ANHUI GUZHEN BIOMASS GENERATION PROJECT

Document Prepared by Beijing Cronus Technology Counsultancy Centre.

Project Title	Anhui Guzhen Biomass Generation Project
Version	2.0
Report ID	/
Date of Issue	28/03/2020
Project ID	1121
Monitoring Period	01/10/2015 to 29/02/2020
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CONTENTS

1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Anhui Guzhen Biomass Generation Project (hereafter referred to as the Project) is located in Guzhen County, Bengbu City, Anhui Province, P.R.China. The Project is invested, constructed and operated by National Guzhen Bio Energy Co., Ltd. The project activity is to install one boiler with capacity of 130t/h, and one steam turbine power generator with a capacity of 30MW. Rice straw, maize straw, peanut straw and wood residues are used as fuel for power generation. The annual net quantity of electricity supply of the Project is expected to be 186,900MWh, and the power will be delivered to East China Power Grid (ECPG). The implementation of the Project needs a supply of 310,000 tonnes of biomass residue per year (on wet basis).

The Project will achieve emission reductions via avoiding CO_2 emissions from the same amount of electricity generated by ECPG, which is mainly composed of traditional fossil fuel fired power plants. It is estimated that the project activity will generate emission reductions of about 132,072 tCO_2e per year.

The project started construction on 28/03/2010. The project started commissioning on 03/01/2011.

This monitoring period is from 01/10/2015 to 29/02/20120(1613days). The project operated normally during this monitoring period and the emission reductions are 619,924tCO_2.

1.2 Sectoral Scope and Project Type

Sectoral scope 1: energy industries (Renewable sources)

This project is not a grouped project.

1.3 Project Proponent

Organization name	National Guzhen Bio Energy Co.,Ltd
Contact person	Mr. Wang Chunli
Title	Manager
Address	Old Administration Building, No. 1 Beishatan, Chaoyang District, 100083, Beijing, China.
Telephone	+86-10-58681511
Email	wcl@nbe.cn

1.4 Other Entities Involved in the Project

Organization name	Beijing Cronus Technology Counsultancy Centre.
Role in the Project	Project participant
Contact person	Li Qiang
Title	Manager
Address	814-004, No.15, information road, Haidian, Beijing, 100083, China
Telephone	+86-13488823841
Email	yaobaojie@126.com

1.5 Project Start Date

03/01/2011 (project started commissioning, which means that the project started to generate GHG emissions)

1.6 Project Crediting Period

According to the VCS PD, the registration date is 16/11/2012 or the actual registration date, whichever is later.

According to VCS rules, the crediting period could start from the day that starts to generate GHG emission reductions, that is 03/01/2011 in this project. So, the first VCS crediting period would from 03/01/2011 to 02/01/2021(10years, renewable) and the total VCS crediting period would from 03/01/2011 to 02/01/2041 (30 years).

As this project was registered under CDM on 07/11/2012 with registration number of 8008 and the first crediting period is 01/01/2013 to 31/12/2019 (7years, which is renewable). Therefore, the total CDM crediting period is from 01/01/2013 to 31/12/2033 (21 years).

Based on VCS regulations, the crediting period under VCS is from 03/01/2011 to 31/12/2033 (23years)

1.7 Project Location

The Project is sited on the Economic Development Zone, 8 km to the downtown of Guzhen County, Anhui Province. The Project has geographical coordinates with east longitude of 117°20′13″ (i.e. 117.3369°) and north latitude of 33°13′08″ (i.e. 33.2189°). Figure 1 shows the location of Guzhen County, Figure 2 shows the location of the Project.

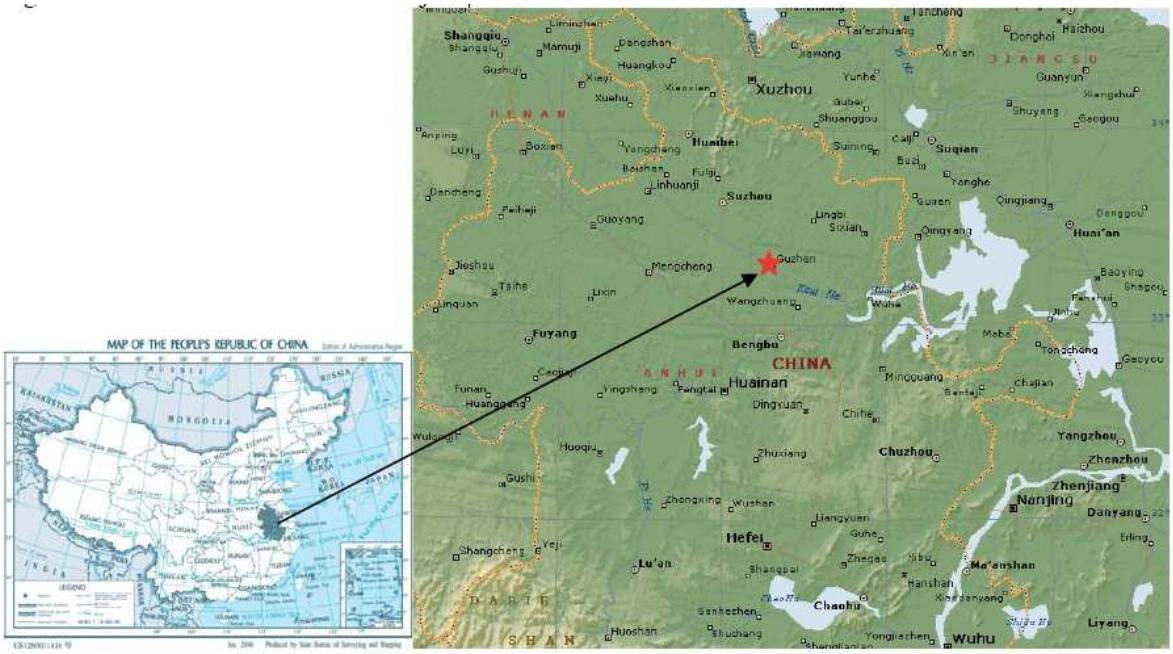

Figure 1. Location of Guzhen county

Figure 2. Location of the project

1.8 Title and Reference of Methodology

Approved consolidated baseline and monitoring methodology ACM0018 (version 02.0.0): "Consolidated methodology for electricity generation from biomass residues in power-only plants"

This methodology also refers to the following tools:

Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 02);

Tool to calculate the emission factor for an electricity system (version 2.2.1);

Project and leakage emissions from road transportation of freight (version 1.0.0)

1.9 Participation under other GHG Programs

This project has been registered as a CDM project on 07/11/2012, and the registration number is 8008. It has been issued carbon credits for one time under CDM mechanism with monitoring period from 01/01/2013 to 30/09/2015.

The emission reductions from 01/10/2015 to 29/02/2020 has not been and will not be counted or claimed under other GHG programs.

The project has not claimed any other forms of environment credit.

1.10 Other Forms of Credit

This project has been registered as a CDM project on 07/11/2012, and the registration number is 8008. It has been issued carbon credits for one time under CDM mechanism with monitoring period from 01/01/2013 to 30/09/2015.

The emission reductions from 01/10/2015 to 29/02/2020 has not been and will not be counted or claimed under other GHG programs.

The project has not claimed any other forms of environment credit.

1.11 Sustainable Development

The Project will not only supply renewable electricity to the grid, but also contribute to sustainable development of the local community, the host country and the world by means of:

- Reducing greenhouse gas emissions compared to a business-as-usual scenario;
- Helping to stimulate the growth of the biomass power industry in China;
- Reducing the emission of other pollutants resulting from the power generation industry in China, compared to a business-as-usual scenario;
- Creating 74 local employment opportunities during the construction and operation period of the Project.

2 SAFEGUARDS

2.1 No Net Harm

The Environmental Impact Statement Form was completed by Anhui Institute of Environmental Science in Oct, 2009. And it was approved by the Anhui Environment Protection Bureau on 11/12 2009. According to the Environmental Impact Statement Form, environmental impacts possibly caused by the Project and corresponding measures employed by the project owner are analyzed as follows:

1. Environmental Impact Analysis During Construction Period

(1) Atmosphere Environment

The major pollutant is flying-dust and is mainly caused by transportation and construction. The influence area of fling-dust is within 100m. The influence area of transportation dust can be effectively reduced by sprinkling the road. The construction dust has no impact on all the environmental sensitive points, which are all 300m away from the project plant.

(2) Waste water

The waste water is mainly concrete maintenance water, road sprinkling water and some domestic waste water. Temporary sedimentation tank and septic tank will installed to treat the waste water. The concrete maintenance water can be reused after treatment in the temporary sedimentation tank, and the domestic waste water can be discharged into the irrigation channel nearby after treated in the septic tank. Thus, the waste water will no impact the environment.

(3) Noise

Noises generated by the Project include primarily from the operation of construction machines and equipment. According to the on-site measurement, the noise value of 60m away doesn't beyond the construction noise standard on day time, and the noise value of 300m away doesn't beyond the construction noise standard on night time. The construction noise has no impact on all the environmental sensitive points, which are all 300m away from the project plant.

(4) Solid waste

The solid wastes during construction are mainly discarded earth, waste construction materials, waste decorating materials and living garbage. The discarded earth, waste construction materials, and some waste decorating materials will be backfilled. The packaging boxes and bags will be selected and sold. The living solid waste will be collected and stored at specific site and delivered to environmental sanitation administrative department. Thus, the solid waste generated during the construction period will not impact the surroundings.

2. Environmental Impact Analysis During Construction Period

(1) Atmosphere Environment

Biomass residues with low ash and sulphur content are used as fuel in the Project. The concentration of SO2 and dust will be much lower comparing with traditional coal power plant. The Project adopts clean combustion technology and is equipped with highly efficient bag-type dust collector and will release the flue gas through high stake, ensuring that the flue gas from the Project will not impact the atmosphere.

(2) Waste water

The waste water is mainly from water purification station and circulating cooling water process. The

quality of the waste water can meet the requirement of Integrated wastewater discharge standard, and thus can be discharged into river and will not poison the water environment.

(3) Noise

The transportation attributed to the Project is much smaller than the present transportation condition, and thus will not increase any noise influence.

The noise of boiler venting is temporary. After taking the measures of venting on day time and installing noise muffler, this noise will not impact the surroundings.

(4) Solid waste

The ash from the Project will be transported in sealed vehicles by specific companies, and will be recycled as raw material for fertilizer, thus the storage, transportation and treatment of ash will not impact the environment.

In summary, by means of pollution avoidance and control, the Project will not have significant impact on the regional environment.

The project does not bring negative environmental and socio-economic impacts.

2.2 Local Stakeholder Consultation

Stakeholders of the Project are identified as the local residents of Shouxian County and around the project site. The survey was conducted on 14/12/2009 through distributing and collecting responses to a questionnaire.

For the total 50 questionnaires distributed to the stakeholders, 50 returned with a response rate of 100%.

The questionnaires mainly focus on the following issues:
· What is the attitude of the environmental protection of Project?
· What is the understand level of the Project?
· What is the impact of the Project on the local economic growth?
· What is the impact of the Project on the life standard of stakeholders?
· What is the most concern of environmental impact of the Project?
· What is the attitude of the stakeholders on the construction of the Project?

The summary of questionnaire survey is listed as the following:
- 58% of them very concern about the environmental protection of the Project, 40% of them concern about the Project, and 2% of them don't concern.
- 64% of them know the Project well, 34% of them know the Project, 2% of them do not know the project;
- 96% think the Project will promote the local economic growth, 4% think the Project has no impact on the local economic growth;
- 100% of them think the Project will bring positive influence on living quality of local people;

- 36% of them worried about the noise issue, 24% of them worried about the wastewater issue,
- 40% of them worried about the air pollution issue.
- 100% of them support the construction of the Project.

We know from the results of questionnaire statistics that the stakeholders support the construction of the Project.

In addition to the above stakeholders' survey, a grievance book was also put in the office of the biomass company. Anyone who have comments on the project could write on the book. And the phone number of the office is known for local people. Therefore, local stakeholders could also leave comments by the phone.

No comments were received during this monitoring period.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The project activity is to install one boiler with a capacity of 130t/h, and one steam turbine generator with a capacity of 30MW. Biomass residues are used as fuel for boiler generating steam, and the steam drives turbine generator which create power.

Figure 3 below shows the technical process of the project, and Table 1 below shows the key technical specifications of the main equipment.

Table 1. Key technical specifications

Parameters	Value
Boiler	
Model	YG-130/9.2-T1
Rated steam capacity	130t/h
Rated steam pressure	9.2MPa
Rated steam temperature	540℃
Manufacturer	Jinan Boiler Group Co., Ltd.
Turbine	
Model	N30-8.83
Rated power	30MW
Rated speed	3,000r/min
Inlet pressure:	8.83MPa (a)
Manufacturer	Qingdao Jieneng Steam Turbine Group Co., Ltd.
Generator	
Model	QF-30-2
Rated power	30MW

Rated voltage	10,500V
Rated frequency	50Hz
Power factor (lagging)	0.8
Manufacturer	Shandong Jinan Generator Factory

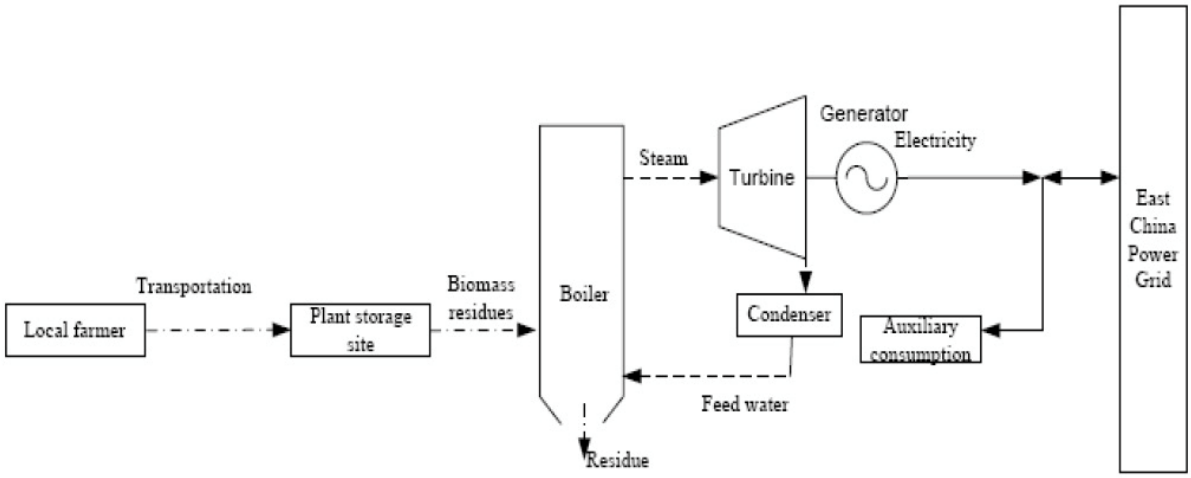

Figure 3. Flowchart of the Project

This Project started construction on 28/03/2010 and was put into operation on 03/01/2011.

There was no overhaul or emergency events which may impact the applicability of the methodology occurred during this monitoring period.

3.2 Deviations

2.1.1 Methodology Deviations

There is no methodology deviation in this monitoring period.

2.1.2 Project Description Deviations

There are two deviations in this monitoring period.

1) Project crediting period.

   According to the VCS PD, the crediting period is from 03/01/2011 to 06/11/2012.

   The project was put into operation on 03/01/2011. As per VCS rules, the project crediting period under VCS is from 03/01/2011 to 31/12/2033 (23years). The detail could be seen in section 1.6 of this monitoring report.

2) NCV of biomass

"Net calorific value of biomass residues" ($NCV_{n,y}$) is not monitored during this monitoring period.

According to methodology ACM0018 (version 2.0.0), the parameter "Net calorific value of biomass residues of category n in year y" ($NCV_{n,y}$) is for the calculation of baseline emissions due to uncontrolled burning or decay of biomass residues ($BE_{BR,y}$) and project emissions from the combustion of biomass residues ($PE_{BR,y}$). ACM0018 allows the project participant not to include the emission source of uncontrolled burning or decay of biomass residues and the combustion of biomass residues for electricity.

In the registered PDD, the project participant has decided to exclude the above emissions ($BE_{BR,y}$ and $PE_{BR,y}$). Therefore, $NCV_{n,y}$ is not related to the calculation of emission reduction, thus it is not necessary to be monitored during this monitoring period. For the project energy efficiency calculation, the NCV from public literature is used.

3.3 Grouped Projects

Not applicable as this is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM,y}$
Data unit	tCO_2e/MWh
Description	The operating margin emission factor
Source of data	2011 Baseline Emission Factors for Regional Power Grid in China
Value applied	0.8367
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the 2011 Baseline Emission Factors for Regional Power Grid in China issued by China's DNA are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2e/MWh
Description	The building margin emission factor
Source of data	2011 Baseline Emission Factors for Regional Power Grid in China
Value applied	0.6622

Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the 2011 Baseline Emission Factors for Regional Power Grid in China issued by China's DNA are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2e/MWh
Description	The combined baseline emission factor
Source of data	2011 Baseline Emission Factors for Regional Power Grid in China
Value applied	0.74945
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the 2011 Baseline Emission Factors for Regional Power Grid in China issued by China's DNA are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$GEN_{j,y}$
Data unit	MWh
Description	Total power generation of province j of East China Power Grid in year y
Source of data	China Electric Power Yearbook 2008~2010
Value applied	Annex 3 of the registered PD
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the China Electric Power Yearbook issued by authorized entity in China are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$r_{j,y}$
Data unit	%
Description	Auxiliary electricity consumption rate of province j of East China Power Grid in year y
Source of data	China Electric Power Yearbook 2008~2010

Value applied	Annex 3 of the registered PD
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the China Electric Power Yearbook issued by authorized entity in China are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{CO2,i,y}$
Data unit	tCO_2/TJ
Description	CO2 emission factor per unit of energy of the fuel i
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value applied	Annex 3 of registered PDD
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$CAP_{j,y}$
Data unit	MW
Description	Total installed capacity of province j of East China Power Grid in year y
Source of data	China Electric Power Yearbook 2008-2010
Value applied	Annex 3 of the registered PDD
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the China Electric Power Yearbook issued by authorized entity in China are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$NCV_{i,y}$
Data unit	TJ/ mass or volume unit of fuel i

Description	Net caloric value of fuel i
Source of data	China Energy Statistical Yearbook 2010
Value applied	Annex 3 of registered PDD
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the China Energy Statistical Yearbook issued by authorized entity in China are reliable
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$FC_{i,l,y}$
Data unit	t or m^3
Description	Consumption of fuel type i of province j of East China Power Grid in year y
Source of data	China Energy Statistical Yearbook 2008- 2010
Value applied	Annex 3 of registered PDD
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the China Energy Statistical Yearbook issued by authorized entity in China are reliable
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	Oxidation rate
Data unit	/
Description	Oxidation rate of the fuel i
Source of data	2006 IPCC Guideline for National Greenhouse Gas Inventories
Value applied	Annex 3 of registered PDD
Justification of choice of data or description of measurement methods and procedures applied	IPCC default value
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$FC_{adv,coal}$

Data unit	gCe/kWh
Description	weighted average fuel consumption for power generation of top 30 sets of 600 MW coal fired power generation units set up in 2009 (taken as efficiency level of the best technology commercially available in China)
Source of data	2011 Baseline Emission Factors for Regional Power Grid in China
Value applied	311.5
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the 2011 Baseline Emission Factors for Regional Power Grid in China made publicly available by China's DNA are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$FC_{adv,oil/gas}$
Data unit	gCe/kWh
Description	weighted average fuel consumption for power generation of 200 MW oil/gas fired combined cycle power generation units (taken as efficiency level of the best technology commercially available in China)
Source of data	2011 Baseline Emission Factors for Regional Power Grid in China
Value applied	237.4
Justification of choice of data or description of measurement methods and procedures applied	The data obtained from the 2011 Baseline Emission Factors for Regional Power Grid in China made publicly available by China's DNA are reliable.
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	Biomass residues categories and quantities used for the selection of the baseline scenario selection and assessment of additionality
Data unit	- Type; - Source; - Fate in the absence of the project activity (scenarios B); - Use in the project scenario (scenarios P); - Quantity (tonnes on dry-basis)
Description	The detail could be seen in following table
Source of data	Feasibility Study Report
Value applied	

No.	Biomass residue type	Biomass residues source	Biomass residues fate in	Biomass residues use	Biomass residues quantity

				the absence of the project activity	in project scenario	(104 tonnes on drybasis)
	1	Rice straw	Offsite from local farmer	Dumped (B1)	Electricity generation on-site (biomass only boiler)	4.80
	2	Peanut straw	Offsite	Dumped (B1)	Electricity generation on-site (biomass only boiler)	2.56
	3	Maize straw	from local	Dumped (B1)	Electricity generation on-site (biomass only boiler)	3.45
	4	Wood residues	farmer	Dumped (B1)	Electricity generation on-site (biomass only boiler)	8.86
Justification of choice of data or description of measurement methods and procedures applied	Feasibility Study Report was finished by a qualified institute and approved by government. It is a reliable source.					
Purpose of Data	Baseline assessment					
Comments	/					

Data / Parameter	$EF_{CO2,f}$
Data unit	gCO_2/t km
Description	Default CO_2 emission factor for freight transportation activity f
Source of data	"Project and leakage emissions from road transportation of freight" (Version 01.0.0)
Value applied	245
Justification of choice of data or description of measurement methods and procedures applied	In "Project and leakage emissions from road transportation of freight" (Version 01.0.0), the default value of emission factors for Light vehicles and Heavy vehicles are 245 (gCO_2 /t km) and 129 (gCO_2/t km), respectively. For conservativeness, the value of 245 (gCO_2/t km) will be adopted for $PE_{TR,m}$ calculations, no matter the freights are transported by Light vehicles or Heavy vehicles.
Purpose of Data	Calculation of project emissions
Comments	/

4.2 Data and Parameters Monitored

<table>
<tr><td>Data / Parameter</td><td>$EG_{PJ,gross,y}$</td></tr>
<tr><td>Data unit</td><td>MWh</td></tr>
<tr><td>Description</td><td>Gross quantity of electricity generated in all power plants which are located at the project site and included in the project boundary in year y</td></tr>
<tr><td>Source of data</td><td>The data is obtained from monthly record based on electricity meter 1.</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>It is measured by the electricity meter continuously and recorded monthly by the project owner. The meters are calibrated annually to ensure its accuracy.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Measured continuously and recorded Monthly.</td></tr>
<tr><td>Value monitored</td><td>992,771.640
The monthly data is shown in table 2 of section 5.</td></tr>
<tr><td>Monitoring equipment</td><td>Identify equipment used to monitor the data/parameter including type, accuracy class, and serial number of equipment, as appropriate.

The information of electricity meters is shown in following table
<table>
<tr><th>Equipment</th><th>Model</th><th>SN</th><th>Accuracy</th><th>Calibration date</th><th>Validity</th></tr>
<tr><td rowspan="6">Meter 1</td><td rowspan="6">DTSD866</td><td rowspan="6">2010040079</td><td rowspan="6">0.5S</td><td>01/11/2014</td><td>31/10/2015</td></tr>
<tr><td>26/10/2015</td><td>25/10/2016</td></tr>
<tr><td>21/10/2016</td><td>20/10/2017</td></tr>
<tr><td>13/10/2017</td><td>12/10/2018</td></tr>
<tr><td>08/10/2018</td><td>07/10/2019</td></tr>
<tr><td>30/09/2019</td><td>29/09/2020</td></tr>
</table></td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The meters are calibrated by national standard. The meter records are crosschecked with the sales receipts. And it is also crosschecked with the energy balance based on biomass and fossil fuel consumption.
<table>
<tr><th>Year</th><th>Plant efficiency</th></tr>
<tr><td>2015</td><td>21.08%</td></tr>
<tr><td>2016</td><td>21.23%</td></tr>
<tr><td>2017</td><td>21.39%</td></tr>
</table></td></tr>
</table>

	2018	21.27%
	2019	21.07%
	2020	20.56%
Purpose of the data	Calculation of baseline emissions	
Calculation method	The total electricity data will be used for baseline emission calculation	
Comments	/	

Data / Parameter	$EG_{PJ,aux,y}$
Data unit	MWh
Description	Total auxiliary electricity consumption required for the operation of the power plants at the project site.
Source of data	The data is obtained from monthly record based on electricity meter 2
Description of measurement methods and procedures to be applied	It is measured by the electricity meter continuously and recorded monthly. The meters are calibrated annually to ensure its accuracy.
Frequency of monitoring/recording	Measured continuously and recorded Monthly. The monthly data is shown in table 8 of section 5.
Value monitored	109,253.040
Monitoring equipment	The information of electricity meters is shown in following table

Equipment	Model	SN	Accuracy	Calibration date	Validity
Meter 2	AINRTAL	02083299	0.2S	01/11/2014	31/10/2015
				26/10/2015	25/10/2016
				21/10/2016	20/10/2017
				13/10/2017	12/10/2018
				08/10/2018	07/10/2019
				30/09/2019	29/09/2020

QA/QC procedures to be applied	The meters are calibrated by national standard. The meter records of ($EG_{PJ,gross,y}$ -$EG_{PJ,aux,y}$) are crosschecked with the sales receipts. And it is also crosschecked with the energy balance based on biomass and fossil fuel consumption.

Year	Plant efficiency

	2015	21.08%
	2016	21.23%
	2017	21.39%
	2018	21.27%
	2019	21.07%
	2020	20.56%
Purpose of the data	Calculation of baseline emissions	
Calculation method	/	
Comments	/	

Data / Parameter	Biomass residues categories and quantities used in the project activity
Data unit	-Type; - Source; - Fate in the absence of the project activity - Use in the project scenario; - Quantity (tonnes on dry-basis)
Description	The quantities of which biomass residues categories are used in the project activity should be updated every year of the crediting period as part of the monitoring plan so as to reflect the actual use of biomass residues in the project scenario. These updated values should be used for emissions reductions calculations. Along the crediting period, new categories of biomass residues (i.e. new types, new sources, with different fate) can be used in the project activity. In this case, a new line should be added to the table. If those new categories are of the type B1, B2, or B3, the baseline scenario for those types of biomass residues should be assessed using the procedures outlined in the guidance provided in the procedure for the selection of the baseline scenario and demonstration of additionality
Source of data	Monthly record based on measurements by belt scale
Description of measurement methods and procedures to be applied	It is measured by the belt scale and recorded monthly.
Frequency of monitoring/recording	Measured continuously and recorded Monthly. The monthly data is shown in table 8 of section 5.

Value monitored

No.	Biomass residue type	Biomass residues source	Biomass residues fate in the absence of the project activity	Biomass residues use in project scenario	Biomass residues quantity (10^4 tonnes on dry basis)
1	Rice straw	Offsite from local farmer	Dumped (B1)	Electricity generation on-site (biomass only boiler)	1.130(in 2015); 4.974(in 2016); 5.019(in 2017);7.145(in 2018);7.322(in 2019)
2	Peanut straw	Offsite	Dumped (B1)	Electricity generation on-site (biomass only boiler)	0.574 (in 2015); 3.542(in 2016); 3.121(in 2017);3.834(in 2018);4.043(in 2019)
3	Maize straw	from local	Dumped (B1)	Electricity generation on-site (biomass only boiler)	0.890(in 2015);6.30(in 2016); 1.395(in 2017); 2.385(in 2018);2.366(in 2019)
4	Wood residues	farmer	Dumped (B1)	Electricity generation on-site (biomass only boiler)	2.499(in 2015) ; 16.603(in 2016);18.860(in 2017); 18.620(in 2018);19.214(in 2019)

Monitoring equipment

The information of belt scale is shown in following table

Equipment	Model	SN	Accuracy	Calibration date	Validity
Belt scale	N20-2-1200	PD100118	1.0	16/09/2015	15/09/2016
				12/09/2016	11/09/2017
				06/09/2017	05/09/2018
				31/08/2018	30/08/2019
				23/08/2019	22/08/2020
Moisture analyzer	SDTGA 300c	3510024c	±0.1mg	16/09/2015	15/09/2016
				12/09/2016	11/09/2017
				06/09/2017	05/09/2018
				31/08/2018	30/08/2019
				23/08/2019	22/08/2020

<table>
<tr><td></td><td></td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The belt scale is calibrated by national standard. The data is crosschecked with annual purchase quantities and stock changes.
<table>
<tr><th>Period</th><th>Total biomass purchase amount (tonnes, wet basis)</th><th>Total biomass consumption (tonnes, wet basis)</th><th>Total biomass stock amount (tonnes, wet basis)</th></tr>
<tr><td>01/10/2015-31/12/2015</td><td>92059.590</td><td>82723.310</td><td>9336.280</td></tr>
<tr><td>01/01/2016-31/12/2016</td><td>362248.090</td><td>338534.001</td><td>33050.369</td></tr>
<tr><td>01/01/2017-31/12/2017</td><td>341253.700</td><td>332414.964</td><td>41889.105</td></tr>
<tr><td>01/01/2018-31/12/2018</td><td>320339.680</td><td>319845.734</td><td>42383.051</td></tr>
<tr><td>01/01/2019-31/12/2019</td><td>317836.380</td><td>329448.944</td><td>30770.487</td></tr>
<tr><td>01/01/2020-29/02/2020</td><td>55752.440</td><td>52667.500</td><td>33855.427</td></tr>
</table></td></tr>
<tr><td>Purpose of the data</td><td>Calculation of baseline emissions</td></tr>
<tr><td>Calculation method</td><td>/</td></tr>
<tr><td>Comments</td><td>/</td></tr>
</table>

Data / Parameter	For biomass residues categories for which scenarios B1, B2 or B3 is deemed a plausible baseline alternative, project participants shall demonstrate that this is a realistic and credible alternative scenario
Data unit	tonnes
Description	- Quantity of available biomass residues of type n in the region - Quantity of biomass residues of type n that are utilized (e.g. for energy generation or as feedstock) in the defined geographical region

	- Availability of a surplus of biomass residues type n (which can not be sold or utilized) at the ultimate supplier to the project and a representative sample of other suppliers in the defined geographical region
Source of data	Surveys or statistics
Description of measurement methods and procedures to be applied	The data is from the statistics of local government
Frequency of monitoring/recording	annually
Value monitored	

Unit：10^4ton	Year 2015			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	55.510	35.670	56.45	92.200
Biomass utilized out of the project	16.100	12.800	16.90	20.700
Biomass utilized by the project	1.130	0.574	0.89	2.499
Total biomass utilized, including the project	17.230	13.374	17.79	23.199
Available Biomass/Total biomass utilized	322%	267%	317%	397%
Available Biomass/Total biomass utilized - 100%	222%	167%	217%	297%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2016			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	56.590	35.400	55.59	92.590
Biomass utilized out of the project	16.800	12.400	17.10	20.200
Biomass utilized by the project	4.974	3.542	6.30	16.603
Total biomass utilized, including the project	21.774	15.942	23.40	36.803
Available Biomass/Total biomass utilized	260%	222%	238%	252%

Available Biomass/Total biomass utilized - 100%	160%	122%	138%	152%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2017			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	55.410	36.120	56.78	92.400
Biomass utilized out of the project	16.700	12.700	16.40	21.500
Biomass utilized by the project	5.019	3.121	1.395	18.860
Total biomass utilized, including the project	21.719	15.821	17.79	40.360
Available Biomass/Total biomass utilized	255%	228%	319%	229%
Available Biomass/Total biomass utilized - 100%	155%	128%	219%	129%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2018			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	57.220	35.430	56.46	93.430
Biomass utilized out of the project	16.900	13.000	16.50	20.600
Biomass utilized by the project	4.749	2.690	1.35	18.620
Total biomass utilized, including the project	21.649	15.690	17.85	39.220
Available Biomass/Total biomass utilized	264%	226%	316%	238%
Available Biomass/Total biomass utilized -100%	164%	126%	216%	138%

Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2019			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	57.010	36.040	56.07	93.170
Biomass utilized out of the project	16.800	13.100	16.90	21.000
Biomass utilized by the project	4.967	2.800	1.32	19.214
Total biomass utilized, including the project	21.767	15.900	18.22	40.214
Available Biomass/Total biomass utilized	262%	227%	308%	232%
Available Biomass/Total biomass utilized - 100%	162%	127%	208%	132%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Monitoring equipment	
QA/QC procedures to be applied	The survey is conducted by local government, which is reliable
Purpose of the data	Calculation of leakage emissions
Calculation method	/
Comments	/

Data / Parameter	Moisture content of the biomass residues
Data unit	%
Description	Moisture content of each biomass residue type k
Source of data	Monthly record based on the measurement by moisture analyzer
Description of measurement methods and	The biomass was sampled randomly and the moisture content of them was monitored by moisture analyzer in the chemical laboratory of the power plant when they are transported to the plant, and then inspected their values with national standard. Moisture content of biomass of every truck arrived in the power plant has been monitored.

<table>
<tr><td>procedures to be applied</td><td>And then the monthly simple mean value of biomass is worked out.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Measured when every truck arrived, and monthly weighted mean value has been applied in the ER calculation.</td></tr>
<tr><td>Value monitored</td><td>
<table>
<tr><td></td><td>2015</td><td>2016</td><td>2017</td><td>2018</td><td>2019</td></tr>
<tr><td>Rice straw</td><td>32.74%</td><td>32.84%</td><td>33.28%</td><td>33.54%</td><td>32.17%</td></tr>
<tr><td>Peanut straw</td><td>28.20%</td><td>29.98%</td><td>29.46%</td><td>29.84%</td><td>30.76%</td></tr>
<tr><td>Maize straw</td><td>42.29%</td><td>44.12%</td><td>42.73%</td><td>43.21%</td><td>44.22%</td></tr>
<tr><td>Wood residues</td><td>41.16%</td><td>41.63%</td><td>42.75%</td><td>41.91%</td><td>42.34%</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>The information of metering equipment is shown in following table:
<table>
<tr><td></td><td>Type</td><td>Accuracy</td><td>Serial No.</td><td>Calibration date</td><td>valid date</td></tr>
<tr><td rowspan="5">Moisture analyzer</td><td rowspan="5">SDTGA 300c</td><td rowspan="5">±0.1mg</td><td rowspan="5">3510024c</td><td>16/09/2015</td><td>15/09/2016</td></tr>
<tr><td>12/09/2016</td><td>11/09/2017</td></tr>
<tr><td>06/09/2017</td><td>05/09/2018</td></tr>
<tr><td>31/08/2018</td><td>30/08/2019</td></tr>
<tr><td>23/08/2019</td><td>22/08/2020</td></tr>
</table>
</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The monitoring equipment are calibrated by national standard.</td></tr>
<tr><td>Purpose of the data</td><td>Calculation of project emissions</td></tr>
<tr><td>Calculation method</td><td>/</td></tr>
<tr><td>Comments</td><td>/</td></tr>
</table>

<table>
<tr><td>Data / Parameter</td><td>$NCV_{n,y}$</td></tr>
<tr><td>Data unit</td><td>GJ / ton of dry matter</td></tr>
<tr><td>Description</td><td>Net Calorific Value of biomass residues of category n in year y</td></tr>
<tr><td>Source of data</td><td>From public literature</td></tr>
<tr><td>Description of measurement methods and</td><td>The NCV comes from page 15 and page 60 of ‘Fuel supply handbook for biomass-fired power project’, the research result of China biomass cogeneration development project initiated by World bank.</td></tr>
</table>

<table>
<tr><td>procedures to be applied</td><td></td></tr>
<tr><td>Frequency of monitoring/recording</td><td>/</td></tr>
<tr><td>Value monitored</td><td>
<table>
<tr><td></td><td>High value of NCV (MJ/kg)</td><td>Low value of NCV(MJ/kg)</td><td>Comment</td></tr>
<tr><td>Rice straw</td><td>15.24</td><td>13.97</td><td rowspan="3">High value is used</td></tr>
<tr><td>Peanut straw</td><td>18.60</td><td>17.23</td></tr>
<tr><td>Maize straw</td><td>16.90</td><td>15.54</td></tr>
<tr><td>Wood residues</td><td>16.90</td><td>/</td><td></td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment</td><td>/</td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The public literature from world bank is reliable.</td></tr>
<tr><td>Purpose of the data</td><td>/</td></tr>
<tr><td>Calculation method</td><td>/</td></tr>
<tr><td>Comments</td><td>/</td></tr>
</table>

Data / Parameter	$D_{f,m}$
Data unit	kilometre
Description	Return trip road distance between the origin and destination of freight transportation activity f in monitoring period m
Source of data	Default values
Description of measurement methods and procedures to be applied	Distance travelled by trucks will be continuously monitored and recorded. For conservativeness, 100km is used for calculation.
Frequency of monitoring/recording	Recording distance when every truck arrived at project site
Value monitored	The actual transportation distance from biomass collection site to the power plant is less than 50km. For conservativeness, 100km is used for calculation.

Monitoring equipment	/
QA/QC procedures to be applied	PO has checked consistency of distance records provided by the truckers by comparing recorded distances with maps for QA/QC.
Purpose of the data	Calculation of project emissions
Calculation method	/
Comments	/

Data / Parameter	$FR_{f,m}$
Data unit	tonnes
Description	Total mass of freight transported in freight transportation activity f in monitoring period m
Source of data	Measured by Weighbridge
Description of measurement methods and procedures to be applied	It is measured by the Weighbridge and recorded monthly. Adjust for the moisture content in order to determine the quantity of dry biomass.
Frequency of monitoring/recording	Measured continuously and recorded Monthly. Measured when the truck entered into the Project site and recorded. The monthly total value has been used when calculating the ER.
Value monitored	1,489,489.880 The monthly data is shown in table 5 of section 5.
Monitoring equipment	The information of Weighbridges are shown in following table:

	Type	Accuracy	Serial No.	Calibration date	valid date
Weighbridge	SCS-60	Class III	20091203	11/09/2015	10/03/2016
				08/03/2016	07/09/2016
				02/09/2016	02/03/2017
				24/02/2017	23/08/2017
				20/08/2017	19/02/2018
				14/02/2018	13/08/2018
				10/08/2018	09/02/2019
				01/02/2019	31/07/2019
				26/07/2019	25/01/2020
				15/01/2020	14/07/2020
Weighbridge	SCS-80	Class III	20101107	11/09/2015	10/03/2016
				08/03/2016	07/09/2016
				02/09/2016	02/03/2017

					24/02/2017	23/08/2017
					20/08/2017	19/02/2018
					14/02/2018	13/08/2018
					10/08/2018	09/02/2019
					01/02/2019	31/07/2019
					26/07/2019	25/01/2020
					15/01/2020	14/07/2020

QA/QC procedures to be applied	The electric truck scales are calibrated by national standard. The records are crosschecked with energy balance based on purchased quantities and stock change record.

Period	Total biomass purchase amount （tonnes）	Total biomass consumption （tonnes）	Total biomass stock amount （tonnes）
01/10/2015-31/12/2015	92059.590	82723.310	9336.280
01/01/2016-31/12/2016	362248.090	338534.001	33050.369
01/01/2017-31/12/2017	341253.700	332414.964	41889.105
01/01/2018-31/12/2018	320339.680	319845.734	42383.051
01/01/2019-31/12/2019	317836.380	329448.944	30770.487
01/01/2020-29/02/2020	55752.440	52667.500	33855.427

Purpose of the data	Calculation of project emissions
Calculation method	The total electricity data will be used for project emission calculation
Comments	/

Data / Parameter	$FC_{diesel,project,y}$
Data unit	Mass unit per year

<table>
<tr><td>Description</td><td>Quantity of diesel combusted that are attributable to the project activity during the year y</td></tr>
<tr><td>Source of data</td><td>On-site measurements</td></tr>
<tr><td>Description of measurement methods and procedures to be applied</td><td>Monitored Continuously by flow meter and calculated monthly.</td></tr>
<tr><td>Frequency of monitoring/recording</td><td>Measured continuously and monthly recorded</td></tr>
<tr><td>Value monitored</td><td>781.433

The monthly data is shown in table 4 of section 5.</td></tr>
<tr><td>Monitoring equipment</td><td>It is monitored by flow meter. The meter information is as follows：
<table>
<tr><th>Model</th><th>Serial No.</th><th>Accuracy</th><th>Calibration date</th><th>Valid date</th></tr>
<tr><td rowspan="5">SKDS-2001A</td><td rowspan="5">101522488</td><td rowspan="5">±0.3%</td><td>16/09/2015</td><td>15/09/2016</td></tr>
<tr><td>12/09/2016</td><td>11/09/2017</td></tr>
<tr><td>06/09/2017</td><td>05/09/2018</td></tr>
<tr><td>31/08/2018</td><td>30/08/2019</td></tr>
<tr><td>23/08/2019</td><td>22/08/2020</td></tr>
</table></td></tr>
<tr><td>QA/QC procedures to be applied</td><td>The flow meter is calibrated by national standards. The records are crosschecked with stock change and purchase records.
<table>
<tr><th>Period</th><th>Diesel purchase amount （tonnes）</th><th>Diesel consumption （tonnes）</th><th>Diesel stock amount （tonnes）</th></tr>
<tr><td>01/10/2015-31/12/2015</td><td>71.764</td><td>54.600</td><td>17.164</td></tr>
<tr><td>01/01/2016-31/12/2016</td><td>179.688</td><td>174.380</td><td>22.472</td></tr>
<tr><td>01/01/2017-31/12/2017</td><td>196.554</td><td>184.965</td><td>34.061</td></tr>
<tr><td>01/01/2018-31/12/2018</td><td>166.382</td><td>177.702</td><td>22.741</td></tr>
<tr><td>01/01/2019-31/12/2019</td><td>170.921</td><td>163.261</td><td>30.401</td></tr>
<tr><td>01/01/2020-29/02/2020</td><td>44.645</td><td>26.525</td><td>48.521</td></tr>
</table></td></tr>
</table>

Purpose of the data	Calculation of project emissions
Calculation method	The volume will be converted into weight using a conservative 0.88 ton/m^3 specific gravity value (see Asian Development Bank, Annex 6 of Opportunities for the CDM in the Energy Sector, China)
Comments	/

Data / Parameter	$NCV_{diesel,y}$
Data unit	GJ/tonne
Description	Net calorie value of diesel in year y
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
Description of measurement methods and procedures to be applied	IPCC default value
Frequency of monitoring/recording	Based on the latest version
Value monitored	43.3
Monitoring equipment	/
QA/QC procedures to be applied	/
Purpose of the data	Calculation of project emissions
Calculation method	/
Comments	/

Data / Parameter	$EF_{CO2,diesel,i}$
Data unit	tCO_2e /GJ
Description	CO_2 emission factor for diesel
Source of data	IPCC default values at the upper limit of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
Description of measurement	IPCC default values

methods and procedures to be applied	
Frequency of monitoring/recording	Any update of IPCC Guidelines in future will be followed.
Value monitored	0.0748
Monitoring equipment	/
QA/QC procedures to be applied	/
Purpose of the data	Calculation of project emissions
Calculation method	/
Comments	/

4.3 Monitoring Plan

1. Monitoring structure

The monitoring structure is shown by Figure 4 and implemented by the project owner.

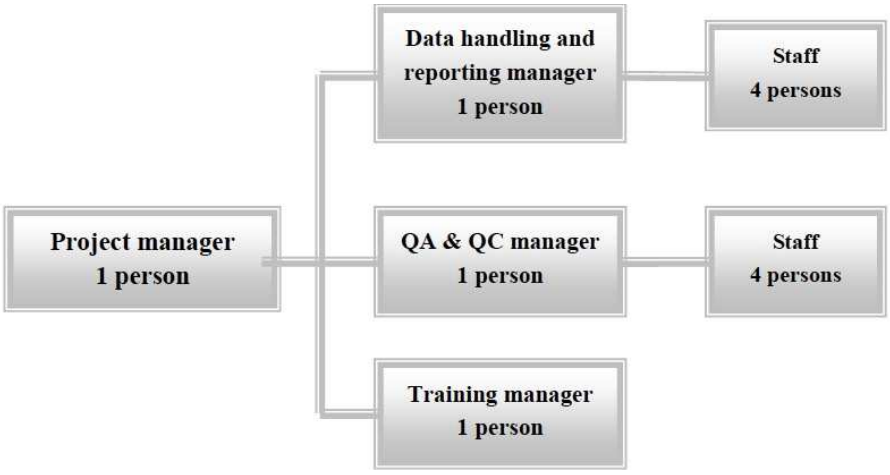

Figure 4. Monitoring structure

The project manager is responsible for 1) implementation and supervision of the monitoring activity 2) periodical training on the staff of the whole monitoring system 3) liaison of this CDM project.

The data handling and reporting staff is responsible for managing, processing and submitting data.

The QA & QC staff is responsible for calibration of meters and supervision of the whole process quality.

The training manger is in charge of training plan and implementation for relevant staffs

2. Installation of meters

The installation of meters is shown below:

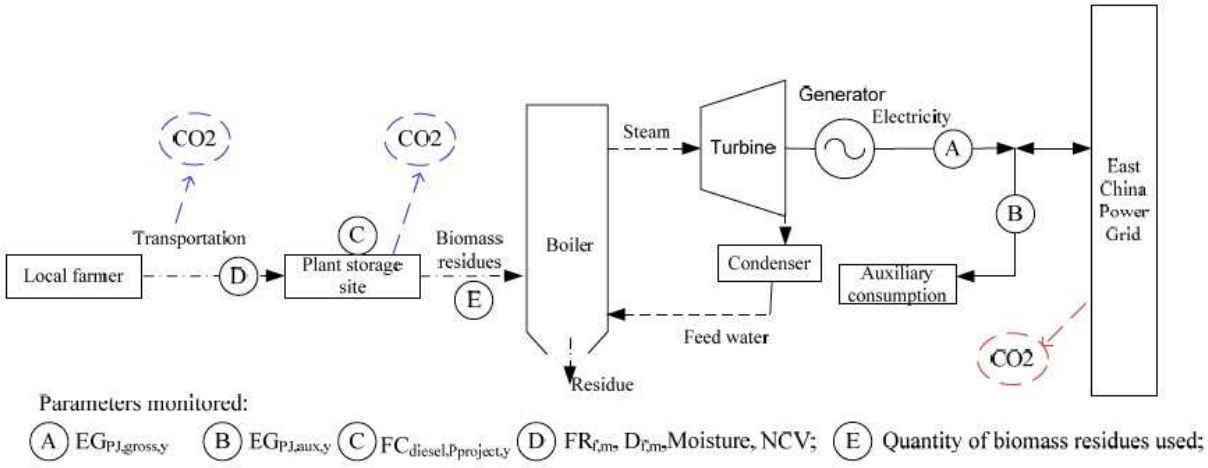

Figure 5. Installation of meters

3. QA/QC

Electricity meters are installed to monitor the gross quantity of electricity generated and the auxiliary electricity consumption required for the operation of the power plants. The accuracy of the meters is 0.5S and 0.2S, which is in line with the national standards. The electricity meters are calibrated annually.

The quantity of each type of biomass residues consumed by the Project are monitored by belt scale installed under the biomass feeding lines in the front of boiler and recorded by the project owner for every biomass feeding process and aggregated monthly. The accuracy of weight meters is class 1.0 and calibrated annually. The project owner conducted an energy balance analysis that is based on purchased quantities and stock changes to crosscheck the amount of biomass residues consumed by the Project. The belt scales are calibrated annually.

The moisture content is monitored for each batch of biomass of homogeneous quality by moisture analyzer in the Project and the monitoring result is recorded. The moisture analyzer is calibrated annually.

The NCV is monitored for each batch of biomass of homogeneous quality by calorimeter based on the dry basis and the monitoring result is recorded. The calorimeter is calibrated annually.

For the biomass transportation, mass of freight transported is monitored by electric truck scales. The monitoring data is recorded and aggregated monthly. The electric truck scale is calibrated twice a year by qualified third parties.

The diesel consumption is continuously measured by flow meter and recorded and the cross-checked with purchase and stock change.

4. Data Management System

The monitoring data such as all kinds of tables for different monitoring parameters, reports and other documents are processed and stored in the plant office by operating manager and biomass purchase department manager.

All the electronic and paper documents relevant with the project must be archived for more than two years since the end of the crediting period.

6. Emergency procedures

In case of breakdowns, the following emergency plan will be adopted:

(1) When the electricity meters are broken, the most conservative approach will be applied in ER calculation.

(2) The distributed control system (DCS) will automatically shut off the boilers upon detecting an emergency

No emergency happens in this monitoring period.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

According to the approved change PDD, the emission reductions by the project are calculated as follows:

$BEy = BE_{EL,y} + BE_{BR,y}$

Where:

BEy =Baseline emissions in year y (tCO_2e)

$BE_{EL,y}$ = Baseline emissions due to generation of electricity in year y (tCO_2e)

$BE_{BR,y}$ = Baseline emissions due to uncontrolled burning or decay of biomass residues in year y (tCO_2e)

According to the registered PDD, the project participants do not include baseline emissions due to uncontrolled burning or decay of biomass residues in baseline calculation.

$BEy = BE_{EL,y} = EG_{PJ,y} \times EF_{BL,EL,y}$

Where

BEy =Baseline emissions in year y (tCO_2 e)

$BE_{EL,y}$ =Baseline emissions due to generation of electricity in year y (tCO_2 e)

$EG_{PJ,y}$ = Net quantity of electricity supplied by all power plants which are located at the project site and included in the project boundary in year y (MWh)

$EF_{BL,EL,y}$ = Emission factor for electricity generation in the baseline in year y (tCO_2/MWh)

$EF_{BL,FF,y} = EF_{grid,CM,y}$

Where

$EF_{grid,CM,y}$ =Combined margin CO_2 emission factor for grid-connected electricity generation in year y (tCO_2/MWh)

$EG_{PJ,y}=(EG_{PJ,gross,y}-EG_{PJ,aux,y})* EF_{grid,CM,y}$

The annual electricity records in this monitoring period are shown as in following table 2.

Table 2. Baseline emissions due to generation of electricity

	Gross quantity of electricity generated ($EG_{PJ,gross,y}$,MWh)	Total auxiliary electricity consumption ($EG_{PJ,aux,y}$,MWh)	$EG_{PJ,gross,y}$ - $EG_{PJ,aux,y}$ (MWh)	Electricity exported(MWh, ETNs)	Electricity imported(MWh, ETNs)	Net exported electricity from ETN(MWh,)	Conservative value for net exported (MWh,)	$EF_{grid,CM,y}$ (tCO_2e/MWh)	$BE_{EL,y}$ (tCO_2e)
	A	B	C=A-B	D	E	F=D-E	G=min(C,F)		
01/10/2015-31/10/2015	19500.180	2,098.80	17,401.38	17,369.38	57.020	17312.360	17312.360	0.7494 5	12974
01/11/2015-30/11/2015	17700.480	1,763.28	15,937.20	15,853.20	0.000	15853.200	15853.200	0.7494 5	11881
01/12/2015-31/12/2015	18970.560	2,159.76	16,810.80	16,755.80	41.220	16714.580	16714.580		12526
Total in 2015	56171.220	6,021.8	50,149.4	49,978.4	98.240	49880.140	49880.140	0.7494 5	37381
01/01/2016-31/01/2016	17380.020	1,911.84	15,468.18	15,375.18	0.000	15375.180	15375.180	0.7494 5	11522
01/02/2016-28/02/2016	16133.460	1,774.80	14,358.66	14,332.66	85.740	14246.920	14246.920	0.7494 5	10677
01/03/2016-31/03/2016	21378.420	2,565.36	18,813.06	18,772.06	3.000	18769.060	18769.060	0.7494 5	14066
01/04/2016-30/04/2016	20679.120	2,481.60	18,197.52	18,127.52	7.560	18119.960	18119.960	0.7494 5	13580
01/05/2016-31/05/2016	16916.760	1,860.96	15,055.80	14,971.80	53.560	14918.240	14918.240	0.7494 5	11180
01/06/2016-30/06/2016	18995.760	1,899.60	17,096.16	16,998.16	0.000	16998.160	16998.160	0.7494 5	12739
01/07/2016-31/07/2016	15860.040	1,585.92	14,274.12	14,273.12	0.000	14273.120	14273.120	0.7494 5	10696
01/08/2016-	20575.800	2,057.52	18,518.28	18,449.28	93.720	18355.560	18355.560	0.7494 5	13756

31/08/2016									
01/09/2016-30/09/2016	20426.280	2,042.64	18,383.64	18,295.64	86.900	18208.740	18208.740	0.74945	13646
01/10/2016-31/10/2016	21850.080	2,403.60	19,446.48	19,377.48	4.000	19373.480	19373.480	0.74945	14519
01/11/2016-30/11/2016	19875.660	2,385.12	17,490.54	17,453.54	58.860	17394.680	17394.680	0.74945	13036
01/12/2016-31/12/2016	20024.760	2,402.88	17,621.88	17,553.88	35.080	17518.800	17518.800		13129
Total in 2016	230096.160	25,371.8	204,724.3	203,980.3	428.420	203551.900	203551.900	0.74945	152546
01/01/2017-31/01/2017	21824.040	2,182.32	19,641.72	19,580.72	0.000	19580.720	19580.720	0.74945	14674
01/02/2017-28/02/2017	19374.180	2,324.88	17,049.30	17,011.30	13.020	16998.280	16998.280	0.74945	12739
01/03/2017-31/03/2017	18561.900	2,041.92	16,519.98	16,423.98	82.540	16341.440	16341.440	0.74945	12247
01/04/2017-30/04/2017	17285.100	1,901.28	15,383.82	15,290.82	8.040	15282.780	15282.780	0.74945	11453
01/05/2017-31/05/2017	17873.100	1,787.28	16,085.82	16,039.82	0.000	16039.820	16039.820	0.74945	12021
01/06/2017-30/06/2017	18004.560	1,980.48	16,024.08	15,991.08	65.060	15926.020	15926.020	0.74945	11935
01/07/2017-31/07/2017	19735.800	1,973.52	17,762.28	17,698.28	20.540	17677.740	17677.740	0.74945	13248
01/08/2017-31/08/2017	17428.320	1,742.88	15,685.44	15,612.44	5.040	15607.400	15607.400	0.74945	11696
01/09/2017-30/09/2017	15084.720	1,508.40	13,576.32	13,559.32	25.520	13533.800	13533.800	0.74945	10142
01/10/2017-31/10/2017	19374.600	2,131.20	17,243.40	17,149.40	47.620	17101.780	17101.780	0.74945	12816
01/11/2017-	21947.100	2,414.16	19,532.94	19,460.94	0.000	19460.940	19460.940	0.74945	14585

30/11/2017									
01/12/2017-31/12/2017	21234.780	2,335.92	18,898.86	18,811.86	0.000	18811.860	18811.860		14098
Total in 2017	227728.200	24,324.2	203,404.0	202,630.0	267.380	202362.580	202362.580	0.74945	151654
01/01/2018-31/01/2018	18439.260	2,212.80	16,226.46	16,223.46	0.000	16223.460	16223.460	0.74945	12158
01/02/2018-28/02/2018	16533.300	1,818.72	14,714.58	14,640.58	71.460	14569.120	14569.120	0.74945	10918
01/03/2018-31/03/2018	20440.560	2,452.80	17,987.76	17,963.76	0.000	17963.760	17963.760	0.74945	13462
01/04/2018-30/04/2018	19246.080	1,924.56	17,321.52	17,260.52	0.000	17260.520	17260.520	0.74945	12935
01/05/2018-31/05/2018	18152.820	2,178.24	15,974.58	15,919.58	33.920	15885.660	15885.660	0.74945	11905
01/06/2018-30/06/2018	14681.100	1,761.84	12,919.26	12,862.26	35.500	12826.760	12826.760	0.74945	9613
01/07/2018-31/07/2018	20102.880	2,211.36	17,891.52	17,851.52	0.000	17851.520	17851.520	0.74945	13378
01/08/2018-31/08/2018	18272.520	2,010.00	16,262.52	16,163.52	78.500	16085.020	16085.020	0.74945	12054
01/09/2018-30/09/2018	16004.100	1,760.40	14,243.70	14,234.70	9.240	14225.460	14225.460	0.74945	10661
01/10/2018-31/10/2018	20399.400	2,448.00	17,951.40	17,904.40	0.000	17904.400	17904.400	0.74945	13418
01/11/2018-30/11/2018	17092.320	1,880.16	15,212.16	15,175.16	3.780	15171.380	15171.380	0.74945	11370
01/12/2018-31/12/2018	20104.560	2,211.60	17,892.96	17,871.96	2.940	17869.020	17869.020		13391
Total in 2018	219468.900	24,870.5	194,598.4	194,071.4	235.340	193836.080	193836.080	0.74945	145263
01/01/2019-31/01/2019	21197.400	2,119.68	19,077.72	19,066.72	0.000	19066.720	19066.720	0.74945	14289

01/02/2019-28/02/2019	19818.120	2,378.16	17,439.96	17,432.96	8.980	17423.980	17423.980	0.74945	13058
01/03/2019-31/03/2019	15115.380	1,511.52	13,603.86	13,519.86	53.820	13466.040	13466.040	0.74945	10092
01/04/2019-30/04/2019	19702.620	1,970.16	17,732.46	17,680.46	0.000	17680.460	17680.460	0.74945	13250
01/05/2019-31/05/2019	17359.860	2,083.20	15,276.66	15,197.66	0.000	15197.660	15197.660	0.74945	11389
01/06/2019-30/06/2019	16487.520	1,978.56	14,508.96	14,427.96	97.660	14330.300	14330.300	0.74945	10739
01/07/2019-31/07/2019	19169.220	2,300.40	16,868.82	16,807.82	0.000	16807.820	16807.820	0.74945	12596
01/08/2019-31/08/2019	18870.600	2,075.76	16,794.84	16,718.84	16.440	16702.400	16702.400	0.74945	12517
01/09/2019-30/09/2019	16708.860	2,004.96	14,703.90	14,657.90	0.000	14657.900	14657.900	0.74945	10985
01/10/2019-31/10/2019	18760.980	2,251.44	16,509.54	16,442.54	92.140	16350.400	16350.400	0.74945	12253
01/11/2019-30/11/2019	19374.180	2,131.20	17,242.98	17,230.98	0.000	17230.980	17230.980	0.74945	12913
01/12/2019-31/12/2019	20624.940	2,062.56	18,562.38	18,529.38	0.000	18529.380	18529.380		13886
Total in 2019	223189.680	24,867.6	198,322.1	197,713.1	269.040	197444.040	197444.040	0.74945	147967
01/01/2020-31/01/2020	18526.620	2,037.84	16,488.78	16,397.78	16.900	16380.880	16380.880	0.74945	12276
01/02/2020-29/02/2020	17590.860	1,759.20	15,831.66	15,820.66	0.000	15820.660	15820.660		11856
Total in 2020	36117.480	3,797.0	32,320.4	32,218.4	16.900	32201.540	32201.540		24132
Total in this monitoring period	**992771.640**	**109,253.0**	**883,518.6**	**880,591.6**	**1315.320**	**879276.280**	**879276.280**	**0.74945**	**658943**

5.2 Project Emissions

According to the registered PDD, project emissions are calculated as follows:

$PEy=PE_{FF,y}+PE_{TR,y}$

Where:

PEy = Project CO_2 emissions during the year y (tCO_2)

$PE_{FF,y}$=Emissions during the year y due to fossil fuel consumption (tCO2)

$PE_{TR,y}$ =Emissions during the year y due to transport of the biomass residues to the project plant (tCO_2)

Table 3. Project emissions

Period	$PE_{TR,y}$ (tCO_2e)	$PE_{FF,y}$(tCO_2e)	PEy(tCO_2e)
01/10/2015-31/10/2015	802.295	85.907	889
01/11/2015-30/11/2015	675.931	26.309	703
01/12/2015-31/12/2015	777.234	64.625	842
Total in 2015	2255.460	176.841	2434
01/01/2016-31/01/2016	791.958	19.145	812
01/02/2016-28/02/2016	695.224	57.036	753
01/03/2016-31/03/2016	875.349	17.749	894
01/04/2016-30/04/2016	891.972	53.914	946
01/05/2016-31/05/2016	768.855	38.484	808
01/06/2016-30/06/2016	664.380	53.221	718
01/07/2016-31/07/2016	565.117	58.034	624
01/08/2016-31/08/2016	792.161	74.205	867
01/09/2016-30/09/2016	739.397	39.235	779
01/10/2016-31/10/2016	727.181	28.605	756
01/11/2016-30/11/2016	663.895	85.156	750
01/12/2016-31/12/2016	699.588	40.006	740
Total in 2016	8875.078	564.789	9447
01/01/2017-31/01/2017	845.228	43.430	889
01/02/2017-28/02/2017	722.639	34.345	757
01/03/2017-31/03/2017	759.669	79.177	839
01/04/2017-30/04/2017	521.078	34.238	556
01/05/2017-31/05/2017	529.286	55.031	585
01/06/2017-30/06/2017	568.624	50.056	619
01/07/2017-31/07/2017	657.204	18.254	676
01/08/2017-31/08/2017	714.516	19.702	735

01/09/2017-30/09/2017	690.267	69.191	760
01/10/2017-31/10/2017	832.603	80.566	914
01/11/2017-30/11/2017	742.082	31.031	774
01/12/2017-31/12/2017	777.520	84.051	862
Total in 2017	8360.716	599.072	8966
01/01/2018-31/01/2018	637.891	29.133	668
01/02/2018-28/02/2018	622.247	23.857	647
01/03/2018-31/03/2018	750.000	17.736	768
01/04/2018-30/04/2018	698.782	52.858	752
01/05/2018-31/05/2018	618.440	69.162	688
01/06/2018-30/06/2018	531.234	52.174	584
01/07/2018-31/07/2018	809.247	56.576	866
01/08/2018-31/08/2018	689.256	85.457	775
01/09/2018-30/09/2018	650.861	38.792	690
01/10/2018-31/10/2018	721.280	81.826	804
01/11/2018-30/11/2018	508.387	29.389	538
01/12/2018-31/12/2018	610.698	38.588	650
Total in 2018	7848.322	575.548	8430
01/01/2019-31/01/2019	915.409	38.698	955
01/02/2019-28/02/2019	695.964	30.361	727
01/03/2019-31/03/2019	522.473	67.591	591
01/04/2019-30/04/2019	719.750	33.830	754
01/05/2019-31/05/2019	479.672	48.035	528
01/06/2019-30/06/2019	535.154	43.893	580
01/07/2019-31/07/2019	642.805	16.460	660
01/08/2019-31/08/2019	702.642	17.127	720
01/09/2019-30/09/2019	545.872	60.482	607
01/10/2019-31/10/2019	813.045	67.193	881
01/11/2019-30/11/2019	709.501	31.197	741
01/12/2019-31/12/2019	504.706	73.910	579
Total in 2019	7786.991	528.776	8323
01/01/2020-31/01/2020	687.845	34.986	723
01/02/2020-29/02/2020	678.090	50.924	730
Total in 2020	1365.935	85.910	1453
Total in this monitoring period	36492.502	2530.936	39053

$$PE_{FF,y} = PE_{FC,j,y=}\Sigma FC_{i,j,y} \times COEF_{i,y}=\Sigma FC_{i,j,y} \times NCV_{i,y} \times EF_{CO2,i,y}$$

Where:

$PE_{FF,y}$ = Emissions during the year y due to fossil fuel consumption (tCO_2)

$FCi_{j,y}$ = Is the quantity of the fuel type i combusted in process j during the year y (mass or volume unit/yr);

$COEF_{i,y}$ = Is the CO_2 emission coefficient of the fuel type i in year y (tCO_2/mass or volume unit)

$NCV_{i,y}$ = Is the weighted average net calorific value of the fuel type i in year y (GJ/mass or volume unit)

$EF_{CO2,i,y}$ = Is the weighted average CO2 emission factor of fuel type i in year y (tCO_2/GJ)

i = Are the fuel types combusted in process j during the year y

Table 4. Project emissions due to fossil fuel consumption

Period	$FC_{i,j,y}$ (ton)	$NCV_{i,y}$ (GJ/ton)	$EF_{CO2,i,y}$ (tCO_2e/GJ)	PE_{FFy} (tCO_2e)
	A	B	C	D=A*B*C
01/10/2015-31/10/2015	26.524	43.300	0.0748	85.907
01/11/2015-30/11/2015	8.123	43.300	0.0748	26.309
01/12/2015-31/12/2015	19.953	43.300	0.0748	64.625
Total in 2015	54.600	43.300	0.0748	**176.841**
01/01/2016-31/01/2016	5.911	43.300	0.0748	19.145
01/02/2016-28/02/2016	17.610	43.300	0.0748	57.036
01/03/2016-31/03/2016	5.480	43.300	0.0748	17.749
01/04/2016-30/04/2016	16.646	43.300	0.0748	53.914
01/05/2016-31/05/2016	11.882	43.300	0.0748	38.484
01/06/2016-30/06/2016	16.432	43.300	0.0748	53.221
01/07/2016-31/07/2016	17.918	43.300	0.0748	58.034
01/08/2016-31/08/2016	22.911	43.300	0.0748	74.205
01/09/2016-30/09/2016	12.114	43.300	0.0748	39.235
01/10/2016-31/10/2016	8.832	43.300	0.0748	28.605
01/11/2016-30/11/2016	26.292	43.300	0.0748	85.156
01/12/2016-31/12/2016	12.352	43.300	0.0748	40.006
Total in 2016	174.380	43.300	0.0748	**564.789**
01/01/2017-31/01/2017	13.409	43.300	0.0748	43.430
01/02/2017-28/02/2017	10.604	43.300	0.0748	34.345
01/03/2017-31/03/2017	24.446	43.300	0.0748	79.177
01/04/2017-30/04/2017	10.571	43.300	0.0748	34.238
01/05/2017-31/05/2017	16.991	43.300	0.0748	55.031
01/06/2017-30/06/2017	15.455	43.300	0.0748	50.056
01/07/2017-31/07/2017	5.636	43.300	0.0748	18.254
01/08/2017-31/08/2017	6.083	43.300	0.0748	19.702

01/09/2017-30/09/2017	21.363	43.300	0.0748	69.191
01/10/2017-31/10/2017	24.875	43.300	0.0748	80.566
01/11/2017-30/11/2017	9.581	43.300	0.0748	31.031
01/12/2017-31/12/2017	25.951	43.300	0.0748	84.051
Total in 2017	184.965	43.300	0.0748	**599.072**
01/01/2018-31/01/2018	8.995	43.300	0.0748	29.133
01/02/2018-28/02/2018	7.366	43.300	0.0748	23.857
01/03/2018-31/03/2018	5.476	43.300	0.0748	17.736
01/04/2018-30/04/2018	16.320	43.300	0.0748	52.858
01/05/2018-31/05/2018	21.354	43.300	0.0748	69.162
01/06/2018-30/06/2018	16.109	43.300	0.0748	52.174
01/07/2018-31/07/2018	17.468	43.300	0.0748	56.576
01/08/2018-31/08/2018	26.385	43.300	0.0748	85.457
01/09/2018-30/09/2018	11.977	43.300	0.0748	38.792
01/10/2018-31/10/2018	25.264	43.300	0.0748	81.826
01/11/2018-30/11/2018	9.074	43.300	0.0748	29.389
01/12/2018-31/12/2018	11.914	43.300	0.0748	38.588
Total in 2018	177.702	43.300	0.0748	**575.548**
01/01/2019-31/01/2019	11.948	43.300	0.0748	38.698
01/02/2019-28/02/2019	9.374	43.300	0.0748	30.361
01/03/2019-31/03/2019	20.869	43.300	0.0748	67.591
01/04/2019-30/04/2019	10.445	43.300	0.0748	33.830
01/05/2019-31/05/2019	14.831	43.300	0.0748	48.035
01/06/2019-30/06/2019	13.552	43.300	0.0748	43.893
01/07/2019-31/07/2019	5.082	43.300	0.0748	16.460
01/08/2019-31/08/2019	5.288	43.300	0.0748	17.127
01/09/2019-30/09/2019	18.674	43.300	0.0748	60.482
01/10/2019-31/10/2019	20.746	43.300	0.0748	67.193
01/11/2019-30/11/2019	9.632	43.300	0.0748	31.197
01/12/2019-31/12/2019	22.820	43.300	0.0748	73.910
Total in 2019	163.261	43.300	0.0748	**528.776**
01/01/2020-31/01/2020	10.802	43.300	0.0748	34.986
01/02/2020-29/02/2020	15.723	43.300	0.0748	50.924
Total in 2020	26.525	43.300	0.0748	**85.910**
Total in this monitoring period	781.433			**2530.936**

$$PE_{TR,y} = PE_{TR,m} = \sum D_{f,m} \times FR_{f,m} \times EF_{CO2,f} \times 10^{-6}$$

Where:

$PE_{TR,m}$ = Project emission from road transportation of freight monitoring period m (t CO_2)

$D_{f,m}$ = Return trip road distance between the origin and destination of freight transportation activity f in monitoring period m (km)

$FR_{f,m}$ = Total mass of freight transported in freight transportation activity f in monitoring period m (t)

$EF_{CO2,f}$ = Default CO_2 emission factor for freight transportation activity f (g CO_2/t km)

f = Freight transportation activities conducted in the project activity in monitoring period m

Table 5. Project emissions from road transportation of freight

Period	$FR_{f,m}$(ton)	D_{fm} (Max,km)	$EF_{CO2,f}$ (tCO_2/km)	$PE_{TR,y}$ (tCO_2e)
	A	B	C	D=A*B*C/1000000
01/10/2015-31/10/2015	32746.750	100.000	245	802.295
01/11/2015-30/11/2015	27589.010	100.000	245	675.931
01/12/2015-31/12/2015	31723.830	100.000	245	777.234
Total in 2015	92059.590			2255.460
01/01/2016-31/01/2016	32324.800	100.000	245	791.958
01/02/2016-28/02/2016	28376.470	100.000	245	695.224
01/03/2016-31/03/2016	35728.550	100.000	245	875.349
01/04/2016-30/04/2016	36407.040	100.000	245	891.972
01/05/2016-31/05/2016	31381.850	100.000	245	768.855
01/06/2016-30/06/2016	27117.540	100.000	245	664.380
01/07/2016-31/07/2016	23066.020	100.000	245	565.117
01/08/2016-31/08/2016	32333.100	100.000	245	792.161
01/09/2016-30/09/2016	30179.460	100.000	245	739.397
01/10/2016-31/10/2016	29680.870	100.000	245	727.181
01/11/2016-30/11/2016	27097.770	100.000	245	663.895
01/12/2016-31/12/2016	28554.620	100.000	245	699.588
Total in 2016	362248.090			8875.078
01/01/2017-31/01/2017	34499.090	100.000	245	845.228
01/02/2017-28/02/2017	29495.450	100.000	245	722.639
01/03/2017-31/03/2017	31006.880	100.000	245	759.669
01/04/2017-30/04/2017	21268.490	100.000	245	521.078
01/05/2017-31/05/2017	21603.530	100.000	245	529.286
01/06/2017-30/06/2017	23209.150	100.000	245	568.624
01/07/2017-31/07/2017	26824.640	100.000	245	657.204
01/08/2017-31/08/2017	29163.920	100.000	245	714.516

01/09/2017-30/09/2017	28174.170	100.000	245	690.267
01/10/2017-31/10/2017	33983.810	100.000	245	832.603
01/11/2017-30/11/2017	30289.060	100.000	245	742.082
01/12/2017-31/12/2017	31735.510	100.000	245	777.520
Total in 2017	341253.700			8360.716
01/01/2018-31/01/2018	26036.350	100.000	245	637.891
01/02/2018-28/02/2018	25397.850	100.000	245	622.247
01/03/2018-31/03/2018	30612.230	100.000	245	750.000
01/04/2018-30/04/2018	28521.700	100.000	245	698.782
01/05/2018-31/05/2018	25242.460	100.000	245	618.440
01/06/2018-30/06/2018	21683.000	100.000	245	531.234
01/07/2018-31/07/2018	33030.470	100.000	245	809.247
01/08/2018-31/08/2018	28132.910	100.000	245	689.256
01/09/2018-30/09/2018	26565.740	100.000	245	650.861
01/10/2018-31/10/2018	29440.020	100.000	245	721.280
01/11/2018-30/11/2018	20750.500	100.000	245	508.387
01/12/2018-31/12/2018	24926.450	100.000	245	610.698
Total in 2018	320339.680			7848.322
01/01/2019-31/01/2019	37363.630	100.000	245	915.409
01/02/2019-28/02/2019	28406.690	100.000	245	695.964
01/03/2019-31/03/2019	21325.440	100.000	245	522.473
01/04/2019-30/04/2019	29377.540	100.000	245	719.750
01/05/2019-31/05/2019	19578.440	100.000	245	479.672
01/06/2019-30/06/2019	21843.030	100.000	245	535.154
01/07/2019-31/07/2019	26236.930	100.000	245	642.805
01/08/2019-31/08/2019	28679.250	100.000	245	702.642
01/09/2019-30/09/2019	22280.490	100.000	245	545.872
01/10/2019-31/10/2019	33185.490	100.000	245	813.045
01/11/2019-30/11/2019	28959.220	100.000	245	709.501
01/12/2019-31/12/2019	20600.230	100.000	245	504.706
Total in 2019	317836.380			7786.991
01/01/2020-31/01/2020	28075.300	100.000	245	687.845
01/02/2020-29/02/2020	27677.140	100.000	245	678.090
Total in 2020	55752.440	100.000	245	1365.935
Total in this monitoring period	1489489.880			36492.502

5.3 Leakage

The data of available biomass and biomass utilized out of the project in the region covering a radius of 50km around the project activity was calculated from official data provided by local government.

Table 6. Biomass used and available biomass in the region of the project activity

Unit：10^4ton	Year 2015			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	55.510	35.670	56.45	92.200
Biomass utilized out of the project	16.100	12.800	16.90	20.700
	39.410	22.870	39.550	71.500
Biomass utilized by the project	1.130	0.574	0.89	2.499
Total biomass utilized, including the project	17.230	13.374	17.79	23.199
Available Biomass/Total biomass utilized	322%	267%	317%	397%
Available Biomass/Total biomass utilized - 100%	222%	167%	217%	297%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2016			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	56.590	35.400	55.59	92.590
Biomass utilized out of the project	16.800	12.400	17.10	20.200
	39.790	23.000	38.490	72.390
Biomass utilized by the project	4.974	3.542	6.30	16.603
Total biomass utilized, including the project	21.774	15.942	23.40	36.803

Available Biomass/Total biomass utilized	260%	222%	238%	252%
Available Biomass/Total biomass utilized - 100%	160%	122%	138%	152%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2017			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	55.410	36.120	56.78	92.400
Biomass utilized out of the project	16.700	12.700	16.40	21.500
Biomass utilized by the project	5.019	3.121	1.39	18.860
Total biomass utilized, including the project	21.719	15.821	17.79	40.360
Available Biomass/Total biomass utilized	255%	228%	319%	229%
Available Biomass/Total biomass utilized - 100%	155%	128%	219%	129%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2018			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	57.220	35.430	56.46	93.430
Biomass utilized out of the project	16.900	13.000	16.50	20.600
Biomass utilized by the project	4.749	2.690	1.35	18.620
Total biomass utilized, including the project	21.649	15.690	17.85	39.220

Available Biomass/Total biomass utilized	264%	226%	316%	238%
Available Biomass/Total biomass utilized - 100%	164%	126%	216%	138%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

Unit：10^4ton	Year 2019			
	rice straw	peanut straw	maize straw	wood residues
Available Biomass in the region	57.010	36.040	56.07	93.170
Biomass utilized out of the project	16.800	13.100	16.90	21.000
Biomass utilized by the project	4.967	2.800	1.32	19.214
Total biomass utilized, including the project	21.767	15.900	18.22	40.214
Available Biomass/Total biomass utilized	262%	227%	308%	232%
Available Biomass/Total biomass utilized - 100%	162%	127%	208%	132%
Abundant surplus? (More than 25%)	Yes	Yes	Yes	Yes

From the above-mentioned background, it was known that the biomass supply is far more than the demand by the project. The conclusion is the biomass supply to the project during the monitoring period was sufficient and did not lead to the displacement of the current use of biomass as a fuel.

And, because the biomass residues collection range is with 50 km which was defined in PDD, leakage for the project is considered zero, according to ACM0018.

5.4 Net GHG Emission Reductions and Removals

Year	Baseline emissions or	Project emissions or	Leakage emissions (tCO_2e)	Net GHG emission reductions or

	removals (tCO_2e)	removals (tCO_2e)		removals (tCO_2e)
01/10/2015-31/12/2015	37,381	2,434	0	34,947
01/01/2016-31/12/2016	152,546	9,447	0	143,099
01/01/2017-31/12/2017	151,654	8,966	0	142,688
01/01/2018-31/12/2018	145,263	8,430	0	136,833
01/01/2019-31/12/2019	147,967	8,323	0	139,644
01/01/2020-29/02/2020	24,132	1,453	0	22,679
Total in this monitoring period	658,943	39,053	0	619,890

The ER in the registered PD is 132,072tCO_2/yr. This monitoring period covers 1613days, and the ex-ante ER for this monitoring period is 132072/365*1613=583,650tCO_2. The actual ER in this monitoring period is 619,890 tCO_2, which is 6.2% larger than the ex-ante estimated ER. According to the registered PD, when the net exported electricity increases 25.15%, the IRR would reach benchmark. While the net exported electricity in this monitoring period increases 6.5% in this monitoring period. Therefore, this will not influence the additionality of the project.

There are some reasons for the electricity generation increase, first, waste biomass is abundant. Second, the equipment is operated and maintained well.