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:

6 MW Biomass based power project in Assam by BEPL
Version: 1.0
Date: 01/06/2007

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

Badarpur Energy Private Limited (BEPL) is setting up a 6MW biomass based power project in the state of Assam of India. The power produced in the project activity shall be supplied to Barak Valley Cement limited (BVCL), a group company of BEPL through direct transmission line. In recent times BVCL has been facing difficult power situation in the state. It's due to abrupt and unreliable grid power supply in the state. Given this, BVCL through BEPL decided to opt for installing a captive power generation unit. As the availability of coal in the region is in abundance and it is of the best quality as available in India, putting up a coal based power plant would have been natural for BEPL. Installation of biomass based power plant would thus displace power from a coal based power plant and help in reduced emissions in power generation.

Biomass combustion is considered GHG neutral and hence power displacement through the project activity shall help in reduced emissions in power generation. Renewable biomass proposed in the project activity primarily is rice husk and rice straw. The area is a paddy rich area and rice husk is available in abundance. The biomass generated in the area doesn't have much commercial use and is surplus in the region.

In the absence of project activity, the best available alternative for the project proponent would have been installation of a coal based power generation plant. This is primarily because of the abundant availability of coal in the region. Also, coal in the area is of the best quality coal available in India (calorific value 6500 kcal/kg, compared to normal 3200-4200 kcal/kg elsewhere) and available at very low prices. However BEPL has decided to opt for bio-mass (rice-husk, rice-straw, other agro-waste) as the primary fuel for the plant due to its positive influence on overall environment.

The project activity faces many hurdles against implementation such as poor management practices for collection and transportation of biomass residues, non-existent market regulations for biomass residues and its dependence on rains and other factors not under direct control of power producers. BEPL foresee overcoming these hurdles with CDM backed revenue generation.

The project activity is a small scale project activity with capacity less than 15MW and has following sustainable development aspects:

Social well being:
The state of Assam in India is facing power shortage for last many years. Power cuts are regular and new industrial connections are difficult to get. The shortage is one of the bottlenecks in faster development of state. The proposed project thus shall help in bridging the demand-supply gap in the state.

It would also help in generating additional income for the local population engaged in agricultural activities, thereby having positive impact on poverty alleviation and sustainable development of the region. Ash from the power plant may be utilized for filling the low lying land and for road base construction by local agencies.

Economic well being:
The project is likely to have many positive economic benefits for the society around:

- Employment of skilled and semi-skilled workmen and labour
- Revenue source for fuel suppliers and developers. This will be net addition to local society, as the fuel is not used in any significant quantities for economically useful applications right now.
- The company proposes to launch large-scale fuel resource development program that is likely to employ significant numbers in the activity. This program will be developed using revenue from sale of carbon credits of the project.

Environmental well being:
The modern equipments and processes along with pollution controlling measures adopted in this project will make the unit environmental safe. The project would have net positive impact the environment, as biomass would be used as fuel.

Activities during construction & operation would not affect the bio-diversity in the region. There will be no impact on soil, water quality, and forest cover due to proposed power project. Biomass use in place of coal will help in conservation of the natural resource.

Technological well being:
The project activity is the first of its kind in the region.

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)
Government of India (Host)	Badarpur Energy Pvt. Ltd. (Private Entity)	No

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):

Country: India

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

State: Assam

A.4.1.3. City/Town/Community etc:

Village : Devendra Nagar
Block : Badarpur
District : Karimganj

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

The proposed plant is located in Karimganj district of Assam. Karimganj District is located in the southern tip of the state. Together with two other neighbouring districts Cachar and Hailakandi, it constitutes the Barak Valley zone in Southern Assam. The geographical location of Karimganj district is between longitudes 92°15' and 92°35' east and latitudes 24°15' and 25°55' north.

It is one of the well developed paddy growing areas in the region. The site is located downstream of river Barakh, which is approximately 1.5 km from the project site.

Physical location is depicted in the following map(s):

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

The project is a small scale CDM project activity and is based on Appendix B of the simplified modalities and procedures for small-scale CDM project activities. The project activity conforms to the following category -

Project Type: I– Renewable Energy Projects

Project Category: IC. Thermal Energy for the user with or without electricity; Sectoral Scope: 1

The project is a Renewable Energy project with maximum output capacity of 6 MW (<15 MW, the maximum output for small scale project) this comes under the Appendix B of the simplified modalities & procedures for small-scale CDM-project activities.

Technology in the project activity:

The proposed project shall use the conventional steam-power cycle. The pressure and temperature chosen are 45 kg/cm^2 and 430 Deg C respectively. A 32TPH travelling grate boiler is installed in the plant. For handling ash generated in the system electrostatic precipitator is also installed. This will help in preventing environmental pollution due to ash generated in the power plant. The turbine is a 6MW extraction-condensing turbine.

Boiler Specifications:

Boiler Type	Travelling grate, Bi Drum
Steam Flow MCR	32 TPH
Steam Pr at Super heater outlet	45 kg/cm2
Steam temp at Super heater outlet	430 + - 10 deg C
Thermal eff. at MCR	76 + - 2%

No technology transfer from annex-1 countries has taken place.

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

Years	Annual estimation of emission reductions in tones of CO2 e
2007-08	38137
2008-09	38137
2009-10	38137
2010-11	38137
2011-12	38137
2012-13	38137
2013-14	38137
2014-15	38137
2015-16	38137
2016-17	38137
Total estimated reductions (tonnes of CO2 e**)**	381370
Total number of crediting years	10 years Fixed
Annual average over the crediting period of estimated reductions (tonnes of CO2e**)**	38137

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

No public funding from Annex 1 countries 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:

As per Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project activities– "A proposed small-scale project activity shall be deemed to be a de-bundled 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; and
- 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"

The project activity is not a de-bundled component of a large project activity as –

There is no small scale CDM project activity or an application registered by BEPL, in the same project category in the last two years within 1 km of the project boundary of the proposed small-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:

The project is a small scale CDM project activity and is based on Appendix B (Version No. 07 dated 28 November 2005) of the simplified modalities and procedures for small-scale CDM project activities. The project activity conforms to the following categories-

TYPE I: Renewable Energy Projects

Category C: Thermal Energy for the user with or without electricity; Sectoral Scope: 1

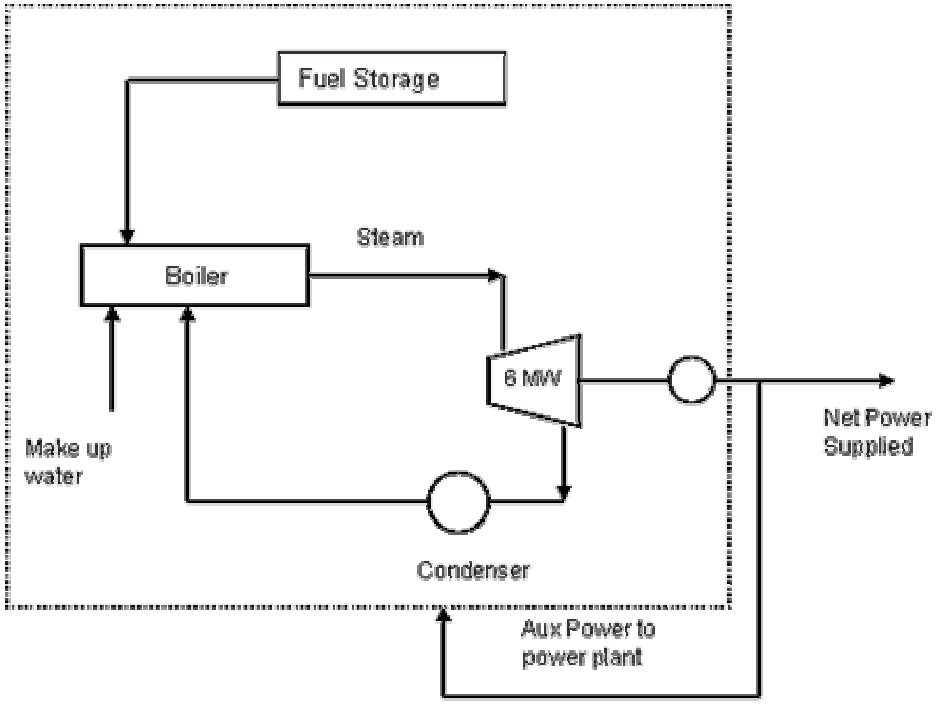
Version 10, Scope 1; EB 31

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

Category	Applicability Criteria	Project Status
IC: Grid connected renewable electricity generation	This category comprises renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels.	The project activity is a renewable energy generation project based on renewable biomass and displaces electricity from a coal based power plant that would have been installed in the absence of project activity.
	Where thermal generation capacity is specified by the manufacturer, it shall be less than 45 MW.	The power generation capacity is 6MW (<15MW) and thermal output capacity of proposed boiler is ~25 (less than 45 MWth)

B.3. Description of the project boundary:

The project boundary encompasses the physical, geographical site of the renewable generation source. Schematic diagram of the project activity is as below -



B.4. Description of baseline and its development:

BEPL from the project activity will supply power to its group company BVCL. BVCL is a cement unit and prior to the project activity had been drawing power from the Assam State Electricity Board grid. Also, DG sets have been used as backup option to support the unreliable/ erratic grid power. The state of power in Assam is bad. A recent report from North-Eastern Regional Load Dispatch Centre (NERLDC) (http://www.nerldc.org/mis/Annual%20Report_2005-06.pdf) suggests that there was a demand and supply gap of approx. 18 million units in the state. There have been heavy power cuts in the sate of Assam in 2005-06. The North Eastern Regional Electricity Board (NEREB's) annual report for 2005-06 gives information on monthly power cuts in the Assam http://www.cea.nic.in/god/reb/nerpc/AnnualReport_2006_literature.pdf). The situation of power is not getting any better and this has direct impact on the industry performance in the region. Due to the worsening power situation in the state, BVCL considered alternative power sources to support the in-house demand of the cement unit.

The technically feasible options for power generation available to PP were -

1. Installation of a coal based power generation unit
2. Installation of FO based DG set(s)
3. Installation of gas based power plant
4. Implementation of project activity without CDM benefits
5. Import from the grid

All the above alternatives are now analysed on the sustainable fuel availability in the region and then among the possible scenarios, power source which effects in lowest cost of power generation has been selected as the baseline to the project activity.

Power Source	Explanation
Proposed project activity not undertaken as CDM project activity	This alternative is in compliance with all applicable legal and regulatory requirements. The biomass residues in the state are available in plenty and could be used in power generation. However, there is no established mechanism for collection and network for transportation of biomass. The project activity faces a number of barriers other than not being the most financially attractive option (discussed further in following sections). Hence it can not be a baseline option.
Coal based CPP	Assam is part of North Eastern Regional Grid. Coal is the most abundant fuel in the region. Assam has a capacity of 300 MW based on coal (about 50% of the total power generation installed capacity by state sector). Coal also has an advantage of having robust supply network for delivery, making it the first choice fuel for most of the power projects in the region. The nearest railway station is only 2.5 km away from the plant which could be used for coal logistics. The coal available in Assam state is of high NCV.
Fuel Oil based CPP	Fuel oil is again abundantly available and Assam is a petroleum rich state contributing to more than 50% of proven offshore reserves in India. This alternative is in compliance with all applicable legal and regulatory requirements and can be a baseline option.
Gas based CPP	Gas is the abundant fuel supply pipeline is distant from the proposed plant site. Assam is the largest natural gas producer in India, contributing over 50% of total supplies (In year 2002-03). Gas constitutes around 41% of power generating capacities in the state. Gas could have been a good fuel option for the project activity but due to location of project site which is far away from pipeline; constructing a pipeline for transportation for this small sized project is not a viable option. The plants based on gas as fuel are located near pipeline which passes through northern part of the sate, whereas proposed project is located on the west-southern part of the state (~ Around 200 km away). The customer desires the power plant to be close to its manufacturing plant; hence locating the power plant near the gas pipeline is not an acceptable alternative for BEPL.
Import from grid	Power situation in the state is not good and BVCL have been facing a lot of problems due to unreliable power situation in the state. Because of this reason, PP through BEPL decided to come up with the project activity. Power from the project activity would be fed to the cement plant through a direct transmission line.

Hence, identified alternatives available to GRSPL for power are following:

1. Captive power generation based on coal
2. Captive power generation based on Fuel Oil

Now, above options have been analyzed for unit cost of power generation and the power option that gives lowest cost of power is selected as baseline option for the project activity.

Report of Expert Committee on Fuels for Power Generation, Central Electricity Authority (CEA) gives unit cost of power generation from different fuel sources. For coal, this cost of power generation is Rs. 1.59/ kWh and for fuel oil based DG sets it comes out to be Rs. 5.96/kWh. Given this, it is obvious that power generation based on fuel oil is much higher than that from a coal based power station. Hence, it can be assumed that project proponent would have installed a coal based power station and not from a fuel oil based DG set in the absence of project activity.

Hence, a coal based power station would have been the option PP would go in the absence of project activity.

Emission reductions in the project activity are achieved through displacement of power from a coal based power plant that would have come up in the absence of project activity.

Parameter	Value	Source
Installed Cap - Power	6MW	Installed turbine rated power
Gross Station Heat Rate	2500 kcal/ kg	Central Electricity Regulatory Commission notification on thermal power plant's performance
Coal emission factor	96.1 tCO2/TJ of coal	IPCC default value
Emission factor for power generation in baseline	1.14 tCO2/MWh	Estimated/ calculated

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:

Proposed project activity is eligible to use simplified methodologies as it conforms to project category in "Appendix B of the simplified modalities & procedures for small scale CDM-project activities under Category D: Energy efficiency and fuel switching measures for industrial facilities.

Establishing Additionality

Additionality of the project activity has been established as per the guidelines suggested in Attachment A to Appendix B.

Project participant provides an explanation to show that the project activity would not have occurred anyway due to at least one of the barriers suggested:

Investment Barriers:
The project activity has been financially analysed against the baseline for Levelized cost of power generation. Levelized cost of power generation from the two sources would indicate whether project activity is financially more viable compared to a coal based thermal power plant. Following project data has been used for the purpose -

Parameter	Value	Source
Total project cost	~Rs. 217 million	Estimated revised project cost
Debt-equity ratio	60:40	As per loan document
Interest rate on debt	8.5%	As per the loan documents. This is floating and recently the interest rates have increased. But for conservative estimates have been considered at original rate
Depreciation rate	7.84 %	Straight Line Method
Interest rate on working capital	10%	
Loan term	5 years	Loan document
Insurance rate	1%	As per ERCs in India
Cost of equity	16%	For power projects in India
Biomass consumption rate	1.4 kg/ kWh	As per project report
Biomass cost	Rs. 900/ MT	Estimated rate for biomass. However, this is highly uncertain and any increment further may impact the project's viability
Plant power generation capacity	6 MW	Project technical specification
Net power supplied from project activity	33454 MWh per annum	At 80% plan load factor with 12% auxiliary consumption

Based on above information the unit cost of power generation comes out to be Rs. 2.61/ kWh. This cost of power generation is more than the cost of power generation in a coal fired thermal power plant. This is explained as below.

Parameter	Biomass based power plant in the project activity	Coal based thermal power plant- Alternative to project activity	Remarks
Cost of equity	0.40	0.38	Project cost for coal based plant considered 35 million/ MW
Cost of debt	0.10	0.09	Similar loan structure has been considered as applicable to the project activity
O&M cost	0.16	0.21	3.5 % of project cost is considered
Depreciation cost	0.41	0.14	Similar depreciation structure assumed for both
Insurance cost	0.05	0.04	
Interest on Working Capital	0.05	0.05	10% of working capital

Fuel cost	1.43	1.28	Fuel cost for coal is based on specific coal consumption at 0.45kg/kWh. Calorific value of coal = 6500 kcal/ kg; Fuel rate considered Rs. 2.5/ kg
Total Cost	**2.61**	**2.19**	

Unit: Rs./kWh

The above comparison suggests that power generation from a coal based thermal power plant would be more economical than the project activity. The cost of power generation in the region is lower due to the fact that coal availability is of highest quality at the lowest rates in India. Also, the plant load factor in a coal fired plant is always higher compared to that of biomass based power plant. Biomass based thermal power plant's performance is further affected by varying moisture levels in it more during the season of rain. PP would have to make proper arrangement to avoid such a situation (this problem is more in case of biomass as the bulk density is less compared to coal and storage area is bigger).

Sensitivity Analysis

Sensitivity analysis is carried out for the project activity on two factors; the price of biomass and plant load factor achieved in a biomass based power plant.

Varying cost of biomass residues

Biomass, though abundant in supply, doesn't have proper logistics network for collection and delivery. In normal practice it is burned inefficiently or is left to rot in the fields. It has also been observed that biomass prices increase significantly due to increased demand in the power plant (Up to Rs 2000/ton). 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 BEPL will have to invest in developing a viable and dependable fuel supply mechanism.

Biomass cost (Rs./ MT)	**Cost of power generation Rs/ kWh)**	**Remarks**
700	2.28	The cost of power is more than that in coal based power plant. This is highly unlikely to have biomass as such a low rate.
800	2.45	
900 (Base rate)	2.61	Base Cost of power generation from project activity
950	2.69	This is likely due to absence of structured collection and delivery network for biomass in the state.
1000	2.77	
1100	2.94	

Low Plant Load Factor

Other important factor is PLF achieved by the power plant in the project activity. Any change in PLF would impact cost of power generation directly.

PLF (%)	**Cost of power generation**	**Remarks**

	Rs/ kWh)	
70%	2.77	Load factor would depend on biomass quality and its availability on sustainable basis through the year.
75%	2.69	
80% (Base PLF)	2.61	
85%	2.54	Even at a higher PLF, rate of power generation is much higher than the cost of power generation in a coal based power plants.
90%	2.48	

Technological barriers

The power plant configuration in the project activity is of 45 kg/cm2 and 430 deg C. Low pressure systems are less efficient than high pressure systems. Biomass as fuel is trouble some at times during combustion due to the presence of alkalies in it. Presence of alkalies in biomass would require frequent cleaning and so stoppages. These alkalies at high temperatures start building up at the heat transfer areas of the systems leading to deficiency in heat transfer performance and thus leading to lower overall efficiency. The efficiency is further lowered due to the presence of high moisture in biomass fuels. These problems are specific to biomass fuels unlike coal. Coal based thermal power plants could have been installed with high pressure configuration as the coal is of good quality it does not change much compared to changes in biomass fuel quality. Silica carry over is more in the case of higher pressure systems. The project activity is first by PP and it would have been easier for them to come up with coal based thermal power plant instead.

Other barriers

Using coal for power generation is also a normal practice in the region; this is evident by the fact that ~50% of total power generation is based on coal. And also, there is no biomass based power project in the state and proposed power project is the first of its kind in the state. There is no regulatory or policy requirement for selecting a particular type of fuel for power generation.

In the state of Assam, power generation is primarily based on thermal power plants. Out of installed capacity of 574MW a whopping ~99% from fossil fuel based with 300 MW (~52%) coming from coal. The captive power generation too is heavily dependent on coal. This is due to the availability of high grade coal at lesser price. According to North Eastern Development Limited, captive power plants installed in the state are 100% on fossil fuel based wit none based on biomass, which is also indicative of the fact that biomass based power generation is not a business-as-usual scenario in the state.

BEPL proposes to utilize financial benefits arising from selling CERs to build sustainable biomass collection & delivery network, as well as dedicated biomass source in nearby wasteland which will in turn help in mitigating biomass availability risk, these benefits will also compensate for lower profitability compared to coal based power project.

Summary

The proposed project activity is not a financially most attractive project as compared to coal based power project (baseline scenario). And there are barriers like Technology, Collection & Delivery methods, and Investment barriers which stall implementation of such type of project activity as evident by common practice of not setting up biomass based power project in the region.

Given the above facts it can be summarized that coal based power generation is financially the most attractive option for BEPL. The cost of power in the project activity is more compared to coal based

power. Apart from this, power generation based on biomass residues face a number of barriers related to sustainable management of biomass residues and operational problems, which prevents implementation of such projects in the state.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

Emission reductions in the project activity
ER_y = Baseline emissions – Project emissions – Leakage

Baseline emissions = $GEN_y * EF_{BSL}$
Project emissions = $\sum FF_i * NCV_i * EF_i * OXID_i$
Leakage = 0 (as per the methodology)

Where;
GEN_y = Net power supplied from the power plant in year y, MWh
EF_{BSL} = Emission factor in the baseline, tCO2e/ MWh
FF_i = Type of fuel i consumed, tonne
NCV_i = Net calorific value of fuel i, GJ/ tonne
EF_i = Emission factor for fuel i, tCO2e/ GJ
$OXID_i$ = Oxidation factor for fuel i

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

(Copy this table for each data and parameter)

Data / Parameter:	**EF_{BSL}**
Data unit:	tCO2e/ MWh
Description:	Emission factor in the baseline
Source of data used:	Central Electricity Regulatory Commission
Value applied:	1.14
Justification of the choice of data or description of measurement methods and procedures actually applied :	The power generation in the absence of project activity would have been in a coal based thermal power plant. The baseline emission factor has been estimated based on Central Electricity Regulatory Commission[1] data on station heat rates for thermal power plants.
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

Net power supplied in the year y = 6 x 330 x 24 x 80% x (1-12%)
= 33454 MWh

Emission reduction = 33454 x 1.14

[1] CEA notification, December 2006, No. L-7/25(5)/2003-CERC

= 38137 tCO2e/ annum

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

Year	Emissions Reduction
2007-08	38137
2008-09	38137
2009-10	38137
2010-11	38137
2011-12	38137
2012-13	38137
2013-14	38137
2014-15	38137
2015-16	38137
2016-17	38137

(Sep-Aug)

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

B.7.1 Data and parameters monitored:

(Copy this table for each data and parameter)	
Data / Parameter:	**GEN_y**
Data unit:	MWh
Description:	Net power supplied from the project plant
Source of data to be used:	On-site measurement
Value of data	33454
Description of measurement methods and procedures to be applied:	Data is monitored using calibrated energy meter installed at the plant site. Frequency of data recording: Daily
QA/QC procedures to be applied:	Energy meter is calibrated annually by accredited certification agency
Any comment:	

Data / Parameter:	**BF_j**
Data unit:	tonne
Description:	Biomass fuel j consumed, tonne
Source of data to be used:	On-site measurement
Value of data	0
Description of measurement methods	Data is monitored using calibrated weigh bridge at the plant site.

and procedures to be applied:	Frequency of data recording: Monthly
QA/QC procedures to be applied:	Data can be cross checked by purchase receipts available at the plant site
Any comment:	

Data / Parameter:	**FF_i**
Data unit:	tonne
Description:	Fossil fuel i consumed, tonne
Source of data to be used:	On-site measurement
Value of data	0
Description of measurement methods and procedures to be applied:	Data is monitored using calibrated weigh bridge at the plant site. Frequency of data recording: Monthly
QA/QC procedures to be applied:	Data can be cross checked by purchase receipts available at the plant site
Any comment:	

Data / Parameter:	**NCV_i**
Data unit:	GJ/ tonne
Description:	Calorific value for fossil fuel i
Source of data to be used:	IPCC default value
Value of data	Estimated for the fuel type combusted
Description of measurement methods and procedures to be applied:	NA
QA/QC procedures to be applied:	NA
Any comment:	

Data / Parameter:	**EF_i**
Data unit:	tCO2e/ GJ
Description:	Emission factor for fossil fuel i, tCO2e/ GJ
Source of data to be used:	IPCC default value
Value of data	Estimated for the fuel type combusted
Description of measurement methods and procedures to be applied:	NA
QA/QC procedures to be applied:	NA
Any comment:	

B.7.2 Description of the monitoring plan:

BEPL proposes following procedures to assure the completeness and correctness of the data needed to be monitored for CDM project.

Organization structure:

Power plant in-charge	Responsibility for completeness of data, reliability of data (calibration of meters), and monthly report generation
Shift In-charge	Responsibility of data monitoring, recording and daily report generation
Operator	Responsibility for data monitoring and recording

Day to day data collection and record keeping:
Plant data shall be collected on operation under the supervision of the respective Shift-in-charge and record would be kept in daily logs.

Frequency of monitoring-
The frequency for data monitoring shall be as per the monitoring details in Section B.7.1 of this document.

Archiving of data-
The data is kept for two years after crediting period (total 12 years)

Checking data for its correctness and completeness:
Power plant in-charge would have the overall responsibility of checking data for its completeness and correctness. The data collected from daily logs is forwarded to the in-charge after verification.

Calibration of monitoring equipments/ instruments:
BEPL will have the energy meter calibrated. A log of calibration records will be maintained. Instrumentation department in the company is responsible for the upkeep of instruments in the plant.

Maintenance of instruments and equipments used in data monitoring:
The operation department shall be responsible for the proper functioning of the equipments/ instruments and shall inform the concerned department for corrective action if found not operating as required. The concerned department shall take corrective action and a report on corrective action taken shall be maintained as done time to time along with the details of problems rectified.

Emergency preparedness:
The project activity does not result in any unidentified activity that can result in substantial emissions from the project activity. No need for emergency preparedness in data monitoring is visualized.

Report generation on monitoring:
After verification of the data and due diligence on correctness an annual report on monitoring and estimations shall be maintained by the CDM team and record to this effect shall be maintained for future verification.

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

01/05/2007

Mr Prahlad Rai Chamaria - Director
Badarpur Energy Private Limited (BEPL) (Also a project participant)
ET Road, 265, Sreemanta Market, Annexe, 2nd Floor
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Tel: (0361) 2637351, 2600262
Fax: (0361)2591844
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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:

08/01/2006

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:

NA

C.2.1.2. Length of the first crediting period:

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01/09/2007

C.2.2.2. Length:

10 years

SECTION D. Environmental impacts

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

Environment Impact Assessment study is not required for the project activity as per the regulations defined by Central Pollution Control Board in India (EIA notification S.O. 60(E) 1994).

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:

The project activity would have following environmental impacts during construction and operation of the project activity.

During construction Phase
No effect on any endangered species is assessed. No tree will be uprooted for the project. There would be short-term negative impacts on various components of socio-economic environment due to increase in population comprising of workmen & labour. However, by providing adequate housing, water, and power and sanitation facilities to construction workmen and labour, these impacts shall be contained within the site. Adequate cooking fuel shall also be arranged by contractors for labour. Thus, this short-term negative impact would be contained within the site & minimized. The execution of project will create employment and increase the earnings of the local people.

During Operational phase
The proposed installation will have no effect on climatic change as the burning of biomass fuels result in zero emission of GHGs as amount of CO2 generated during combustion is taken in during the growth of the biomass.

The air pollution from burning of such fuel is less harmful due to the lower quantity of sulphur in it as compared to other fossil fuels. The particulate emission would be arrested by ESPs and thus minor negative impact is envisaged.

The fly ash generated as a result would be collected in ash silos from the one ESP installed at the site. The ash handling system shall be arranged in a way that no ash escapes to the atmosphere. The requirement of water is proposed to be met from the bore well at the site. Further the effluent and the blow down water used for green belt development, ash quenching and sprinkling over fuel would percolate to the ground water and cause recharge of the ground water body.

SECTION E. Stakeholders' comments

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

Stakeholder consultation for the project activity has been conducted to account for the views of the people impacted either directly or indirectly due to the project activity. This has been carried out at all levels of stakeholders –

A. Local NGO Gharoa
B. Local gram panchayat, Debendranagar
C. Badarpur Town Committee
D. Rotary Club of Badarpur
E. Deputy Commissioner, Karimganj District
F. Assam Pollution Control Board

BEPL invited views of people at all levels i.e. through meetings, consultation with Gram Panchayat representatives and district authorities. People responded to the call and presented their views, comments and offered suggestions.

E.2. Summary of the comments received:

The project activity does not have any significant negative impact on people and environment in the area. Use of biomass for power generation would have definite positive impact in the region.

The project is likely to have many positive impacts on society around:

- Employment of skilled workmen and labor
- Payment to fuel suppliers and developers. This will be net addition to local society, as the fuel is not used in any significant quantities for economically useful applications right now.
- Reduced GHG emissions shall lead to a better & cleaner environment to live in
- Increased supply of electric power from grid as pressure on grid would be eased after commissioning of proposed power plant.

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

No adverse comment from stakeholders on the project activity received.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No ODA funding for the project activity.

Annex 3

BASELINE INFORMATION

Please refer section B.4 for details of estimation of baseline emission factor.

Annex 4

MONITORING INFORMATION

Please refer section B.7.2 for detailed monitoring plan.

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