emissionshandel/05556/05558/index.html?lang=en
〈59〉 Modalities and Communication of Inner Mongolia Wuhai 30MW waste gas power generation project.
〈60〉 EIA report published by institute of environmental protection division of Wuhai City, dated September 2008
〈61〉 Electricity demand of Carbon Black production lines from FSR Page17-18.
〈62〉 Certification on the Xi'an Datang Electric Power and Research Institute which is FSR institute from the Chinese Ministry of Construction, dated 9 Febuary 2007
〈63〉 Evidence of public notice - Wuhai daily newspaper, dated 5 May 2008

〈64〉 Value added tax(VAT), Provisional regulations of the People's Republic of China, [1993] No.134, issued by the National Financial Ministry and National Revenue Ministry

〈65〉 City maintenance & construction tax, Construction and maintenance tax Provisional Regulations of the People's Republic of China, [1985] No.19, issued by the National Financial Ministry and National Revenue Ministry

〈66〉 Educational tax, Decision on amending Provisional Regulations of collecting educational tax, [2005] No.448, issued by the National Financial Ministry and National Revenue Ministry

〈67〉 Income tax rate, [2007] No.63, Enterprise Income Tax Provisional Regulations of the People's Republic of China effect from 1 January 2008, issued by the National Financial Ministry and National Revenue Ministry

〈68〉 Line loss rate for west of Inner Mongolia grid from Inner Mongolia Statistical Year Book 2005, published by Inner Mongolia Bureau of statistics, dated 28 May 2008, http://www.nmqq.gov.cn/content.aspx?classid=293&id=3613

〈69〉 Unit price of Chemical material for the water treatment System from Shanxi Welsun E&P Technology Co., Ltd

〈70〉 Notice on adjusting the price of Municipal Water Supply and Drainage in Wuhai City from Inner Mongolia Autonomous Region DRC, dated 14 December 2006

〈71〉 Construction Contract for Phase 1 Power station between the 13th Construction Co., Ltd of China National Chemical Engineering(TTECC) and Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 3 September 2008

〈72〉 Construction Contract for Phase 2 Power station between the 13th Construction Co., Ltd of China National Chemical Engineering(TTECC) and Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, 21 September 2009

〈73〉 Approval letter for actual tariff from Inner Mongolia Autonomous DRC for Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 4 September 2009

〈74〉 Evidence for actual O&M cost expenditure from January 2010 to 30 June 2010 from Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 6 July 2010

〈75〉 Evidence for actual total investment expenditure till 10 August 2010 from Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 12 August 2010

〈76〉 High Voltage Electricity Supply Contract between Wuhai City Power Bureau and Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, dated 15 May 2009

〈77〉 IRR Calculation spreadsheet, dated 6 October 2010

〈78〉 ER calculation spreadsheet, dated 10 Mar 2011

〈79〉 Loan contract between Bank of China and Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd, 9, 24 July 2009

〈80〉 Quantity of chemical material usage explanation from water treatment facility manufacturer(Shanxi Welsun E&P Technology Co., Ltd), dated March 2009

〈81〉 List of Carbon black plants from China Carbon Black Association, http://www.carbonblack.org.cn/cn/zhongdianqiye.asp

〈82〉 Evidence document for the amortization period from China Accounting net, dated 21 Aug 2008
〈83〉 Approval letter by Wuhai City DRC, dated 6 Mar 2009
〈84〉 Meeting notice for Project examination from NDRC, dated 22 June 2009
〈85〉 Methodology and Parameter for Project Economic Evaluation [third edition] issued by NDRC, dated 3 July 2006
〈86〉 Implementation rule of enterprise income tax law of the People's Republic of China, issued by State Council of the People's Republic of China, No.512, dated 6 December 2007
〈87〉 Clarification on grid tariff of Renewable Energy Projects in china, published by China NDRC, dated 13 May 2009
〈88〉 Clean Development Mechanism in China, CDM project database, http://cdm.ccchina.gov.cn/website/CDM/pdf/Item_new/Item_new4584.pdf
〈89〉 Construction completion Report for Carbon Black production lines of Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd.
〈90〉 Electricity purchase receipts of Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd. from June 2009 to Dec 2010
〈91〉 2010 Annual audit report from Zhonglei Certified Public Accountants Co., Ltd, dated 13 Jan 2011
〈92〉 Carbon Black User Guide published by International Carbon Black Association, dated June 2004
〈93〉 Handbook of carbon black production and application from Chemical industry press material science and engineering press center
〈94〉 Local expert opinion, president of Carbon Black Branch of China Rubber Industry Association, dated 7 Dec 2010.
〈95〉 Preferential policies of the income tax for western development, [2001] No.202, dated 30 Dec 2001.
〈96〉 General Tax payment certificate from Hainan District National Taxation Bureau, dated 31 May 2010.
〈97〉 Purchase agreement of reactors for Carbon Black production lines of Inner Mongolia Wuhai Black Cat Carbon Black Co., Ltd.
〈98〉 Tariff adjustment of western Inner Mongolia from Inner Mongolia Autonomous DRC, [2009] No.2530, dated 20 Nov 2009.
〈99〉 Layout of the carbon black facility before and after the project implementation from Xi'an Datang Electric Power and Research Institute
〈100〉 PDD [ver 03.6] dated 10 Mar 2011
〈101〉 f_{cap} calculation spreadsheet, dated 10 Mar 2011

Background documents related to the design and/or methodologies employed in the design or other reference documents:

(1) Clean Development Mechanism PDD Form, 28 July 2006, Version 03
(2) EB51 Annex10, ACM0012, Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects, Version 03.2

(3) EB39 Annex10, Tools for the Demonstration and Assessment of Additionality, Version 05.2
(4) EB50 Annex14, Tool to calculate the emission factor an electricity system, Version 02
(5) EB49 Annex22, Guidelines on the demonstration and assessment of prior consideration of the CDM, version 03
(6) EB51 Annex58, Guidelines on the Assessment of Investment Analysis, Version 03.1
(7) EB55 Annex1, Clean Development Mechanism Validation and Verification Manual, Version 01.2,
(8) EB51 Annex59, Information note: Previous rulings related to the appropriateness of benchmarks for project activities utilizing waste heat/waste gas for power generation
(9) EB41 Annex11, Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion, Version 02
(10) Energy Conservation law from China Government, dated 28 October 2007, http://www.gov.cn/flfg/2007-10/28/content_788493.htm

2.2. Follow-up Actions

During the period of 4-5 Aug 2009 Keco performed an on-site visit and had interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in Table1.

Interviewed organization	Interview topics
Inner Mongolia Wuhai Black Cat Carbon Black Co.,Ltd - Mr. Wangqueming, Administration department manager - Mr. Hengjun, Director of Power department - Mr. Rwzhide, Vice President - Mr. Jianghiagnang, General Manager	✓General aspects of the project ✓Involved personnel and responsibilities ✓Contribution to sustainable development ✓License, operation & maintenance authority and responsibility ✓Monitoring Plan
Hangzhou Carbon Trade Environment Engineering Co., Ltd. - Ms. Tina Wang, director - Ms. Shirley, Consultant	✓Legal aspects of the project ✓Project boundary ✓Technical details of the project realization ✓Involved personnel and responsibilities ✓Monitoring and measurement equipment ✓Contribution to sustainable development ✓Additionality ✓Baseline methodology ✓Calculation on GHG emission ✓License, operation & maintenance authority and responsibility

Interviewed organization	Interview topics
	✓QA/QC procedure ✓Project management system ✓Duration of the project/Crediting period ✓Environmental impacts ✓Comments by local stakeholder, process ✓Approval by the host country

Table 1. Interview topics

2.3. Resolution of Clarification and Corrective Action Requests

The objective of this phase was to resolve the requests for corrective actions, clarification, forward actions and any other outstanding issues, which were needed to be clarified for Keco's positive conclusions on the project design. Twelve (12) Corrective Action Requests(CAR) and thirty (30) Clarification Requests(Cl) were identified in the initial validation. In order to guarantee the transparency of the validation process, the raised concerns and given responses are documented in the validation protocol in Appendix A. However, all of the CARs and CLs have been corrected completely through the validation process. Since modifications to the project design documents were necessary to resolve Keco's concerns, the PPs resubmitted the revised project design documentation on 10 Mar 2011. After reviewing the resubmitted project documentation, Keco has issued this final validation report and opinion.

2.4. Internal Quality control

The final validation report was published after a review by an qualified independent technical reviewer as per the Keco's qualification management system.

3. FINDINGS

The validation function by Keco and the results are described as below in accordance with the VVM reporting requirements.

3.1. Approval

The PPs are Inner Mongolia Wuhai Black Cat Carbon Black Co.,Ltd.(hereinafter referred to as the Wuhai Black Cat company) of People's of Republic of China and Vitol S.A. of Switzerland. The host Party, China, and Annex I Party, Switzerland, meet the requirements of participation of the CDM. The DNA of China issued the Letter of Approval(LoA) on 15 July 2009 (〈23〉 in the 2.1 Documents review). From the letter, Keco confirms that:

(a) China is a Party to the Kyoto Protocol;
(b) Participation is voluntary;
(c) The proposed CDM project activity contributes to the sustainable development of the host Party;
(d) it refers to the precise proposed CDM project title in the PDD.

Since it was provided by the PPs, Keco checked the China DNA web site 〈88〉 to confirm its authenticity. LoA from Federal Office for the Environment of Switzerland has also been issued on 23 October 2009 and Keco checked with FOEN web site 〈58〉.

3.2. Participation

Keco confirms that all PPs are listed in a tabular form in section A.3 of the PDD and that information is consistent with the contact details provided in annex 1 of the PDD. The participants, China and Switzerland, have been approved by the corresponding Party and it has been confirmed by the LoAs.

3.3. Project design document

The PDD is in compliance with relevant form and guidance as currently provided by UNFCCC 〈http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/PDD_form04_v03_2.pdf〉. The latest version of the PDD template has been used. This section has been handled in the checklist in Appendix A of this report.

3.4. Project description

Through the on-site visit(4-5 Aug 2009) Keco confirms the followings: The project is sited at Hainan district, Wuhai city of Inner Mongolia province, People's Republic of China. The geographical coordinates are latitude 39° 22'18"N and longitude 106° 55'34"E. The objective of the project is to generate electric power utilizing waste gas from three hard and one soft carbon black production lines, 160,000t/yr, for it's own demand and the remaining will be exported to the grid. The power generated replaces electricity which would be purchased and generated from the NCPG in the absence of the project activity. The project activity involves the installation of two waste gas recovery boilers at three hard and one soft carbon black production lines and Two steam turbines each with capacity of 15MW and generators. The waste gas is collected through pipes, fed into boilers and burned. The steam produced by the waste gas boilers will be led to the turbine generating electric power that will be used on-site and exported to the grid. The total electricity generated is 240,000MWh and the electricity consumed by the power generation equipment on-site is considered 10% of total generated electricity. The annual net electricity is expected to be 209,520MWh after considering internal consumption(10%) and transmission line loss rate(3%). Generated electricity, 209,520MWh, results in emission reductions of 1,872,160tCO_2e over the 10-year crediting period. The project will contribute to sustainable development by improving energy efficiency of the carbon black industry in Inner Mongolia Province, which was confirmed by Keco with the documents from China Carbon Black Association 〈81〉, reducing GHGs and creating employment opportunities for local residents. The accuracy and completeness of the project description is secured by the on-site visit including project stakeholder interview, cross-check with other sources(see 2.1 Documents review). In conclusion, Keco confirms that the project description, as included to the PDD, is sufficiently accurate and complete in order to comply with the requirements of the CDM.

3.4.1 The source of energy used to meet the internal energy demand of the carbon black

production facility

Wuhai Black Cat company installed four(4) carbon black production lines step by step. The 1st and 2nd production lines were installed on 16 Jun 2009 and 16 May 2009. The 3rd and 4th production lines were installed on 20 Nov 2009 and 18 May 2010. The DOE confirmed above fact with "Completion report of production lines" 〈89〉. Carbon black facility purchases electricity from NCPG and power demand of existing facility has been increased according to the production levels of carbon black productions.

	Total Electricity consumption (Mwh)	Carbon black production (ton/yr)
2009 (Jun-Dec)	8,249	34,479
2010	65,248	126,379

Table 2. Electricity consumption and carbon black production

The DOE confirmed above with "Layout of the carbon black facility before and after the project implementation" 〈99〉, "Electricity purchase receipts" 〈90〉 and "2010 Annual audit report" 〈91〉. The total designed power demand of the carbon black facility is 50,408Mwh with 160,000ton/year carbon black production. Carbon black facility would import electricity from NCPG and the waste gas would be released into the atmosphere after incineration in the absence of project activity.
After the project activity implementation, electricity generated by waste gas will be transmitted to carbon black facility and NCPG, substituting relevant generation of fossil fuel fire power plants of NCPG, so the baseline of the project is the equivalent electricity which supplied by NCPG. This condition is applicable in accordance with ACM0012 ver03.2.

3.4.2 Validation whether the waste energy utilized in the project activity is recovered from an existing facility or new facility;

Wuhai Black Cat company was established on 16 Apr 2008 and has produced carbon black using four(4) carbon black production lines. The 1st and 2nd production lines were installed on 16 Jun 2009, 16 May 2009 and started commercial productions at Jun 2009. The DOE confirmed establishment and production starting date of company with "business license" 〈27〉 and "Completion report of production lines" 〈89〉. Production of carbon black is confirmed by "2010 Annual audit report" 〈91〉 from Zhonglei Certified Public Accountants Co., Ltd. The detailed information on the constructions and production of carbon black are listed in table 3 and 4.

Line No.	Constructor	Installation Complete date	Capacity of Reactor (ton/yr)
1	Jiangdu City Installation Engineering Co., Ltd	16-Jun-09	40,000
2	The 13th Construction Co., Ltd of China National Chemical Engineering	16-May-09	40,000
3	Jiangdu City Installation Engineering Co., Ltd	20-Nov-09	40,000
4	The 13th Construction Co., Ltd of China National	18-May-10	40,000

Line No.	Constructor	Installation Complete date	Capacity of Reactor (ton/yr)
	Chemical Engineering		

Table 3. Detailed information on the carbon black production lines

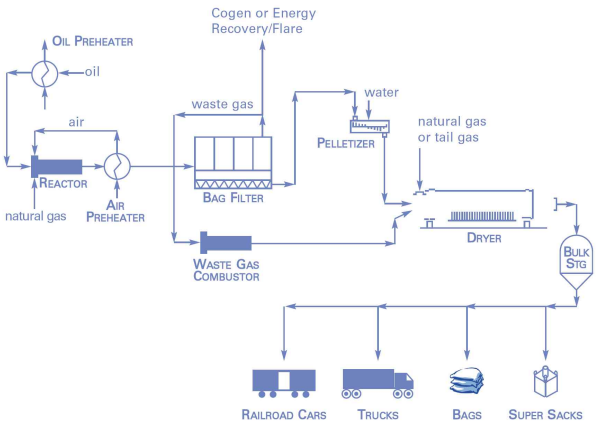
Month	Carbon black production (ton)								
	2009			2010				2009	2010
	# 1	# 2	# 3	# 1	# 2	# 3	# 4	Total	Total
1				3,072	2,518	2,153			7,744
2				3,397	2,152	3,533			9,082
3				3,047	2,483	3,413			8,943
4				3,495	2,462	3,154			9,111
5				3,707	2,674	3,469	945		10,795
6	960	1,254		3,177	1,923	3,061	3,375	2,214	11,536
7	2,326	2,016		3,073	2,508	1,672	2,841	4,342	10,094
8	2,657	2,010		2,967	2,760	1,341	3,191	4,667	10,259
9	2,793	2,133		3,654	2,449	3,273	3,506	4,926	12,882
10	3,219	2,210		4,005	2,691	3,283	3,557	5,429	13,536
11	2,700	2,134	481	2,370	2,069	3,633	2,804	5,315	10,876
12	2,917	2,331	2,337	2,993	3,179	2,963	2,386	7,586	11,521
Total	17,573	14,088	2,818	38,959	29,867	34,948	22,606	34,479	126,379

Table 4. Carbon black production

Existing facility is defined as facilities where the commercial production had began at the time when the project activity is submitted for validation in ACM0012(ver. 03.2) and the project activity is submitted to Keco at 13 July 2009 which is a contract date for validation. Thus, the DOE concluded that the project activity is implemented at the existing facility.

3.4.3 information on the amount of waste energy available.

✓ Two(2) carbon black manufacturing processes (furnace black and thermal black) are used in nearly all of the world's carbon black industries and the furnace black process is the most common in accordance with the "Carbon Black User Guide" 〈92〉 from international carbon black association. The project produced carbon black using oil furnace process often referred to as furnace black. Figure 2 shows typical furnace black(oil furnace) process diagram which is the same process applied to the projects facility. Small part of tail gas usage for dryer usually designed from the first stage of construction and considered as a part of a unit process without additional technology or substantial investment and rest of major tail gas was discharged. The project activity is recovering and generating electricity using unused tail gas.



Figre 2. Typical Furnace Black Process Diagram

✓ According to ACM0012 ver03.2, the definition of waste energy is follows: A by-product gas/heat/pressure from machines and industrial processes having potential to provide usable energy, for which it can be demonstrated that it was wasted. For example gas flared or released into the atmosphere, the heat or pressure not recovered (therefore wasted).

All of the tail gas, 160,000Nm^3/h, from carbon black production lines is not waste energy since a certain portion of tail gas, 32,000Nm^3/h, was being utilized in the process before project implementation. Only the portion of the tail gas, 128,000Nm^3/h, that was released into the atmosphere prior to the implementation of the project activity is the waste energy. After the implementation of the project activity, carbon black tail gas was completely utilized. The tail gas, 32,000Nm^3/h, used before the project activity will be used for same purpose and quantity. project activity is using newly installed pipelines and waste recovery system to utilize wasted tail gas before. The DOE confirmed above with "handbook of carbon black production and application" 〈93〉, "layout of the carbon black facility before and after the project implementation" 〈99〉 and "The quantity of waste gas per carbon black production" 〈52〉 from Carbon Black Branch of China Rubber Industry Association and confirmed the quantity of tail gas.

3.5. Baseline and monitoring methodology

3.5.1 Applicability of the selected methodology to the project activity

✓ The project applies methodology, ACM0012 "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects"(ver 03.2). Through the on-site visit, an interview with the PPs and the documents provided Keco confirms that the information in the PDD complies with the criteria of the methodology ACM0012(ver 03.2). These are the steps, Table 5., to assess the applicability of the methodology.

Category			Applicability check		
			Criteria discussed in the PDD	Compliance provable	Compliance verified
TYPE	Ⅰ	All the waste energy in identified WECM stream/s, that will be utilized in the project activity, is, or would be flared or released to atmosphere in the absence of the project activity at the existing or new facility. The waste energy is an energy source for:	Yes	Yes	Yes
		o Cogeneration; or o Generation of electricity; or o Direct use as process heat source; or o For generation of heat in element process (e.g. steam, hot water, hot oil, hot air); or o For generation of mechanical energy.			
	Ⅱ	An existing industrial facility, where the project activity is implemented, that captures and utilizes a portion of the waste gas stream(s) considered in the project activity, and meet the following criteria:	N/A	N/A	N/A
		o The project activity is to increase the capture and utilization of waste gas for generation of electricity that is flared or vented in the absence of the project activity, and not only the replacement/modification/ expansion of existing generation equipment with or to a more efficient equipment;	N/A	N/A	N/A
		o The portion of waste gas captured prior to implementation of the project activity is used for generation of captive electricity. The use of a portion of the waste gas in the baseline for the purpose of heat generation or other use prior to implementation of the project activity is also permitted under this methodology provided the generation of heat or other use in the crediting period remain same as that in the baseline;	N/A	N/A	N/A
		o If the project participant uses a part of the electricity generated in the project activity onsite	N/A	N/A	N/A

Category			Applicability check		
			Criteria discussed in the PDD	Compliance provable	Compliance verified
		and exports the remainder, both shall be monitored. In such situations it shall be demonstrated that the electricity generated for own consumption from waste gas is not reduced in the project activity;			
		o Emission reductions generated in the project activity are attributable to the amount of waste gas captured and utilized in the project activity that was flared or vented in the absence of the project activity and to the increase in energy efficiency of the new power generating facility;	N/A	N/A	N/A
		o No auxiliary fossil fuel (except start-up fuel) is used in the waste gas boiler for the generation of captive electricity in the absence of the project.	N/A	N/A	N/A
For project activities that use waste pressure, the consolidated methodology is applicable where waste pressure is used to generate electricity only.			N/A	N/A	N/A
CONDI-TION	1	If the project activity is based on the use of waste pressure to generate electricity, electricity generated using waste pressure should be measurable	N/A § The project activity does not involve the use of waste pressure.	N/A	N/A
	2	Energy generated in the project activity may be used within the industrial facility or exported from the industrial facility	Yes § Generated electricity from the project activity will be used within the facility and the remaining will be exported	Yes	Yes
	3	The electricity generated in the project activity may be exported to the grid or used for captive purposes;	Yes § Generated electricity from the project activity will be used within the facility and the remaining will be exported	Yes	Yes
	4	Energy in the project activity can be generated by the owner of the industrial facility producing the waste energy or by a third party (e.g. ESCO) within the industrial facility;	Yes § The owner of the carbon black facility using waste gas to generate electricity.	Yes	Yes
	5	Regulations do not constrain the industrial facility	Yes	Yes	Yes

Category			Applicability check		
			Criteria discussed in the PDD	Compliance provable	Compliance verified
		that generates waste energy from using fossil fuels prior to the implementation of the project activity			
	6	The methodology covers both new and existing facilities. For existing facilities, the methodology applies to existing capacity. If capacity expansion is planned, the added capacity must be treated as a new facility;	Yes § The project is implementing new waste gas recovery system on the existing carbon black facility.	Yes	Yes
	7	The emission reductions are claimed by the generator of energy using waste energy	Yes	Yes	Yes
	8	In cases where the energy is exported to other facilities, an official agreement exists between the owners of the project energy generation plant with the recipient plant(s) that the emission reductions would not be claimed by the recipient plant(s) for using a zero-emission energy source	Yes	Yes	Yes
	9	For those facilities and recipients included in the project boundary, that prior to implementation of the project activity generated energy on-site, the credits can be claimed for minimum of the following time periods o The remaining lifetime of equipments currently being used; and o Credit period.	N/A § There has been no on-site energy generation prior to implementation.	N/A	N/A
	10	Waste energy that is released under abnormal operation (for example, emergencies, shut down) of the plant shall not be accounted for	Yes	Yes	Yes
This methodology is not applicable to projects where the waste gas/heat recovery project is implemented in a single-cycle power plant (e.g. gas turbine or diesel generator) to generate power.			N/A § The project activity is not a single-cycle power plant.	N/A	N/A

Table 5. Applicability of the methodology.

Keco confirms that the selected baseline and monitoring methodology is applicable to the project activity. Emission reductions that are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not addressed by the applied methodology have not been identified.

✓ Since the project is implemented at an existing facility where the commercial production had began at the time when the project activity is submitted for validation, the PPs need to demonstrate that the waste energy utilized in the project activity was flared or released into the atmosphere in the absence of the project activity in accordance with the methodology ACM0012(ver. 03.2).

The PPs choose to demonstrate of use of waste gas in absence of CDM project activity using process plant and submitted process of plant to depict waste gas recovery system before and after implementation of it. The project is type-1 project activity and implemented at the existing facility, DOE concluded that it is appropriate.

The quantity of the waste gas fed into the power generator is not the 160,000m^3/h but the 128,000m^3/h. Total quantity of tail gas produced from Wuhai Black Cat company is 160,000Nm^3/h. The PPs used 32,000Nm^3/h as combustion gas for the waste gas burner to the drier. The rest of major tail gas was released into the atmosphere after incineration. The PPs installed new pipelines to use wasted tail gas, 128,000Nm^3/h, boilers, steam turbines and generators for electricity generation as a project activity. The tail gas, 32,000Nm^3/h, used before the project activity will be used for same purpose and quantity. Thus the quantity of waste gas used for electricity generation is only 128,000m^3/h not 160,000m^3/h. The PPs proved usage of waste gas by process of plant. The DOE cross-checked "layout of the carbon black facility before and after the project implementation", 〈99〉 "Material process balance diagram" 〈49〉 and "The quantity of waste gas per carbon black production" 〈52〉 and confirmed the quantity of tail gas.

The PPs installed waste gas monitoring meter after implementation of the project activity and the measured quantity of waste gas fed into the boiler was about 109,376Nm^3/h. The DOE cross-checked "Daily record of waste gas" 〈53〉 at 29 Jun 2010. The actual amount of waste gas fed into the boiler was smaller than in the FSR, so the DOE concluded that it is conservative and reasonable.

3.5.2 Project boundary

The project boundary was assessed based on documented evidence, an on-site visit and interviews. Keco confirms that the identified boundary, the selected sources, and gases as documented in the PDD are justified for the project activity, hence all sources and GHGs required by the methodology have been included within the project boundary. See the followings.

✓The industrial facility where waste energy is generated: Three hard and one soft carbon black production lines (160,000t/yr)

✓The facility where electricity is generated: Waste gas power generation equipment

✓The industrial facility where the generated electricity is used: Three hard and one soft carbon black production lines and NCPG

As per the methodology ACM0012(ver. 03.2), the spatial extent of the grid is defined in the "Tool to calculate the emission factor for an electricity system". For the delineation of grid boundary "2009 Baseline Emission Factors for Regional Power Grids in China published by China NDRC(2 July 2009)" 〈48〉, is used. Since electricity generated by the project will displace the electricity purchased

and generated from the NCPG, the spatial extent of the grid is all power plants connected physically to the NCPG that the project is connected to. "A certificate of business registration for Wuhai Black Cat company(07 Apr 2009)" 〈27〉 has also been assessed to confirm the project boundary.

3.5.3 Baseline identification

In accordance with the methodology ACM0012(ver. 03.2), the baseline was determined through following four steps:

Step 1: Define the most plausible baseline scenario for the generation of heat and electricity using the following baseline options and combinations

Step 2: Identify the fuel for the baseline choice of energy source taking into account the national and/or sectoral policies as applicable

Step 3: Step 2 and/or step 3 of the latest approved version of the "Tool for the demonstration and assessment of additionality"

Step 4: If more than one credible and plausible alternative scenario remain, the alternative with the lowest baseline emissions shall be considered as the most likely baseline scenario

〈STEP 1〉: There are six alternatives for the use of waste gas, and eleven alternatives for power generation.

For the use of waste:

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

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

W3: Waste energy is sold as an energy source;

W4: Waste energy is used for meeting energy demand;

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

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

For power generation:

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

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

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

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

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

P6: Sourced Grid-connected power plants;

P7: Captive Electricity generation using waste energy (if project activity is captive generation using waste energy, this scenario represents captive generation with lower efficiency than the project

activity);

P8: Cogeneration using waste energy (if project activity is cogeneration with waste energy, this scenario represents cogeneration with lower efficiency than the project activity);

P9: Existing power generating equipment (used previous to implementation of project activity for captive electricity generation from a captured portion of waste gas) is either decommissioned to build new more efficient and larger capacity plant or modified or expanded (by installing new equipment), and resulting in higher efficiency, to produce and only export electricity generated from waste gas. The electricity generated by existing equipment for captive consumption is now imported from the grid;

P10: Existing power generating equipment (used previous to implementation of project activity for captive electricity generation from a captured portion of waste gas) is either decommission to build a new more efficient and larger capacity plant or modified or expanded (by installing new equipment), and resulting in higher efficiency, to produce electricity from waste gas (already utilized portion plus the portion flared/vented) for own consumption and for export;

P11: Existing power generating equipment is maintained and additional electricity generated by grid connected power plants.

In the PDD:

✓**W1** is correctly excluded since alternative option is not allowed by the Chinese laws and regulations. Keco has cross-checked with "Prevention and Control of Atmospheric Pollution Law" 〈37〉.

✓**W3** is correctly excluded since there are no demand around the project site and the waste gas would not be sold in the absence of the project.

✓**W5, W6** are correctly excluded, since there is no waste gas produced at the facility is captured and used for captive electricity generation.

✓**P2, P3, P8** are correctly excluded since the project does not include a heat generation, and also there is no demand for heat or electricity.

✓**P4** is correctly excluded since creation of captive power generation capacity is impossible because: (1) the construction of thermal power plants with the installed capacity of 30MW is prohibited by the Chinese government 〈36〉, and (2) gas-fired thermal power generation is not feasible due to the fact that there is no connection to a natural gas pipeline at the project location.

✓**P5** is correctly excluded since there is no on-site or existing renewable energy based existing captive or identified plant, all the electricity demand by the carbon black lines is supplied by NCPG.

✓**P6** is correctly included since there is historical data for electricity imported by carbon black production facility and the DOE validated that the existence of baseline alternative 6 for power generation as follows.

The total designed power demand of the carbon black facility is 50,408Mwh with 160,000ton/year carbon black production which is 0.32Mwh/ton of carbon black production in FSR. And the required electricity was imported from the NCPG since Jun 2009.

Period	Electricity Purchased (Mwh)	Carbon black production (ton)	Electricity consumption per carbon black production (Mwh/ton)
2009 (Jun-Sep)	6,917	16,149	0.43

Table 6. Electricity consumption before project activity

Project activity is planned to be implemented at the existing carbon black facility with 4 production lines. The 1st and 2nd production lines were installed on 16 Jun 2009, 16 May 2009 and started commercial productions at Jun 2009. Project activity is divided into two phase which each of them are equally same system with boiler, turbine, generator. Waste gas recovery system for phase 1 is implemented at 1st and 2nd production lines and phase 2 is implemented at 3rd and 4th productions lines. Construction of phase 1 recovery system was started at 8 Sep 2008 and finished 28 Aug 2009. Construction of phase 2 recovery system was started at 1 Oct 2009 and finished 30 Jan 2010. Project activity generated electricity from Oct 2009 with phase 1 recovery system and the generated electricity from the project exported to the carbon black facility and NCPG.

(Unit: Mwh)

Year	Total electricity generation	Exported to the NCPG	Exported To the Carbon black facility	Purchased Electricity from the NCPG	Net electricity generation
2009 (Oct-Dec)	19,151	11,908	7,243	1,007	18,144
2010	127,493	64,301	63,192	2,055	125,438

Table 7. Electricity generation/consumption after project activity

The PPs exported electricity to the carbon black facility and NCPG from Oct 2009 and the replaced electricity from the NCPG to the carbon black facility was 63,192 Mwh at 2010.

✓**P7** is correctly excluded since China has been encouraged the construction of energy conservation and high efficiency project.

✓**P9, 10, 11** are correctly excluded since there is no existing power generating equipment exists in the project site.

According to above analysis, alternatives W2 and W4 for the use of waste gas and alternatives P1 and P6 for power generation are left for further discussion.

In conclusion, there are two possible baseline combination. "Combination Ⅰ" is composed of **W2**(waste gas is released to the atmosphere after incineration) and **P6**(sourced grid-connected power plant) and "Combination Ⅱ" is composed of **W4**(waste gas is used for electricity generation) and **P1**(the project undertaken without CDM program).

〈STEP 2〉: This step is not applicable since both alternative combinations identified in Step 1 do not give rise to the selection of fuel.

〈STEP 3〉: The latest version of "Tool for the demonstration and assessment of additionality" are

used to identify the most plausible baseline scenarios by eliminating non-feasible options. Based on the investment analysis, the project IRR, 4.17%, of alternative **W4**(waste gas is used for electricity generation)/alternative P1 (the project undertaken without CDM program) is lower than benchmark, 8%. Therefore, alternative **W4** and **P1** are excluded as unfeasible options. Keco has verified relevant evidence and confirmed that the investment analysis is appropriate. After step 3, only one alternative for use of waste gas and one alternative for power generation left.

〈STEP 4〉: Since there is only one credible and plausible baseline scenario left, step 4 is not applicable.

Therefore, alternative "**Combination Ⅰ**", as below, power imports from the grid combined with the non-utilization of waste gas, is the only scenario that is not eliminated and is selected as the baseline scenario of the project.

Scenario	Baseline options		Description
	Waste gas use	Power generation	
Combination I	W2	P6	Waste gas is released into the atmosphere after purified (such as incineration) and electricity is sourced from grid connected power plants.

Table 8. Baseline Scenario

From above analysis, Keco confirms that the baseline determination is transparent and deemed reasonable.

- ✓All the assumptions and data used by the PPs are listed in the PDD;
- ✓All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- ✓Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- ✓Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- ✓The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.5.4 Algorithm and/or formulae used to determine emission reductions

Keco conducted assessment of baseline emissions, project emissions, leakage, and emission reductions. The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements stipulated in the methodology and respective tools. The assumptions and data used to determine the emission reductions are described in the PDD and all the sources have been checked and confirmed. Based on the information reviewed, it can be confirmed that the sources used are correctly quoted and

interpreted in the PDD. The values in the PDD are considered reasonable based on the documentation and references reviewed, as well as, the result of the interviews. The baseline methodology has been correctly applied according to the requirements. The estimate of the baseline emissions can be confirmed as the same that have been replicated by Keco using the information provided.

❑ Baseline Emissions

The baseline emissions for the year y shall be determined as follows according to the methodology.

$$BE_y = BE_{En,y} + BE_{flst,y}$$

where:

BE_y = The total baseline emissions during the year y in tons of CO_2

$BE_{En,y}$ = The baseline emissions from energy generated by project activity during the year y in tons of CO_2

$BE_{flst,y}$ = Baseline emissions from steam generation, if any, using fossil fuel that would have been used for flaring the waste gas in absence of the project activity (tCO_2e per year) This is relevant for those project activities where in the baseline steam is used to flare the waste gas

Since the project does not use fossil fuel for flaring the waste gas in absence of the project activity, $BE_{flst,y}$ is zero (0).

The calculation of baseline emissions from energy generated by the project activity during the year y in tons of CO_2($BE_{En,y}$) depends on the identified baseline scenario. The methodology identifies two different scenarios, depending on the baseline options for the utilization of the waste energy resource, power supply, and heat supply. As discussed above, the relevant baseline options are W2 and P6, which the methodology is labelled **Scenario 1**. Thus Keco has identified **Scenario 1** as the applicable scenario for the calculation of baseline emissions as electricity is obtained from the grid. $BE_{En,y}$ can be calculated as:

$$BE_{En,y} = BE_{Elec,y} + BE_{Ther,y}$$

where:

$BE_{Elec,y}$ = Baseline emissions from electricity during the year y in tons of CO_2

$BE_{Ther,y}$ = Baseline emissions from thermal energy (due to heat generation by element process) during the year y in tons of CO_2

Since the project does not involve the use of waste energy resource to provide heat, $BE_{Ther,y}$ is zero (0).

The project has correctly been identified as Type-1 the calculation for $BE_{Elec,y}$ can be calculated:

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

where:

$BE_{Elec,y}$ = Baseline emissions due to displacement of electricity during the year y in tons of CO_2

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

identified source) during the year y in MWh

$EF_{Elec,i,j,y}$ = The CO_2 emission factor for the electricity source i (i=gr (grid) or i=is (identified source)), displaced due to the project activity, during the year y in tons CO_2/MWh

f_{wcm} = Fraction of total electricity generated by the project activity using waste energy. This fraction is 1 if the electricity generation is purely from use of waste energy, without additional firing of fossil fuels

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

The electricity generated in the project is from waste gas only, without any additional firing of fossil fuels, f_{wcm} is assumed to be 1.

The PPs used method-2 for f_{cap} calculation and it is validated by the DOE as follows: Method-1 is not applicable in facilities where three-year data on production is unavailable, and method-3 is applicable only when the PPs can demonstrate technical limitations in direct monitoring of waste heat/pressure of waste energy carrying medium (WECM), so method-2 is used for the f_{cap} calculation in accordance with the ACM0012 ver03.2. The PPs installed waste gas monitoring meter during implementation of project activity, there is no three years of historical data for WECM before project activity. The DOE confirmed that "layout of the carbon black facility before and after the project implementation" 〈99〉.

$$f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}}$$

$Q_{WCM,BL}$ is quantity of waste energy generated prior to the start of the project activity estimated using below Equation (kg of WECM or other relevant unit).

$$Q_{WCM,BL} = Q_{BL,product} \times q_{wcm,product}$$

$Q_{BL,product}$ is production associated with the relevant waste energy generation as it occurs in the baseline scenario. The PPs do not have average annual historical production data because the 4th production line of carbon black facility started commercial operation from May 2010. The PPs used the most relevant manufacture's data for normal operating conditions which is 160,000ton/yr and DOE confirmed it with "Purchase agreement of reactors" 〈97〉. Capacity of each reactor for four production lines is 40,000ton/yr.

$q_{wcm,product}$ is amount of waste energy per unit of product generated by the process in the carbon black facility. The carbon black facility designed to produce 160,000ton carbon black per year and the waste gas production is 160,000Nm^3/h with 8000 operation hour. Thus, $q_{wcm,product}$ is calculated 8,000Nm^3 per ton carbon black production for project activity.

$Q_{WCM,y}$ is quantity of WECM used for energy generation during year y (mass unit (kg)). The PPs installed waste gas meter before it enters waste gas boiler. The DOE cross-checked monitoring point using "layout of the carbon black facility before and after the project implementation" 〈99〉 and "Daily record of waste gas" 〈53〉 at 29 Jun 2010.

$$f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}} = \frac{Q_{BL,product} \times q_{wcm,product}}{Q_{WCM,y}} = \frac{160{,}000 ton/yr \times 8000 Nm^3/ton}{1{,}280{,}000{,}000\, Nm^3/yr} = 1$$

The f_{cap} calculated as 1 for the ex-ante calculation and it will be updated using monitored data for $Q_{WCM,y.}$ Keco cross-checked f_{cap} calculation spreadsheet 〈101〉. Keco confirmed all the assumptions are resonable and the relevant information has been submitted.

The calculation of the baseline emissions followed the procedures described in the methodology ACM0012(ver. 03.2) and "Tool to calculate the emission factor for an electricity system(version 02). The NCPG is considered to be the project boundary. The operating margin emission factor was determined based on the simple OM method. The ex-ante option was chosen for this calculation. The calculation of the build margin emission factor was based on modified methods agreed by the EB, because plant specific data are not available in China. The emission factor of the thermal power plants was calculated by the proportion of the emissions of coal, gas and oil times the emission factor of the best available coal, gas and oil power plant as defined and published by the Chinese DNA. The new thermal capacity installation that exceeded 20% in the last years, for which data was available, was finally assessed with this factor.

The operating margin($EF_{grid,OM,y}$)of the NCPG is 1.0069tCO_2e/MWh, and the build margin($EF_{grid,BM,y}$)of the NCPG is calculated as 0.7802tCO2e/MWh. The factors need to be revaluated once it has been decided which values can be applied. The value for the combined margin emission factor($EF_{grid,CM,y}$) is determined with the weighted average of the $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ using the default values for the factors as described in the methodology(i.e. 0.5 for waste gas recovery projects).

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times W_{OM} + EF_{grid,BM,y} \times W_{BM}$$

As per the methodology the combined margin emission factor($EF_{grid,CM,y}$) is 0.89355tCO_2e/MWh.

❑ Project Emissions

The project emissions for the year y shall be determined as follows according to the methodology.

$$PE_y = PE_{AF,y} + PE_{EL,y} + PE_{EL,Import,y}$$

where:

PE_y = Project emissions due to project activity

$PE_{AF,y}$ = Project activity emissions from on-site consumption of fossil fuels by the cogeneration plant(s), in case they are used as supplementary fuels, due to nonavailability of waste energy to the project activity or due to any other reason

$PE_{EL,y}$ = Project activity emissions from on-site consumption of electricity for gas cleaning equipment or other supplementary electricity consumption

$PE_{EL,Import,y}$ = Project activity emissions from import of electricity replacing captive electricity generated in the absence of the project activity for Type-2 project activities

Since no auxiliary fuel is consumed due to the project activity, $PE_{AF,y}$ is zero (0), and as no gas will be cleaned as the project utilizes waste gas, the $PE_{EL,y}$ is zero (0). Also the project is not TYPE-2 project, $PE_{EL,Import,y}$ is 0.

But the coke oven gas will be used only once in a year when start-up the boiler. Since the

boiler will be stopped only once a year for overhaul maintenance. The emissions are calculated based on methodological tool which is "Tool to calculated project or leakage CO_2 emission from fossil fuel combustion, ver.2" . Keco confirmed above using an explanation from Xian Datang power design Institute related with boiler ignition program 〈26〉. The quantity of coke oven gas based on a clarification from Xian Datang power design Institute. It caused very small amount of CO_2 emission. The quantity of emission is only 0.00017% of total emission reduction which is smaller than 1%, thus this is not considered as a project emission.

Any auxiliary electricity consumption by the project activity is to be measured and deducted from the gross electricity supply to the internal grid of the black carbon production facility, and Keco confirms the details of consumption ratio by power generation equipments(10%) 〈30〉.

❑ Leakage

According to the methodology, the project does not need to consider leakage.

❑ Emission reductions

Emission reductions due to the project activity during the year y are follows according to the methodology.

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Total emissions reductions during the year y in tons of CO_2

PE_y = Emissions from the project activity during the year y in tons of CO_2

BE_y = Baseline emissions for the project activity during the year y in tons of CO_2 applicable to Scenario 2

The expected emission reductions are 1,872,160tCO_2e(187,216tCO_2e/year average) over the defined ten years crediting period. Emission reductions are not likely vary significantly as the demand of carbon black in the future is expected to last, according to "Chinese carbon black industry status and future trends" 〈29〉. Keco judges that the calculation of the baseline emissions, project emissions, leakage and the emission reductions are appropriate.

3.6. Additionality

The PDD has presented the additionality with the four steps as per "Tool for the demonstration and assessment if additionality"(ver05.2). Following documents are reviewed to assess the approach used in the PDD:

✓PDD[ver 3.6] of "Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project." 〈8〉

✓IRR calculation sheet 〈77〉

The data, rationales, assumptions, justifications, and documentation provided have been verified using local knowledge as well as sectoral and financial expertise. This information was also confirmed through the following documentation:

✓Document of FSR 〈56〉

✓Comments in questionnaire, minute of stakeholder meeting, public notice 〈50〉, 〈51〉, 〈63〉

Based on these validation steps, Keco confirms that the documentation assessed is appropriate for

the project.

3.6.1 Prior consideration of the clean development mechanism

It has been demonstrated by the timeline of events of the project that the CDM revenues was seriously considered in the decision to proceed with the project activity prior to start of the project and the continuing real action were taken to secure CDM status for the project in parallel with its implementation:

Date	Events	Documents
19 Nov 2007	The holding company of the project owner signed the letter of commitment with CDM consultancy company.	Commitment letter between holding company of PPs and consulting company (Hangzhou Carbon Trade Environment Engineering Co., Ltd) 〈19〉
May 2008	The feasibility study report of the Project completed.	Feasibility Study Report published by Xi'an Datang electric power and Research Institute 〈56〉
5 May 2008	The project owner published the project information in the Wuhai Daily for public investigation.	Wuhai Daily Newspaper 〈63〉
3 Jun 2008	The project owner took Board meeting and made decision to CDM development.	Internal decision documents by the Board of Directors 〈12〉
15 Jun 2008	The project owner signed the CDM consultancy agreement with CDM consultancy company.	CDM consultancy agreement between project owner and consulting company (Hangzhou Carbon Trade Environment Engineering Co., Ltd) 〈14〉
10 July 2008	The project owner held a stakeholder meeting and decided to conduct public investigation by delivering the questionnaires.	Evidence of stakeholder meeting a. Meeting minute (10 July 2008) 〈50〉, b. Actual questionnaire and Results Report of stakeholder investigation (20 July 2008) 〈51〉
30 July 2008	The grid connection application of the Project approved by Inner Mongolia Power Corporation.	Approval letter for grid connection, Inner Mongolia Autonomous Region Power grid company 〈18〉
28 Aug 2008	Main equipment purchase agreement for phase 1 of the Project was signed.	Main equipment (phase 1-boiler) purchase agreement of the project and technical specification 〈13〉
Sep 2008	The environment impact assessment report of the Project completed.	EIA report 〈60〉
3 Sep 2008	The phase 1 construction contract signed.	Construction contract for phase 1 power station between the 13th Construction Co., Ltd of China National Chemical Engineering(TTECC) and Wuhai

Date	Events	Documents
		Black Cat company 〈71〉
18 Nov 2008	The project owner signed ERPA with the buyer.	ERPA between project owner and buyer (Visol S.A) 〈22〉
18 Dec 2008	The EIA report of the Project approved by Environmental Protection Bureau of Inner Mongolia Autonomous Region.	EIA approval letter by Environmental Protection Bureau of Inner Mongolia Autonomous Region 〈16〉
12 Jan 2009	The project owner informed NDRC in writing of the commencement of the Project.	NDRC notification for prior consideration, dated 〈20〉
6 Mar 2009	The Project was approved by Wuhai City DRC.	Approval letter by Wuhai City DRC 〈83〉
5 May 2009	Main equipment purchase agreement for phase 2 of the Project was signed.	Main equipment (Phase 2-boiler) purchase agreement of the project and Technical specification 〈39〉
7 Jun 2009	The Project was approved by Inner Mongolia DRC.	Approval letter for the project activity from Inner Mongolia Autonomous Region Development and Reform Committee 〈15〉
22 Jun 2009	The NDRC meeting for the Project examination.	Meeting notice for project examination from NDRC 〈84〉
15 July 2009	China LoA received.	A written approval letter from the DNA of China 〈23〉
21 Sep 2009	The phase 2 construction contract signed.	Construction Contract for Phase 2 Power station between the 13th Construction Co., Ltd of China National Chemical Engineering(TTECC) and Wuhai Black Cat company 〈72〉
23 Oct 2009	Swiss LoA received.	A written approval letter from the Federal Office for the Environment of Switzerland 〈24〉

Table 9. Prior consideration

From above table, Keco verifies that the start date of the project activity determined as **28 Aug 2008** is appropriate (the signed date of Main equipment (phase 1-boiler) purchase agreement 〈13〉), which was confirmed by Keco to be the earliest of the dates at which the implementation or construction or real action of the project activity began and in compliance with the CDM glossary. This is in accordance with the latest CDM glossary.

Since the project starting date is after 2 Aug 2008, the project is considered to be a new project activity in line with "Guidelines on the demonstration and assessment of prior consideration of the CDM"(ver 03, EB49, Annex22, 11 Sep. 2009). Keco confirms that the project activity complies with the requirements of the guidance as:

✓the PPs submitted an inform letter on prior consideration of the CDM to the Host Party, People's Republic of China, dated **12 Jan 2009 〈20〉**, which is within six months of the project activity start date(28 Aug 2008) 〈13〉

Since the starting date of this project is 28/8/2008 which is much earlier than the date of revision of "Guidance on the demonstration and assessment of prior consideration of the CDM(ver 02, EB48, Annex 61, 17 July 2009)", the PPs had no choice but to apply "Guidance on the demonstration and assessment of prior consideration of the CDM(ver 01, EB41, Annex 46, 2 Aug 2008)", where the provision that the PPs must inform the Host Party DNA and/or the UNFCCC secretariat in writing for commencement of the project activity and of their intention to seek CDM status within six months of the project activity start date" is stipulated. Keco therefore confirms that only an inform letter to the host party is enough to meet the requirements of the guideline.

Keco has checked all the physical documents mentioned in above table and verified that all the documents are substantial and reasonable at that situation in the host country. Keco has therefore judged that the incentives of CDM were seriously considered prior to the start of the project activity and real action were taken to secure CDM status for the project in parallel with its implementation.

3.6.2 Identification of alternatives

The baseline scenario of the project is composed of alternative W2(waste gas is released to the atmosphere) and alternative P6(sourced grid-connected power plants of NCPG). Through the assessment of the PDD to identify alternatives, Keco confirms that the list of alternatives include the project activity undertaken without being registered as a proposed CDM project activity, the list contains all plausible scenarios, and the alternatives comply with all applicable legislation. Hence, Keco considers the listed alternatives to be credible and complete.

3.6.3 Investment analysis

Since the project will earn revenues not only from the CERs but also from electricity supply, the simple cost analysis(Option I) is not appropriate. Therefore, the PPs opted for Option III (benchmark analysis) to conduct the investment analysis.

The benchmark IRR, **8%** (before Tax), is derived from "Methodology and Parameter for Project Economic Evaluation" issued by NDRC 〈85〉. Keco judges that the benchmark is appropriate as the PPs used the government/official approved benchmark as per "Tool for the demonstration and assessment of additionality(ver05.2)". Also Keco validate appropriateness of benchmark in accordance with the information note "Previous rulings related to the appropriateness of benchmarks for project activities utilizing waste heat/waste gas for power generation", EB51 Annex59. Since the project exporting more than 75% of generated electricity to the grid, so the project considered to be an investment in power production and related industries. Keco verified that using FSR and grid connection contract. The total generated electricity of the project is 240,000MWh and the electricity demand of the carbon black production lines on-site is 50,407.76MWh which accounts about 21% of net power generation and rest of electricity will be exported to the NCPG which is more than 75% of generated electricity. Keco has cross-checked the quantity of electricity demand of carbon black

production lines based on each equipments applied 〈61〉. So the PPs can not use core business benchmark for the project. Construction of fire power plant and related industries benchmark is 8% in "Methodology and Parameter for Project Economic Evaluation". It reflects the risks faced by the project in power generation and related industry.

Based on the project IRR calculation spreadsheet 〈77〉, the IRR of the project without CERs revenue is **4.17%**, which is much lower than the benchmark indicating that the project is not financially attractive compared to the benchmark in the absence of CDM benefits. Hence, Keco confirms that the financial returns of the project would be insufficient to justify the required investment. Keco has also verified that the IRR processing is reasonable and the data input are relied on values from the approved FSR carried out by an authorized third party, Xi'an Datang Electric Power and Research Institute granted as B class design institute for electric power industry issued by China Ministry of construction 〈62〉. Therefore, Keco can confirm that the input values from FSR are valid and applicable and the parameters in the PDD and associated annexes are fully consistent with FSR.

However, Keco has identified differences of the amortization period in project IRR calculation. This inconsistency has been reviewed by Keco as below: The amortization period is 6 years in FSR. According to the information from China Accounting net 〈82〉, the Intangible assets amortization should be no less than 10 years. Therefore, amortization period is changed to 10 years in the IRR calculation and the result of project IRR is remain same.

Parameter	Unit	FSR	PDD (IRR calculation sheet)
Amortization period	year	6	10
	↓		
Project IRR	%	**4.17**	**4.17**

✓In regard with amortization period, the PPs have used 6 year for amortization cost in FSR. But "Evidence document for the amortization period from China Accounting net" 〈82〉, regulated the period of amortization more than 10 years. Keco has checked the documentation and confirmed its value, 10 years, applied to the project is reasonable as the period applied to the project is longer than that of FSR where the period is mentioned as 6 years. Therefore Keco judges the amortization period, 10 years are conservative and reasonable.

In conclusion, the justification of the application of parameters that are different from FSR is reasonable.

Since the PPs rely on values from FSR approved by national authorities for proposed CDM project activity, Keco confirmed that FSR has been the basis of the decision to proceed with the investment in the project. The completion date of the approval of FSR 〈56〉 is May 2008 and the board of Wuhai Black Cat company decided to develop the project under CDM program on 3 Jun 2008. Keco can therefore confirm that the board members considered to proceed CDM project activity based on FSR. Furthermore, the period between completion of FSR study and the board resolution is sufficiently short, one month, that it is unlikely the input values would have materially

changed.

Keco has reviewed the IRR calculation sheet and confirmed that the operating period of 20 years is selected reasonably since Keco has confirmed the technical specifications of turbine, boilers and generator with "Operational lifetime of main equipments" 〈34〉, 〈35〉 where total lifetime of turbine, boilers and generator are described over 20 years and it is consistent with the requirements of paragraph 3 of "Guidance on the Assessment of Investment Analysis(ver 03.1)", i.e. "a minimum period of 10 years and a maximum of 20 years will be appropriate". Thus Keco judges that the operating period of 20 years is appropriate.

In regard with sensitivity analysis, four financial parameters were taken as uncertain factors for sensitive analysis of financial attractiveness:

a) Total (Construction) investment
b) O&M cost
c) Annual electricity generation
d) Electricity tariff

As per "Guidelines on the assessment of investment analysis(ver 03.1)", the sensitivity was conducted over a range of ±10% for above four parameters and Keco found that the IRR would remain under the benchmark.

Refer to the following:

✓With a decrease in **Total(Construction) investment**, a), by 30.9% and **O&M cost,** b), by 21.5%, the project IRR may reach 8%. Considering the increasing pricing level of construction materials, and employee salary in line with the GDP growth rate in China, Keco can confirm that neither the construction investment, a), decreased by 30.9% nor operation cost, b), decreased by 21.5% is likely. Keco has also cross-checked it with static data from National Bureau of Statistics of China 〈32〉, which predicts the strong tendency of rising raw materials, fuels and power prices. See Table 5.

(Preceding year=100)

Year	General Index	Fuel and Power	Ferrous Metals	Nonferrous Metals	Raw Chemical Materials	Timber and Paper Pulp	Building Materials
2004	111.4	109.7	120.4	120.1	108.9	102.8	105.1
2005	108.3	115.0	107.5	114.0	108.3	103.5	103.1
2006	106.0	111.9	98.3	130.8	102.1	102.6	101.9
2007	104.4	104.3	105.4	111.6	103.6	102.7	103.0
2008	110.5	120.6	118.4	98.6	105.2	105.2	109.5

Table 10. Purchasing price indices for raw materials, fuels and power

✓With an increase in **Annual electricity generation**, c), by 36.6%, the project IRR may reach 8%. The annual operating hour of the project is 8,000h. From the fact that (1) the amount of annual power supply depends on the waste gas from carbon black production lines, (2) the operating hour, 8,000h, is the same as the designed operating hours of carbon black production

lines(8,000h) in "Carbon black production and Waste Gas Recovery system equipment maintenance plan" 〈57〉, Keco can confirms that it is unlikely to increase the supplied electricity of the project by 36.6%.

✓With an increase in **Electricity tariff**, d) by 18.5%, the project IRR may reach 8%. However, the grid connect contract had been made and the electricity tariff is same with the confirmed tariff. From the fact that electricity tariff is strictly regulated by China government and will not be significantly changed without permission by the central and local governments and the same economic climate in which the O&M cost and the electricity tariff are changing simultaneously along with the economy fluctuation, the overall impact will not be great due to mutual-offset of the two indicators. Hence, Keco judges that the actual tariff saved by the project is impossible to increase by 18.5%.

If the CERs sales revenues are considered, the project IRR of the project will reach the benchmark by 10.46%. According to the investment analysis above, it is convinced that without CDM incentive the investment barrier the project faced is insurmountable. Considering of the CERs sales revenues the IRR of total investment of the project will significantly improve.

In order to assess its correctness, consistence, appropriateness and credibility, input parameters/indicators for investment analysis has been validated by Keco as below:

❑ Total investment

The total investment of the project is 183,590,000 RMB from FSR approved by Inner Mongolia Autonomous Region Development and Reform Committee 〈15〉. The project was developed by Wuhai Black Cat company. 30% of the total investment was self-raised by the company and 70% of the total investment was loan from the bank of China. This is verified by the The DOE with the "loan contract" 〈79〉 signed on 24 July 2009.

The DOE interviewed with local expert to verify appropriateness of input values. There are about one(1) hundred carbon black facilities and thirty of them are using waste gas for electricity generation in China 〈81〉. The DOE validated the list of carbon black facilities with submitted documents. According to "Local expert opinion" 〈94〉, the unit installed capacity of total investment is 5000-7000 RMB/kw for the power generation project of the carbon black company. The unit installed capacity of total investment of the project is 6119.7 RMB/kw which is within the range.

The validity and applicability of the investment cost was cross-checked with a construction investment proof and provided by the PPs. Keco received the materials of actual generators, turbines, boilers and construction contracts for phase 1,2 and confirmed them. Keco has further cross-checked it with "2010 Annual audit report" 〈91〉, and found that the actual cost of the project is 187.90 million RMB which is higher than estimated total investment cost (183.59 million RMB) in FSR.

❑ Operation and Maintenance Costs (O&M cost) (26,993,100 RMB/year)

The DOE cross-checked the O&M cost of the project with local expert opinion to verify appropriateness. According to "Local expert opinion 〈94〉, for the power generation project of the

carbon black company, the average power generation cost is 0.11-0.20 RMB/kwh. The average power generation cost of the project is 0.11RMB/kwh which is within the range. Keco has further cross-checked it with "2010 Annual audit report" 〈91〉, and found that the actual O&M cost of the project is 27,814,154 RMB/yr which is higher than estimated O&M cost in FSR.

Keco has assessed every parameter for calculation of the O&M cost to validate its appropriateness and conservativeness. The O&M cost of the project includes raw material costs, water costs, salary and welfare costs, repair and maintenance costs, grid charges, and other administrative expenses. All the values came from an independent third party, Xi'an Datang Electric Power and Research Institute. The DOE confirmed below factors with FSR and reference documents.

Parameter		Value (10^4RMB/year)	Reference
Material expenditure	Hudsperse DT503	35.4	- FSR 〈56〉 - Unit price of Chemical material for the water treatment System from Shanxi Welsun E&P Technology Co., Ltd 〈69〉 - Quantity of chemical material usage explanation from water treatment facility manufacturer 〈80〉 ※ There is a calculation error when add up material expenditure in FSR. The material expenditure in FSR is 3,499,200RMB but it need to be 3,510,200RMB. But the difference can be neglectable since it is 0.04% of O&M cost and 0.006% of total investment. And the project IRR will remain same. So Keco decided to use the figure in FSR which is more conservative.
	Optimgard MS6200	33.04	
	Aquacide BC1100	24.96	
	NaCl0 (10%)	3.6	
	HCl (30%)	8.06	
	Aquacide BC1007	80	
	NH_4OH(AR)	4.64	
	H_2SO_4(AR)	0.176	
	Optimgard SC2101	156	
	$NaHSO_3$	0.512	
	HCl (AR)	1.44	
	$SnCl_2$	0.03	
	$(NH_4)_2S_2O_8$	0.16	
	RO scale inhibitor	1.92	
	Na_2HPO_4	1.08	
	Subtotal	**349.92**	
Water cost		**367.2**	- FSR 〈56〉 - IRR calculation sheet 〈77〉 - Notice on adjusting the price of Municipal Water Supply and Drainage in Wuhai City from Inner Mongolia Autonomous Region DRC 〈70〉
Salary and welfare	Salary	141	- FSR 〈56〉 - China statistical year book 〈32〉
	welfare	19.74	
	Subtotal	**160.74**	
Repairs and maintenance		**449.85**	- FSR 〈56〉

Parameter	Value (10^4RMB/year)	Reference
		- Methodology and Parameter for Project Economic Evaluation[third edition] by China NDRC 〈85〉
Other cost	810	- FSR (Company experience) 〈56〉 - Methodology and Parameter for Project Economic Evaluation[third edition] by China NDRC 〈85〉
Grid-connection management cost	561.6	- FSR (Company experience) 〈56〉 - High Voltage Electricity Supply Contract 〈76〉
O&M cost	2,699.31	

Table 11. Parameters for O&M cost

(a) Material expenditure (3,499,200 RMB/year)

The PPs determines 3,499,200RMB/year for material expenditure of the project as in FSR. Keco has cross-checked the chemical price with "Unit price of Chemical material for the water treatment System" 〈69〉 issued by Shanxi Welsun E&P Technology Co., Ltd which is a major company in chemical and quantity of usage with "Quantity of chemical material usage explanation" 〈80〉 issued by water treatment facility manufacturer which is same company above.

Keco has further cross-checked material expenditure with "2010 Annual audit report" 〈91〉. Based on the evidence, material expenditure is 3,632,554 RMB/year which is higher than the estimated amount in the FSR. Thus the estimated material expenditure used in FSR is conservative and appropriate.

(b) Water cost (3,672,000 RMB/year)

The annual cost of water of the project is 3,672,000 RMB/year. The PPs have used 2.6 RMB/ton for water unit cost in accordance with "Notice on adjusting the price of Municipal Water Supply and Drainage in Wuhai City from Inner Mongolia Autonomous Region DRC" 〈70〉, where the price of industrial tap water, Keco has checked the documentation and confirmed its value applied to the project is reasonable.

Keco has further cross-checked water cost with "2010 Annual audit report" 〈91〉. Based on the evidence, water cost is 3,841,512 RMB/year which is higher than the estimated amount in the FSR. Thus the estimated water cost used in FSR is conservative and appropriate.

(c) Salary and welfare (1,607,400 RMB/year with 47 employees)

The Salary and welfare costs have been determined as 1,410,000 RMB/year and 197,400 RMB/year respectively as in FSR. Keco finds that annual average salary per person is 30,000 RMB/year based on the number of employees and welfare rate is 14% of total salary. Keco has cross-checked the annual average salary with statistical annual salary 〈32〉 where a strong tendency to increase(See Table 10) is identified. Keco has further cross-checked actual salary with "2010 Annual audit report" 〈91〉. Since the estimated wage in FSR is lower than that of statistical data and actual data, Keco confirms that the annual salary applied in FSR is reasonable and

conservative.

Year	Sector	China (RMB)	Inner Mongolia Autonomous Region (RMB)	The project (RMB)	
				Assessed salary in FSR	Actual salary payment
2005	Production and Distribution of Electricity, Gas and Water sector	25,073	30,661	-	-
2006		28,765	33,022	-	-
2007		33,809	36,806	-	-
2008		39,204	41,241	**30,000**	-
2009		-	-	-	**30,285**

Table 12. Statistical and actual annual salary

Keco has validated the welfare cost, 14% of total salary, with "Implementation rule of enterprise income tax law of the People's Republic of China" 〈86〉 for employee welfare expenses. The documents confirms that 14% of welfare cost is appropriate. Keco has further cross-checked welfare costs with "2010 Annual audit report" 〈91〉. Based on the evidence, the welfare cost is 199,276 RMB/year which is higher than the estimated amount in the FSR. Thus the estimated welfare costs used in FSR is conservative and appropriate.

(d) Repairs and maintenance (4,498,500 RMB/year, 2.5% of fixed assets)

The repair and maintenance cost of the project is 2.5% of fixed assets in FSR. The value was the same as PDD and Keco confirmed it. In accordance with "Methodology and Parameter for Project Economic Evaluation[third edition] by China NDRC" 〈85〉, the repair and maintenance value should be chosen based on industry and project characteristics. Since 2.5% of fixed assets comes from company experience, Keco has further cross-checked repair and maintenance cost with "2010 Annual audit report" 〈91〉. Based on the evidence, repair and maintenance cost is 4,637,530 RMB/year which is higher than the estimated amount in the FSR. Thus the estimated repair and maintenance cost used in FSR is conservative and appropriate.

(e) Other cost (8,100,000 RMB/year, 5.0 times of the salary and welfare)

Other cost of the project is 5.0 times of the salary and welfare cost. The value is derived from FSR and Keco has confirmed "Methodology and Parameter for Project Economic Evaluation[third edition] by China NDRC" 〈85〉, indicates that other cost can be calculated according to the multiple of salary and welfare. Since other expenses of the project come from company experience, Keco has cross-checked other cost with "2010 Annual audit report" 〈91〉. Based on the evidence, other cost is 6,420,291 RMB/year. Expenditure on other cost reduced than estimated in FSR, but it is only 6% of total O&M cost and total O&M cost increased 3% than estimated in FSR. Thus the estimated other cost used in FSR is appropriate.

(f) Grid-connection management cost (5,616,000 RMB/year)

Grid-connection management cost will be imposed every year. Keco has cross-checked using a "High Voltage Electricity Supply Contract" 〈76〉. The contract indicates that the recipient power plant of the enterprise which is connected to the power grid shall pay the grid system reserved fee to the grid enterprise. The contract signed between two Parties which are Party B: Wuhai Black Cat company and Party A: Inner Mongolia Wuhai city power Bureau. Party A will provide a reserved capacity of electricity supply for the (waste gas recovery) recipient power plant of Party B during an operation accident or scheduled maintenance (repairing), and will take the basic fee based on the maximum demand, Party B shall also pay Party A the grid system reserved fee(Grid connection charges) according to the actual electricity generation of the recipient power plant of Party B. Keco has further cross-checked grid-connection management cost with "2010 Annual audit report" 〈91〉 Based on the evidence, grid-connection management cost is 9,120,000 RMB/year which is higher than the estimated amount in the FSR. Thus the estimated grid-connection management cost used in FSR is conservative and appropriate.

❑ Tax

Keco confirms that the taxes applied in the project are appropriate by cross-checking relevant documentation as below:

(a) Value added tax (VAT) (17%)

Keco has cross-checked VAT with the document "Provisional Regulations of the People's Republic of China", [1993] No.134, issued by the National Financial Ministry and National Revenue Ministry 〈64〉 indicating selling or importing merchandise by a taxpayer, except second and third item of present section, the VAT should be 17%.

(b) City maintenance & construction tax (7% of VAT)

Keco has cross-checked city maintenance & construction tax with the document "Construction and maintenance tax Provisional Regulations of the People's Republic of China", [1985] No.19, issued by the National Financial Ministry and National Revenue Ministry 〈65〉 indicating if an incorporation is located in a city, the tax rate is 7% of VAT. As it is mentioned above Keco confirms the 7% is appropriate since the project is located in a city.

(c) Education tax (3% of VAT)

Keco has cross-checked educational tax with the document tax "Decision on amending Provisional Regulations of collecting educational tax", [2005] No.448, issued by the National Financial Ministry and National Revenue Ministry 〈66〉. This indicates educational tax rate is 3% of VAT. As it is mentioned above Keco confirmed that it is reasonable.

(d) Income tax rate (25% of Income)

The PPs choose 25% tax rate in the FSR and IRR calculation based on "Law of People's Republic of China on income tax", [2007] No.63, issued by People's Republic of China 〈67〉. Keco

has cross-checked income tax rate with the document indicating the income tax rate is 25% as a effective date on 1 Jan 2008. Income tax calculation from first year of operation is as calculated as follows in the FSR and IRR calculation sheet:

Income tax = (Electricity sales - Total costs - Tax - Interest payments) × Income tax rate

There is a preferential policy related with the carbon black waste gas utilization which is "Preferential policies of the income tax for western development", [2001] No.202, dated 30 Dec 2001 〈95〉. This indicates that if a company newly sets up business in transportation, power, water conservancy, postal service areas and the income from those business areas takes up over 70% of the total income that the company makes, it can enjoy income tax exemption for the first 2 years and income tax reduction by 50% for the subsequent 3 years. But the PPs didn't correspond with above conditions so they calculated the income tax with 25%. The DOE cross-checked above fact with the "General Tax payment certificate" which indicate 25% of income tax 〈96〉.

❑ Annual output of electricity and operation hour

The expected annual output of electricity, 216,000 MWh, is in line with FSR. The line loss rate is 3% and Keco has cross-checked with "Line loss rate for West of Inner Mongolia Grid" 〈68〉 from Inner Mongolia Year Book. Line loss late in west of Inner Mongolia grid is 5.04%, so choosing 3% for line loss rate is conservative. The annual output power is calculated based on turbine and generator technical specification. Internal electricity consumption by the power generation devices is 24,000 MWh and Keco confirmed it with "Internal electricity consumption by power generation equipments" 〈30〉 for a cross-check. Therefore the internal electricity consumption in FSR is considered conservative and appropriate.

The operation hour is 8,000 based on FSR. Keco has validated the operation hour with "Carbon black production and Waste Gas Recovery system equipment maintenance plan" 〈57〉 for appropriate annual operation rate of carbon black production lines and waste gas recovery system. Keco therefore judges the operation hour(8,000) of the project is appropriate and conservative.

❑ Operation lifetime

The expected operational lifetime of the project of 20 years is in line with FSR. Keco confirms that it is reasonable based on the "Operational lifetime of main equipments" 〈34〉, 〈35〉 from equipment manufacturers and the DOE's sectoral knowledge.

❑ Electricity tariff

The electricity tariff is 0.25 RMB/Kwh(0.21 RMB/Kwh VAT excluded) in the PDD and it is same with FSR. The assessed tariff in FSR is based on the "Wuahi Junzheng Energy Chemical Industry company(0.25 RMB/Kwh VAT included), Wuhai Haishen thermoelectricity company(0.24 RMB/Kwh VAT included) grid-connect tariff approval letter" 〈54〉, 〈55〉 approved by Wuhai City DRC. The PPs choose higher tariff which is 0.25 RMB/Kwh(VAT included) in FSR and it has been approved by DRC of Inner Mongolia Autonomous Region 〈15〉.

The actual tariff of the project is 0.27 RMB/kwh(VAT included) which is higher than the assessed tariff in FSR. The DOE verified actual tariff using "Tariff adjustment of western Inner Mongolia from Inner Mongolia Autonomous DRC" 〈98〉. The tariff increases by 9.9% than estimated in FSR but the project IRR does not cross the benchmark. Thus, Keco confirmed that the tariff in FSR is appropriately used.

3.6.4 Barrier analysis

No barrier analysis has been applied.

3.6.5 Common practice analysis

Keco has reviewed the approach presented in the PDD and confirmed that relevant parameters such as location, infrastructure, economical situation, and development have been taken into account in order to define the region to be used for the common practice. Since the conditions vary from province to province in the NCPG, the presented region, Inner Mongolia Autonomous region, is considered appropriate for the common practice analysis. Keco has reviewed "List of Carbon black plants from China Carbon Black Association (http://www.carbonblack.org.cn)" 〈81〉. This information confirms that the list of similar projects that have carbon black production plants with waste gas recovery facilities presented in the PDD is complete. All the similar projects presented in the PDD have been checked by review of available information. There are only three (3) carbon black companies in Inner Mongolia Autonomous region and the project is the only facility adopts waste gas recovery system. In conclusion, it is practically impossible to invest in the similar projects without CDM. Therefore, it can be confirmed that the proposed CDM activity is not a common practice in the defined region.

3.7. Monitoring plan

Keco has applied a two-step process to assess compliance with the requirement of the VVM as below:

3.7.1 Compliance of the monitoring plan with the approved methodology

The monitoring plan presented in the PDD complies with the requirements of the applicable methodology ACM0012(ver. 03.2), "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects". Keco has verified that all parameters in the monitoring plan against the requirements of the methodology, and no relevant deviations have been found. The data and parameters in the methodology ACM0012(ver. 03.2) has been validated as follows:

Data/Parameter	Description	Assessment	Conclusion
$FF_{i,y}$	Quantity of fossil fuel type i combusted to supplement WECM in the project activity during the year y	There is no fossil fuel combustion as the supplement fuels on site	Does not need to be monitored.
$ws_{i,j}$	Fraction of total heat that is	The project activity does not	Does not need to

Data/Parameter	Description	Assessment	Conclusion
	used by the recipient j in the project that in absence of the project activity would have been supplied by the i^{th} boiler	involve supply of heat to the recipient in the baseline.	be monitored.
$Q_{WCM,y}$	Quantity of Waste Gas used for energy generation during year y	This parameter will be monitored continuously by the PPs with metering instruments.	Needs to be monitored.
$Q_{OE,y}$	Quantity of actual output/ intermediate energy during year y	The project activity applies Method-2 for f_{cap} calculation	Does not need to be monitored.
$EF_{elec,i,j,y}$	CO_2 emission factor for the electricity source i (i=gr (grid) or i=is (identified source))	The factor was determined ex ante.	Does not need to be monitored.
$EF_{CO2,is,j}$	CO_2 emission factor per unit of energy of the fossil fuel used in the baseline generation source i (i=is) providing energy to recipient j	The only baseline generation source is grid-generated electricity.	Does not need to be monitored.
$EF_{CO2,COGEN}$	CO_2 emission factor per unit of energy of the fuel that would have been used in the baseline cogeneration plant	The project does not include a cogeneration plant.	Does not need to be monitored.
$EG_{i,j,y}$	Quantity of electricity supplied to recipient plants during year y	This parameter will be monitored continuously by the PPs with metering instruments.	Needs to be monitored.
$EG_{j,y}$	Quantity of electricity supplied to the recipient plant j by the project activity during the year y in MWh	The project does not supply heat to the recipient plant.	Does not need to be monitored.
$HG_{j,y}$	Net quantity of heat supplied to the recipient plant j	The project does not supply heat to the recipient plant.	Does not need to be monitored.
$MG_{i,j,y,mot}$ or $MG_{i,j,y,tur}$	Mechanical energy supplied to the recipient j by generator	The project activity does not supply mechanical energy to the recipient plant.	Does not need to be monitored.
$EF_{CO2,i,j}$	CO_2 emission factor per unit of energy of the baseline fuel	The project activity does not involve a boiler at the recipient site in the baseline.	Does not need to be monitored.
$EF_{CO2,j}$	CO_2 emission factor of fossil fuel (tCO_2/TJ) that would have been used at facility	The project activity does not involve the flaring of waste gas at the facility in the	Does not need to be monitored.

Data/Parameter	Description	Assessment	Conclusion
	'j' for flaring the waste gas	baseline.	
$EF_{CO2,I}$	CO_2 emission factor per unit of energy or mass of the fuel type i	The project does not involve project emissions due to auxiliary fossil fuel.	Does not need to be monitored.
$Q_{i,h}$	Amount of individual fuel (and other fuel(s)) i consumed at the energy generation unit during hour h	The project activity does not consume fuels at the energy generation.	Does not need to be monitored.
$EG_{tot,y}$	Total annual energy produced at the cogeneration plants, using waste energy and fossil fuel	The project activity does not involve the construction of a cogeneration plant.	Does not need to be monitored.
$Q_{wcm,h}$	Quantity of WECM recovered in hour h	The project activity does not involve this parameter for calculation.	Does not need to be monitored.
$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type i.	The factor was determined ex ante.	Does not need to be monitored.
$NCV_{WCM,y}$	Net Calorific Value annual average for WECM.	There is no supplement fuel consumption on site.	Does not need to be monitored.
CP_{wcm} or CP_i	Specific Heat of WECM or fuel	The project activity does not involve the utilization of specific heat of WECM or fuel.	Does not need to be monitored.
$t_{wcm,h}$ or $t_{i,h}$	The temperature of WECM (or fuel) in hour h	The project activity does not involve the monitoring of the temperature of WECM or fuel.	Does not need to be monitored.
$t_{wcm,y}$	Average temperature of Waste Energy Carrying Medium (WECM) in year y	The project activity does not involve the monitoring of the temperature of WECM or fuel.	Does not need to be monitored.
$P_{WCM,\ y}$	Average pressure of WECM in year y	The project activity does not involve the utilization of waste pressure.	Does not need to be monitored.
$H_{WCM,\ y}$	Average enthalpy of WECM in year y	The project activity applies Method-2 for f_{cap} calculation	Does not need to be monitored.
$d_{wcm,y}$	Average density of WECM at actual temperature and pressure in year y	The project activity does not involve the utilization of the pressure.	Does not need to be monitored.
$ST_{whr,y}$	Energy content of the steam generated in waste heat recovery boiler fed to turbine via common steam header	The project activity does not involve this parameter for calculation.	Does not need to be monitored.

Data/Parameter	Description	Assessment	Conclusion
$ST_{other,y}$	Energy content of the steam generated in other boilers fed to turbine via common steam header	The project activity does not involve this parameter for calculation.	Does not need to be monitored.
$EF_{heat,j,y}$	CO_2 emission factor of the heat source that would have supplied the recipient plant j in absence of the project activity	The project activity does not involve heat supply to the recipient plant in the baseline.	Does not need to be monitored.
$EC_{PJ,y}$	Additional electricity consumed in year y, for gas cleaning equipment, or any other project related equipment, as a result of the implementation of the project	This parameter will be monitored continuously by the PPs with metering instruments.	Needs to be monitored.
$EF_{CO2,EL,y}$	CO_2 emission factor for electricity consumed by the project activity in year y	The project does not involve any project emissions.	Does not need to be monitored.
$FC_{EL,CP,k,y}$	Quantity of fuel type k combusted in the captive power plant at the project site in year y where k are the fuel types fired in the captive power plant at the project site in year y	The project activity does not involve captive power in the baseline scenario.	Does not need to be monitored.
NCV_k	Net calorific value of fuel type k where k are the fuel types fired in the captive power plant at the project site in year y	The project activity does not involve captive power in the baseline scenario.	Does not need to be monitored.
$EF_{CO2,k}$	Emission factor of fuel type k where k are the fuel types fired in the captive power plant at the project site in year y	The project activity does not involve captive power in the baseline.	Does not need to be monitored.
$EC_{CP,y}$	Quantity of electricity generated in the captive power plant at the project site in year y	The project activity does not involve captive power in the baseline.	Does not need to be monitored.
$\eta_{Project\ plant,j}$	Overall efficiency of the new electricity generating plant(%) in year y	The project activity does not involve captive power in the baseline.	Does not need to be monitored.

Data/Parameter	Description	Assessment	Conclusion
$EC_{PJ,import\ i,y}$	Quantity of import electricity from source i consumed replacing captive electricity generated in the absence of the project activity during year y	The project is Type-1 project.	Does not need to be monitored.
Thermal energy produced by Type-2 project activity	Annual quantity of thermal energy produced by Type-2 project activity	The project is Type-1 project.	Does not need to be monitored.

Table 12. Validation of Data/Parameter in the methodology ACM0012(ver. 03.2)

As discussed above, the parameters need to be monitored are identified as follows:

✓$Q_{WCM,y}$: Quantity of waste gas used for energy generation during year y, which will be continuously measured by the PPs through appropriate metering devices and the metering instrument will undergo regular maintenance and calibration.

✓$EG_{i,j,y}$: Quantity of electricity supplied to recipient plants(Carbon black facility and grid) during year y, which will be continuously measured by the PPs. The readings of meters installed at the recipient plant and at the generation plant will be used to complement each other.

✓$EC_{PJ,y}$: Additional electricity consumed in year y for the project related equipment as a result of the implementation of the project, which will be continuously measured.

3.7.2 Implementation of the Plan

Monitoring structure for the project activity is comprehensively detailed in the PDD including description of the responsibility, training, procedure reference, equipment details, calibration frequency and maintenance. Archiving of the records is indicated. By reviewing the provided "Power House Operation and Management Procedure" 〈42〉 and on-site interview with the PPs, Keco confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan is sufficient to ensure the emission reductions achieved by the proposed CDM project activity can be reported ex-post and verified. In conclusion, Keco has the opinion that the PPs have the ability to implement the monitoring plan.

3.8. Sustainable development

The DNA of the Host country, People's Republic of China issued the Letter of Approval(LoA) on 15 July 2009 〈23〉 has confirmed the contribution of the project to the sustainable development.

3.9. Local stakeholder consultation

The project owner invited local stakeholders for the comments on the project activity via newspaper, stakeholder meeting, questionnaire. Keco confirmed that the questionnaires were distributed transparently, as the questionnaires were available for everyone who wanted to give comments on the project. Total fifty (50) questionnaires were distributed and all of them were collected with 100% return rate. According to the 50 collected questionnaires, the interested stakeholder have a very good understanding of the project, and they generally agreed that the project had positive influence on the local socio-economy, environmental impact, the role of the project, and their work and life. 98% of the invited stakeholders supported the construction of the project. The returned questionnaires with answers of interested stakeholders had been maintained by the project owner and were presented to Keco for assessment during the on-site visit. Keco has cross-checked Wuhai Daily Newspaper 〈63〉, meeting minute 〈50〉, Actual questionnaire and results report of stakeholder investigation 〈51〉 and confirmed that the summary of the comments received has been completely provided in the PDD. Keco has therefore its opinion that the local stakeholder consultation is appropriate.

3.10. Environmental Impacts

Keco has ensured that Environment Impact Assessment(EIA) Report have been carried out by Institute of Environmental Protection division of Wuhai city and approved by Environmental Protection Bureau of Inner Mongolia Autonomous Region 〈16〉. The environmental impact results from the project have been identified and analyzed in the PDD. By checking the EIA report 〈60〉, Keco is able to ensure that the environment impacts occurs in the construction period and operational period. EIA covers impact and prevention of noise, waste water, dust and waste gas. All above impacts would be within an acceptable limit by carrying out corresponding mitigation measures as per the statement of the EIA. Keco therefore concludes that the project will not have significant impacts on the environment by means of measures of pollution avoidance and control. Furthermore, LoA issued by DNA of China confirmed that the project contributes to sustainable development.

4. COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. Keco published the project documents on the UNFCCC CDM web site 〈http://cdm.unfccc.int〉 on 22 July 2009 and invited comments by 20 Aug 2009 by Parties, stakeholders and non-governmental organizations. No Comments were received.

5. VALIDATION OPINION

Keco has performed a validation of the proposed CDM project activity, "Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project". The validation was performed on the basis of UNFCCC criteria and host country criteria.

Keco carried out the validation via i) desk review of project design documentation, the baseline and monitoring plan; ii) follow-up interviews with project stakeholders and technical experts; and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

No public funding is involved and the validation did not reveal any information indicates that the project can be seen as a diversion of ODA funding.

The proposed project applies the baseline and monitoring methodology ACM0012(ver 03.2), "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects" and the "Tool for the demonstration and assessment of additionality(ver 05.2)" to determine that the project activity would not have occurred anyway due to the barrier identified.

Emission reductions from the project are hence additional to any that would have occurred in the absence of the project activity. Given that the project is expected to be implemented and maintained as designed, the project is likely to achieve the estimated total amount of emission reductions of 1,872,160tCO_2e over 10 years crediting period and annual average emission reductions of 187,216tCO_2e by displacing fossil fuel-based electricity over the crediting period. The project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, this proposed CDM project activity, as described in the revised and resubmitted project design documentation dated 10 Mar 2011(ver. 03.6) meets all relevant UNFCCC requirements for CDM and relevant host country criteria. Keco will therefore recommend the registration of the proposed project,"Inner Mongolia Wuhai 30MW Waste Gas Power Generation Project", as CDM project activity.

The validation is based on the information made available to the DOE and the engagement conditions detailed in this report. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, Keco cannot be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

11-Mar-2011

Signature: .

Lee Seon-woo

GHG Certification Center Manager

6. VALIDATION TEAM

❑ Team Members

Lee Seon-gyoo, Keco, Republic of Korea - Team Leader
Park Beom-woong, Keco, Republic of Korea - Team member
Jeong Dong-hee, Keco, Republic of Korea - Technical Expert
Kang Hee-kyung, Keco, Republic of Korea - Observer
Yu in-sik, Industrial Bank of Korea, Republic of Korea - Observer

❑ Qualification of validators

a. Lee Seon-gyoo - Team Leader

Korea Environment Corporation

CERTIFICATE
of
CDM Auditor

No. 100001

Name : ***Lee Seon-gyoo***
Date of Birth : *4, Feb, 1966*
Sectoral Scope :

1	*Energy industries*
4	*Manufacturing industries*
5	*Chemical industry*
13	*Waste handling and disposal*
15	*Agriculture*

We, hereby recognize the above-mentioned person is qualified for a CDM Auditor by Korea Environment Corporation.

4, May, 2010

Chairman : Park Seung-hwan
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b. Park Beom-woong - Team member

Korea Environment Corporation

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of
CDM Auditor

No. 100007

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15	*Agriculture*

We, hereby recognize the above-mentioned person is qualified for a CDM Auditor by Korea Environment Corporation.

20, Sep, 2010

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c. Jung Dong-hee

Certificate of Competence

Jung Dong-hee

Data of Birth : 18 Sep. 1962
Sectoral scope : 1, 4

According to EMC(Keco)'s Qualification Scheme(KECOS -S1200), above person is qualified for a Technical Expert.

4 May 2010

Lee Seon-woo

GHG Certification Center Manager
Korea Environment Corporation

Appendix A
Validation Protocol

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

REQUIREMENT	REFERENCE	CONCLUSION	CROSS REFERENCE/COMMENT
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art. 12.2	OK	The project will assist Switzerland (Annex1) in achieving compliance.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures § 40a	OK	In accordance with a Letter of Approval (LoA), the DNA of the Host country confirms the sustainable development.
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	OK	The project result in fewer GHG emissions than the baseline case
4. The project shall have written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures § 40a	OK	Written approval letter (LoA) from DNA of China and Switzerland have been received.
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Section B of the PDD
6. Reduction in GHG emissions must be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5.c, CDM Modalities and Procedures § 43	OK	Section B.5 of the PDD
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords (Decision 17/CP.7)	OK	No public funding has been involved. This project is planned to be invested 30% from Wuhai Black Cat company and 70% from local bank. Keco confirm it with DRC approval (7 Jun 2009) 〈15〉

REQUIREMENT	REFERENCE	CONCLUSION	CROSS REFERENCE/COMMENT
			and interview with the PPs. And Vitol S.A. is a Credits buyer. The evidence examined by Keco using ERPA(18 Nov 2008) 〈22〉.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures § 29	OK	**DNA of Host party : China** National Development and Reform Commission (NDRC) **DNA of Annex1 Party :** Switzerland Federal Office for the Environment FOEN, Climate Unit of the Switzerland organized
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities and Procedures § 30, 31b	OK	**Host party: China** China is a party to the Kyoto Protocol. Ratification date is 30 Aug, 2002. **Annex1 Party:** Switzerland The Switzerland is a party to the Kyoto Protocol. Ratification date is 09 July, 2003.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures § 31b	OK	The assigned amounts for Switzerland have been calculated and recorded.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures § 31b	OK	Switzerland has in place national systems for estimation of GHG emissions and regularly submits inventories to UNFCCC(submission date: 15 Apr 2010)

REQUIREMENT	REFERENCE	CONCLUSION	CROSS REFERENCE/COMMENT
12. The project design document shall conform with the latest CDM Project Design Document format	Marrakech accords, CDM Modalities, Appendix B, EB Decisions	OK	CDM-PDD(version03) has been used.
13. Comments by local stakeholders are invited, and a summary of these provided	CDM Modalities and Procedures § 22b	OK	Section E of the PDD
14. 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.	Marrakech Accords, CDM Modalities § 37c	OK	Section D of the PDD
15. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	CDM Modalities and Procedures § 40	OK	The period for comments at UNFCCC website was 22 July 2009 - 20 Aug 2009. There was no comment.
16. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures § 37e	OK	The latest version of approved methodology, ACM0012(ver. 03.2), has been applied.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures § 45c,d	OK	Section B.4 of the PDD

Table 2. Requirement Check list

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
1. Approval					
All Parties involved have approved the project activity.	/1/ 44				
1.1. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in Section A.3 of the PDD provided a written letter of approval?	/1/ 45	DR/I	No, A written approval letter (LoA) from the DNA of China was published. But Keco did not receive it yet from the PPs. And A written approval letter (LoA) from the Federal Office for the Environment FOEN, Climate Unit of the Switzerland is not obtained yet also.	~~CAR1~~ ~~CAR2~~	OK
1.2. Does the written letter of approval from each DNA involved;	/1/ 45				
1.2.1. Does it confirm that the party is a Party of the Kyoto Protocol?	/1/ 45(a)	DR	Yes, **Host party: China** China is a party to the Kyoto Protocol. Ratification date is 30 Aug 2002. **Annex1 Party: Switzerland** Switzerland is a party to the Kyoto Protocol. Ratification date ratification date is 09 July 2003.	OK	OK
1.2.2. Doe it confirm that participation is voluntary?	/1/ 45(b)	DR	No, LoAs from China and Switzerland need to be obtained. Wuhai Black Cat company is China company. But Keco need more clarification using Business license of Wuhai Black Cat company.	~~CAR1~~ ~~CAR2~~ ~~CI1~~	OK
1.2.3. In the case of the host Party, does the proposed CDM	/1/	DR	No,	~~CAR1~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
project activity contribute to the sustainable development of the country?	45(c)		LoA from DNA of China needs to be obtained.		
1.2.4. Does it refer to the precise proposed CDM project activity title in the PDD being submitted for registration?	/1/ 45(d)	DR	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
1.3. Is the letter of approval unconditional with respect to 1.2.1 to 1.2.4 above?	/1/ 46	DR/I	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
1.4. Has the letter of approval been issued by the respective Party' s designated national authority (DNA)?	/1/ 47	DR/I	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
1.5. Is the letter of approval authentic?	/1/ 48	DR/I	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
1.6. Do letters of approval contain additional specification of the project activity, such as the PDD version number?	/1/ 50	DR	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
1.7 Does a letter of approval refer to a specific version of the validation report and the DOE therefore is unable to submit this precise version of the validation report?	/1/ 50	DR	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
2. Participation					
All project participants have been listed in a consistent manner in the project documentation, and their participation in the project activity has been approved by a Party to the Kyoto Protocol.	/1/ 51				
2.1. Are the project participants listed in tabular form in Section A.3 of the PDD?	/1/ 52	DR	Yes, There are the PPs listed in section A.3 of the PDD.	OK	OK
2.2. Is the information consistent with the contact details provided in annex 1 of the PDD?	/1/ 52	DR	Yes, The information is consistent with the contact	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			details provided in annex 1 of the PDD.		
2.3. Has the participation of each project participant been approved by at least one Party involved either in a letter of approval or in a separate letter specifically to approve participation?	/1/ 52	DR/I	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
2.4. Are any entities other than those approved as project participants included in these Sections of the PDD?	/1/ 52	DR/I	No, With the PDD and an interview with the PPs during the on-site visit, Keco confirms that any entities other than those approved as the PPs have been included.	OK	OK
2.5. Has the approval of participation been issued from the relevant DNA?	/1/ 53	DR/I	No, LoAs from China and Switzerland need to be obtained.	~~CAR1~~ ~~CAR2~~	OK
3. PDD					
The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.	/1/ 55				
3.1. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance?	/1/ 55	DR	No, "CDM-PDD-Version03.1" has been used for the PDD. The PPs needs to use the latest PDD version posted at UNFCCC website.	~~CAR3~~	OK
3.2. Is the PDD in accordance with the applicable CDM requirements for completing PDD?	/1/ 56 57	DR	Yes,	OK	OK
3.2.1. Are the following indicated in Section A.1 of the PDD; · The title of the project activity, · The current version number of the document, and · The date when the document was completed?	/2/	DR	Yes, There are the title of the project activity, the current version number of the document, and the date when the document was completed in section A.1 of the PDD	OK	OK
3.2.2. Has not potential public funding for the project from Parties in	/2/	DR/I	No,	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
Annex I be a diversion of official development assistance?			Keco confirms that there is no public funding involved in the project with a cross-check on Emission Reduction Purchase Agreement(ERPA), a bank contract for a loan, and interview with the PPs.		
3.2.3. Has the Section B.8 of the PDD provided followings? · Date of completion of the application of the methodology to the project activity · Contact information of the persons(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	/2/	DR	Yes, The PDD describes the date of completion of the methodology, 15 Aug 2010, and a contact person responsible for the application of the baseline and monitoring methodology to the project activity.	OK	OK
4. Project description					
The PDD shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.	/1/ 58				
4.1. Is the description of the proposed CDM project activity sufficiently covering all relevant elements accurate?	/1/ 59	DR/I	Yes, The proposed CDM project activity sufficiently covers relevant elements accurate.	OK	OK
4.2. Does the description provide a clear understanding of the nature of the proposed CDM project activity?	/1/ 59	DR/I	Yes, The description provides a clear understanding of the nature of the proposed CDM project activity.	OK	OK
4.3. If the proposed CDM project activity involves the alteration of an existing installation or process, are the differences resulting from the project activity compared to the pre-project situation clearly stated in the project description?	/1/ 63	DR	N/A The proposed CDM project is not involves with the alteration of an existing installation or process.	OK	OK
4.4. Are followings included in the description in Section A.2 of the PDD?	/2/	DR	Yes, The PDD describes:	OK	

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
· The purpose of the project activity; · Explain how the proposed project activity reduces greenhouse gas emissions; · The view of the project participants on the contribution of the project activity to sustainable development			· The purpose of the project activity: ✓The project activity will lead to the mitigation of greenhouse gas emissions · How the project activity reduces greenhouse gas emissions: ✓The project activity will recover and use the waste gas from the carbon black production lines · The view of the PPs on the contribution of the project activity to sustainable development: ✓Reducing environmental pollution and reducing reliance on exhaustible fossil fuel based power sources ✓Increasing the diversity of power supply and mitigate conflict between supply and demand of electricity ✓Creating 47 employment opportunities for local residents		
4.5. Are the project's spatial (geographical) boundaries clearly defined so that no submitted project could potentially be confused with another in Section A.4.1 of the PDD?	/2/	DR/I	No, The project is located at Hainan District of Wuhai City which geographical coordinates are latitude 39° 22'18"N and longitude 106° 55'34"E But in Annex1, described location is Nanhai District. the PPs must correct right location.	~~CI2~~	OK
4.6. Have a description of how environmentally safe and sound technology and knowhow is being applied by the project activity inter alia technology transfer to the Host Party(ies) for application in the project activity been included in Section A.4.3 of the PDD?	/2/	DR/I	Yes, The PDD describes that no technologies have been transferred to the Host country. All the equipment employed is domestically manufactured. However, the presented tables in A.4.3 do not	~~CI5~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			have any identification name and number (i.e. Table A.4.2). It must be extend to the rest of the tables of the PDD. The PPs did not describe details on tail gases (e.g. A flow rate of around 54,000 Nm^3/hr at a temperature of 200℃ is collected through collection pipes and calorific value of about 720 Kcal/Nm^3). An explanation on it should be provided in the PDD. Technical specifications of main equipments such as boilers, turbines and generators need to be provided. The details/justification of self-consumption ratio (10%) provided. The electricity during any emergency or for start-up are including in the self-consumption ratio. Keco find that in FSR what is provided by the PPs.	~~CI6~~ ~~CI26~~	
4.7. Has the chosen crediting period been indicated and the estimation of the total emission reductions as well as annual estimates for the chosen crediting period been provided in the PDD Section A.4.4?	/2/	DR	Yes, The PDD describes chosen crediting period, fixed ten-year, and the estimation of the total emission reductions, 1,872,160tCO_2e, and annual estimates, 187,216tCO_2e during the defined crediting period. The fixed crediting period of 10 years is selected starting on 01 Jan 2010 in PDD C.2.2.1. But starting date in C.2.2.1 must be changed from '01 Jan 2010' to '01, Dec 2010.	~~CAR12~~	OK
5. Baseline and monitoring methodology					
The baseline and monitoring methodology shall be previously	/1/				

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
approved by the CDM Executive Board. 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.	65				
(a) General requirement					
5.1. Do the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	/1/ 65 68	DR	Yes. The project adopts the latest version of the approved methodologies as below - ACM0012(ver. 03.1), "Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system" - "Tool for the demonstration and assessment of additionality" ver05.2 - "Tool to calculate the emission factor for an electricity system" ver01.1 But in page16, the version of "Tool for the demonstration and assessment of additionality" must change from version5 to version05.2.	~~CI8~~	OK
5.2. Are the number and the version of the approved methodology that is used indicated and correctly quoted in Section B.1 of the PDD?	/2/	DR	Yes, The PDD clearly mentions the approved methodology with the number and the version.	OK	OK
5.3. Is the used version of the baseline and monitoring methodology valid?	/1/ 68	DR	Yes	OK	OK
5.4. Is the selected methodology applicable to the project activity?	/1/ 66(a)	DR/I	Yes, The PPs have explained in the PDD why the proposed CDM project is a Type-1 and the several applicability conditions mentioned in the methodology as below:		OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			✓Type: Since the project activity will utilize all waste gas generated by the carbon black production lines for electricity generation. ✓Applicability conditions: a. Applicable conditions · Energy generated in the project activity may be used within the industrial facility or exported from the industrial facility. · The electricity generated in the project activity may be exported to the grid or used for captive purposes; · Energy in the project activity will be generated by the owner of the industrial facility producing the waste energy. · Regulations do not constrain the industrial facility that generates waste energy from using fossil fuels prior to the implementation of the project activity. · The project activity involves a waste gas recovery project in a existing facility. · The emission reductions are claimed by the generator of the electricity using waste gas. · In cases where the energy is exported to other facilities, an official agreement is signed by exists between the owners of the project energy generation plant with the recipient plant(s) that the emission reductions would not be claimed by recipient plant(s) for using a zero-emission energy source.		

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			· Waste energy that is released under abnormal operation (for example, emergencies, shut down) of the plant shall not be accounted for. · The waste gas/heat project is not implemented in a single-cycle power plant to generate power. b. Irrelevant conditions · If the project activity is based on the use of waste pressure to generate electricity, electricity generated using waste pressure should be measurable. ⇨This applicability condition is not relevant, as the project activity does not involve the use of waste pressure. · For those facilities and recipients included in the project boundary, that prior to implementation of the project activity generated energy on-site, the credits can be claimed for specified period. ⇨This applicability condition is not relevant, as there was no on-site energy generation prior to implementation. However, there should be a demonstration of use of waste energy in the absence of CDM project activity, Keco needs to confirm disposal manner of waste gas before implementation of this project in accordance with the selected methodology. There are four options to prove it in the methodologies.	~~CAR6~~	

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
(b) Applicability of the selected methodology to the project activity					
5.5. Is the methodology correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology?	/1/ 70	DR	Yes, The methodology is correctly quoted and applied by comparing it with the actual text of methodology ACM0012(ver. 03.1). But the PPs need to apply the latest version of the methodology.	~~CI8~~	OK
5.6 Have the project participants shown that the project activity meet each of the applicability conditions of the approved methodology or any tool or other methodology component referred to therein?	/1/ 66(b) 71	DR	Yes, Refer to 5.4 above.	OK	OK
5.7. Is the project activity expected to result in emissions other than those allowed by the methodology?	/1/ 71	DR/I	No, The project activity is not expected to result in emissions other than those allowed by the methodology.	OK	OK
5.8. Is it possible to make a determination regarding the applicability of the selected methodology to the proposed CDM project activity?	/1/ 72-75	DR/I	Yes, Refer to 5.4 above.	OK	OK
(c) Project boundary					
5.9. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	/2/ /1/ 78-80	DR/I	No, The project boundaries are the Boilers, turbines, generators and setting equipments in the power plant and all the power plants that are connected to NCPG (North China Power Grid). Keco cross-checked using the Approval letter for Grid connection to Inner Mongolia Autonomous area Grid 〈18〉. But fig2 does not include all of the equipments.		OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			The diagram of project boundary must be corrected. The equipment purchase agreement for phase 1 was signed at 28 Aug 2008 〈13〉. But it was only for one boiler, one turbine and generator. The PPs need to submit additional purchase agreement for phase 2 equipments. And table B.5-1 must be corrected.	~~CAR4~~ ~~CAR5~~	
5.10. Have all sources and GHGs required by the methodology been included within the project boundary?	/2/ /1/ 78	DR/I	Yes, The emission sources included or excluded from the project boundary for determination of both baseline and project emissions are explained and listed in Table B.3-1. All of gases and sources that need to be included are demonstrated.	OK	OK
5.11. If the methodology allows project participants to choose whether a source or gas is to be included within the project boundary, is the justification provided reasonable?	/2/ /1/ 79 80	DR/I	N/A	OK	OK
(d) Baseline identification					
5.12. Has the PDD identified the baseline for the proposed CDM project activity?	/1/ 81	DR	Yes, The PDD has identified the baseline for the proposed CDM project.	OK	OK
5.13. Has any procedure contained in the methodology to identify the most reasonable baseline scenario been correctly applied?	/1/ 82	DR	Yes, The PDD has correctly applied the procedure contained in the methodology to identify the most reasonable baseline scenario.	OK	OK
5.14. Has each step in the procedure been described in the PDD against the requirements of the methodology?	/1/ 82	DR/I	Yes, The PDD follows the steps in the methodology		OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			as below: ✓**Step1** (Define the most plausible baseline scenario for the generation of heat and electricity using the following baseline options and combinations) 〉 step 1(Use of waste energy) Realistic and credible alternatives have been discussed for the use of waste energy and the elimination of the non-feasible options (among W1-W6) were justified. · Related to W3, Keco need more evidence documents for the cross-check. 〉 step 1(Power generation) Realistic and credible alternatives have been discussed for the power supply and the elimination of the non-feasible options (among P1-P11) was justified. · The project is not a cogeneration plant. So P2, P3, and P8 are excluded. · P4 is excluded based on restriction on new fire power plants. · P5 is correctly excluded since there is no on-site or existing renewable energy based existing captive or identified plant, all the electricity demand by the carbon black lines is supplied by NCPG · P7 is correctly excluded since China encourage the construction of energy conservation and high efficiency project. · No existing power generating equipment	~~CI14~~	

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			exists in the project site. P9, P10 and P11 are excluded. 〉Overall Conclusion of Step 1 There are four combinations after step 1. But the combination of P1 and W2, W4 and P6 are not applicable because this combination is not consistent each other. ✓**Step2** (Identify the fuel for the baseline choice of energy source taking into account the national and/or sectoral policies as applicable) 〉N/A Since the PPs identified fuel for the baseline choice taking into consideration national and/or sectoral polices. Both of the combination scenario does not have a constrain of fuel supply. ✓**Step3** (Use Step 2 and/or step 3 of the latest approved version of the "Tool for the demonstration and assessment of additionality") 〉There are combinations of options for power generation and use of waste energy. According to the PDD, alternative Combination I which is composed of W2(waste gas is released to the atmosphere after incineration) and P6(grid-connected power plant) and Combination II which is composed of W4(waste gas is used for electricity generation) and P1(the project undertaken		

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			without CDM program) are applicable. However, after step 3, alternative combination II is eliminated due to its barriers. ✓**Step4** 〉Step 4 is not applicable since there is only one alternative scenario.		
5.15. If the selected methodology requires use of tools to establish the baseline scenario, has it been correctly applied?	/1/ 82	DR	Yes, The latest version of "Tool for the demonstration and assessment of additionality" has been applied. But in page16, the version of "Tool for the demonstration and assessment of additionality" must change from version5 to version05.2	~~CR~~8	OK
5.16. Does the methodology require several alternative scenarios for reasonable baseline scenario? · If yes, are all those scenarios reasonable in the context of the proposed CDM project activity? · Has no reasonable alternative scenario been excluded?	/1/ 83	DR	Yes, Alternative scenarios are reasonable in the context of the proposed CDM project activity and no reasonable alternative scenario has been excluded.	OK	OK
5.17. Have the key assumptions and rational been explained and justified? · Are all the assumptions and data used by the project participants listed in the PDD, including their references and sources? · Is all documentation used relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD?	/1/ 84 87(a) 87(b) /2/	DR	Yes, The key assumptions and rational have been explained and justified.	OK	OK
5.18. Are the assumption, calculation and rationales used reasonable?	/1/ 84 87(c)	DR/I	Yes, The assumption, calculation and rationales used are reasonable.	OK	OK
5.19. Have all relevant policies and circumstances been identified and correctly considered in Section B.5 of the PDD?	/1/ 85	DR/I	Yes, All relevant policies and circumstances have	OK	OK

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	87(d) /2/		been identified and correctly considered.		
5.20. Does the PDD provide a verifiable description of the identified baseline scenario, including description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	/1/ 86 87(e)	DR/I	Yes, The PPs followed the methodology ACM0012 to identify the most plausible baseline including description of the technology that would be employed and the activities that would take place in the absence of the proposed CDM project activity.	OK	OK
(e) Algorithms and/or formulae used to determine emission reductions					
5.21. Has the PDD explained how the procedures, in the approved project category to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity?	/1/ 89 /2/	DR/I	Yes, The PDD has explained how the procedures, in the approved project category to calculate project emissions, baseline emissions, leakage and emission reductions are applied to the project activity. In the PDD, the project emission is described as zero. But project participant must provide analysis for possible emission source. According to technical expert's opinion, light diesel oil or coke oven gas can be used in the boiler as auxiliary fuel or can be used as a start-up fuel. And potential sources like boiler pump, desalting water station and hot water circulating pump must consider. During interview with the PPs, Keco confirmed that the project is not using auxiliary fuel in the boiler due to inconsistency in the availability of	~~CAR8~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			tail gas. Efficiency of the boiler will be changed automatically refer to the DCS. And other equipments will using electricity as an energy source. Keco find that coke oven gas will be used only for start-up. Related data must be provided and included in the revised PDD. PDD used 'China electric power year books, 2002-2006. OM, BM and CM must be calculated using a latest version.	~~CAR9~~	
5.22. Does the PDD clearly state which equations will be used in calculating emission reductions?	/2/	DR	Yes, The PDD clearly state which equations will be used in calculating emission reductions.	OK	OK
5.23. Have the equations and parameters in the PDD been correctly applied as per the methodology used?	/1/ 90	DR/I	Yes, The equations and parameters in the PDD have been correctly applied and Keco compared them to those in the selected approved methodology. But No information for f_{wcm} and f_{cap} are provided in the PDD. the PPs must provide calculation spreadsheet for f_{wcm} and f_{cap} to Keco and include in the revised PDD.	~~CI17~~	OK
5.24. If the methodology provides for selection between different options for equations or parameters, has adequate justification been provided and have correct equations and parameters been used in accordance with the methodology selected?	/1/ 90	DR	Yes, When there are different options for equations or parameter, adequate justification has been provided and correct equations and parameters have been used in accordance with the methodology.	OK	OK
5.25. (For Section B.6.2 of the PDD) If data and parameters have already been determined and will remain fixed throughout the crediting period without being monitored throughout the	/1/ 91 /2/	DR/I	There are some parameters that will remain fixed throughout the crediting period without being monitored throughout the crediting period	~~CI16~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
crediting period of the proposed CDM project activity. · Are all data sources and assumptions appropriate? · Are calculations are correct, applicable to the proposed CDM project activity? · Will calculations result in a conservative estimate of the emission reductions ?			of the proposed CDM project activity. Keco has assessed that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and result in a conservative estimate of the emission reductions. But data/parameter in PDD B.6.2 is not in accordance with the methodology. 〉 Fi,j,y is not a latest version. It must be changed to FCi,y. 〉 Source of data used of NCVi and CAPi,j,y must be changed to 2006-2008.		
5.26. (For Section B.6.3 of the PDD) Has the PDD provided a transparent ex-ante calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations?	/1/ 92 /2/	DR/I	Yes, The PDD has provided a transparent ex-ante calculation of project emissions, baseline emissions and leakage emissions. However, description of the project emissions (e.g. equation, justification of the choice, etc.) is needed as per the methodology. If the project activity emits CO_2 resulting from auxiliary equipment consuming power in the project boundary, this must include in the revised PDD.	~~CI19~~	OK
5.27. Has it documented how each equation is applied, in a manner that enables the reader to reproduce the calculation?	/1/ 92 /2/	DR	According to submitted emission reduction spread sheet, equation is applied in a manner that enables the reader can reproduce the calculation.	OK	OK
5.28. If the project activity involves more than one component activity, have emission reduction calculations for each of the component been provided separately in a transparent manner?	/2/		N/A	OK	OK

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5.29. (For Section B.6.4 of the PDD) Has the PDD summarized the results of the ex-ante estimation of emission reductions for all years of the crediting period, using the tabular form provided?	/2/	DR	Yes, The PDD has summarized the results of the ex-ante estimation of emission reductions for all years of the crediting period, in section B.6.4 of PDD	OK	OK
5.30. Have all data used to determine the baseline emissions (variables, parameters, data sources etc.) been illustrated in a transparent manner?	/1/ 93 /2/	DR	Yes, All data used to determine the baseline emissions have been illustrated in a transparent manner. The major uncertainty is the amount of waste gas recovered in the future. Relative emissions are not likely to vary significantly, given that demand for carbon black at the same level for at least the crediting period. But this is not described in the PDD.	~~CI18~~	OK
6. Additionality of a project activity					
The PDD shall describe how a proposed CDM project activity is additional.	/1/ 94				
6.1. Does project participants describe how a proposed CDM project activity is additional in the PDD?	/1/ 94	DR/I	Yes, The PPs have describe how the proposed CDM project activity is additional in the PDD with the "Tool for the demonstration and assessment of additionality".	OK	OK
6.2. Are all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality reliable and credible?	/1/ 95	DR/I	Yes, All data, rationales, assumptions, justifications and documentation provided by the PPs to support the demonstration of additionality reliable and credible. In regard to investment analysis: The PPs must provide reference report for	~~CI9~~	OK

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			benchmark ratio of IRR (8%). This project is planned to be invested 30% from the PPs and 70% from local bank. Potential of additional investment for transmission line must be provided to validation team. ~~CL10~~ Keco validate the methodology for assuming of operation hours. The project used 8,000 of operation hours except for 1 month for maintenance. Keco confirm that investment costs, operation costs, and tariff, annual output are not likely to increase to reach 8% of benchmark through sensitivity analysis. Keco found that the assessed tariff is differ with the actual tariff of the project. According to 'Clarification on grid tariff of Renewable Energy Projects in china, dated 13 May, 2009' 〈87〉, the actual tariff can be differ with the assessed tariff in feasibility study report. But Keco need more clarification for methodology of assuming of assessed tariff in FSR and PDD. ~~CL11~~		
6.3. Does the proposed project activity comply with the latest tools and documents provided by the CDM Executive Board to demonstrate the additionality of proposed CDM project activities, as well as specific complementary or alternative requirements included in approved CDM methodology?	/1/ 96 137	DR	Yes, The latest version of "Tool for the demonstration and assessment of additionality" has been applied and the project activity complies with it.	OK	OK
6.4. If this starting date is earlier than the date of publication of the	/2/	DR/I	Yes,		OK

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CDM-PDD for global stakeholder consultation, has Section B.5 in the PDD contain a description of how the benefits of the CDM were seriously considered prior to the starting date?			The starting date of the project is 28 Aug 2008, which is earlier than the date of PDD publication for global stakeholder consultation, 22 July 2009. The PPs provided project history related to early consideration with relevant documentations. However, PPs did not included time line of public investigation, stakeholder meeting, phase 1 construction contract, Information on NDRC notification, Wuhai City DRC approval, phase 2 main equipment purchase agreement, Inner Mongolia approval, China LoA, phase 2 construction contract, Swiss LoA date in table B.5-1 of PDD. And the date of the letter of commitment with the CDM consultancy company is differ with the submitted documents.	~~CL30~~	
(a) Prior consideration of the clean development mechanism					
6.5. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	/1/ 98	DR	Yes, The starting date of the project is 28 Aug 2008, which is earlier than the date of PDD publication for global stakeholder consultation, 22 July 2009.	OK	OK
6.6. Did project participants reported in Section C.1 of the PDD about the start date of the project activity in accordance with the "Glossary of CDM terms"?	/1/ 99 /2/	DR/I	Yes, The PPs have determined the date of signing of main equipment purchase contract as its starting date(28 Aug 2008), in accordance with the definition in the glossary of terms.	OK	OK
6.7. For a new project activity (a project activity with a start date on or after 02 Aug 2008), if PDD has not been published for	/1/ 100	DR	Yes, The PPs must inform to DNA and UNFCCC		OK

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global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, did project participants had informed the host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status?	101		secretariat in writing of the commencement of the project activity. Such notification must be made within six months of the project activity start date and shall contain the precise geographical location and a brief description of the project activity (refer to "Guidelines on the demonstration and assessment of prior consideration of the CDM" Ver 03, EB49, Annex22, 11 Sep. 2009). But the PPs notified the commencement of the project activity only to the DNA of China. The PPs need to submit related document. No information is provided in the PDD table B.5-1. So the PPs must include above information in the PDD.	~~CAR7~~ ~~CI15~~	
6.8. For an existing project activity(a project activity with a start date before 02 Aug 2008), for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are there sufficient and available evidence to support the serious consideration of the CDM in the decision to implement the project activity?	/1/ 100 102	DR	N/A	OK	OK
6.9. Is the evidence to support the serious prior consideration of the CDM as indicated above available?	/1/ 102	DR	Yes, The PPs mentioned activities to seek CDM status in the PDD.	~~CI30~~	OK
(b) Identification of alternatives					
6.10. Does approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario so that no further analysis is required?	/1/ 105	DR/I	Yes, The approved methodology prescribes the baseline scenario and no further analysis is required.	OK	OK

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6.11. If no above question, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	/1/ 105	DR	N/A	OK	OK
6.11.1. Does the list of alternatives include as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	/1/ 106(a)	DR/I	Yes, The list of alternatives in the PDD include as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity, Combination II, which is composed of **W4**(waste gas is used for electricity generation) and **P1**(the project undertaken without CDM program).	OK	OK
6.11.2. Does the list contain all plausible alternatives?	/1/ 106(b)	DR/I	Yes, The PDD explains the plausible alternatives.	OK	OK
6.11.3. Do the alternatives comply with all applicable and enforced legislation?	/1/ 106(c)	DR/I	Yes The project is a voluntary initiative by Wuhai Black Cat company. There are no regulatory requirements related to installation of waste gas power generation in China. And the project complies with all the relevant rules and regulations of China. This is confirmed by LoA from the DNA of China. According to Keco's additional research, there is legislation concerning energy efficiency which encourages usage of waste gas such as "Energy Conservation Law"(which came into force in 1998). But this was not described in the PDD. However, as Keco was able to confirm, such legislation is not sufficient to mandate the project developer to develop the waste gas		OK

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			project or other uses of the waste gas because above legislation don't have penalty or incentive and it's just character of policy than mandatory regulation. Keco confirm this using interview with project owner. But Keco need additional cross check using interview with officer in government agency.	~~CI7~~	
(c) Investment analysis	/1/ 108				
6.12. Does the PDD provide evidence that the proposed CDM project activity would not be below? · The most economically or financially attractive alternative; or · Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)	/1/ 108	DR/I	Yes, The PDD describes that without the sale of certified emission reductions(CERs) the project is not feasible with the investment analysis where the project IRR has been determined as 4.17%, which is much lower than the benchmark, 8%. All the evidence for the investment analysis has been provided.	OK	OK
6.13. Do project participants demonstrate this through one of the following approaches? · The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity; · The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative; · The financial returns of the proposed CDM project activity would	/1/ 109	DR/I	Yes, Through the benchmark analysis the PPs demonstrate that the financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	OK	OK

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be insufficient to justify the required investment.					
For the assessment of investment analysis					
6.14. Has project participants choose appropriate investment analysis method? - simple cost analysis, investment comparison analysis or benchmark analysis	/3/ 16	DR	Yes, The PPs selected the benchmark analysis as: · Option I (Simple cost analysis) Since the project will earn revenues from not only the CDM but also the electricity output, the simple cost analysis method is not applicable; · Option II (Investment comparison analysis) It is not used, as the identified alternative (nonuse of the waste gas and purchase of the power from the grid) does not involve investments; · **Option III (Benchmark analysis)** It is the key consideration for the project entity to compare the benchmark IRR with estimation of the project investment IRR, therefore, option III is applicable for investment analysis of the project.	OK	OK
6.15. Is the plant load factor defined ex-ante in the PDD according to the latest "Guidelines for the reporting and validation of plant load factors"?	/1/ 110	DR	N/A	OK	OK
To verify the accuracy of financial calculations carried out for any investment analysis,	/1/ 111				
6.16. Are all parameters and assumptions used in calculating the relevant financial indicator valid and these parameters accurate and suitable?	/1/ 111(a) 111(b) 111(c)	DR/I	Yes All parameters and assumptions used in calculating the relevant financial indicator are valid and these parameters are accurate and	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
	113(a)		suitable.		
6.17. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	/3/ 3	DR	No, The proposed crediting period is ten (10) years. However, the project life time is twenty (20) years and the period of assessment is twenty (20) years according to the IRR calculation sheet.	OK	OK
6.18. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	/3/ 3	DR/I	Yes In the O&M cost, maintenance costs have been included.	OK	OK
6.19. Does the fair value of project activity assets at the end of the assessment period include as a cash inflow in the final year?	/3/ 4	DR	Yes The fair value is included at the end of the assessment period with residual rate 5% of fixed asset and is compliance with national standard where the residual rate is determined as no more than 5%.	OK	OK
6.20. Is the fair value calculated in accordance with local accounting regulations where available, or international best practice?	/3/ 4	DR	Yes The fair value is calculated in accordance with local accounting regulations.	OK	OK
6.21. Are depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator?	/3/ 5	DR	Throughout the calculation process of the project IRR, non-cash items such as depreciation and amortization have not been considered as an actual expense so there is no double counting.	OK	OK
6.22. Are all of the input values used in investment analysis valid and applicable at the time of the investment decision taken by the project participants?	/3/ 6	DR/I	Yes, All of the input values used in investment analysis valid and applicable at the time of the investment decision taken by the PPs. But, amortization period is not correctly applied in the FSR.	~~CI9~~	OK
6.23. Are the listed input values consistently applied in all	/3/	DR	Yes,	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
calculations?	6		Input values are consistently applied in all calculations.		
6.24. In the case of project activity for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM, does the investment analysis reflect the economic decision making context at point of the decision to recommence the project?	/3/ 7	DR	N/A	OK	OK
6.25. Did project participants supply spreadsheet versions of all investment analysis?	/3/ 8	DR	Yes, The PPs have provided the IRR calculation sheet.	OK	OK
6.26. Are the all formulas used in the analysis readable and all relevant cells viewable and unprotected?	/3/ 8	DR	Yes.	OK	OK
6.27. Is not the cost of financing expenditures included in the calculation of project IRR?	/3/ 9	DR	No, The cost of financing expenditures such as loan repayments and interest has not been included in the calculation of the project IRR. Therefore, there is no double counting in the calculation.	OK	OK
6.28. In the calculation of equity IRR, are the portion of investment cost which is financed by equity just considered as the net cash outflow and the portion of investment costs which is financed by debt not considered a cash outflow?	/3/ 10	DR	N/A The the benchmark ratio is for a project IRR.	OK	OK
6.29. In cases where a project IRR is calculated, is a pre-tax benchmark applied?	/3/ 11	DR	Yes, A benchmark, 8%(before tax), derived from the document "Methodology and Parameter for Project Economic Evaluation (ver 3)" 〈85〉 is applied.	OK	OK
6.30. Were the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed?	/1/ 111(e)	DR/I	Yes, Keco has assessed the sensitivity analysis as below: ✓With a decrease in "construction Investment"	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			by 30.9% and "O&M cost" by 21.5%, the project IRR may reach 8%. Considering the increasing pricing level of construction materials, and employee salary in line with the GDP growth rate in China, Keco can confirm that neither the construction investment decreased by 30.9% nor operation cost decreased by 21.5% is likely. Keco also has cross-checked it with static data from "National Bureau of Statistics of China" which predicts the strong tendency of rising raw materials, fuels and power prices. ✓With an increase in "annual power supply" by 36.6%, the project IRR may reach 8%. The annual operating hour of the project is 8,000. From the fact that (1) the amount of annual power supply depends on the waste gas from carbon black production lines, (2) the operating hour, 8,000, is the same as the designed operating hours of carbon black production lines(8,000h) in FSR, Keco can confirms that it is unlikely to increase the supplied electricity of the project by 36.6% ✓With an increase in "electricity tariff" by 18.5%, the project IRR may reach 8%. However, the grid connect contract ha been made and the electricity tariff is same with the confirmed tariff. From the fact that electricity tariff is strictly regulated by China government and will not be significantly changed without		

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			permission by the central and local governments and the same economic climate in which the O&M cost and the electricity tariff are changing simultaneously along with the economic fluctuation, the overall impact will not be great due to mutual-offset of the two indicators. Hence, Keco judges that the actual tariff saved by the project is impossible to increase by 18.5%.		
6.31. For the sensitivity analysis, are only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues, subjected to variation?	/3/ 17	DR	Yes, Variables including the total investment, O&M cost, annual power supply, and electricity tariff are subjected to variation.	OK	OK
6.32. Are the results of this variation for the sensitivity analysis presented in the PDD and reproducible in the associated spreadsheets?	/3/ 17	DR	Yes, The results of the variation for the sensitivity analysis are presented in the PDD and reproducible.	OK	OK
6.33. Is the range of variations reasonable in the project context?	/3/ 18	DR	Yes, As per "Guidelines on the assessment of investment analysis" the sensitivity was conducted over a range of ±10% for four parameters such as construction investment, O&M Cost, annual power supply, and electricity tariff.	OK	OK
To confirm the suitability of any benchmark applied in the investment analysis,	/1/ 112				
6.34. Is the applied benchmark appropriate to the type of IRR calculated?	/1/ 112(a) /3/ 12	DR	Yes, The PPs used an appropriate benchmark for cement industry supplied by NDRC China for the project IRR.	~~CI9~~	OK
6.35. Do risk premiums applied in determining the benchmark reflect	/1/	DR	Yes,	~~CI9~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
the risk profile associated with the project type or activity?	112(b) /3/ 15		The applied benchmark reflects the risks associated with the project.		
6.36. Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark?	/1/ 112(c)	DR/I	Yes, The project IRR, 4.17%, is lower than the benchmark, 8%, so the investment in the project is unlikely.	OK	OK
6.37. In the cases of projects which developed by an entity other than the project participants, did project participants use the benchmark based on publicly available data sources which can be clearly validated?	/3/ 13	DR	N/A	OK	OK
6.38. Is internal company benchmarks/expected returns applied?	/3/ 14	DR	No	OK	OK
6.39. Did project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities?	/1/ 113 113(b)	DR/I	Yes, The PPs rely on values from FSR approved by local government.	OK	OK
6.39.1. Is the period of time between the finalizations of the FSR and the investment decision sufficiently short that it is unlikely the input values would have materially changed?	/1/ 113(a)	DR/I	Yes, FSR was completed on May 2008 and only one month later, the board of Wuhai Black Cat company decided to develop the project under CDM program on 3 Jun 2008. Therefore, it is confirmed that the period between FSR study and the board resolution is sufficiently short that it is unlikely the input values would have materially changed.	OK	OK
6.39.2. Are the values used in the PDD and associated annexes are fully consistent with the FSR?	/1/ 113(b)	DR/I	Yes, All of the input values used in PDD are fully consistent with the FSR. But, amortization period is not correctly applied in the FSR.	~~CI9~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
6.39.3. Are the input values from the FSR valid and applicable at the time of the investment decision?	/1/ 113(c)		Yes, All of the input values used in investment analysis valid and applicable at the time of the investment decision taken by the PPs.	OK	OK
(d) Barrier analysis	115				
6.40. Has the PDD demonstrated that the proposed CDM project activity faces barriers that; · Prevent the implementation of this type of proposed CDM project activity · Do not prevent the implementation of at least one of the alternatives	/1/ 115	DR	Yes, The thermal efficiency is around 83%, while the average value is 80% based on the report from Carbon black industry research and design institute of Zhongzxiang group. The project is much more efficient and good practices than those of its kind in China. However, PPs must provide above evidential report from 'Carbon black industry research and design institute of Zhongzxiang group'. Furthermore, the generator unit adopts DCS system to automatically operation and monitor. PDD describe that this technology is only applied in developed countries. But DCS (Distributed Controlling System) have developed at 1975. And some developing country (ex. Republic of Korea) is using now. So this technology is not a new one. The PPs must provide status of DCS in China and change expression in PDD page 20. For waste gas generation, gas cleaning and dust removal is an obvious technical barrier but Keco can not find any description about it in the PDD.	~~CI3~~ ~~CI4~~ ~~CI12~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
6.41. Are not the barriers presented issues that have a clear direct impact on the financial returns of the project activity?	/1/ 116	DR	N/A	OK	
6.42. Is existence of barriers substantiated by independent sources?	/1/ 117(a)	DR/I	N/A	OK	
6.43. Do the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives?	/1/ 117(b)	DR/I	N/A	OK	
(e) Common practice analysis	/1/ 119				
6.44. Is the geographical scope (i.e. the defined region) of the common practice analysis appropriate for the assessment of common practice related to the project activity's technology or industry type?	/1/ 120(a)	DR/I	No, The PDD should explain the reason that the PPs chose Inner Mongolia autonomous region instead of the entire country. Keco need more clarification about how many carbon black companies located in China and Inner Mongolia autonomous region. And how many carbon black companies utilize waste gas for power generation.	~~CR13~~	OK
6.45. Were official sources and local and industry expertise used to determine to what extent similar and operational projects (i.e. using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	/1/ 120(b)		Yes, An official source, "List of Carbon black plants from China Carbon Black Association" has been reviewed in order to confirm a list of carbon black plants in inner Mongolia autonomous region. There were three carbon black facilities in inner Mongolia autonomous region and the only one facility which is the project utilize waste gas for electricity generation.	OK	OK
6.46. If similar and operational projects, other than CDM project activities, are already "widely observed and commonly carried	/1/ 120(c)		N/A The project is the only one facility utilize waste	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
out" in the defined region, are there the essential distinctions between the proposed CDM project activity and the other similar activities?			gas for electricity generation in inner Mongolia autonomous region. In conclusion, it is almost impossible to invest in the similar projects without CDM incentive.		
7. Monitoring plan					
The PDD shall include a monitoring plan. This monitoring plan shall be based on the approved monitoring methodology applied to the proposed CDM project activity.	/1/ 122				
7.1. (For section B.7 of the PDD) Has the PDD noted that data monitored and required for verification and issuance are to be kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later?	/2/	DR	Yes, The PDD has noted that all the data monitored under the monitoring plan will be kept in electronic or hard copy format for two (2) years after the end of crediting period.	OK	OK
7.2. (For section B.7 of the PDD) If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, are the estimates provided in the PDD for these data and parameters reasonable?	/2/	DR/I	Yes, There are parameters to be monitored on implementation and hence become available only after validation of the project activity such as belows: ✓$Q_{WCM,y}$: Quantity of Waste Gas used for energy generation during year y ✓$EG_{i,j,y}$: Quantity of electricity supplied to recipient plants during year y ✓$EC_{PJ,y}$: Additional electricity consumed in year y, for gas cleaning equipment, or any other project related equipment, as a result of the implementation of the project The estimates of these parameters are provided in the PDD and these parameters are reasonable.	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
For compliance of the monitoring plan with the approved methodology					
7.3. Is the list of parameters required by the selected approved methodology identified in Section B.7.1 of the PDD, using tabular form provided by guideline for completing the PDD?	/1/ 123(a) /2/	DR	Yes, There is a list of parameters required by the approved methodology in the PDD.	OK	OK
7.4. Does the monitoring plan contain all necessary parameters?	/1/ 123(a)	DR	Yes, The monitoring plan contains all necessary parameters.	OK	OK
7.5. Are the parameters clearly described?	/1/ 123(a) /2/	DR/I	Yes, The PPs clearly explains the parameters in the PDD.	OK	OK
7.6. Does the means of monitoring described in the plan comply with the requirements of the methodology?	/1/ 123(a)	DR	Yes, The means of monitoring described in the plan comply with the requirements of the methodology. The main parameters to be monitored are identified as follows: ✓$Q_{WCM,y}$: Quantity of waste gas used for energy generation during year y, which will be continuously measured by the PPs through appropriate metering devices and the metering instrument will undergo regular maintenance and calibration. ✓$EG_{i,j,y}$: Quantity of electricity supplied to recipient plants(Carbon black facility and grid) during year y, which will be continuously measured by the PPs. The readings of meters installed at the recipient plant and at the generation plant will be used to complement each other.	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			✓$EC_{PJ,y}$: Additional electricity consumed in year y for the project related equipment as a result of the implementation of the project, which will be continuously measured.		
For implementation of the plan					
7.7. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	/1/ 123(b)	DR	No, In the PDD, data recorders and meter supervisors will be trained according to the requirement of CDM before they go on duty. Keco confirm this with received training records provided by PPs. But procedures have not been envisaged and systematically linked to the management system.	~~CAR10~~	OK
7.8. Is the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by/ resulting from the proposed CDM project activity can be reported ex post and verified?	/1/ 123(b)	DR/I	Yes, The parameters to be monitored are the total generated electricity, electricity delivered to the grid and carbon black plant, electricity for internal consumption of power generation unit. Generally, the amount of electricity transferred to the grid is to be cross-checked with two meters, one on the project site and the other on the grid site. Monitoring equipment is planned to be properly installed in the project. However, the PDD mentions a team assigned to monitor emission reductions, Keco need more clarification for personnel information.	~~CI22~~	OK
7.9. Have the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity been	/2/	DR/I	Yes, The PDD demonstrates operational and management structure.		OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
described in the PDD?			However, any procedures for dealing with possible monitoring data adjustments and uncertainties are not identified in the PDD. The details should be demonstrated.	~~CAR11~~	
7.10. Have the responsibilities for and institutional arrangements for data collection and archiving been clearly indicated in the PDD?	/2/	DR	Yes, The PPs indicate a person who is in charge institutional arrangements for archiving monitoring data. Procedures for the internal audits of GHG project compliance with operational requirements, project performance reviews, corrective actions are kept in the project site. But PDD must include those procedures.	~~CI23~~ ~~CI24~~ ~~CI25~~	OK
7.11. Has the monitoring plan reflected good monitoring practice appropriate to the type of project activity?	/2/	DR	Yes, The calibration is done according to the Technical Administrative Code of Electric Energy Metering (DL/T448-2000) and thus meets current good monitoring practice. The digital meter will be properly configured. Generally, the amount of electricity exported to the grid is to be cross-checked using two meters one on the project site and one on the grid side. But just two bidirectional electricity ammeter (one for backup) will be installed within the project site only. We need more clarification for the method of cross check. During interview with PPs, The electricity will be cross-checked using two meters one on the project site (including one for backup) and one on the grid side and sales receipts will be kept	~~CI20~~	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			as documents evidence. This must be included in the revised PDD. Detailed specification of Meter must be included in the PDD.	~~CI21~~	
8. Sustainable development					
CDM project activities shall assist Parties not included in Annex I to the Convention in achieving sustainable development.	/1/ 125				
8.1 Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	/1/ 126	DR	No, A LoA from DNA of China needs to be obtained.	~~CAR1~~	OK
9. Local stakeholder consultation					
Local stakeholders shall be invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website.	128				
9.1. Were stakeholders invited by the project participants to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC web site?	/1/ 128	DR/I	Yes, The stakeholder meeting was held on 10 July 2008 and questionnaires were distributed to fifty (50) local stakeholders from 18 to 19 July, 2008. But the PPs must provide questionnaires for survey. And pictures or other evidence for meeting must be included in the PDD.	~~CI27~~ ~~CI28~~	OK
9.2. Have comments by local stakeholder that can reasonably be considered relevant for the proposed CDM project activity, been invited?	/1/ 129(a)	DR	Yes, The comments by the stakeholders have been invited reasonably and Keco has cross-checked it with real questionnaires.	OK	OK
9.3. Has the PDD described the process by which comments by local stakeholder have been invited and compiled?	/2/	DR	Yes, The description how comments by local	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
			stakeholders have been invited and compiled is presented in the PDD.		
9.4. Was an invitation for comments by local stakeholders made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted.(in Section E.1 of the PDD)?	/2/	DR/I	Yes, An invitation for comments by local stakeholders was made in an open and transparent manner. Keco has also confirm it through an Wuhai Daily Newspaper dated 5 May 2008 〈63〉. The meeting includes: · Introduction of the Clean Development Mechanism; · Introduction of the Project; · Explanation of the stakeholder consultation process; · Opportunity for comments and questions from each participant. But Wuhai Daily was used to invite comments by local stakeholders on 05 May, 2008. But PPs must provide Wuhai Daily on 05 May, 2008.	~~CI29~~	OK
9.5. Do project participants describe a project activity in a manner which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures.(in Section E.1 of the PDD)?	/2/	DR/I	Yes, By reviewing stakeholders Meeting minute 〈50〉, actual questionnaire and results report of stakeholder investigation 〈51〉. Keco could confirm that the PPs described a project activity in a manner which allowed the stakeholders to understand the project activity.	OK	OK
9.6. Is the summary of the comments received complete in Section E.2 of the PDD?	/1/ 129(b)	DR/I	Yes, The summary of the comments is described in the PDD in a tabular form.	OK	OK

REQUIREMENT CHECK LIST	Ref. §	MoV	COMMENTS	Draft Concl.	Final Concl.
9.7. Have the project participants taken due account of any comments received and described this process in Section E.3 of the PDD?	/1/ 129(c)	DR/I	Yes, The PPs are to take countermeasures to the comments, which has been described in the PDD.	OK	OK
10. Environmental impacts					
Project participants shall submit documentation to the DOE on the analysis of the environmental impacts of the project activity in accordance with paragraph 37(c) of the CDM modalities and procedures	/1/ 131				
10.1. Have project participants submitted documentation on the analysis of the environmental impacts of the project activity?	/1/ 131	DR/I	Yes,. The PPs completed the environmental impact assessment(EIA) and submitted its documentation to Keco.	OK	OK
10.2. If an environmental impact assessment required by the host Party, have the project participants undertaken an analysis of environmental impacts?	/1/ 131 132	DR/I	Yes The PPs performed EIA and obtained an approval by Environmental Protection Bureau of Inner Mongolia Autonomous Region.	OK	OK

/1/ Validation and Verification Manual (ver. 01.2)

/2/ Guidelines for completing the project design document(CDM-PDD) and the form for proposed new methodologies(CDM-NM) (ver. 07)

/3/ Guidelines on the assessment of investment analysis (ver. 03.1)

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 participants responses	Review by DOE	Concl.
CAR.1 A written approval letter (LoA) from the DNA of China was published. But Keco did not receive yet.	1.1 1.2.2 1.2.3 1.2.4 1.3 1.4 1.5 1.6 1.7 2.3 2.5 8.1	A LoA from DNA of China is submitted	1.1 : A LoA issued on 15 July 2009 by the DNA of China, which has been checked authentic. Keco has cross-checked it with the China DNA web site. 1.2.2 : The participation is voluntary. 1.2.3 : An LoA from DNA of the Host country confirms the sustainable development of the country. 1.2.4 : The precise proposed CDM project activity title in the PDD being submitted for registration is same with China LoA. 1.3 : The LoAs from China and Switzerland have covered those information. 1.4 : The China LoA is published by China DNA 1.5 : Refer to 1.1 1.6 : There is no additional specification of the project activity in LoA 1.7 : LoA does not refer to a specific version of the validation report. 2.3 : LoA from the China DNA is published. 2.5 : LoA of participation been issued from the relevant DNA which is China DNA. 8.1 : DNA confirms the contribution of the proposed CDM project activity to the sustainable development. So, CAR1 is closed.	OK
CAR.2 A written approval letter (LoA) from the Federal Office for the Environment FOEN, Climate Unit of	1.1 1.2.2 1.2.4 1.3	A LoA from Federal Office for the Environment FOEN, Climate Unit of the Switzerland is submitted	1.1 : A LoA issued on 23 October 2009 by the Federal Office for the Environment FOEN, Climate Unit of the Switzerland, which has been checked authentic. Keco has cross-checked it with the FOEN	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
the Switzerland is not obtained yet	1.4 1.5 1.6 1.7 2.3 2.5		web site 〈58〉. 1.2.2 : The participation is voluntary. 1.2.4 : The precise proposed CDM project activity title in the PDD being submitted for registration is same with Switzerland LoA. 1.4 : The Switzerland LoA is published by Federal Office for the Environment FOEN. 1.5 : Refer to 1.1 1.6 : There is no additional specification of the project activity in LoA 1.7 : LoA does not refer to a specific version of the validation report. 2.3 : LoA from the Switzerland FOEN is published. 2.5 : LoA of participation been issued from the relevant DNA which is Switzerland FOEN. So, CAR2 is closed.	
CAR.3 "CDM-PDD-Version03.1" has been used for the PDD. The PPs needs to use the latest PDD version posted at UNFCCC website.	3.1	The PDD updated and submitted	The PPs sumbit the PDD again using the latest version of PDD template(ver 03, in effective as of 28 July 2006). So CAR3 is closed.	OK
CAR.4 But fig2 does not include all of the equipments. The diagram of project boundary must be corrected.	5.9	The PDD updated and submitted	The PPs submitted PDD after revised fig3(figure name has been changed from 2 to 3) describing all of the equipments such as power plant substation. And the project boundary clearly described. So CAR4 is closed.	OK
CAR.5	5.9	The evidence document of the	The PPs submitted PDD after revised table B.5-1.	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
The equipment purchase agreement for phase 1 was signed at 28 Aug 2008 〈13〉. But it was only for one boiler, turbine and generator. PPs need to submit additional purchase agreement for phase 2 equipments. And table B.5-1 must be corrected.		purchase agreement for phase 2 equipments is submitted and table B.5-1 is revised.	PPs added purchase agreement for phase 2 equipments and Keco has cross-checked with "Main equipment (Phase 2-boiler) purchase agreement of the project and Technical specification" 〈39〉. The technical specification of phase 1 and phase 2 was same and supplied from the same manufacturer. So CAR5 is closed.	
CAR.6 However, there should be a demonstration of use of waste energy in the absence of CDM project activity, Keco needs to confirm disposal manner of waste gas before implementation of this project in accordance with the selected methodology. There are four options to prove it in the methodologies.	5.4	Corrective Action #1 The evidence document to demonstrate usage of waste energy in the absence of CDM project activity is submitted.	DOE review comment #1 The PPs submitted "Material balance process diagram of hard and soft Carbon Black" 〈49〉 from Environmental impact assessment report of project and And the EIA report was published by Institute of Environmental Protection division of Wuhai City and approved by Environmental Protection Bureau of Inner Mongolia Autonomous Region. Keco has cross-checked using above that no waste gas was used for electricity generation before implementation of the proposed CDM activity. But PPs did not changed explanation in PDD. So PPs need to submit after revised PDD.	OK
		Corrective Action #2 The PDD updated and submitted	DOE review comment #2 The PPs submitted PDD after revised explanation in PDD B.2. Since the project is implemented at an existing facility where the commercial production had began at the time when the project activity is submitted for validation, the PPs need to demonstrate that the	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			waste energy utilized in the project activity was flared or released into the atmosphere in the absence of the project activity in accordance with the methodology ACM0012(ver. 03.2). The PPs choose to demonstrate of use of waste gas in absence of CDM project activity using process plant and submitted process of plant to depict waste gas recovery system before and after implementation of it. The project is type-1 project activity and implemented at the existing facility, DOE concluded that it is appropriate. The quantity of the waste gas fed into the power generator is not the 160,000m^3/h but the 128,000m^3/h. Total quantity of tail gas produced from Wuhai Black Cat company is 160,000Nm^3/h. The PPs used 32,000Nm^3/h as combustion gas for the waste gas burner to the drier. The rest of major tail gas was released into the atmosphere after incineration. The PPs installed new pipelines to use wasted tail gas, 128,000Nm^3/h, boilers, steam turbines and generators for electricity generation as a project activity. The tail gas, 32,000Nm^3/h, used before the project activity will be used for same purpose and quantity. Thus the quantity of waste gas used for electricity generation is only 128,000m^3/h not 160,000m^3/h. The PPs proved usage of waste gas by process of plant. The DOE	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			cross-checked "layout of the carbon black facility before and after the project implementation", 〈99〉 "Material process balance diagram" 〈49〉 and "The quantity of waste gas per carbon black production" 〈52〉 and confirmed the quantity of tail gas. The PPs installed waste gas monitoring meter after implementation of the project activity and the measured quantity of waste gas fed into the boiler was about 109,376Nm^3/h. The DOE cross-checked "Daily record of waste gas" 〈53〉 at 29 Jun 2010. The actual amount of waste gas fed into the boiler was smaller than in the FSR, so the DOE concluded that it is conservative and reasonable. So CAR6 is closed.	
CAR.7 The PPs must inform to DNA and UNFCCC secretariat in writing of the commencement of the project activity. Such notification must be made within six months of the project activity start date and shall contain the precise geographical location and a brief description of the proposed project activity (refer to "Guidelines on the demonstration and assessment of prior consideration of the CDM" Ver 03,	6.7	Since the starting date of this project is 28/8/2008 which is before the date of revision of "Guidance on the demonstration and assessment of prior consideration of the CDM(ver 02, EB48, Annex 61, 17 July 2009)", So PPs applied "Guidance on the demonstration and assessment of prior consideration of the CDM(ver 01, EB41, Annex 46, 2 Aug 2008)", which stipulates that "the PPs must inform the Host Party DNA and/or the UNFCCC secretariat in writing for	Since the project starting date is after 2 Aug 2008, the project is considered to be a new project activity in line with "Guidelines on the demonstration and assessment of prior consideration of the CDM"(ver 03, EB49, Annex22, 11 Sep. 2009). Keco confirms that the project activity complies with the requirements of the guidance as: ✓the PPs submitted an inform letter on prior consideration of the CDM to the Host Party, People's Republic of China, dated **12 Jan 2009 〈20〉**, which is within six months of the project activity start date(28 Aug 2008) 〈13〉 Since the starting date of this project is 28/8/2008	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
EB49, Annex22, 11 Sep. 2009). But PPs notified the commencement of the project activity only to the NDRC of China. PPs need to submit related document.		commencement of the project activity and of their intention to seek CDM status within six months of the project activity start date" is reasonable. And PPs submits evidence documents for the inform letter to NDRC.	which is much earlier than the date of revision of "Guidance on the demonstration and assessment of prior consideration of the CDM(ver 02, EB48, Annex 61, 17 July 2009)", the PPs had no choice but to apply "Guidance on the demonstration and assessment of prior consideration of the CDM(ver 01, EB41, Annex 46, 2 Aug 2008)", where the provision "the PPs must inform the Host Party DNA and/or the UNFCCC secretariat in writing for commencement of the project activity and of their intention to seek CDM status within six months of the project activity start date" is stipulated. Keco therefore confirms that only an inform letter to the host party is enough to meet the requirements of the guideline. Keco has checked all the physical documents mentioned in timeline table and verified that all the documents are substantial and reasonable at that situation in the host country. Keco has therefore judged that the incentives of CDM were seriously considered prior to the start of the project activity and real action were taken to secure CDM status for the project in parallel with its implementation. So CAR7 is closed.	
CAR.8 In the PDD, the project emission is described as zero. But PPs must provide analysis for	5.21	Corrective Action #1 The main emission for the Project is supplemental electricity use. Net electricity delivered to the grid is used	DOE review comment #1 The related data of coke oven gas for start-up was provided by PPs. And DOE verified with the document. This project will use 500Nm^3/h coke oven	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
possible emission source. According to our technical expert's opinion, light diesel oil can be used as a start-up fuel in the boiler/gas turbine or coke oven gas can be used in the boiler as auxiliary fuel. And potential sources like boiler pump, desalting water station and hot water circulating pump must consider. During interview with PPs, Keco confirm the project is not using auxiliary fuel in the boiler due to inconsistency in the availability of tail gas. Efficiency of the boiler will be changed automatically refer to the DCS. And other equipments will using electricity as an energy source. Keco find that coke oven gas will be used only for start-up. Related data must be provided to the and included in the revised PDD.		to calculate the baseline emissions. There will be no combustion of auxiliary fuels in the boiler due to inconsistency in the availability of tail gas. The coke oven gas will be used to start-up and the amount is small. This emission can be neglected. - The related data of coke oven gas for start-up is provided by Design Institute.	gas when start boiler for an hour. PPs said this emission can be neglected. But for conservative approach, quantity of coke oven gas should be calculated as a project emission and described in PDD.	
		Corrective Action #2 The quantity of emissions caused by start up the boiler is only 0.00017% of total emission reductions much lower than 1% of total emission. So it does not need to count as the project emission.	DOE review comment #2 Since the usage of coke oven gas for start up the boiler is not stipulated as a project emission in ACM0012(ver. 03.2), PPs calculated emissions using "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion(version 02)". In the course of calculation, option A is the preferred approach, the data of fossil fuel (the weighted average mass fraction of carbon in fuel and the weighted average mass fraction of carbon in fuel) is unavailable, So the option B is adopted for calculation. Keco calculated this emission to verify its quantity in accordance VVM para76. The quantity of emission is only 0.00017% of total emission reduction which is lower than 1%, thus this does not need to be calculated as a project emission. So CAR8 is closed.	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
CAR.9 PDD used 'China electric power year books, 2002-2006. OM, BM and CM must be changed using latest version. Revised PDD (ver2) is using latest version of 'China electric power year books 2006-2008' and 'China statistics year books 2006-2008'.	5.21	The PDD updated and submitted	Revised PDD is using latest version of 'China electric power year books 2006-2008' and 'China statistics year books 2006-2008'. So CAR9 is closed.	OK
CAR.10 In the PDD, data recorders and meter supervisors will be trained according to the requirement of CDM before they go on duty. Keco confirm this with received training records provided by PPs. But procedures have not been envisaged and systematically linked to the management system.	7.7	The training records and the other training documents are provided.	By reviewing the provided "Power House Operation and Management Procedure" 〈42〉, "Training plan of employee and Record of each training" 〈43〉 and on-site interview with the PPs, it is confirmed that the monitoring arrangements described in the monitoring plan are feasible within the project design. So CAR10 is closed.	OK
CAR.11 However, any procedures for dealing with possible monitoring data adjustments and uncertainties are not identified in the PDD. The details should be demonstrated.	7.9	PDD is updated in the B.7.2 Emergencies and submitted.	By reviewing the provided "Power House Operation and Management Procedure" 〈42〉 and revised PDD, Keco confirmed possible monitoring data adjustments and uncertainties will be covered properly. So CAR11 is closed.	OK
CAR.12	4.7	PDD is updated and submitted.	In revised PDD, The fixed crediting period of 10	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
The fixed crediting period of 10 years is selected starting on 01 Jan 2010 in PDD C.2.2.1. But starting date in C.2.2.1 must be changed from '01 Jan 2010' to '01, Dec 2010.			years is selected starting on 01 Jan, 2011.	
		PDD is updated and submitted.	The fixed crediting period of 10 years is selected starting on 01 Jun 2011. So CAR12 is closed.	
CI.1 Wuhai Black Cat company is China company. But Keco need more clarification using Business license of Wuhai Black Cat company.	1.2.2	Enclosed is a Business license.	Keco verified business license valid from 16 Apr, 2008 to 19 Aug, 2023 with "A certificate of business registration for Wuhai Black Cat company" 〈27〉. So CI1 is closed.	OK
CI.2 The project is located at Hainan District of Wuhai City which geographical coordinates are latitude 39° 22'18"N and longitude 106° 55'34"E But in Annex1, described location is Nanhai District. PPs must correct right location.	4.5	The location of the Project is Hainan District of Wuhai City. The description in annex 1 is corrected.	Keco verified Annex 1 of PDD. The location of project is consistent between annex 1 and PDD. So CI2 is closed.	OK
CI.3 The thermal efficiency is around 83%, while the average value is 80% based on the report from Carbon black industry research and design institute of Zhongzxiang	6.40	The report from 'Carbon black industry research and design institute of Zhongzxiang group for demonstrating the boiler efficiency will provide.	DOE verified thermal efficiency with "Specification of 3,000Kw Waste Gas Power Generation plant published by Research and Design Institute of Zhongxiang group" 〈38〉. Since this Step 3. "Barrier analysis" is optional when Step 2. "Investment analysis" is satisfactory, the PPs	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
group. The project is much more efficient and good practices than those of its kind in China. However, PPs must provide above evidential report from 'Carbon black industry research and design institute of Zhongzxiang group'.			skipped the analysis as per "Tool for the demonstration and assessment of additionality" So CI3 is closed.	
CI.4 Furthermore, the generator unit adopts DCS system to automatically operation and monitor. PDD describe that this technology is only applied in developed countries. But according to Keco's opinion, DCS (Distributed Controlling System) have developed at 1975. And some developing country (ex.Republic of Korea) is using now. So this technology is not a new one. PPs must provide status of DCS in China and change expression in PDD page 20.	6.40	Clarification #1 We have confirmed that the DCS technology of the Project is domestic and DCS is not a new technology. However, the technology application is complicate and has difficulties such as equipment operation and maintenance, worker training. It is updated in the PDD.	DOE review comment #1 O.K. But PPs need to submit evidence document for DCS technology. So CI4 is closed.	OK
		Clarification #2 We submit revised PDD after skipped step 3 which is barrier analysis.	DOE review comment #2 Since this Step 3. "Barrier analysis" is optional when Step 2. "Investment analysis" is satisfactory, the PPs skipped the analysis as per "Tool for the demonstration and assessment of additionality"	
CI.5 The presented tables in A.4.3 do not have any identification name and number (i.e. Table A.4.2). It	4.6	Clarification #1 The tables are all named and numbered in updated PDD.	DOE review comment #1 But there are still differences in naming and numbering for table. 1. Difference between Table A4.3 and Table A4-4	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
must be extend to the rest of the tables of the PDD.			2. Table B.1 should be changed to table B.2.1 3. Table B.3 should be changed to table B.3.1 4. Table B.5-1 5. B7.2.1 should be changed to fig.XX 6. B7.2.2 should be changed to fig. XX It must be extend to the rest of the tables of the PDD.	
		Clarification #2 The tables are all named and numbered in updated PDD again.	DOE review comment #2 The tables are all named and numbered in PDD. So CI5 is closed.	
CI.6 The PPs did not describe details on tail gases (e.g. A flow rate of around 54,000 Nm^3/hr at a temperature of 200℃ is collected through collection pipes and calorific value of about 720 Kcal/Nm^3). An explanation on it should be provided in the PDD.	4.6	Clarification #1 It is updated in the A.4.3. waste gas with a flow rate of around 160,000Nm^3/hr at a temperature of 220℃ is collected through collection pipes and calorific value of about 650Kcal/Nm^3.	DOE review comment #1 There is a description about tail gases in PDD page 5. But PPs need to submit for relative document for tail gases to verify.	OK
		Clarification #2 Related documents are submitted.	DOE review comment #2 All of the tail gas, 160,000Nm^3/h, from carbon black production lines is not waste energy since a certain portion of tail gas, 32,000Nm^3/h, was being utilized in the process before project implementation. Only the portion of the tail gas, 128,000Nm^3/h, that was released into the atmosphere prior to the implementation of the project activity is the waste	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			energy. After the implementation of the project activity, carbon black tail gas was completely utilized. The tail gas, 32,000Nm^3/h, used before the project activity will be used for same purpose and quantity. project activity is using newly installed pipelines and waste recovery system to utilize wasted tail gas before. The DOE confirmed above with "handbook of carbon black production and application" 〈93〉, "layout of the carbon black facility before and after the project implementation" 〈99〉 and "The quantity of waste gas per carbon black production" 〈52〉 from Carbon Black Branch of China Rubber Industry Association and confirmed the quantity of tail gas	
CL7 According to Keco's additional research, there is legislation concerning energy efficiency which encourages waste gas use such as the Energy Conservation Law (which came into force in 1998). But this was not described in the PDD. However, as Keco was able to confirm, such legislation is not sufficient to mandate the project developer to develop the waste gas project or other uses of the waste gas because above legislation don't	6.11.3	The contact information for the government officer is submitted	Keco concluded that Energy Conservation Law will not affect to project by verifying "Energy Conservation Law" So Cl7 is closed.	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
have penalty or incentive and it's just character of policy than mandatory regulation. Keco confirm this using interview with project owner. But Keco need additional cross check using interview with officer in government agency.				
CL8 The project adopts the latest version of the approved methodologies as below - ACM0012 ver03.1, "Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system" - "Tool for the demonstration and assessment of additionality" ver05.2 - "Tool to calculate the emission factor for an electricity system" ver01.1 But in page16, the version of "Tool for the demonstration and assessment of additionality" must change from version5 to version05.2.	5.1	Clarification #1 The version of "Tool for the demonstration and assessment of additionality" is corrected from version5 to version05.2.	DOE review comment #1 The version of the tool related with additionality is correctly applied. But PPs need to use ACM0012(ver. 03.2), "Consolidated baseline methodology for GHG emission reductions from waste energy recovery projects" and "Tool to calculate the emission factor for an electricity system" ver2.0	OK
		Clarification #2 PDD is updated in accordance with the ACM0012(ver. 03.2) and "Tool to calculate the emission factor for an electricity system" ver2.0.	DOE review comment #2 The correct version of the tool and methodology are correctly applied. So CL8 is closed.	
CL9	6.2	PDD is updated and evidence	Revised PDD provide reference report ('Methodology	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
PPss must provide reference report for benchmark ratio of IRR (8%).	6.34 6.35 6.39.2	document is submitted.	and Parameter for Project Economic Evaluation', 2006). Keco confirm with FSR and "Methodology and Parameter for Project Economic Evaluation" is widely used benchmark and published by DNA of China. The benchmark IRR, **8%** (before Tax), is derived from "Methodology and Parameter for Project Economic Evaluation" issued by NDRC 〈85〉. Keco judges that the benchmark is appropriate as the PPs used the government/official approved benchmark as per "Tool for the demonstration and assessment of additionality(ver05.2)". Also Keco validate appropriateness of benchmark in accordance with the information note "Previous rulings related to the appropriateness of benchmarks for project activities utilizing waste heat/waste gas for power generation", EB51 Annex59. Since the project exporting more than 75% of generated electricity to the grid, so the project considered to be an investment in power production and related industries. Keco verified that using FSR and grid connection contract. The total generated electricity of the project is 240,000MWh and the electricity demand of the carbon black production lines on-site is 50,407.76MWh which accounts about 21% of net power generation and rest of electricity will be exported to the NCPG which is more than 75% of generated electricity. Keco has cross-checked the quantity of electricity demand of carbon black production lines based on each equipments applied	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			〈61〉. So PPs can not use core business benchmark for the project. Construction of fire power plant and related industries benchmark is 8% in "Methodology and Parameter for Project Economic Evaluation". It reflects the risks faced by the project in power generation and related industry.	
But, amortization period is not correctly applied in the FSR.	6.22	PDD is updated and evidence document is submitted.	Keco has identified differences of the amortization period in project IRR calculation. This inconsistency has been reviewed by Keco as below: The amortization period is 6 years in FSR. According to the information from China Accounting net 〈82〉, the Intangible assets amortization should be no less than 10 years. Therefore, amortization period is changed to 10 years in the IRR calculation and the result of project IRR is remain same. So CI9 is closed.	
CI.10 Potential of additional investment for transmission line must be provided to Keco.	6.2	Evidence document is submitted.	Keco confirm that additional investment for transmission line is included in investment calculation with FSR 〈56〉 and "Evidence for actual total investment expenditure" 〈75〉. So CI10 is closed.	OK
CI.11 According to 'Clarification on grid tariff of Renewable Energy Projects in china, 13 May, 2009' 〈87〉, the	6.2	The electricity tariff used in the PDD is the same with FSR. Approval letter for actual tariff from Inner Mongolia Autonomous DRC is received and provided.	Tariff is 0.21CNY/Kwh (exclusive VAT) in PDD and it is same with FSR. 1. What is the reference document for tariff in FSR? 2. Approval letter was published at 4 Sep 2009 the	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
actual tariff is different from the assessed tariff in feasibility study report. But Keco need more clarification for methodology of assuming of assessed tariff in FSR and PDD.			tariff was 0.222 RMB/Kwh in letter. And it is differ with tariff in PDD. Please explain about this.	
		Evidence document for assessed tariff and the reason for the difference between PDD and actual tariff.	1. Evidence document of tariff in FSR Reference of the assessed tariff in FSR was from Wuhai City DRC for Wuahi Junzheng Energy Chemical Industry company and Wuhai Haishen thermoelectricity company grid-connect tariff 〈54〉, 〈55〉 2. Actual tariff for the project The actual tariff of the project is 0.27 RMB/kwh(VAT included) which is higher than the assessed tariff in FSR. The DOE verified actual tariff using "Tariff adjustment of western Inner Mongolia from Inner Mongolia Autonomous DRC" 〈98〉. The tariff increases by 9.9% than estimated in FSR but the project IRR does not cross the benchmark. Thus, Keco confirmed that the tariff in FSR is appropriately used. So CI11 is closed.	
CI.12 For waste gas generation, gas cleaning and dust removal is an obvious technical barrier but Keco can not find any description about it in the PDD.	6.40	/	During an interview with technical engineer from Wuhai Black Cat company, Keco confirm that gas cleaning and dust removal is not technical barrier in this project. Since this Step 3. "Barrier analysis" is optional when Step 2. "Investment analysis" is satisfactory, the PPs skipped the analysis as per "Tool for the demonstration and assessment of additionality"	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			So CI12 is closed.	
CI.13 The PDD should explain the reason that the PPs chose Inner Mongolia autonomous region instead of the entire country. Keco need more clarification about how many carbon black companies located in China and Inner Mongolia autonomous region. And how many carbon black companies utilize waste gas for power generation.	6.44	Clarification #1 Common practice analysis is updated in the PDD. Having check from the last PDD and considering that analysis in China or 5 autonomous regions is too large scope, so in the updated PDD, set Inner Mongolia as the common practice place.	DOE review comment #1 There are explanations that there is no carbon black waste gas recovery system in Inner Mongolia Autonomous Region in PDD page 22. And Keco cross-checked using a CDM UNFCCC website. But Keco still need to verify about status of carbon black waste gas recovery system in China. Keco need more clarification how many carbon black companies located in China, Inner Mongolia autonomous region, utilize waste gas for power generation.	OK
		Clarification #2 According to the statistics of China Carbon Black Association, there are about 60 carbon black plants as the members of Association. There are three carbon facilities but the project is the only project which utilize waste gas for power generation.	DOE review comment #2 Keco has reviewed the approach presented in the PDD and confirmed that relevant parameters such as location, infrastructure, economical situation, and development have been taken into account in order to define the region to be used for the common practice. Since the conditions vary from province to province in the NCPG, the presented region, Inner Mongolia Autonomous region, is considered appropriate for the common practice analysis. Keco has reviewed "List of Carbon black plants from China Carbon Black Association (http://www.carbonblack.org.cn)" 〈81〉. This information confirms that the list of similar projects that have	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			carbon black production plants with waste gas recovery facilities presented in the PDD is complete. There are only three (3) carbon black companies in Inner Mongolia Autonomous region and the project is the only facility adopts waste gas recovery system. In conclusion, it is practically impossible to invest in the similar projects without CDM So CI13 is closed.	
CI.14 The six baseline alternatives (W1-W6) are discussed for the generation of heat and electricity. And eleven baseline alternatives (P1-P11) are discussed for the power generation. W1 is not allowed by the local regulation. Related to W3, Keco need more evidence documents for the cross-check.	5.14	/	During site visit, Keco confirm that no potential buyers are in the vicinity. So CI14 is closed.	OK
CI.15 PPs notified the commencement of the project activity only to the NDRC of China. No information is provided in the PDD table B.5-1. So PPs must include above information in the PDD.	6.7	Please see CAR 7. The information is updated in PDD.	The information is updated in the PDD table B.5-1. PPs described NDRC inform letter in the table and submitted evidence document which is "NDRC notification for prior consideration" 〈20〉. So CI15 is closed.	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
CL.16 There are some parameters that will remain fixed throughout the crediting period without being monitored throughout the crediting period of the proposed CDM project activity. Keco has assessed that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and result in a conservative estimate of the emission reductions. But data/parameter in PDD B.6.2 is not in accordance with the ACM0012(ver. 03.2) 〉 Fi,j,y is not a latest version. It must be changed to FCi,y. 〉 Source of data used of NCVi and CAPi,j,y must be changed to 2006-2008.	5.25	Clarification #1 The PDD B.6.2 and B.7.1 is revised in accordance with the ACM0012(ver. 03.2)	DOE review comment #1 There are some parameters that PPs need to change. The description need to be same with the explanation in PDD and ACM0012(ver. 03.2) **Section B.6.2 in PDD** 1. $FC_{i,j,y}$ need to be changed to $FC_{i,y}$ and description need to be changed 2. $GEN_{i,y}$ need to be changed to EG_y 3. NCV_i need to be changed to $NCVi_{,y}$ 4. $EF_{CO2,i}$ need to be changed to $EF_{CO2,i,y}$ 5. PPs need to change "any comment" of $Q_{ff,fl,b}$. Because this parameter is related with flaring of waste gas in the baseline not f_{cap}. 6. PPs need to change "any comment" of $Q_{WG,FL,b}$. Because this parameter is related with flaring of waste gas in the baseline not f_{cap}. 7. PPs need to change "any comment" of $Q_{st,fl,b}$. Because this parameter is related with flaring of waste gas in the baseline not f_{cap}. **Section B.7.1 in PDD** 1. "Description" of $EG_{i,j,y}$ is not consistent with the "source of data". 209,520 MWh is not the quantity of electricity to the grid. It is sum of quantity of electricity from the project to the carbon black plant and the grid. 2. And PPs need to describe and monitor $EG_{aux,y}$ for the quantity of electricity for internal consumption of	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			power generation unit. 3. "Any comment" for the $Q_{wcm,y}/Q_{wg,y}$ is not correct. $Q_{wcm,y}$ do not need to monitor because PPs chooses different method for f_{cap} calculation. And $Q_{wg,y}$ do not need to be monitored because the project does not related with flaring of waste gas in the baseline 4. "Data unit" of $EF_{CO2,is,j}$ is differ with methodology. 5. "Data unit" of $HG_{j,y}$ is differ with methodology. 6. "Any comment" of $Q_{wcm,h}$ is not correct. This parameter is not used for f_{wcm} calculation for the project 7. NCV_i need to be changed to $NCV_{wcm,y}$ 8. "Any comment" for $EF_{CO2,EI,y}$ is not correct. This parameter is related with the project using a electricity for gas cleaning.	
		Clarification #2 The PDD B.6.2 and B.7.1 is revised in accordance with the ACM0012(ver. 03.2)	DOE review comment #2 All of the parameters are correctly applied in the PDD B.6.2 and B.7.1 So CI16 is closed.	
CI.17 No information for f_{wcm} and f_{cap} are provided in the PDD. Project participant must provide calculation spreadsheet for f_{wcm} and f_{cap} to Keco and include in the revised PDD.	5.23	Clarification #1 According to f_{cap} calculation, the value is 1.9, therefore, the Project f_{cap} is 1.0. See the f_{cap} calculation sheet.	DOE review comment #1 The PDD need to be revised in accordance with the ACM0012(ver. 03.2)	OK
		Clarification #2 Explanation of f_{wcm} and f_{cap} are provided in the PDD and PDD is	DOE review comment #2 f_{wcm} : As the electricity generated in the project is from waste gas only, without any additional firing of	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
		revised in accordance with the ACM0012(ver. 03.2)	fossil fuels, f_{wcm} is assumed to be 1 f_{cap} : The PPs used method-2 for f_{cap} calculation and it is validated by the DOE as follows: Method-1 is not applicable in facilities where three-year data on production is unavailable, and method-3 is applicable only when the PPs can demonstrate technical limitations in direct monitoring of waste heat/pressure of waste energy carrying medium (WECM), so method-2 is used for the f_{cap} calculation in accordance with the ACM0012 ver03.2. The PPs installed waste gas monitoring meter during implementation of project activity, there is no three years of historical data for WECM before project activity. The DOE confirmed that "layout of the carbon black facility before and after the project implementation" 〈99〉. $$f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}}$$ $Q_{WCM,BL}$ is quantity of waste energy generated prior to the start of the project activity estimated using below Equation (kg of WECM or other relevant unit). $$Q_{WCM,BL} = Q_{BL,product} \times q_{wcm,product}$$ $Q_{BL,product}$ is production associated with the relevant waste energy generation as it occurs in the baseline scenario. The PPs do not have average annual historical production data because the 4th production	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			line of carbon black facility started commercial operation from May 2010. The PPs used the most relevant manufacture's data for normal operating conditions which is 160,000ton/yr and DOE confirmed it with "Purchase agreement of reactors" 〈97〉. Capacity of each reactor for four production lines is 40,000ton/yr. $q_{wcm,product}$ is amount of waste energy per unit of product generated by the process in the carbon black facility. The carbon black facility designed to produce 160,000ton carbon black per year and the waste gas production is 160,000Nm^3/h with 8000 operation hour. Thus, $q_{wcm,product}$ is calculated 8,000Nm^3 per ton carbon black production for project activity. $Q_{WCM,y}$ is quantity of WECM used for energy generation during year y (mass unit (kg)). The PPs installed waste gas meter before it enters waste gas boiler. The DOE cross-checked monitoring point using "layout of the carbon black facility before and after the project implementation" 〈99〉 and "Daily record of waste gas" 〈53〉 at 29 Jun 2010. $f_{cap} = \frac{Q_{WCM,BL}}{Q_{WCM,y}} = \frac{Q_{BL,product} \times q_{wcm,product}}{Q_{WCM,y}} = \frac{160,000ton/yr \times 8000Nm^3/ton}{1,280,000,000Nm^3/yr} = 1$ The f_{cap} calculated as 1 for the ex-ante calculation and it will be updated using monitored data for $Q_{WCM,y.}$ Keco confirmed all the assumptions are	

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
			resonable and the relevant information has been submitted. So CI17 is closed.	
CI.18 The major uncertainty is the amount of waste gas recovered in the future. Relative emissions are not likely to vary significantly, given that demand for carbon black at the dame level for at least the crediting period. But this is not described in the PDD.	5.30	As we have discussed with the project owner, the amount of waste gas is influenced by the amount of carbon black production, the carbon black production is influenced by the market. For the Project, till now there are 2 carbon black production lines commissioned on Jun, 2009. According to Chinese carbon black industry status and future trends, the carbon black production and demand is increasing very fast. And we also can see from Overview of supply and demand of carbon black in Asia, the carbon black production and demand show the fast growth trend. Therefore, the project owner indicates that it is impossible for the carbon black production decline and it will keep steady in annual carbon black production.	PPs submitted relative documents which are "Overview of supply and demand of carbon black in Asia from chemical information website" 〈28〉 and "Chinese carbon black industry status and future trends" 〈29〉 from chemical information website. The DOE confirmed that demand for carbon black at the same level for at least the crediting period. So CI18 is closed.	OK
CI.19 Description of the project emissions (e.g. equation, justification of the	5.26	The auxiliary equipment of the Project using the power electricity from the project itself and not fossil fuel.	The project emits CO_2 resulting from use of electricity for the auxiliary equipment of power generating equipments. But the electricity consumed by power	OK

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choice, etc.) is needed as per the methodology. If the project activity emits CO_2 resulting from auxiliary equipment consuming power in the project boundary, this must include in the revised PDD.		Therefore, it will not have CO_2 emission.	generating equipments are deducted as a internal consumption. So it will not calculated as a project emissions. So CI19 is closed.	
CI.20 Generally, the amount of electricity exported to the grid is to be cross-checked using two meters one on the project site and one on the grid side. But just two bidirectional electricity ammeter (one for backup) will be installed within the project site only. Keco need more clarification for the method of cross check. During interview with PPs, The electricity will be cross-checked using two meters one on the project site (including one for backup) and one on the grid side and sales receipts will be kept as documents evidence. This must be included in the revised PDD.	7.11	Clarification #1 The more details are confirmed with PO. The monitoring meters configuration and installation are all updated in the PDD B7.	DOE review comment #1 According to PPs explanation in PDD B.7.2, PPs will install 6 ammeter for measurements for electricity. Please explain us which one will measure the total electricity, electricity to the grid, internal consumption of electricity. And also explain monitoring procedure and reporting system. PPs need to submitted sufficient information about this. Because it is very important for verification.	OK
		Clarification #2 The PDD B.7.2 is revised to explain installations of monitoring equipments and installation.	DOE review comment #2 There are six meters will be installed at the project site and two meters will be installed at the grid site. The total electricity : The total quantity of the Project is the reading of M1+M2 meter. Electricity to the grid : Meter M_a is the main meter and M_b as its backup meter to measure electricity to the grid. The meter M_A and M_B are bilateral with accuracy of 0.5s that measure the quantity of electricity supplied to the grid by the Project as well as the electricity purchased from the Grid Company has been installed at the Grid Company	

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			Electricity to the carbon black plant : M_3 is one-way meter and will measure the quantity of electricity consumed by carbon black production lines Internal consumption of electricity : M_4 is one-way meter and will measure the quantity of electricity consumed by power generation units on the project. The PPs changed related explanation with the monitoring methods in PDD. PP need to explain how to check (1) Quantity of electricity consumed by the project operations, (2) Quantity of electricity supplied to the recipient plant(s)	
		PP submitted revised PDD with explanations.	(1) Quantity of electricity consumed by the project operations will be measured by using below parameter. ✓$EC_{PJ,y}$: Additional electricity consumed in year y for the project related equipment as a result of the implementation of the project, which will be continuously measured. (2) Quantity of electricity supplied to the recipient plant(s) will be measured by using below parameter. ✓$EG_{i,j,y}$: Quantity of electricity supplied to recipient plants(Carbon black facility and grid) during year y, which will be continuously measured by the PPs. The readings of meters installed at the recipient plant and at the generation plant will be used to complement each other.	

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			So CI20 is closed.	
CI.21 Detailed specification of Meter must be included in the PDD.	7.11	Clarification #1 The parameters which need to be updated are corrected. The meters specification is described in the B.7.2 part.	DOE review comment #1 Meter's specification is briefly explained in PDD. But DOE need relative document for meters.	OK
		Clarification #2 Evidence documents are submitted.	DOE review comment #2 Keco has cross-checked meter's specification and performance with "Test Report of Metering Device" from Inner Mongolia Wuhai electric Power Bureau Electric Energy Measurement Center 〈46〉 and "Technical Specification of Metering Device" published by Changsha Weisheng Electronics Co., Ltd 〈47〉. So CI21 is closed.	
CI.22 The PDD mentions a team assigned to monitor emission reductions, Keco need more clarification for personnel information.	7.8	Clarification #1 The monitoring member information is provided.	DOE review comment #1 PPs submitted "Clarification for Monitoring team" 〈31〉. But PPs needs to submit 47 employees name, positions and evidence document for salary payment.	OK
		Clarification #2 Evidence for actual salary expenditure for the project is submitted	DOE review comment #2 Keco has cross-checked 47 employees with "2010 Annual audit report" 〈91〉. So CI22 is closed.	
CI.23 Procedures for the internal audits of GHG project compliance with operational requirements is kept in	7.10	PDD is revised and submitted.	Keco reviewed "Power House Operation and Management Procedure" 〈42〉 and confirmed that the procedure is in the procedure. So CI23 is closed.	OK

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the project site. But PDD must include internal audit procedure				
CL24 Procedures for the project performance reviews are kept in the project site. But PDD must include project performance review procedure	7.10	PDD is revised and submitted.	Keco reviewed "Power House Operation and Management Procedure" 〈42〉 and confirmed that the procedure is in the procedure. So Cl24 is closed.	OK
CL25 Procedures for the corrective actions are kept in the project site. But PDD must include corrective actions procedure.	7.10	PDD is revised and submitted.	Keco reviewed "Power House Operation and Management Procedure" 〈42〉 and confirmed that the procedure is in the procedure. So Cl25 is closed.	OK
CL26 According to the definition in the glossary of terms, starting date is must the date of contract. In this project, the project owner signed the main equipment agreement at 28 Aug, 2008. So project's starting date is defined 28 Aug, 2008. This confirmed by equipment purchase agreement of the project signed. The operational lifetime of the project activity is 20 years. Keco	4.6	Firstly, we took 20 years as the operational lifetime of the project activity is based on FSR. Secondly, For there is no equipment lifetime information in the equipment purchase agreement, project owner consulted with the manufacturing factory and confirmed that 20 years is reasonable and the manufacturing factory gave letters to the project owner for explanation this issue. Enclosed please check explanation letter about lifetime of the Project.	PPs submitted "technical opinion related with operational lifetime from each equipment manufacturer". The document indicate that core part of boiler's operational life time is 20 years 〈35〉 and lifetime of steam turbines and generators are more than 20 years 〈34〉. So Cl26 is closed.	OK

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cross- checked using benchmarking data from other registered CDM project in waste gas/heat recovery facility. According to those data, the operational lifetime is 20 years also. But Keco need re-check using technical specification of the main equipment. In equipment purchase agreement, Keco couldn't find lifetime information. PPs must provide this document to Keco.				
CL.27 The stakeholder meeting was held on 10 July 2008 and questionnaires were distributed to fifty (50) local stakeholders from 18 to 19 July, 2008. But PPs must provide questionnaires for survey.	9.1	The questionnaires of survey are provided.	Keco received "Actual questionnaire and results report of stakeholder investigation" 〈51〉 and verified. So Cl27 is closed.	OK
CL.28 And pictures or other evidence for meeting must be included in the PDD.	9.1	The stakeholder meeting opened and Meeting minute is provided.	PPs submitted "Meeting minute" 〈50〉 for stake holder meeting and Keco verified. So Cl28 is closed.	OK
CL.29 Wuhai Daily was used to invite	9.4	Wuhai Daily was used to invite comments by local stakeholders on 05	PPs submitted "Wuhai Daily Newspaper," 〈63〉 for stake holder notification and Keco verified.	OK

Draft report clarifications and corrective action requests by Validation team	Ref. to checklist question in table 2	Summary of project participants responses	Review by DOE	Concl.
comments by local stakeholders on 05 May, 2008. But PPs must provide captured image of Wuhai Daily on 05 May, 2008.		May, 2008. The picture is provided.	So CI29 is closed.	
CI.30 PPs did not included time line of public investigation, stakeholder meeting, phase 1 construction contract, NDRC information, Wuhai City DRC approval, phase 2 main equipment purchase agreement, Inner Mongolia approval, China LoA, phase 2 construction contract, Swiss LoA date in table B.5-1 of PDD. And the date of the letter of commitment with the CDM consultancy company is differ with the submitted documents.	6.4	PPs submitted relevant document for timeline of the projects.	PPs submitted below documents and Keco verified them. · Letter of commitment with CDM consultancy company 〈19〉 · Public investigation in Wuhai Daily 〈63〉 · Stakeholder meeting 〈50〉 · Phase 1 Construction contract 〈71〉 · NDRC notification 〈20〉 · Wuhai City DRC approval letter 〈83〉 · Phase 2 main equipment purchase agreement 〈39〉 · Inner Mongolia DRC approval letter 〈73〉 · China LoA 〈23〉 · Phase 2 construction contract 〈72〉 · Swiss LoA 〈24〉 There is a type error to write down the date of Letter of commitment with CDM consultancy company. So CI30 is closed.	OK