TÜV SÜD Industrie Service GmbH · 80684 München · Germany

Industrie Service

Choose certainty.
Add value.

CDM Executive Board

Your reference/letter of	Our reference/name	Tel. extension/E-mail	Fax extension	Date/Document	Page
	IS-CMS-MUC/Th	+49-89 5791-1186	+49-89 5791-2756	2009-08-19	1 of 13
	Thomas Kleiser	Thomas.Kleiser@tuev-sued.de			

Request for review

Dear Sirs,

Please find below the response to the request for review formulated for the CDM project with the registration number 2508. In case you have any further inquiries please let us know as we kindly assist you.

Yours sincerely,

Thomas Kleiser
Carbon Management Service

Response to RfR of Project 2508 "Hebei Wasted Gas based Captive Power Plant Project in Longgang Group"

Issue 1

The DOE shall further substantiate the existence of investment and technological barrier in accordance with the Sub-step 3a of the Tool for the demonstration and assessment of additionality, version 05.2.

Joint response by TÜV SÜD and Project Participants

The project participants have used the barrier analysis to demonstrate the additionality of the project. The presented barriers are:

- Investment barrier
- Technological barrier

As per Investment barrier

The investment barriers can be summarized to the following three aspects:

(1) the unavailability of sufficient equity funds to finance the project activity
(2) the refusal to provide the necessary funds from external funding institutions
(3) the application for CDM could significantly alleviate the investment barrier

For aspect (1), it can be justified that the project owner did not have sufficient equity funds to finance the project based on following reasons with related evidence in Appendixes.

- The historical financing assessment data indicated that the owner was not able to allocate the equity to implement the project independently in early 2007. Normally the disposable equity for a new investment project is sourced from aggregated net cash flows (also may be referred to as "free cash flow") from operation, investment and financing activities in the most recent financial years of the company. At the same time, it could also refer to corresponding current equity to check if it is affordable to finance the CDM project. Therefore, "Financing Assessment Report of Longgang Group by an accounting firm in 2006 (**Appendix 1**)" has been checked. In the report, it can be found that the aggregated net cash flows (i.e. sum of net cash flows from operating activities, from investing activities and in financing activities) in the end of 2006 is 100,282,106 RMB which is much lower than the total investment of 177,640,000 RMB for the project activity.
- Furthermore, the anticipated equity in coming years will still be not sufficient for the proposed project due to expansion of its core business. The priority to invest core business is based on "Fifteen years Development Plan" (Appendix 3). This plan was recognized by the board meeting. The expansion will be in order to enhance its market share and core-competitiveness and it is deemed as higher priority than the proposed project. It can be proved by the document Financing Invitation Letter dated on Sep 1st 2006 (**Appendix 2**) and Fifteen-years Development Plan from 2006 to 2020 of the project owner (**Appendix 3**). There it is stated that Longgang Group is planning to invest 110 million RMB in 2007 to build new oxygen making machine and LF refining furnace, to invest 166 million RMB to construct new blast furnace and a shaft furnace in 2008. half of the money was from equity, and the other was lending from other private entities. Due to the financial crisis in 2008, the LF refining furnace and the new blast furnace have not been built as the original plan.
- During the on-site visit, the assessment team found that due to shortage of fund the start of project construction had been delayed for nearly one year (from March 2006 to January 2007) and so far only the first unit of 12MW had been installed while the entire plan is 30 MW (2*12 MW + 2*3MW). This can be supported by "Work Plan Meeting of the Project" dated on Janu

ary 20th 2007 (**Appendix 4**), the official document "Construction Postponement of Waste Gas Based Power Generation Project of Xingtai Longhai Steel **Group Co.,** Ltd" (**Appendix 5)** and Project Permit for issue by DRC of Hebei Province (**Appendix 6)**

Based on the above, lack of sufficient equity funds to finance the project activity is substantiated.

Regarding aspect (2), it can be evidenced through "Rejection of l**o**an application from Agricultural Bank of China" **(Appendix 7)** and "Rejection of loan application from China Construction Bank" **(Appendix 8)** which stated the rejection reason that the project applied for a large amount of investment but with high uncertainty in return due to lack of operational experience. The assessment team also checked the financial status at the moment and found that its asset-liability ratio in 2006 reached 88.9% (88.9%=956,468,449/1,075,641,668 **Appendix 9**) which is much higher than that the average value of 50% of iron and steel industry **(Appendix 10)**. It can also be found from the report of Financing Energy Efficiency in China **(Appendix 11)** that the commercial banks would not like to lend loan to steel companies because the central bank of China had determined to adopt constrictive monetary policy to rein in unbridled expansion of steel industry. Furthermore difficulty in getting loan from commercial bank is a common phenomenon for small and medium private enter-prises, as evidenced by Study on Reason for Difficulties of China SMEs Bank Financing **(Appendix 12)**. Based on the above reason, the assessment team considered that the obstacle of obtaining financing support from bank is plausible.

Regarding aspect (3), CDM application contributed decisively in raising fund from other three companies since it could significantly alleviate the investment barriers. The assessment team checked this point by the following documents:

- Invitation Letter of financing (**Appendix 2**)
- A Letter Reply to the Investment of the Project (**Appendix 13**)
- The Investment Agreement of the Proposed Project, issued by Xingtai Xingli Group Co., Ltd. Xingtai Longhai Steel Group Co., Ltd., Neiqiu County Heng'an Power Co., Ltd and Handan City Wanxing Co., Ltd. (**Appendix 14**)

Particularly, the invited investors showed their negative attitude initially and that could be substantiated based on Letter Reply to the Investment of the Project. The reason was stated that high uncertainty on return for the project is detected. Finally their attitude changed positively for the investment when CDM revenue was taken into account. It could be proved by ''The Investment Agreement of the Proposed Project'' (**Appendix 14**).
From the documents above, it can be clearly concluded that CDM is a key factor in the whole negotiation process of the financing, and it would be not feasible to implement the project activity without CDM. Therefore, assessment team can confirm that the incentive for CDM has significantly alleviated the investment barrier.

The investment barriers mentioned above would not prevent the implementation of alternative W2/P6, that is the waste gas or pressure would be flared or directly vented into atmosphere and electricity would be imported from grid.

As per Technological barriers

Technological barrier of unstable burning of waste gas boiler

The unstable burning of waste gas boiler is caused by vacancy of gas tank and the can be explained as follows:

The gas pressure before entering the waste gas boiler is required to be within 8~12 kPa according to the manufacture specifications of the boiler. The gas pressure before entering the waste gas boiler is determined by the structure and arrangement of the burners fixed to the boiler. However, the pressure of raw BFG can only reach up to a range of 4 kPa to 6 kPa or even lower. It can be proved by the operational record of waste gas pressure (**Appendix 15**). In actual operation, due to the non-existence of the expected gas tank, the boiler was operated under an unstable situation

and quenched frequently. The main reason for that is the volatile combustion in low and fluctuated gas pressure conditions. This point can be proved by the document "Effect of Supplying Gas Pressure on Combustion of Waste Gas Boiler" assessed by Dr. Li Hongfu, engineer of Jinan Iron & Steel Co., Ltd, (**Appendix 16**).

During On-site visit on Mar 27th, 2008, the auditor personally witnessed a breakdown incident of boiler flameout resulting from fluctuation of gas pressure. The assessment team also checked the Operational Log in 2008 of the unit 12MW power unit which shows that more than 50% operational breakdown was caused by the fluctuation of gas flow. (In 2008, there were 37 incidents of operational breakdown and 19 of them were caused by flameout of waste gas boiler resulting from pressure fluctuation of gas flow, see **Appendix 17**) According to the Report of Ultrasonic Testing (**Appendix 18**) in the first overhaul dated on June 10th 2009, only being operated for one year, two cracks were separately detected in the internal surface of main steam valve and the internal surface of high-pressure cylinder. These damages were caused by the frequent start/stop operation and have made adverse impacts on the power unit.

In addition to the low pressure of BFG, the gas tank is necessary to hold LDG due to the conflict between intermittent of recovering converter gas (LDG) and continuity of power generation. This barrier can be proved by an external Japanese expert, Mr Nobuo Inoue who was Director of the Energy/Environment Management Department of Nagoya Factory, Nippon Steel Corporation. Mr. Nobuo Inoue stated that the converter gas utilization technology consists of converter gas recovery and electricity generation, and the technological barrier exists in not only the safe recovery of converter gas, which is generated intermittently through oxygen injection of 15-20 minutes per batch of 40 minutes, but also the continuous supply of the recovered converter gas to electricity generators. (**Appendix 19**)

The prevailing and most economical way to solve this problem is to build a gas tank as a buffer for waste gases, especially for the intermittent converter gas. However, due to the shortage of fund, the construction of gas tank which required 30 million RMB has not been built. During the on-site visit on Mar 27th, 2008 the auditor found vacant land reserved for the gas tank but no sign of construction. At that time, only one unit of 12MW steam generator with waste gas boiler was put into operation.

Therefore, technological barriers would be caused by the vacancy of gas tank. Moreover it should, but would not be solved by Longgang Group before the implementation of the project without revenue from CDM.

Through the above assessment, technological barrier of unstable burning of waste gas boiler caused by vacancy of gas tank is justified.

Technological barrier for TRT

At first, it has been reported that the blade, as the critical component of the TRT, could be severely worn out, eroded and could even be broken due to heavy content of dust fume corrosive elements in the BFG. The assessment team has checked literature "Cause to Damage of TRT Blade and Preventive Measures" (**Appendix 20**). Secondly, the blast furnace in the project activity is not suitable for installation of TRT unit because its volume is only 450m^3 which is much lower than the

volume threshold of 1000m^3. In the project, the blast furnaces involved have beeen operated with top pressure ranged from 100 kPa to 140 kPa and the average value is 120 kPa. (**Appendix 21**) The top pressure is instable and much lower than the threshold value of 150kPa to implement TRT which may result in a poor performance in power generation. This can be proved by official document "Improperness to Install TRT on Blast Furnace Below the Volume of 1000m^3", issued by NDRC of China (**Appendix 22**)

Therefore the assessing team is convinced that the possibility of disorder or poor operational effect is foreseeable.

Without CDM, the project owner so far would not carry out the TRT facility considering above risks. So at the time of decision making, it was clear that these technological barriers would prevent the implementation of project activity by the technological reasons mentioned above and their indirect impact on attracting financial support from other entities without CDM.

The technical barriers described above would not prevent the implementation of baseline scenario, which is that waste gas or pressure would be flared or directly vented into atmosphere and electricity would be imported from the grid.

Issue 2

The PP/DOE shall further substantiate: (i) that the waste gas/pressure utilized in the project activity was always released into the atmosphere in the absence of the project activity at existing facility with detailed information in line with the applicability criteria of the methodology, also explaining why this waste gas could not be used by any other installation at the premises of the iron & steel plant and (ii) how it is confirmed that the electricity was purchased from the imports from the North China Power Grid in the pre-project scenario.

Joint response by TÜV SÜD and Project Participants

There are five methods proposed by the methodology to demonstrate that the waste gas/pressure utilized in the project activity, was flared or released into the atmosphere in the absence of the project activity.
For the project, gas balance of iron and steel making section of Longgang from year 2005 to 2009 is used to prove this. Actually, the BFG and LDG generated are first used in the iron and steel making process from 2005 to 2007 as shown in the historical balance, such as sintering, lime kiln, steel rolling etc. Moreover in 2008 and 2009, the surplus gases, after consumptions by other users, are still able to satisfy the demand of project. The gas balance sheet has been submitted to DOE during the on-site validation (**Appendix 23**). Please refer to Table 1 and Table 2 for detail.
Therefore, both values from the historical records (2005-2007) and these from manufactures specifications (2008-2009), have been taken into account by all users for BFG and LDG while calculating and identifying amount of "waste gases". In the project, utilization of waste gases is based on the "surplus" quantity that cannot be used by any other users.
As for the waste pressure, the manufacturer's original specification can demonstrate that waste pressure was released into atmosphere in the absence of the project activity. The top of two blast furnaces with a volume of 450 m^3 (No. 3# and 4#) is around 0.10~0.15MPa. Prior to installation of TRT unit, the pressure would be decreased to 8~10kPa by the relief valves, by which the waste pressure cannot be used.

Table 1
BFG Balance from 2005 to 2009 (the data in 2008 and 2009 is predicted)
Unit 10000m^3

	item	Historical record			Predicting value	
		2005	2006	2007	2008	2009
Industrial facility where the BFG is generated	1#BF (203m^3)	16670	19298	19303	17673	17721
	2#BF (230m^3)	24867	28786	28794	26363	26435
	3#BF (450m^3)	-	-	33572	66275	66456
	4# BF (450m^3)	13197	61111	61125	66275	66456
	5# BF (540m^3)	-	-	-	-	95995
	6# BF (540m^3)	-	-	-	-	95991
BFG Consumer	ring sintering machine	2628	2592	2629	2628	2630
	band sintering machine	-	20736	42048	42049	42050
	lime kiln	14016	14106	14107	14106	14108
	converter	6570	6570	6571	9820	13143
	steel rolling	-	-	15330	30661	30662
	shaft furnace	-	-	-	28251	28252
surplus waste gas of BFG		**31521**	**65191**	**62109**	**49071**	**238210**

Note: the amount of BFG generated has deducted the BFG consumed by hot blast stove. The difference between the years is the result of new facilities putting into operation which lead to increase of BFG/LDG generated and increase of BFG/LDG consumed. .

Table 2
LDG Balance from 2005 to 2009 (the data for 2008 and 2009 are predicted)
Unit 10000m^3

	item	Historical record			Predicting value	
		2005	2006	2007	2008	2009
Industrial facility where the LDG is generated	1#conveter (30t)	3040	4712	5180	5179	5178
	2#converter (30t)	2843	4716	5179	5178	5178
	3#converte (60t)	-	-	-	7767	10356
LDG consumer	steel rolling	-	-	3504	7009	7009
surplus waste gas of LDG		**5883**	**9428**	**6854**	**11115**	**13703**

(ii) Electricity was purchased from the North China Power Grid in the pre-project scenario. It can be confirmed by the following three documents:

- Electricity invoice of Hebei Longgang for normal operation of the steel industry from July 2006. (**Appendix 26**)

- Feasibility Study Report, which states that Xingtai Longhai Steel Group Co., Ltd. has three substations which are separately connected with Yong'an substation by 35KV transmission line, Chengxi substation by 10KV transmission line and Suzhuang substation by 10KV transmission line. These three substations belong to power grid. (**Appendix 24**)
- Power Purchase Agreement in 2008-The agreement shows the supply and demand relationship between Xingtai Longhai Steel Group Co., Ltd. Xingtai Power Supply Bureau, one of the distributors of power grid. (**Appendix 25**)

Issue 3

The PP/DOE shall provide the detailed information covering a representative number of years of BFG and LDG generation from each unit in the pre-project scenario/project scenario and quantity of BFG and LDG utilized in the project activity from each unit.

Joint response by TÜV SÜD and Project Participants

The detailed information covering a representative number of years of BFG and LDG generation from each unit in the pre-project scenario/project scenario is shown in table 1 and table 2 above (see Issue 2).
According to Feasibility Study Report, annual BFG and LDG utilized in the project activity is separately 231,768,000 m^3 and 92,736,200 m^3 till 2009. As summarized in Table 3, while the project was put into operation waste gases would be kept surplus.

Table 3
BFG and LDG demand of project from 2005 to 2009 (the data in 2009 is predicted)
Unit: 10000m^3

	item	Historical record			Predicting value	
		2005	2006	2007	2008	2009
Industrial facility where the BFG is generated	1#BF (203m^3)	16670	19298	19303	17673	17721
	2#BF (230m^3)	24867	28786	28794	26363	26435
	3#BF (450m^3)	-	-	33572	66275	66456
	4# BF (450m^3)	13197	61111	61125	66275	66456
	5# BF (540m^3)	-	-	-	-	95995
	6# BF (540m^3)	-	-	-	-	95991
BFG Consumer	ring sintering machine	2628	2592	2629	2628	2630
	band sintering machine	-	20736	42048	42049	42050
	lime kiln	14016	14106	14107	14106	14108
	converter	6570	6570	6571	9820	13143
	steel rolling	-	-	15330	30661	30662
	shaft furnace	-	-	-	28251	28252
surplus waste gas of BFG		**31521**	**65191**	**62109**	**49071**	**238210**
BFG consumed by the project		**-**	**-**	**-**	**23176.8**	**23176.8**

	1#conveter (30t)	3040	4712	5180	5179	5178
	2#converter (30t)	2843	4716	5179	5178	5178
	3#converte (60t)	-	-	-	7767	10356
LDG consumer	steel rolling	-	-	3504	7009	7009
Surplus waste gas of LDG		**5883**	**9428**	**6854**	**11115**	**13703**
LDG consumed by the project		**-**	**-**	**-**	**9207.36**	**9207.36**

Issue 4

The PP/DOE shall substantiate how the treatment of the installation of new blast furnace and new gas converter is in line with the applicability criteria of the methodology.

Joint response by TÜV SÜD and Project Participants

The demonstration of new blast furnace and new converter applied to the methodology is as follows:

Firstly, the new blast furnace and new converter is in line with the applicability criteria "The methodology covers both new and existing facilities. For existing facilities, the methodology applies to existing capacity. If capacity expansion is planned, the added capacity must be treated as a new facility."

Secondly, energy balance can be used to demonstrate that the waste gases were flared into atmosphere in the absence of project activity.

Gas balance is not static but a dynamic equilibrium during a certain period. The BFG/LDG generation or consumption will change along with the change of steel products. Take the change between year 2005 and 2006 for instance, the production of raw iron increase greatly because the 4# blast furnace was fully put into commercial operation in 2006, so the generation of BFG extensively increase.

Table 4 gas balance of new blast furnace and new converter **(Appendix 23)**

	Type of waste gas	Facilities where the gas is generated or consumed	Quantity of gas ($10000m^3$)
BFG	BFG generated by new blast furnace	5# blast furnace ($540m^3$)	95995
		6# blast furnace ($540m^3$)	95991
	new BFG consumer	steel making in new converter (60t)	6572
		steel rolling	15332
		shaft furnace	28252
	surplus waste gas of BFG		141830
LDG	LDG generated by new converter	new converter (60t)	10356
	new LDG consumer	steel rolling (the second production line)	3505
	surplus waste gas of LDG		6851

The table 4 of "gas balance of new blast furnace and new converter" was based on the manufacturer's specification and provided to DOE during the on-site validation. It can be found the after being consumed in the iron and steel making process, the surplus BFG and LDG could not be used as energy source without the implementation of the project activity.

Therefore, in the light of applicability criteria, the new facilities mentioned in PDD are justified in the context of the proposed activity. Especially since all described sub-activities are taken as a whole under cosnideration when checking applicability of methodology, additonality, baseline emissions and project emissions.

Issue 5

The means of calculation of fcap for waste gas fired power plants and fcap for waste pressure based power plants are not in line with ACM0012 v2. The DOE shall clarify why Corrective Action Requests were not raised during validation.

Joint response by TÜV SÜD and Project Participants

The ACM0012 version-2 methodology requires the capping of emission reductions through the parameter fcap for which two methods are described.

Method (1) is applicable to projects utilizing waste gas/heat at facilities for which data is available while Method (2) applies to projects at new facilities or projects that utilize waste pressure.
Method-1: From the first sentence of Method 1 it is clear that fcap applies to both waste gas and waste heat. However in the description of the parameters only reference is made to waste gas and a unit is provided (Nm^3) that is relevant to waste gas.

Method-2: This method is described as being applicable to projects involving waste gas, heat and pressure but also here there are a number of inconsistencies regarding reference to waste gas only and the applicable unit.

Monitoring Section: In the monitoring section the methodology only refers to the monitoring of waste gas (not waste pressure or heat).
The monitoring of waste heat is very complex.
• Waste heat is a relative value (as opposed to volume of waste gas) and should always be measured relative to a certain temperature, as absolute energy has no relevance in the context of waste heat utilization;
• Gases coming from industry processes are aggressive and would easily damage the instruments;
• To properly monitor the waste heat, instruments would need to be installed at several points, which would require a substantial investment.

The proposed project is a Waste gas and pressure Recovery Project. Hence the above described difficulties
apply for this project.

Seeking for clarification on this issue, a request for clarification has been submitted to the Meth

panel.[1] (21/05/2008)
On 25/08/2008 the clarification has been answered, referring to the following[2]:

“The Meth Panel suggests the project participant to refer to the revised version (version 3.0) of the methodology, approved by EB41. The revised methodology addresses all the issues raised above.
The specific details on how above issues are addressed, are given as follows:

(1) Method-1: In the revised version now fcap is calculated using the energy tained in the Waste Energy Containing Medium (WECM), and not only waste gas. The equations are updated
accordingly to truly represent waste heat and waste pressure. The equation for estimation of fcap based on only waste pressure is also added. The monitoring section now represents the monitoring of all the parameters required to estimate the waste heat in the baseline and crediting period.
(2) Method-2: This method will also apply the similar approaches as Method-1.
(3) The Method-3 is added to cover scenarios where it is demonstrated by project proponents that it is technically difficult to monitor the waste heat generated. In these cases fcap can be defined based on the ratio of theoretical energy production in baseline to the actual energy content of WECM''.

The clarification has furthermore been approved in EB 42.

It is TÜV SÜDs understanding that the Meth Panel suggests to revise the fcap calculation part of the PDD refer to the version 3.0 of the method, while the rest of the PDD could still use version 2.

Further TÜV SÜD would like to refer to project 1878, which got registered on 15/12/2008.

• 24/11/2008 request for review project 1878[3];

Minor issue: The DOE should explain how it has validated that (a) the PDD complies with Method 2 for estimating the baseline emissions cap which requires using manufacturers' data or independent experts' analysis for estimating the values of the parameters Q_{BL}, product and Q_{wg}, product.

The referred project uses waste heat from a Cement Plant, applying ACM0012 version 2 while referring to method 3 in the part for fcap calculation, which is only used in version 3 of the methodology.
Furthermore the validation report refers to version 3 of the methodology.

Summary:
In the proposed project TÜV SÜD used ACM0012 version 2, referring to version 3 in the fcap calculation part following guidance from the Meth Panel as well as the indications of the Board (registration of project 1878 after RfR on the fcap calculation).
TÜV SÜD would like to apologize that a direct reference to the above named clarification AM_CL0101 has not been given in the Validation Report, which might have caused confusion during the review of the project.
Footnotes mentioned in the answer for Question 3:

1 http://cdm.unfccc.int/UserManagement/FileStorage/U4D3OE8YFYYO3XXH4M8HXKNSJ6COF0
2 http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_F2E9IGIK9QBGSVMXOSWO5YXTN0KMMM
3 http://cdm.unfccc.int/Projects/DB/DNV-CUK1213872634.6/Review/VD9EBN4GFVMGPY9C8JNPCX6BKRS359/display

Industrie Service

Issue 6

The monitoring plan shall include monitoring of: (i) quantity of waste gas used for energy generation (Q WG,h), (ii) amount of individual fuel (Qi,h) consumed at the energy generation unit, and (iii) net calorific values of the waste gas (NCV WG) and fossil fuel (NCVi) used in the project activity in accordance with the methodology.

Joint response by TÜV SÜD and Project Participants

Refering to tACM0012, the four parameters ($Q_{WG,h}$, $Q_{i,h}$, NCV_{WG} and NCV_i) are used in the calculation of f_{WG}. According to FSR and on-site check, the electricity generated by the project activity is purely from BFG and LDG, though a few of acetylene (C_2H_2) is used for ignition. Because only a few of acetylene (C_2H_2) supplied as liquefied bottle is used to ignite the waste gas during the start-up of boiler and it will be removed from the fuel supply system as soon as the waste gas is ignited. Thus the acetylene is not used along with waste gas for electricity generation. According to ACM0012, f_{WG} can be estimated as 1. Meanwhile, the emission due to consumption of acetylene has been considered as part of project emissions.

Based on the above consideration, the four parameters ($Q_{WG,h}$, $Q_{i,h}$, NCV_{WG} and NCV_i) involved in the calculation of f_{WG} is not necessary to be monitored.

The formula used to calculate the f_{WG} is as follows:

$$f_{WG} = \frac{\left(\frac{\sum_{h=1}^{8760} Q_{WG,h} * NCV_{WG}}{H_r} \right)}{EG_{tot,y}} \text{ and } H_r = \frac{\sum_{h=1}^{8760} \sum_{i=1}^{I} Q_{i,h} * NCV_i}{EG_{tot,y}}$$

The project participants agreed to the DOE's response and to the submission of the joint responses.

Industrie Service

Appendix list

No.	Document	Issuer/Remarks
Appendix 1	financing assessment from accounting firm	
Appendix 2	Financing Invitation Letter	Xingtai Longhai Steel Group Co., Ltd
Appendix 3	Fiteen-years Development Plan from 2006 to 2020	Xingtai Longhai Steel Group Co., Ltd
Appendix 4	Work Plan Meeting of the Project	Xingtai Longhai Steel Group Co., Ltd
Appendix 5	Construction Postponement of Waste Gas Based Power Generation Project of Xingtai Longhai Steel Group Co., Ltd	Development and Reform Commission of Xingtai City
Appendix 6	Project Permit	Development and Reform Commission of Hebei Province
Appendix 7	Rejection for the application of the project loan from Agricultural Bank of China	Xingtai Xingdong branch of Agricultural Bank of China
Appendix 8	Rejection for the application of the project loan from China Construction Bank	Xingtai Housing and Urban Construction branch of China Construction Bank
Appendix 9	Financing statement in 2006	
Appendix 10	Ranking of Asset-Liability Ratio in Iron and Steel Industry	The average asset-liability ratio in the ranking is 50.0%
Appendix 11	Financing Energy Efficiency in China	William Chandler and Holly Gwin
Appendix 12	Study on Reason for Difficulties of China SMEs Bank Financing	Mr. Zhang Guoting, Secience Technology and Industry, Vol.8, No.12, Dec, 2008
Appendix 13	A Letter Reply to the Investment of the Project	Xingtai Xingli Group Co., Ltd.
Appendix 14	The Investment Agreement of the Proposed Project	Xingtai Xingli Group Co., Ltd. Xingtai Longhai Steel Group Co., Ltd., Neiqiu County Heng'an Power Co., Ltd and Handan City Wanxing Co., Ltd.
Appendix 15	Operational record of waste gas pressure.	The power plant
Appendix 16	Effect of Supplying Gas Pressure on Combustion of Waste Gas Boiler	Dr. Li Hongfu, engineer of Jinan Iron & Steel Co., Ltd,
Appendix 17	Operational Log of one unit 12MW power unit	The power plant
Appendix 18	Report of Ultrasonic Testing in the First Overhaul	
Appendix 19	Statement on the technical aspects of converter gas recovery and utilization	Mr Nobuo Inoue, Director of the Energy/Environment Management Department of Nagoya Factory, Nippon Steel

		Corporation
Appendix 20	The cause to damage of TRT blade and preventive measures	
Appendix 21	Operational log of blast furnace	Xingtai Longhai Steel Group Co., Ltd
Appendix 22	Improper to install TRT on blast furnace below 1000m^3	National Development and Reform Commission
Appendix 23	gas balance sheet	Xingtai Longhai Steel Group Co., Ltd
Appendix 24	Feasibility Study Report, P8	Handan Huabei Metallurgy and Construction Engineering Design Co., Ltd.
Appendix 25	Power Purchase Agreement	Xingtai Power Supply Bureau and Xingtai Longhai Steel Group Co., Ltd."
Appendix 26	Electricity invoice	Xingtai Electric Power Company