



**Monitoring report form  
(Version 05.1)**

*Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.*

**MONITORING REPORT**

<b>Title of the project activity</b>	Ganpati co-generation project at Medak, Andhra Pradesh	
<b>UNFCCC reference number of the project activity</b>	0370	
<b>Version number of the monitoring report</b>	2	
<b>Completion date of the monitoring report</b>	30/09/2016	
<b>Monitoring period number and duration of this monitoring period</b>	Monitoring period 2 of Crediting Period 2 25/06/2012 to 24/03/2016	
<b>Project participant(s)</b>	- Ganpati Sugar Industries Limited, India - Noble Carbon Credits Limited (United Kingdom of Great Britain and Northern Ireland ) - Vitol S.A (Switzerland )	
<b>Host Party</b>	India	
<b>Sectoral scope(s)</b>	Sectoral Scope: 01, Energy industries (renewable - / non-renewable sources)	
<b>Selected methodology(ies)</b>	AMS-I.C. ver. 17 Thermal energy production with or without electricity	
<b>Selected standardized baseline(s)</b>	Not Applicable	
<b>Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD</b>	176,207	
<b>Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period</b>	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	6,179	91,523

## SECTION A. Description of project activity

### A.1. Purpose and general description of project activity

The project activity is a bagasse based co-generation facility installed at Ganpati Sugar Industries Limited's (GSIL) sugar mill at Sanga Reddy, Medak District of Andhra Pradesh<sup>1</sup>, India. The bagasse used as fuel in the project activity is the co-product of sugar production process and is therefore a renewable carbon neutral source of electricity. The project activity is a small scale project activity and conforms to Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

The project activity is a grid connected bagasse based co-generation power plant with a high pressure and temperature steam configuration of 67 kg/cm<sup>2</sup> and 480°C boiler with an extraction cum condensing type turbo-generator, 55 tonnes per hour capacity boiler using bagasse as the fuel. The power generated from the project is partly utilized for the plant and its auxiliaries. The remaining power is exported to the grid.

Relevant dates for the project activity:

- Project implementation Started in 29/04/2001<sup>2</sup>
- Continued its operation since 1st January 2003
- 1st crediting period Issued i.e., from 01/01/2003 to 31/12/2009
- 2<sup>nd</sup> Crediting period, 1<sup>st</sup> MP – from 01/01/2010 to 24/06/2012
- 2<sup>nd</sup> Crediting period, 2<sup>nd</sup> MP ( Current MP) – from 25/06/2012 to 24/03/2016

Total GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period: 97,702 tonnes CO<sub>2</sub>e

### A.2. Location of project activity

(a) Host Party: India

(b) Region/ State/ Province etc; Andhra Pradesh State (new Telangana State)

(c) City/ Town/ Community, etc: The project site is located at Kulbagur, Fasalwadi Village, Sanga Reddy

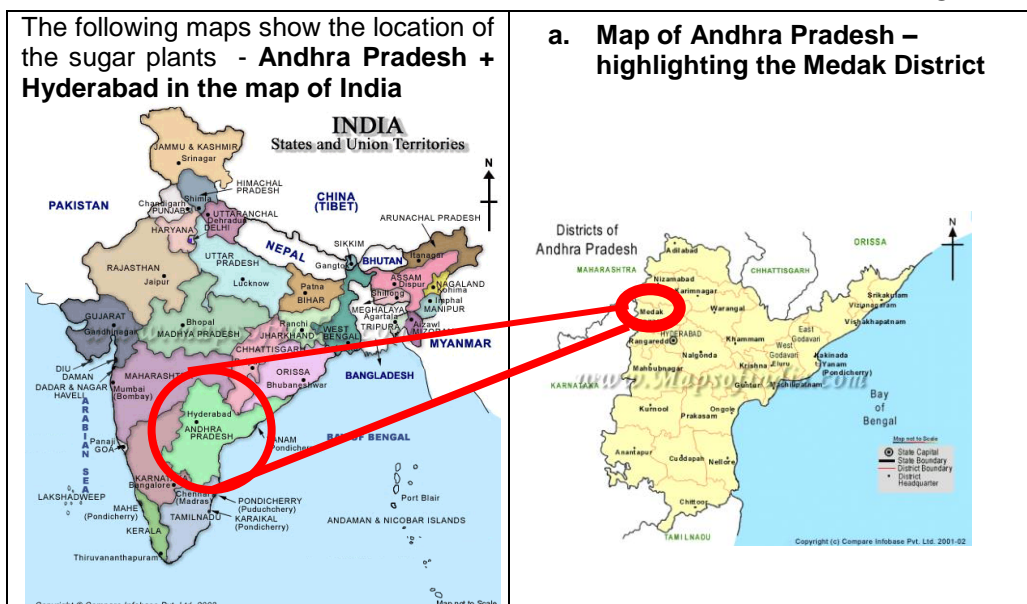
Mandal, Medak District of Andhra Pradesh

(d) Physical/ Geographical location: latitude 17° 38' 17" N and longitude 78° 7' 17" E) some 75 Km from Hyderabad (nearest airport)

---

<sup>1</sup> As per Andhra Pradesh reorganization Act, 2014, the state of Andhra Pradesh is bifurcated into Telangana and residuary Andhra Pradesh. As per this new act, the Medak district where project activity is located comes under Telangana state. Thus Andhra Pradesh mentioned in MR represents the new Telangana state as per Andhra Pradesh reorganization Act, 2014

<sup>2</sup> Turbogenerator supply contract date



### A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
India	Ganpati Sugar Industries Limited,	No
United Kingdom of Great Britain and Northern Ireland	Noble Carbon Credits Limited	No
Switzerland	Vitol S.A	No

### A.4. Reference of applied methodology and standardized baseline

The approved baseline and monitoring methodologies applied for the project activity are:  
AMS.I.C Thermal energy production with or without electricity, Version 17, Sectoral Scope: 01, EB 54

Tools referenced by the methodology and applicable for the project activity:

Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion, Version 02

“Tool to calculate the emission factor for an electricity system”, version 02

### A.5. Crediting period of project activity

Type of crediting period: Renewal

Start date of Crediting period: Second crediting period (01/01/2010 to 31/12/2016)

Length of the crediting period: 7 years

### A.6. Contact information of responsible persons/entities

Person or entity responsible for the preparation of the monitoring report:

Ramkrishna Patil  
M + 91 9096562065  
E [ramkrishna.patil@enkingint.org](mailto:ramkrishna.patil@enkingint.org)  
T +91 0731 42 89 086  
W [www.enkingint.org](http://www.enkingint.org)

Above mentioned is not the project participant, details of the project participant has been mentioned in appendix 1.

## SECTION B. Implementation of project activity

### B.1. Description of implemented registered project activity

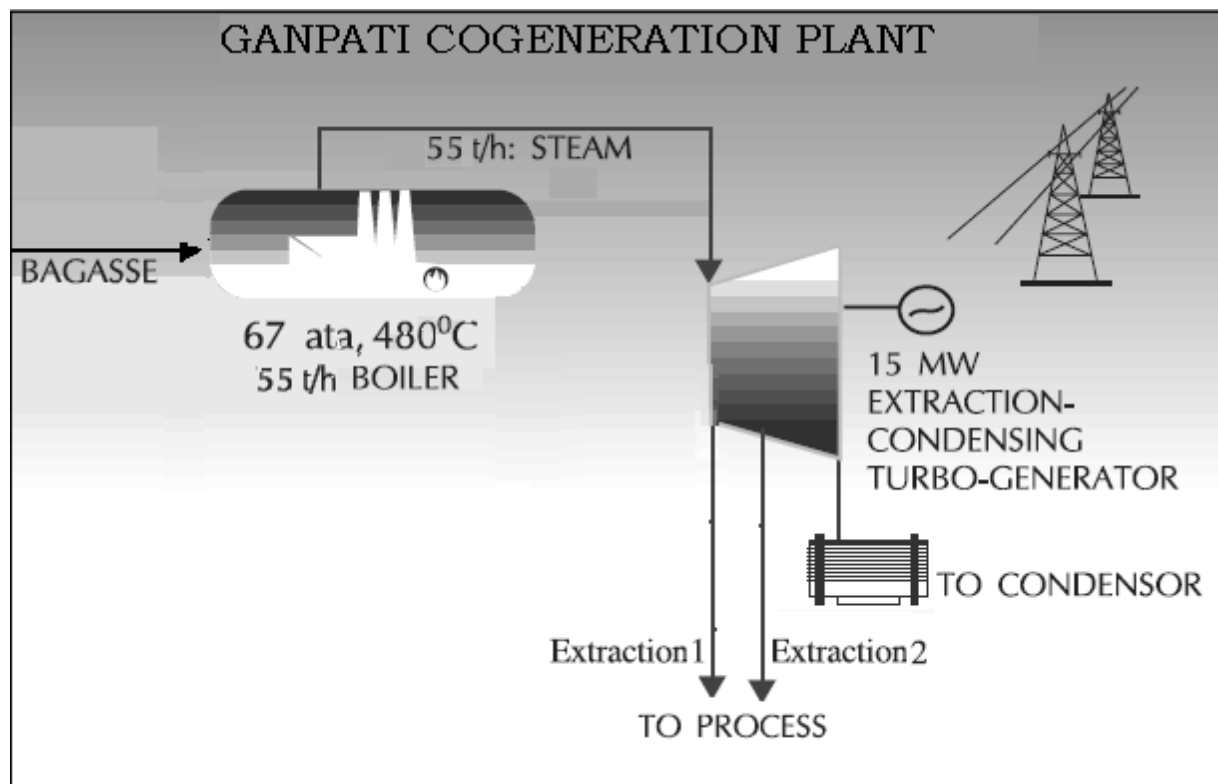
The project implementation status is as below

- Project implementation Started in 29/04/2001
- Commercial operations started from 1st January 2003
- During this monitoring period Total Electricity exported to the grid is 116,644 MWh and Total power import is 3239.72 MWh (after application error factor due to delay in calibration). Hence the Net electricity supplied to the grid by the project activity is 113,442.020 MWh

There are no such any event or situation occurred during current monitoring period which impact the applicability of methodology.

### Process Flow Diagram

The project activity produces renewable energy from the combustion of bagasse in a cogeneration facility which simultaneously produces steam and power (via a steam turbine generator). The project activity is a 15MW capacity biomass based cogeneration power plant consists of a high pressure boiler and a suitable collaterally operating TG set and associated auxiliary equipment. The steam conditions at the boiler heat outlet at a pressure of 67 ata and temperature of 480 deg C. The cogeneration plant generates a total power of 15MW during season and off-season. After meeting steam and power requirements of sugar plant, cogeneration plant auxiliaries surplus power during season and off-season are being exported to the grid.



**B.2. Post-registration changes****B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline**

Not Applicable

**B.2.2. Corrections**

Not Applicable

**B.2.3. Changes to start date of crediting period**

Not Applicable

**B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration**

Not Applicable

**B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline**

Not Applicable

**B.2.6. Changes to project design of registered project activity**

Not Applicable

**B.2.7. Types of changes specific to afforestation or reforestation project activity**

Not Applicable

**SECTION C. Description of monitoring system**

The project revenue is based on the units exported as measured by power meters, main and check meters at the high-tension substation of the APTRANSCO. The amount of electricity exported to grid shown in Joint meter reading cards are only be considered for CERs calculation purpose.

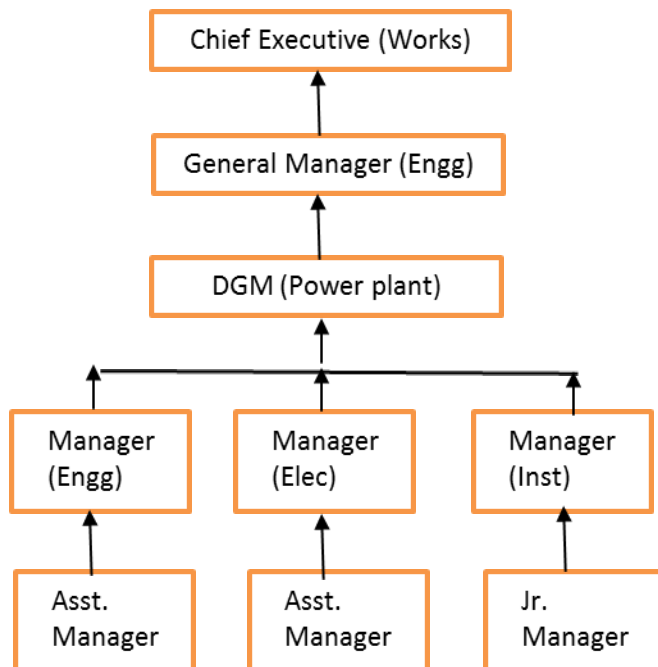
The GSIL project activity has employed PLC (Programmable Logic Controller) system and Micro processor based instruments which electronically monitors the main performance and output variables of the power plant, the systems for monitoring the CDM aspect of the project draws extensively from the above system, monitoring and control equipment that measure, monitor and control various key parameters.

Parameters being monitored according to Monitoring Plan

- Net electricity supplied to the grid by the project activity
- Electricity exported to the grid after meeting captive & auxiliary power requirements
- Electricity import from grid to the project activity
- Quantity of bagasse used in the project activity
- Net calorific value of bagasse used in the project activity
- Moisture content of bagasse used in the project activity
- Quantity of diesel consumed in DG set for electricity generation used by project activity

**Operational and Management structure:**

The operational and management structure of the co generation plant is provided in the following flow chart. The overall responsibility for ensuring the accuracy of the records as well as ensuring complete environmental integrity of the emissions reduction claims will rest with the Board, which has in turn appointed the Chief Executive (Works) to ensure that the details submitted are accurate.



### Procedure for training monitoring personnel

Purpose is to establish a system for training and awareness of staff on monitoring and recording of clean development mechanism (CDM) related data. This procedure outlines the steps to ensure that staff receives adequate training to collect and archive complete and accurate data necessary for CDM monitoring.

Orientation/induction training is being conducted for all new operational staff. All the Managers and AGM are responsible for this task. Training records are being maintained and initiated

**Handling of Day-to-Day record:** Purpose of the monitoring plan is to define the procedures and responsibilities for GHG Performance, Project Management, Registration, Monitoring, Measurement and Reporting of data and dealing with uncertainties.

AGM of the plant is responsible for the collation of data required to conduct the monitoring plan who reports to the GM. The management of the plant puts in place monthly reporting of electricity generation. Plant Manager identifies day to day information/data/record that needs to be maintained as per the CDM norms and prepare a record matrix/list for records as per the protocol of the CDM. Supervisors maintain active files/registers/books for this data indexed in a manner to enable easy retrieval of specific data/record.

### Reliability and calibration and maintenance of monitoring equipment:

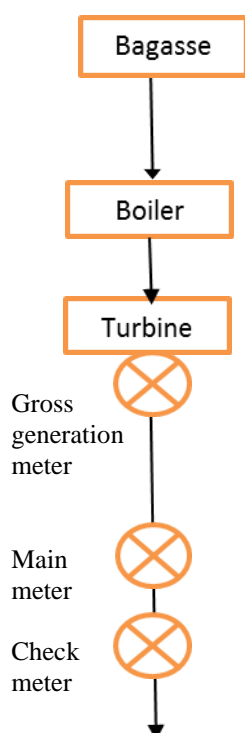
The amount of emission reduction units is proportional to the net energy generation from the project. Thus the final KWh meter reading is the final value from project side. All measurement devices are with best accuracy procured from reputed manufacturers. Since the reliability of the monitoring system is governed by the accuracy of the measurement system and the quality of the equipment to produce the result all power measuring instruments is calibrated once in a year for ensuring reliability of the system. Therefore the system ensures the final generation is highly

reliable. AGM (Power Plant) is responsible for getting the instruments checked and calibrated as per calibration schedule.

#### INFORMATION ON ACCURACY & LOCATION OF MONITORING EQUIPEMENTS

Description	Main Meter	Check Meter	Generation meter
Accuracy Class	Class 0.2	Class 0.2	Class 0.2
Location	Kandi Substation	Kandi Substation	Generator terminal at control room
Purpose	To measure the electricity exported to APTRANSCO and electricity imported from APTRANSCO grid. The amount of electricity exported to grid measured by this meter and as shown in Joint meter reading cards only be considered for CERs calculation purpose	It is a stand by meter for export and import of electricity	Measures the total electricity generated from the project activity

#### Schematic Diagram of Metering locations involved in project activity:



#### Uncertainties and Reliability:

The amount of emission reduction units is proportional to the net energy reduction due to the CDM Project. Measurement devices having good accuracy and procured from reputed manufacturers have been installed at site for the purpose of monitoring the various parameters of the Project. Since the reliability of the monitoring system is governed by the accuracy of the measurement system and the quality of the equipment for reproducibility, all instruments are calibrated as per the planned frequency for ensuring reliability of the system.

**Emergency preparedness plan:**

Identify potential hazardous and emergency situations for the activities of different areas in consultation with the concerned heads/ managers. Make all concerned personnel aware of all the aspects & conditions that may lead to emergency situations. In the onsite emergency plan all the emergency conditions, preparedness and response plan is described. Since the project activity does not result in any unidentified activity that can result in unpredicted and significant emissions from the project activity. Hence no major need is envisaged for emergency preparedness in data monitoring

**Reporting procedures**

The various measurements that need to be observed and recorded are identified as provided Section B of the PDD. Monthly reports are prepared stating the generation. In addition to the records maintained by the GSIL, APTRANSCO also monitors the power exported to the grid and certify the same. The data would be thus registered into softcopies for recording purposes.

**Procedures for internal audit of GHG project compliance**

A team consisting of experienced personnel is constituted for the Internal CDM Audit, who conducts yearly Audit. Wherever required the assistance from the CDM PDD consultants will be sought.

The internal audit and team reviews all the records pertaining to power generation, power exported, checking monitoring equipments for accuracy and whether calibration was performed. The manager in association with the Supervisor shall answers all the queries raised by the internal audit team. The internal audit team produces an audit report providing details of concerns that need to be attended to immediately before actual verification by the external verifier.

The meter details and their calibration details are as below

Description	Serial Number	Date of last calibration	Calibration Validity	Delay in calibration if applicable
<b>Export /Import Main meter</b>	1959480	4-Jul-11	4-Jul-12	Not Applicable
Make: L&T	1959478	02-Jul-12	02-Jul-13	Not Applicable
Type: ER 300P	3148278	24-Jun-13	24-Jun-14	Not Applicable
Accuracy: Class 0.2S	2781671	05-Sep-14	05-Sep-15	Yes, from 24/06/2014 to 05/09/2014
	2781671	02-Sep-15	02-Sep-16	Not Applicable
<b>Export /Import Check meter</b>	3148278	4-Jul-11	4-Jul-12	Not Applicable
Make: L&T	1999438	02-Jul-12	02-Jul-13	Not Applicable
Type: ER 300P	8039598	24-Jun-13	24-Jun-14	Not Applicable
Accuracy: Class 0.2S	2781672	05-Sep-14	05-Sep-15	Yes, from 24/06/2014 to 05/09/2014
	2781672	02-Sep-15	02-Sep-16	Not Applicable

Note - main and check meters have been changed every year till Sept 2014.

Calibration frequency has been considered as annual as per registered PDD though national standard i.e CEA notification follows once in five years calibration frequency.

DIESEL TANK LEVEL GAUGE CALIBRATION DETAILS		
Sl.No	Calibration Date	Calibration due date
1	28-May-12	27-May-13
2	26-May-13	25-May-14
3	21-May-14	20-May-15
4	18-May-15	17-May-16

## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante or at renewal of crediting period

<b>Data/parameter:</b>	<b>EF<sub>grid,OM,y</sub></b>
Unit	tCO <sub>2</sub> e/MWh
Description	Simple operating Margin CO <sub>2</sub> emission factor of the Southern regional grid
Source of data	Central Electricity Authority (CEA): "CO <sub>2</sub> Baseline Database", Version 05, November 2009. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a>
Value(s) applied)	0.9867 (Ex-ante)
Choice of data or measurement methods and procedures	CEA has estimated the simple operating margin for the three years before the second crediting period. As per the tool the average need to be considered to fix the emission factor ex ante. Weight of 25% has been considered as 'Tool to calculate the emission factor for an electricity system' for the operating margin
Purpose of data	To determine Baseline Emissions
Additional comments	The operating margin emission factor has been fixed for the second crediting period

<b>Data/parameter:</b>	<b>EF<sub>grid,BM,y</sub></b>
Unit	tCO <sub>2</sub> e/MWh
Description	Build Margin CO <sub>2</sub> emission factor of the Southern regional grid
Source of data	Central Electricity Authority (CEA): "CO <sub>2</sub> Baseline Database", Version 05, November 2009. <a href="http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm">http://www.cea.nic.in/reports/planning/cdm_co2/cdm_co2.htm</a>
Value(s) applied)	0.82 (Ex-ante)
Choice of data or measurement methods and procedures	CEA has estimated the build margin for the last year (2008-2009). Weight of 75% has been considered as 'Tool to calculate the emission factor for an electricity system' for the build margin
Purpose of data	To determine Baseline Emissions
Additional comments	The build margin emission factor has been fixed for the second crediting period

<b>Data/parameter:</b>	<b>NCV<sub>diesel</sub></b>
Unit	GJ/ton
Description	Net calorific value of diesel
Source of data	"Tool to calculate project or leakage CO <sub>2</sub> emissions from fossil fuel combustion" & IPCC 2006 default values. Volume 2, Chapter 1: Introduction.
Value(s) applied)	43.3

Choice of data or measurement methods and procedures	As per "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", IPCC default value at the upper limit of the uncertainty at a 95% confidence interval of NCVdiesel is required to calculate the CO2 emission factor of diesel (i.e, COEFdiesel) and thereafter project emissions from diesel consumption. Since the data on NCVdiesel from neither the supplier nor its measurement procedures are available with PP, also there are no regional or national default values publicly available. Value as per Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories at the upper limit of the uncertainty at a 95% confidence interval is used as data source. NCVdiesel is 43.3GJ/ton value taken from IPCC 2006 default values. Volume 2, Chapter 1: Introduction. Any future revision of the IPCC Guidelines should be taken into account as per the tool.
Purpose of data	To determine Project Emissions
Additional comments	Data archived for Crediting period + 2 yrs

<b>Data/parameter:</b>	EFdiesel / EFCO2,i,y
Unit	tCO2/GJ
Description	CO2 emission factor of diesel
Source of data	"Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" & <b>IPCC</b> 2006 default values. Volume 2, Chapter 1: Introduction.
Value(s) applied)	0.0748
Choice of data or measurement methods and procedures	As per "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", IPCC default value at the upper limit of the uncertainty at a 95% confidence interval of EFdiesel is required to calculate the CO2 emission factor of diesel (i.e, COEFdiesel) and thereafter project emissions from diesel consumption. Since the data on EFdiesel from neither the supplier nor its measurement procedures are available with PP, also there are no regional or national default values publicly available. Value as per Table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories at the upper limit of the uncertainty at a 95% confidence interval is used as data source. EFdiesel is the CO2 emission factor of diesel 74.8 tCO2/TJ value taken from IPCC 2006 default values. Volume 2, Chapter 1: Introduction. Any future revision of the IPCC Guidelines should be taken into account as per the tool.
Purpose of data	To determine Project Emissions
Additional comments	Data archived for Crediting period + 2 yrs

## D.2. Data and parameters monitored

<b>Data/parameter:</b>	EGBL,y
Unit	MWh
Description	Net electricity supplied to the grid by the project activity
Measured/calculated/default	Calculated
Source of data	Monthly joint meter readings
Value(s) of monitored parameter	113,404.220 Please refer ER spreadsheet for monthly values of parameter
Monitoring equipment	Not Applicable
Measuring/reading/recording frequency:	Measuring Frequency: Hourly Recording Frequency: Monthly (refer the ER sheet)

Calculation method (if applicable):	The Net electricity supplied to the grid by the project activity is calculated as: $E_{GBL,y} = (\text{Electricity exported to the grid after meeting captive \& auxiliary power requirements}) - (\text{Electricity Import from the grid})$ . Total units exported to the grid and imported from the grid are measured by energy meters installed at APTRANSCO substation on 24th day of every month <sup>3</sup> and recorded by representatives of APTRANSCO (Grid operator) and project proponent (GSIL in a monthly Joint Meter Reading (JMR)). The Net electricity supplied to the grid by the project activity ( $E_{GBL,y}$ ) only be considered for CERs calculation purpose.
QA/QC procedures:	Since this is a calculated value QA/QC procedures are not applicable
Purpose of data:	This data is used to calculate the baseline emissions
Additional comments:	Data is archived electronically and on paper. Archived data will be kept during the crediting period plus 2 years or the last issuance of CERs for this project activity, whichever occurs later

<b>Data/parameter:</b>	<b><math>E_{G_{export,y}}</math></b>
Unit	MWh
Description	Electricity exported to the grid after meeting captive & auxiliary power requirements during the year y
Measured/calculated/default	Measured
Source of data	Monthly joint meter readings
Value(s) of monitored parameter	116,644.00 Please refer ER spreadsheet for monthly values of parameter
Monitoring equipment	Power export to grid is measured by energy meters installed at APTRANSCO substation on 24th day of every month. A monthly Joint Meter Reading (JMR) for the energy exported to the Grid is recorded by representatives of APTRANSCO (Grid operator) and project proponent (GSIL). The Net electricity supplied to the grid by the project activity ( $E_{GBL,y}$ ) only be considered for CERs calculation purpose. Please refer section C for meter details like make, serial number, accuracy class, calibration date etc.
Measuring/reading/recording frequency:	Measuring Frequency: Hourly Recording Frequency: Monthly (refer the ER sheet)
Calculation method (if applicable):	-
QA/QC procedures:	This is cross checked with the bills raised by the company as well as the payment details by the grid operator as the Net electricity supplied to the grid by the project activity ( $E_{GBL,y}$ ) only be considered for CERs calculation purpose. Meters based with best accuracy procured from reputed manufacturers are calibrated to national standards. Recalibration frequency is either subject to appropriate intervals according to manufacturer specifications or with a minimum frequency of once a year. In case of delay in calibration, error factor is applied conservatively..
Purpose of data:	This data is used to calculate the baseline emissions
Additional comments:	Data is archived electronically and on paper. Archived data will be kept during the crediting period plus 2 years or the last issuance of CERs for this project activity, whichever occurs later

<b>Data/parameter:</b>	<b><math>E_{G_{import,y}}</math></b>
Unit	MWh
Description	Electricity import from grid to the project activity during the year y

<sup>3</sup> Metering Date is subjected to the standards of the Agreement made with APTRANSCO (as per the directions of Andhra Pradesh Electricity Regulatory Commission, Govt of AP).

Measured/calculated/default	Measured
Source of data	Monthly joint meter readings
Value(s) of monitored parameter	3,239.780 ( after application of error factor due to delay in calibration) Please refer ER spreadsheet for monthly values of parameter
Monitoring equipment	Power imported from the grid is measured by energy meters installed at APTRANSCO substation on 24th day of every month. A monthly Joint Meter Reading (JMR) for the energy imported from the Grid is recorded by representatives of APTRANSCO (Grid operator) and project proponent (GSIL). The Net electricity supplied to the grid by the project activity (EGBL,y) only be considered for CERs calculation purpose. Please refer section C for meter details like make, serial number, accuracy class, calibration date etc.
Measuring/reading/recording frequency:	Measuring Frequency: Hourly Recording Frequency: Monthly (refer the ER sheet)
Calculation method (if applicable):	-
QA/QC procedures:	This is cross checked with the bills raised by the company as well as the payment details by the grid operator as the Net electricity supplied to the grid by the project activity (EGBL,y) only be considered for CERs calculation purpose. Meters based with best accuracy procured from reputed manufacturers are calibrated to national standards. Recalibration frequency is either subject to appropriate intervals according to manufacturer specifications or with a minimum frequency of once a year. In case of delay in calibration, error factor is applied conservatively. .
Purpose of data:	This data is used to calculate the baseline emissions
Additional comments:	Data is archived electronically and on paper. Archived data will be kept during the crediting period plus 2 years or the last issuance of CERs for this project activity, whichever occurs later

<b>Data/parameter:</b>	$B_{\text{Biomass},y}$
Unit	Tons
Description	Quantity of bagasse used in the project activity
Measured/calculated/default	Estimated
Source of data	Plant Records
Value(s) of monitored parameter	378,625 Please refer ER spreadsheet for yearly values of parameter
Monitoring equipment	-
Measuring/reading/recording frequency:	Measuring & Recording Frequency: Yearly ((Reference: ER calculation sheet for yearly consumption))
Calculation method (if applicable):	Estimated based on cane crushed, steam generation, bagasse production, open stock bagasse and closed stock bagasse etc
QA/QC procedures:	Since this is an estimated value, QA/QC procedures are not applicable
Purpose of data:	Value of data is not used for calculating expected emission reductions
Additional comments:	Data is archived electronically and on paper. Archived data will be kept during the crediting period plus 2 years

<b>Data/parameter:</b>	$NCV_{\text{bagasse}}$
Unit	GJ/ton
Description	Net calorific value of bagasse used in the project activity
Measured/calculated/default	Measured
Source of data	Value is based on laboratory test

Value(s) of monitored parameter	8.835 Please refer ER spreadsheet for yearly values of parameter
Monitoring equipment	The Net Calorific Value of Bagasse on dry basis is measured in external NABL Accredited Laboratory (in Kcal/kg) by conducting laboratory test on annual basis according to national standards and is converted to GJ/ton as required by the methodology
Measuring/reading/recording frequency:	Measuring & Recording Frequency: Yearly (refer the ER sheet)
Calculation method (if applicable):	-
QA/QC procedures:	The consistency of the measurements is checked by comparing the measurement results with measurements from previous years. Testing laboratory comply with national quality standards. Laboratory test is conducted periodically once in a year. Since this parameter is measured through external NABL Accredited Laboratory, no any calibration certificates required.
Purpose of data:	Value of data is not used for calculating emission reductions
Additional comments:	-

<b>Data/parameter:</b>	<b>Moisture<sub>bagasse</sub></b>
Unit	%
Description	Moisture content of bagasse used in the project activity
Measured/calculated/default	Measured
Source of data	Value is based on laboratory test
Value(s) of monitored parameter	49.75% Please refer ER spreadsheet for yearly values of parameter
Monitoring equipment	The moisture content of bagasse used in the project activity is determined as per authorised external NABL Accredited laboratory test report
Measuring/reading/recording frequency:	Measuring Frequency: Monthly Recording Frequency: Yearly (The weighted average has been calculated for this monitoring period in line to the applied methodology as mentioned in the Registered PDD)
Calculation method (if applicable):	-
QA/QC procedures:	Calibration frequency is either subject to appropriate intervals according to industry standards or with a minimum frequency of once a year. Since this parameter is measured through external NABL Accredited Laboratory, no any calibration certificates required.
Purpose of data:	Value of data is not used for calculating emission reductions
Additional comments:	-

<b>Data/parameter:</b>	<b>FC<sub>i,j,y</sub> (Diesel)</b>
Unit	Litres
Description	Quantity of diesel consumed in DG set for electricity generation used by project activity
Measured/calculated/default	Measured
Source of data	Plant Records
Value(s) of monitored parameter	5,405 Please refer ER spreadsheet for monthly values of parameter

Monitoring equipment	Diesel in DG set is used only for emergency purposes (trail runs to maintain its running condition) and not for the power generation purpose in the project activity. The diesel quantity and source are maintained at the point of entry by stores department. Diesel once received by stores department is issued to DG set department as and when required. Stores department maintains receipt, issue data everyday in excel sheet and takes issue slips from DG set department for the issued Quantity. The amount of diesel consumed by DG set is measured by using a level measuring gauge in the tank continuously and the same is cross verified with the issue slips
Measuring/reading/recording frequency:	Measuring Frequency: Continuously Recording Frequency: Daily (refer the ER sheet)
Calculation method (if applicable):	-
QA/QC procedures:	The measuring equipment is calibrated at least once a year. The consumption of diesel can be cross checked with the log books to find whether DG set is used for power generation. Mostly diesel is used in the DG sets for keeping them in better running condition and rarely diesel may be used for emergency purposes, the amount of electricity generation from the DG set and corresponding diesel consumption for electricity generation is monitored.
Purpose of data:	Data is used to estimate project emissions
Additional comments:	-

### D.3. Implementation of sampling plan

Not Applicable

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

As per Paragraph 17 of approved methodology AMS.I.C, the baseline emissions for supply of electricity to and/or displacement electricity from a grid shall be calculated as per the procedures detailed in AMS-I.D.

As per AMS I.D version 16, Paragraph 11 states that “The baseline emissions are the product of electrical energy baseline EGBL<sub>y</sub> expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor”

$$BE_y = EGBL_y * EFCO2_{grid,y}$$

Where:

BE<sub>y</sub> Baseline Emissions in year y; t CO<sub>2</sub>

EGBL<sub>y</sub> Energy baseline in year y; kWh

EFCO2<sub>grid,y</sub> Emission Factor in year y; t CO<sub>2</sub>e/kWh

Energy baseline (EGBL<sub>y</sub>) is the net electricity produced by the renewable generating unit delivered to the grid by the project that otherwise would have been generated by the operation of grid connected fossil fuel power plants.

The Emission Factor (EFCO2<sub>grid,y</sub>) Is the CO<sub>2</sub> grid emission factor. For this project activity, the combined margin baseline emission factor value for the southern regional grid has been directly adopted from the CEA database. EFCO2 = 0.86167 tCO<sub>2</sub>/MWh

$$\begin{aligned} BE_y &= EGBL_y * EFCO2_{grid,y} \\ &= 113,404.220 * 0.86167 \\ &= 97,717 \text{ tCO}_2 \end{aligned}$$

### E.2. Calculation of project emissions or actual net GHG removals by sinks

As per paragraph 35 of the AMS.I.C version 17 methodology, Project emissions include:

- CO<sub>2</sub> emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”
- CO<sub>2</sub> emissions from electricity consumption by the project activity using the latest version of “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”
- Any other significant emissions associated with project activity within the project boundary;

According to the operation of the project activity the following is the only source for the project emissions:

CO<sub>2</sub> emissions from on-site consumption of fossil fuels due to the project activity shall be calculated using the latest version of “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”

The project activity is renewal based electricity generation and can only fire bagasse as fuel (The local regulation also constraint use of fossil fuels for the bagasse based co-gen system implemented in sugar industry) and the emission reductions are calculated based on the net electricity supplied to the grid. Since it is not a co-fired plant the amount of fossil fuel input to the project activity need not to be monitored.

Fossil fuel combustion (diesel) in standby DG sets during trial runs and maintenance activities only (not for power generation purpose in the project activity) is included as a monitoring parameter. The consumption records of Diesel in DG set for maintenance purposes can be cross checked with the log books and purchase records. If diesel is consumed for the project activity, the project emissions from the same are calculated as below:

For the project activity, since the CO<sub>2</sub> emissions from fossil fuel combustion are only from diesel consumption for electricity generation. The above formula can henceforth be referred as:

$$PE_y = FC_{\text{diesel}} \times COEF_{\text{diesel}}$$

Where :

$PE_y$  Are the CO<sub>2</sub> emissions from diesel consumption during the year y (tCO<sub>2</sub>/yr);

$FC_{\text{diesel}}$  Is the quantity of diesel consumed in process during the year y (tons/yr), which equals to the Quantity of diesel consumed in litres/yr times the density of diesel

( $\rho_{\text{diesel}}$ ) in kg/lit and divide by 1000 kg/ton to convert the unit of  $FC_{\text{diesel}}$  to tons/yr.

$COEF_{\text{diesel}}$  Is the CO<sub>2</sub> emission coefficient of diesel in year y (tCO<sub>2</sub>/ton).  $COEF_{\text{diesel}}$  is based on Option B of “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”.  $COEF_{\text{diesel}} = NCV_{\text{diesel}} \times EFCO_2, \text{ diesel}$

Option A for calculating the CO<sub>2</sub> emission coefficient is not used, as the necessary data is not available since the approach is based on the chemical composition of the fossil fuel type. Hence the preferred approach is Option B of “Tool to calculate project or leakage CO<sub>2</sub> emissions from fossil fuel combustion”, Version 02, to calculate the CO<sub>2</sub> emission coefficient ( $COEF_{i,y}$ )

Therefore, Project emissions due to diesel consumption for electricity generation ( $PE_y$ ) can be calculated finally as follows:

$$PE_y = FC_{\text{diesel}} \times NCV_{\text{diesel}} \times EFCO_2, \text{ diesel}$$

Where:

$FC_{\text{diesel}}$  Is the quantity of diesel consumed in process during the year y (tons/yr),

$NCV_{\text{diesel}}$  Is net calorific value of the diesel (GJ/ton)

$EFCO_2, \text{ diesel}$  Is the CO<sub>2</sub> emission factor of diesel in year y (tCO<sub>2</sub>/GJ)

**Project emissions due to diesel consumption for electricity generation:**

$NCV_{\text{diesel}}$ (GJ/ton)	$EF_{CO_2, \text{diesel}}$ (tCO <sub>2</sub> /TJ)	$EF_{\text{diesel}} /$ $EF_{CO_2, i, y}$ (tCO <sub>2</sub> /GJ)
-----------------------------------	---	---

43.3	74.8	0.0748
------	------	--------

Calculation of project emissions			
Period	Diesel Consumption in DG set for electricity generation	$FC_{\text{diesel}}$ ( NCV of Diesel as 0.83)	$PE_y$
	Litres	tonnes	tCO <sub>2</sub>
25/06/2012 to 24/03/2016	5,405	4.49	15 (Rounded up)

### E.3. Calculation of leakage

As per the guidance by the latest methodology AMS.I.C.Version 17, Para 37 states that “If the energy generating equipment currently being utilised is transferred from outside the boundary to the project activity, leakage is to be considered”. No leakage emissions are considered for the proposed project activity since no energy generating equipment is from outside the boundary to the project activity transferred from another activity and/or the existing equipment is transferred to another activity.

Further Para 38 states that “In case collection/processing/transportation of biomass residues is outside the project boundary CO<sub>2</sub> emissions from collection/processing/transportation (If biomass residues are transported over a distance of more than 200 kilometers due to the implementation of the project activity then this leakage source attributed to transportation shall be considered, otherwise it can be neglected) of biomass residues to the project site”. The biomass used in the project activity is the mill generated bagasse available within the project premises. Collection/processing/transportation of bagasse is within the sugar plant and not outside the project boundary. Hence no leakage sources are considered and CO<sub>2</sub> emissions from same are zero.

**E.4. Summary of calculation of emission reductions or net GHG removals by sinks**

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	GHG emission reductions or net GHG removals by sinks (t CO <sub>2</sub> e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
<b>Total</b>	97,717	15	0	6,179	91,523	97,702

**E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD**

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	176,207	97,702

**E.6. Remarks on difference from estimated value in registered PDD**

Emission Reduction value estimated in ex-ante calculation of registered PDD is 46,980 tCO<sub>2</sub>e per annum, whereas the estimated emission reduction from this monitoring period for 1369 days is 176,207 tCO<sub>2</sub>e. Actual achieved emission reduction by this project during the same period is 97,702 tCO<sub>2</sub>e. The net emission reduction for the reported period is 44.6% less than the estimated in the registered PDD. This difference has occurred due to less availability of sugar cane during monitoring period and hence the project activity couldn't generate the estimated power. Therefore, less amount of power has been exported to the grid which resulted in lower number of emission reductions from project activity.

## Appendix 1. Contact information of project participants and responsible persons/entities

<b>Project participant and/or responsible person/ entity</b>	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	Ganpati Sugar Industries Limited
<b>Street/P.O. Box</b>	Road No. 4, Banjara Hills
<b>Building</b>	8-2-438/5
<b>City</b>	Hyderabad
<b>State/region</b>	Andhra Pradesh
<b>Postcode</b>	500034
<b>Country</b>	India
<b>Telephone</b>	91-40-23355212/3/4
<b>Fax</b>	91-40-23350959
<b>E-mail</b>	<a href="mailto:Gsil_factory@yahoo.com">Gsil_factory@yahoo.com</a> , <a href="mailto:ganpatisugars@rediffmail.com">ganpatisugars@rediffmail.com</a>
<b>Website</b>	
<b>Contact person</b>	Mr. Mahesh Barasia
<b>Title</b>	President
<b>Salutation</b>	Mr.
<b>Last name</b>	Barasia
<b>Middle name</b>	
<b>First name</b>	Mahesh
<b>Department</b>	Commercial
<b>Mobile</b>	+91-9331018485
<b>Direct fax</b>	
<b>Direct tel.</b>	
<b>Personal e-mail</b>	<a href="mailto:barasia@hotmail.com">barasia@hotmail.com</a>

<b>Project participant and/or responsible person/ entity</b>	<input type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
<b>Organization name</b>	EKI Energy Services Limited
<b>Street/P.O. Box</b>	Plot 48, Scheme 79, Part- 2, Vijay Nagar
<b>Building</b>	Enking Embassy
<b>City</b>	Indore
<b>State/region</b>	Madhya Pradesh
<b>Postcode</b>	452010
<b>Country</b>	India
<b>Telephone</b>	+91 731 4289086
<b>Fax</b>	+91 731 4289086
<b>E-mail</b>	<a href="mailto:ramkrishna.patil@enkingint.org">ramkrishna.patil@enkingint.org</a>
<b>Website</b>	<a href="http://www.enkingint.org">www.enkingint.org</a>
<b>Contact person</b>	Ramkrishna Patil
<b>Title</b>	GM
<b>Salutation</b>	Mr.

<b>Last name</b>	Patil
<b>Middle name</b>	Vasantrao
<b>First name</b>	Ramkrishna
<b>Department</b>	CDM Services
<b>Mobile</b>	+91 9096562065
<b>Direct fax</b>	+91 731 4289086
<b>Direct tel.</b>	+91 731 4289086
<b>Personal e-mail</b>	<a href="mailto:ramkrishna.patil@enkingint.org">ramkrishna.patil@enkingint.org</a>

- - - - -

**Document information**

<i>Version</i>	<i>Date</i>	<i>Description</i>
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: <ul style="list-style-type: none"> <li>• Include provisions related to delayed submission of a monitoring plan;</li> <li>• Provisions related to the Host Party;</li> <li>• Remove reference to programme of activities;</li> <li>• Overall editorial improvement.</li> </ul>
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> <li>• Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0));</li> <li>• Include provisions related to standardized baselines;</li> <li>• Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1;</li> <li>• Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>;</li> <li>• Editorial improvement.</li> </ul>
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: monitoring report		