LH SUGAR FACTORIES

MONITORING REPORT

Version 1

LHSF BAGASSE PROJECT

CDM REGISTRATION REFERENCE NO: 0334

Monitoring period: 2nd June 2007 – 30th April 2008

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Date: 24th June 2008

Introduction

The data presented in this verification report has been collected in line with the approved revision in the monitoring plan[1] for the registered CDM project, LHSF Bagasse Project, reference number 0334.

The project involves the generation of electricity in the LH Sugar Factories sugar plant located at Pilibhit, in the state of Uttar Pradesh, India. The fuel used in the power plant is bagasse, a fibrous material derived from the crushing of sugar cane. The combustion of this biomass residue therefore results in the generation of renewable electricity. The power plant is grid connected and the emission reductions are calculated from the product of the carbon dioxide grid emissions factor and the electricity supplied to the grid.

The carbon dioxide grid emissions factor was calculated on an *ex-ante* basis in the PDD and will therefore be held constant over the life of the project. This data is therefore not part of the monitoring plan.

The project activity was commissioned in December 2005 and was established without any changes to that envisaged in the PDD. The project operated as expected for the period under verification.

The verification of the LHSF Bagasse Project has been undertaken over the period of the 2007–08 sugar crushing season. The period from 2nd June 2007–31st October 2007 was off-season and hence no power was generated during this period.

Technology employed

The project activity consists of a 12 MW backpressure turbine generator manufactured by Triveni and an 80 tonnes per hour, 67 bar Walchandnagar bagasse fuelled boiler. The electricity generated is stepped up at the plant to 132 kV and supplied to the grid via the UPPCL Roopurkamlu substation.

Emission reductions generated

In line with the PDD for the project activity the total number of CERs (tCO_2e) is calculated from the following equations:

$$ER_y = BE_y - Pe_y \qquad \text{Equation 1}$$

Where:

ER_y = Emission reduction in year y, tCO_2e
BE_y = Baseline emissions in year y, tCO_2e
Pe_y = Project emissions in year y, tCO_2e

$$BE_y = 0.918.P_y \qquad \text{Equation 2}$$

Where:

P_y = Electricity exported in year y, MWh

[1] http://cdm.unfccc.int/Projects/DB/TUEV-SUED1142621143.43/MonitoringPlanRevisions/01/RevisedMonitoringPlan

$$Pe_y = Q_i.COEF_i.NCV_i.OXID$$ Equation 3

Where:

Q_i = Mass of fossil fuel combusted, t
$COEF_i$ = Emissions factor of fossil fuel combusted, tCO_2/TJ
NCV_i = Net calorific value of fossil fuel combusted, TJ/t
OXID = Oxidation factor, %

Monitored data

The following table highlights the data that should be monitored for the project activity.

Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of data to be monitored	Comment
P_y	MWh	M	Annually	100%	Electricity baseline
Pe_y	tCO_2e	C	Monthly	100%	Calculated project emissions
Q_i	tonnes	M	Monthly	100%	Quantity of fossil fuel purchased and used in each month
NCV_i	TJ/t	M	Annually	100%	From purchase records or if not available IPCC country specific data
$COEF_i$	tCO_2/TJ	M	Annually	100%	IPCC data
OXID	%	M	Annually	100%	IPCC data
PCB approval		M	Annually	100%	Consent from Pollution control board

a) ***Monitored energy data***

The following data has been monitored for the project. Electricity export data has been taken from the invoices raised by the factory on UPPCL, the purchaser of electricity. P_y has been monitored as exports of electricity to the grid.

Period	Net electricity export, (kWh)	Invoice no
Nov 2007	50,400	LHSF/UPPCL/Export Power/07-08/1
Dec 2007	54,21,600	LHSF/UPPCL/Export Power/07-08/2
Jan 2008	56,43,720	LHSF/UPPCL/Export Power/07-08/3
Feb 2008	53,95,680	LHSF/UPPCL/Export Power/07-08/4
Mar 2008	51,06,240	LHSF/UPPCL/Export Power/07-08/5
Apr 2008	39,98,520	LHSF/UPPCL/Export Power/07-08/6
Total	**25,616,160**	

b) ***Biomass generation***

The power plant operated solely on bagasse. The bagasse generation according to RT8C is shown below:

Period	Bagasse generation, mt	RT 8C form mentioning in % of cane crushed
Nov-07	1651.4	34.05
Dec-07	65985.4	30.65
Jan-08	75966.0	31.95

Feb-08	86474.8	32.96
Mar-08	78606.6	34.51
Apr-08	38391.6	35.22
Total	**347075.8**	**32.83**

c) ***Environmental monitoring***

The plant operated under a valid consent from the Uttar Pradesh Pollution Control Board and a copy of this consent has been provided to the verification team.

Consent name/number	Validity period
F30658/C-5/AIR POLLUTION/B35/2008/76	19th March 2009
F30659/C-5/WATER-37/2008/87	19th March 2009

d) ***Recalibration of meters, uncertainty/accuracy levels***

The meters for the recording of net power generation have been re-calibrated and calibration certificates have been provided at the time of verification.

The data reported in the monitoring report has a low level of uncertainty and high accuracy. All the meters are calibrated which coupled with their internal accuracy levels leads to high overall accuracy. The accuracy of the meters is provided in the table below.

Meter	Make of meter	Meter number	Accuracy level	Calibration status
UPPCL S/S at 132kV	Secure	Main meter-APM04222	0.2	Calibrated
	Secure	Check Meter-APM04223	0.2	Calibrated
12 MW T.G. generation	Secure	KAU O2668	0.2	Calibrated
Plant side export meter	Secure	UPU O3221	0.5	Calibrated
12 MW T.G. generation (Backup)	Secure	UPU 03222	0.5	Calibrated
Export meter plant side (Backup)	Secure	UPU 01633	0.2	Calibrated

There was no recourse to check meters for the measurement of data and therefore the uncertainty level of the data is low.

e) ***Quality control/quality assurance***

The QC/QA procedure is available through the electrical data that has been provided from the recordings maintained in the power plant. An internal audit has also been conducted within the plant on to verify the data.

f) ***Emergencies***

No emergencies occurred during the period under verification which could have given rise to emissions.

g) ***Calculation of emission reductions***

The calculation of the emission reductions requires the input of the net electricity export variable into equation 2.

$$BE_y = 0.918.P_y$$

From the data above these data are:
P_y = 25,616.16 MWh

Therefore,
BE_y = 23,515.63 tCO_2e

The calculation of the emission reductions from the project requires us to consider the project emissions.

$$Pe_y = Q_i.COEF_i.NCV_i.OXID$$

The values taken for the calculation are:
Q_i = 0
$COEF_i$ = 25.8 tC/TJ
NCV_i = 19.98 TJ/kt
OXID = 98%
The values for $COEF_i$, NCV_i and OXID are taken from the IPCC and represent Indian coal.

Therefore,
Pe_y = 0

As project emissions are equal to zero the equation for the calculation of emission reductions is simplified to baseline emissions.

$$ER_y = BE_y - Pe_y$$
$$ER_y = BE_y - 0$$

Therefore,
ER_y = 23,515.63 tCO_2e