

Gold Standard Monitoring Report

Version 04

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4.5 MW Biomass (low density Crop Residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd.

UNFCCC Reference No: 0298

GS Reference No.: GS343

4th Verification (1st Periodic Verification of the 2nd Crediting Period)
Monitoring Period: 01/08/2008 – 30/04/2009

Net Emission reductions: 9,211 tCO₂e

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1. Introduction

This Monitoring Report has been developed for the purpose of the Gold Standard verification exercise for greenhouse gas emission reductions achieved by the project activity titled “4.5 MW Biomass (low density Crop Residues) based Power Generation unit of Malavalli Power Plant Pvt Ltd.” and subsequent certification as per requirements of the UNFCCC Methodology Type I.D, for the period 01/08/2008 – 30/04/2009.

The information contained in this Monitoring Report corresponds to the Gold Standard verification criteria that are over and above the CDM verification criteria that are contained in the CDM Monitoring Report, available on the UNFCCC website:

<http://cdm.unfccc.int/UserManagement/FileStorage/JTL8F5RDNE64UW1V0OS39K7AXPMCHI>.

The verification has been conducted by an accredited Designated Operational Entity: DNV. The verification report is available on the following link:

<http://cdm.unfccc.int/UserManagement/FileStorage/PYRAEUDW10BZJ4LVG2NSFMI8X96HQ3>

The project was registered with CDM Executive Board on 21 July 2006 and was completed as planned and described in the Project Design Document (PDD). The project has been verified in the past and has issued (or in the process of issuing) Gold Standard Certified Emission Reductions (GS CERs) for the following vintages:

1st crediting period:

1. First Monitoring Period – 01 August 2001 to 30 June 2006 – 77, 294 GS CERs
2. Second Monitoring Period – 01 July 2006 to 30 September 2007 – 17,160 GS CERs
3. Third Monitoring Period – 01 October 2007 to 31 July 2008 – issuance process ongoing with UNFCCC 8,191 CERs – GS issuance to be proposed upon issuance of CERs

2nd Crediting period:

4. First Monitoring Period - 01 August 2008 to 30 April 2009 – **9,211 CERs** issued by UNFCCC – GS issuance currently proposed by means of this report

The project has been promoted by MPPL Renewable Energy (P) Ltd, formerly Malavalli Power Plant (P) Ltd.

2. Monitoring Background

The Sustainable Development Matrix for the project activity is provided in the Gold Standard Annex submitted at the time of GS registration.

The Sustainable Development Assessment Matrix shows that there are no indicators, which would be critical for a positive contribution of the project to Sustainable Development or that are particularly sensitive. Further, the initial stakeholder consultation has not demonstrated any concerns, which would require special monitoring.

Upon approval of the project by the Gold Standard for retroactive validation (Gold Standard communication dated 8 December 2006), the Gold Standard recommended to monitor particulate matter emission levels as additional measure to regular CDM monitoring procedures.

Regular CDM monitoring procedures as specified in the PDD of the project activity account for:

- Determination of project emissions and emission reductions during the crediting period
- Determination of leakage due to transport of biomass and competing uses for biomass resources
- Determination of monitoring method (including data registration, monitoring, measurement and calibration) and the equipment applied
- Quality assurance and control procedures for the monitoring process
- Documentation of all relevant monitoring steps

Renewal of crediting period

Furthermore, the project proponent wishes to inform that as highlighted in the previous section, all GS CERs issued previously correspond to the 1st crediting period of the project activity. There has since been a renewal of the crediting period, as evident from the crediting period renewal from UNFCCC CDM website:

<http://cdm.unfccc.int/UserManagement/FileStorage/YGRS75IJEVWQMZX4C3OP8L2F0B61KN>

There has been no change in the baseline scenario and major monitoring procedures for calculating GHG emission reductions generated by the project. This is evident from the revised PDD available in the UNFCCC CDM website:

<http://cdm.unfccc.int/UserManagement/FileStorage/VRN9IYK32XFOHL8DEUSBZPMG10C457>

The same has been validated by an accredited DOE and explicitly mentioned in their validation opinion:

<http://cdm.unfccc.int/UserManagement/FileStorage/DWAZBYCS076QOHIPXUJMT529R1KEV3>

From the said documents, it can be argued that the renewal in crediting period brings about no impacts that can have any changes in the GHG emission reduction quantum of the project activity.

The GS CERs covered in the monitoring report under consideration correspond to the 2nd crediting period of the project activity. It may be justifiably concluded that as the baseline scenario and GHG emission reduction calculation and monitoring procedures are unchanged, the Gold Standard monitoring parameters shall also be the same for the 2nd crediting period of the project activity. Hence the Gold standard monitoring plan and parameters mentioned in subsequent sections of this Monitoring Report are same as the GS Annex submitted to the GS Registry at the time of project registration.

3. Parameters monitored according to the monitoring plan

The Gold Standard Monitoring Plan includes measurements of particulate emission levels in addition to the regular CDM monitoring procedures. It is also in line with the requirements of the Karnataka state's Pollution Control Board

1. Monitoring procedures for particulate emission levels:

Data / Parameter:	<i>EL_{particulateemissions}</i>
Data unit:	Ppm
Description:	Particulate emission levels measured periodically at the stack of the biomass based plant
Source of data to be used:	Periodical measurements carried out according to international standards by qualified professionals with qualified equipment
Measurement procedures (if any):	Particulate emission levels shall be determined based on a stack gas analysis using calibrated analyzers. Measurements shall be carried out according to international standards by qualified professionals with qualified equipment
Monitoring frequency:	Monthly measurements
QA/QC procedures to be applied:	Measurements shall be conducted by qualified institutions, which guarantee for the accuracy of the measurement procedures and equipment.
Any comment:	

2. Monitoring procedures for employment generation

Data / Parameter:	<i>Employment (quantity)</i>
Data unit:	Number
Description:	Number of skilled and unskilled personnel directly employed by the project participants
Source of data to be used:	Plant operational data like payrolls, registers, attendance sheets and relevant third party documents
Measurement procedures (if any):	Relevant plant operational records like payrolls, registers, attendance sheets as well as relevant third party documents shall reflect the number of employees that are a part of the project proponent organization
Monitoring frequency:	Annually
QA/QC procedures to be applied:	Data can be directly obtained from the payrolls, registers, attendance sheets, etc. of employees.
Any comment:	

3. Monitoring procedures for livelihood of the poor

Data / Parameter:	<i>Livelihood of the poor (indicator: biomass usage)</i>
Data unit:	Tonnes
Description:	Direct contribution of the project activity to the local populace can be measured by the amount of biomass usage by the plant, as it is entirely procured from the region
Source of data to be used:	Relevant CDM procedural documents: example biomass usage excel-sheet submitted to the UNFCCC
Measurement procedures (if any):	Relevant procedures as explained in the monitoring plan in the CDM PDD
Monitoring frequency:	Annually
QA/QC procedures to be applied:	Calibration schedule as described in the CDM PDD
Any comment:	

4. Monitoring Results

1. Monitoring results for particulate emission levels:

Procedures and Sources/supportive references: The measurements have been conducted monthly by Amulya Associates, an independent external agency. The instrument used for the monitoring of stack emissions is an handy stack sampler from Envirotech (model number: APM 620).

Results: The results of the suspended particulate matter (SPM) for the monitoring period under consideration, i.e., 01 August 2008 to 30 April 2009 are provided below:

Sl. No.	Measurement Month	Measurement Date	SPM Amount (PPM)
1	August 2008	19/08/2008	132.00
2	September 2008	27/09/2008	138.00
3	October 2008	07/10/2008	124.00
4	November 2008	22/11/2008	105.00
5	December 2008	19/12/2008	130.00
6	January 2009	14/01/2009	116.00
7	February 2009	21/02/2009	128.00
8	March 2009	12/03/2009	134.00
9	April 2009	04/04/2009	126.00
<i>Reference: Monthly measurement reports issued by an independent external agency on the basis of tests conducted.</i>			

Conclusion: The measured values of SPM from stack emissions are well within the maximum limits prescribed by the Karnataka state's Pollution Control Board of 150.00 PPM.

2. Monitoring results for employment generation

Procedures and Sources/supportive references: The quantitative values for this parameter have been sourced from the records maintained and submitted by the project proponent in the form of additional appendixes to this document. The same can also be cross-verified from pages 126 and 127, section A.2.4.4: “Implications of the Malavalli Plant for local communities” of the independent third party study report – Peskett, Brown and Schreckenber (2010), available at <http://www.odi.org.uk/resources/download/4889.pdf>.

Results: The results of the number of personnel directly and indirectly employed by the project activity from the records maintained by the project proponent are summarized below:

- No. of direct employees: 151 – breakup as under
 - Operation and maintenance staff: 50
 - Operation and maintenance contract labours: 38
 - Biomass feeding contract labours: 57
 - Fertilizer production labour: 6
- No. of indirect employees: 350 – breakup as under
 - Gang leaders (for locating availability of fuel in field) village wise: 30
 - Labours under each gang leaders (8) for bundling and loading to tractors - village wise: 240
 - Vendor / contractors (village wise): 22
 - Tractor / lorry drivers: 28
 - Fertilizer distribution labours (village wise): 30

Note: As the indirect employment from the project is not under the direct supervision and control of the project proponent, it has been estimated based on the number of suppliers as well as the biomass fuel procurement quantum and hence not possible to be directly verified. It is also noteworthy here that the data for biomass fuel procurement has also been verified by the DOE conducting the verification process under UNFCCC/ CDM this parameter features in the regular CDM monitoring plan, thus establishing the worthiness of the data.

Source: summary of project proponent records submitted separately.

As per the said third party report, no. of jobs created by the project activity – 500 (approximate lower estimate). Hence the data provided above has also been cross-verified from independent sources.

Source: independent third party report submitted separately.

Conclusion: The project activity contributes to employment generation in the region by employing a huge number of human workforces as evident above. It is hence contributing to the economic upliftment of the area on a local scale and the country on a national scale.

3. Monitoring results for livelihood of the poor

Procedures and Sources/supportive references: The biomass usage data for the plant submitted to the UNFCCC based on the CDM verification have been reproduced below. The quantitative values for this parameter can also be sourced from pages 126 and 127, section A.2.4.4: “Implications of the Malavalli Plant for local communities” of the independent third party study report – Peskett, Brown and Schreckenber (2010), available at <http://www.odi.org.uk/resources/download/4889.pdf>.

Results: The plant biomass usage data obtained from the excel-sheet submitted to the UNFCCC and accepted for successful issuance is reproduced below:

Table A:										
MPPL-FUEL CONSUMPTION DATA FROM AUGUST 2008 TO APRIL 2009										
YEAR 2008-2009	Aug-08	Sep-08	Oct-08	Nov-08	Dec-08	Jan-09	Feb-09	Mar-09	Apr-09	Aug-Apr
Cane Trash Total MT	30.500	282.000	166.671	205.700	551.314	399.670	401.012	255.015	131.637	2,423.519
Coconut fronds Total MT	1,370.897	1,355.858	286.782	1,085.118	1,746.057	746.128	1,995.232	2,837.545	2,977.144	14,400.761
Corn Cob (Sandu) Total MT	6.090	11.181	3.000	87.350	294.708	470.012	89.030	47.504	70.301	1,079.176
Toppings Total MT	350.610	373.795	40.965	326.000	483.136	626.051	381.018	388.997	675.642	3,646.214
Husk Total MT	626.356	163.964	-	35.466	198.456	589.365	1,267.941	1,027.068	538.120	4,446.736
Total fuel consumption month MT	2,384.453	2,186.798	497.418	1,739.634	3,273.671	2,831.226	4,134.233	4,556.129	4,392.844	25,996.406

As all of this biomass has been procured locally, the contribution of the project activity towards livelihood of the poor in the region can be suitably established.

The results of the contribution of the project activity towards livelihood of the poor can also be summarized below by means of the cash flow analysis among the various parties involved in the biomass procurement supply chain: MPPL, biomass selling vendors and the labourers involved in biomass procurement and handling.

Cost category		Cost (INR) per day (assumes 9T of biomass collected per day)	Cost (INR) per tonne
MPPL payment to vendor		6300	700
Costs to vendor	Transport costs (truck rental and gas) ³¹	1000	111
	Payment to one farmer (one time annual payment during harvest)	900	100
	Payment to 10 labourers	2300 (230 per labourer)	256 (26 per labourer)
Profit margin for vendor		2100	233

Note: 31 – Transport costs assume one tractor carries 3T and makes three trips in one day; diesel is 34INR per litre and 1L=5km.

Furthermore, as per interviews conducted in the area with the local populace, the following figures reflect the quantitative contribution of the project activity towards the local beneficiaries:

- Families whose land was bought to build the plant have also benefitted from the sale of land
- Vendors earn around INR 15000-20000 rupees per month
- Labourers earn a minimum daily salary in the range of INR 150-250 per day

Reference: Pages 127 and 128 of Peskett, Brown and Schreckenber (2010)

Additional information: Biomass Availability Assessment – Further to the above monitored parameters, the biomass residues availability assessment results from a study conducted by an

independent third party in the region within 100 km radius of the project activity for the monitoring period under consideration are provided below:

Table B:						
Sl. No.	Type of Fuel	Total Residue Generation (MT)	Usage of Biomass from Others (MT)	Available Biomass Before consumption from MPPL (MT)		Usage of Biomass by MPPL (MT)
1	Cane Trash	486,150.00	22,000.00	464,150.00	>	2,423.52
2	Coconut Fronds	148,359.00	26,428.00	121,931.00	>	14,400.76
3	Corn Cobs	41,164.00	35,883.00	5,281.00	>	1,079.18
4	Rice Husk + Ground Nut Husk	75,361.00	51,661.00	23,700.00	>	4,446.74
5	Toppings	28,132.00	12,287.00	15,845.00	>	3,646.214

Source: Biomass Availability Assessment Reports and fuel consumption data (Table A)

Hence, it has been established that the biomass availability in the region is much in excess of the usage by the project activity.

Overall Conclusion:

It can suitably be established that the project has complied with the Monitoring Plan laid out in the Gold Standard Annex and hence the **9,211 CERs** under for the monitoring period under consideration are eligible for issuance under Gold Standard.