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 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:

>>

Rice Husk based cogeneration plant

Version 02

05/05/2008

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

>>

Purpose

The purpose of the project activity is to utilize rice husk available in the region for effective generation of electricity and steam for in-house consumption. The project activity is the 5.2 MW rice husk based cogeneration power plant generating electricity (back pressure turbine) and steam for captive consumption. The project activity is helping in conservation of natural resources like coal.

Salient features of the project

Sidharth Papers Limited (SPL), manufacturer of paper is the promoter of the project activity. The project activity is installed in the unit 2 of SPL. The major equipments of the project activity comprise of a 5.2 MW back pressure turbine and one boiler. This cogeneration system is installed for the requirement of the new paper plant at SPL.

Present Scenario

The project activity is installed at the new unit of SPL. In the absence of the project activity coal based cogeneration power plant was the cheapest option for the project proponent.

Project Scenario

The project activity, which is a 'carbon neutral fuel' based cogeneration plant, generates electricity in addition to steam to meet SPL's captive electricity requirement. Therefore project activity displaces the use of fossil fuels like coal which would have been used in absence of the project activity.

Project's contribution to sustainable development

This project activity has good contribution towards sustainable development and addresses the key issues:

Environmental well-being

1. With generation of electricity and steam from the renewable fuel i.e. rice husk; project activity is reducing the application of coal which would have been used in absence of project activity; therefore the project activity is reducing green house gas load in the environment and contributing in environmental well- being.

Socio-economic well being

1. Saving the coal and allowing it to be diverted to other needy sections of the economy
2. Contributing to a small increase in the local employment by employing skilled and un-skilled personnel for operation and maintenance of the equipment.

Technological well being

1. Adopting an advanced and sustainable technology for long term benefits.

A.3. Project participants:

>>

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)
India (Host)	Sidharth Papers Limited – unit 2 (Private)	No

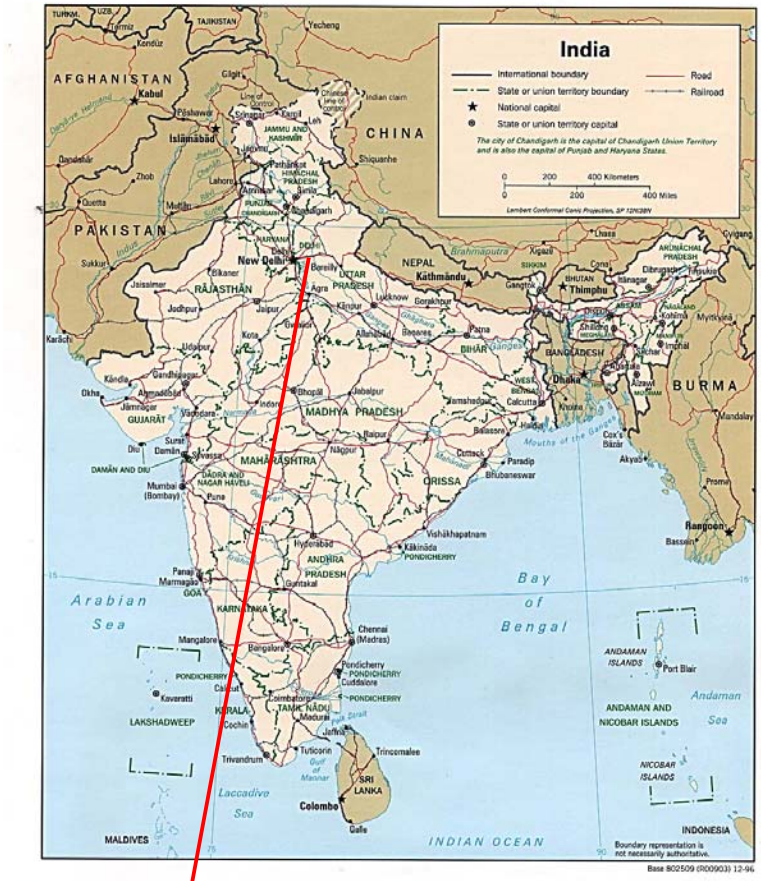
A.4. Technical description of the small-scale project activity:

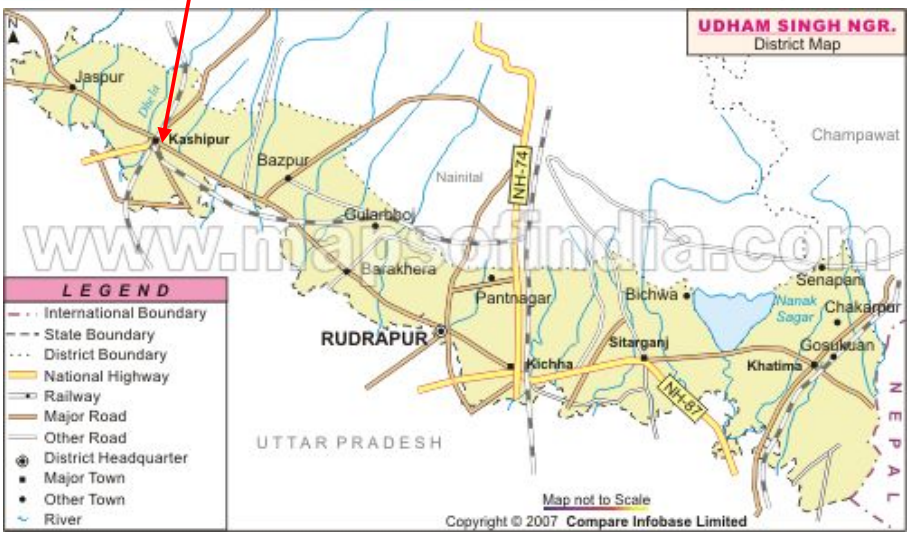
>>

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

>>

The location of project activity site is shown in map below.


India
International boundary
State or union territory boundary
National capital
State or union territory capital
Road
Railroad
AFGHANISTAN
PAKISTAN
CHINA
NEPAL
BHUTAN
BANGLADESH
BURMA
SRI LANKA
MALDIVES
INDONESIA
Arabian Sea
Bay of Bengal
Andaman Sea
INDIAN OCEAN
New Delhi
Islamabad
Kabul
Thimphu
Kathmandu
Dhaka
Rangoon
RAJASTHAN
UTTAR PRADESH
BIHAR
MADHYA PRADESH
MAHARASHTRA
GUJARAT
ORISSA
ANDHRA PRADESH
KARNATAKA
TAMIL NADU
KERALA
GOA
PONDICHERRY
LAKSHADWEEP
ANDAMAN AND NICOBAR ISLANDS
Mumbai (Bombay)
Chennai (Madras)
Colombo
Port Blair


UDHAM SINGH NGR.
District Map
Jaspur
Kashipur
Bazpur
Gularbbo
Nainital
NH-74
Champawat
Barakhera
Pantnagar
RUDRAPUR
Bichwa
Nanak Sagar
Senapani
Chakarpur
Sitarganj
Kichha
Khatima
Gosaintan
NH-87
UTTAR PRADESH
NEPAL
LEGEND
International Boundary
State Boundary
District Boundary
National Highway
Railway
Major Road
Other Road
District Headquarter
Major Town
Other Town
River
Map not to Scale
Copyright © 2007 Compare Infobase Limited

A.4.1.1. Host Party(ies):

>>
India.

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

>>
Uttranchal

A.4.1.3. City/Town/Community etc:

>>
7th km stone, Moradabad Road
Kashipur, Udham Singh Nagar, Uttranchal

A.4.1.4. Detail of physical location, including information allowing the unique identification of this small scale project activity:

>>
The project activity site is located at Moradabad Road in district Udham Singh Nagar. The project site is located 7 km from the heart of city. The site is well connected with road and rail network. The latitude and longitude for the project activity is 29°13'11"N and 78°57'35"E respectively.

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

>>
Type & Category

Main Category: TYPE I - RENEWABLE ENERGY PROJECTS

Sub Category: I. C - Thermal energy for the user with or without electricity

As defined under the version of above said methodology Biomass-based co-generating systems that produce heat and electricity are included in this category.

The technology used for the project activity is environmentally safe and sound.

Technology employed for the project activity

The plant has installed one multi grade rice husk fired 36 TPH steam boiler to generate high pressure (52Kg/cm^2) and superheated (490°C) steam. The entire quantity of the generated Steam will be first supplied to the back pressure steam turbine at the above said pressure and temperature for power generation. This will generate 5200 KW per hour electric power as well as low pressure and temperature steam for paper manufacturing process. The exhaust steam from turbine shall have a pressure of 4 Kg/Cm^2 and temperature of about 298°C, which will used in paper manufacturing process.

This boiler is of modern design with fludised bed furnace suitable for outdoor installation with water scrubber for dust collection. Uninterrupted flow of rice husk to the boiler enabled by a twin bunker system; located in front of the boiler. In case of exigencies of biomass fuel scarcity, SPL proposes to use coal as fuel. The plant has seven days storage capacity for rice husk.

Fuel Handling System: Rice husk is loaded in the twin type bunkers, installed near the boiler with the help of conveyor belts. One drag chain conveyor for each bunker is provided for mixing of fuel in the twin bunker.
For generating maximum of 100 % steaming capacity of the boiler at rated parameters, about 7 TPH of Rice husk (100 % Rice husk firing) is required.
The plant also has coal handling facilities with necessary crushers and conveyors to meet the requirement in case of exigencies of biomass fuel scarcity.

The plant has Distributed Control System (DCS) for operation and generates a gross output of 5200 kW at the generator terminals. The power generation in the cogeneration plant is at 6600 V level.

No transfer of technology is involved to host country because technology is available within India from reputed manufacturers.

The plant is designed with all other auxiliary plant systems like:
1. Rice husk and coal handling system
2. Ash handling system
3. Air pollution control devices
4. Water system consists of following sub-systems:
5. Raw water system
6. Condensate system
7. Water treatment system
8. Service and potable water system
9. Compressed air system
10. Fire protection system
11. Complete electrical system for power plant including, instrumentation and control systems etc.

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

>>

Years	Estimation of annual emission reductions in tonnes of CO_2 e
2008	30904
2009	30904
2010	30904
2011	30904
2012	30904
2013	30904

Years	Estimation of annual emission reductions in tonnes of CO_2 e
2014	30904
Total estimated reductions (tonnes of CO_2 e)	**216328**
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tonnes of CO_2 e)	**30904**

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

>>

There is no public funding available for the project activity.

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 simplified modalities and procedures for small-scale CDM project activities, '***debundling'*** is defined as the fragmentation of a large project activity into smaller parts. A small-scale project activity that is part of a large project activity is not eligible to use the simplified modalities and procedures for small-scale CDM project activities.

According to para 2 of appendix C[1]

A proposed small-scale project activity shall be deemed to be a debundled component of a large project activity if there is a registered small-scale CDM project activity or an application to register another small-scale CDM project activity:

- With the same project participants;
- In the same project category and technology/measure;
- Registered within the previous 2 years; and
- Whose project boundary is within 1 km of the project boundary of the proposed small- scale activity at the closest point

According to above-mentioned points of de-bundling, SPL's project activity does not comply with above, therefore, considered as small scale CDM project activity.

[1] Appendix C to the simplified M&P for the small-scale CDM project activities, http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf

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:

>>

Main Category:
TYPE I - RENEWABLE ENERGY PROJECTS

Sub Category:
I.C. Thermal energy for the user with or without electricity (Version 13, EB 38)

Reference: http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html

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

>>

This project activity falls under the "Type I: Renewable energy projects" and "Category I C: Thermal energy for the user with or without electricity". The project activity is falling under the approved methodology AMS I.C (version 13, EB38) in following manner:

Applicability condition	Justification
This category comprises renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels. Examples include solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass for water heating, space heating, or drying, and other technologies that provide thermal energy that displaces fossil fuel. Biomass-based co-generating systems that produce heat and electricity are included in this category.	The project activity is biomass based co-generating system and producing heat (steam) and electricity for internal consumption. Thus project activity is fulfilling this requirement of approved methodology.
Where thermal generation capacity is specified by the manufacturer, it shall be less than 45 MW.	The thermal generation capacity of the boiler is 34 MW at the maximum generation capacity.
For co-fired systems the aggregate installed capacity (specified for fossil fuel use) of all systems affected by the project activity shall not exceed 45 MW_{th}. Cogeneration projects that displace/ avoid fossil fuel consumption in the production of thermal energy (e.g. steam or process heat) and/or electricity shall use this methodology.	The project may fire the coal (max upto 20%). The total generation capacity of boiler including all type of fuels is 34 MWth.

The capacity of the project in this case shall be the thermal energy production capacity i.e. 45 MW_{th}.	
In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should be lower than 45 MW_{th} and should be physically distinct from the existing units.	The project activity is a separate activity and it is not an addition to existing capacity.

B.3. Description of the project boundary:

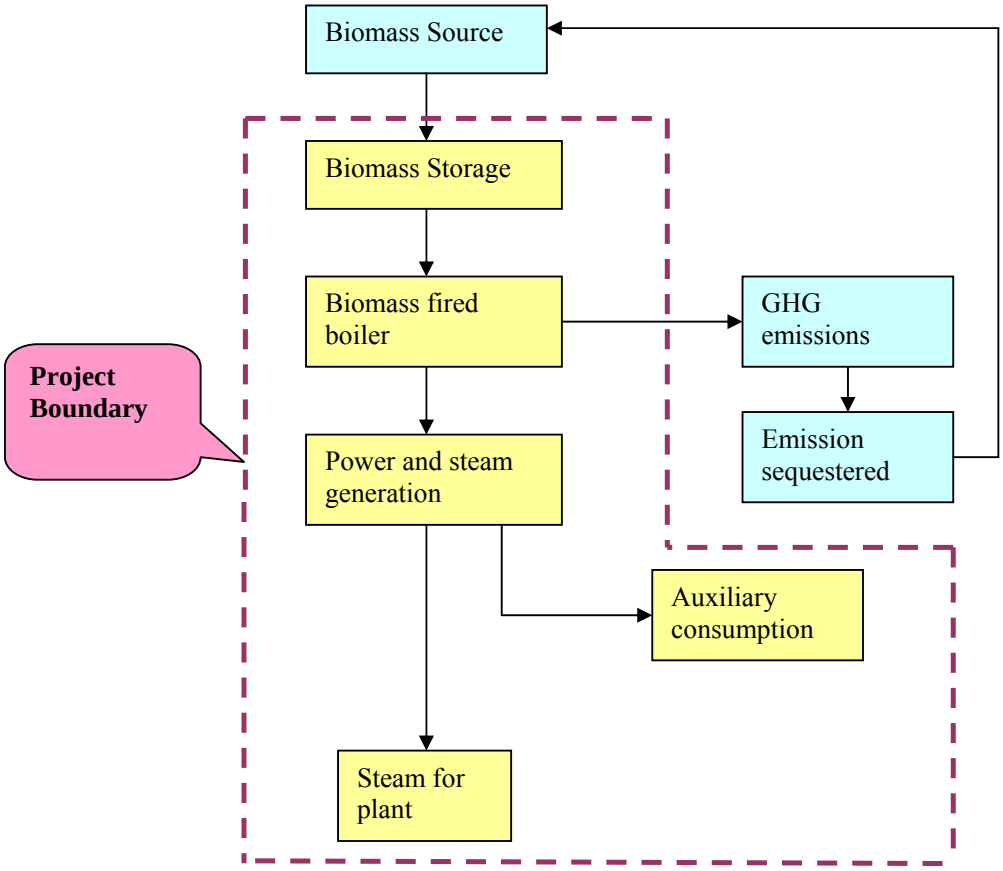
>>

As mentioned under Type I.C. (ver 13) 'The physical, geographical site of the renewable energy generation delineates the project boundary'.

For the project activity the project boundary is from the point of fuel storage to the point of electricity and steam supply to the paper mill where the project proponent has a full control.

Thus, project boundary covers fuel storage, boiler, steam turbine generator and all other accessory equipments.

Flow chart and project boundary is illustrated in the following diagram:



B.4. Description of baseline and its development:

>>

The project activity is rice husk based cogeneration system. In absence of the project activity there were following options for the project activity:

1. **Continuation of current practice in absence of project activity:** The project activity is new installation and therefore there was no current practice. The project proponent would have opt the least cost option in absence of the project activity.
2. **Purchasing the electricity (100%) from the state grid and steam from coal based boiler:** Purchasing electricity from grid is an alternative and the electricity cost is also low in the state. The steam from coal based power plant is one of the cheapest options available in the region. Therefore overall this alternative can be a baseline option based on cost.

3. **Electricity from the electricity board and steam from rice husk (Biomass) based boiler:** Purchasing electricity from grid is an alternative and the electricity cost is also low in the state. The steam from rice husk based power plant is not a cheaper option available in the region. Therefore overall this alternative can be a baseline option based on cost.
4. **Electricity from DG set and steam from coal/rice husk based boiler:** The power generation from DG set is possible option for the project proponent. The capital investment is low but per kWh cost is high in this case. The steam from rice husk/coal based power plant may be an option available in the region. Therefore overall this alternative can be a baseline option based on cost.
5. **Captive Co-generation unit using coal as fuel:** Coal is the primary fuel for power generated in the regional electricity grid. Coal is also an economical option for power generation as it does not face supply barriers. Price fluctuations of fuel are not high which makes it a less risky fuel option. The cogeneration system is the more energy efficient with respect to individual generation of electricity and steam and therefore this can be the best baseline alternative.
6. **Captive Co-generation unit using biomass as primary fuel *i.e.* project activity:** The project activity plant is situated in the agriculture belt. There is an abundant supply of crop residue (mainly rice-husk) in the region[2]. However in normal practice it is burned in inefficient & improper way or is left for rotting in the fields. Supply related constraints are evident by the fact that despite availability of good quality biomass, it is not used for power generation in the state. There are barriers prohibiting implementation of the project activity.

Alternative scenario	**Investment barriers**	**Technological barriers**	**Barriers due to prevailing practices**	**Other barriers**
Continuation of current practice in absence of project activity	Not applicable; New plant	Not applicable; New plant	Not applicable; New plant	Not applicable; New plant
Purchasing the electricity (100%) from the state grid and steam from coal based boiler	Low investment only for boiler	No	No	No
Electricity from the electricity board and steam from rice husk	Low investment only for boiler	No	No	No

[2] Based on Biomass assessment report of region that the availability of rice husk is more than 25% of the all the users.

(Biomass) based boiler				
Electricity from DG set and steam from coal/rice husk based boiler	Low investment only for boiler and DG	No	No	No
Captive Co-generation unit using coal as fuel:	High investment	No	No	No
Captive Co-generation unit using biomass as primary fuel *i.e.* project activity:	High investment	No	No	No

From the above analysis it is clear that the above discussed alternative scenario can be a baseline scenario. The project activity can not be a baseline option because the project activity faces maximum barrier for implementation.

Selection of baseline emission factor: As discussed above any of the below options can be a baseline option. Based on the excel sheet of cost analysis the coal based cogeneration plant is the cheapest option for the power and steam generation in the plant. Therefore the same option is considered as a baseline and the emission factor for the same is taken as baseline emission factor.

According to the approved methodology AMS I. C the baseline for cogeneration system is defined as:

Para 7. Cogeneration projects shall use one of the four following options for baseline emission calculations depending on the technology that would have been used to produce the thermal energy and electricity in the absence of the project activity:
(a) Electricity is supplied from the grid and steam/heat is produced using fossil fuel;
(b) Electricity is produced in an onsite power plant (with a possibility of export to the grid) and steam/heat is produced using fossil fuel;
(c) A combination of (a) and (b);
(d) Electricity and steam/heat are produced in a cogeneration unit, using fossil fuel.
The project activity falls under point d of para 7 of the methodology that is electricity and steam/heat produced in a cogeneration unit, using fossil fuel **i.e. coal.**

According to para 12 of methodology

12. For electricity and steam produced in a cogeneration unit, using fossil fuel, the following formula shall be used:

$BEy = (HGy + EGy*3.6) * EF\ CO2 / \eta\ cogen$

Where:

BEy the baseline emissions from electricity and steam displaced by the project activity during the year y in tCO2e.

EGy the amount of electricity supplied by the project activity during the year y in GWh

3.6 conversion factor, expressed as TJ/GWh.

HGy the net quantity of steam/heat supplied by the project activity during the year y in TJ.

EFCO2 the CO2 emission factor per unit of energy of the fuel that would have been used in the baseline cogeneration plant in (tCO2 / TJ) obtained from reliable local or national data if available, otherwise IPCC default emission factors are used.

ηCogen the total efficiency (thermal and electrical both included) of the cogeneration plant using fossil fuel that would have been used in the absence of the project activity.

Efficiency should be calculated as total energy produced (electricity and steam/heat extracted) divided by thermal energy of the fuel used.

13. Efficiency of the baseline units shall be determined by adopting one of the following criteria:

(a) Highest measured efficiency of a unit with similar specifications,

(b) Highest of the efficiency values provided by two or more manufacturers for units with similar specifications,

(c) Maximum efficiency of 100%.

Conservatively 100% efficiency will be used in emission reduction calculation.

In this case the baseline for the power generation will be calculated based on the following equation:

HGy will be calculated based on the enthalpy of steam and quantity of steam used in the process.

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:

>>

In accordance with 'Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities, a simplified baseline and monitoring methodology listed in Appendix B may be used for a small-scale CDM project activity if project participants are able to demonstrate to a designated operational entity that the project activity would otherwise not be implemented due to the existence of one or more barrier(s) listed in attachment A of Appendix. B.

It is established here that the project activity has associated barriers to its implementation which would be overcome with the availability of carbon financing against a sale consideration of carbon credits that would be generated during project operation.

The alternatives for the project activity applicable with current laws and regulations:
The alternative scenario for the project activity is discussed in the above section and it is clear that project activity is facing maximum barrier for implementation. The same is discussed here in detail.

Investment barrier
The main investment barriers for the project activity are discussed below:

1. The project participants are small scale paper manufacturing unit and an investment of this magnitude was impossible for it alone therefore it has approached financial institutions to finance the project (Please see the breakup of project financing below).
2. In an event of any technical failures or delay in the project activity there is a grave risk of interests building up and threatening the financial capacity of SPL.
3. After the success of this project activity it is natural that there will be similar projects which will push the biomass prices upwards. Therefore escalation of biomass prices due to increase in demand for this fuel could hamper the financial prospects of the project activity.
4. Conceiving this project without CDM benefits would have been impossible. The CDM fund will help the project proponent to run the cogeneration plant smoothly in-spite of rising biomass prices. CDM funding to project participants would also encourage other paper industries to follow suit and thereby contribute towards GHG emission reduction. The sister unit of the project participants has gone for the same project activity with the expectation of CDM revenue. The project proponent gained the knowledge from the same and has started the environmentally sustainable activity.

The major investment barrier to the project is the perceived risk in case of reduced supply of rice husk or increased rice husk prices in future. Investors are worried that shortage in supply of rice husk in future, may lead to steep rise in prices of rice husk which might render the project financially unstable.
This is evident from the fact that the cost of rice husk during the financial closure was around INR 1,400-1500/ton. Current prevailing prices of rice husk are INR 2000/ton. This escalation in the rice prices is expected to continue in future. Te table below represents the cost per million Kcal of the different fuel used.

As per the prevailing prices of CER the CDM fund will compensate the increase in the rice husk prices (The differences in the cost of different fuel. This CDM fund is expected to increase in future and the rice husk price as well. The CDM revenue will help to improve the sustainability of the project which will otherwise be rendered financially unstable.

The project activity is a costlier option with respect to other available option *i.e.* coal based power and steam generation. The cost difference is shown in the attached excel sheet and the difference is in tune of INR 0.80/kWH. The project proponent being environmentally proactive company and therefore invested in the rice husk based power generation plant. The decision was based on the revenue from CDM and

same is reflecting from board approval. Therefore the project will operate successfully in the lieu of CDM revenue only. Therefore after installation of cogeneration plant it is very difficult to use rice husk (biomass) without any additional support i.e. CER revenue due to huge cost difference of the fuel. The project proponent has submitted the documentary evidence for the cost as well. Due to high initial investment in starting the cogeneration plant and due to its associated financial risk mentioned above it was not possible for the project proponent to install rice husk based cogeneration power plant. It is ascertained here that, if SPL is successful in securing the proposed carbon financing, it will help in offsetting this barrier and encourage other entrepreneurs to come up with similar project activities.

Technological barrier:

a) Clinker Formation: Rice husk has low density. As a result of this the ash generated during rice husk burnings has low density due to which it has a tendency to adhere to the boiler tubes, thereby affecting the heat transfer and reducing thermal efficiency.

b) Blocking of Primary Air Lines: During rainy season whenever the rice husk gets wet, it blocks the Primary Air lines at the time of feeding. The blocking of primary air lines blocks the primary air supply to boiler; and call for inefficient combustion. The inefficient combustion increases the fuel intake for same quantity of output from boiler and thereby in affects the operation.

The associated CDM benefits with such a project activity played a key role in motivating the project proponent to invest in spite of the perceived technological risks.

Other Barriers

Energy is not a core business of SPL. They are mainly manufacturers of paper. The rice husk based cogeneration project activity is a steep diversification from the core business fields to power sector economics, where the project proponent has to meet challenges of techno-commercial problems associated with the project activity.

In addition to all the barriers mentioned above, project proponent is also facing the following barriers after the implementation of project activity:

- Rice husk has low specific gravity which requires proper handling and storage procedures of rice husk at project site. The specific gravity of rice husk being low, it requires a larger stocking area. This has increased the land procurement and site development cost by a significant amount. Compared to project activity a coal based power plant would have been a less technologically advanced alternative with lower risks associated with performance uncertainty, but would have led to higher GHG emissions.

- Since the project activity involves co-firing of rice husk and coal, the handling equipment (like screens, conveyors for stacking etc.) are required more in numbers than that required for a 100%

coal based power plant. For the same reason, additional manpower is also required at the project site for handling both rice husk and coal.

Fuel Supply Barriers

Biomass, though abundant in supply, doesn't have proper logistics network for collection and delivery. In normal practice it burned in improper way or is left for rotting in the field. It has also been observed (Rice-husk procured in the plant in past one year) that biomass prices increase significantly due to increased demand in the power plant. This happens due to lack of proper collection mechanism and delivery of biomass, this leads to short-term shortage and thus increased prices.

This is a fuel availability risk, and to ensure continuous & economical fuel supply project participants will have to invest in developing a viable fuel supply mechanism.

It has been clearly established from the above discussion that the project activity faces many barriers in its implementation and successful operation. Some of these barriers have the potential to even disrupt the operation of the rice husk based cogeneration plant. The management of project proponent considered all risk aspects associated with the implementation of the project activity during the project inception.

The barriers discussed above are sufficient to hinder growth of the cogeneration plants in sector. While the country has a clean energy strategy, the reality is that coal will continue to dominate in the near term and the paper industry will burn coal in inefficient boilers unless financial incentives, such as carbon financing, exist.

This project activity is a renewable energy project with net zero CO_2 emission due to the carbon sequestration. Paddy re-grows at the same rate as it is being harvested, and acts as a sink for atmospheric carbon dioxide and the net flux of CO_2 to the atmosphere is zero. The project activity will save coal i.e. fossil fuel. The estimated emission reduction from the project activity is **30904** ton/annum.

In view of the above mentioned prohibitive barriers and GHG emission reductions, it is understood that the project activity is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

>>

As established in Section above the project activity falls under Category I.C. Generation of electricity for captive consumption using rice husk as fuel in SPL's cogeneration plant will lead to mitigation of GHG emissions from the fossil fuel based plants, which supply steam and power to SPL. In order to monitor the mitigation of GHG due to at the project activity at SPL, the total electricity produced and auxiliary consumption need to be measured.

The baseline scenario for the project activity is the coal based cogeneration plant. The baseline emissions will be calculated by the actual plant operation.

The project activity is following paragraph 7 and 12 of the approved methodology AMS I.C Ver 13.

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

Data / Parameter:	**Emission factor of Coal**
Data unit:	kg CO_2/TJ
Description:	Carbon emissions factor of Coal used
Source of data used:	IPCC 2006
Value applied:	96100
Justification of the choice of data or description of measurement methods and procedures actually applied :	Table 2.2, 2.6 IPCC 2006 value is used.
Any comment:	Data will be kept for crediting period + 2 years.

B.6.3 Ex-ante calculation of emission reductions:

>>

Baseline Emissions:

BEy = (HGy + EGy*3.6) * EF CO2 /η cogen

Quantity of gross electricity generated	5200	KW
Quantity of net electricity generated	4680	kW
No of days of operation	300	Days
Total unit generated in a year	33696000	kWh
EGy	33.696	GWh
Quantity of steam used in process	12	TPH
Net enthalpy of steam	2318.0	KJ/kg

Total quantity of steam used in a year	86400	tons
Heat required (HGy)	200.3	TJ
Emission factor of fuel	96.1	tCO2/TJ
Efficiency	100	%
Baseline emissions	**30904**	ton CO2

Leakage:

There is no technology transfer in the project activity and therefore no leakage is envisaged due to project activity.

The project activity is using the boiomass available in near by area of radius 150 km. in absence of the project activity the project proponent was purchasing the coal from more than 300 km. therefore project activity is saving the transport emissions. Conservatively these emissions have not been claimed in emission reduction calculations.

Emission reduction: Baseline emissions – Leakage

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

>>

Year	Estimated Project Activity Emissions (tonnes of CO_2e)	Estimated Baseline Emissions (tonnes of CO_2e)	Estimated leakage(tonnes of CO_2e)	Estimated Emission Reduction (tonnes of CO_2e)
2008	0	30904	0	30904
2009	0	30904	0	30904
2010	0	30904	0	30904
2011	0	30904	0	30904
2012	0	30904	0	30904
2013	0	30904	0	30904
2014	0	30904	0	30904
Total	**0**	**216328**	**0**	**216328**

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

>>

The monitoring plan will consists of monitoring the gross electricity generated and auxiliary consumption. The net electricity generation will be calculated with the difference between gross and net electricity generation. The coal use and steam produced will be monitored separately.

B.7.1 Data and parameters monitored:

>>

Data / Parameter:	**Net Electricity generated**
Data unit:	KWh
Description:	Net electricity generated from cogeneration plant
Source of data to be used:	Plant.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	33.696
Description of measurement methods and procedures to be applied:	Monitoring: electronic meters at the plant and DCS will measure the data. In case the net is not monitored directly the net electricity is calculated based on the gross and net electricity; which is also measured regularly. Data Type: measured Frequency: Daily Archiving Policy: Paper & Electronic Responsibility: Manager (power plant) would be responsible for regular calibration of the meter. Calibration Frequency: Once in every year.
QA/QC procedures to be applied:	Yes, Quality Management System will be used and the same procedures would be available at the project site
Any comment:	Data archived: Crediting period + 2 yrs

Data / Parameter:	**Steam**
Data unit:	Ton/annum
Description:	Steam consumption in process plant
Source of data to be used:	Plant.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	86400
Description of measurement methods and procedures to be applied:	Monitoring: Steam flow meter. Data Type: measured Frequency: Monthly Archiving Policy: Paper & Electronic Responsibility: Manager (power plant) would be responsible for regular calibration of the meter. Calibration Frequency: Once in every year.
QA/QC procedures to be applied:	Yes, Quality Management System will be used and the same procedures would be available at the

	project site
Any comment:	Data archived: Crediting period + 2 yrs

Data / Parameter:	**Enthalpy of steam**
Data unit:	KJ/kg
Description:	The enthalpy of steam will be calculated based on temperature and pressure.
Source of data to be used:	Plant
Value of data applied for the purpose of calculating expected emission reductions in section B.5	2318
Description of measurement methods and procedures to be applied:	Monitoring: Temperature and pressure meter Data Type: Measured and calculated Frequency: Daily Archiving Policy: Paper & Electronic Responsibility: Manager (power plant) would be responsible. Calibration Frequency: Once in a year
QA/QC procedures to be applied:	Yes, Quality Management System will be used and the same procedures would be available at the project site
Any comment:	Data archived: Crediting period + 2 yrs

Data / Parameter:	**Biomass used**
Data unit:	Ton
Description:	Quantity of biomass used in the plant
Source of data to be used:	Plant.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	No
Description of measurement methods and procedures to be applied:	Monitoring: Monitored annually based on the data recorded at the weigh bridge in the gate. Data Type: measured Frequency: Monthly Archiving Policy: Paper & Electronic Responsibility: Manager (power plant) would be responsible for regular calibration of the meter. Calibration Frequency: Once in every year.
QA/QC procedures to be applied:	Yes, Quality Management System will be used and the same procedures would be available at the project site
Any comment:	Data archived: Crediting period + 2 yrs

Data / Parameter:	**Quantity of coal consumed**
Data unit:	Ton

Description:	Quantity of coal used in the plant
Source of data to be used:	Plant.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	No
Description of measurement methods and procedures to be applied:	Monitoring: Monitored annually based on the data recorded at the weigh bridge in the gate. Data Type: measured Frequency: Monthly Archiving Policy: Paper & Electronic Responsibility: Manager (power plant) would be responsible for regular calibration of the meter. Calibration Frequency: Once in every year.
QA/QC procedures to be applied:	Yes, Quality Management System will be used and the same procedures would be available at the project site
Any comment:	Data archived: Crediting period + 2 yrs

Data / Parameter:	**Availability of Biomass**
Data unit:	Ton
Description:	Quantity of biomass available for the use
Source of data to be used:	Published literature/ survey by the plant/third party survey
Value of data applied for the purpose of calculating expected emission reductions in section B.5	The value is not used in the calculation.
Description of measurement methods and procedures to be applied:	Monitoring: The data will be taken from the published report or surveys by the plant. Data Type: Data will be taken from third party or surveys. Frequency: Annually Archiving Policy: Paper & Electronic Responsibility: Manager (power plant). Calibration Frequency: Data is from third party or estimation therefore calibration is not required.
QA/QC procedures to be applied:	Yes, Quality Management System will be used and the same procedures would be available at the project site
Any comment:	Data archived: Crediting period + 2 yrs

B.7.2 Description of the monitoring plan:

>>

Emission monitoring and calculation procedure will follow the following organisational structure. All data and calculation formula required to proceed is given in the section B in PDD.

Organisational structure for monitoring plan

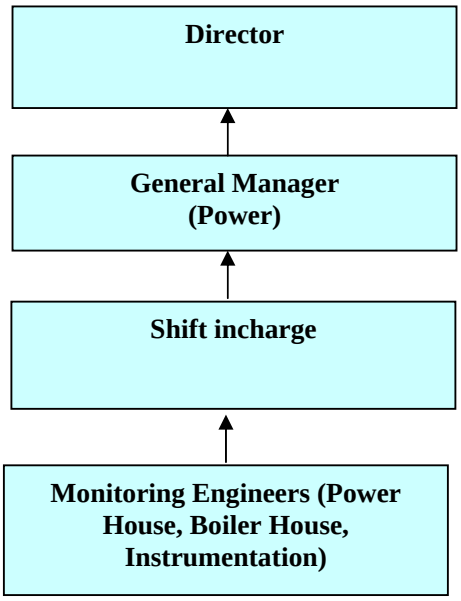


Table --: Monitoring and calculation activities and responsibility

Monitoring and calculation activities	**Procedure and responsibility**
Data source and collection	Data is taken from the power plant. Data will be monitored with the installed electronic data recording system.
Frequency	Monitoring frequency should be as per section B of PDD.
Internal Review	All received data is reviewed by the engineers in the power plant.
Data compilation	All the data is compiled and stored in power plant.
Emission calculation	Emission reduction calculations will be done annual based on the data collected. Engineers/Executives of power plant will do the calculations
Review	General Manager, power will review the calculation.
Emission data review	Final calculations is reviewed and approved by Director.
GHG performance and uncertainties assessment	The director will review the calculation and make the GHG performance review. The director will address the uncertainties as per inter procedure laid down for CDM project.
Record keeping	All calculation and data record will be kept with the power plant.

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

>>

Date of completing the final draft of this baseline and monitoring methodology:

01/05/2008

Name of person/entity determining the baseline:

SPL and Carbon Tech Traders Pvt Ltd

The person/entity is also a project participant as listed in Annex 1 of this document.

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:

>>
08/07/2006 (Date of release of purchase order for boiler)

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:

>>
Date of registration of the project activity. For calculation purposes 1st July 2008 is taken as the start date of crediting period.

C.2.1.2. Length of the first crediting period:

>>
7 years 0 months.

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

>>
NA

C.2.2.2. Length:

>>
NA

SECTION D. Environmental impacts

>>

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

>>

The project does not fall under the purview of the Environmental Impact Assessment (EIA)[3] notification of the Ministry of Environment and Forest, Government of India. However the design philosophy of this cogeneration project activity is driven by the concept of providing the low cost energy with acceptable impact on the environment hence the environment and safety aspects of the project activity can be are discussed as follows:

Particulate matter and gases

The elements polluting the air that are discharged from the Cogeneration power plant are,

1. Dust particulate from fly ash in flue gas
2. Nitrogen oxide in flue gas
3. Sulphur di-oxide in flue gas

Water scrubber is installed for the plant steam generator to contain the dust emission from plant to a level of less than 115 mg/Nm3. The water scrubber is designed such that the dust concentration at the ESP outlet will be 115 Mg/Nm3 even during the plant is fired by coal in future. Adequate height of the stack for the Rice husk fired boiler, which disburses the pollutants has been provided as per guidelines given by the pollution regulations for dust and sulphur-di-oxide emissions into the atmosphere.

The temperatures encountered in the boiler while burning the specified fuels, are low enough not to produce nitrogen-oxides. Hence, no separate measures are taken to contain the nitrogen oxide pollutants.

Dry fly ash

The ash will be collected manually by using Trolleys. The dry fly ash from the economiser, air heater and ESP hoppers will be collected by dense phase ash handling system and stored in ash bunker, will be used for land filling in the nearby lowland areas. Provision is made in the system for water spray to eliminate dust nuisance in the plant.

Wastewater

Effluent from water treatment plant: Hydrochloric acid and sodium hydroxide is used as regenerants in the water treatment plant. The acid and alkali effluent generated during the regeneration process of the ion-exchangers are drained into a lined underground neutralizing pit. Generally these effluents are self neutralizing. The effluent is then pumped into the effluent treatment ponds which form part of the main paper unit as well as cogeneration power plant's effluent disposal system. The neutralizing pit are sized with sufficient capacity. The rejects from plant has high TDS which could be diluted and used for cleaning purposes in the project activity. This water also could be used for plantation.

[3] http://envfor.nic.in/legis/legis.html#H

Chlorine in cooling water: In the condenser cooling water, residual chlorine of about 0.2 ppm is maintained at the condenser outlet. This chlorine dosing is done mainly to prevent biological growth in the cooling tower system. This value would not result in any chemical pollution of water and also meets the national standards for the liquid effluent.

Monitoring

The characteristics of the effluents from the plant are monitored and maintained to meet the requirements of State Pollution Control Board and the minimum national standards for effluent from thermal power plants. Air quality monitoring is also undertaken to ensure that the dust pollution level is within limits.

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:

>>

As per the impacts discussed in the above section, there are no significant impacts envisaged on implementation of the project.

SECTION E. Stakeholders' comments

>>

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

>>

SPL organised stakeholder consultation with the objective to inform the interested stakeholders on the environmental and social impacts of the project activity and discuss their concerns regarding the project activity.

SPL representatives presented the salient features of the company and the project activity to the stakeholders and requested their suggestions/objections. The project proponent has sent the letters to different stakeholders for their views for the project activity. The opinions expressed by them were recorded and are available for validation.

The other stakeholders identified for the project activity are as under:

1. Local population /Village panchayat
2. State Pollution Control Board
3. Consultants
4. Equipment suppliers

Stakeholders list includes the government and non-government parties, which are involved in the project activity at various stages. At the appropriate stage of the project development, stakeholders /relevant bodies would be involved to get the clearance.

E.2. Summary of the comments received:

>>

Stakeholders Involvement

The local community mainly comprises of local population around the project area. In addition to this, it also includes local manpower since; the project activity provides direct and indirect employment opportunities to local populace thus encouraging the project activity.

The project activity did not cause to any displacement or adverse social impacts on the local population and is helping in improving the quality of life for them.

State Pollution Control Board (SPCB) has prescribed standards of environmental compliance and monitor the adherence to the standards. SPL has received NOC from SPCB.

Projects consultants were involved in the project activity to take care of the various pre contract and post contract issues / activities like preparation of basic and detailed engineering documents, preparation of tender documents, and selection of vendors / suppliers, supervision of project operation, implementation, successful commissioning and trial run.

The project proponent has received comments from local population in appreciation for such an effort on SPL's part. They have no objection to the installation of the proposed cogeneration plant. The copies of the comments received from the stakeholders are available for validation.

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

>>

In view of various direct and indirect benefits (social, economical, environmental), no concerns were raised during the consultation with stakeholders, hence it is not required to take due account of the comments.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Sidharth Papers Ltd – Unit 2
Street/P.O.Box:	7 KM
Building:	Moradabad Road
City:	Kashipur, Udam Singh Nagar
State/Region:	Uttarakhand
Postfix/ZIP:	244713
Country:	India
Telephone:	+91 5947 279074
FAX:	+91 131 2660192
E-Mail:	spl@sidharthpapers.com
URL:	
Represented by:	Mr Atul Agarwal
Title:	General Manager Commercial
Salutation:	Mr.
Last Name:	Agarwal
Middle Name:	
First Name:	Atul
Department:	
Mobile:	09837509030
Direct FAX:	+91 5947 270873
Direct tel:	+91 5947 270875
Personal E-Mail:	spl@sidharthpapers.com

Organization:	Carbon Tech Traders Pvt. Ltd
Street/P.O.Box:	J-557, Awas Vikas -1, Keshavpuram
Building:	Kalyanpur
City:	Kanpur
State/Region:	Uttar Pradesh
Postfix/ZIP:	208019
Country:	India
Telephone:	+91 131 2660191
FAX:	+91 131 2660192
E-Mail:	ncss@rediffmail.com
URL:	

Represented by:	
Title:	Managing Director
Salutation:	Mr.
Last Name:	Prakash
Middle Name:	
First Name:	Om
Department:	Managing Director
Mobile:	+919956444870
Direct FAX:	+91 131 2660192
Direct tel:	+91 131 2660191
Personal E-Mail:	op_carbontechtraders@rediffmail.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

NO PUBLIC FUNDING IS INVOLVED IN PROJECT ACTIVITY.

Annex 3

BASELINE INFORMATION

Applicability of small scale methodology

Small scale project category		
Temperature of steam	490	deg C
Steam pressure	52	kg/cm2
Enthalpy	3409	KJ/kg
Max steam production	36000	kg/hr
Capacity of Boiler in MW thermal	**34**	MW thermal

Annex 4

MONITORING INFORMATION

As described in section B.7.