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:

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Biomass based power project of SPPPL

Version: 01

Date: 18/1/07

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

>>

Purpose

Satyakala Power Projects Private Limited (SPPPL) has set up a 4MW biomass based power plant at Ganguru near Vijayawada. Electricity generated from the power plant is supplied to the electricity grid of Andhra Pradesh Power Transmission Corporation (APTRANSCO). The electricity grid is dominated by higher greenhouse gas (GHG) intensive power plants, mainly thermal power plants. Thus, the project activity displaces an equal amount of electricity from the grid and reduces emission of greenhouse gas.

Projects contribution to sustainable development

Environmental well being

Local benefits: The project activity helps in sustainable development by using agricultural waste and other industrial waste as fuels in the power plant. As this project activity uses renewable fuels, it reduces the burden on fossil fuels. Since it is a cleaner fuel, it reduces air emissions too.

In the absence of project activity, agricultural waste was burned in the open. It not only caused air pollution but also lead to degradation of top soil.

Global benefits: The project activity reduces emissions of GHG, thus contributes to global air pollution reduction.

Social well being

The project proponent has made efforts to enhance the social status in some of the ways like opening bank accounts for the suppliers and farmers, thus, helping them get exposure to more efficient and secure ways of accounting.

By using waste and giving it an economic value, project proponent spreads a new message on the utilization prospectus available with agricultural wastes. Increased income also adds to social well being. Overall social well being is increased because of the project.

Economic well being

Due to the project activity 50 local people have received employment as casual labors in the power plant. There are 42 employees permanent employees in the company. Most of these employees belong to Andhra Pradesh and more than one-fourth are local people. In addition to direct employment it has created avenues for indirect employment. One of the most prominent areas of employment is to the lorry drivers. They provide transportation of biomass from farms and various other locations to the power plant. Also agricultural waste has attained an economic value. Thus, there is an improvement in the economic status of people.

Due to all the above mentioned aspects project activity has an overall positive contribution to sustainability.

A.3. Project participants:

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Name of Party involved (*) ((host) indicates a host Party)	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project participant (Yes/No)
India	Satyakala Power Projects Pvt. Ltd.	No

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

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

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A.4.1.1. Host Party(ies):

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India

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

>>

Andhra Pradesh

A.4.1.3. City/Town/Community etc:

>>

Ganguru, Krishna District

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

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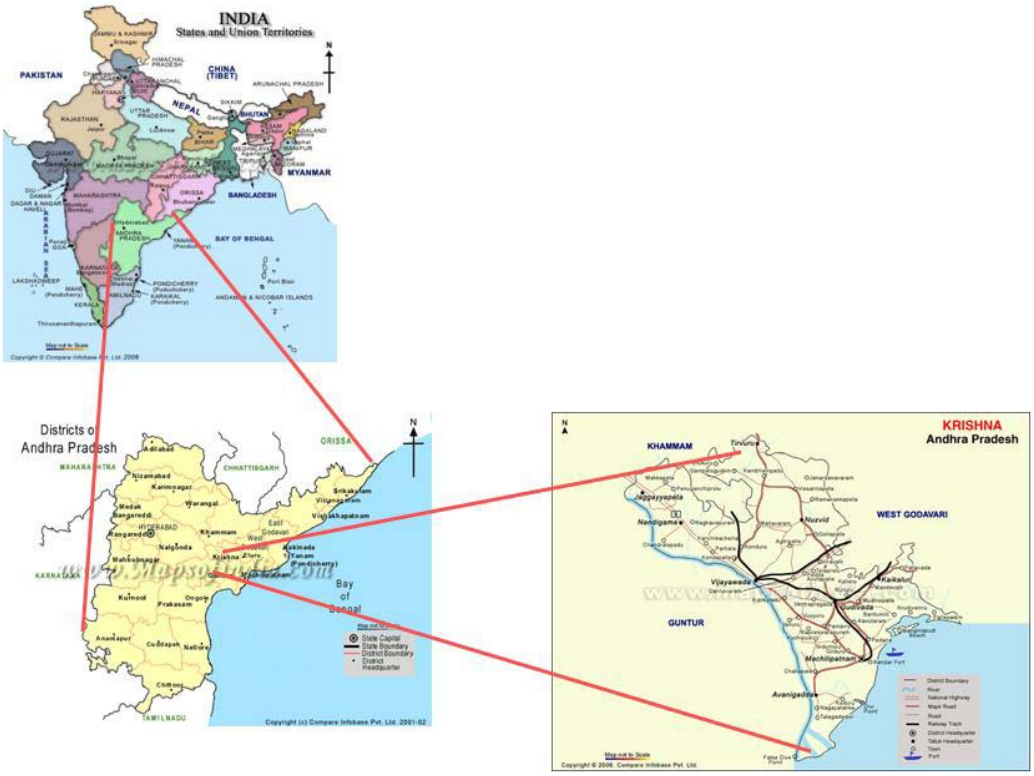
The project activity is located at Ganguru village of Penamaluru Mandalam in Krishna District of Andhra Pradesh in India. The longitude and latitude of the project activity is 80°31'E & 16°31'N. The closest railway station and airport is at Vijaywada which is nearly 20 km away from project site.



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

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The project activity consists of a boiler and turbine. The project proponent has installed a 30TPH fluidized bed cum Bi-drum boiler. The pressure and temperature specifications for the boiler are 68kg/cm2 and 495+_5^0C. The 4MW turbine installed at project site has been supplied by Triveni Engineering & Industries Ld. It is an extraction cum condensation type turbine, having an extraction flow of 18T.

Power plant is fed with different types of fuels through three different conveyor belts. Rice husk and wood chippings are fed through one conveyor belt, palm leaves and other type of agricultural waste is fed through another conveyor system and coal through the third conveyor system.

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

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Year[1]	Emission Reduction
Year 1	18089
Year 2	18089
Year 3	18089
Year 4	18089
Year 5	18089
Year 6	18089
Year 7	18089
Year 8	18089
Year 9	18089
Year 10	18089
Total Emission Reduction (tCO2e)	**180890**
Crediting Period (years)	**10**
Average CO2 emission reduction (tCO2/yr)	**18089**

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

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No public funding is available for the project activity

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

The small-scale project activity is not a debundled component of a large project activity since there is no 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 or technology; 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 proponent has not proposed any other CDM project activity till now. Hence, the project activity is not a debundled project activity.

SECTION B. Application of a baseline and monitoring methodology

[1] Year starts from the date of registration of the project at UNFCCC

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

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The small scale methodology applicable to the project activity is Type I – Renewable Energy Projects subset 1D - Grid connected renewable electricity generation

Version: 10

Sectoral Scope: 1

Date of update: 23rd of December 2006

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

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The applicability conditions under the applied baseline methodology mentioned in section B1 of the PDD are as follows:

1. *This category comprises renewable energy generation units, such as photovoltaics, hydro,tidal/wave, wind, geothermal and renewable biomass, that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.*

2. *If the unit added 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 added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15MW.*

3. *Biomass combined heat and power (co-generation) systems that supply electricity to and/or displace electricity from a grid are included in this category. To qualify under this category, the sum of all forms of energy output shall not exceed 45 $MW_{thermal}$ e.g. for a biomass based co-generating system the rating for all the boilers combined shall not exceed 45 $MW_{thermal}$.*

4. *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[1] from the existing units.*

5. *Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.*

The project activity is a new biomass based power plant set up for supplying power to the electricity grid. The power plant set up in the project activity is a 4MW power plant. After extraction in the turbine, steam in used in the solvent plant which is located adjacent to the power plant. Project activity fires renewable fuels and co-fires coal (i.e. fossil fuel). Thus, the project activity meets all applicability criteria of the methodology 1D.

B.3. Description of the project boundary:

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The project boundary is defined in the methodology as: *The project boundary encompasses the physical, geographical site of the renewable generation* source.

In the project activity project boundary is the premises of the Satyakala power plant where the power generation set up is present.

B.4. Description of baseline and its development:

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Project activity mainly uses agricultural waste for generation of power. Coal is being co-fired in case of exigencies and for startup. Since inception of the power plant the average coal usage has been around 8%. This clearly envisages that the project activity predominantly used renewable fuels for power generation.

The GHG emission from biomass based fuels is negligible. The power plant of SPPPL supplies power to APTRANSCO which is located in the southern electricity grid of India as shown in table below.[2] In the absence of the project activity, due to demand for electricity in the southern grid, same electricity would have been generated in a more GHG intensive power plant.

Northern	Western	Southern	Eastern	North-Eastern
Chandigarh	Chhattisgarh	Andhra Pradesh	Bihar	Arunachal Pradesh
Delhi	Gujarat	Tamil Nadu	Jharkhand	Assam
Haryana	Maharashtra	Karnataka	Orissa	Manipur
Punjab	Madhya Pradesh	Kerala	West Bengal	Meghalaya
Himachal Pradesh	Daman & Diu	Pondicherry	Sikkim	Mizoram
Jammu & Kashmir	Dadar & Nagar Haveli	Lakshadweep	Andaman & Nicobar	Nagaland
Uttar Pradesh	Goa			Tripura
Uttranchal				
Rajasthan				

[2] Regional Electricity grid distribution as provided by Central Electricity Authority of India

Southern grid is dominated by GHG intensive fuels especially, coal. Thus, the baseline for the project activity is the kWh of electricity generated by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2e/kWh) calculated in a transparent and conservative manner.

Central Electricity Authority of India has published baseline emission factor for both the scenarios and is as below:

- Average GHG intensity of southern grid for the year 2004-2005 is 0.79 tCO2/MWh[3].
- The combined margin (CM) for the last three years (i.e. 2004-2005 to 2003-2002), using the approach defined by ACM0002, 0.86 tCO2/MWh

The average GHG emission factor, as per methodology, must use data of the year in which project emission occurs. As latest information for the year 2005-2006 is not available in the public domain, CM is more appropriate choice and hence applied to the project activity.

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:

As per the decision 17/cp.7 para 43, a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.

Step 1: The project activity started after 1st January 2000.

First machinery for the power plant i.e. boiler wads ordered in September 2000. Also the project activity claims CDM revenue only after registration.

Step 2: Financial Barrier

Project cost:

The project activity has been funded by internal accruals of SPPPL. Total project cost has been INR160million.

Fuel Cost:

Fuel cost has been fluctuating over the years. Rice husk has over the past four years contributed to more than 50% of the fuel consumed by the plant. The prices of this major fuel have risen from INR 1000/T to INR 1400/T from the year 2002 to the year 2005 respectively. Thus, the cost of fuel for the project has increased.

Power tariff structure:

[3] Most recent information is available for the year 2004-2005

Power purchase agreement (PPA) for the project activity was signed between SPPPL and APTRANSCO in the year 2001. As per the purchase agreement APTRANSCO agreed to purchase power under a single tariff system at the rate of INR 3.16/KWh, with an escalation of 5% every year till March 2004. However subsequently policies changed and the power purchase prices dropped to INR 2.8/KWh in the year 2004 and continued to remain the same till May 2005. Subsequently, a two part tariff structure was introduced in May 2005, which had a fixed and variable cost component. From May 2006 till December 2006, the power tariff has fluctuated from INR 3.14/KWh to INR 3.165/ KWh. Thus, the tariff structure for renewable energy power generation facilities has been very uncertain and not supplier friendly.

The uncertainty in fuel price and varying power tariff over the years has impacted the financial viability of the project. IRR for the project, as per DPR, estimates was approximately 21% (Appendix 1). However, due to the above mentioned fluctuations actual IRR for the project has been 11.67% (Appendix 1), which much below the projected IRR.

Thus under the current power tariff structure and fuel prices, the sustenance of biomass based power plant of SPPPL, cannot be ascertained in the absence of CDM revenue. IRR for the project activity with CDM revenue is expected to become 15.77%. Hence, biomass based power plant of SPPPL faces a financial barrier, in terms of future sustainability, which it can overcome with CDM revenue.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

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The monitoring methodology for the project activity is to be used in conjunction with the baseline methodology ID. Since, the baseline methodology is applicable to the project activity, the monitoring methodology is also applicable.

The monitoring methodology requires monitoring of the following:

- Metering the electricity generated from the project activity
- Monitoring of biomass and fossil fuel generated from the project activity

In the project activity at SPPPL - electricity generated and fuel fired are measured.

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

(Copy this table for each data and parameter)

Data / Parameter:	**$Net\_E_{exp,m}$**
Data unit:	KWh/month
Description:	Net Electricity exported to the electricity grid after deducting auxiliary consumption and imports from the southern electricity grid

Source of data to be used:	Calculated
Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. 24.30GWh/yr
Description of measurement methods and procedures to be applied:	Trivector meters of L& T make, 0.2 Class accuracy with optical port were installed at 132 KV Sub-Station, Ganguru, 1.5 Kms away from project and meter readings were recorded by the APTRANSCO Officials in the presence of the proponent for both import and export. These meters are calibrated by APTRANSCO/ ETDC early or half yearly. The figure is calculated by subtracting the import and export readings.

Data / Parameter:	$\mathbf{E}_{exp,m}$
Data unit:	KWh/month
Description:	Electricity exported to the electricity grid after deducting auxiliary consumption
Source of data to be used:	Tri vector Electricity meter reading recorded at electricity board meter reading jointly by both the parties
Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. 24.38GWh/yr
Description of measurement methods and procedures to be applied:	Trivector meters of L& T make, 0.2 Class accuracy with optical port were installed at 132 KV Sub-Station, Ganguru, 1.5 Kms away from project and meter readings were recorded by the APTRANSCO Officials in the presence of the proponent for both import and export. These meters were calibrated by APTRANSCO/ ETDC early or half yearly.

Data / Parameter:	$\mathbf{E}_{imp,m}$
Data unit:	KWh/month
Description:	Electricity imported from the electricity grid during startup and shut down
Source of data to be used:	Electricity bills by APTRANSCO provided to SPPPL

Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. 0.084KWh/yr
Description of measurement methods and procedures to be applied:	Trivector meters of L& T make, 0.2 Class accuracy with optical port were installed at 132 KV Sub-Station, Ganguru, 1.5 Kms away from project and meter readings were recorded by the APTRANSCO Officials in the presence of the proponent for both import and export. These meters were calibrated by APTRANSCO/ ETDC early or half yearly.

Data / Parameter:	**$FF_{c,,y}$**
Data unit:	Tonnes/yr
Description:	Coal used in the power plant during the year
Source of data to be used:	Coal allotment from Singrani collaries, puchase receipts and stock details
Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. 4552Tonnes/yr
Description of measurement methods and procedures to be applied:	A weigh bridge was installed in the project premises to weigh the arrivals of all fuels.This weigh bridge was calibrated by the A.P.State Govt. authorities yearly.

Data / Parameter:	**$BF_{i,,y}$**
Data unit:	Tonnes/yr
Description:	Quantity of 'I' type of biomass used during the year 'y'
Source of data to be used:	Purchase receipts and payment details
Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. 51573 Tonnes/yr

Description of measurement methods and procedures to be applied:	A weigh bridge was installed in the project premises to weigh the arrivals of all fuels. This weigh bridge was calibrated by the A.P.State Govt. authorities yearly.

Data / Parameter:	**$NCV\_FF_{c,,y}$**
Data unit:	Kcal/kg
Description:	Net calorific value of the coal used in the power plant during the year
Source of data to be used:	NCV figures provided by Singreni colaries and the measurements by SPPPL
Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. 4000kCal/kg
Description of measurement methods and procedures to be applied:	The NCV measurements shall take place only once a month.

Data / Parameter:	**$NCV\_BF_{i,,y}$**
Data unit:	kCal/kg
Description:	Net calorific value of the biomass 'I' used in the power plant during the year 'y'
Source of data to be used:	NCV figures from the measurements at an external laboratory
Value of data applied for the purpose of calculating expected emission reductions in section	Four year average figure i.e. from March 2002 to March 2006. Weighted average GCV for all fuels except for coal is 2876kCal/kg
Description of measurement methods and procedures to be applied:	The NCV measurements shall take place only once a month.

B.6.3 Ex-ante calculation of emission reductions:

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Project emissions occur due to the following three:

1. Emissions from power generation by using coal

PEc,y = FFc,y *NCV_BFc,y * EFc

FFc,y	Average coal consumption (MT/yr)
NCV_BFc,y	NCV of coal (kCal/kg)
EFc	Average emission factor for power generation by coal (tCO2/TJ)

2. Emissions due to transportation of fuel

$N_{t,t}$	=	Average fuel consumption at project plant / $C_{avg,t}$
$C_{avg,t}$		Capacity of one truck or lorry (MT)
D_F_y	=	$N_{t,t}$ *2* $F_{avg,t}$ / Average mileage of the truck
$F_{avg,t}$		Average distance of fuel availability (km)

$PE_{d,y}$	=	D_F_y * NCV_d * η_d * $EF_{d,y}$ *4186.8 *10^-12
NCV_d		Calorific value of diesel (kCal/kg)
η_d		density of diesel (kg/l)
$EF_{d,y}$		Emission factor for diesel trucks (tCO2/TJ)

PEy = $PE_{c,y}$ + $PE_{d,y}$

BE_y = EFCO2 * $Net\_E_{exp,m}$

EFCO2	=	Combined margin emission factor for southern grid
$Net\_E_{exp,m}$	=	Net electricity exported to the southern grid by SPPPL
BE_y	=	Baseline emission from the generation of electricity

The baseline emission for the project activity is 20899tCO2/yr.

$ER_y = BE_y - PE_y$

Emission reduction due to the project activity is 18089 tCO2/annum

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

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Emission Type	Units	Year1	Year2	Year3	Year4	Year5	Year 6	Year 7	Year 8	Year 9	Year 10
Baseline Emissions	tCO2/yr	20899	20899	20899	20899	20899	20899	20899	20899	20899	20899
Project Emissions	tCO2/yr	2810	2810	2810	2810	2810	2810	2810	2810	2810	2810
Leakage	tCO2/yr	0	0	0	0	0	0	0	0	0	0
Emission Reduction	tCO2/yr	18089	18089	18089	18089	18089	18089	18089	18089	18089	18089
Total Emission Reduction	tCO2	180890									

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:	$\mathbf{E}_{exp,m}$
Data unit:	KWh/month
Description:	Electricity exported to the electricity grid
Source of data to be used:	Tri vector Electricity meter reading recorded at electricity board meter reading jointly by both the parties
Value of data	Refer annexure 3
Description of measurement methods and procedures to be applied:	Trivector meters of L& T make, 0.2 Class accuracy with optical port were installed at 132 KV Sub-Station, Ganguru, 1.5 Kms away from project and meter readings were recorded by the APTRANSCO Officials in the presence of the proponent for both import and export. These meters are calibrated by APTRANSCO/ ETDC early or half yearly. The figure is calculated by subtracting the import and export readings.
QA/QC procedures to be applied:	Joint meter readings are taken by APTRANSCO and SPPPL. SPPPL is paid for this quantity of electricity.
Any comment:	

Data / Parameter:	$\mathbf{E}_{imp,m}$
Data unit:	KWh/month
Description:	Electricity imported from the electricity grid during startup and shut down
Source of data to be	Electricity bills by APTRANSCO

used:	
Value of data	Refer annexure 3
Description of measurement methods and procedures to be applied:	Trivector meters of L& T make, 0.2 Class accuracy with optical port were installed at 132 KV Sub-Station, Ganguru, 1.5 Kms away from project and meter readings were recorded by the APTRANSCO Officials in the presence of the proponent for both import and export. These meters are calibrated by APTRANSCO/ ETDC early or half yearly. The figure is calculated by subtracting the import and export readings.
QA/QC procedures to be applied:	Electricity imported figures are from the payments made against the bills provided by the state electricity board.
Any comment:	

Data / Parameter:	$\mathbf{FF}_{c,,y}$
Data unit:	Tonnes/yr
Description:	Coal used in the power plant during the year
Source of data to be used:	Coal allotment from Singrani collaries, puchase receipts and stock details
Value of data	Refer annexure 3
Description of measurement methods and procedures to be applied:	A weigh bridge was installed in the project premises to weigh the arrivals of all fuels. This weigh bridge was calibrated by the A.P.State Govt. authorities yearly.
QA/QC procedures to be applied:	Coal allotment is done by Singreni collieries. The coal receipt and coal used data is also available
Any comment:	

Data / Parameter:	$\mathbf{BF}_{i,,y}$
Data unit:	Tonnes/yr
Description:	Quantity of 'I' type of biomass used during the year 'y'
Source of data to be used:	Purchase receipts and payment details
Value of data	Refer annexure 3
Description of measurement methods and procedures to be applied:	A weigh bridge was installed in the project premises to weigh the arrivals of all fuels. This weigh bridge was calibrated by the A.P.State Govt. authorities yearly.
QA/QC procedures to be applied:	Payment is made against fuel received and also daily records are kept of fuel sued.
Any comment:	

Data / Parameter:	$NCV\_FF_{c,,y}$
Data unit:	KCal/kg
Description:	Net calorific value of the coal used in the power plant during the year
Source of data to be used:	NCV figures provided by Singreni colaries and the measurements by SPPPL
Value of data	Refer annexure 3
Description of measurement methods and procedures to be applied:	The NCV measurements shall take place only once a month.
QA/QC procedures to be applied:	NCV of coal is provided by Singreni collieries along with the bill.
Any comment:	

Data / Parameter:	$NCV\_BF_{i,,y}$
Data unit:	kCal/kg
Description:	Net calorific value of the biomass 'I' used in the power plant during the year 'y'
Source of data to be used:	NCV figures from the measurements at an external laboratory
Value of data	Refer annexure 3
Description of measurement methods and procedures to be applied:	The NCV measurements shall take place only once a month.
QA/QC procedures to be applied:	NCV measurements are carried out once in a month at an external laboratory
Any comment:	

B.7.2 Description of the monitoring plan:

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Monitoring plan is described in details in annexure 4.

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

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Date of completion of the application of baseline and monitoring methodology: 12/1/07

The baseline for the project activity has been developed by Satyakala Power Projects Pvt. Ltd. Along with their consultants.

Details provided in Annexure I

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:

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The project activity was started on 15/09/2000. (purchase order to the boiler supplier)

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

>>

20years

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:

>>

Not applied

C.2.1.2. Length of the first crediting period:

>>

Not applied

C.2.2. Fixed crediting period:

Applied

C.2.2.1. Starting date:

>>

From the date of project registration

C.2.2.2. Length:

>>

10 years

SECTION D. Environmental impacts

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

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As environmental impact assessment study has been carried out for the project activity. The environmental management for the project activity is as follows:

Parameter	Construction Phase		Operation Phase	
	Issue	**Mitigation plan**	**Issue**	**Mitigation plan**
Air & Noise	Generation of fugitive dust emissions Generation of noise due to use of machinery for construction purpose	Spraying of water for dust suppression Use of personal protection equipments like ear muffs	Due to operation of power plant machinery like boilers there will be noise pollution	Use of proper acoustic for the equipment. Also the noise will not have effect beyond the premises
Water	Water requirement for construction purpose and waste water generation	Ground water was used during the construction activity. Toilets and septic tanks were provided for the wastewater collection	Process water requirement	Process water requirement is met from ground water. However, the overall ground water requirement is also much less than that for a thermal power plant.
Solid Waste	No fly ash during this phase	Not needed	Fly ash is the main solid waste generated. Fly ash generated from the plant is much less than a thermal plant. However, inappropriate fly ash storage and disposal can lead to degradation of land and water sources	Ash is collected in and tube hopper, Economizer, Air Pre-heater and electrostatic precipitator by a belt conveyor and is kept in ash bunker of 10MT capacity. From here it is loaded into trucks through ash conditioner. This is used by brick manufacturers for

				brick manufacturing.
Social	Local community	Local people are employed for suitable activity	Local community	Agricultural waste is sued as fuel in the project. This is procured mainly from the farmers in and around the project site. It fetches good economic value for a waste .

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:

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No significant impacts are considered by the project participant or host party.

SECTION E. Stakeholders' comments

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

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Following were identified as the major stakeholders for the project activity:

- Government institutions – APTRANSCO and Andhra Pradesh Pollution Control Board (APPCB)
- Transporters of fuel
- Farmers
- Local population
- Employees
- Nearby industries

An invitation letter was sent to all the stakeholders prior to the stakeholder consultation on the 23rd of November 2006. Stakeholders were provided a briefing on the project activity in local language (Telugu) as well as English and Hindi as needed. The director of power plant explained the project to all. Following this the participants were requested to discuss and questions with all present at the meeting.

The major question and comments were noted and signed by the questioner or concerned audience. Adequate answers were provided and noted in minutes of meeting.

CDM – Executive Board

E.2. Summary of the comments received:

>>

The stakeholders appreciated the setting up of a biomass based power plant by SPPPL. Many stakeholders came forward and explained that agricultural waste which earlier was a problem for them has now become a source of income. They added that waste from sugar can plant like leaves and thrash which sugar manufacturers refused to purchase is also purchased by these plants. Most of the waste gathering from the farms is done by women. Hence, this activity fetches them employment. The lorry and truck persons carrying waste from the various farms to the power plant were satisfied as it increased the number of Lorries they operated.

Some details can be provided like comments from APPCB, APTCL, Biomass suppliers etc.

Due to the project activity local gram panchayat officials were benefited due to additional revenue.

The brick manufacturers have been benefited due to availability of good quality fly ash from the power plant.

In addition some stakeholders wanted the benefits to the buyer of CER's to be explained in detailed.

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

>>

In general people were satisfied with the power plant. The comment on buyers benefit was explained in detail.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Satyakala Power Projects Pvt. Ltd.
Street/P.O.Box:	
Building:	
City:	Ganguru, Krishna District
State/Region:	Andhra Pradesh
Postfix/ZIP:	521 139
Country:	India
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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

NO PUBLIC FUNDING FOR PROJECT ACTIVITY

Annex 3

BASELINE INFORMATION

Emission Reduction Calculation

Baseline emission	***Generation of electricity from fossil fuel intensive power plants in the electricity grid.***		
Combined margin emission factor for southern grid	EFCO2	0.86	tCO2/MWh
Net electricity exported to the southern grid by SPPPL	$Net\_E_{exp,m}$	24301.58	MWh/yr
Baseline emission from the generation of electricity	***BE_y***	***20899.36***	***tCO2/yr***
Project emissions			
Due to generation of electricity			
Average coal consumption	$FF_{c,y}$	4552.00	Mt
NCV of coal	$NCV\_BF_{c,y}$	4000.00	Kcal/kg
Average emission factor for power generation by coal		26.80	tCO2/TJ
Emission from power generation by using coal	***$PE_{c,y}$***	***2043.05***	***tCO2/yr***
Due to transportation of fuel			
Average distance of fuel availability	$F_{avg,t}$	75.00	km
Capacity of one truck or lorry	$C_{avg,t}$	8.00	MT
Average fuel consumption at project plant	$\sum BF_{i,y} + FF_{c,y}$	56126.00	Mt/yr
Average millage of the trucks		4.00	km/l
Number of truck trips	$N_{t,t}$	7015.75	
diesel consumption in fuel transportation	D_F_y	263090.63	litres
Calorific value of diesel	NCV_d	9600.00	kcal/kg
density of diesel	η_d	0.98	kg/l
Emission factor for diesel trucks	$EF_{d,y}$	74.00	tCO2/TJ
Emission due to diesel trucks	***$PE_{d,y}$***	***766.86***	***tCO2/yr***
Project Emissions	***PE_y***	***2809.91***	***tCO2/yr***
Emission reduction	***ER_y***	***18089.45***	***tCO2/yr***

Annex 4

MONITORING INFORMATION

The calibration of monitoring equipment is being maintained as per the requirement of APTRANSCO and the same is being done regularly. Power Generation, Export & Auxiliary Consumption, fuel consumption are being recorded daily and the same is being verified and approved by General Manager of the plant.

Further, Internal Auditors also verify the monitoring data. As per the advices of the Internal Audit team, corrective actions will be taken up for more accurate future monitoring and reporting system.

The Plant is equipped with energy meters/export meters for monitoring and control purpose. There are two energy meters at APTRANSCO sub station to measure the export power, namely main meter and check meter with 0.2 class accuracy. The energy meters shall be tested and calibrated utilizing a standard meter. The standard meter shall be calibrated once in a year at the approved laboratory of Govt. of India or Govt. of AP as per terms and conditions of supply. The tests of meters shall be jointly conducted by authorised representatives of both the parties and the results and correction so arrived at mutually will be applicable and binding on both the parties. The energy meters shall not be interfered with, tested or checked except in the presence of representatives of company and APTRANSCO. If any of the meters is found to be registered inaccurately, the affected meter will be immediately replaced. The meters will be checked in presence of both the parties on mutually agreed periods. If during the test checks both the meters are found beyond permissible limits of error, both the meters shall be immediately replaced and the correction applied to the consumption registered by the main meter to arrive at the correct energy exported for billing purposes for the period of one month up to the time of test check, computation of exported energy for the period thereafter till next monthly reading shall be as per the replaced meter. Corrections in exported energy shall be applicable to the period between the two previous monthly reading and the sate and time of test calibration in the current month when error is observed.

Power generation, export and auxiliary consumption are being recorded at the plant from the installed meters. However, for applying monthly bill to APTRANSCO the meter readings will be taken on 24th of every month by APTRANSCO officials in presence of company representatives and readings will be jointly certified.

If both the both and check meters fail to record or if any of the PT fuses are blown out, the export energy will be computed on a mutually agreeable basis for the point of defect.

The following log sheets are being maintained for the critical equipment of the plant and readings are being recorded on day to day basis:

1. Turbine log
2. Boiler log
3. Electrical log

Emission levels are being monitored as per the statutory requirement. Plant emission levels are being monitored and the results are being sent to APPCB. For this purpose, the service of external agency is being utilized.

Energy Meters:

The Energy Meters installed at the Sub station shall be tested once in a year by APTRANSCO – MRT Division. For testing purpose a standard injection test kit shall be used by APTRANSCO and this test kit is the master tool for testing of the energy meters. The test results shall be jointly signed by the representatives of the Company and APTRANSCO. The Company shall authorize a Dy. Manager (E&I) or Electrical supervisor, who shall be a minimum Diploma Holder in Electrical Engineering, for witnessing / reviewing of the test results.

Instruments:

Instruments installed in the Plant like pressure gauges, temperature gauges, flow meters etc shall be calibrated once in a year or as per the recommendations of the Supplier. The instruments shall be tagged with the calibration date and next calibration due date.

Appendix 1

IRR of the project post implementation with out CDM revenue

Parameters	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capital Investment	-1374.44														
Working Capital Borrowings		-75													
Profite Before Tax	-96.73	-107.2	-59.14	-109.04	9.4	40	65	87	107	127	145	163	181	208	226
Add Depreciation and non cash expenses	131.99	293.17	230.62	176.14	86.98	75.17	64.46	55.31	47.47	40.77	35.03	30.11	25.9	22.23	19.19
Add- Interest	15.47	88.83	88.03	74.58	64.1	60.5	48	36	24	12	0	0	0	0	0
Less : tax	0	0	0	0	0.8	3.4	5.53	7.4	9.1	10.8	12.33	13.86	15.39	17.68	19.21
Add : Salvage value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IRR = 11.67%															

IRR of the project post implementation with CDM revenue

Parameters	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Capital Investment	-1374.44														
Working Capital Borrowings		-75													
Profite Before Tax	-96.73	-107.2	-59.14	-109.04	9.4	40	65	87	107	127	145	163	181	208	226
CDM revenue @8EURO/CER						89.6	89.6	89.6	89.6	89.6	89.6	89.6	89.6	89.6	89.6
Add Depreciation and non cash expenses	131.99	293.17	230.62	176.14	86.98	75.17	64.46	55.31	47.47	40.77	35.03	30.11	25.9	22.23	19.19
Add- Interest	15.47	88.83	88.03	74.58	64.1	60.5	48	36	24	12	0	0	0	0	0
Less : tax	0	0	0	0	0.8	3.4	5.53	7.4	9.1	10.8	12.33	13.86	15.39	17.68	19.21
Add : Salvage value	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
IRR = 15.77%															

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