CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

CONTENTS

Annexes

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	The Board agreed to revise the CDM project design 2006 document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

Title: Shanxi Hongyi Glassware Co., Ltd. Small-scale Fuel Switching Project
Version number of the document: 04
Date: 14Sep 2011

Version	Date	Comments
01	21 Dec 2008	Initial PDD in Chinese and English for HNA
02	19 Mar 2009	PDD prepared for GSP
03	06 May 2011	Finalized PDD
04	14 Sep 2011	Revised PDD according to Request for review

A.2. Description of the small-scale project activity:

Shanxi Hongyi Glassware Co., Ltd. (the Project Entity) was established in 1994 and is a manufacturer of glassware which is mostly exported to Europe and America. Since its early days, the Project Entity has used coal as fuel in its kilns. *The Shanxi Hongyi Glassware Co., Ltd. Small-scale Fuel Switching Project* (Project Activity) consists of the investments needed to adapt the existing glass two kilns to the use of natural gas instead of coal as an energy source.

In the Project Activity only the fuel combustion devices of the equipments are changed, the glass-making equipment remains the same and its operating lifetime and production capacity is not extended. This means that the extra income of the Project Activity is exclusively derived from the sale of CERs which are necessary to ease the burden of switching to natural gas which is more expensive than coal.[1]

Prior to the implementation of the Project Activity, the Project Entity used coal to fire the glass-making kiln. Due to the abundant availability of cheap coal in Shanxi province, the baseline scenario is the same situation existing prior to the implementation of the Project Activity. By switching from coal-fired to natural-gas fired kilns the Project Activity is expected to reduce emissions of greenhouse gases by an estimated 45,251 tCO_2e per year and 316,757 tCO_2e over the first crediting period of 7 years.

The Project Activity helps China fulfill its goals of promoting sustainable development. Specifically, the Project Activity achieves this by:

- Reducing the atmospheric emissions of pollutants and improving the air quality locally for employees and the local community;
- Creates new employment for the installation of the equipment and contributes to longer term local skills development in the installation and operation of natural gas combustion devices.
- The transport of coal using heavy trucks which is a strain on the local road infrastructure, and the most common source of fatal road accidents in Shanxi, will be reduced.

In addition, the Project Activity is an important capacity building activity, demonstrating the use of the CDM for funding environmental friendly technologies (including fuel switching), which reduce emissions of greenhouse gases.

[1] See also http://www.in-en.com/gas/html/gas-20072007011262841.html (in Chinese)

A.3. Project participants:

Please list project participants and Party(ies) involved and provide contact information in Annex 1. Information shall be in indicated using the following tabular format.		
Name of Party involved (*) ((host) indicates a host Party)	**Private and/or public entity(ies) project participants (*) (as applicable)**	**Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)**
People's Republic of China (host)	Shanxi Hongyi Glassware Co., Ltd. (Project Entity)	No
United Kingdom of Great Britain and Northern Ireland	Trading Emissions PLC (CER Buyer)	No

Please see Annex 1 for detailed contact information.

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

A.4.1.1. Host Party(ies):

People's Republic of China

A.4.1.2. Region/State/Province etc.:

Jinzhong prefecture of Shanxi Province

A.4.1.3. City/Town/Community etc:

Qi County

A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity(ies):

The exact location of the Project Activity is in Xiliuzhi Village, part of the Xiliuzhi Countryside in Qi County, Jinzhong City, Shanxi Province, P.R. China.

The geographical coordinates are north latitude 37°4′5″and east longitude 112 °1′25″. The detailed physical location is indicated in **Figure 1** below:

Figure 1: Location of the Project

A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

According to Appendix B of the simplified procedures for small-scale activities, the type and category of the Project Activity is:

- TYPE I - Energy industries (renewable - / non-renewable sources)

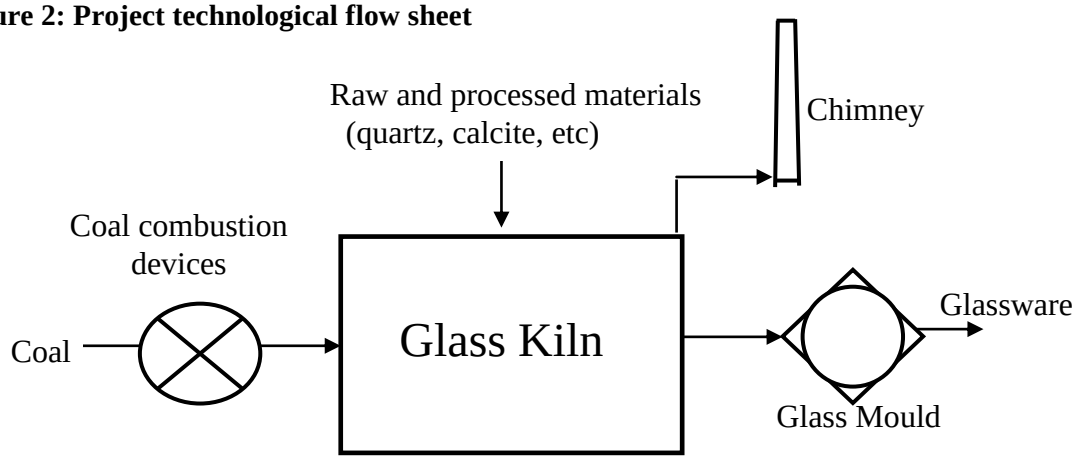
The Project Activity is a fuel switch program that is based on equipment fuel conversion. The conversion relates to the adaptation and modification of the fuel combustion devices, allowing for the consumption of natural gas instead of coal to power the glass kilns. The Project Activity involves installation of NG pipeline, NG devices and destruction of the coal device connection with Glass Kiln.
Figure 2 outlines the fuel switch before and after the Project Activity. This process will not increase the

lifetime of equipment, nor will it alter production capacity.

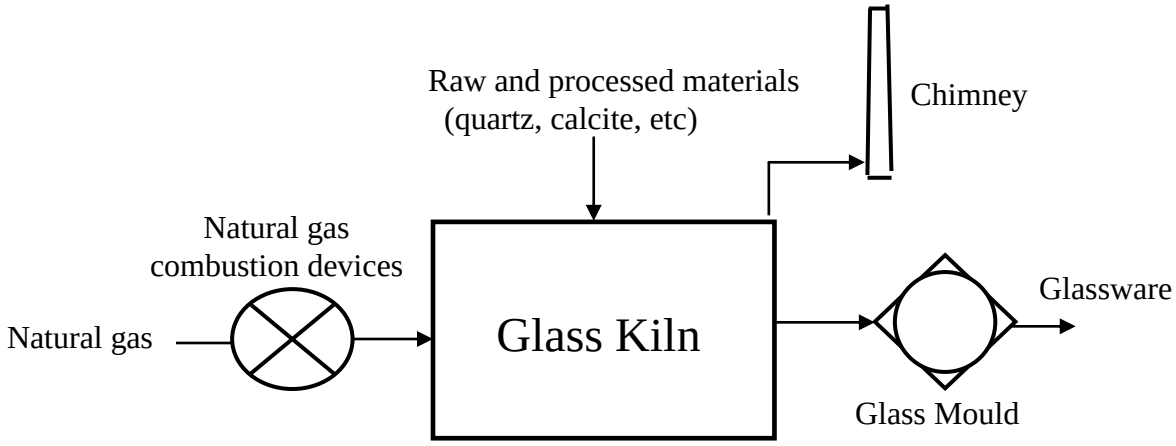
The lifetime and capacity of the existing glassware making equipment is expected to run well beyond the proposed crediting period, and will not be altered by the implementation of the Project Activity, given that the only modifications will be to the combustion devices, which does not upgrade any other aspects of the equipment used in the production of glassware.

The equipment used for the Project Activity is invested by the Project Entity. The current coal burning devices will be dismantled and a new natural gas burner and controlling system will be installed. This includes the installation of pipelines for the transportation of natural gas as well as pressure-adjusting and measuring equipment within the plant area. These equipments allow the natural gas burner of the glass kilns to start functioning.

Figure 2: Project technological flow sheet



a) Prior to the implementation of project



b) After the implementation of project

After the implementation of the Project Activity, the fuel will be switched from coal to the new fuel, natural gas. During production, CO_2 emissions generated from combusting natural gas are measurably less than that generated from combusting coal (for a detailed calculation, please see **Annex 3**). Through

implementing the Project Activity, CO_2 emission reductions will be generated while production at the plant continues normal operation.

The Project Activity adopts the latest advanced domestic technology of natural gas combustion and automatic control system; the main parameters of natural gas devices are shown as below:

Table 1: Key technical parameters of Nature Gas Devices

Natural Gas Pressure Regulator	Type	RT- 22/58 FU
	Inlet pressure	0.1-0.13 MPa
	Outlet pressure	8 kPa
	Flow velocity	100 Nm^3/h
	Manufactory	Hebei Huixing Electric Co.,Ltd
Control Valve	Type	Quantity
	Q41F-16-20	10
	Q41F-16-50	4
NG combustion nozzle	Type	Cr25Ni20 heat resistant stainless steel

According to the approved letter from China Glass Association, the new technique adopted in this project is advanced in china and not commonly adopted because the cost of natural gas is normally higher than coal. However, all the devices could be supplied by power equipment manufactures in China. So there is no new foreign technology introduced to the Project Activity.

As shown in the following section the emission reduction of the Project Activity is less than 60 $ktCO_2$ per year, therefore the project applies the small scale methodology.

A.4.3. Estimated amount of emission reductions over the chosen crediting period:

The Project Activity will adopt a renewable crediting period (7 years × 3). The Project Activity is expected to generate an estimated annual emission reduction of 45,251 tCO_2e and 316,757tCO_2e during the first crediting period of the project.

Year	**Estimation of annual emission reductions in tonnes of CO_2e**
01 July 2011 – 30 June 2012	45,251
Year 2	45,251
Year 3	45,251
Year 4	45,251
Year 5	45,251
Year 6	45,251
01 July 2017 – 30 June 2018	45,251
Estimated reductions during the first crediting period (tonnes of CO_2e)	316,757
Total number of crediting years	7
Annual average of estimated reductions over the 1st crediting period	45,251

A.4.4. Public funding of the small-scale project activity:

There is no public funding from Annex I Parties for this Project.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

According to Appendix C of the *Simplified Modalities and Procedures for Small-scale CDM Project Activities*[2], a registered small-scale CDM project or an application to register another small-scale CDM project activity, shall be deemed to be a debundled component of a larger project activity under the following conditions:

a) With the same project owner/ participants;

b) In the same project category and technology/measure; and

c) Registered within the previous 2 years; and

d) Whose project boundary is within 1 km of the project boundary of the proposed activity at the closest point.

With regards to the above conditions, the project participants confirm that there is no such small-scale CDM project activity with the above listed characteristics, so the Project Activity is not a debundled component of a large-scale project activity.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

According to the UNFCCC's most recent list in Appendix B of the simplified Modalities and Procedures (M&P) for small-scale CDM project activities, the approved baseline methodology applied to the proposed project as follows:

Title of the methodology: Switching Fossil Fuels
Methodology code: AMS- III.B.（Version 14）
Reference website:
http://cdm.unfccc.int/UserManagement/FileStorage/F1UNE5XIAP87HOZ6MVJQ3R4LK0TGDW

B.2 Justification of the choice of the project category:

This Project Activity is applicable to small-scale project type III.B. -Switching Fossil Fuels:
·Methodology AMS- III.B. – Switching Fossil Fuels (version 14).

The small scale methodology III.B. (version 14) states that the baseline methodology is applicable to projects where:

[2] http://cdm.unfccc.int/Projects/pac/howto/SmallScalePA/sscdebund.pdf

Applicability Condition	Project Activity compliance with Applicability condition
1. "This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional or electricity generation applications (e.g., fuel switch from fuel oil to natural gas in an existing captive electricity generation or replacement of a fuel oil boiler by a natural gas boiler)."	The Project Activity replaces coal by natural gas in an existing industrial application (i.e. glassware production).
2. "Fuel switch may be in a single element process or may include several element processes within the facility. Multiple fossil fuel switching is not covered under this methodology."	The Project Activity only involves switching fuel from coal to natural gas in two glass kilns. The only fuel used before the impletion of the project was coal and after the project impletion NG is the only fuel being used.
3. "This methodology is applicable for new facilities as well as for retrofit or replacement of existing installations"	The project involves the retrofit of existing two glass kilns to make them able to use natural gas. Therefore, in the NPV analysis of the Project Activity depreciation would remain the same after the retrofit.
4. "Fuel switching may also result in energy efficiency improvements. If the project activity primarily aims at reducing emissions through fuel switching, it falls into this methodology. If fuel switching is part of a project activity focused primarily on energy efficiency, the project activity falls under a Type II methodology."	The project aims at reducing emissions by switching from coal to natural gas. Glassware production is a Labor Intensive Industry [3] which requires skilled labor. The Project Activity does not affect the quantity and quality of glassware production[4].Even if there was an efficiency gain from switching from coal to natural gas it would not be possible to take advantage of this due to the rated output capacity of the kiln and the relatively fixed amount of labour involved. In addition, since the cost of using natural gas is more than double that of coal (as discussed in the PDD section B5.), using natural gas to improve the efficiency of the Project Activity would be counter-productive. Because of this the official approval of the project (Shanxi Qi County Planning Commission, Aug 2006) confirms that the primary purpose of the Project Activity is to achieve emission reductions and the Project Entity should therefore "apply for the CDM and improve the project return through GHG emission reduction trading". The project activity is therefore falls into this methodology.

[3] http://www.glass.org.cn/jsjl/201105/25/267.html (evidence: please see attached 'Labor Intensive Industry.pdf')

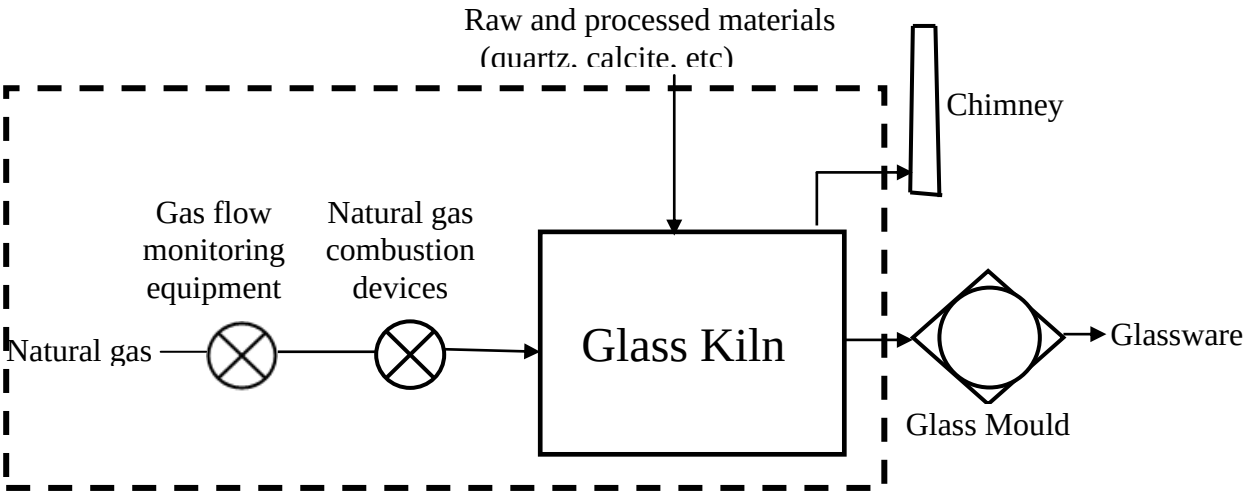
[4] Wang, J. (2009, Sep). The application of fuel Switch from coal to natural gas in glass kiln. *Glass Industry.* Page 81.

5. "New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible to apply this methodology if they comply with the related and relevant requirements in the General Guidance for SSC methodologies[2]. The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the General Guidance for SSC methodologies. If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project activity."	This Project does not involve any new facility
6. "This methodology is not applicable to project activities that propose switch from fossil fuel use in the baseline to renewable. A relevant Type I methodology shall be used for such project activities that generate renewable energy displacing fossil fuel use. This methodology is also not applicable to project activities involving the use of waste gas; these project activities might be eligible under AMS III.Q."	The project switches the fuel from coal to natural gas and does not involve a switch to the use of waste gas or renewable energy.
7. "The facility may involve grid connected elemental processes however this methodology does not cover emission reductions on account of shift from use of grid electricity."	The Project Activity only cover emission reductions for the gas consumed through natural gas combustion system, does not involve grid connected processes.
8. This category is applicable to project activities where it is possible to directly measure and record the energy use/output (e.g., heat and electricity) and consumption (e.g., fossil fuel) within the project boundary.	The project is replacing NG to Coal use to produce glassware. The NG meter is installed and NG consumption can be directly measured and recorded within the project boundary. Scale is installed and glassware output can be directly measured within the project boundary.
9. "Heat or electricity produced under the project activity shall be for on-site captive use and/or export to other facility, or facilities, within the project boundary, a contract between the supplier and consumers of the energy will have to be entered into specifying that only the facility generating the energy can claim emission reductions from the energy displacement."	The project activity is for on-site captive use.
10. "Regulations do not constrain the facility from using the energy sources cited in paragraph 1 before or after the fuel switch. Regulations do not require the use of low carbon energy source (e.g., natural gas or any other fuel) in the element processes."	There is no such regulation to constrain the facility from using coal before or after the fuel switch, no regulation require the use of natural gas as the energy source.
11. "The project activity does not result in integrated process change. The purpose is to exclude measures that affect other characteristics of the process besides switch of energy sources e.g., operational conditions, type of raw material processed, use of non-energy additives, change in type or quality of products manufactured etc."	This project activity does not involve any integrated process change; the only change in this project is the fuel type.
12. "Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO2 equivalent annually."	As is shown in Section A.4.3, the project will result in an estimated 45,251 tCO_2e emission reductions annually.

B.3. Description of the project boundary:

The project boundary is the physical, geographical site where the fuel combustion affected by the fuel switching measure occurs as stated by AMS- III.B. (version14). The project boundary includes installation of natural gas combustion system and natural gas flow monitoring system affected by the fuel switching (Figure 3).

Figure 3: Project boundary



In conformance with the *Guidelines and Rules for Small-scale Project Activities*, the emissions related to production, transport and distribution of the fuel used in the power plants in the baseline are not included in the project boundary, as these do not occur at the physical and geographical site of the Project Activity.

The greenhouse gases and emission sources included or excluded from the project activity boundary are shown in the following table:

	Source	Gas	Included?	Justification/Explanation
Baseline	Coal emission	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification. This is conservative.
		N_2O	No	Excluded for simplification. This is conservative.
Project activity	Natural gas emssion	CO_2	Yes	Main emission source
		CH_4	No	Excluded for simplification. This is conservative.
		N_2O	No	Excluded for simplification. This is conservative.

B.4. Description of baseline and its development:

According to the methodology available in paragraph 14 of Type – III Other Projects (B: Fuel Switching Projects) of the *Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories*: *"In case of existing facilities historical information (detailed records) on the use of fossil fuels and the plant output (e.g., heat or electricity) in the baseline captive energy generation plant from at least 3 years prior to project implementation shall be used in the baseline calculations, e.g., information on coal use and heat output by a district heating plant, liquid fuel oil use and electricity generated by a generating unit (records of fuel used and output can be used in lieu of actual collecting baseline validation data). For facilities that are less than 3 years old, all historical data shall be available (a minimum of one year data would be required). The emission baseline is the current emissions of the facility expressed as emissions per unit of output."* Emission coefficients for the fuel used by the generating unit before and after the fuel switch are also needed. IPCC default values for emission coefficients may be used.

In the Project Activity the emission reductions occurs due to the switch in fuel from coal to natural gas. In the absence of the project activity the baseline would be consumption of coal as fuel for powering the glass kilns. Therefore the emissions in the baseline scenario are the emissions per ton of glass (kg CO_2e/t) that would have occurred due to the burning of the fossil fuel i.e. coal in the glassware kilns.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

The Project Entity was at an early stage aware about the potential of CDM to support its activities and fully considered the revenues from CDM when making the decision to implement the Project Activity. This is illustrated with the following schedule of milestones relating to the project:

Time	Milestone
Jun 2006	The FSR report for the Project Activity was completed by the Shanxi Guoyang Investment Consulting Co.ltd. It is clearly stated in the FSR that the Project Activity could get CDM revenue. The FSR states that the Project Activity's feasibility depends on CDM income.
Aug 2006	The Shanxi Qi County Planning Commission approved the FSR of the Project Activity, and in the official approval it is clearly stated that "To ensure a successful implementation of the proposed project, the project developer should apply for the CDM and improve the project return through GHG emission reduction trading"
Sep 2006	The Qi County Environmental Protection Agency ratified the environmental impact registration for the Hongyi Fuel Switch Project.
10 Oct 2006	Board meeting in which CDM was considered as a key factor in the investment decision.
16 Nov 2006	CDM consulting contract with Shanxi Huaaoda Green Industry Development Ltd.
10 Feb 2007	The project construction contract was signed (CDM project start-date)
12 Feb 2007	Construction Commencement
1 Apr 2007	Equipment Technical Agreement was signed
3 Apr 2007	Equipment Purchase Contract was signed
16 May 2007	Terminate contract with Shanxi Huaaoda Green Industry Development Ltd.
23 Jun 2007	The Project Entity contracted the CDM consultant to complete CDM application work.

Sep 2007	First CDM Training meeting for project owner
Dec 2007	Second CDM Training meeting for project owner
March 2008	PDD methodology discussion meeting
July 2008	Draft PDD discussion meeting
17 Jan 2008	Natural Gas Supply Agreement
Oct 2008	Emission Reduction Purchase Agreement was signed
20 Feb 2009	Submission of PDD for HNA
Apr 2009	HNA obtained
Sep 2009	PDD published for GSP
12 Mar 2010	UK LoA obtained

Decision on the start date of the Project Activity

The Project Construction Contract date was taken as the project start date, which is 10 Feb 2007. This is in line with the CDM Glossary. As per the CDM Glossary of Term ver.4 ('the Glossary'), the starting date of a CDM Project Activity is the earliest date at which either the implementation or construction or a real action of a Project Activity begins.

In light of the above definition, the starting date of a CDM Project Activity is further clarified in the Glossary as the date on which the Project Activity participant has committed to the expenditures related to the implementation or related to the construction of a Project Activity.

The Project Construction Contract was signed on 10 Feb 2007, and the Construction Commencement date was on 12 Feb 2007 (as stated in the Construction Contract), the Equipment Purchase Contract was signed in April 2007. Therefore, the signing date (10 Feb 2007) of the Project Construction Contract shall be regarded as the start date of the Project Activity, as it was the first date for the Project Activity to commit to the expenditures related to the implementation of the Project Activity.

Additionality justification

In accordance with Appendix B of the *Simplified Modalities and Procedures for Small-scale CDM Project Activities*, the following analysis shows evidence of the additionality of the Project Activity:

In China, natural gas used as fuel has been listed in the official energy program for development. But as described in section **B.4**, in Qixian County the use of coal-fired kilns is in line with the requirements of the Local Bureau for Environmental. Moreover, existing environmental licenses do not include any requirements to use natural gas or other fuel types in the glassware industry. Therefore, the fuel switch exclusively depends on the economic benefits of using one type of fuel over another in the production process. Without the CDM, the proposed project activity faces substantial investment barriers caused by high up-front investment and higher operational costs associated with switching from coal to natural gas as a fuel.

Firstly, the fuel switch requires up-front investments for connecting the plant to the gas supply pipeline, putting in place an internal pipeline (including regulators, pumps and safety equipment), and other relevant equipment conversions to allow the switch from coal to gas. These combined investments were estimated to amount to the sum of 4,968,000 Yuan (RMB).

The Project Activity only changes the fuel type, and does not improve the output or quality of the actual glassware production process, nor does it increase the lifetime of glass production equipment. Glassware

production, and consequently the revenue from production, will not be affected by the project activity. Therefore revenues from glassware are not included in the comparative financial analysis provided below.

Secondly, the operating cost for using natural gas fuel for glassware production will increase after the implementation of the Project Activity. Therefore a comparison is done between the economics of the baseline option (continued use of coal) and the Project Activity (switch to natural gas).

The analysis on project investment and operation cost under baseline and the Project Activity is shown below:

Table 2: Main parameters for calculation of financial indicators

Baseline scenario			
Indicator	**Value**	**Unit**	**Reference**
Price of coal	385	RMB/ton	FSR (page 21)
Coal operation cost	547	RMB/ton of product	FSR (page 21)
Annual glassware production	24000	ton	FSR (page 20)
Project scenario			
Static total investment	4,968,000	RMB	FSR (page 21)
Price of natural gas	2.3	RMB/Nm^3	FSR (page 21)
NG operation cost	1,341	RMB/ton of product	FSR (page 21)
Annual glassware production	24,000	ton	FSR (page 21)
Annual NG consumption	14,000,000	Nm^3	FSR (page 20)
Income tax	33	%	State council (No.137)[5]
VAT	17	%	State council (No.134)[6]

The table above illustrates that without new investment (in the case of baseline scenario), the plant would be able to maintain a low-cost base. In the scenario of the Project Activity, the supplementary investment would reach 4.968 million RMB and the associated fuel operating cost would increase to 1,341 RMB per ton of products produced. Only operating cost is increased during the implementation of the project, but do not result in any increase of processing capacity of glassware or in substantial product changes.

Using the investment benchmark of 12% Internal Rate of Return (IRR) for the glass industry[7] as the discount rate for the Project Activity, a Net Present Value (NPV[8]) calculation was conducted using the parameters of the project adopted from FSR. As can be seen in the table below, the NPV for energy generation using coal in the baseline scenario is minus 6,895 Yuan. The NPV of minus almost 3 million Yuan for the Project Activity in the absence of the CDM illustrates that it is substantially less economically attractive than the baseline scenario. However, the Project Activity benefitting from CDM

[5] Enterprise Income Tax Provisional Regulation of The People's Republic of China (State Council No.137), published on 13th Dec 1993, came into force on 1st Jan 1994. Website: http://www.gdjy.com.cn/glpx/swzs/ds/sd_01.htm

[6] Value Added Tax Provisional Regulation of The People's Republic of China (State Council No.134), came into force on 1st Jan 1994. Website: http://www.gov.cn/banshi/2005-08/19/content_24733.htm

[7] Industry IRR benchmark taken from *Methods and Parameters for Economic Assessment of Construction Projects* (version 3), published by China's National Development and Reform Commission and Construction Ministry, December 2006. This reference is widely used by Chinese authorities for assessing the financial viability of potential new projects, and it is still valid.

[8] NPV is used as it allows for a comparison between the discounted present value of the baseline scenario and that of the project activity with/without CDM revenue. NPV is a commonly used tool in discounted cash flow analysis, and is a standard method for using the time value of money to audit long time projects; In the case when all future cash flows are incoming and the only outflow of cash is the purchase price, then NPV is simply the present value of future cash flows minus the purchase price.

revenue becomes economically attractive with an NPV exceeding 20 million Yuan.

Table 3: Comparison of NPV with and without CERs revenue

Scenario	CER Price (RMB)[9]	NPV result (RMB)	Discount Rate
Baseline	N/A	¥-6,895	12%
Project w/o CDM	N/A	¥-17,207	12%
Project with CDM	90	¥27,480,059	12%

Glass production, and consequently the revenue from production, will not be affected by the project activity. Therefore, revenues are not included in the financial analysis. Instead, a comparison is done between the NPV of the baseline option (continuing to use coal) and the project activity (switch to NG).

Based on the investment and operational cost-benefit analysis above, the Project Activity's NPV is ¥-17,207 (negative) without CER revenue, while the baseline scenario NPV is ¥-6,895 (negative). The project activity NPV minus baseline NPV is ¥-10,312 (negative), which is indicated that the project investment would bring no financial benefits except those derived from the CDM. In addition, as can be seen from the table of 'NPV sensitivity analysis', the NPV value is negative when static total investment, NG and coal price varied. Therefore, it can be concluded that the fuel-switching project from coal to natural gas would have no attractiveness from a stand-alone financial perspective and illustrates the additionally of the Project Activity to the baseline. The table below shows the NPV of the Project Activity when its key parameters are subjected to sensitivity analysis:

Table 4: NPV Sensitivity Analysis

	-10%	0	10%
Static total Investment	-10,283	-10,312	-10,342
NG Price	-8,621	-10,312	-12,004
Coal Price	-11,002	-10,312	-9,623

Static total investment

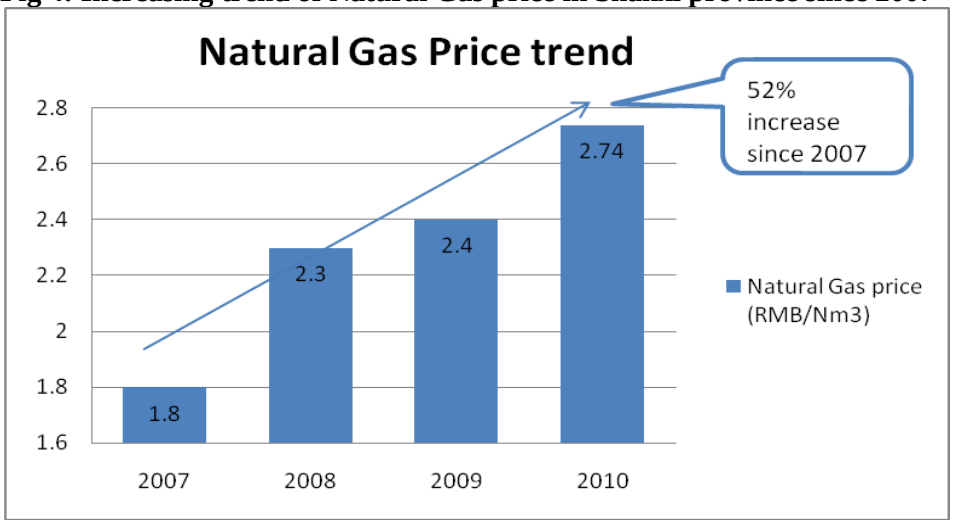
When the static total investment decrease to 0 (decrease by 100%), the NPV of the project still negative value, therefore this parameter has no impact on the additionality of the Project Activity.

NG price

When the natural gas price decreases by 60.981%, the NPV of the Project Activity will become positive. The natural gas price is very unlikely to decrease by 60.981% as it is now 19% higher than it was when the FSR prepared and the investment decision was made. The trend of natural gas price has increased dramatically (see Figure 4) from when the NG pipeline was introduced in Shanxi province in 2007. Since the NG price is now much higher than what was used in the PDD, we considered it as conservative and very unlikely that the Project Activity could under any reasonable assumptions achieve positive value.

[9] The Project owner has signed Natural gas Purchase Agreement with Qi County Jieyuan Natural Gas Ltd

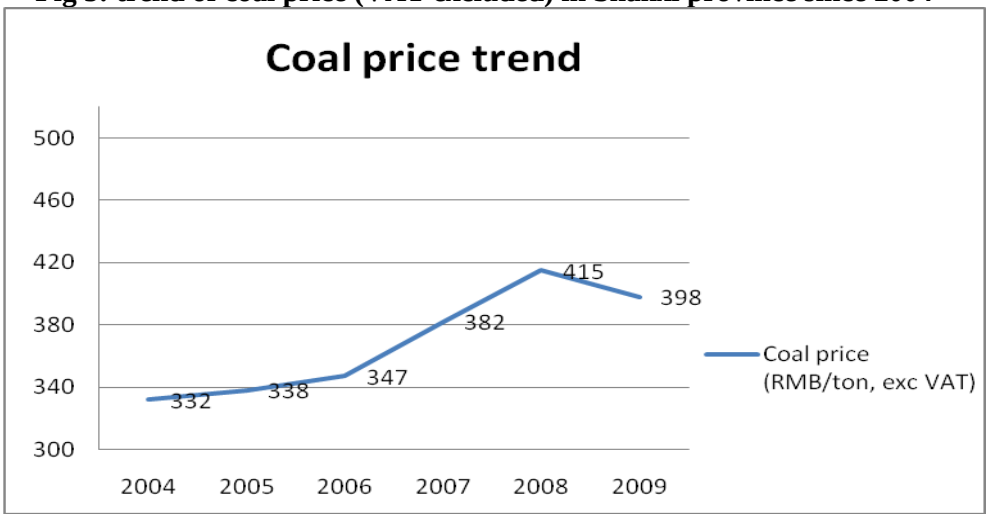
Fig 4: Increasing trend of Natural Gas price in Shanxi province since 2007[10]



Coal price

When the coal price increases by 149.57%, the NPV of the Project Activity will become positive. According to the local whole sale price of coal (Fig5), there is only 19.8% increase in the coal price since 2004 with recent trends decreasing. In addition, according to the China Statistical Yearbook[11] that Shanxi Province has the biggest coal reservoir in China which would remain relative stable price in the local area. We therefore do not consider that the coal price increase will outstrip the increase in the price of NG and the coal price adopted in the PDD is suitable.

Fig 5: trend of coal price (VAT excluded) in Shanxi province since 2004[12]



To conclude, the sensitivity analysis shows that without CER revenue, the project NPV is unlikely to be positive, which further demonstrates the additionality of the project activity.

[10] The actual value was taken from government official document and also the natural gas invoices from PO, evidences are submitted to the DOE.

[11] http://www.stats.gov.cn/tjsj/ndsj/2009/html/L1111e.htm

[12] The coal price evidences are submitted to DOE.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

Project emissions

Project emissions consist of those emissions related with the use of natural gas after the fuel switch.

Project emissions are calculated as follows:

$$PE_y = FC_y \times NCV_{NG} \times EF_{NG}$$

where,

PE_y Project emissions in the project activity in year *y* (tCO_{2e})

FC_y, Amount of natural gas combusted in the project glass kilns in the year y (Nm^3)

NCV_{NG} Net calorific value for the natural gas (TJ/Nm^3)

EF_{NG} CO_2 emission factor for the natural gas fuel (tCO_2/TJ)

Baseline emissions

Baseline emissions are the emissions that would otherwise be emitted in the absence of the Project Activity by using coal to power project glass kilns.

$$BE_y = EF_{BSL} \times Q_{PJ,y}$$

where,

BE_y Baseline emissions in the project activity in year *y* (tCO_{2e})

$Q_{PJ,y}$ quantity of glassware produced in the project activity in year *y* (t);

EF_{BSL} Emission factor for the baseline situation (tCO_2/t), which is the coefficient for the coal used in the baseline expressed as emissions per tons of glassware produced (from historical data)

$$EF_{BSL} = \sum_{i,j} FC_{i,j,BL,y} * NCV_j * EF_{CO2,j} / Q_{BSL,j}$$

Where,

$FC_{i,j,BL,y}$ Total amount of coal consumed for glassware production during the year (2004,2005,2006) in the baseline situation

$EF_{CO2,j}$ CO_2 emission factor for the coal (tCO_2/TJ)

$Q_{BSL,j}$ Total amount of glassware produced (in t) during the year (2004,2005,2006) in the baseline

NCV_j Net calorific value of coal (TJ/t)

Leakage
As described in AMS III.B, no leakage calculation is required.

Emission reductions

$ER_y = BE_y - PE_y$

where,

ER_y Emission reductions in the year y (tCO_2e)

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	$FC_{i,j,BL,y}$
Data unit:	ton
Description:	Total amount of coal consumed for glassware production during the year (2004,2005,2006) in the baseline situation
Source of data used:	Hongyi Shanxi Hongyi Glassware Co., Ltd. (the Project Entity)
Value applied:	year: ton 2004: 22368.9 2005: 30368.45 2006: 35149.88
Justification of the choice of data or description of measurement methods and procedures actually applied :	Value for 3 years (2004 ~ 2006) is used. Historical data is described in the Annex 3.
Any comment:	-

Data / Parameter:	NCV_j
Data unit:	TJ/ton
Description:	Net calorific value of coal (TJ/kg)
Source of data used:	Coal sample test report from Shanxi Coal Quality Measuring Center
Value applied:	0.025TJ/t
Justification of the choice of data or description of measurement methods and procedures actually applied :	-
Any comment:	-

Data / Parameter:	$EF_{co2,j}$
Data unit:	tCO_2/TJ

Description:	CO_2 emission factor of coal.
Source of data used:	IPCC default
Value applied:	87.3tCO2/TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	Derived from *IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual (2006)*
Any comment:	-

Data / Parameter:	$Q_{BSL,j}$
Data unit:	10^4 ton
Description:	Total amount of glassware produced (in t) during the year(2004,2005,2006) in the baseline situation
Source of data used:	Shanxi Hongyi Glassware Co., Ltd. (the Project Entity)
Value applied:	year: 10^4 ton 2004: 1.6 2005: 2.2 2006: 2.36
Justification of the choice of data or description of measurement methods and procedures actually applied :	Value for 3 years (2004 ~ 2006) is used. Historical data is described in the Annex 3.
Any comment:	-

Data / Parameter:	EF_{NG}
Data unit:	tCO_2/TJ
Description:	CO_2 emission factor of natural gas.
Source of data used:	IPCC default
Value applied:	$58.3tCO_2/TJ$
Justification of the choice of data or description of measurement methods and procedures actually applied :	derived from *IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual (2006)*
Any comment:	-

Data / Parameter:	EF_{BSL}
Data unit:	tCO2/ton
Description:	Emission factor for the baseline situation
Source of data used:	Based on the calculation in B.6.3
Value applied:	3.1138

Justification of the choice of data or description of measurement methods and procedures actually applied :	-
Any comment:	According to methodology

B.6.3 Ex-ante calculation of emission reductions:

Project emissions:

$$PE_y = FC_y \times NCV_{NG} \times EF_{NG}$$

$=14{,}000{,}000\text{Nm}^3 \times 36.12\text{MJ/Nm}^3 \times 58.3\text{tCO}_2\text{/TJ}/1{,}000{,}000$

=29,481 tCO2e

Baseline emissions:

$$BE_y = EF_{BSL} \times Q_{PJ,y}$$

$$= (\sum_{i,j} FC_{i,j,BL,y} * EF_{CO2,j} * NCV_j) / Q_{BSL,j} \times Q_{PJ,y}$$

$= (87887.23\text{t} * 87.3\text{tCO}_2\text{/TJ} * 0.025\text{TJ/t}) / (6.16 \times 10^4\text{t}) * 24{,}000\text{t}$

$= 3.1138\text{tCO}_2\text{/t} * 24{,}000\text{t}$

=74732.68 tCO2e

Emission reductions:

$ER_y = BE_y - PE_Y$ **=74,732−29,481=45,251 tCO$_2$e**

B.6.4 Summary of the ex-ante estimation of emission reductions:

As the project starting date of the first crediting period is 01 July 2011 with the renewable crediting period ending on the 30 June 2018, the emission reductions during the first crediting period are estimated as follows:

Year	Estimation of baseline emissions (tCO_2e)	Estimation of project activity emissions (tCO_2e)	Estimation of leakage (tCO_2e)	Estimation of overall emission reductions (tCO_2e)
01 July 2011 - 30 June 2012	74,732	29,481	0	45,251
Year 2	74,732	29,481	0	45,251
Year 3	74,732	29,481	0	45,251
Year 4	74,732	29,481	0	45,251
Year 5	74,732	29,481	0	45,251
Year 6	74,732	29,481	0	45,251
01 July 2017 - 30 June 2018	74,732	29,481	0	45,251
Total (tCO_2e)	747,320	294,810	0	316,757

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	FC_y
Data unit:	Nm^3
Description:	Natural gas consumed in the project boiler in year y
Source of data to be used:	On-site measurement
Value of data applied for the purpose of calculating expected emission reductions	14,000,000 Nm^3(FSR)
Description of measurement methods and procedures to be applied:	Monitored continuously using meters by operation. The Natural Gas Supplier, together with the Project Entity reads the main meter and records the data reading on the last day of every month; The Project Entity will archive the data electronically in an Archives Collection Unit, these data will kept at least for 2 years after the end of the last crediting period.
QA/QC procedures to be applied:	The meters will be calibrated once a year by a certified body (Ningbo Trunsun Instrument Co., Ltd.). Should any erroneous measurement or malfunction be detected, the backup meter shall be used. The amount of natural gas combusted will be double checked with the purchase receipt.
Any comment:	The type of NG main and back meter type is CQ-100L-1.5-1.6/0.2-IC, measuring range is 32-650m^3/h, with an accuracy of 1.5.

Data / Parameter:	$Q_{PJ,y}$
Data unit:	tonnes
Description:	Production of glassware in year y
Source of data to be used:	On-site measurement
Value of data applied for the purpose of calculating	24,000t (this value is the designed capacity of the plant for glassware production, it was adopted from FSR)

expected emission reductions	
Description of measurement methods and procedures to be applied:	Monitored everyday and reported in a monthly report, the Project Entity will archive the data electronically in an Archives Collection Unit, these data will kept at least for 2 years after the end of the last crediting period.
QA/QC procedures to be applied:	The weighing instrument will be calibrated/ checked once half of a year by a certified body 'Qixian Technology Quality Supervision, Inspection & Testing Agency' by using the examination standard (JJG539-1997).
Any comment:	Balance Scale and Platform Scale will be used for weighing different type of glassware product. For detailed information regarding the parameter of the scales, please see section B.7.2

Data / Parameter:	NCV_{NG}
Data unit	MJ/Nm^3
Description:	Net calorific value of NG
Source of data to be used:	From the gas supplier (Qi County Jieyuan Natural Gas Co.,Ltd)
Value of data applied for the purpose of calculating expected emission reductions	$36.12MJ/Nm^3$
Description of measurement methods and procedures to be applied:	The value will be monitored every two weeks in order to check its accuracy, the Project Entity will archive the data electronically in an Archives Collection Unit, these data will be kept at least for 2 years after the end of the last crediting period.
QA/QC procedures to be applied:	-
Any comment:	-

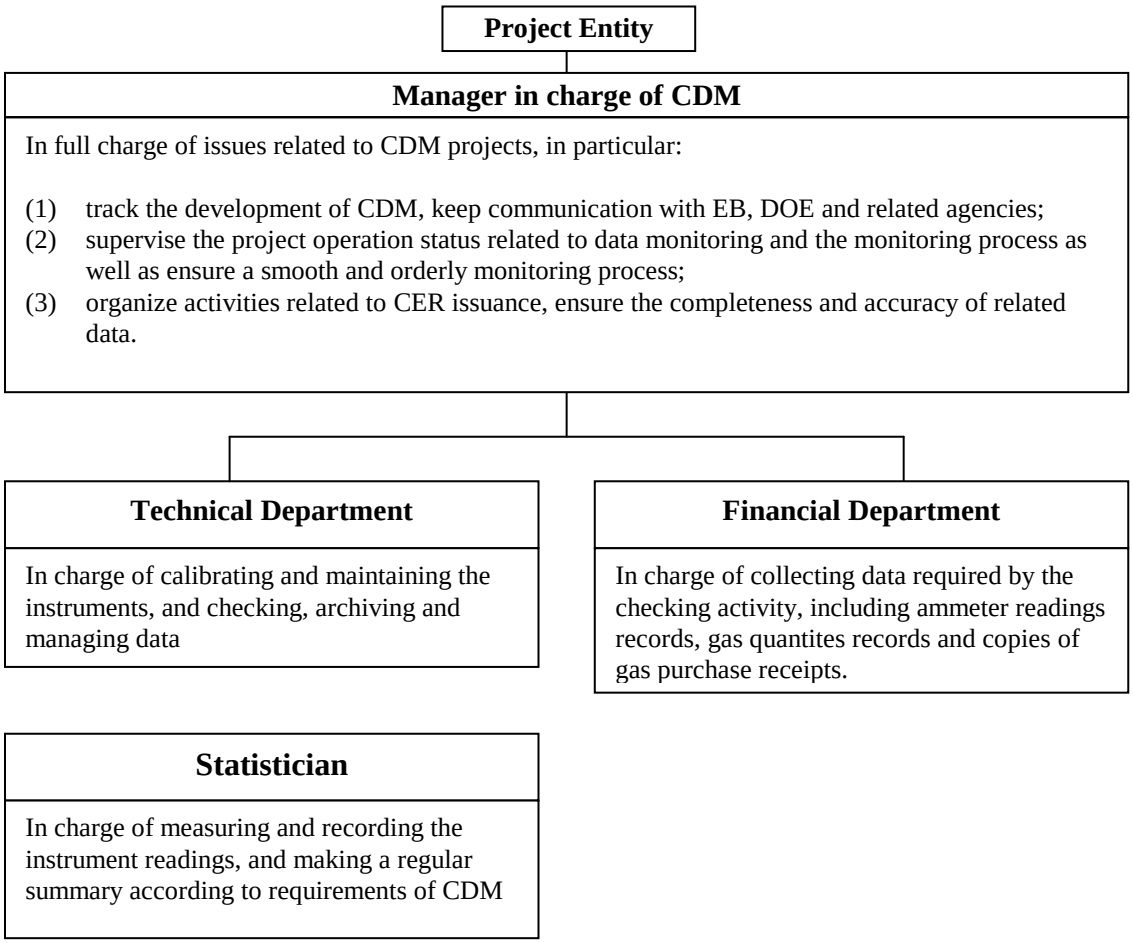
B.7.2 Description of the monitoring plan:

The approved monitoring methodology AMS-III.B is used for developing the monitoring plan.

The Project Entity must maintain credible, transparent, and adequate data estimation, measurement, collection, and tracking systems to maintain the information required for an audit of this emission reduction project. Monitoring tasks must be implemented according to the monitoring plan in order to ensure that the real, measurable and long-term greenhouse gas (GHG) emission reduction for the Project Activity is monitored and reported.

1. Responsibility

Overall responsibility for daily monitoring and reporting lies with the Project Entity. A CDM group will be established to carry out the monitoring work. Staff will be trained by the experts of the project consultancy. The organizational structure of monitoring is as follows:

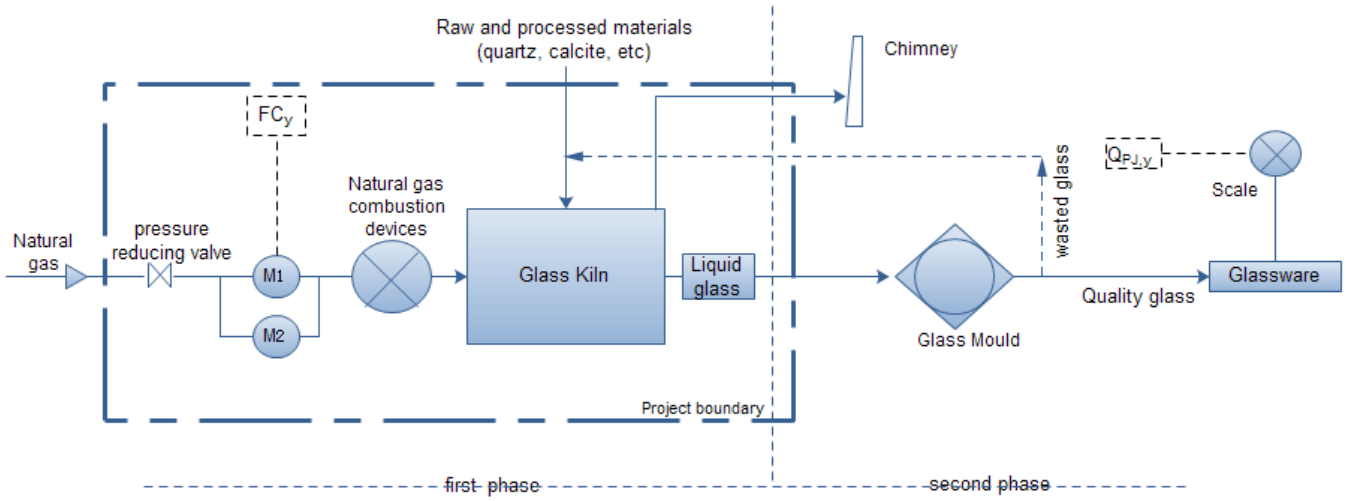


2. Monitoring parameters

The glassware production process in the Project Activity includes two main phases (as shown in the Figure 6):

1) First Phase- the gas combustion under the glass kiln heats the raw material (e.g. quartz, calcite, etc) and melts it into liquid glass.
2) Second Phase- The melted liquid is injected into the glass mold to form glassware.

Figure 6: Monitoring diagram of the Project Activity



The output of element process in this project activity is created in the First Phase described above: the gas combustion (**FC_y**) in the glass kiln heats the raw material which melts into liquid glass[13] used for glassware (**$Q_{PJ,y}$**).

The design of the glass kiln is such that the temperature and heat amount is kept stable to allow glass production. Using coal or natural gas as the fuel does not change the operating parameters under which glass kiln converts raw materials into glass liquid[14,15]. The element process output of the Project Activity is therefore the quantity of melted liquid glass produced. There is no significant difference between the quantity of melted liquid glass in this element process and the final glassware amount[16]. As $Q_{PJ,y}$ equals quantity of melted liquid glass which determines the quantity of glassware produced. The glassware quantity is monitored in this project activity to establish **$Q_{PJ,y}$.**

The monitoring of **$Q_{PJ,y}$** therefore ensures that all the emission reductions are claimed due to the fuel

[13] The melting point of the melted liquid glass is stable in the glass kiln, and the energy of liquid glass is in direct proportion with the quantity of liquid glass (Q=M×Cp×T), of which Q: the energy of liquid glass. M: the quantity of liquid glass. Cp: the specific heat capacity of liquid glass. T: temperature of liquid glass.
[14] Wang, J. (2009, Sep). The application of fuel Switch from coal to natural gas in glass kiln. *Glass Industry.* P 81.
[15] According to the confirmation letter from China Glass Association that fuel switch from coal to natural gas does not change the glass kiln physical properties, such as structure, volume, area, melting rate, melting point temperature, and the conversion rate of raw material to liquid glass.
[16] The losses during transferring and processing are so small that these can be neglected, and in any case are not affected by the type of fuel used.

switching measure: the temperature and heat amount will stay the same per the operating parameters of the glass kiln while monitoring the consistent quantity of glassware produced (further limited by the rated output capacity of the kiln) confirms that no other measures can explain the amount of emission reductions that will be claimed.

The above approach is reliable as a glass kiln is different than other type of boilers: in order to melt the raw material into liquid at the melting point of 1500℃, the flame temperature has to be kept stable at 1800℃. The energy absorption by the kiln using different fuels is therefore always the same, while only the energy loss is different.[17] In this way there can be no change to the production efficiency of the kiln through fuel switching.

3. Installation of monitoring devices

FC_y

There are two monitoring meters (M1 is the main meter, M2 is for back up) installed at about 50 meters way from the gateway of the glassware factory, which monitoring the quantity of natural gas coming into the glassware production plant. The meter will be owned, operated and maintained by Qi County Jieyuan Natural Gas Co., Ltd. (natural gas supplier).

$Q_{PJ,y}$

There are 2 type of Weighing Scales for two furnaces workshop to measure glassware output.

4. Reporting

FC_y

The specific steps for natural gas amount data collection and reporting are listed below:

- Natural gas Company, together with the Project Entity reads the main meter and records data on the last day of every month;
- The Natural gas Company supplies readings to the Project Entity and provides the invoice;
- CDM manager crosscheck the data on the natural gas purchase invoices with the amount of natural gas consumption;
- Should any previous months reading of the main meter be inaccurate by more than the allowable error, or otherwise functioned improperly, the backup meter should be used.

  The Project Entity will archive the data electronically in an Archives Collection Unit, these data will kept at least for 2 years after the end of the last crediting period.

$Q_{PJ,y}$:

The specific steps for glassware production data collection and reporting are listed below:

[17] Because coal involves solid-state combustion, it takes time to start up the combustion system and combustion temperature changes with the amount of coal combusted. In order to keep a stable temperature, coal residue has to be disgarded while it is not yet fully burned (i.e. half turned to ash, the other half still in burning state). Thus, when the glass kiln uses coal as fuel the glass kiln absorbs lower heat as coal generates higher heat losses. In the scenario of the Project Activity the original physical design of the glass kiln is kept the same. After switching from coal to natural gas the temperature can is more consistent and shorter time is needed to meet the melting point (due to natural gas being gas-state combustion/diffusion combustion). This result in less residual energy loss in the kiln but not a higher performance of the kiln itself. (see evidence from China Glass Association)

- Different types of glassware products will be weighed by Balance Scale and Platform Scale and will be physically recorded on a daily basis and summarized into a paper archive on monthly and yearly basis.
- CDM manager crosscheck the glassware sale receipts with the record of glassware weight to ensure accuracy.
- The Project Entity will archive the data electronically in an Archives Collection Unit, these data will kept at least for 2 years after the end of the last crediting period..

5. Calibration

FC_y:

The natural gas metering equipment was manufactured by the Ningbo Trunsun Instrument Co., Ltd. The main parameters are shown as below:

Table 5: Parameter of NG metering equipment (main & backup meter)

	Main meter	Backup meter
Type	CQ-100L-1.5-1.6/0.2-IC	CQ-100L-1.5-1.6/0.2-IC
Measuring range	32-650 m^3/h	32-650 m^3/h
Accuracy	1.5	1.5

According to the "Law on Metrology of the P.R.China" and the requirements of the "Rule for the Examination of Measurement Standard", to ensure the accuracy of the metering equipment, a certified body (Ningbo Trunsun Instrument Co., Ltd.) will check the equipments once a year by using the examination standard (JJG 1037-2008).

$Q_{PJ,y}$:

For monitoring glassware products, Balance Scale and Platform Scale will be used for weighing different type of the glassware product. Parameters of each type of weighing scales are shown in the table below:

Table 6: Parameter of Glassware weighing scales

Instrument name	Type	Accuracy
Balance Scale	JPT-05 (500g)	1g
Platform Scale	TGT-500A (500kg)	200g

The weighing instrument will be calibrated/ checked once half of a year by a certified body 'Qixian Technology Quality Supervision, Inspection & Testing Agency' by using the examination standard (JJG539-1997).

6. Error Handling and Emergency Procedure

In the event that a meter has lost calibration over the allowable error limit then this shall be corrected at the earliest opportunity and re-calibrated and the data recorded from this meter since the last successful calibration shall be ignored.

In the event that there is uncertainty over the accuracy of the data set for natural gas amount from the main meter (e.g. the meter has lost calibration over the acceptable error limit) then the data from the

back-up meter shall be used.

If the Project Activity stops operation due to an emergency or unscheduled maintenance, the Project Participants will not claim emission reductions for the relevant duration of no natural gas consumption and glassware production. The Project Entity will declare the emergency period over the following procedure:

a) The project Entity will ensure all requirement for monitoring of emission reductions have been re-established;

b) The CDM manager of Project Entity will sign a statement to declare the emergency situation to have ended and normal operation to have resumed.

The CDM consultant and DOE will check for errors from CER calculations. Where errors in the calculations are discovered by either of these Parties, the monitoring report shall be modified and the corrected version shall be resubmitted to the verifier.

7. External Reporting Procedure

After signing by the CDM consultant, the report is sent to the DOE verifier who is contracted to verify the emissions reductions during the crediting period of the project.

8. Procedure for corrective actions arising

The CDM consultant is responsible for identifying corrective actions arising from the above procedures and for liaising with the CER buyer, the DOE verifiers and other stakeholders to take necessary steps to implement the corrective actions.

9. Training

Members of staff who are involved in the CDM project will be given training on the CDM and reporting requirements, prior to registration of the project. New members of staff joining the CDM project team will also be given training in relation to their responsibilities.

10. Data management system

All monitoring data and records will be archived electronically as well as paper documents. The project owner will also keep the copies of sale invoices and prepare a monitoring report which includes the monitoring data summary, the calibration records, the emission reduction calculations and emergency report (if applicable).

All the electronic and paper documents will be archived and be kept at least for 2 years after the end of the last crediting period.

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

>>

This version of PDD was completed on 14/09/2011 by:

Entity: EEA Clean Energy China Ltd
Address: Unit 1505, Full Tower, No.9 East 3rd Ring Middle Road, Chaoyang District, Beijing, China.

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Other entities involved in the project are:
Shanxi Taiyuan Zihuan Environmental Protection Technology Ltd. Address: Dongjihuying Taiyuan City Shanxi, China. Telephone: 86-3513036751, fax: 86-3513036751, e-mail: zj590601@163.com.

The above entities are not the project participants listed in Annex 1.

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

>>
10 February 2007

C.1.2. Expected operational lifetime of the project activity:

>>
25 years

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

>>
01 July 2011 or the actual date of CDM registration

C.2.1.2. Length of the first crediting period:

>>
7 years

C.2.2. Fixed crediting period:

>>

C.2.2.1. Starting date:

>>
N/A

C.2.2.2. Length:

>>
N/A

SECTION D. Environmental impacts

D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

In line with Articles 13 and 19 of Environmental Protection Law of the People's Republic of China (adopted on December 26, 1989), the Project Entity must analyze the environmental impacts of the Project Activity before receiving approval of project construction. The Environmental Impact Registration for the project had been approved by Qi County Environmental Protection Agency. Therefore the proposed project complied with national, regional and local environmental regulations.

As specified in the project's Environmental Impact registration form, dust power emission will be reduced by 106.55t and N_2O emission will be reduced by 0.3t annually. The Project Activity will help to improve local air quality as well as contribute to mitigating climate change resulting from global warming. Since natural gas does not contain sulphur, it is expected that emissions of SO_x and dust will be reduced much in comparison to the baseline situation (coal consumption).

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:

No negative environmental impacts will occur due to the Project Activity.

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

The selected stakeholders are residents in the local community. A public consultation was conducted in August 2006, mainly through the distribution of questionnaires. 35 copies of questionnaires were distributed to the residents nearby. 35 copies were collected, among which 30 copies were completed.

Below is a profile of the respondents:

Features	Category	Number	Percentage
Gender	Male	19	63%
	Female	11	37%
Age	18 – 25 years old	4	13%
	25 – 45 years old	19	63%
	45 – 60 years old	7	24%
	Above 60 years old	0	0%
Education	Primary school	3	10%
	Junior high school	9	30%
	Senior high school	11	37%
	Technical secondary school	3	10%
	University	4	13%
	Graduate school	0	0%

In general, the survey established the extent of:

1. The awareness of the project;
2. The understanding of the project purpose;
3. The expected benefits to the local community;
4. The challenges to the project;
5. Concerns of environmental impact;
6. Suggestions of environmental protection measures;
7. Economic impacts from the project; and
8. In overall, if the respondents approve of the project.

Further ad hoc comments and feedback were also invited, if not included as a part of the structured questionnaire.

E.2. Summary of the comments received:

>>

	Question	**Feedback**
1	Are you aware of the proposed project, namely the Fuel Switching Project by Shanxi Hongyi Glassware Co., Ltd.?	27% felt they are familiar with the project; 53% have heard of the project; and 20% were not aware of the project.
2	To your understanding, what is considered as the major purpose of the project? (Multiple choices possible)	100% improving environment; and 3% improving glass production;
3	What is the most significant benefit the project will bring to the local community? (Multiple choices possible)	40% increasing local tax/financial revenue; 73% more employment opportunities; 63% reduction of direct gas dust emission and improvement of air quality
4	What is considered as the challenges to the proposed project? (Multiple choices possible)	60% high capital cost for the equipment installation; 93% high operation cost of the project
5	Concerns of environmental impact (Multiple choices possible)	96% Noise; 5% Air emission from Natural gas combustion; 17% Solid wastes.
6	What kind of environmental protection measures you would expect the project to implement?	67% maximizing natural gas combustion to reduce exhaust emission; 33% ensuring budget is reserved and utilized

		for environmental protection systems
7	Does the project create any impact to the local economy?	80% - positive impact; 0% - negative; 20% - not sure.
8	Do you approve of the project? Will you be supportive in the project's registration with the CDM for its benefit of reducing greenhouse gas emissions?	80% - yes; 0% - no; 20% - not sure.
9	Overall, do you think the project brings in positive or negative impact to the local community?	87% - more positive than negative; 13% - equivalent level of positive and negative; 0% - more negative than positive.
10	Please kindly provide further comments if any.	Stakeholders suggested that the local community should be involved as much as possible in the construction of the proposed project.

E.3. Report on how due account was taken of any comments received:

No negative comments have been received from the stakeholder consultation. Based on the suggestions and comments, the Project Entity will adopt relevant pollution control measures strictly according to the national standard and regulatory requirements. The Project Entity has also confirmed that it is giving priority of employment opportunities to members of the local community.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Shanxi Hongyi Glassware Co., Ltd.
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

Here is no public funding for the Project Activity.

Annex 3

BASELINE INFORMATION

Variables & Parameters	Value (Data source)
NCV_{NG}: Net calorific value of the natural gas	36.12MJ/Nm^3 (Natural gas supplier (Qi County Jieyuan Natural Gas Co., Ltd.))
NCV_j: Net calorific value of coal	0.025TJ/t (Shanxi Coal Quality Measuring Center)
EF_{NG}: CO_2 emission factor of the natural gas	58.3 tCO2/TJ (IPCC)
$EF_{CO2,j}$: CO_2 emission factor of coal	87.3 tCO2/TJ (IPCC)

Historical coal use and glassware generated
(Source: PO historical record (e.g. sale invoices of coal and glassware))

Year	Consumption of Coal (ton)	Production of Glassware (10^4ton)	Coal consumption rate
	A	B	C=A/B
2004	22368.9	1.6	1.398
2005	30368.45	2.2	1.380
2006	35149.88	2.36	1.489
Average			1.42[18]

[18] The definition of Fuel Consumption Rate is the ratio of fuel consumed (coal used per year) divided by the production (glassware generated per year). The coal consumption rate used for NPV analysis is calculated by using the 3 years historical average data ((C_{2004}+C_{2005}+C_{2006})/3).

Annex 4

MONITORING INFORMATION

See B.7.2 for details. No additional information.

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