



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

Title of the project activity	DSCL Sugar Ajbapur Cogeneration Project Phase II	
UNFCCC reference number of the project activity	0982	
Version number of the monitoring report	1.0	
Completion date of the monitoring report	08/08/2017	
Monitoring period number and duration of this monitoring period	8 th Monitoring period; (01/05/2016 to 17/05/2017) first & last days included	
Project participant(s)	1. M/s. DCM Shriram Limited (India) 2. Agrinergy Ltd.(United Kingdom of Great Britain and Northern Ireland) 3.Asian Development Bank, as Trustee of the Future Carbon Fund (Sweden) 4. Swedish Energy Agency (Sweden)	
Host Party	India	
Sectoral scope(s)	01: Energy industries (renewable -/ non-renewable sources)	
Selected methodology(ies)	Approved consolidated baseline and monitoring methodology ACM0006, Version 04, "Consolidated methodology for grid-connected electricity generation from biomass residues"	
Selected standardized baseline(s)	N/A	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	59,690 tCO ₂ e	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	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
	N/A	42,723 tCO ₂ e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

>> The purpose of the project activity is to generate electricity using renewable biomass and thereby reducing GHG emissions by displacing the fossil fuel dominated grid based electricity with biomass based renewable electricity.

The project activity is the expansion of the cogeneration unit at the DSCL Sugar-Ajbapur plant. Two new high pressure (87kg/cm²) and high efficiency boilers, of 60 tonnes per hour (TPH) capacity each, have been installed along with a 20MW extraction-condensing turbine.

Relevant dates for the project activity

- Date of registration: 18/05/2007
- Date of commissioning for the IJT-1 boiler: 03/12/2005
- Date of commissioning for the for the IJT-2 boiler: 09/12/2006
- Date of commissioning the project (date of synchronization of the turbine with the UPPCL grid): 02/02/2007 and continuing till date.

The total emission reductions achieved in the current monitoring period is 42,723 tCO₂e.

A.2. Location of project activity

>> Host Party (ies): India

Region/ State/ Province, etc.: Uttar Pradesh

City/ Town/ Community, etc.: Ajbapur village, Lakhimpur Kheri District

Physical/ Geographical location: GPS coordinates 27°54' (27.9000) °N & 79°57' (79.9500) °E

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 (host)	M/s DCM Shriram Limited	No
United Kingdom of Great Britain and Northern Ireland	Agrinergy Ltd.	No
Sweden	Asian Development Bank, as Trustee of the Future Carbon Fund, Swedish Energy Agency	Yes

A.4. Reference of applied methodology and standardized baseline

>> Approved consolidated baseline and monitoring methodology ACM0006, Version 04

2nd November 2006, "Consolidated methodology for grid-connected electricity generation from biomass residues" is applied to the project activity.

<http://cdm.unfccc.int/methodologies/DB/U3THXNPFFSPP2WO1MFB20DXU1444S5/view.html>

A.5. Crediting period of project activity

>> Crediting Period: 18/05/2007 – 17/05/2017 (fixed)

Length of crediting period: 10 years 0 months

Start date: 18/05/2007

A.6. Contact information of responsible persons/entities

>> Mr. Anoop Singh

5th floor, Kanchenjunga Bldg, 18 Barakhamba Road 110001

New Delhi, India

anoopsingh@dcmsriram.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>>The project activity is the expansion of the cogeneration unit at the DSCL Sugar-Ajbapur plant. Two new high pressure (87kg/cm²) and high efficiency boilers, of 60 tonnes per hour (TPH) capacity each, have been installed along with a 20MW extraction-condensing turbine.

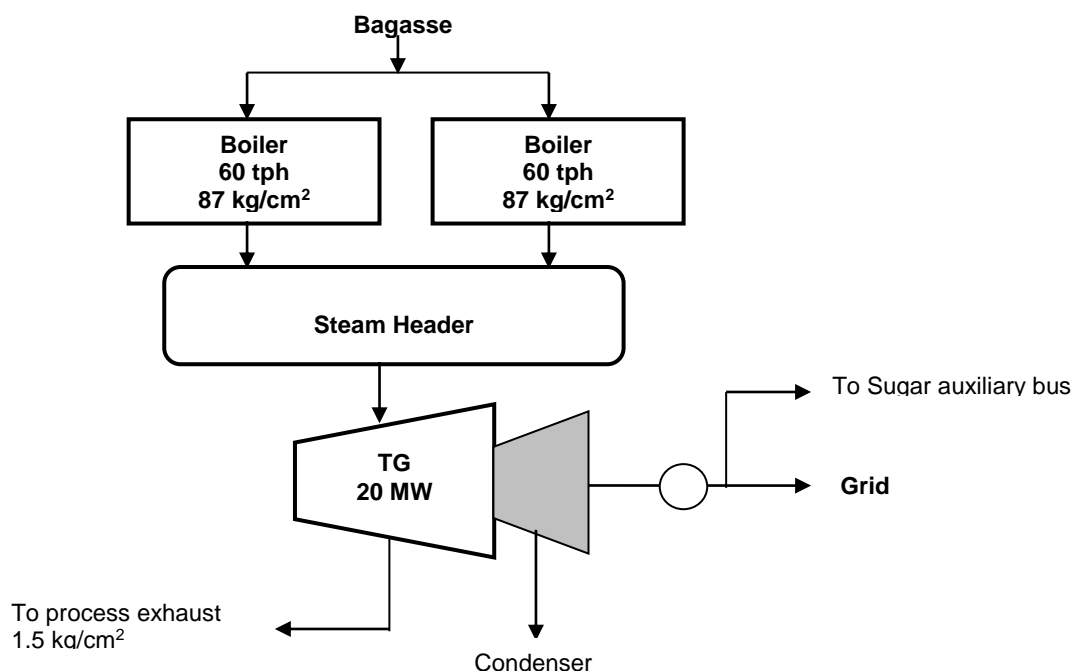
Implementation details are given below,

1. Date of commissioning for the IJT-1 boiler:03/12/2005
2. Date of commissioning for the for the IJT-2 boiler: 09/12/2006
3. The starting date of operation of the project activity is 02/02/2007 (date of synchronization of the turbine with the UPPCL grid)

The list of equipments is as follows:

Sr. No	Boiler Details	Make
1.	60 TPH, 87 Kg/cm ²	IJT No 1
2.	60 TPH, 87 Kg/cm ²	IJT No 2

Sr. No	Turbine Details	Make
1.	20 MW Extraction and Condensing	GE



There are no events or situations that occurred during the monitoring period which may impact the applicability of the methodology.

B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

>>N/A

B.2.2. Corrections

>> N/A

B.2.3. Changes to start date of crediting period

>> N/A

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

>> N/A

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

>> N/A

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

>> N/A

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

>> N/A

SECTION C. Description of monitoring system

>> The project activity is implemented as mentioned in the registered PDD. No new technology measure or retrofits have been added during this verification period.

During the operation period from October 2016 to 17 May 2017 the plant was under breakdown for 37 hours and 49 minutes.

The overall responsibility of the project monitoring remains with the Plant Head. The person in charge of data collection reports to the Plant Head. The Power Plant Head maintains the electricity generation and any outside biomass procurement records. Hourly readings are taken by the shift operator of the energy meters. The hourly data are compiled into daily data by the Electrical Engineer. This is verified by the Electrical Head. Furthermore, the daily data is compiled into monthly data, which is again verified by the Electrical Head. The plant records are a part of the MIS (Management Information System). The monthly reports are compiled to calculate the number of CERs.

The monitoring plan has followed the registered PDD which had correctly applied the methodology for the emission reduction calculation.

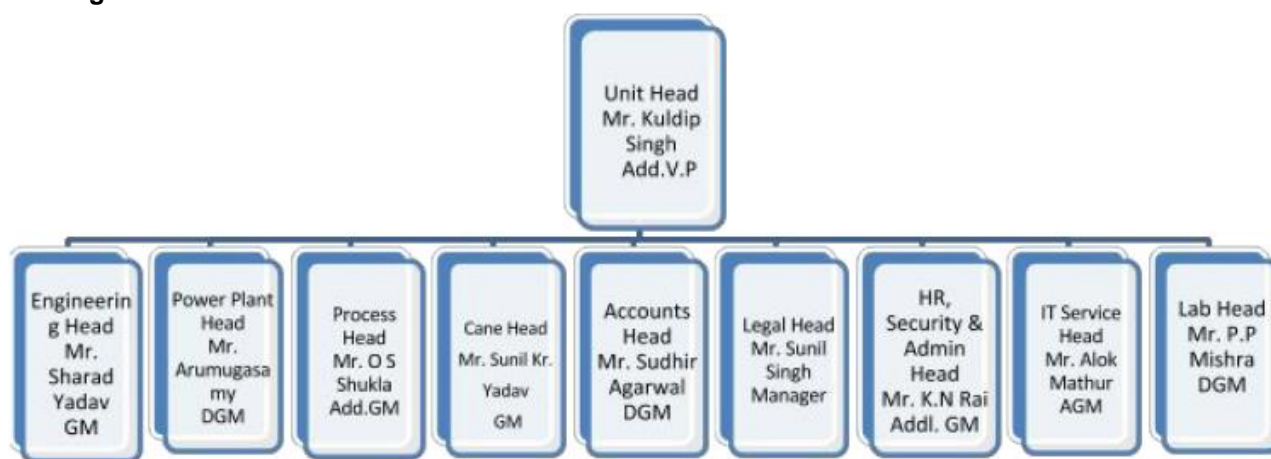
Procedures are also in place for cross checking and correlation of data related to the CDM project. The plant has undertaken both energy and material balances for the entire monitoring period and details of the same have been provided to the DOE. Furthermore, regular training on operation and maintenance of the equipment is also provided to the operators present at the plant as per ISO standards. The entire sugar mill (including the power plant) operates under ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 certification.

Roles and responsibilities

Designation	Responsibility
Unit Head	Overall responsibility of CDM Project
Power Plant Head	Co-ordination of day to day CDM preparation of monthly reports , Boiler Operation
Vice President Commercial (at corporate	All commercial matters

office)	
Vice President Finance & Accounts (at corporate office)	Monitoring and submission of data to UNFCCC
Joint Vice President Technical (at corporate office)	All technical matters and instrumentation
Sr. Manager Boiler	Data checking & verification
AGM Instrumentation	Supervision of all the instrument
Switch Board Attendant	Data recording
DM Human Resource	Training & Development for CDM
Manager Safety	All the safety aspects related to CDM
Manager Safety	All the environmental aspects related to CDM

Organizational structure



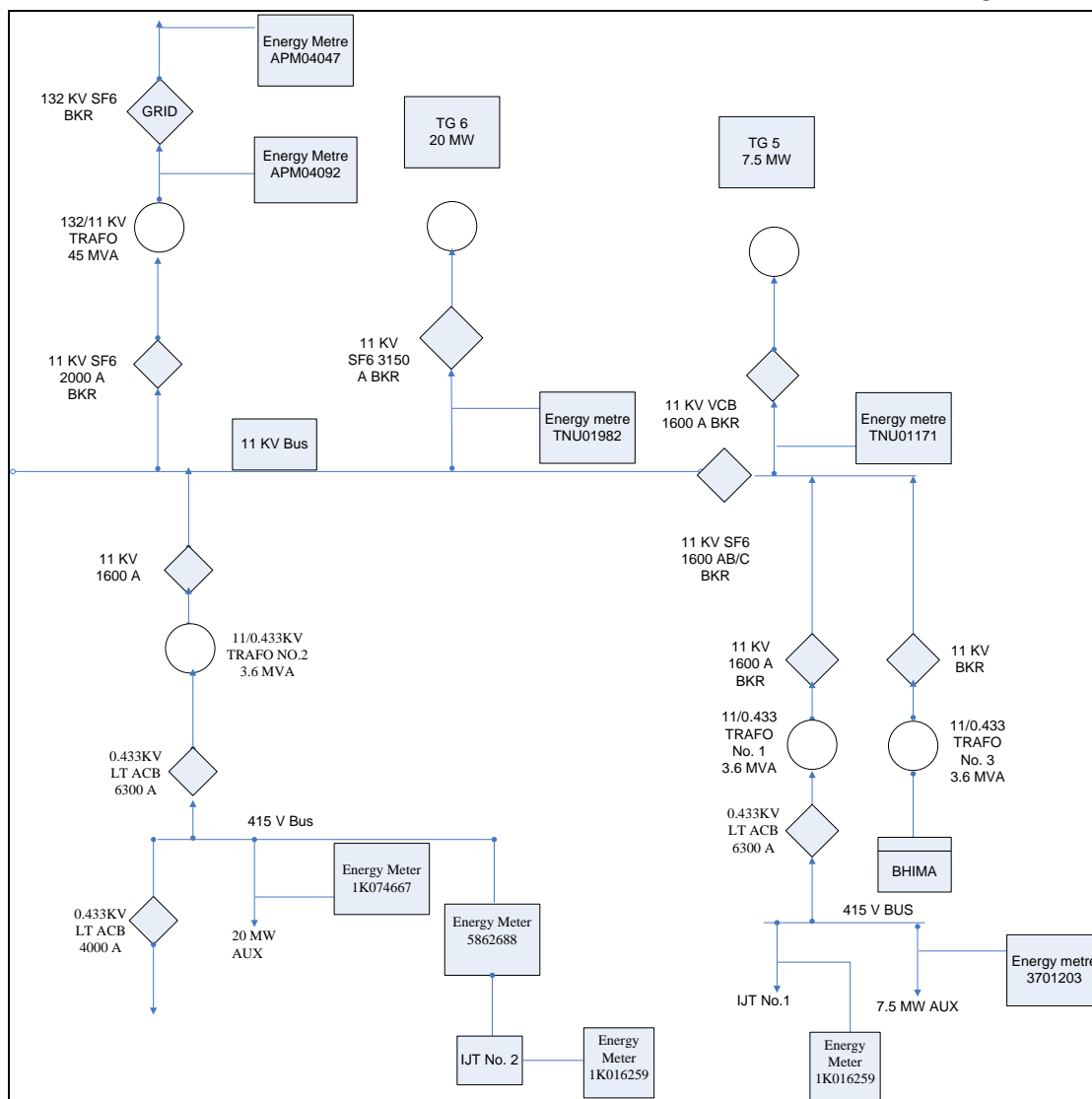
Emergency procedures

The plant maintains the data in both hard and soft copy formats. Agrinergy also receives the monthly data from the plant and if any discrepancies are observed, questions are raised and corrections made accordingly. In general, the plant operates in line with the ISO 9001 procedures. However, no emergencies occurred during the period under verification which could have given rise to emissions.

QA/QC procedures

All monitored data will be kept for a minimum of two years after the end of the crediting period. The single line diagram showing all relevant electricity monitoring points is given below,

SLD CDM METER



SECTION D. Data and parameters

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

Data/parameter:	EF_{kmCO_2}
Unit	t CO ₂ /km
Description	Average CO ₂ emission factor for transportation of biomass with trucks
Source of data	Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual Table 1-32
Value(s) applied)	1,097 gm CO ₂ /km
Choice of data or measurement methods and procedures	Since national values were not available, default IPCC values were considered and fixed ex ante at the time of registration.
Purpose of data	Project Emission Calculations
Additional comments	

Data/parameter:	$EG_{historic,3yr}$
Unit	MWh
Description	Historic 3 year average net generation of existing power plant

Source of data	Plant records
Value(s) applied)	37,828
Choice of data or measurement methods and procedures	The data is based on historical records in line with requirements of the methodology.
Purpose of data	Baseline emission calculation
Additional comments	The time series data is provided in Annex 3 of the PDD

D.2. Data and parameters monitored

Data / Parameter:	EF_y
Unit:	tCO ₂ /MWh
Description:	Emission factor
Measured/ Calculated / Default:	Calculated
Source of data:	Calculated from the weighted average of the Simple Operating Margin and Build Margin
Value(s) of monitored parameter:	0.9369
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	EF _y = (Simple Operating Margin*0.5 + Build Margin*0.5) = (0.9655*0.5 + 0.9082*0.5)
QA/QC procedures:	-
Purpose of data:	Baseline emissions calculations
Additional comment:	The latest available emission factor, in-line with the methodology requirement has been taken for emission reduction calculations.

Data / Parameter:	EF_{OM,y}
Unit:	tCO ₂ /MWh
Description:	Simple Operating Margin
Measured/ Calculated / Default:	Calculated
Source of data:	Central Electricity Authority: CO ₂ Baseline Database, version 12.0 dated May 2017
Value(s) of monitored parameter:	0.9655
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emissions calculations
Additional comment:	The value applied is for the year 2015-16, since this is the latest data made available by CEA under version 12 of CO ₂ baseline database

Data / Parameter:	EF_{BM,y}
Unit:	tCO ₂ /MWh
Description:	Build Margin
Measured/ Calculated / Default:	Calculated
Source of data:	Central Electricity Authority: CO ₂ Baseline Database, version 12.0 dated May 2017 for the year 2015-2016
Value(s) of monitored parameter:	0.9082
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emissions calculation
Additional comment:	The value applied is for the year 2015-16, since this is the latest data made available by CEA under version 12 of CO ₂ baseline database

Data / Parameter:	F_{i,y}
Unit:	Mass or volume
Description:	Amount of each fossil fuel consumed by each power source/plant
Measured/ Calculated / Default:	Measured by independent plants and reported to Central Electricity Authority
Source of data:	Central Electricity Authority, most recent General Review or other publication that contains fossil fuel consumption by power plants.
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emissions calculations
Additional comment:	-

Data / Parameter:	COEF_i
Unit:	tCO ₂ /mass or volume unit
Description:	Emission factor
Measured/ Calculated / Default:	Measured by relevant Indian ministries or agency on their behalf.

Source of data:	India's Initial National Communication to the UNFCCC, http://natcomindia.org/pdfs/chapter2.pdf for the NCV and EF and IPCC data for OXID
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emissions calculations
Additional comment:	-

Data / Parameter:	Gen_{j/k/n,y}
Unit:	MWh
Description:	Electricity generation of each power source/plant j, k n
Measured/ Calculated / Default:	Measured by independent plants and reported to Central Electricity Authority
Source of data:	Central Electricity Authority, most recent data is from the Monthly Generation Report
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emissions calculations
Additional comment:	-

Data / Parameter:	Plant name
Unit:	Text
Description:	Identification of power source/plant for the calculation of the OM
Measured/ Calculated / Default:	Determined from all plants operating on regional grid
Source of data:	Central Electricity Authority, monthly generation reports
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.

Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emission calculations
Additional comment:	-

Data / Parameter:	Plant name
Unit:	Text
Description:	Identification of power source/plant for the calculation of the BM
Measured/ Calculated / Default:	Determined from all plants operating on regional grid
Source of data:	Central Electricity Authority, state electricity boards and NTPC websites.
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emission calculations
Additional comment:	-

Data / Parameter:	COEF_{i,j, y, IMPORTS}
Unit:	tCO ₂ /mass or volume unit
Description:	For calculation of emission factor
Measured/ Calculated / Default:	Reported by Central Electricity Authority
Source of data:	Central Electricity Authority
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emission calculations

Additional comment:	-
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Data / Parameter:	Gen_{j/k/n,y,imports}
Unit:	KWh
Description:	Electricity imports to the project electricity system
Measured/ Calculated / Default:	Reported by Central Electricity Authority
Source of data:	Central Electricity Authority
Value(s) of monitored parameter:	The values are not provided since they are being monitored by Central Electricity Authority (CEA), a Government of India authority on an annual basis, but the monitored values are not available in the public domain. However, the CEA provides the values of OM and BM which are required to calculate the grid emission factor.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Baseline emission calculations
Additional comment:	-

Data / Parameter:	BF_{k,y}
Unit:	T
Description:	Quantity of outside biomass used at the project activity site
Measured/ Calculated / Default:	Measured
Source of data:	Plant records
Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Daily
Calculation method (if applicable):	-
QA/QC procedures:	The biomass combusted in the boilers can be cross checked through an energy balance undertaken each year for the project activity which involves the calculation of the bagasse used in the boilers.
Purpose of data:	Leakage emission calculations
Additional comment:	-

Data / Parameter:	Moisture content of biomass residues
Unit:	% water content
Description:	Moisture content of each biomass residue k
Measured/ Calculated / Default:	Measured

Source of data:	On-site measurements
Value(s) of monitored parameter:	Bagasse: 50.04 No outside biomass used at the project activity site for the monitoring period.
Monitoring equipment:	Type: Weighing balance, Calibration frequency: Annually Serial Number: 033950261 Accuracy class: $\pm 0.5\%$ Type: Temperature Indicator, Calibration frequency: Annually Serial No: 3032, Accuracy Class: $\pm 0.5\%$
Measuring/ Reading/ Recording frequency:	Daily
Calculation method (if applicable):	-
QA/QC procedures:	Calibrated annually at in house laboratory.
Purpose of data:	Leakage emissions calculations
Additional comment:	The measurement is carried out as per the standard procedures.

Data / Parameter:	N_y
Unit:	-
Description:	Number of truck trips of biomass procured during the period y
Measured/ Calculated / Default:	Measured
Source of data:	DSCL Sugar Ajbapur factory records
Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	The uncertainty level of the data is low. However, the consistency of the number of truck trips can be checked with the quantity of outside biomass combusted.
Purpose of data:	Project emissions calculations
Additional comment:	-

Data / Parameter:	AVD_y
Unit:	Km
Description:	Average return trip distance between the biomass fuel supply sites and the site of project plant
Measured/ Calculated / Default:	Measured
Source of data:	Receipts for the trucks transporting the biomass to the project site
Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period.

Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	Check consistency of distance records provided by the truckers by comparing recorded distances with other information from other sources (eg. maps)
Purpose of data:	Project emission calculations
Additional comment:	-

Data / Parameter:	EG _{project plant, y}																							
Unit:	MWh																							
Description:	Net quantity of electricity generated in the project plant during the year y																							
Measured/ Calculated / Default:	Calculated																							
Source of data:	DSCL Sugar - Ajbapur factory records																							
Value(s) of monitored parameter:	57,194.78																							
Monitoring equipment:	Type: Energy meter, Calibration frequency: Annually Calibrating agency: Belz Calibration Lab TNU01982-20 MW Generation: Accuracy class: ±0.5% 1K074667-20 MW Auxiliary: Accuracy class: ±1.0% 1K016259-IJT 1 Boiler: Accuracy class: ±1.0% 5862688-IJT 2 Boiler: Accuracy class: ±1.0%																							
Measuring/ Reading/ Recording frequency:	Measured continuously and recorded hourly																							
Calculation method (if applicable):	Net electricity generation = Gross electricity generation – Auxiliary consumption-Import from grid																							
QA/QC procedures:	This parameter is checked with the quantity of biomass consumed. <table><tr><th>Serial Number</th><th>Accuracy class</th><th>Calibration date</th><th>Valid till</th></tr><tr><td>TNU01982 (20 MW Generation)</td><td>±0.5%</td><td>31/05/2015 31/05/2016</td><td>30/05/2016 30/05/2017</td></tr><tr><td>1K074667 (20 MW Auxiliary)</td><td>±1%</td><td>30/05/2015 26/05/2016</td><td>29/05/2016 25/05/2017</td></tr><tr><td>1K016259 (IJT 1 Boiler)</td><td>±1%</td><td>30/05/2015 30/05/2016</td><td>29/05/2016 29/05/2017</td></tr><tr><td>5862688 (IJT 2 Boiler)</td><td>±1%</td><td>30/05/2015 27/05/2016</td><td>29/05/2016 26/05/2017</td></tr></table>				Serial Number	Accuracy class	Calibration date	Valid till	TNU01982 (20 MW Generation)	±0.5%	31/05/2015 31/05/2016	30/05/2016 30/05/2017	1K074667 (20 MW Auxiliary)	±1%	30/05/2015 26/05/2016	29/05/2016 25/05/2017	1K016259 (IJT 1 Boiler)	±1%	30/05/2015 30/05/2016	29/05/2016 29/05/2017	5862688 (IJT 2 Boiler)	±1%	30/05/2015 27/05/2016	29/05/2016 26/05/2017
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Purpose of data:	Baseline emission calculations																							
Additional comment:	-																							

Data / Parameter:	EG_{total, y}
Unit:	MWh
Description:	Net quantity of electricity generated in all power units at the project site, generated from firing the same type(s) of biomass as in the project plant, including the new power unit installed as part of the project activity and any previously existing units, during the year y.

Measured/ Calculated / Default:	Calculated																																														
Source of data:	DSCL Sugar - Ajbapur factory records																																														
Value(s) of monitored parameter:	83,428.40																																														
Monitoring equipment:	Type: Energy meter, Calibration frequency: Annually Calibrating agency: Belz Calibration Lab 7124256-TG 1 3 MW: Accuracy class: $\pm 2\%$ 7124021-TG 2 3 MW: Accuracy class: $\pm 2\%$ 1K142624-TG 3 3 MW: Accuracy class: $\pm 1\%$ 3715744-TG 4 1.5 MW: Accuracy class: $\pm 1\%$ 3701203-7.5 MW Auxiliary: Accuracy class: $\pm 0.2\%$ TNB01177-7.5 MW Generation: Accuracy class: $\pm 0.2\%$ TNU01982-20 MW Generation: Accuracy class: $\pm 0.5\%$ 1K074667-20 MW Auxiliary: Accuracy class: $\pm 1\%$ 1K016259-IJT 1 Boiler: Accuracy class: $\pm 1\%$ 5862688-IJT 2 Boiler: Accuracy class: $\pm 1\%$																																														
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QA/QC procedures:	This parameter is checked with the quantity of biomass consumed. Calibrating agency: Belz Calibration Lab <table border="1"> <thead> <tr> <th>Serial Number</th> <th>Accuracy class</th> <th>Calibration date</th> <th>Valid till</th> </tr> </thead> <tbody> <tr> <td>7124256 (TG 1- 3 MW)</td> <td>$\pm 2\%$</td> <td>30/05/2015 30/05/2016</td> <td>29/05/2016 29/05/2017</td> </tr> <tr> <td>7124021 (TG 2- 3 MW)</td> <td>$\pm 2\%$</td> <td>31/05/2015 30/05/2016</td> <td>30/05/2016 29/05/2017</td> </tr> <tr> <td>1K142624 (TG 3- 3 MW)</td> <td>$\pm 1\%$</td> <td>01/06/2015 30/05/2016</td> <td>31/05/2016 29/05/2017</td> </tr> <tr> <td>3715744 (TG 4- 1.5 MW)</td> <td>$\pm 1\%$</td> <td>01/06/2015 30/05/2016</td> <td>31/05/2016 29/05/2017</td> </tr> <tr> <td>3701203 (7.5 MW Auxiliary)</td> <td>$\pm 0.2\%$</td> <td>31/05/2015 31/05/2016</td> <td>30/05/2016 30/05/2017</td> </tr> <tr> <td>TNB01177 (7.5 MW Generation)</td> <td>$\pm 0.2\%$</td> <td>31/05/2015 31/05/2016</td> <td>30/05/2016 30/05/3017</td> </tr> <tr> <td>TNU01982 (20 MW Generation)</td> <td>$\pm 0.5\%$</td> <td>31/05/2015 31/05/2016</td> <td>30/05/2016 30/05/2017</td> </tr> <tr> <td>1K074667 (20 MW Auxiliary)</td> <td>$\pm 1\%$</td> <td>30/05/2015 26/05/2016</td> <td>29/05/2016 25/05/2017</td> </tr> <tr> <td>1K016259 (IJT 1 Boiler)</td> <td>$\pm 1\%$</td> <td>30/05/2015 30/05/2016</td> <td>29/05/2016 29/05/2017</td> </tr> <tr> <td>5862688 (IJT 2 Boiler)</td> <td>$\pm 1\%$</td> <td>30/05/2015 27/05/2016</td> <td>29/05/2016 26/05/2017</td> </tr> </tbody> </table>			Serial Number	Accuracy class	Calibration date	Valid till	7124256 (TG 1- 3 MW)	$\pm 2\%$	30/05/2015 30/05/2016	29/05/2016 29/05/2017	7124021 (TG 2- 3 MW)	$\pm 2\%$	31/05/2015 30/05/2016	30/05/2016 29/05/2017	1K142624 (TG 3- 3 MW)	$\pm 1\%$	01/06/2015 30/05/2016	31/05/2016 29/05/2017	3715744 (TG 4- 1.5 MW)	$\pm 1\%$	01/06/2015 30/05/2016	31/05/2016 29/05/2017	3701203 (7.5 MW Auxiliary)	$\pm 0.2\%$	31/05/2015 31/05/2016	30/05/2016 30/05/2017	TNB01177 (7.5 MW Generation)	$\pm 0.2\%$	31/05/2015 31/05/2016	30/05/2016 30/05/3017	TNU01982 (20 MW Generation)	$\pm 0.5\%$	31/05/2015 31/05/2016	30/05/2016 30/05/2017	1K074667 (20 MW Auxiliary)	$\pm 1\%$	30/05/2015 26/05/2016	29/05/2016 25/05/2017	1K016259 (IJT 1 Boiler)	$\pm 1\%$	30/05/2015 30/05/2016	29/05/2016 29/05/2017	5862688 (IJT 2 Boiler)	$\pm 1\%$	30/05/2015 27/05/2016	29/05/2016 26/05/2017
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Purpose of data:	Baseline emission calculations																																														
Additional comment:	-																																														

Data / Parameter:	EF _{CO₂,LE}
Unit:	tCO ₂ /GJ
Description:	CO ₂ emission coefficient for most carbon intensive fuel used in the country
Measured/ Calculated / Default:	Calculated
Source of data:	CEA, National Communication and/or IPCC

Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	The values has been checked against IPCC data.
Purpose of data:	Leakage emission calculations
Additional comment:	-

Data / Parameter:	NCV_k
Unit:	GJ/t of dry matter
Description:	Net calorific value of rice husk for leakage estimation due to competing use of biomass
Measured/ Calculated / Default:	Measured
Source of data:	Measurements carried out by reputed laboratories
Value(s) of monitored parameter:	No rice husk (outside biomass) used at the project activity site for the current monitoring period.
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Quarterly
Calculation method (if applicable):	-
QA/QC procedures:	Data determined on the basis of dry weight. Data will be held for a period of 2 years after the end of the crediting period.
Purpose of data:	Leakage emission calculations
Additional comment:	-

Data / Parameter:	-
Unit:	-
Description:	Demonstration that the biomass residue type k from a specific source would continue not to be collected or utilised e.g. by an assessment whether a market has emerged for that type of biomass residue or by showing that it would still not be feasible to utilise the biomass residues for any purposes.
Measured/ Calculated / Default:	Measured
Source of data:	Information by the site where the biomass is generated
Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period and therefore no need of survey
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-

Purpose of data:	Leakage emissions calculations (approach L1 of leakage test)
Additional comment:	-

Data / Parameter:	-
Unit:	Tonnes
Description:	Quantity of available biomass residues of type k that in the region
Measured/ Calculated / Default:	Measured
Source of data:	Survey of statistics
Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period and therefore no need of survey
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	The data will be rechecked to ensure correctness
Purpose of data:	Leakage emissions calculations (approach L2 of leakage test)
Additional comment:	-

Data / Parameter:	-
Unit:	-
Description:	Availability of a surplus of biomass residue type k at the ultimate supplier to the project and a representative sample of other suppliers in the defined geographical region
Measured/ Calculated / Default:	Measured
Source of data:	Surveys
Value(s) of monitored parameter:	No outside biomass used at the project activity site for the current monitoring period and therefore no need of survey
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annual
Calculation method (if applicable):	-
QA/QC procedures:	-
Purpose of data:	Leakage emissions calculations (approach L3 of leakage test)
Additional comment:	-

Data / Parameter:	Amount of biomass combusted in project activity boilers
Unit:	T
Description:	Amount of biomass combusted in project activity boilers (IJT 1 and IJT 2)
Measured/ Calculated / Default:	Measured
Source of data:	DSCL Sugar - Ajbapur factory records

Value(s) of monitored parameter:	100,080 (boiler IJT 1) 101,450 (boiler IJT 2)
Monitoring equipment:	Type: Encoders, Accuracy class: ± 1 RPM at 95% confidence level, Calibration frequency: Annually Calibrating agency: Adcon Test & Calibration Lab Calibrating agency: Adcon Test & Calibration Lab IJT-1 Feeder 1-1054712 Feeder 2-1054709 Feeder 3-1054708 IJT-2 Feeder 1-1054507 Feeder 2-1054713 Feeder 3-1054710
Measuring/Reading/Recording frequency:	Daily
Calculation method (if applicable):	-
QA/QC procedures:	The encoders are calibrated on yearly basis.
Purpose of data:	Baseline emissions calculations
Additional comment:	There has been a delay in calibration of the encoders by few days. This does not have any impact on the emission reduction calculations.

D.3. Implementation of sampling plan

>>N/A

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

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

>> The formulae used to calculate the baseline emissions are:

$$ER_{electricity,y} = EG_y \cdot EF_{electricity,y}$$

Where:

$ER_{electricity,y}$ Emission reductions due to the displacement of electricity during the year y in tons of CO₂
 EG_y Net quantity of electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh, and
 $EF_{electricity,y}$ CO₂ emission factor for the electricity displaced due to the project activity during the year y in tons CO₂/MWh.

$$EG_y = MIN \left[(EG_{projectplant,y}) \text{ and } \left(EG_{total,y} - \frac{EG_{historic,3yr}}{3} \right) \right]$$

Where:

EG_y Net quantity of increased electricity generation as a result of the project activity (incremental to baseline generation) during the year y in MWh, is the net quantity of electricity generated in the project plant during the year y in MWh
 $EG_{projectplant,y}$ Net quantity of electricity generated in the project plant during the year y in MWh
 $EG_{total,y}$ Net quantity of electricity generated in all power units at the project site, generated from firing the same type(s) of biomass as in the project plant, including the new power unit installed as part of the project activity and any previously existing units, during the year y in MWh,
 $= MIN [(57,194.78) \text{ and } (83,428.40 - 37,828)]$
 $= MIN [(57,194.78) \text{ and } (45,600.40)]$
 $= 45,600.40$
 $ER_{electricity,y} = EG_y \cdot EF_y$

$$ER_{electricity, y} = 45,600.40 * 0.9369 \\ = 42,723 \text{ tCO}_2$$

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

>>The formula to calculate the Project emissions is

$$PET_y = N_y \cdot AVD_y \cdot EF_{kmCO_2}$$

Where,

PET_y CO₂ emissions during the year y due to transport of the biomass to the project plant in tons of CO₂

N_y Number of truck trips during the period y

AVD_y Average return trip distance between the biomass fuel supply sites and the site of project plant in kilometers (km)

EF_{kmCO_2} CO₂ emission factor for the trucks measured in t CO₂/km

$$PET_y = 0 \text{ tCO}_2\text{e}$$

There is no transportation of external purchased biomass in the monitoring period under consideration and hence the project emissions are zero.

E.3. Calculation of leakage

>>The formula to calculate the Leakage is

$$L_y = EF_{CO_2,LE} \cdot \sum_k BF_{PJ,k,y} \cdot NCV_k$$

Where,

L_y Leakage emissions during the year y in tons of CO₂

$EF_{CO_2,LE}$ CO₂ emission factor of the most carbon intensive fuel used in the country (tCO₂/GJ),

k Types of biomass residues for which leakage effects could not be ruled out with one of the approaches L_1 , L_2 or L_3

$BF_{PJ,k,y}$ Incremental quantity of biomass residue of type k used as a result of the project activity in the project plant during the year y (tons of dry matter or liter)

NCV_k Net calorific value of the biomass type k (GJ/ton of dry matter or GJ/liter).

$$L_y = 0 \text{ tCO}_2\text{e}$$

There is no external purchase of biomass in the monitoring period under consideration and hence there is no leakage during this monitoring period.

As mentioned in the PDD – PP needs to demonstrate that the biomass used in the project plant has not increased the fossil fuel consumption elsewhere. This is to be demonstrated to the DOEs at the time of verification by showing that the quantity of available biomass in the region is 25% larger than the quantity of biomass that is utilized, including the project plant. The geographical boundary of the region would cover a radius of 200 km around the project activity.

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 ₂ e)	Project emissions or actual net GHG removals by sinks (t CO ₂ e)	Leakage (t CO ₂ e)	GHG emission reductions or net GHG removals by sinks (t CO ₂ e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	42,723	0	0	0	42,723	42,723

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 ₂ e)	59.690	42,723

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

>>There is no increase in the emission reductions during the current monitoring period relative to the estimation in the registered CDM-PDD. The decrease in emission reductions during the monitoring period are less than the estimated in the registered PDD as the turbine operated for less number of days in the season as well as off-season than the days expected in the PDD.

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

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input checked="" type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	M/s DCM Shriram Ltd.
Street/P.O. Box	18 Barakhamba Road
Building	5th floor, Kanchenjunga Bldg,
City	New Delhi
State/region	Delhi
Postcode	
Country	India
Telephone	
Fax	
E-mail	
Website	
Contact person	
Title	
Salutation	Mr
Last name	Singh
Middle name	
First name	Anoop
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	anoopsingh@dcmshriram.com

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Agrinergy Ltd.
Street/P.O. Box	Eagle Tower
Building	Montpellier Drive
City	GL50 1TA Cheltenham
State/region	
Postcode	
Country	United Kingdom of Great Britain and Northern Ireland
Telephone	
Fax	
E-mail	
Website	
Contact person	
Title	Director
Salutation	Mr

Last name	Atkinson
Middle name	
First name	Ben
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	ben.atkinson@agrinergergy.com

Project participant and/or responsible person/ entity	<input checked="" type="checkbox"/> Project participant <input type="checkbox"/> Person/entity responsible for completing the CDM-MR-FORM
Organization name	Asian Development Bank
Street/P.O. Box	-
Building	6 ADB Avenue
City	1550 Mandaluyong City
State/region	
Postcode	
Country	Philippines
Telephone	
Fax	
E-mail	
Website	
Contact person	
Title	Director General
Salutation	Ms.
Last name	Locsin
Middle name	
First name	Ma. Carmela D.
Department	Sustainable Development and Climate Change
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	futurecarbonfund@adb.org

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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"> • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: <ul style="list-style-type: none"> • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from <i>F-CDM-MR</i> to <i>CDM-MR-FORM</i>; • Editorial improvement.
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		