**PROJECT DESIGN DOCUMENT FORM
FOR SMALL-SCALE CDM PROJECT ACTIVITIES (F-CDM-SSC-PDD)
Version 04.0**

PROJECT DESIGN DOCUMENT (PDD)

Title of the project activity	Biomass Based Power Project by Gemco Energy Limited at Bhiwani, Haryana, India
Version number of the PDD	01
Completion date of the PDD	17/04/2012
Project participant(s)	Gemco Energy Limited (Private Entity) First Climate (India) Private Limited (Private Entity)
Host Party(ies)	India
Sectoral scope(s) and selected methodology(ies)	AMS I.D version 17
Estimated amount of annual average GHG emission reductions	**74,142**

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

a) The proposed CDM project activity is undertaken by Gemco Energy Limited (GEL) and is a biomass based power plant located in Bhiwani district, in the state of Haryana, India. The plant will utilise renewable biomasses like mustard husk, bajra and cotton stalk as fuel which is available in excess in the region where the plant is being setup. The purpose of the project activity is to generate electricity through the combustion of biomass and supply to the grid.

b) In India, the existing installed grid electricity generation capacity is predominantly coal-based and therefore, electricity generation is a major source of carbon dioxide emissions. In order to meet the increasing demand of electricity, the capacity addition of power includes mainly large coal based power plants. The generation of power from biomass residues will contribute to reducing greenhouse gas (GHG) emissions in the current energy mix. As the project utilises renewable biomass as the source of fuel for the generation of electricity, it will qualify as a renewable source of electricity. The proposed project activity envisages installation of 15 MW independent biomass based power plant. The project will be completed in two phases:-In the first phase, 8 MW shall be commissioned and is expected to be completed by July 2012. Second phase of 7 MW is expected to be commissioned by end of July 2013. The project involves the installation of 2 nos. of high pressure boiler of 35 tonnes per hour steam capacity (62 kg/cm^2, 455°C). Steam from the boilers will be utilised in the condensing type steam turbine generators (8 MW in phase-I and 7 MW in phase-II). The project activity will involve the collection of mustard husk, bajra, and cotton stalk residues within a 50 km radius of the plant. The project activity is expected to provide 15 MW of electrical power to the Haryana State Electricity Board (part of the NEWNE regional grid) at 132kV through the solid tap arrangement. The project is expected to displace on an average **80,475** MWh of electricity per annum over the crediting period. This will result in average emission reductions of **74,142** tCO_2e per annum over the entire crediting period.

The plant will make a significant contribution to sustainable development not just directly through the provision of renewable energy but also through the establishment of an industrial unit in a rural area. As per Ministry of Environment & Forest (DNA India), a CDM project activity should contribute to sustainable development in the following ways:

- Environmental well being
- Social well being
- Economic well being
- Technological well being

The project activity contributes to sustainable developments in the following ways:

Environmental well being:

- Replacement of fossil fuel by biomass power based electricity would lead to reduction of green house gas emission.
- Replacement of fossil fuel based power with biomass power would lead to reduction of other harmful gases like SO_x, NO_x etc.

Social well being

- The project activity will generate employment for skilled and unskilled labours to operate the power plant. The project activity will also enhance employment generation for the collection and

transportation of biomass. This also offers the farmers additional revenue on account of selling biomass to the plant.

Economic well being

- The project has opened up business opportunities for direct and indirect business for technology provider, consultant, labour contractors, biomass suppliers, farmers and local villagers, thus promoting economical well being in the region.

Technological well being

- The project would help in developing the technical know-how of plant operators in operating biomass power project and increase awareness about sustainable sources of energy generation in the nearby region.
- This type of project will also enhance small and medium scale industries.

A.2. Location of project activity
A.2.1. Host Party(ies)
India

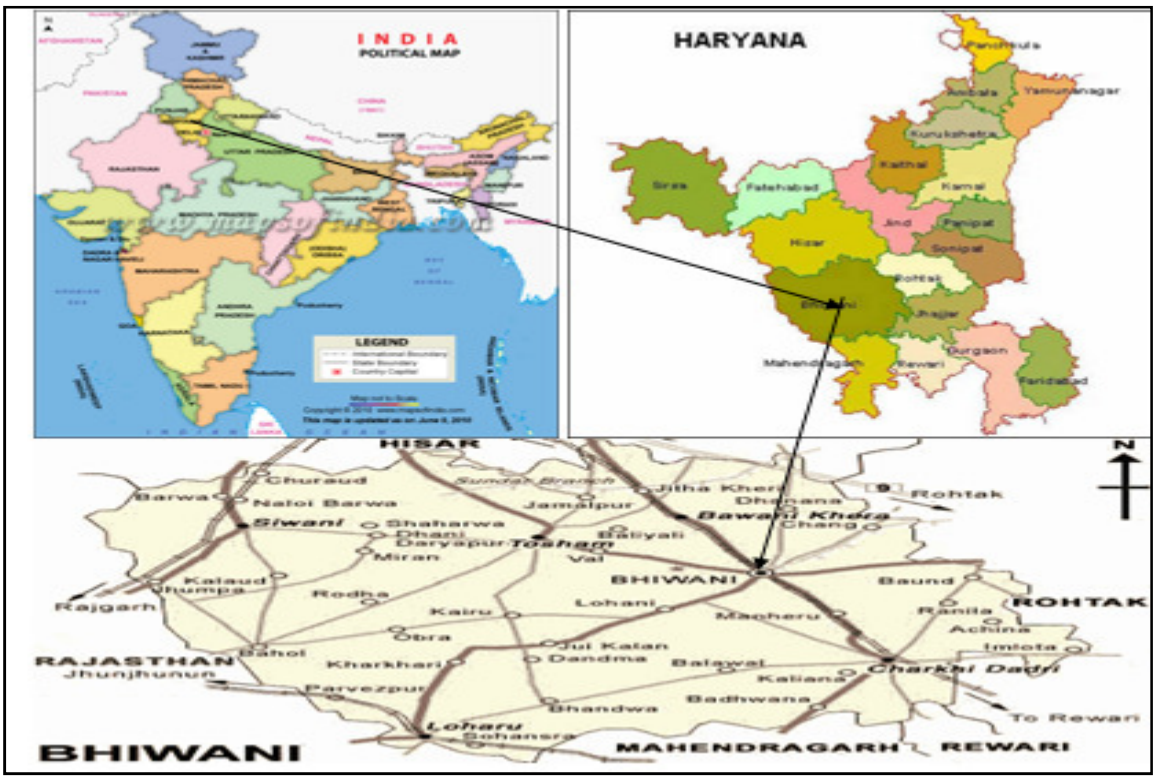
A.2.2. Region/State/Province etc.
Haryana

A.2.3. City/Town/Community etc.
Place- Kausambhi Road, Village- Dinod , District- Bhiwani

A.2.4. Physical/ Geographical location
The project activity is installed at the following location:

Latitude – 28º46.741′ North

Longitude -76º 02.844′ East



A.3. Technologies and/or measures

>>Under the project activity, Gemco Energy Limited (GEL) is going to install 2 nos. biomass fired boiler of 35 TPH capacity which will generate high pressure steam at 62 kg/cm^2 and 450°C. This high pressure steam will be utilized for power generation. The power generated from the project will be dispatched to the regional electricity grid and will result in reduction of GHG emissions caused by combustion of fossil fuel in the power plants connected to the grid.

The technology for the project is an established technology and hence can be considered safe. Furthermore, consents from the Regulatory Boards also shows that the power plant adheres to environmental guidelines and thus the project activity undertaken is environmentally safe. Proper training will also be imparted to the boiler operators to ensure successful operation of the plant

Technical Specification of the Boiler

a)	Quantity	2 Nos.
b)	Steam Flow at boiler outlet	35 TPH
c)	Steam Pressure at boiler outlet	62 kg/cm^2
d)	Steam temperature at boiler	450±5°C
e)	Type of boiler	Travelling Grate Boiler

Technical Specification of the Turbo Generator

S.No	Description	Phase-I	Phase-II
a)	Capacity	8MW	7 MW
b)	Generation Voltage	11 kV	11kV
c)	Steam Flow at TG inlet	35.2 TPH	32 TPH
d)	Steam Pressure at TG inlet	60 kg/cm^2	60 kg/cm^2
e)	Steam temperature at TG inlet	450°C	450°C

A.4. Parties and project participants

Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
India (host)	Gemco Energy Limited	No
	First Climate (India) Private Limited	No

A.5. Public funding of project activity

There is no public funding from any Annex I country for the project activity.

A.6. Debundling for project activity

As per Guidelines on assessment of de-bundling for SSC project activities, Version 031 (EB 54, Annex 13),
A proposed small scale project activity shall be deemed to be a de-bundled component of a large scale 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 participants*
- *In the same project category/technology measure; and*
- *Registered within the previous two 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 promoter hereby confirms that there is no registered small scale project activity

- With the same project participant, *i.e.*, Gemco Energy Limited
- In the same project category/technology measure
- Registered with the UNFCCC within the previous two years
- Whose project boundary is within 1 km of the project boundary of the small scale project activity

Thus it has been established that the project activity under consideration is not a de-bundled component of any large-scale GHG abatement project activity.

SECTION B. Application of selected approved baseline and monitoring methodology

B.1. Reference of methodology

Type I – Renewable Energy Projects

Category D – Grid connected renewable electricity generation

Version 17 EB- 61

Valid from: - 17th June 2011

B.2. Project activity eligibility

Reference	Applicability Condition as per methodology	Justification

[1] http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf

Para 1	*"This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass:* *a. Supplying electricity to a national or a regional grid. "* *b. Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.*	Applicable and Fulfilled : In this project, electricity generated using renewable biomass will be supplied to the regional electricity grid (NEWNE) which is connected to and catered by mostly fossil fuel based power plant.
Para 2	*Illustration of respective situation under which each of the methodology(i.e. AMS- I.D, AMS-I.F and AMS-I.A)*	Applicable and Fulfilled;- The project activity is supplying electricity to NEWNE grid.
Para 3	*This methodology is applicable to project activities that (a) install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).*	Applicable and Fulfilled:- The project activity involves installation of a Greenfield power plant.
Para 4	*Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:* • *The project activity is implemented in an existing reservoir with no change in the volume of reservoir;* • *The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m^2;* • *The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m^2.*	Not Applicable: The project activity does not involve generation of electricity from hydro power plant.

Para 5	*If the new unit has both renewable and non-renewable components (e.g. a wind/diesel unit), the eligibility limit of 15MW for a small-scale CDM project activity applies only to the renewable component. If the unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW".*	Applicable and Fulfilled: The project activity is a 100% biomass (renewable) based power plant.
Para 6	*Combined heat and power (co-generation) systems are not eligible under this category"*	Applicable and Fulfilled:- The project activity is a purely power generation plant and not a cogeneration plant.
Para 7	*"In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units."*	Not Applicable The project activities being installed at a new facility.
Para 8	*In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.*	Not Applicable: The project activity is not a retrofit and replacement.
Footnote 1	*Refer to EB 23, annex 18 for the definition of renewable biomass*	Applicable and Fulfilled:- This project involves the use of mustard husk, cotton stalk, bajra as a fuel. According to EB 23 annex 18 "*The biomass is a biomass residue (Biomass residue is defined as biomass by-products, residues and waste streams from agriculture, forestry, and related industries) and the use of that biomass residue in the project activity does not involve a decrease of carbon pools, in particular dead*

		wood, litter or soil organic carbon, on the land areas where the biomass residues are originating from." Since mustard husk, cotton stalk, bajra is biomass residues these fuels are considered as renewable biomass.
Footnote 2	*AMS-I.D .Grid connected renewable electricity generation., AMS-I.F .Renewable electricity generation for captive use and mini-grid and AMS-I.A .Electricity generation by the user.*	Applicable and Fulfilled:- AMS-I.D. Grid connected renewable electricity generation. The project involves supply of electricity to grid.
Footnote 3	*A capacity addition is an increase in the installed power generation capacity of an existing power plant through: (i) The installation of a new power plant besides the existing power plant/units; or (ii) The installation of new power units, additional to the existing power plant/units. The existing power plant/units continue to operate after the implementation of the project activity.*	Not Applicable:- This project does not involve any capacity addition. The project is installed at new facility i.e. the project is a Greenfield project.
Footnote 4	*Retrofit (or rehabilitation or refurbishment). It involves an investment to repair or modify an existing power plant/unit, with the purpose to increase the efficiency, performance or power generation capacity of the plant, without adding new power plants or units, or to resume the operation of closed (mothballed) power plants. A retrofit restores the installed power generation capacity to or above its original level.* *Retrofits shall only include measures that involve capital investments and not regular maintenance or housekeeping measures.*	Not Applicable:- The project is installed at new facility i.e. the project is a Greenfield project.
Footnote 5	*Replacement. It involves investment in a new power plant or unit that replaces one or several existing unit(s) at the existing power plant. The installed capacity of the new*	Not Applicable:- The project is installed at new facility i.e. the project is a

	plant or unit is equal to or higher than the plant or unit that was replaced.	Greenfield project.
Footnote 6	*A reservoir is a water body created in valleys to store water generally made by the construction of a dam.*	Not Applicable:- This is not a hydro power project.
Footnote 7	*A reservoir is to be considered as an .existing reservoir. if it has been in operation for at least three years before the implementation of the project activity*	Not Applicable:- This project is not a hydro power project.
Footnote 8	*A co-fired system uses both fossil and renewable fuels, for example the simultaneous combustion of both biomass residues and fossil fuels in a single boiler. Fossil fuel may be used during a period of time when the biomass is not available and due justifications are provided.*	Not Applicable:- The project does not involve the consumption of fossil fuel.
Footnote 9	*Physically distinct units are those that are capable of generating electricity without the operation of existing units, and that do not directly affect the mechanical, thermal, or electrical characteristics of the existing facility. For example, the addition of a steam turbine to an existing combustion turbine to create a combined cycle unit would not be considered .physically distinct.*	Not Applicable:- There is no capacity addition involve in the project. The project is installed at new facility i.e. the project is a Greenfield project.

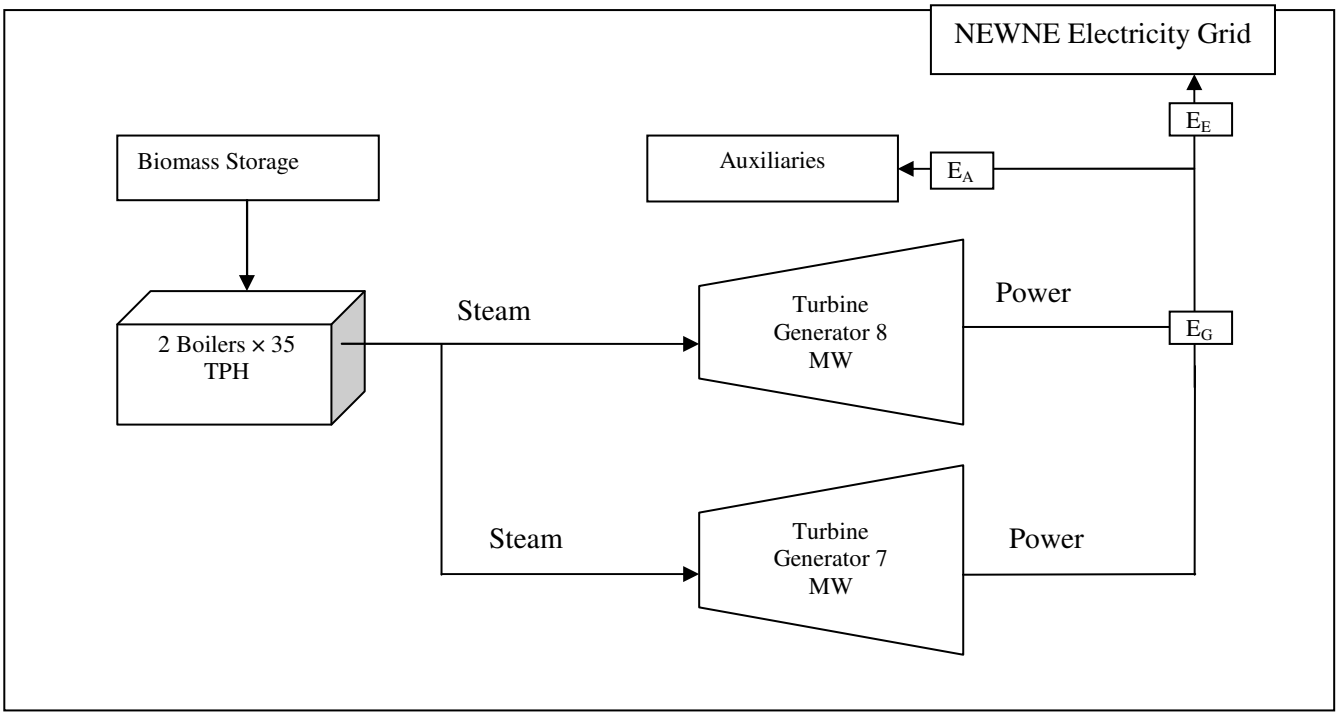
It may be concluded from the justifications provided in the table above that the project activity qualifies as a small-scale project activity and it will remain under the limits of applicable small-scale project activity types during every year of the crediting period. Further, the project activity meets all the applicable eligibility criterion of the methodology AMS I.D. (as explained above) and hence the application of the methodology is justified

B.3. Project boundary

Paragraph 9 of "Type AMS I.D. Grid connected renewable electricity generation" (Version 17) states that:

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to.

The project boundary can be pictorially represented as follows:



Symbol	Description
E_A	Energy meter for Auxiliary/Station Electricity Consumption
E_G	Energy meter for Gross Energy Generation
E_E	Energy meter for Net Electricity (bi-directional meter, measures both export and import of electricity)

For the purpose of the project activity the relevant electricity grid is defined by the regional electricity grid to which power is dispatched by the project. In India there are two regional grids which facilitate the transfer of electricity between states. The project activity displaces power generation in the Haryana State Electricity Grid which is a part of the NEWNE grid (Northern, Eastern, Western and North Eastern grid) as per the recent grid definitions outlined by the Central Electricity Authority (CEA), Government of India. The baseline emission factor has hence been calculated from the CEA database for electricity generation.

Since there is no transfer of equipment to/from the project activity there is no requirement to measure leakage associated with equipment transfer.

With reference to the general guidance on leakage in biomass project activities, possibility of leakage due to competitive use of biomass in the case of the project activity has been analysed. As per Attachment C to Appendix B, the project participant(s) have conducted a biomass availability survey in the region of the project activity to ensure that there is abundant surplus of mustard husk, bajra, and cotton stalk in the region. Hence this source of leakage may be neglected.

The biomass that is stored is used up almost immediately and under no circumstances will the storage of the biomass extend to one year. Project emissions from the decomposition of biomass, stored for significant periods of time, can therefore be ruled out. Leakage emissions due to transportation of renewable biomass (mustard husk, bajra, cotton stalk) have also been neglected since the mustard husk will be sourced from within a radius of 50 kms of the project plant.

B.4. Establishment and description of baseline scenario

Baseline to the proposed CDM project activity has been identified in line with paragraph 10 of the methodology AMS-I.D. Version 17, which states that:

"The baseline scenario is that the electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid."

The proposed project activity supplies renewable electricity to the NEWNE Grid system of India, which would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. Thus, the baseline to the project activity is:

Generation of electricity by operation of grid connected carbon intensive power plants and by the addition of new generation sources into the NEWNE Regional Grid system of India.

The parameters used for calculation of baseline emission are:

Parameters	Unit	Value	Justification
Net electricity generation for 1st Year	MWh	39917	Detailed Project Report
Net electricity generation for 2nd year	MWh	80546	
Net electricity generation for 3rd year onwards	MWh	85536	
CO_2 emission factor of grid electricity (NEWNE)	tCO_2/MWh	0.9213	CEA database version 07

B.5. Demonstration of additionality

According to Attachment A to the Appendix B of Simplified Modalities and Procedure for Small Scale CDM project activities, the project participants are required to provide an explanation to show that the project activity would not have occurred anyway due to **at least one** of the below mentioned barriers

(a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions;

(b) Technological barrier: a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions;

(c) Barrier due to prevailing practice: prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions;

(d) Other barriers: without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emissions would have been higher.

Investment barrier is chosen to demonstrate additionality of the project activity.

The investment analysis is done in line with the "Guidelines on the Assessment of Investment Analysis, Version 05"

Investment Barrier:

In line with paragraph 19 of the Guidelines, "*If the alternative to the project activity is the supply of electricity from a grid this is not to be considered an investment and a benchmark approach is considered appropriate*", benchmark approach for demonstration of investment barrier has been chosen as the project activity involves supply of electricity to the grid, which would have otherwise been supplied by other grid connected power plants.

Financial indicator selected:

Post tax project IRR is chosen as the financial indicator

Benchmark selected:-

The financial indicator chosen is post tax project IRR. In line with the paragraph 12 and paragraph 13 of the guidelines, Weighted Average Cost of Capital (WACC) based on standard market parameters is used as the appropriate investment benchmark.

In line with paragraph 15 and paragraph 16 of the guidance, the cost of equity has been determined based on publicly available data sources of the Indian equity market using the capital asset pricing model (CAPM). The cost of debt has been taken as the local commercial lending rates made publicly available by national bank of India (State Bank of India prime lending rate) and the marginal tax rate is taken as per Government of India notification (finance bill). As per the CAPM model, the cost of equity is calculated as:

Cost of equity = Risk free rate + equity beta*(market return on equity – risk free rate)

The risk free rate taken as coupon rate of 10 year risk free domestic Government Bond, issued prior to decision making. The market return on equity is taken for diversified stock index of India (BSE 500) for the period August 2005 to July 2010. The equity beta is calculated from the asset betas for other listed power generation companies of India and using a normative Debt:Equity ratio of 70:30 which is the

normal D:E ratio for any project in India. This is in line with paragraph 18 of the guidelines. Unlevered beta has been calculated for power generation companies which were listed at the time of decision making and having at least 5 years data available. The following power companies were taken for calculating the beta values: Tata Power Company Limited, NTPC Limited, Reliance Infrastructure Limited, Neyveli Lignite Corporation Limited, CESC Limited, GIPCL, EDCL, and Jaiprakash Power Ventures

Based on the considered data sources, the calculated benchmark WACC for the company is 14.94%.

Project IRR calculation:

The post tax project IRR has been calculated in line with the "Guidelines on the Assessment of Investment Analysis, Version 05"[2]. The assumptions used for IRR calculation are provided below:

Sl. No.	Parameter	Unit	Value applied	Source of value
1	Project investment	INR million	544.153	Detailed Project Report
2	Debt component	%	70	Normative
3	Equity component	%	30	
4	Margin money for working capital	%	30	Detailed Project Report
5	Repayment period	Years	9	Detailed Project Report
6	Moratorium period	Years	1	
7	Number of quarterly repayments	Months	32	
8	Interest rate	%	11.75	
9	Power sale tariff (base rate)	INR/kWh	4	HERC tariff order
10	Escalation in Power tariff	%	3	
11	O&M expenses	INR million	32.12	Detailed project report
12	Plant Load Factor- 1st Year	%	70	
13	Plant Load Factor – 2nd Year onwards	%	80	
14	Escalation in O&M expenses	%	5.72	
13	Working capital for:			HERC tariff order

[2] http://cdm.unfccc.int/Reference/Guidclarif/reg/reg_guid03.pdf

	O&M expenses	Month	1	
	Receivables	Month	2	
14	Depreciation rates as per IT Act			Depreciation rates for power generating units under IT Act[3]
	i. Plant & Machinery	%	80	
15	Depreciation rates as per Company Act			Company Act 1956, Schedule XVI[4]
	i. Plant & Machinery	%	5.28	
	ii. Power transmission equipment	%	5.28	
	iii. Civil construction	%	3.34	
16	Corporate tax rate[5]	%	33.2175	Corporate tax base rate = 30% Surcharge = 7.5% Education cess = 2% Higher education cess = 1% MAT base rate = 19.93%
17	MAT rate	%	19.93	

In the light of above figure and assumption, the project IRR comes to 7.17% without considering revenues from CDM, which is lower than the investment benchmark of 14.22%.

Sensitivity Analysis:

In line with paragraph 20 of the guidelines which states that "*only variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenue should be subjected to reasonable variation (all parameters varied need not necessarily be subjected to both negative and positive variations of the same magnitude), and the result of this variation should be presented in the PDD and be reproducible in the associated spreadsheets. Where a DOE consider that a variable which constitutes less than 20% has a material impact on the analysis they shall raise a corrective action request to include this variable in the sensitivity analysis",* the parameters considered for the sensitivity analysis are project investment, tariff , plant load factor, price of mustard husk and O&M cost. The parameters considered have been varied in a range of +/- 10% leading to the following variation in the post tax project IRR for the project:

Parameter varied	IRR with -10% variation	IRR with 0% variation	IRR with +10% variation

[3] http://law.incometaxindia.gov.in/DitTaxmann/IncomeTaxActs/2001ITAct/rules2001/appIA.htm
[4] http://www.mca.gov.in/Ministry/latestnews/Explanatory_Statement_alongwith_Schedule_XIV_4d ec2008.pdf
[5] http://www.incometaxindiapr.gov.in/incometaxindiacr/contents/forms2010/pamphets/COMPANIES_2012_13.htm

Project investment	8.37%	7.17%	6.16%
Power tariff	-	7.17%	14.57%
PLF	2.41%	7.17%	11.12%
Price of biomass	13.15%	7.17%	-
O&M Expense	8.14%	7.17%	6.09%
Benchmark	**14.22%**	**14.22%**	**14.22%**

It can be observed that for variation in parameters mentioned above, the IRR of the project does not cross the benchmark for a reasonable variation of ±10% for any of the parameters. The IRR crosses the benchmark for 9.5% increase of tariff. However it is extremely unlikely that the tariff will increase by 9.5% without affecting any of the other parameters since the tariff has been sourced from HERC which has already fixed the tariff and also incorporates an escalation in the tariff.

Conclusion:

The Internal Rate of Return (IRR) for the project activity has been evaluated and demonstrated to be lower than the benchmark return. The project IRR surpasses the benchmark return with additional revenue stream from sale of Certified Emission Reductions (CER) generated under the project activity. Thus, the project activity is additional.

B.6. Emission reductions

B.6.1. Explanation of methodological choices

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As defined in section B.3 of the PDD the baseline of the project activity is generation of electricity by operation of grid connected power plants and by the addition of new generation sources into the NEWNE Regional Grid system of India.

Baseline Emission:

Baseline emission to the proposed CDM project activity has been calculated in line with paragraph 11 of the methodology AMS- I.D. Version 17, which states that "*the baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor*."

$BE_y = EG_{BL,y} * EF_{CO2,y}$ _____ Equation 1

Where:

Parameter	Unit	Description of parameter
BE_y	tCO_2	Baseline emission in year y
$EG_{BL,y}$	MWh	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year
$EF_{CO2,y}$	tCO_2/MWh	CO_2 emission factor of the NEWNE grid in year *y*

Guideline on calculation of baseline grid emission factor is taken from paragraph 12 of the methodology AMS-I.D. Version 17, which states that, *"the emission factor can be calculated in a transparent and conservative manner as follows:*

(a) *A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the Emission Factor for an electricity system";*

OR

(b) *The weighted average emissions (in t CO_2/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.*

Calculation shall be based on data from an official source (where available) and made publicly available.

As the project activity displaces the power that would have been obtained from the grid, the option (a) is used for calculation of emission factor. The emission factor of the grid has been calculated based on combined margin (CM) approach.

The emission factor has been estimated using the following six- steps of according to "Tool to Calculate the Emission Factor for an Electricity System", Version 2.2.1, EB 63, Annex 19

Step 1: **Identify the relevant system**:

The CEA, Ministry of Power, Government of India (Host Country) has given the delineations of the project electricity system and the connected electricity system in India. As per CEA, the Indian power system is divided into two regional grids

- Northern, Eastern, Western, and North- Eastern regional grids (NEWNE)
- Southern grid

As per CEA CO_2 baseline database version 7, geographical scopes of the two regional electricity grids are given below:

Regional scope of the Integrated grid system of India:

NEWNE Grid				**Southern Grid**
Northern	Eastern	Western	North-Eastern	Southern
• Chandigarh • Haryana • Delhi • Himachal Pradesh • Jammu &	• Bihar • Jharkhand • Orissa • West Bengal • Sikkim • Andaman	• Chhattisgarh • Gujarat • Daman & Diu • Dadar & Nagar Haveli • Madhya	• Arunachal Pradesh • Assam • Manipur • Meghalaya • Mizoram	• Andhra Pradesh • Karnataka • Kerala • Tamil Nadu • Pondicherry

Kashmir • Punjab • Rajasthan • Uttar Pradesh • Uttarakhand	Nicobar	Pradesh • Maharashtra • Goa	• Nagaland • Tripura	• Lakshwadeep

Step 2: **Choose whether to include off-grid power plants in the project electricity system (optional):**
Option I (Only grid power plants are included in the calculation) is applicable as the grid system in India is very stable enough and off grid generation is not significant.

Step 3: **Select a method to determine the operating margin (OM):**
The calculation of the operating margin emission factor ($EF_{grid, OM, y}$) is based on one of the following methods:-

a) Simple OM, or
b) Simple adjustment OM, or
c) Dispatch data analysis OM, or
d) Average OM.

Out of the above options, the simple OM method (option a) is used in India. The dispatch data analysis OM is not used as off-grid generation is not significant in India as per step 2 above. Other methods cannot currently be applied in India due to lack of necessary data.

For the simple OM, the simple adjusted OM and the average OM, the emission factor can be calculated using either of the two following data vintages:

- *Ex ante option*: *If the ex ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emission factor during the crediting period is required. For grid power plant, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation. For off-grid power plant, use a single calendar year within the 5 most recent calendar year prior to the time of submission of the CDM-PDD for validation.*
- *Ex post option: If the ex post option is chosen, the emission factor is determined for the year in which the project activity displaces grid electricity, requiring the emission factor to be updated annually during monitoring. If the data required to calculate the emission factor for year y is usually only available later than six months after the end of year y, alternatively the emission factor of the previous year y-1 may be used. If the data is*

usually only available 18 months after the end of year y, the emission factor of the year proceeding the previous year y-2 may be used. The same data vintage (y, y-1 or y-2) should be used throughout all crediting periods.

Among the two options the (option a) the ex-ante option is chosen for emission factor calculation. As per emission factor tool, the simple OM method (option a) can only be used if low-cost/ must run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or
2) based on long- term average for hydroelectricity production.

	Share of low cost/ must run (% net generation)				
Year	2006-07	2007-08	2008-09	2009-10	2010-11
NEWNE	18.5%	19.0%	17.4%	15.9%	17.6%
Average of most recent five year (NEWNE grid)	17.68%				

Step 4: Calculated the operating margin emission factor according to the selected method:

The operating margin describes the average CO_2 intensity of the existing stations in the grid which are most likely to reduce their output if a CDM project supplies electricity to the grid (or reduces consumption of grid electricity). The simple operating margin is the weighted average emission rate of all generation sources in the region except so-called low-cost or must- run sources. In India, hydro and nuclear stations qualify as low-cost/ must- run sources and are excluded. The operating margin, therefore, can be calculated by dividing the region's total CO_2 emission by the net generation of all thermal stations. In other words, it represents the weighted average emission rate of all thermal stations in the regional grid.

Simple Operating Margin:-

The simple OM emission factor is calculated as the generation- weighted average CO_2 emission per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units. The values of OM have been taken from CEA Database which has been calculated based on "Tool to calculate the emission factor for an electricity system". The value of simple operating margin emission factors is 0.9840 tCO_2/MWh (NEWNE Grid).

NEWNE		
Year	**Simple Operating Margin**	**Net Generation in Operating Margin (GWh)**
2007-08	1.00	4,01,642
2008-09	1.01	4,21,803

2009-10	0.98	4,58,043
2010-11	0.97	4,76,987
Weighted Average Operating Margin		0.9840

Simple Operating Margin calculation has been done ex-ante and hence OM value will remain fixed and need not be monitored during the crediting period.

Step 5: Calculate the build margin emission factor:

The build margin emission factor is the generation- weighted average emission factor (tCO2e/MWh) of all power units during the most recent year y for which power generation data is available, calculated as follows:

$EF_{grid,BM,y}=(\sum EG_{m,y}*EF_{EL,m,y})/\sum_m EG_{m,y}$

Where:

$EF_{grid, BM,y}$ = Build margin CO_2 emission factor in year y (tCO_2e/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EF_{EL,m,y}$ = CO_2 emission factor of power unit m in year y (tCO_2e/MWh)

m= Power units included in the build margin

y= Most recent historical year for which power generation data is available.

Calculation for the Build Margin emission factor $EF_{grid,BM,y}$ is based on the most recent information available on the plants already built for sample group at the time of PDD submission. The sample group consists of the power plant capacity additions in the electricity system that comprise 20% of the system generation and that have been built most recently.

As per CEA CO_2 database, the latest available for the year

Build Margin	Values	Source
2010-11	0.85875 tCO_2e/MWh	CEA CO_2

Step 6: Calculate the combined margin emission factor:

The combined margin is a weighted average of the simple operating margin and build margin, the combined margin emission factor is calculated as follows:

$$EF_{CO2,y} = EF_{CM,y} = EF_{OM,y} * W_{OM} + EF_{BM,y} * W_{BM}$$ _____Equation 2

Where:

Parameter	Unit	Description
$EF_{CM,y}$	tCO_2/MWh	Combined margin CO_2 emission factor for the project electricity system (NEWNE grid) in year y

$EF_{BM,y}$	tCO_2/MWh	Build margin CO_2 emission factor for the project electricity system (NEWNE grid) in year y
$EF_{OM,y}$	tCO_2/MWh	Operating margin CO_2 emission factor for the project electricity system (NEWNE grid) in year y
W_{OM}	%	Weighing of operating margin emissions factor
W_{BM}	%	Weighing of build margin emissions factor

The tool provides default values of OM & BM for projects with continuous sources of power based power plants. Thus, W_{OM} =0.5 and W_{BM} =0.5 for the first crediting period. The project activity would claim emission reductions for a fixed crediting period of 10 years, and thus for the project's crediting period, the weighing of OM and BM are fixed at 50% and 50% respectively.

Hence the combined margin is calculated as follows:

$$EF_{CO2,y} = EF_{CM,y} = EF_{OM,y} * W_{OM} + EF_{BM,y} * W_{BM}$$

$$= (0.5*0.9840)+(0.5* 0.8587)$$

$$= 0.9213\ tCO_2/MWh$$

Project Emissions:

Referring to paragraph 20 and 21 of the methodology AMS-I.D. Version 17, project emissions sources relevant to the project activity have been identified and equations to be used for project emission calculation have been formulated.

Sources of project emissions as per paragraph 20 and 21 of the methodology	**Applicability of the project emission sources to the project activity:**
For most renewable energy project activities, $PE_y = 0$. However, for the following categories of project activities, project emissions have to be considered following the procedure described in the most recent version of ACM0002. • *Emissions related to the operation of geothermal power plants (e.g. non-condensable gases, electricity/fossil fuel consumption);* • *Emissions from water reservoirs of hydro power plants.*	Not Applicable: The proposed CDM project activity is a biomass based project.
CO_2 emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion".	Not Applicable: The project does not involve consumption of fossil fuels.

Thus, the project activity does not result in any kind of project emission as identified by the methodology AMS-I.D. Version 17.

i.e., $PE_y = 0$ _____Equation 3

Where:

Parameter	Unit	Description
PE_y	tCO_2	Project emissions from the project activity during the year y

Leakage Emissions:

Referring to paragraphs 22 of the methodology AMS-I.D. Version 17, the proposed CDM project activity may result in leakage emissions *"if the energy generating equipment is transferred from another activity, leakage is to be considered."* The equipment for the project activity are new equipment and hence would not result in any leakage emissions.

Further, as established through a biomass assessment survey, the biomass (mustard husk, bajra and cotton stalk) available in the region is in surplus of more than 25%. Hence, no leakage needs to be considered due to competitive use of biomass.

Thus, there is no relevant source of leakage emission applicable to the project activity. Accordingly, the project activity does not result in any leakage emission.

i.e., $LE_y = 0$ _____Equation 4

Where:

Parameter	Unit	Description
LE_y	tCO_2	Leakage emissions from the project activity during the year y

Emission Reduction:

Referring to paragraph 23 of the methodology AMS-I.D. Version 17, emission reduction from the project activity is calculated as:

$ER_y = BE_y - PE_y - LE_y$ _____Equation 5

Where:

Parameter	Unit	Description
ER_y	tCO_2/y	Emission reduction in year y
BE_y	tCO_2/y	Baseline emission in year y
PE_y	tCO_2/y	Project emissions in year y
LE_y	tCO_2/y	Leakage emissions in year y

B.6.2. Data and parameters fixed ex ante

Data / Parameter	$EF_{CM,y}$
Unit	tCO_2 /MWh
Description	Combined margin emission factor for the NEWNE grid
Source of data	Central Electricity Authority (CEA):Carbon Dioxide Baseline Database version 7.0
Value(s) applied	0.9213
Choice of data or Measurement methods and procedures	The value used has been fixed *ex-ante* and will be used throughout the crediting period of the project activity
Purpose of data	Calculation of baseline emission
Additional comment	The value is fixed *ex-ante*. The value utilized above is available at the following web link: http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm

Data / Parameter	$EF_{OM,y}$
Unit	tCO_2 /MWh
Description	Simple Operating margin emission factor for the NEWNE grid
Source of data	Central Electricity Authority (CEA):Carbon Dioxide Baseline Database version 7.0
Value(s) applied	0.9840
Choice of data or Measurement methods and procedures	The value used has been fixed *ex-ante* and will be used throughout the crediting period of the project activity
Purpose of data	Calculation of baseline emission
Additional comment	The value is fixed *ex-ante*. The value utilized above is available at the following web link: http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm

(Copy Data / Parameter	$EF_{BM,y}$
Unit	tCO_2 /MWh
Description	Build margin emission factor for the NEWNE grid
Source of data	Central Electricity Authority (CEA):Carbon Dioxide Baseline Database version 7.0
Value(s) applied	0.8588
Choice of data or Measurement methods and procedures	The value used has been fixed *ex-ante* and will be used throughout the crediting period of the project activity
Purpose of data	Calculation of baseline emission
Additional comment	The value is fixed *ex-ante*. The value utilized above is available at the following web link: http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm

(Copy Data / Parameter	η_{EG}
Unit	%
Description	Efficiency of energy generation
Source of data	Estimated value based on station heat rate value as provided in the public domain[6].
Value(s) applied	22 (Calculated)
Choice of data or Measurement methods and procedures	The value has been sourced from (CERC) which is publicly available data.
Purpose of data	Calculation of baseline emission
Additional comment	Fixed *ex-ante* value used for the entire crediting period. This value will be required to cross the biomass consumption value

B.6.3. Ex-ante calculation of emission reductions

>>>> From Section B.6.1, the emission reduction are given as:

$ER_y = BE_y - PE_y - LE_y$ and

BE_y = Total $EG_{BL,y}$. $EF_{CO2,y}$

Where:

[6] CERC Tariff order dated 26.4.2010:-http://cercind.gov.in/2010/ORDER/April10/Final_RE_Tariff_Order_FY2010-11(53-2010_Suo-motu).pdf

$EG_{BL,y}$ Net electricity exported to the grid in year y. MWh

$EF_{CO2,y}$ Combined margin emission factor, tCO_2e/MWh

Baseline emissions:

The project will be implemented in two phases. In the first year of plant operation only phase I consisting of the 8 MW turbine will be operational at 70% PLF. In the second year of operation the 8 MW turbine will be operational at 80% PLF and phase-II of the project consisting of the 7 MW turbine will also start operation at 70% PLF. From the third year of operation both the turbines will be operational at 80% PLF. The emission reductions from the two phases are as detailed below. The plant will be operating for 330 days in a year and the auxiliary consumption is assumed to be 10% of the generation. The emission factor is fixed *ex-ante* as 0.921 tCO_2/MWh:

- **For 1st year**:

8 MW operating at 70% PLF

$EG_{BL,y} = EG_{gross} - EG_{aux}$

Where:

EG_{gross} :- Gross electricity generated by the project activity in the year y, MWh

EG_{aux} :- Auxiliary consumption due to the project activity in the year y, MWh

EG_{gross} = Capacity × Operating days× Hours × PLF

= 8 × 330 × 24 × 0.7

= 44352 MWh

EG_{aux} = 44352 *10%

= 4435.2 MWH

$EG_{BL,y}$ = 39916.8MWh

The 7 MW turbine is not operational in the first year. Hence,

$EG_{BL,y} = EG_{gross} - EG_{aux}$

= 0

Total $EG_{BL,y}$ = 39916.8 + 0 = 39916.8 MWh

$BE_y = 39916.8*0.9213 = 36775\ tCO_2$

- **For 2nd year: -**

8 MW operating at 80 % PLF (2nd Year onwards)

EG_{gross} = 50688 MWh

EG_{aux} = 5068.8 MWh

$EG_{BL,y}$ = 45619.2MWh

7MW operating at 70 % of PLF (1st year of operation)

EG_{gross} = 38808 MWh

EG_{aux} = 3880.8 MWh

$EG_{BL,y}$ = 34927.2MWh

Total $EG_{BL,y}$ = 45619.2 + 34927.2 = 80546.4 MWh

BE_y = 80546*0.9213 = 74207 tCO_2

- **For 3rd year**: -

8 MW operating at 80% of PLF

EG_{gross} = 50688 MWh

EG_{aux} = 5068.8 MWh

$EG_{BL,y}$ = 45619.2MWh

7MW operating at 80% of PLF (2nd year onwards)

EG_{gross} = 44352 MWh

EG_{aux} = 4435.2 MWh

$EG_{BL,y}$ = 39916.8MWh

Total $EG_{BL,y}$ = 45619.2 + 39916.8 = 85536 MWh

BE_y = 85536*0.9213 = 78804 tCO_2

Project emissions:

There are no project emissions this project activity as a carbon neutral fuel is being used.

i.e. PE_y = 0

Leakage Emission:-

With reference to the general guidance on leakage in biomass project activities, possibility of leakage due to competitive use of biomass in the case of the project activity has been analyzed. As per Attachment C to Appendix B, GEL has evaluated the surplus availability of mustard husk, cotton stalk and guar around the region of the project activity and has established that all this biomasses are available in excess of 25% quantity from the project region. Hence this source of leakage may be neglected. Leakage emissions due

to transportation of mustard husk have also been neglected since the mustard husk will be sourced from within 50 kms of the project plant.
There is no other relevant source of leakage emission applicable to the project activity. Accordingly, the project activity does not result in any leakage emission.

According to the biomass availability study report:-

Types of Biomass	Total Generation (Tons/ year)	Total Consumption in district (Tons/ year)	Total Consumption in project (Tons/ year)	% Surplus
Mustard Stalk	450000	267000	48153	42%
Bajra	918000	670000	48153	28%
Cotton Stalk	58000	35000	0 (negligible quantity)	65%

However since Mustard Stalk is available in surplus will be used as primary fuel and it is assumed that Cotton Stalk will be fired in a negligible quantity along with the primary fuel, although yet not decided. According to report all fuels are available in surplus.

i.e, $LE_y = 0$

Therefore, the emission reductions are estimated as:

$ER_y = BE_y - PE_y - LE_y$ Emission Reduction	1st	2nd	3rd year onwards
ER_y	36,775	74,207	78,804

B.6.4. Summary of ex-ante estimates of emission reductions

Year	Baseline emission (tCO_2 e)	Project emission (tCO_2 e)	Leakage (tCO_2 e)	Emission reductions (tCO_2 e)
Year 1	36,775	0	0	36,775
Year 2	74,207	0	0	74,207
Year 3	78,804	0	0	78,804
Year 4	78,804	0	0	78,804
Year 5	78,804	0	0	78,804
Year 6	78,804	0	0	78,804
Year 7	78,804	0	0	78,804
Year 8	78,804	0	0	78,804
Year 9	78,804	0	0	78,804
Year 10	78,804	0	0	78,804
Total	**7,41,417**	**0**	**0**	**7,41,417**
Total number of crediting years	**10**			
Annual average over the crediting period	**74,142**	**0**	**0**	**74,142**

B.7. Monitoring plan
B.7.1. Data and parameters to be monitored

Data / Parameter	**$EG_{BL,y}$**
Unit	MWh/y
Description	Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year
Source of data	Plant log book data recorded from energy meter.
Value(s) applied	39916 - 1st year 80546 - 2nd year 85536-3rd year onwards.
Measurement methods and procedures	Measured on a monthly basis by the grid meters installed by HSEB as the net electricity exported to the grid. This will form the basis for calculations and will be tallied against the data recorded by the DISCOM which will be taken monthly by the plant and officials from the DISCOM. In case there is a difference between the plant records and the DISCOM record, the DISCOM record will prevail. The meters are tri-vector meters with accuracy class of 0.2
Monitoring frequency	On an hourly basis.
QA/QC procedures	Electricity meter would be calibrated at least once in every three years by external agency. Electricity exported can be checked with records (Invoices) for sold electricity. The net electricity export/supplied to a grid is the difference between the measured quantities of the grid electricity export and the import. If applicable, cross check net electricity supplied to a grid as gross energy generation in the project activity power plant minus the auxiliary/station electricity consumption, technical losses and electricity import from the grid to the project power plant measured at the grid interface/connection used for billing purpose.
Purpose of data	Calculation of baseline emissions
Additional comment	Data will be kept for the crediting period and two years thereafter

Data / Parameter	$EG_{aux,y}$
Unit	MWh
Description	Auxiliary consumption due to the project activity in the year y,
Source of data	Plant records
Value(s) applied	4435.2- 1st year 8949.6- 2nd year 9504-3rd year onwards
Measurement methods and procedures	Meter will be installed in order to measure the auxiliary consumption by the project activity. Data from the turbine generator will be continuously recorded by the Shift Electrical in-charge. This will be collated at the end of each day. Tri-vector meters with an accuracy class of 0.2 will be installed
Monitoring frequency	In an hourly basis
QA/QC procedures	Electricity meter would be calibrated at least once in every three years by external agency. Electricity exported can be checked with records (Invoices) for sold electricity. The net electricity export/supplied to a grid is the difference between the measured quantities of the grid electricity export and the import. If applicable, cross check net electricity supplied to a grid as gross energy generation in the project activity power plant minus the auxiliary/station electricity consumption, technical losses and electricity import from the grid to the project power plant measured at the grid interface/connection used for billing purpose
Purpose of data	Calculation of baseline emissions
Additional comment	Data will be kept for the crediting period and two years thereafter.

Data / Parameter	$EG_{gross,y}$
Unit	MWh
Description	Gross electricity generated by the project activity in the year y,
Source of data	Plant records
Value(s) applied	44352- 1st year 89496- 2nd year 95040-3rd year onwards
Measurement methods and procedures	Data from the turbine generator will be continuously recorded by the Shift Electrical in-charge. This will be collated at the end of each day. Tri-vector meters with an accuracy class of 0.2 will be installed.
Monitoring frequency	In an hourly basis
QA/QC procedures	The meters used will be calibrated at least once every year.
Purpose of data	Calculation of baseline emissions
Additional comment	Data will be kept for the crediting period and two years thereafter.

Data / Parameter	$Q_{i,y}$
Unit	MWh
Description	Consumption of biomass by type i for the year y,
Source of data	Plant records
Value(s) applied	48153.6- 1st year 97167.1- 2nd year 103186.3-3rd year onwards
Measurement methods and procedures	The quantity of all biomass will be measured by means of weighbridge at the plant.100% of the data will be monitored
Monitoring frequency	In an hourly basis
QA/QC procedures	Transporters receipts and/or computer generated payment invoice will form a QA/ QC check. The weighbridge meters will have an accuracy of ± 10 kgs
Purpose of data	Calculation of baseline emissions
Additional comment	Data will be kept for the crediting period and two years thereafter.

Data / Parameter	$M_{i,y}$
Unit	%
Description	Moisture content of biomass by
Source of data	Plant records
Value(s) applied	10%(*ex-ante*)
Measurement methods and procedures	The moisture content of biomass of homogeneous quality shall be determined *ex-ante.*
Monitoring frequency	The moisture content will be monitored on a monthly basis by moisture analyser. The weighted average should be calculated for each monitoring period and used in the calculation for dry biomass
QA/QC procedures	The data will be cross verified from the
Purpose of data	Calculation of baseline emissions
Additional comment	Data will be kept for the crediting period and two years thereafter.

Data / Parameter	$NCV_{i,y}$
Unit	GJ/tonne
Description	Net Calorific value of biomass residue by type i for the year y,
Source of data	Lab test report conducted
Value(s) applied	14.62 (calculated based on NCV of 3500kacl/kg as per the value provided in the Detailed Project Report)
Measurement methods and procedures	NCV of Biomass will be conducted by NABL accredited third party lab following the relevant national/international standards. NCV will be measured quarterly, taking at least three samples for each measurement. The average value can be used for the rest of the crediting period.
Monitoring frequency	Determine once in the first year of crediting period.
QA/QC procedures	The consistency of measurements will be compared with the measurement results, relevant data sources (e.g. values in the literature, values used in the national GHG inventory) and default values by the IPCC. If the measurement results differ significantly from previous measurements or other relevant data sources, additional measurements will be conducted
Purpose of data	Calculation of baseline emissions
Additional comment	

Following parameters are not monitored under the project activity:-

Parameters	Description	Remarks
1. $EF_{Co2,y}$	CO_2 emission factor of fossil fuel type i	The project does not involve the consumption of fossil fuel.
2.	Net calorific value of fossil fuel type i	The project does not involve the consumption of fossil fuel.
3.	Quantity of fossil fuel consumed in year y	The project does not involve the consumption of fossil fuel.
4. $\sigma_{historical}$	Standard deviation of the annual average historical net electricity generation delivered to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity	Not applicable since there was no existing renewable energy plant that was operated at the project site prior to the implementation of the project activity as this is a Greenfield project.

B.7.2. Sampling plan

>>Not Applicable for this project activity.

B.7.3. Other elements of monitoring plan

>>

The data flow and monitoring hierarchy is diagrammatically represented below

#	Tasks description	Operator(s)	Technical Engineer	Technical manager	CDM monitoring project manager
Monitoring activity					
1	Recording of monitored data	✓	✓		
Quality Assurance & Quality Control					

2	Verification of data monitored (consistency and completeness)		✓	✓	
3	Ensuring adequate training of staff			✓	✓
4	Ensuring adequate maintenance		✓	✓	
	Ensuring calibration of monitoring instruments		✓	✓	✓
5	Data archiving: ensuring adequate storage of data monitored (integrity and backup)			✓	✓
6.	Identification of non-conformance and corrective/preventive actions and monitoring plan improvement			✓	✓
7	Emergency procedures		✓	✓	
Calculation of GHG emission reductions and reporting					
9	Processing of data and calculation of emission reductions				✓
10	Monitoring report: management review of monitoring report (internal audit)			✓	✓

SECTION C. Duration and crediting period

C.1. Duration of project activity

C.1.1. Start date of project activity

>> Starting date of the project activity is 03/10/2010, which corresponds to the purchase order of boiler for the project activity.

C.1.2. Expected operational lifetime of project activity

>>Expected operational lifetime of the project activity is 20 years.

C.2. Crediting period of project activity

C.2.1. Type of crediting period

>>

Fixed crediting period

C.2.2. Start date of crediting period

>>

01/08/2012 or the date of submission to UNFCCC, whichever is later.

C.2.3. Length of crediting period

>>10 years 0 months

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

>> In accordance with Environmental Impact Assessment (EIA) notification S.O. 1533, dated 14th September 2006[7] issued by Ministry of Environment & Forests (MoEF), Govt. of India, the biomass based power projects are not included in the list of projects that have to get Prior Environmental Clearance (EC) either from State or Central Govt. authorities. The project activity being a biomass based power project, it does not fall under the purview of said EIA notification and therefore the EIA study need not be conducted for the project activity under consideration

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

>> GEL has 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. The project proponent has invited comments and feedbacks of the local stakeholders by posting a notice and also conducted a meeting[1] on 18/02/2012.

E.2. Summary of comments received

The stakeholders who were attended the meeting are categorised as under:

1. Villagers
2. Gram Panchayat

Following comments were received during the meeting:-

1. Does this project required water and if yes from where it will be arranged
2. Does the project increase employment opportunities in the area?
3. What will be the fuel used to generate power and what are the benefits to local farmers?

E.3. Report on consideration of comments received

>>

Comments have been received on minutes of meeting.

SECTION F. Approval and authorization

>>

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[7] Reference:- http://envfor.nic.in/legis/eia/so1533.pdf

[1] Relevant poof of Stakeholder Consultation would be presented to DOE.

Appendix 1: Contact information of project participants

Organization	Gemco Energy Limited
Street/P.O. Box	Mathura Road
Building	14/3
City	Faridabad
State/Region	Haryana
Postcode	121003
Country	India
Telephone	91-129-2271477
Fax	0129-2274832
E-mail	deepakssl2009@gmail.com
Website	
Contact person	Mr Deepak Sharma
Title	General Manager
Salutation	Mr.
Last name	Sharma
Middle name	
First name	Deepak
Department	Technical
Mobile	08053107005
Direct fax	0129-2274832
Direct tel.	91-129-2271477
Personal e-mail	deepakssl2009@gmail.com

Organization:	First Climate (India) Private Limited
Street/P.O.Box:	3C Camac Street
Building:	Camac Tower, 9th Floor
City:	Kolkata
State/Region:	West Bengal
Postfix/ZIP:	700 016
Country:	India
Telephone:	+91 (33) 4022 3456
FAX:	+91 (33) 4022 6615
E-Mail:	
URL:	www.firstclimate.com
Represented by:	
Title:	Director
Salutation:	Mr.
Last Name:	Biswas
Middle Name:	
First Name:	Subhendu
Department:	Carbon Asset Development

Mobile:	+91 9748756709
Direct FAX:	+91 (33) 4022 6615
Direct tel:	+91 33 4022 3468
Personal E-Mail:	subhendu.biswas@firstclimate.com

Appendix 2: Affirmation regarding public funding

No public funding is involved in the project activity. The entire project investment has been sourced from equity contribution from project proponent and debt from bank

Appendix 3: Applicability of selected methodology

Appendix 4: Further background information on ex ante calculation of emission reductions

Appendix 5: Further background information on monitoring plan

Appendix 6: Summary of post registration changes

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History of the document

Version	Date	Nature of revision
04.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for small-scale CDM project activities" (EB 66, Annex 9).
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.
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>.
01	21 January 2003	Initial adoption.
Decision Class: Regulatory **Document Type:** Form **Business Function:** Registration		