

VALIDATION REPORT

Energy Initiative Japan Inc.

**73MW Tonghua Iron & Steel Waste Gas and
Heat for Power Generation Project in China**

April 7, 2009

Japan Consulting Institute

REPORT NO. JCI-CDM-VAL-07/013

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Approved by: Akio YOSHIDA Executive Director	Organisational unit: JCI CDM Center Japan Consulting Institute
Client: Energy Initiative Japan	Client ref.:

Project Name: 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project

Country: China

Methodology: ACM0012

Version: 02

GHG reducing Measure/Technology: Coke Dray Quenching(CDQ), Combined Cycle Power Plant(CCPP)

ER estimate: 324,205 tonCO₂e/year

Size

☒ Large Scale

☐ Small Scale

Validation Phases:

☐ Desk Review

☐ Follow up interviews

☒ Resolution of outstanding issues

Validation Status

☐ Corrective Actions Requested

☐ Clarifications Requested

☒ Full Approval and submission for registration

☐ Rejected

In summary, it is JCI's opinion that 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project in China as described in the PDD-Version 8 of 4 November 2008, meets all relevant UNFCCC requirements and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0012 Version 02. JCI thus requests the registration of the project as a CDM project activity.

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Report title: 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project in China		
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Abbreviations

BFG	Blast Furnace Gas
CAR	Corrective Action Request
CCPP	Combined Cycle Power Plant
CDM	Clean Development Mechanism
CDQ	Coke Dry Quenching
CEFelectricity	CO ₂ Emission intensity of the electricity displaced
CERs	Certified Emission Reductions
CH ₄	Methane
CLAR	Clarification
CO ₂	Carbon dioxide
CO ₂ e	CO ₂ equivalent
COG	Coke Oven Gas
DNA	Designated National Authority
EB	Executive Board
EIA	Environmental Impact Assessment
EIJ	Energy Initiative Japan Inc.
GHG	Greenhouse Gas
GWP	Global Warming Potential
JCI	Japan Consulting Institute
MP	Monitoring Plan
N ₂ O	Dinitrogen Monoxide (Nitrous oxide)
NDRC	The National Development and Reform Commission of the People's Republic of China
NECPG	North East China Power Grid
NEDO	New Energy and Industrial Technology Development Organization
ODA	Official Development Assistance
PDD	Project Design Document
SD	Sustainable Development
TGGC	Tonghua Iron & Steel Co., Ltd.
UNFCCC	United Nations Framework Convention on Climate Change

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Japan Consulting Institute (JCI) has performed a validation of the 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project in China. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The host country is China and the Annex I country is Japan. Both countries fulfil the participation criteria and have approved the project and authorized the project participants. The DNA from China confirmed that the project assists in achieving sustainable development.

The project correctly applies ACM0012 “Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system”, version 02.

By utilizing Blast Furnace Gas and Coke Oven Gas as fuel instead of flared venting it and by utilizing heat from Coke Oven, the project generates electricity and results in reductions of CO₂ emissions by replacing the grid electricity supplied that are real, measurable and give long-term benefits to the mitigation of climate change. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average 324,205 tCO₂e per year over the selected 10 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is JCI’s opinion that the 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project in China, as described in the PDD-Version 8 of 4 November 2008, meets all relevant UNFCCC requirements and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0012 Version 02. JCI thus requests the registration of the project as a CDM project activity.

2 INTRODUCTION

The Client has commissioned JCI to perform a validation of the 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project in China (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

2.1 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement

for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

2.2 Scope

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

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

3 METHODOLOGY

The validation consists of the following three phases:

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

The following sections outline each step in more detail.

3.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

- /1/ PDD Version 1, 09/03/2007, Version 2, 02/11/2007 (ACM0004 applied)
- /2/ PDD Version 3, 21/11/2007 (ACM0012 applied)
- /2-1/ PDD Version 4, 07/12/2007 (ACM0012 applied)
- /2-2/ PDD Version 5, 20/02/2008 (ACM0012 applied)
- /2-3/ PDD Version 5.1, 13/03/2008 (ACM0012 applied)
- /2-4/ PDD Version 5.2, 14/04/2008 (ACM0012 applied)
- /2-5/ PDD Version 7, 1/10/2008 (ACM0012 applied)
- /2-6/ PDD Version 8, 4/11/2008 (ACM0012 applied)
- /3/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. <http://www.vvmanual.info>
- /4/ ACM0012, Version 02 "Consolidated baseline methodology for waste gas or waste heat or waste pressure based energy pressure"
- /5/ (ACM0002 Version 06 "Consolidated baseline/monitoring methodology for (zero-emissions) grid-connected electricity generation from renewable sources")
(Applied only for ACM0004.)
- /6/ Tool for the demonstration and assessment of additionality (Version 05.2)
- /7/ Tool to calculate the emission factor for an electricity system (Version 01.1)
- /8/ Minutes of the Board Meeting on 20 March 2006
- /9/ Agreement with the Energy Initiative Japan Inc. on CDM feasibility study on 30 August 2006
- /10/ Feasibility Study Report (FSR)
- /11/ Minutes of the Board Meeting on 19 March 2007 (serious consideration of CDM)
- /12/ Emission Reduction Purchase Agreement (ERPA) on 18 May 2007
- /13/ LOA by China DNA on 22 August 2008
- /14/ LOA by Japan DNA on 12 September 2008 and on 27 February 2009
- /15/ EIA report of GTCC plant (summary)
- /16/ EIA report of CDQ plant (summary)

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- /17/ Approval of the EIA report on TGGC gas turbine power generation plant by EPA of Jilin Province –December 21, 1999
- /18/ Approval of the EIA report on TGGC CDQ plant for No1, No2, No.3 coke oven by EPA of Jilin Province – January 7, 2002
- /19/ Propaganda poster for the project to stakeholders
- /20/ Summary of stakeholders' comments
- /21/ General arrangement drawing-CCPP
- /22/ General arrangement drawing-CDQ
- /23/ By-product gas mass balance table
- /24/ System diagram of waste gas and heat power generation plant
- /25/ Single line diagram of the power plant-main
- /26/ Single line diagram of the power plant-CDQ
- /27/ NDRC ordinance - List of important technologies for domestic development (2005 version)
- /28/ Forbiddance of the construction of fossil fuel-fired power plant with capacity below 300MW included in the above ordinance and publicized by <http://www.serc.gov.cn/opencms/export/serc/laws/index.html> or <http://nyj.ndrc.gov.cn>
- /29/ Memorandum of Electric power supply between TGGC and Tonghua electric power bureau
- /30/ Approval of the feasibility study report on TGGC gas turbine power generation plant by Economy and Trade Commission of Jilin province –September 5, 2001
- /31/ Approval of the feasibility study report on TGGC CDQ modification plant by Economy and Trade Commission of Jilin province –November 13, 2002
- /32/ Letter for approval of the application of the project for CDM to NDRC by TGGC – June, 2007
- /33/ China electric power yearbook 2003-2007
- /34/ China energy statistical yearbook 2005, 2006, 2007
- /35/ China DNA data source issued on 18 July 2008
- /36/ Operation and Maintenance Manual for BFG fired gas turbine and CDQ
- /37/ Evaluation and method of Economic Analysis” 3rd edition (Plan press of China) for iron and steel sector
- /38/ Measures for operation and management of CDM in China” issued by the Office of National Coordination Committee on Climate Change
- /39/ Outline of the project for the meeting with stakeholders
- /40/ ZHANG Chunxia and WANG Haifeng from CISRI (2007) “Circular Economy in the Chinese Steel Industry”
- /41/ China’s Steel Industry 2008
- /42/ “Design for Blast Furnace Gas Firing Turbine” presentation material at 15th Conference on Electric Power Supply Industry (2004)

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

	PDD-Ver.1.0 (published on 19 June 2007)	PDD-Ver.4 (re-published on 6 February 2008)	PDD-Ver.8 (final)
Methodology applied	ACM0004 Ver.02 ACM0002 Ver.06 Additionality Tool Ver.02	ACM0012 Ver.02 Emission factor calculation Tool Ver.01 Additionality Tool Ver.03	ACM0012 Ver.02 Emission factor calculation Tool Ver.01.1 Additionality Tool Ver.05.2
Expected annual emission reductions	336,650 tCO ₂ e	332,781 tCO ₂ e	324,205 tCO ₂ e
Project boundary	Not mentioned clearly	Included the grid (NECPG) and sources of waste gas and heat	Included the grid (NECPG) and sources of waste gas and heat
IRR	Step 2 bypassed. Step3 Barrier analysis applied.	Without CER: 10.06% With CER: 13.03% Bench mark=13% Attached IRR calculation sheet	Step 2 bypassed Step 3 Barrier analysis applied
Data source for OM, BM calculation	China electricity power yearbook 2001-2005 China energy statistical yearbook 2003-2005 DNA data source 15/12/2006	China electricity power yearbook 2002-2006 China energy statistical yearbook 2004-2006 DNA data source 09/08/2007	China electricity power yearbook 2003-2007 China energy statistical yearbook 2005-2007 DNA data source 18/07/2008
Baseline emission factor	1.0046 tCO ₂ /MWh	1.0517 tCO ₂ /MWh	1.02535 tCO ₂ /MWh
Starting date of the project	07//2000	07//2000	19/03/2007 The explanation of the starting date is added in Section B.5.
Starting date of crediting period	01/01/2008	01/04/2008	01/02/2009

3.2 Follow-up Interviews with Project Stakeholders

Date	Name	Organization	Topic
/51/ 7 August 2007	Wang Youli Chief International Co-operation and foreign programs	Environmental Protection Agency of Jilin Province	<ul style="list-style-type: none"> ● Laws/regulations on requirement of EIA ● Confirmation of submission and approval of EIA report of this project

				● Problems and advantages expected of this project
/52/	Ditto	Wang Jian International Co-operation and foreign programs	Ditto	Ditto
/53/	8, 9 August 2007	Ma Chun Mao Assistant to general manager of economic operation dept.	TGGC	General information of the project, starting date of the project, stakeholder meeting
/54/	Ditto	Han Ke Deputy general manager of production safety environment dept.	TGSC	Ditto
/55/	Ditto	IN Xiao Chen Group chief of cokes factory	Ditto	FS, system, technology, operation of CDQ project
/56/	Ditto	Zhou Yu Ping Group chief of cokes factory	Ditto	Ditto
/57/	Ditto	He Li Gang Group chief of power factory	Ditto	FS, system, technology, operation of CCPP project
/58/	Ditto	Ding Zhao Yi Group chief of power factory	Ditto	Ditto
/59/	Ditto	Yu Peng Fei Production safety environment dept.	Ditto	Environment assessment
/60/	Ditto	Ma Ri Xu Production safety environment dept.	Ditto	Environment assessment
/61/	8 August 2007	Yu Zeng Yuan	Local resident, no occupation	Local stakeholder's comments
/62/	Ditto	Liu Jing Xi	Ditto	Ditto
/63/	Ditto	Qu Li Huan	Local resident, housewife	Ditto
/64/	Ditto	Wei Di	Local resident, teacher	Ditto
/65/	8, 9 August 2007	S. Emoto	EIJ	General information of the project
/66/	Ditto	T. Li	EIJ	Ditto

3.3 Resolution of Outstanding Issues

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

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

The validation protocol consists of three tables. The different columns in these tables are described in the Figure 1 below. The completed validation protocol for the 73MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project is enclosed in Appendix A to this report.

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

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

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

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

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

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	Ref. to checklist question in table 1 & 2	Summary of project owner response	Validation conclusion
If the conclusions from the draft Validation are either a CAR or a CLAR, these should be listed in this section.	Reference to the checklist question number in Table 1 & 2 where the CAR or CLAR is explained.	The responses given by the project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation protocol tables

3.4 Internal Quality Control

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

3.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Validation Team Leader Auditor	SATO	Hideyuki	Japan
Validation Team Member Auditor	KITAGAWA	Toru	Japan
Validation Team Member Auditor	HISATOME	Masatoshi	Japan

The certificate of appointment of validation team member is attached in Appendix B to this report.

4 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A. As the result of the validation of the PDD (PDD-Ver.1 (ACM0004 applied))/1/ and PDD-Ver.3 (ACM0012 applied)/2/, two (2) CARs and twenty three (23) CLARs have been addressed as findings and all of these findings were completely resolved by the desk review of the revised PDD-Ver.8 (ACM0012 applied)/2-6/, follow-up interview and additional information received.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation (PDD-Ver.8).

4.1 Participation Requirements

The participating Parties fulfill the participation requirements.

The project will not receive any public funding from Annex 1 Party.

As the written letter of approval of voluntary participation by the DNA of each party was not provided, **CAR-1** was addressed.

The DNA of China has issued a Letter of Approval on 22 August 2008 authorizing Tonghua Iron & Steel Co., Ltd. in China as a project participant confirming that the project assists the host country in achieving sustainable development and that it is voluntary participation./13/

The DNA of Japan has issued a Letter of Approval on 12 September 2008 authorizing Energy Initiative Japan Inc. in Japan as a project participant and re-issued on 27 February 2009 authorizing The New Energy and Industrial Technology development Organization for addition as a project participant./14/

Therefore, **CAR-1** was resolved and cleared.

4.2 Project Design

The technologies employed by the project activity are Steam Network Power Generation System composed of CDQ, CCPP which enable effective utilization of recovered steam by CDQ and CCPP.

The CCPP at TGGC utilises COG and BFG as fuels, which are low calorific by-products gases generated in iron-making process. When installing of CCPP is started to be discussed at TGGC, given that there was only one case of CCPP installation in China which use steel by-product gases with low calorific value and much impurities, and that the Chinese government had been promoting “domestic production of advanced technology”, the CCPP installation at TGGC has started as a joint experimental development project with several Chinese manufacturers and is still in the phase of demonstration. Particularly a gas turbine technology promoted by the Chinese government was based on the technology of the natural gas fuelled gas turbine produced by US based company of General Electric. Hence, the technology itself needed to be modified to suit it for utilization of BFG and COG as fuel.

As the system applied to the project is quite new in the host country and the first one in the province and China, it requires extensive training for operation and maintenance of the facilities, especially BFG fired gas turbine and CDQ.

CLAR-9 was addressed to review the training program for operation and maintenance/36/. After reviewing the documents provided by TGGC at the follow-up interview, **CLAR-9** was resolved and cleared.

It was confirmed that the project duration shall be twenty (20) years and crediting period is ten (10) years.

As the description of the project activity was not in accordance with the latest “Guidelines for Completing the Project Design Document (CDM-PDD)” Version 07, **CLAR-4 (3)** was addressed. In the PDD-Ver.8, it was confirmed that the description was appropriately in accordance with the above “Guidelines”. Therefore, **CLAR-4** was resolved and cleared.

The other CLARs were addressed and resolved as mentioned in Appendix A.

4.3 Baseline Determination

It was confirmed that the proposed project activity fully satisfies the applicability of ACM0012 Version 02 as below.

According to ACM0012 Version 02, the possible alternative scenarios in the absence of the CDM project activity would be as follows:

For the use of waste gas/heat, the realistic and credible alternative(s) may include:

- W1 Waste gas is directly vented to atmosphere without incineration;
- W2 Waste gas is released to the atmosphere after incineration or waste heat is released to the atmosphere;
- W3 Waste gas/heat is sold as an energy source;
- W4 Waste gas/heat is used for meeting energy demand.

For power generation, the realistic and credible alternative(s) may include:

- 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 based existing captive or identified plant;
- P6 Sourced Grid-connected power plants;
- P7 Captive Electricity generation from waste gas (if project activity is captive generation with waste gas, this scenario represents captive generation with lower efficiency than the project activity.);
- P8 Cogeneration from waste gas (if project activity is cogeneration with waste gas, this scenario represents cogeneration with lower efficiency than the project activity).

CLAR-15 was addressed to review the evidences and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements.

Exclusion of any baseline options was justified with documented evidences as follows and **CLAR-15** was resolved and cleared;

W1: Environmental regulations.

W3, W4: Tonghua Iron & Steel Co., Ltd. supplies COG as fuel for households mainly in Erdaojian Qu in Tonghua City as a part of local contribution activities, yet the supplying amount is about

1,500 Nm³/h, which is about 2% of the COG generated. The supply is stable over long time that the amount of supply or supply areas will not likely to be enlarged. Now natural gas network is expanding in Tonghua city for civil uses and it is preferred to COG, which is low in calorie with unstable supply. Besides, expansion of COG supply requires installation of additional pipelines which will involve a large cost and relatively low return. For these reasons, expansion of COG supply is very unlikely./Table B.4-1 to B.4-4 Waste gas balance in 2004 to 2006 and 2009 of PDD-Ver.8/

P2, P4: According to the “NDRC ordinance – List of important technologies for domestic development” (2005)/27/, construction of captive fuel fired power plant with capacity of 300MW or below within the grid-connected area is forbidden./28/

P3, P5: There are no economically exploitable renewable energy resources such as hydro, wind and biomass in the neighboring area of Tonghua Iron & Steel Co., Ltd.

P7: P7, namely, captive electricity generation from waste gas with lower efficiency than the project activity is assumed to be a steam turbine generator. The project activity is designed based on the amount of excess waste gas at the time of 2000, which are 74,870 Nm³/h of BFG and 14,500 Nm³/h of COG, and to generate 468,204MWh/yr of electricity. Applying an average generation efficiency of 3,500kcal/kWh for a steam turbine generator, annual power generation is estimated to be 242,462MWh, which is lower than the planned output by the project proponent. It means that it is impossible to gain same amount of electricity output by a steam turbine generator even if consuming all excess waste gas at that time./ Table B.4-2 and Table B.4-3 of PDD-Ver.8/ Considering that annual electricity consumption at Tonghua Iron & Steel Co., Ltd. is no less than 600 thousand megawatt-hour, it seems not likely the project proponent select power generation system with smaller amount of generation while consuming same quantity of waste gas.

From the above analysis, the combination of either “W2 and P1” or “W2 and P6” could be baseline. W2 and P1 could be the baseline scenario in terms of fitting with energy demand of the project site, depending on fuels that are available at the project site and complying with the existing Chinese legislation. However, P1 is not only financially unattractive, but also faces many prohibiting barriers, therefore combination of W2 and P1 cannot be the baseline scenario.

Therefore, as shown in the table below, JCI has judged that the baseline scenario of the project is appropriate.

Scenario	Baseline options		Description
	Waste gas	Power	
1.	W2	P6	Waste gas is released to the atmosphere after incineration and waste heat is released to the atmosphere, and electricity required for Tonghua Iron & Steel Co., Ltd. is sourced by power plants connected to the Northeast China Power Grid (NECPG).

Moreover, the system boundary is appropriately presented in tabular format below:

	GHGs involved	Description
Baseline emissions	CO ₂	Grid (NECPG) electricity Generation: Main emission source
Project emissions	CO ₂	CCPP: Diesel oil will be used as auxiliary fuel (for start-up) of CCPP. CDQ: No fossil fuel is used for CDQ

		operation.
Leakage	No leakage	

The other CLARs were addressed and resolved as mentioned in Appendix A.

4.4 Additionality

As the starting date of the project activity is before the date of validation, **CLAR-16** was addressed to review the evidences that the incentive from the CDM was seriously considered in the decision to proceed with the project activity and also to review the implementation timeline of the project.

The detail of the timeline is described in the Table B.5-1 of the PDD-Ver.8 as follows;

Table B.5-1 Timeline of the proposed project activity

Date	Event	Source
1 Jun 2001	Construction work of CCPP started	Record on acceptance of equipment
15 Nov 2002	Commissioning of CCPP	Record on acceptance of equipment
Oct 2003	Full operation of CCPP	CCPP operation record
Year 2004	Out of operation for 4,426 hours because of failure and malfunction	CCPP operation record
Year 2005	Out of operation for 3,309 hours because of failure and malfunction	CCPP operation record
20 Mar 2006	The board of directors decided to cease the project and to assess the possibility to implement the project being registered as a CDM project activity	Minutes of the board meeting
30 Aug 2006	Agreement with the Energy Initiative Japan Inc.(EIJ) on CDM feasibility study	Memorandum of understanding
19 Mar 2007	The board of directors made decision to recommence the project based on the serious consideration of the incentive from the CDM, and ordered to construct the new Steam Network Power Generation System. (= project activity restarting date)	Minutes of the board meeting
18 May 2007	Signing of Emission Reduction Purchase Agreement	Emission Reduction Purchase Agreement
11 Jun 2007	Contract on validation with DOE	Contract on validation
19 Jun 2007	PDD made publicly available	UNFCCC website
19 Sep 2007	Start-up of the Steam Network Power Generation System	Record on acceptance of equipment
1 Feb 2009	Expected start of crediting period	-

The project has started the construction work of CCPP used the domestic technologies in June 2001 and operation in 2003, but faced high technological barriers and the operation was stopped frequently, that was confirmed by the operation records. It was understood that it took so much cost to repair them and it is so difficult to resolve the technological troubles by the domestic technologies in China. Accordingly, it was decided to cease the operation of CCPP at the Board meeting on 20 March 2006/8/. At that time, it was decided to assess the possibility to implement as CDM supporting by foreign technologies.

It was confirmed with evidences (Minutes of the board meeting/11/) that the serious consideration of CDM on 19 March 2007 based on the FSR prepared by EIJ who agreed on 30 August 2006 as a CDM consultant/9/

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was undertaken and the project was ordered to restart the construction by the Board. Moreover, ERPA/12/ has been awarded on 18 May 2007. According to the “Glossary of CDM terms”, JCI has judged that the date of 19 March 2007 is appropriate as the starting date of the CDM project of the steam network power generation system linked to CDQ project supporting by foreign technologies.

Therefore, **CLAR-16** was resolved and cleared.

The additionality of the project has been established using the procedure of the step by step in the “Tool for the demonstration and assessment of additionality” version 05.2/6/.

Step 1: Possible alternative scenarios were defined as described in Section 4.3 of this report. Scenario W2 and P6 were appropriately identified as realistic and credible scenarios to the project activity.

Step 2: Investment Analysis:

For the project, this Step 2 was not undertaken.

Step 3: Barrier Analysis:

Technological barriers and barriers due to prevailing practice were demonstrated using the relevant evidences documented.

CLAR-18 was addressed to review the evidences.

It was confirmed with evidence (China’s Steel Industry/41/) that the Steam Network Power Generation System is considered as the “First of its kind” in China.

The gas turbine used in the CCPP is licensed by General Electric Company based on using natural gas as fuel in essence, accordingly, it is so difficult to apply waste gas such as BFG which is narrow flammability zone, low calorie and contain a lot of impurities such as dust and tar. Therefore, very high technical development is required to apply BFG as fuel. Actually, the operation of CCPP has stopped frequently by a lot of troubles.

The above was confirmed with evidences, “Circular Economy in China’s Steel Industry”/41/ and “Design for Blast Furnace Gas Firing Gas Turbine”/42/ and it was ensured that the project involves much technological barriers..

Therefore, **CLAR-18** was resolved and cleared. The details are mentioned in Appendix A.

Step 4: Common Practice Analysis

It was appropriately demonstrated that there is no other the steam network power generation system using CCPP and CDQ in steel making plants in China as shown in CLAR-18.

The CLARs addressed and resolved in this Section have been mentioned in detail in Appendix A.

It is sufficiently demonstrated in the PDD-Ver.8 that the project is not a likely baseline scenario and emission reductions by the project can hence be deemed additional.

JCI has assessed the reliability and credibility of all discussion for the demonstration of the additionality, verifying all data, assumptions, justifications and documentation provided by the project participants and confirmed that those discussions are appropriate and credible.

JCI, therefore, has judged that the project is additional.

4.5 Monitoring

Referring to Part B and Annex 4 of the PDD.

4.5.1 Parameters determined ex-ante

As the calculation procedure of Operating Margin (OM) and Build Margin (BM) based on the latest data which are parameters determined ex-ante were not mentioned and attached, **CAR-2 (1)** was addressed.

The calculation procedure of them was attached in Annex 3 of the PDD-Ver.4. After review of them, it was confirmed that these were appropriately corrected and demonstrated. As the latest data was published on 18 July 2008 by NDRC of China/35/, OM/BM was recalculated appropriately by using these data. Therefore, **CAR-2 (1)** was resolved.

The CAR-2 addressed and resolved in this Section has been mentioned in detail in Appendix A.

4.5.2 Parameters monitored ex-post

As the parameters sufficient for calculating emission reductions was not clearly mentioned in the PDD-Ver. 1, especially amount of electricity consumed by the project activity (EG_{AUX}), **CLAR-3** was addressed. At the follow-up interview, one-line diagram was shown and the parameter of EG_{AUX} was clearly defined in the PDD-Ver.4. Therefore, **CLAR-3** was resolved.

The CLAR-3 addressed and resolved in this Section has been mentioned in detail in Appendix A.

4.5.3 Management system and quality assurance

The authority and responsibility of project management, quality control and quality assurance were clearly mentioned in the PDD-Ver. 1.

However, **CLAR-19**, **CLAR-20** and **CLAR-23** were addressed for confirmation of training procedure, calibration period, internal audits and so on. As the operation and maintenance manual for CCPP & CDQ/36/ was appropriately reviewed at the follow-up interview, these CLARs were resolved.

The **CLARs (19, 20 and 23)** addressed and resolved in this Section have been mentioned in detail in Appendix A.

4.6 Estimate of GHG Emissions

CAR-2 (1)-(5) were addressed as follows;

- (1) Calculation table of BM & OM
- (2) Base data for the calculation of the ratio of the power generation
- (3) The appropriateness of the efficiency (EF_{coal} , EF_{oil} , EF_{gas}) used for the calculation of BM
- (4) The calculation process of ex-ante emission reduction
- (5) The amount of the electricity generated by CCPP & CDQ and the consumption by auxiliary equipment

CAR-2 (1) was resolved as mentioned in the above Section 4.5.1.

The data for CAR-2 (2), (3) were shown appropriately in Annex 3 of the PDD-Ver.4 and these CAR items were resolved.

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CAR-2 (4) was resolved in Section B.6.1 and B.6.6 of the PDD-Ver.4.

CAR-2 (5) was resolved in Table.B.6-1 and 6-2 of the PDD-Ver.4.

These have been mentioned in detail in Appendix A.

4.7 Environmental Impacts

EIA report was not provided in the PDD-Ver.1. **CLAR-2** was addressed.

It was confirmed by the EIA report/15/, /16/ that the EIA was conducted and the report of the result was approved by the Jilin Province Environmental Protection Agency/17/, /18/ at the on-site assessment.

Therefore **CLAR-2** was resolved.

4.8 Comments by Local Stakeholders

The following questionnaires for stakeholder comments was prepared and carried out to 60 respondents.

1. What do you think of the local environment?
2. By what mean have you heard about the project?
3. Which pollution do you think occurs from the current system (multiple items may be selected)?
4. Who might you notify when encountered with an environmental problem?
5. Do you think the project will improve the local environment?
6. Do you think the project will contribute to the improvement of the local living standard?
7. Do you think the project will contribute to the local development?
8. Do you support the project?

The result shows that 24 out of 60 respondents (accounting for 40%) are dissatisfied, further 34 (57%) are highly dissatisfied and 2 (3%) are satisfied with the local environment. 54 (90%) consider that the project can improve the local environment and 14 out of those 54 considered the project will improve the local environment greatly. Furthermore, all respondents consider that the project has no negative impact; and most of them supported the proposed project (2 responded that they “neither support nor not support”).

There was no opposition to the project activity.

However, **CLAR-1** was addressed to review the minutes of meeting and further information in detail at the on-site assessment.

CLAR-1 was resolved with the three documents provided at the on-site assessment, that are the propaganda poster for the project/19/ and the outline of the project for the meeting with stakeholders/39/ and the minutes of meeting held on 8 June 2007/20/.

4.9 Comments by Parties, Stakeholders and NGOs

The PDD –Ver. 1 (ACM0004 applied) of 9 March 2007 was made publicly available on JCI website linked on UNFCCC CDM website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 19 June 2007 to 18 July 2007.

No comment was received.

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The PDD-Ver.4 (ACM0012 applied) of 7 December 2007 was again made publicly available on JCI website linked on UNFCCC CDM website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 6 February 2008 to 6 March 2008.

One comment was received and is given in the below text box.

Comment by:

Long Yan

Huanneng environmental protection center,

Beijing, China

☐ Accredited NGO

☐ Party

☒ Stakeholder

Inserted on: 19 February 2008

Comment:

1. The net electricity generation for this 73MW project is 317,414 MWh/yr. It gives a annual operation hour of less than 5,000 hours. Normally the operation hour for such project could reach 7,000 hours. What is the reason for the low operation in hours? This should also be a sensitive factor in sensitive analysis.
2. Second, project mentioned a 0.018 RMB/m³ price for waste gas. This is self captive power plant using previously not used valueless waste gas. Why such cost is considered?

How JCI has considered the comment received in its validation:

1. The net electricity generation means the gross electricity generation (=468,204 MWh/yr) minus the electricity consumed by auxiliary equipment (=150,790 MWh/yr), that is 317,414 MWh/yr (=468,204-150,790).
Accordingly, the annual operation time is 320 days for Gas turbine and 355 days for Steam turbine as shown Section B.6.3 of the PDD, that is more than 7,000 hours.
2. The BFG and COG occurs as by-product of steel making process and it is utilized as fuels for various kinds of steel making plants. Accordingly, the price is strictly decided on financial account same as energy purchased from outside.
As surplus of BFG and COG is used for the project, the price (0.018 RMB/m³) is decided same as that of the utilizing for steel making plants.

APPENDIX A

CDM VALIDATION PROTOCOL –VERSION 01

INTRODUCTION

This document is the Validation Protocol on 73 MW Tonghua Iron & Steel Waste Gas and Heat for Power Generation Project

The validation protocol is prepared for the following purposes:

- To organise, detail and clarify the requirements that the CDM project is expected to meet
- To ensure a transparent validation process with the documenting how a particular requirement has been satisfied and which conclusions have been reached

The validation protocol is consisted of the following three types of tables, which are effective for the purposes of validation above.

Table 1 show the mandatory requirements, which the proposed project activity has to meet as a CDM project activity and the conclusion by the validator of how the requirements are met.

Table 2 contains the checklist with questions which ask how the requirements in Table 1 are fulfilled methodologically, qualitatively and quantitatively, and conclusion by the validator with such marks as **OK**, **CAR** and **CLAR** *.

Table 3 shows the corrective actions or clarifications which are requested to be taken in Table 1 & 2.

*Note:

- Findings established during the validation can either be seen as a non-fulfillment of CDM criteria or where a risk to the fulfillment of project objectives is identified. Corrective action requests (**CAR**) are issued, where,
 - i) mistakes have been made with a direct influence on project results;
 - ii) CDM and/or methodology specific requirements have not been met; or
 - iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified
- A request for clarification (**CLAR**) may be used where additional information is needed to fully clarify an issue. Depending on the result of clarification, the item may lead to additional corrective request or further request for clarification.

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

Table 2 Requirements ChecklistA-6

Table 3 Corrective Action (CAR)/Clarification (CLAR) and Conclusion by Validator.....A-24

History of the documents

PDD Version	Issue Date	Nature of Revision(s)	Revision of Validation Report
1	9 March 2007	Initial Issue: made publicly available on the UNFCCC website from 19 June to 18 July 2007 (ACM0004 ver.02 applied)	00
2	1 November 2007	Changed the process system	00
3	21 November 2007	Changed from ACM0004 to ACM0012	01
4	7 December 2007	Resubmitted to make publicly available on the UNFCCC website from 6 February to 6 March 2008 (ACM0012 ver.02 applied)	02
5	20 February 2008	Detailed production gas and waste gas balance for recent 3 years (2005, 2006 and 2007) is added in Annex 3. The period of all monitored data to be kept is described.	02
5.1	13 March 2008	The starting date of the project activity is explained in B.5.	03
5.2	14 April 2008	Changed annual estimation of emission reductions of 2008 and 2018 and corrected editorial mistake	03
8	4 November 2008	Changed to the latest data on emission factor published by China DNA on 18 July 2008 Applied the latest "Guidelines for completing the PDD (Version 07)" and "Guidance on the demonstration and assessment of prior consideration of the CDM"	04
8	7 April 2009	Re-issuance of Japan LOA on 27 February 2009	05

Remarks;

The CLARs (Clarifications) and the other items which were newly found or changed after the change of methodology from ACM0004 to ACM0012 are indicated by using blue fonts and shadow.

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

Requirement	Reference	Cross-reference	Conclusion	Comments by validator
About Parties				
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	PDD A.3. A.4.4.	CAR-1 OK	The written approval of voluntary participation by the DNA of each party shall be provided.
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	PDD A.2. A.3.	CAR-1 OK	Same comments as for item 1 of Table 1.
3. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a		CAR-1 OK	Same comments as for item 1 of Table 1
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	PDD A.2.	CAR-1 OK	Same comments as for item 1 of Table 1.
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not	Marrakesh Accords	PDD A.4.5.	OK	No. The project will not receive any public funding from Annex-1 party.

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Requirement	Reference	Cross-reference	Conclusion	Comments by validator
counted towards the financial obligations of these Parties.				
6. Parties participating in the CDM shall designate a national authority for the CDM	Marrakesh Accords, CDM Modalities §29		OK	Yes. National Development and Reform Commission (NDRC) is the designated national authority for the CDM of China. The Liaison Committee for the Utilization of the Kyoto Mechanisms is the designated national authority for CDM of Japan.
7. The host Party and the participating Annex 1 Party shall be a Party to the Kyoto Protocol	Marrakesh Accords, CDM Modalities §30/31a		OK	Yes. China, host country, has been a party to the Kyoto Protocol since 30/08/02.
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b		OK	Yes.
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b		OK	Yes.
About Additionality				
10. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional as anthropogenic emissions of greenhouse gases by sources are reduced below those that	Kyoto Protocol Art.12.5c, Marrakesh Accords, CDM Modalities §43		OK	The additionality is duly discussed using "Tool for the demonstration and assessment of additionality (version05.2)"/6/ in the PDD.

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Requirement	Reference	Cross-reference	Conclusion	Comments by validator
would have occurred in the absence of the registered CDM project activity				
About Environmental Impacts				
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	PDD D.1.	OK	The emission reductions are real, measurable and give long-term benefits related to atmosphere, water quality and noise.
For Large- scale only				
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakesh Accords, CDM Modalities §37c	PDD D.1.	CLAR-2 OK	The report of EIA carried out by Tonghua iron & Steel Stock Co., Ltd. (TGGC/TGSC) and approved by Jilin Province Environmental Protection Agency shall be provided and briefed at the on-site assessment including the requirement of the EIA.
About Stakeholder Involvement				
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakesh Accords, CDM Modalities §37b	PDD E.1. E.3. I	CLAR-4 OK	The information of the procedure for the invitation of the stakeholders' comments shall be described in more detail including the reason why questionnaire survey was adopted instead of facilitation or interview survey and how the 60 stakeholders were selected. The minutes of the meeting/20/ shall be provided and briefed at the on-site assessment.

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Requirement	Reference	Cross-reference	Conclusion	Comments by validator
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for 30 days, and the project design document have been made publicly available.	Marrakesh Accords, CDM Modalities, §40	PDD E.	OK OK	Yes. The PDD has been made publicly available on JCI web site which is linked on the UNFCCC CDM web site from June 19, 2007 through July 18, 2007 for the invitation of the comments by Parties, stakeholders and UNFCCC accredited NGOs. No comment was received. The revised PDD Ver.4 applied ACM0012 has been made again publicly available on JCI web site which is linked on the UNFCCC CDM web site from 6 February through 6 March 2008 for the invitation of the comments by Parties, stakeholders and UNFCCC accredited NGOs. One comment was received.
Other				
15. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	Marrakesh Accords, CDM Modalities §37e	PDD B.1. B. 2.	OK OK	Yes. "Approved consolidated baseline methodology for waste gas and/or heat and/or pressure for power generation ACM0004" ver. 02 and "consolidated monitoring methodology for waste gas and/or heat and/or pressure for power generation ACM0004" ver. 02 are applied to the project with the justification of their applicability. Yes. Approved "Consolidated baseline methodology for GHG emission reductions for waste gas or waste heat or waste pressure based energy system" ACM0012 ver.02 is applied to the project with the justification of the applicability.
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakesh Accords, CDM Modalities, §45c,d	PDD B.6.1. B.6.2. B.6.3.	OK	Yes. Baseline is established on a project-specific basis in a transparent manner and taking into account the relevant national and/or sectoral policies and circumstances.
17. The baseline methodology shall exclude to earn CERs for	Marrakesh Accords, CDM	PDD	OK	Yes. The baseline methodology will exclude to earn CERs for the decreases in activity levels outside the project activity or due to force

Requirement	Reference	Cross-reference	Conclusion	Comments by validator
decreases in activity levels outside the project activity or due to force majeure	Modalities, §47	B.6.1.		majeure.
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakesh Accords, CDM Modalities, Appendix B, EB Decisions		OK	Yes. PROJECT DESIGN DOCUMENT FORM (CDM PDD) – Version 03.1.is used appropriately for the PDD of the project.
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakesh Accords, CDM Modalities §37f		CLAR-3 OK	<p>They are in accordance with Marrakesh Accords and relevant decisions of the COP/MOP in principle.</p> <p>EG_{AUX} shall include the electricity supply to all auxiliary equipments of the power plant of the project including the fuel gas compressor motor.</p> <p>It shall be confirmed whether the electricity meters will be installed on every power supply line to the auxiliaries or on the main auxiliary power supply line.</p> <p>The single line diagram shall be provided.</p>

Table 2. Requirements Checklist

Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
A.1. Title of the project activity:					
A.1.-1 Is the number and the date of the issue of the version updated?			Yes	OK	OK
A.2. Description of the project activity: <i>How the project activity reduces GHG emissions.</i> <i>The project's contribution to sustainable development is assessed.</i>					
A.2.-1 Is the project in line with relevant regulation and plans in the host country?	PDD A.2. A.4.3. B.4. B.5.	DR I	(1)It is stated that the project will be implemented in accordance with the environmental regulation of the local government (Jilin Province) as well as with the laws and regulations of State Electricity including "Measures for operation and management of CDM in China". The relevant regulations and plans of the host country to which the project refers or is in line with shall be stated. The whole or the relevant pages of the document shall be provided and briefed at the on-site assessment. (2)The document of the decision on strictly forbidding the illegal construction of fuel-fired power plant with capacity 135MW and below (2002) shall be provided and briefed at the on-site assessment. (3)Description of the project activity shall be described in accordance with the "Guidelines for Completing the Project Design Document (CDM-PDD)" Version 07.	CLAR-4 OK	OK
A.2.-2 Is the project in line with host-country specific CDM requirements?	PDD A.2	DR I	The country specific requirement on CDM project activity shall be described if any in addition to the Article 4 in the "CDM Project Management & Operational Method".	CLAR-5 OK	OK
A.2.-3 Is the project in line with sustainable development policies of the host	PDD A.2	DR I	Yes, the project is in line with SD (Sustainable Development) policies of China.	OK	OK

* MoV = Means of Verification, DR= Document Review, I= Interview, CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
country?					
A.2.-4 Will the project create other environmental or social benefits other than GHG emission reductions?	PDD A.2	DR	Yes, the project will create environmental and social benefits by mitigating air pollution problem, reducing fuel consumption and creating work opportunity.	OK	
A.2.-5 Is the length of the description within one page?	PDD A.2.	DR	The length of the explanation of the project activity shall be max. one page.	CLAR-21 OK	OK
A.3. Project participants:					
A.3.-1 Do both parties wish to be considered as project participant?	PDD A.3.	DR	The written evidence of the wish of the parties to be considered as project participant shall be provided.	CLAR-6 OK	OK
A.3.-2 Is the name of the project participant correctly stated and consistent?	PDD A.3.	DR	The name of the project participant of the host country shall be correctly stated consistent with Annex 1.	CLAR-22 OK	OK
A.4. Technical description of the project activity					
A.4.1.4. Detail of physical location, including information allowing the unique identification of this project activity (maximum one page)					
A.4.1.4.-1 Is English used in map? Is the physical location of project activity indicated with longitude and latitude? Is map clear?	PDD A.4.1.	DR	As for the maps concerned with the project site, the exact location shall be indicated with the longitude and latitude and they shall be clear.	CLAR-7 OK	OK

Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
A.4.3. Technology to be employed by the project activity: <i>Project technology focused on the project engineering, choice of technology and competence /maintenance needs are assessed. Validator shall ensure that environmentally safe and sound technology and know-how are used.</i>					
A.4.3.-1 Are the current good practices reflected in the project engineering /design?	PDD A.4.3.	DR	<p>(1)The current good practices are reflected. However, the plant efficiency (%) and consumption of blast furnace gas and coke oven gas (Nm³/h) shall be described.</p> <p>The table of heating value (kcal/NM³) and analysis value (vol. %) of the blast furnace and coke oven gas shall be attached to Annex 3.</p> <p>(2)Description of technology to be employed by the project activity shall be described in accordance with the “Guidelines for Completing the Project Design Document (CDM-PDD)” Version 07.</p>	CLAR-8 OK	OK
A.4.3.-2 Does the project use state of the art technology or will the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD A.4.3	DR	Same comment as that for item A.4.3.-1.	CLAR-8 OK	OK
A.4.3.-3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD A.4.3	DR	Same comment as that for item A.4.3.-1.	CLAR-8 OK	OK
A.4.3.-4 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD A.4.3. B.7.2.	DR I	As the technology applied to the project is quite new in the host country and the first one in the province, it requires extensive training for operation and maintenance of the facilities, especially BFG fired gas turbine and CDQ.	CLAR-9 OK	OK

* MoV = Means of Verification, DR= Document Review, I= Interview, CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
			Training program for operation and maintenance shall be provided.		
A.4.3.-5 Does the project make provisions for meeting training and maintenance needs?	PDD A.4.3. B.7.2.	DR I	Same comments as on item A.4.3.-4	CLAR-9 OK	OK
A.4.4. Estimated amount of emission reductions over the chosen crediting period:					
A.4.4.-1 Is the crediting period consistent with that shown in item B.6.4.and C.2.1.1.?	PDD A.4.4. B.6.4. C.2.1.	DR	Yes.	OK	OK
A.4.4.-2 Is estimated amount of emission reduction consistent with that shown in item B.6.4. ?	PDD A.4.4. B.6.4.	DR	Yes.	OK	OK
A.4.5. Public funding of the project activity:					
A.4.5.-1 Is the funding not diversification of Official Development Assistance?	PDD A.4.5.	DR	No. The funding for the project is not diversion of ODA.	OK	OK
B. Application of a baseline and monitoring methodology <i>The assessment of the project baseline whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity: <i>It is assessed whether the project is applied</i>					

* MoV = Means of Verification, DR= Document Review, I= Interview, CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
<i>with appropriate baseline methodology.</i>					
B.1.-1 Does the project apply an approved methodology and the correct version thereof?	PDD B.1. B.2.	DR	Yes.	OK	OK
B.1.-2 Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	PDD B.1. B.2.	DR	Yes.	OK	OK
B.1.-3 Are the title and version of the approved Methodology applied to the project activity indicated?	PDD B.1. B.2.	DR	The number of the version of “Consolidated baseline methodology for grid – connected electricity generation from renewable sources” ACM0002 and “Tool for the demonstration and assessment of additionality” shall be correctly indicated in the PDD. <i>The number of the version of ACM0012 and Tool to calculate the emission factor for an electricity system is correctly indicated in the PDD-Ver.4.0</i>	CLAR-10 OK	OK
B.1.-4 Are any methodologies or tools to which the approved Methodologies refer and their version indicated?	PDD B.1.	DR	Same comments as on item B.1.-3.	CLAR-10 OK	OK
B.2. Justification of the choice of the methodology and why it is applicable to the project activity: <i>The choice of baseline shall be assessed with the focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.</i>					
B.2.-1 Is the choice of methodology justified transparently by showing that the proposed project activity meets each of the applicability conditions of the methodology	PDD B.2.	DR	<i>The waste gas utilized in the project was flared into the atmosphere in the absence of the project at existing facility. This is proven by the energy balance of steel making plants. It, however, must demonstrate that the waste gas was not</i>	CLAR-14 OK	OK

* MoV = Means of Verification, DR= Document Review, I= Interview, CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
			used and also provide conservative estimations of the energy content and amount of waste gas released in order to prove the applicability of ACM0012.		
B.2.-2 Is the document has been used explained? Are the references to the document provided?	PDD B.2. Annex 3	DR	Yes.	OK	OK
B.3. Description of the sources and gases included in the project boundary:					
B.3.-1 Are the project's spatial boundaries (geographical) clearly defined?	PDD B.3.	DR	The project boundary (spatial) shall be clearly defined referring to a system diagram.	CLAR-11 OK	OK
B.3.-2 Is the description of the sources and gases for calculating project emissions and baseline emissions appropriate?	PDD B.3.	DR,	The operation of the existing # 1 to # 5 boilers shall be identified. Then the consideration on the emission of GHG shall be taken into account appropriately.	CLAR-12 OK	OK
B.3.-3 Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	PDD B.3.	DR, I	The project boundary (equipment of the project including existing ones) shall be clearly defined referring to a system diagram, on which the location of the electricity meters shall be indicated.	CLAR-13 OK	OK
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:					
B.4.-1 Has the baseline scenario been determined according to the methodology?			Same comment as on item B.4.-4	CLAR-15 OK	OK
B.4.-2 Has the baseline scenario been determined using conservative assumptions where possible?			The baseline scenario has been determined using conservative assumptions.	OK	OK
B.4.-3 What is the baseline scenario? Does	PDD	DR	Same comments as on item A.2.-1	CLAR-4	OK

* MoV = Means of Verification, DR= Document Review, I= Interview, CAR= Corrective Action Request, CLAR= Clarification, OBS= Observation

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	B.4. B.5.			OK	
B.4.-4 Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	PDD B.4. B.5. B.6.	DR	(1) Evidences and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements; or depend on fuels not available at the project site, shall be provided. (2)The detail gas balance of annual production for recent three (3) years shall be described in the PDD.	CLAR-15 OK	OK
B.4.-5 Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	PDD B.4. B.5.	DR	Same comment as on item B.4.-4	CLAR-15 OK	OK
B.4.-6 Is it demonstrated / justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?	PDD B.4. B.5.	DR,	Same comment as on item B.4.-4	CLAR-15 OK	OK
B.4.-7 Have the major risks to the baseline			No major risks to the baseline.	OK	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
been identified?					
B.5. Description of how the anthropogenic emission of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality)					
B.5.1 Step 1. Identification of alternatives to the project activity consistent with current laws and regulations					
B.5.1-1 Are alternatives to the project activity consistent with current laws and regulations of host country identified?	PDD B.5.	DR	Same comments as on item A.2.-1	CLAR-4 OK	OK
B.5.2 Step 2. Investment analysis					
B.5.2-1 Is investment analysis conducted?	PDD B.5.	DR	No, investment analysis is not conducted, but the barrier analysis is conducted.	OK	OK
B.5.2-2 If benchmark analysis applied, is benchmark fully described with clear evidences?	PDD B.5.	DR	N.A	OK	OK
B.5.2-3 Are calculation sheets for investment analysis (IRR) attached in PDD?	PDD B.5.	DR	N.A	OK	OK
B.5.2-4 Are the conditions and data for financial analysis clear?	PDD B.5.	DR	N.A	OK	OK
B.5.2-5 Are sensitivity analysis fully described with clear evidences?	PDD B.5.	DR	N.A	OK	OK
B.5.3 Step 3. Barrier analysis.					

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
B.5.3-1 If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	PDD B.5.	DR	In case that the starting date of the project activity is before the date of validation, the evidence which shows that the incentive from the CDM was seriously considered in the decision to proceed with the project activity before the starting date shall be provided. The starting date of the project activity shall be due to the definition of the latest "Glossary of CDM terms" revised in accordance with EB41 Para.67.	CLAR-16 OK	OK
B.5.3-2 Is the national policy for domestic production of advanced technology clear?	PDD B.5.	DR	The written information of the national policy for domestic production of advanced technology shall be provided.	CLAR-17 OK	OK
B.5.3-3 Are investment barriers fully described with clear evidences?	PDD B.5	DR	Investment barriers are not applied.	OK	OK
B.5.3-4 Are technical barriers fully described with clear evidences?	PDD B.5	DR	The manufacturing experience of gas turbine especially of BFG fired gas turbine and high pressure fuel gas compressor in the host country shall be described for the explanation of the technological barrier. The year of installation of the gas turbines in Table B.5.-1 of the PDD shall be indicated. Barriers due to prevailing practice shall be described with clear evidences.	CLAR-18 OK	OK
B.5.4 Step 4. Common practice analysis					
B.5.4-1 Is common practice analysis fully described with clear evidences?	PDD B.5	DR	The Steam Network Power Generation system installed by the project is unique and no other steel making plant exists in the Northeast China which adopts power generation system like this. (First of its kind : see CLAR-18)	OK	OK
B.6. Emission reductions:					
B.6.1. Baseline Emissions					
<i>It is assessed whether the baseline</i>					

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
<i>emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.1.-1 Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	PDD B.6.1. B.6.2. B.7.1.	DR	Yes.	OK	OK
B.6.1.-2 Are data and parameters that are available at validation provided and explained? Further, are clear and transparent references or additional documentation provided in Annex 3?	PDD B.6.1. Annex 3	DR	Same comment as on item B.6.5.-1.	CAR-2 OK	OK
B.6.1.-3 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	PDD B.3 B.6.1.	DR	Same comment as on item B.6.5.-1.	CAR-2 OK	OK
B.6.1.-4 Have conservative assumptions been used when calculating the baseline emissions?	PDD B.6.1.	DR	Same comment as on item B.6.5.-1.	CAR-2 OK	OK
B.6.1.-5 Are uncertainties in the baseline emission estimates properly addressed?	PDD B.6.1.	DR	Yes.	OK	OK
B.6.2. Project emissions <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is</i>					

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
<i>justified.</i>					
B.6.2-1 Are all aspects related to direct and indirect project emissions considered in the project design?	PDD B.3. B.6.1.	DR	Same comment as on item B.3.-2.	CLAR-12 OK	OK
B.6.2.-2 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	PDD B.6.1	DR	Same comment as on item B.6.5.-1.	CAR-2 OK	OK
B.6.2.-3 Have conservative assumptions been used when calculating the project emissions?	PDD B.6.3	DR	Yes, conservative assumptions were used to calculate project GHG emissions.	OK	OK
B.6.2.-4 Are uncertainties in the project emissions estimates properly addressed?	PDD B.6.1	DR	Yes, uncertainties in the GHG emissions estimates are properly addressed in the documentation such as that the emission is estimated by simply monitoring the electricity exported outside, that the electricity meters are operated and calibrated by NECPG in accordance with the regulations and standards, and that emission factors publicized by the DNA are adopted, all of which are effective for minimizing uncertainties.	OK	OK
B.6.3 Leakage <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>					
B.6.3.-1 Are potential leakage effects beyond the chosen project boundaries properly identified?	PDD B.6.1	DR	There is no leakage to be considered as stated in ACM0004 version 02. There is no leakage to be considered as stated in ACM0012 version 02.	OK OK	OK OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
B.6.3-2 Have these leakage effects been properly accounted for in calculations?	PDD B.6.1	DR	Same comment as on item B.6.3.-1	OK	OK
B.6.3.-3 Does the methodology for calculating leakage comply with existing good practice?	PDD B.6.1	DR	Same comment as on item B.6.3.-1	OK	OK
B.6.4 Data and parameters that are available at validation: <i>The availability of data required for the estimation of emission reduction is assessed.</i>					
B.6.4.-1 Are the operation data of power plants available for calculating Operating Margin (OM) and Build Margin (BM)?			Same comments as on item B.6.5.-1 (1)	CAR-2 OK	OK
B.6.5 The ex-ante estimation of emission reductions and the summary					
B.6.5.-1 Emission reductions Is all relevant methodology choices explained and justified? - including explanation and justification of scenario or case applied to the project activity - including explanation and justification of option chosen for the project activity - including explanation and justification of default value chosen for the project activity Is the equation calculating	PDD B.3. B.6.1. B.6.2. Annex 3	DR I	(1)The calculation tables of Operating Margin (OM) and Build Margin (BM) of NECPG based on the latest data shall be attached to Annex 3 of the PDD. They shall show also the project specific values in addition to the default values used for the calculations. (2)The base data for the calculation of the ratio of the power generation with low- cost/must run shall be provided. (3)The appropriateness of the efficiency used for the calculation of BM (EF _{coal} , EF _{oil} , EF _{gas}) shall be described. (4)The calculation process of ex-ante emission reduction shall be shown by substituting the corresponding figures for the variables in the formulae step by step for transparency of the calculation.	CAR-2 OK	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
emission reductions clearly stated?			(5)The detail of the calculation of the amount of electricity generated by CCPP and CDQ and the consumption by auxiliary equipment shall be shown.		
B.6.5.-2 Will the project result in fewer GHG emissions than the baseline?	PDD B.6.1. B.6.2.	DR	Yes. The project activity does not produce GHG emission except for the start-ups of gas turbine with oil fuel, but produce electricity which is exported to NECPG, reducing the fuel consumption and the GHG emission from the NECPG accordingly.	OK	OK
B.6.5.-3 Are the crediting period and the emission reductions consistent with that shown in item A.4.4.?	PDD B.6.4.	DR	Yes.	OK	OK
B.7. Application of the monitoring methodology and description of the monitoring plan: <i>It is assessed whether the project applies an appropriate monitoring methodology.</i>					
B.7.-1 Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	PDD B.7.2.	DR	The monitoring plan is described according to ACM0012 in a complete and transparent manner.	OK	OK
B.7.-2 Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?			All monitored data shall be required to be kept for two years after the end of the crediting period or the last issuance of CERs, for the project activity, whichever occurs later.	CLAR-23 OK	OK
B.7.1. Data and parameters monitored: <i>It is checked whether the parameters to be monitored are sufficient and measurement is reliable for calculating emission reduction.</i>					
B.7.1.-1 Are the parameters sufficient for calculating emission reductions?	PDD	DR	Same comment as on Table 1, item 19.	CLAR-3	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
	B.7.1			OK	
B.7.1.-2 Will it be possible to monitor the specified baseline indicators?	PDD B.7.1.	DR	Yes.	OK	OK
B.7.1.-3 Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD B.7.1.	DR	Yes, monitoring plan for CDM activity provides the collection and archiving of relevant data concerning environmental, social and economic impacts in general. CDM activity will improve air pollution problem owing to the cleaning of the waste gas (fuel), reduce fuel consumption reducing emission of pollutants and creating job opportunity.	OK	OK
B.7.1.-4 Is the choice of indicators for sustainable development (social, environmental, economic) reasonable? Will it be possible to monitor them?	PDD B.7.1.	DR	Yes. The choice is reasonable as commented on item B.7.1.-3 and the indicators are measurable.	OK	OK
B.7.1.-5 Are the sustainable development indicators in line with the national priorities in the Host Country?	PDD B.7.1.	DR	Yes, the sustainable development indicators are in line with the national priorities of the Host Country, especially with the national high priority area of fuel saving.	OK	OK
B.7.1.-6 How often are the meters calibrated and maintained? How much is the accuracy or errors permitted? Who will monitor, maintain and calibrate?	PDD B.7.1.	DR	The information of the national standard for the accuracy and calibration of the electricity meters and oil flow meters shall be provided.	CLAR-19 OK	OK
B.7.2. Description of the monitoring plan: <i>It is checked whether monitoring plan is appropriate, whether role and responsibility for management, operation, maintenance /calibration, monitoring /operation, QC/QA and training of personnel are clear, whether operation and maintenance manuals are available.</i>					
B.7.2.-1 Is the authority and responsibility of project management clearly described?	PDD B.7.2.	DR	Yes, it is clearly described.	OK	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
B.7.2.-2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD B.7.2	DR	Same comment as on item B.7.2.-1.	Ditto	OK
B.7.2.-3 Are procedures identified for training of monitoring personnel?	PDD B.7.2	DR I	The operation and maintenance manual for CCPP & CDQ shall be provided and briefed at the on-site assessment.	CLAR-20 OK	OK
B.7.2.-4 Are procedures identified for the cases where emergencies can cause unintended emissions?	PDD B.7.2	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-5 Are procedures identified for calibration of monitoring equipment?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-6 Are procedures identified for maintenance of monitoring equipment and installations?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-7 Are procedures identified for monitoring, measurements and reporting?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-8 Are procedures identified for day-to-day records and how to process performance documentation?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-10 Are procedures identified for review of reported results /data?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-11 Are procedures identified for internal audits of GHG project compliance with operational	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
requirements where applicable?					
B.7.2.-12 Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD B.7.2.	DR	Same comment as on item B.7.2.-3.	Ditto	OK
B.7.2.-13 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD B.7.2	DR	Same comment as on item B.7.2.-3.	Ditto	OK
C.1. Duration of the project activity* <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Starting date of the project activity:					
C.1.1.-1 Is the starting date of project clearly defined and evidenced?	PDD B.5. C.1.1.	DR	Same comments as on item B.5.3.-1	CLAR-16 OK	OK
C.1.2. Expected operational lifetime of the project activity:					
C.1.2.-1 Is expected operational lifetime of the project clearly defined?	PDD C.1.2.	DR	Yes.	OK	OK
C.2. Choice of the crediting period and related information:					
C.2.-1 Is the starting date and ending date clearly defined and reasonable, and is it consistent with that shown in A.4.4.and B.6.4.?	PDD C.2.1. A.4.4. B.6.4.	DR	Yes.	OK	OK
C.2.2.2. Length:					
C.2.2.2.-1 Is the crediting period clearly defined?	PDD	DR	Yes.	OK	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
	C.2.1.				
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:					
D.1.-1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD D.1.	DR I	Same comments as on Table 1, item 12.	CLAR-2 OK	OK
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.					
D.2.-1 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD D.1.	DR I	Same comments as on Table 1, item 12.	CLAR-2 OK	OK
D.2.-2 Will the project creates any adverse environmental effects?	PDD A.2. D.1. D.2.	DR	No. The project shall have only favourable effect on the environment locally as stated in sections A.2.and D.1.	OK	OK
D.2.-3 Are transboundary environmental impacts considered in the analysis?	PDD D.2	DR	Yes, they are considered. There will be no transboundary environmental impact by the project.	OK	OK
D.2.-4 Have identified environmental impacts been addressed in the project design?	PDD D.2	DR	Yes, there will be favourable environmental impact by the project but no negative impact on the environment.	OK	OK
D.2.-5 Does the project comply with environmental legislation in the host country?	PDD D.1,	DR	Yes, the EIA was conducted and the report of the result was approved by the concerned authority of the province as stated in item D.1.-1.	OK	OK

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Checklist Question	Ref.	*MoV	Comments	Draft Concl	Final Concl
	D.2				
E.1. Brief description how comments by local stakeholders have been invited and complied: <i>The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.</i>					
E.1.-1 Have relevant stakeholders been consulted?	PDD E.1. E.3.	DR	Same comments as on Table 1, item 13.	CLAR-4 OK	OK
E.1.-2 Have appropriate media been used to invite comments by local stakeholders?	PDD E.1. E.2.	DR	Same comments as on Table 1, item 13.	CLAR-4 OK	OK
E.1.-3 If a stakeholder consultation process is required by regulations /laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD E.1. E.3.	DR	Same comments as on Table 1, item 13.	CLAR-4 OK	OK
E.2. Summary of the comments received:					
E.2.-1 Is a summary of the stakeholder comments received provided?	PDD E.2	DR	Yes. The stakeholders' comments are classified into 3 to 5 groups depending on the content of their answer. There is none who is opposed to the implementation of the project and requires modification of the project.	OK	OK
E.3. Report on how due account was taken of any comments received:					
E.3.-1 Has due account been taken of any stakeholder comments received?	PDD E.3.	DR	Same comment as on Table 1, item 13.	CLAR-4 OK	OK

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Table 3. Corrective Action (CAR) /Clarification (CLAR) and Conclusion by Validator

Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
CAR-1 The written approval of voluntary participation by the DNA of each party shall be provided.	Table1, item 1, 2, 3, 4	LOA by the DNA of each party has been submitted.	OK It was confirmed LOA by the DNA of China/13/ was issued on 22 August 2008 and LOA by the DNA of Japan/14/ was issued on 12 September 2008, and re-issued on 27 February 2009 for addition of The New Energy and Industrial Technology Development Organization as a project participant. CAR-1 was resolved and cleared.
CAR-2 (1)The calculation tables of Operating Margin (OM) and Build Margin (BM) of NECPG based on the latest data shall be attached to Annex 3 of the PDD. They shall show also the project specific values in addition to the default values used for the calculations. (2)The base data for the calculation of the ratio of the power generation with low- cost/must run shall be provided. (3)The appropriateness of the efficiency used for the calculation of BM (EF _{coal} , EF _{oil} , EF _{gas}) shall be described. (4)The calculation process of ex-ante emission reduction shall be shown by substituting the corresponding figures for the variables in the formulae step by step for transparency of the calculation.	B.6.1.-2, 3, 4 B.6.2.-2 B.6.4.-1 B.6.5.-1	(1)-(3) Detailed calculation data for OM and BM calculations are added to Annex 3. This includes power supply data, fuel consumption data, efficiency of advanced technology for coal, oil and gas fired thermal generation and the power generation ratio of low-cost/ must run resource. The base data for the calculation of the ratio of the power generation with low-cost/must run for 2001, 2002, 2003, 2004 and 2005 are attached to Annex 3 of the PDD-Ver.4. The latest data was applied in the PDD-Ver. 8.	OK (1)-(3) The detailed calculation process was reviewed and the appropriateness was confirmed. However, the base data for the calculation of the ratio of the power generation with low- cost/must run for 2001, 2002, 2003, 2004 and 2005 is not clearly mentioned. It was confirmed the low cost/must run data was attached appropriately to Annex 3 of the PDD-Ver.4. The base data is requested to apply the latest data issued on 18 July 2008 by NDRC of China/35/.

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Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
(5)The detail of the calculation of the amount of electricity generated by CCPP and CDQ and the consumption by auxiliary equipment shall be shown.		<p>(4) Calculation steps for emission reduction are added in B.6.1 and B.6.3 of the PDD-Ver.2.</p> <p>(5) Amount of electricity generation and consumption by auxiliary equipment are listed in Table B.6-1 and B.6-2 of the PDD-Ver.2 respectively.</p>	<p>The latest data was confirmed clearly in the PDD-Ver. 8.</p> <p>(4) The calculation process of ex-ante emission reduction was clearly reviewed the appropriateness was confirmed</p> <p>(5) .The detail of the calculation of the amount of electricity generated by CCPP and CDQ and the consumption by auxiliary equipment were clearly shown and the appropriateness was confirmed.</p> <p>CAR-2 was resolved and cleared.</p>
CLAR-1 The information of the procedure for the invitation of the stakeholders' comments shall be described in more detail including the reason why questionnaire survey was adopted instead of facilitation or interview survey and how the 60 stakeholders were selected. The minutes of the meeting shall be provided and briefed at the on-site assessment.	Table 1 item 13 Table 2 E.1.-1, 2, 3 E.3.-1	The following three (3) documents have been provided. <ul style="list-style-type: none"> ● Propaganda poster/19/ for the project to stakeholders ● Outline of the project for the meeting with stakeholders held on 8 June 2007/39/ ● Minutes of the meeting with stakeholders held on 8 June 2007/20/ 	OK It was confirmed by the documents received that stakeholders were invited appropriately by the propaganda poster and the meeting was conducted and collected comments appropriately on 8 June 2007. CLAR-1 was resolved and cleared.
CLAR-2 The report of EIA carried out by Tonghua iron & Steel Stock Co., Ltd. (TGGC/TGSC) and approved by Jilin Province Environmental Protection Agency shall be provided and briefed at the on-site	Table 1 item 12 Table 2 D.1.-1	The EIA report/15/,/16/ approved by Environmental Protection Agency of Jilin Province/17/,/18/ has been provided and explained in detail at the	OK It was confirmed by the EIA report that the project improves the surrounding environment and does not create any adverse environmental effect.

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Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
assessment including the requirement of the EIA.	D.2.-1	on-site assessment.	CLAR-2 was resolved and cleared.
CLAR-3 They are in accordance with Marrakech Accords and relevant decisions of the COP/MOP in principle. EG _{AUX} shall include the electricity supply to all auxiliary equipments of the power plant of the project including the fuel gas compressor motor. It shall be confirmed whether the electricity meters will be installed on each power supply line to the auxiliaries or on the main auxiliary power supply line. The single line diagram shall be provided.	Table 1 item 19 Table 2 B.7.1.-1	The single line diagrams for CCP and CDQ/25/, /26/ have been provided. The location of the electricity meters has been changed in the revised PDD-Ver.2 in accordance with the single line diagrams for CCP and CDQ. It is shown in Table M-1 and Figure M-1 in Annex 4 of the revised PDD-Ver.2.	OK The electricity meters which were confirmed in the single line diagrams are shown correctly in the revised PDD-Ver.2. These are shown correctly Figure B.7-2 and Table B.7-1 of the PDD-Ver.5.1. CLAR-3 was resolved and cleared.
CLAR-4 (1)It is stated that the project will be implemented in accordance with the environmental regulation of the local government (Jilin Province) as well as with the laws and regulations of State Electricity including "Measures for operation and management of CDM in China". The relevant regulations and plans of the host country to which the project refers or is in line with shall be stated. The whole or the relevant pages of the document shall be provided and briefed at the on-site assessment. (2)The document of the decision on strictly forbidding the illegal construction of fuel-fired power plant with capacity 135MW and below	Table 2 A.2.-1 B.4.-3 B.5.1.-1	(1)The "Measures for operation and management of CDM in China" /38/ issued by the Office of National Coordination Committee on Climate Change/38/ has been provided and briefed at the on-site assessment. (2)The document (2005) of the decision on the construction of power plant was briefed and it was informed that it was available on the	OK (1)It was confirmed that the project activity implemented in accordance with the relevant regulations and plans would achieve the Sustainable Development in China. (2)It was confirmed that the construction of fuel-fired power plant with capacity 300MW and below was forbidden by

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Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
<p>(2002) shall be provided and briefed at the on-site assessment.</p> <p>(3)Description of the project activity shall be described in accordance with the "Guidelines for Completing the Project Design Document (CDM-PDD)" Version 07.</p>		<p>website of the NDRC of China at the on-site assessment.</p> <p>(3)It was described in the PDD-Ver.8.</p>	<p>the latest document /28/.</p> <p>(3)It was clearly confirmed in the PDD-Ver.8.</p> <p>CLAR-4 was resolved and cleared.</p>
<p>CLAR-5</p> <p>The country specific requirement on CDM project activity shall be described if any in addition to the Article 4 in the CDM Project Management & Operational Method.</p>	Table 2 A.2.-2	Same answer as CLAR-4 item (1). (The "CDM Project Management & Operational Method" is same as the above document.)	<p>OK</p> <p>The project activity is energy efficiency improvement project and Article 4 of the document states that the priority areas for CDM projects in China are energy efficiency improvement.</p> <p>CLAR-5 was resolved and cleared.</p>
<p>CLAR-6</p> <p>The written evidence for the wish of the parties to be considered as project participant shall be provided.</p>	Table 2 A.3.-1	As the both parties are not project participants, the PDD has been revised.	<p>OK</p> <p>It is correctly mentioned that the both parties were not project participants in the revised PDD-Ver.2.</p> <p>CLAR-6 was resolved and cleared.</p>
<p>CLAR-7</p> <p>As for the maps concerned with the project site, the exact location shall be indicated with the longitude and latitude and they shall be clear.</p>	Table 2 A.4.1.4.-1	The PDD has been revised including the longitude and latitude. The following information is added to A.4.1.4. of the PDD-Ver.2: 41°43'North and 125°55'53"East.	<p>OK</p> <p>The longitude and latitude is added correctly in the revised PDD-Ver.2.</p> <p>CLAR-7 was resolved and cleared.</p>

Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
CLAR-8 (1)The current good practices are reflected. However, the plant efficiency (%) and consumption of blast furnace gas and coke oven gas (Nm ³ /h) shall be described. The table of heating value (kcal/NM ³) and analysis value (vol. %) of the blast furnace and coke oven gas shall be attached to Annex 3. (2)Description of technology to be employed by the project activity shall be described in accordance with the “Guidelines for Completing the Project Design Document (CDM-PDD)” Version 07.	Table 2 A.4.3.-1, 2, 3	(1) The relevant data has been attached to Annex 3 of the revised PDD-Ver.2. (2) It has been described in the PDD-Ver. 8.	OK (1) The plant efficiency (%) and consumption of blast furnace gas, coke oven gas (Nm ³ /h), heating value and analysis value (vol. %) of the blast furnace/coke oven gas were shown clearly in the revised PDD-Ver.2. (2) It was confirmed in the PDD-Ver. 8. CLAR-8 was resolved and cleared.
CLAR-9 As the technology applied to the project is quite new in the host country and the first one in the province, it requires extensive training for operation and maintenance of the facilities, especially BFG fired gas turbine and CDQ. Training program for operation and maintenance shall be provided.	Table 2 A.4.3.-4, 5	The “Operation and Maintenance Manual” for BFG fired gas turbine and CDQ/36/ have been provided and briefed at the on-site assessment.	OK The training program in the operation & maintenance manual/36/ were reviewed and confirmed. CLAR-9 was resolved and cleared.
CLAR-10 The number of the version of “Consolidated baseline methodology for grid – connected electricity generation from renewable sources” ACM0002 and “Tool for the demonstration and assessment of additionality” shall be correctly indicated in the PDD.	Table 2 B.1.-3, 4	The version number of the methodologies applied has been correctly described in the revised PDD-Ver.2/ Ver.4. The correct versions of ACM0002 and additionality tool are ver.06 and ver.03 respectively. This information is added to B.1. of the revised PDD-Ver.2 where these are first mentioned in the document.	OK The version numbers of the methodologies are correctly described in the revised PDD-Ver.2/ Ver.4. The latest version of “additionality tool Ver.05.2” and “Tool to calculate the

Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
		The correct version number of the "Tool to calculate the emission factor for an electricity system" is added in the PDD-Ver.4.	emission factor for an electricity system Ver.01.1" is applied in the PDD-Ver. 8. CLAR-10 was resolved and cleared.
CLAR-11 The project boundary (spatial) shall be clearly defined referring to a system diagram.	Table 2 B.3.-1	The project boundary (spatial) has been clearly defined in a system diagram added to B.3. (Fig.B.3-1) of the revised PDD-Ver.2. Moreover, it has been clearly defined in Fig.B.3-1 of the PDD-Ver.4.	OK The line of the project boundary is not clearly described. It was confirmed that the project boundary is clearly described according to ACM0012 in the PDD-Ver.4. CLAR-11 was resolved and cleared.
CLAR-12 The operation of the existing # 1 to # 5 boilers shall be identified. Then the consideration on the emission of GHG shall be taken into account appropriately.	Table 2 B.3.-2 B.6.2.-1	Operation and GHG emission of the existing #1 - #5 boilers is identified and described in Table B.3-1. of the revised PDD-Ver.2.	OK It was confirmed that no fossil fuel is used for #1-#5 boilers operation. CLAR-12 was resolved and cleared.
CLAR-13 The project boundary (equipment of the project including existing ones) shall be clearly defined referring to a system diagram, on which the location of the electricity meters shall be indicated.	Table 2 B.3.-3	1) The project boundary (equipment of the project including existing ones) has been clearly defined in a system diagram added to B.3. of the revised PDD-Ver.2. Moreover, it has been clearly defined in	OK 1) The line of the project boundary is not clearly described.

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Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
		Fig.B.3-1 of the PDD-Ver.4. 2) Location of electricity meters is highly complicated, so, it is provided in Figure B.7-2 and Table B.7-1 in Section B.7.2 of the revised PDD-Ver.2.	It was confirmed that the project boundary is clearly described according to ACM0012 in the PDD-Ver.4. 2) Location of electricity meters is clearly shown in Figure B.7-2 and Table B.7-1 in Section B.7.2 of the revised PDD-Ver.2. CLAR-13 was resolved and cleared.
CLAR-14 The waste gas utilized in the project was flared into the atmosphere in the absence of the project at existing facility. This is proven by the energy balance of steel making plants. It, however, must demonstrate that the waste gas was not used and also provide conservative estimations of the energy content and amount of waste gas released in order to prove the applicability of ACM0012.	Table 2 B.2.-1	Detailed waste gas balance in years 2005, 2006 and 2007 are provided in Annex 3. They show that waste gas has been continuously flared into the atmosphere. It demonstrates that the waste gas utilized in the project was flared into the atmosphere in the absence of the project activity.	OK Detailed waste gas balance in recent years 2005, 2006 and 2007 were confirmed appropriately in Table 1, 2 and 3 of Annex 3. As it was proven that the waste gas is flared into the atmosphere in the absence of the project, it could be applied ACM0012. CLAR-14 was resolved and cleared.
CLAR-15 (1) Evidences and supporting documents to exclude baseline options that do not comply with legal and regulatory requirements; or depend on fuels not available at the project site, shall be provided. (2) The detail gas balance of annual production for recent three (3) years shall be described in the	Table 2 B.4.-1, 4, 5, 6, 7	(1) Baseline options which depend on oil and natural gas are excluded since: a) There is no oil supplier in Tonghua City and thus it is very expensive to purchase oil from outside supplier because of higher transportation cost as well as higher fuel cost. b) There is no pipeline network which	OK (1) Based on the information, baseline options depend on oil and natural gas are excluded.

Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
PDD.		supplies natural gas to Tonghua Iron and Steel Co., Ltd. (2) The detail gas balance of annual production of recent three (3) years, namely, 2005, 2006 and 2007, is provided in B.4.	(2) It was confirmed that the detail gas balance of annual production of recent three years (2005, 2006 and 2007) is described in the PDD-Ver.5. CLAR-15 was resolved and cleared.
CLAR-16 In case that the starting date of the project activity is before the date of validation, the evidence which shows that the incentive from the CDM was seriously considered in the decision to proceed with the project activity before the starting date of the project activity shall be provided. The starting date of the project activity shall be due to the definition of the latest "Glossary of CDM terms" revised in accordance with EB41 Para.67.	Table 2 B.5.3.-1 C.1.1.-1	As the starting data of the project activity is earlier than the date of validation, it is explained that the incentive from the CDM was seriously considered in the decision to proceed with the project activity in Section B.5 of the PDD-Ver.5.1. The timeline of the project activity has been described in the PDD-Ver. 8	OK As for the starting date of the project activity, it is requested to mention them in Section B.5 of the PDD-Ver.4. According to Para.67 of EB41 and the "Guidelines for Completing the Project Design Document (CDM-PDD) Version 07", it is requested to mention the timeline and the starting date of the project activity in Section B.5.of the PDD with available evidences and also mention in Section C.1.1 how this start date has been determined. In the timeline explanation with clear evidences, it was clearly confirmed that the starting date of the project activity was appropriately defined and the serious consideration of CDM was taken into./11/

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Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
			CLAR-16 was resolved and cleared.
CLAR-17 The written information of the national policy for domestic production of advanced technology shall be provided.	Table 2 B.5.3.-2	The NDRC ordinance –list of important technologies for domestic development-issued on 2 December 2005/27/ has been provided and briefed at the on-site assessment.	OK It was confirmed that CCPP and CDQ technologies is included in the list./27/ CLAR-17 was resolved and cleared.
CLAR-18 The manufacturing experience of gas turbine especially of BFG fired gas turbine and high pressure fuel gas compressor in the host country shall be described for the explanation of the technological barrier. The year of installation of the gas turbines in Table B.5.-1 of the PDD shall be indicated. Barriers due to prevailing practice shall be described with clear evidences.	Table 2 B.5.3.-4	The year of installation of gas turbines is added to Table B.5-1 of the revised PDD-Ver.2. The manufacturing experience could be found in the Table. Barriers due to prevailing practice has been described with clear evidences in the PDD-Ver. 8.	OK As the domestic manufacturing experience has not been found in China, it was confirmed that there were technological barrier to manufacture, operate and maintenance the BFG fired gas turbine of domestic in China with clear evidences./40/,/42/ The steam Network Power Generation System was confirmed to be “first of its kind” in China with clear evidence/41/. CLAR-18 was resolved and cleared.
CLAR-19 The information of the national standard for the accuracy and calibration of electricity meters and oil flow meters shall be provided.	Table 2 B.7.1.-6	National standards for the accuracy and calibration of electricity meters used in TGGC are JJG 596-1999 and JJG 307-2006. National standards for oil flow meters and waste gas flow meter used in	OK These standards were confirmed in B.7.2 of the PDD-Ver.5.1

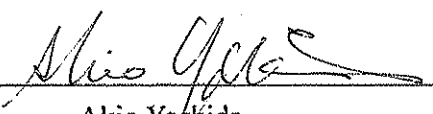
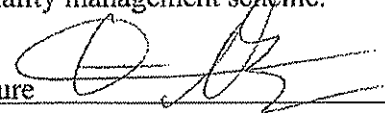
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Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
		TGGC are JJG 235-1990 and JJG 640-1994, respectively. This information is added in B.7.2 of the revised PDD-Ver.5.1.	CLAR-19 was resolved and cleared.
CLAR-20 The operation and maintenance manual for CCPP & CDQ shall be provided and briefed at the on-site assessment.	Table 2 B.7.2.-3 to B.7.2.-13	The operation and maintenance manuals for CCPP & CDQ/36/have been provided and briefed at the on-site assessment.	OK It was confirmed that the procedures of calibration, training, data record, maintenance and so on are described clearly and appropriately in the operation and maintenance manual./36/ CLAR-20 was resolved and cleared.
CLAR-21 The length of the explanation of the project activity shall be max. one page.	Table 2 A.2.-5	Adjustment has been made to meet the requirement in the revised PDD-Ver.2.	OK "Within one page" was confirmed. CLAR-21 was resolved and cleared.
CLAR-22 The name of the project participant of the host country shall be correctly stated consistent with Annex 1.	Table 2 A.3.-2	Correction has been made so that the participant name of the host country is consistent with Annex 1. The correct name is TGSC. The project participant was changed from TGSC to Tonghua Iron & Steel Co., Ltd., which has been revised in Section A.3 and Annex 1 the PDD-Ver. 6. The letter on this matter has been submitted to JCI on 18 June 2008 according to para.41 of EB30.	OK The name of the project participant was correctly described in the revised PDD-Ver.2. It was confirmed that Tonghua Iron & Steel Co., Ltd. is the project participant in the revised PDD-Ver.6. The letter to JCI was checked and reviewed.

Items of which clarifications and corrective actions are requested	Question No. in table 1 & table 2	Outline of the answer from the Project participants	Conclusion by Validator
			CLAR-22 was resolved and cleared.
CLAR-23 All monitored data shall be required to be kept for two years after the end of the crediting period or the last issuance of CERs, for the project activity, whichever occurs later.	Table 2 B.7.-2	It is clearly stated that monitored data shall be kept for two years after the end of the crediting period or the last issuance of CERs, for the project activity, whichever occurs later, in B.7.2 of the PDD-Ver.5.1.	OK It was confirmed that all monitored data shall be kept for two years after the end of the crediting period or the last issuance of CERs in the PDD-Ver.5.1. CLAR-23 was resolved and cleared.

APPENDIX B

Certificate of Appointment of Validation Team

Project Title	73MW Tonghua Iron & Steel Waste Gas and Heat Power Generation Project
Applied Methodology	ACM0012-Ver.02 Sectoral Scope 1, 4
Date: 30 November 2007	
Designated Operational Entity: Japan Consulting Institute (JCI)	
<p>Reflecting the competence criteria of JCI in accordance with "Criteria for operational entities of LIST of SECTORAL SCOPES", this is to certify the appointment of validation team of JCI specified below for the CDM project activity above, as per CDM Project Activity Registration Form, "F-CDM-REG" adopted at the 24th Meeting of CDM Executive Board, and Validation Procedure established by JCI CDM Center.</p> <p style="text-align: right;">Signature  Akio Yoshida, Executive Director, JCI CDM Center</p>	
Date: 3 December 2007	
Client: Energy Initiative Japan, Inc.	
<p>Reflecting the curricula vitae provided, this is to agree the validation team of JCI specified below for the CDM project activity above, as per Validation Procedure established by JCI CDM Center.</p> <p>It is also agreed that Mr. Yoshihisa SAKAI of JCI participates in the validation activities of the said project for the quality issues under its quality management scheme.</p> <p style="text-align: right;">Signature  Takehisa Kanamori Chief Operating Officer, Energy Initiative Japan</p>	

Validation Team

Validation Team	Name	Assigned Role
Leader	Hideyuki SATO	All relevant issues
Member	Masatoshi HISATOME	CDM auditor
Member	Toru KITAGAWA	CDM auditor