ANHUI GUZHEN BIOMASS GENERATION PROJECT

Document Prepared By National Bio Energy Co., Ltd.

Project Title	Anhui Guzhen Biomass Generation Project
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Monitoring Period	03/01/2011 to 06/11/2012
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1 PROJECT DETAILS

1.1 Summary Description of Project

Anhui Guzhen Biomass Generation Project (hereafter referred to as the Project) is sited within Guzhen County, Anhui Province, P.R.China. The Project is invested, constructed and operated by the National Guzhen Bio Energy Co., Ltd. The Project installed one 130t/h boiler and one 30MW steam turbine generator. Rice straw, maize straw, peanut straw and wood residues are used as fuel for power generation. The annual electricity supply of the Project is expected to be 186,900 MWh, which is delivered to East China Power Grid.

Prior to the Project, the biomass residues used in the Project are dumped or left to decay under mainly aerobic conditions. The electricity supplied by the Project is supplied by East China Power Grid, which generates CO_2 emissions as it is mainly composed of traditional fossil fuel fired power plants. These are also the baseline scenarios of the Project.

The construction of project was started on March 31st, 2010 and the project was put into operation on January 3rd, 2011. The expected life-time of the project is 20 years.

The Project achieves emission reductions via avoiding CO_2 emissions from the same amount of electricity generation from East China Power Grid, which is mainly composed of traditional fossil fuel fired power plants. The project activity achieved emission reductions of 242,990 tCO_2e during this monitoring period from 03/01/2011 to 06/11/2012.

1.2 Sectoral Scope and Project Type

Sectoral scope 1: energy industries (Renewable sources)
The project is neither AFOLU project nor a grouped project.

1.3 Project Proponent

Project owner

Organization:	National Guzhen Bio Energy Co.,Ltd
Street/P.O.Box:	Deshengmen Wai
Building:	Old Administration Building, No. 1 Beishatan
City:	Chaoyang District, Beijing
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1.4 Other Entities Involved in the Project

EDF Trading Limited is a project participant of CDM project. There is no other entity involved in the VCS project.

1.5 Project Start Date

03/01/2011 (the date of which the project is put into commercial operation)

1.6 Project Crediting Period

The start date: 03/01/2011 (the date of which the project is put into commercial operation)
The end date: 06/11/2012 (The project is registered as CDM on UNFCCC on 07/11/2012 http://cdm.unfccc.int/Projects/DB/PJR%20CDM1351854815.15/view)
674days in total, covering 1 year, 10 months and 4 days

1.7 Project Location

The Project is sited on the Economic Development Zone, 8 km to the downtown of Guzhen County, Bengbu City, 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°).

1.8 Title and Reference of Methodology

The methodology applied to the project is Approved consolidated baseline and monitoring methodology ACM0018 (ver 2.0.0): "Consolidated methodology for electricity generation from biomass residues in power-only plants".

This methodology also refers to:
- "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" ver 02;
- "Tool to calculate the emission factor for an electricity system" ver 2.2.1.
- "Project and leakage emissions from road transportation of freight" ver 1.0.0;

2 IMPLEMENTATION STATUS

2.1 Implementation Status of the Project Activity

The project started construction on March 31st, 2010 and started operation on January 3rd,2011. There is no long term overhaul and equipment exchange during the monitoring period. There is no special events happened during the monitoring period which may affect the applicability of the methodology. Rice straw, maize straw, peanut straw and wood residues are used as fuel for power generation which are the same as project design.

The project was registered as CDM on 07/11/2012. The Project installed one 130t/h boiler and one 30MW steam turbine generator which are the same as described in the project PDD. The technical specifications of main equipments are listed as below:

Item	Quantity	Key technical specifications
Boiler	1 set	Type:YG-130/9.2-T1; Rated steam output: 130t/h; Rated steam pressure: 9.2 MPa(a); Rated steam temperature：540℃; Life time: 20 years Manufacturer: Jinan Boiler Group Co., Ltd.
Steam turbine	1 set	Model: N30-8.83 Rated output: 30MW; Rated pressure of main steam: 8.83 MPa(a); Rated temperature of main steam: 535℃; Rated flux of main steam: 130t/h; Life time: 20 years Manufacturer: Qingdao Jieneng Steam Turbine Group Co., Ltd.
Generator	1 set	Model: QF-30-2 Rated output: 30MW; Rated voltage: 10.5kV; Rated rotating speed: 3,000r/min; Life time: 20 years Manufacturer: Shangdong Jinan Power Equipment Factory Co., Ltd

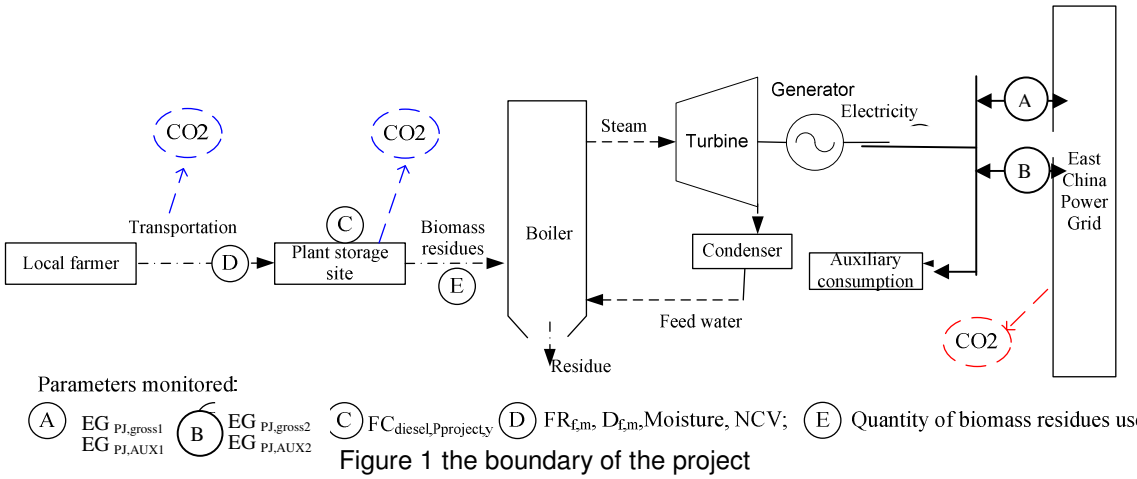

Figure 1 the boundary of the project

2.2 Project Description Deviations

There are two project description deviations.
The first deviation is that the gravity value of diesel in this monitoring report is selected as 0.84t/m^3 rather than 0.88t/m^3 as described in PDD. According to "Asian Development Bank, Annex 6 of Opportunities for the CDM in the Energy Sector, China", the specific gravity value of 0.88 t/m^3 is for heavy diesel while 0.84t/m^3 is for light diesel. Actually, the light diesel has been consumed by the project after the project was operated. Thus, the selection of 0.84t/m^3 is more reasonable and accurate.

The second deviation is that the parameter "Net calorific value of biomass residues" ($NCV_{n,y}$, dry-basis) is not necessary to monitored during the monitoring period. According to the methodology ACM 0018 (version 2.0.0), the parameter "Net calorific value of biomass residues" ($NCV_{n,y}$, dry-basis) 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 ($PE_{BR,y}$). ACM 0018 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. Both in registered PDD and MR, the project participant decided not to include the above two emission source, then $BE_{BR,y}$ and $PE_{BR,y}$ should not be claimed. $NCV_{n,y}$ is not related to the calculation of emission reduction, thus it is not necessary to monitor it during the monitoring period.

2.3 Grouped Project

The project is not a grouped project.

3 DATA AND PARAMETERS

3.1 Data and Parameters Available at Validation

Data Unit / 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
Purpose of the data:	Used for baseline emission calculation
Any comment:	-

Data Unit / 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
Purpose of the data:	Used for baseline emission calculation
Any comment:	-

Data Unit / 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
Purpose of the data:	Used for baseline emission calculation
Any comment:	-

Data Unit / 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);

<table>
<tr><td></td><td>- Use in the project scenario (scenarios P);
- Quantity (tonnes on dry-basis)</td></tr>
<tr><td>Description:</td><td>Biomass residues categories and quantities used for the selection of the baseline scenario selection and assessment of additionality</td></tr>
<tr><td>Source of data:</td><td>Feasibility Study Report</td></tr>
<tr><td>Value applied:</td><td>
<table>
<tr><th>No.</th><th>Biomass residues type</th><th>Biomass residues source</th><th>Biomass residues fate in the absence of the project activity</th><th>Biomass residues use in project scenario</th><th>Biomass residues quantity (10^4 tonnes on dry-basis)</th></tr>
<tr><td>1</td><td>Rice straw</td><td>Offsite from local farmer</td><td>Dumped (B1)</td><td>Electricity generation on-site (biomass-only boiler)</td><td>4.80</td></tr>
<tr><td>2</td><td>Peanut straw</td><td>Offsite from local farmer</td><td>Dumped (B1)</td><td>Electricity generation on-site (biomass-only boiler)</td><td>2.56</td></tr>
<tr><td>3</td><td>Maize straw</td><td>Offsite from local farmer</td><td>Dumped (B1)</td><td>Electricity generation on-site (biomass-only boiler)</td><td>3.45</td></tr>
<tr><td>4</td><td>Wood residues</td><td>Offsite from local farmer</td><td>Dumped (B1)</td><td>Electricity generation on-site (biomass-only boiler)</td><td>8.86</td></tr>
</table>
</td></tr>
<tr><td>Purpose of the data:</td><td>Used for baseline assessment</td></tr>
<tr><td>Any comment:</td><td>-</td></tr>
</table>

Data Unit / Parameter:	$EF_{CO2,f}$
Data unit:	g CO_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
Purpose of the data:	Used for project emission calculation
Any comment:	-

3.2 Data and Parameters Monitored

Data Unit / Parameter:	$EG_{PJ,gross,y}$
Data unit:	MWh
Description:	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*
Source of data:	monitored through the gateway electricity energy meter
Description of measurement methods and procedures to be applied:	Continuously measured by meter and monthly recorded
Frequency of monitoring/recording:	Continuously measured by meter and monthly recorded
Value monitored:	188,586.650 (03/01/2011 - 31/12/2011) 159,706.680 (01/01/2012 - 06/11/2012)
Monitoring equipment:	The electricity generated by the project is delivered to the grid by two transmission line. Two gateway electricity energy meters are separately installed on two transmission lines to monitor the gross quantity of electricity generated and total auxiliary electricity consumption simultaneously.

	type	Serial number	accuracy
$EG_{PJ,gross\ 1}$	AINRTAL	02083345 (main meter)	0.2s
		02083299 (back-up	0.2s

			meter)	
	$EG_{PJ, gross\ 2}$	AINRTAL	02083144 (main meter)	0.2s
			02083330 (back-up meter)	0.2s

QA/QC procedures to be applied:	The consistency of metered electricity generation was cross-checked with receipts from electricity sales and the quantity of fuels fired (e.g. check whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency that is comparable to previous years, see table 4 below) The calibration of electricity energy meters was conducted by Anhui Electric Power Measurement & Testing Center once per year.

Calibration date	Valid period
03/11/2010	03/11/2010 - 02/11/2011
02/11/2011	02/11/2011 - 01/11/2012
01/11/2012	01/11/2012 - 31/10/2013

Calculation method:	$EG_{PJ, gross} = EG_{PJ, gross\ 1} + EG_{PJ, gross\ 2}$
Any comment:	-

Data Unit / 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:	monitored through the gateway electricity energy meter
Description of measurement methods and procedures to be applied:	Continuously measured by meter and monthly recorded
Frequency of monitoring/recording:	Continuously measured by meter and monthly recorded
Value monitored:	739.060 (03/01/2011 - 31/12/2011) 247.380 (01/01/2012 - 06/11/2012)
Monitoring equipment:	The electricity generated by the project is delivered to the grid by two transmission line. Two electricity energy meters are separately installed on two transmission lines to monitor the gross quantity of electricity generated and total auxiliary electricity

<table>
<tr><td></td><td>consumption simultaneously.
<table>
<tr><td></td><td>type</td><td>Serial number</td><td>accuracy</td></tr>
<tr><td rowspan="2">$EG_{PJ, AUX1}$</td><td rowspan="2">AINRTAL</td><td>02083345 (main meter)</td><td>0.2s</td></tr>
<tr><td>02083299 (back-up meter)</td><td>0.2s</td></tr>
<tr><td rowspan="2">$EG_{PJ, AUX2}$</td><td rowspan="2">AINRTAL</td><td>02083144 (main meter)</td><td>0.2s</td></tr>
<tr><td>02083330 (back-up meter)</td><td>0.2s</td></tr>
</table></td></tr>
<tr><td>QA/QC procedures to be applied:</td><td>The consistency of metered electricity consumed was cross-checked with receipts from electricity sales.
The calibration of electricity energy meters was conducted by Anhui Electric Power Measurement & Testing Center once per year.
<table>
<tr><td>Calibration date</td><td>Valid period</td></tr>
<tr><td>03/11/2010</td><td>03/11/2010 - 02/11/2011</td></tr>
<tr><td>02/11/2011</td><td>02/11/2011 - 01/11/2012</td></tr>
<tr><td>01/11/2012</td><td>01/11/2012 - 31/10/2013</td></tr>
</table></td></tr>
<tr><td>Calculation method:</td><td>$EG_{PJ, AUX} = EG_{PJ, AUX 1} + EG_{PJ, AUX 2}$</td></tr>
<tr><td>Any comment:</td><td>-</td></tr>
</table>

Data Unit / Parameter:	Biomass residues categories and quantities used in the project activity
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 quantities of which biomass residues categories are used in which installation(s) under the project activity and what is their baseline scenario (tonnes on dry-basis). These quantities 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. [1]

[1] These updated values, the biomass residues quantities (dry base) used by the project, were not used for emission reductions calculations. Because these values are in relation to baseline emissions due to uncontrolled burning or decay of surplus biomass residues and project emission due to combustion of biomass residues for electricity.

<table>
<tr><td></td><td>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</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>Use weight meter. Adjust for the moisture content in order to determine the quantity of dry biomass. Data monitored continuously and aggregated as appropriate.</td></tr>
<tr><td>Frequency of monitoring/recording:</td><td>Data monitored continuously and aggregated as appropriate</td></tr>
<tr><td>Value monitored:</td><td>03/01/2011-31/12/2011
<table>
<tr><th>No.</th><th>Biomass residues type</th><th>Biomass residues source</th><th>Biomass residues fate in the absence of the project activity</th><th>Biomass residues use in project scenario</th><th>Biomass residues quantity (10^4 tonnes on dry-basis)</th></tr>
<tr><td>1</td><td>Rice straw</td><td>Offsite from local farmer</td><td>Dumped (B1)</td><td>Electricity generation on-site (biomass-only boiler)</td><td>3.0458</td></tr>
<tr><td>2</td><td>Peanut straw</td><td>Offsite from local farmer</td><td>Dumped (B1)</td><td>Electricity generation on-site (biomass-only boiler)</td><td>2.1977</td></tr>
<tr><td>3</td><td>Maize straw</td><td>Offsite from</td><td>Dumped (B1)</td><td>Electricity generation</td><td>9.0468</td></tr>
</table></td></tr>
</table>

According to ACM0018 and registered PDD, the project participant decided not to include the baseline emission source due to uncontrolled burning or decay of surplus biomass residues, and correspondingly the project emission source due to combustion of biomass residues for electricity could be excluded. Therefore, the biomass residues quantities (dry base) used by the project were not used for emission reductions calculations. However, they are used for the calculation of energy input of the project of checking whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency.

		local farmer		on-site (biomass-only boiler)	
4	Wood residues	Offsite from local farmer	Dumped (B1)	Electricity generation on-site (biomass-only boiler)	3.5317

01/01/2012-06/11/2012

No.	Biomass residues 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)	3.0165
2	Peanut straw	Offsite from local farmer	Dumped (B1)	Electricity generation on-site (biomass-only boiler)	1.5838
3	Maize straw	Offsite from local farmer	Dumped (B1)	Electricity generation on-site (biomass-only boiler)	5.5041
4	Wood residues	Offsite from local farmer	Dumped (B1)	Electricity generation on-site (biomass-only	4.1124

					boiler)	
Monitoring equipment:	weight belt Type: N20-2-1200 Serial No. : P0070452 Accuracy: 1.0					
QA/QC procedures to be applied:	The biomass quantities used in the project activity was crosschecked with an annual balance that was based on purchased quantities and stock changes, please see table 2 in section 3.3. The calibration of weight belt was conducted by Guzhen county Quality Supervision Technology Institute once per year.					
Calculation method:	-					
Any comment:	-					

Calibration date	Valid period
21/09/2010	21/09/2010 -20/09/2011
20/09/2011	20/09/2011 -19/09/2012
19/09/2012	19/09/2012 -18/09/2013

Data Unit / 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:	Tones
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:	Official statistic data issued by local Development and Reform Committee
Description of measurement methods and procedures to be applied:	Official statistic data issued by local Development and Reform Committee
Frequency of monitoring/recording:	Annually
Value monitored:	2011

Biomass residues type	Annual available amount (10^4 tonnes, wet base)	Other use, excluding the Project (10^4 tonnes, wet base)	The Project use (10^4 tonnes, wet base)[2]	Annual available amount/Total annual use
Rice straw	55.1	16.6	4.9	257%
Peanut straw	35.4	12.2	3.2	229%
Maize straw	54.9	16.0	15.9	172%
Wood residues	91.8	21.1	7.9	316%

2012

Biomass residues type	Annual available amount (10^4 tonnes, wet base)	Other use, excluding the Project (10^4 tonnes, wet base)	The Project use (10^4 tonnes, wet base)[3]	Annual available amount/Total annual use
Rice straw	56.2	15.9	6.0	257%
Peanut straw	36.7	12.4	2.4	248%
Maize straw	55.0	16.8	11.6	194%
Wood residues	90.9	22.2	12.3	263%

Monitoring equipment:	-
QA/QC procedures to be applied:	The project participant checked the official statistic data of 2011 and 2012, the data updated according to the newly issued official statistic data.
Calculation method:	-
Any comment:	-

Data Unit / Parameter:	Moisture content of the biomass residues
Data unit:	% Water content
Description:	Moisture content of each biomass residues type *k*
Source of data:	On-site measurements

[2] The data is from the biomass consuming record by the project owner

[3] The data is from the biomass consuming record by the project owner.

<table>
<tr><td>Description of measurement methods and procedures to be applied:</td><td>The moisture content should be monitored for each batch of biomass of homogeneous quality. The weighted average should be calculated for each monitoring period and used to adjust the quantity of biomass residues from wet base to dry base[4].</td></tr>
<tr><td>Frequency of monitoring/recording:</td><td>once for each freight transportation activity</td></tr>
<tr><td>Value monitored:</td><td>
<table>
<tr><td>type</td><td>2011</td><td>2012</td></tr>
<tr><td>Rice straw</td><td>37.55%</td><td>41.26%</td></tr>
<tr><td>Peanut straw</td><td>32.31%</td><td>33.08%</td></tr>
<tr><td>Maize straw</td><td>43.24%</td><td>45.77%</td></tr>
<tr><td>Wood residues</td><td>55.41%</td><td>57.64%</td></tr>
</table>
</td></tr>
<tr><td>Monitoring equipment:</td><td>Moisture analyzer
Type: SDTGA 300c
Serial No. : 3510024c
Accuracy: 0.5e</td></tr>
<tr><td>QA/QC procedures to be applied:</td><td>The calibration of moisture analyzer was conducted by Guzhen county Quality Supervision Technology Institute once per year.
<table>
<tr><td>Calibration date</td><td>Valid period</td></tr>
<tr><td>21/09/2010</td><td>21/09/2010 -20/09/2011</td></tr>
<tr><td>20/09/2011</td><td>20/09/2011 -19/09/2012</td></tr>
<tr><td>19/09/2012</td><td>19/09/2012 -18/09/2013</td></tr>
</table>
</td></tr>
<tr><td>Calculation method:</td><td>-</td></tr>
<tr><td>Any comment:</td><td>-</td></tr>
</table>

Data Unit / 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:	Determined once for each freight transportation activity f for a reference trip using the vehicle odometer
Description of measurement methods and procedures to be applied:	Determined once for each freight transportation activity *f* for a reference trip using the vehicle odometer and recorded when the trucks arrived.

[4] The Moisture content of the biomass residues was used to adjust the quantities of biomass residues from wet base to dry base which were used for the calculation of energy input of the project of checking whether the electricity generation divided by the quantity of fuels fired results in a reasonable efficiency. As footnote 1 mentioned, the biomass residues quantities (dry base) used by the project are not used for emission reductions calculations, thus the moisture content is not a necessary parameter of the calculation of emission reduction.

Frequency of monitoring/recording:	Once for each freight transportation activity
Value monitored:	100
Monitoring equipment:	-
QA/QC procedures to be applied:	The distance of each freight transportation activity *f* was checked every month and the longest distance was chosen to calculate the project emission for the conservativeness.
Calculation method:	-
Any comment:	-

Data Unit / 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:	Records by project participant
Description of measurement methods and procedures to be applied:	Use weight meters. Data monitored continuously and aggregated as appropriate.
Frequency of monitoring/recording:	Monitor/record every freight transportation and aggregate monthly
Value monitored:	320,067.40 (03/01/2011 - 31/12/2011) 319,740.46 (01/01/2012 - 06/11/2012)
Monitoring equipment:	Weighbridge Type: S/ZCS-60 Serial No. : 20091203 Accuracy: III
QA/QC procedures to be applied:	The total mass of freight transported was crosschecked with an annual balance that was based on biomass consumed quantities and stock changes, please see table 2 in section 3.3. The calibration of weighbridge was conducted by Guzhen county Quality Supervision Technology Institute twice per year.
Calculation method:	-

Calibration date	Valid period
21/09/2010	21/09/2010 - 20/03/2011
20/03/2011	20/03/2011 - 19/09/2011
19/09/2011	19/09/2011 - 18/03/2012
18/03/2012	18/03/2012 - 17/09/2012
17/09/2012	17/09/2012 - 16/03/2013
16/03/2013	16/03/2013 - 15/09/2013

Any comment:	-

Data Unit / Parameter:	$FC_{diesel,project,y}$
Data unit:	Mass unit per year
Description:	Quantity of diesel combusted that are attributable to the project activity during the year *y*
Source of data:	On-site measurements
Description of measurement methods and procedures to be applied:	Use flow meter and the volume was converted into weight using a specific gravity value of the relevant type of diesel. As light diesel was consumed by the project, specific gravity value of 0.84 t/m^3 was adopted. [5] (see Asian Development Bank, Annex 6 of Opportunities for the CDM in the Energy Sector, China, http://www2.adb.org/Documents/TARs/PRC/tar-prc-3840-fr-app-d.pdf)
Frequency of monitoring/recording:	Measured every time used and aggregated monthly
Value monitored:	272.996 tones (03/01/2011 - 31/12/2011) 228.104 tones (01/01/2012 - 06/11/2012)
Monitoring equipment:	flow meter Type: SKDS-2001A Serial No. : 101522488 Accuracy: 0.3%
QA/QC procedures to be applied:	The quantity of diesel combusted is cross-checked t with an annual balance that is based on purchased quantities and stock changes, please see table 4 in section 3.3. The metered fuel consumption quantities were also cross-checked with purchase invoices from the financial records. The calibration of flow meter was conducted by Guzhen county Quality Supervision Technology Institute once per year.

Calibration date	Valid period
21/09/2010	21/09/2010 -20/09/2011
20/09/2011	20/09/2011 -19/09/2012

[5] The specific gravity value of 0.88 t/m^3 indicated in registered PDD is for heavy diesel, but the diesel consumed by the project was light diesel. Therefore, the specific gravity value of 0.84 t/m^3 was used.

	19/09/2012	19/09/2012 -18/09/2013
Calculation method:	-	
Any comment:	-	

Data Unit / Parameter:	$NCV_{diesel,y}$
Data unit:	GJ/tonne
Description:	Net calorific value of 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 methods and procedures to be applied:	Any future revision of the IPCC Guidelines should be taken into account
Frequency of monitoring/recording:	Annually
Value monitored:	43.3
Monitoring equipment:	-
QA/QC procedures to be applied:	Check the latest IPCC Guidelines every year
Calculation method:	-
Any comment:	-

Data Unit / Parameter:	$EF_{FF,diesel,y}$
Data unit:	tCO_2e/GJ
Description:	CO_2 emission factor of 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 methods and procedures to be applied:	Any future revision of the IPCC Guidelines should be taken into account
Frequency of monitoring/recording:	Annually
Value monitored:	0.0748
Monitoring equipment:	-
QA/QC procedures to be applied:	Check the latest IPCC Guidelines every year
Calculation method:	-
Any comment:	-

3.3 Description of the Monitoring Plan

1. Monitoring structure

The monitoring structure is shown by Figure 2 and implemented by the project owner.

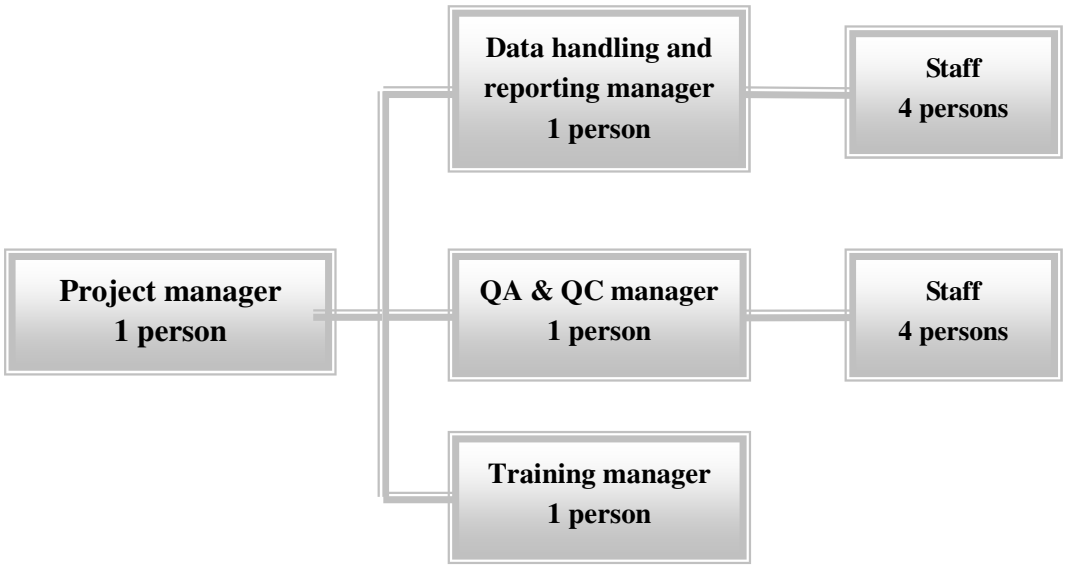

Figure 2. Monitoring structure of the Project

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 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

Instruments used are described in section B.7.1, and their locations are as below:

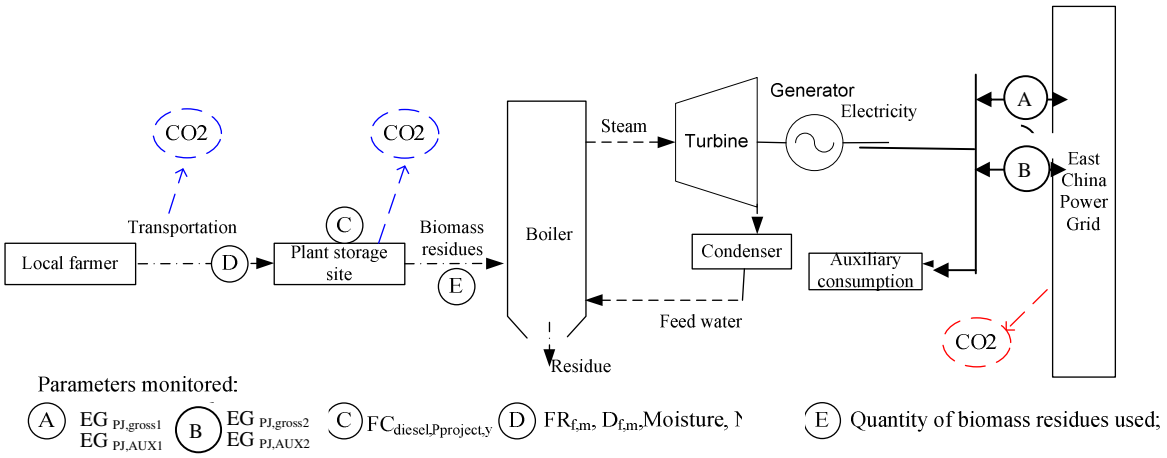

Figure 3 monitoring locations

3. Calibration

The electricity energy meters, weigh belt, moisture analyzer, and flow meter of the Project will be calibrated once a year by qualified third parties. The Weighbridge will be calibrated twice a year by qualified third parties. And such calibration will be carried out in line with national norms.

4. Data Management System

Specific staff will be appointed by the project owner to take the overall responsibility for monitoring greenhouse gas emission reductions and keeping all the data collected as part of monitoring archived electronically and kept at least for two years after the end of the last crediting period.

Electronic data and documents, including readings from meters, will be regularly copied and archived via optical discs, and kept at least for two years after the end of the last crediting period.

Written data and documents, including receipts for cross-checking of data, will be copied and archived with an explanation of the department or company where the original copy is kept, and kept for at least two years after the end of the last crediting period.

5. QA/QC

The QA/QC manager is in charge of calibration and maintenance of the instruments to ensure their accuracy and reliability; verify the data monitored according to the QA/QC procedure described in table B7.1 and the requirement of internal audit; report to the project manager immediately when find out any abnormal.

Table 1 Calibration of monitoring equipment

parameter	equipment	Serial No.	type	accuracy	Calibration entity	Calibration date	Valid period
$EG_{PJ,gross,1}$ $EG_{PJ,aux,1}$	Electricity energy	02083345;	AINRTAL	0.2s	Anhui Electric	03/11/2010	03/11/2010 - 02/11/2011

	meter 1				Power Measurement & Testing Center	02/11/2011;	02/11/2011 - 01/11/2012
						01/11/2012	01/11/2012 - 31/10/2013
$EG_{PJ,gross,1}$ $EG_{PJ,aux,1}$	Back-up meter of Electricity energy meter 1	02083299	AINRTAL	0.2s	Anhui Electric Power Measurement & Testing Center	03/11/2010	03/11/2010 - 02/11/2011
						02/11/2011	02/11/2011 - 01/11/2012
						01/11/2012	01/11/2012 - 31/10/2013
$EG_{PJ,gross,2}$ $EG_{PJ,aux,2}$	Electricity energy meter 2	02083144	AINRTAL	0.2s	Anhui Electric Power Measurement & Testing Center	03/11/2010	03/11/2010 - 02/11/2011
						02/11/2011	02/11/2011 - 01/11/2012
						01/11/2012	01/11/2012 - 31/10/2013
$EG_{PJ,gross,2}$ $EG_{PJ,aux,2}$	Back-up meter of Electricity energy meter 2	02083330	AINRTAL	0.2s	Anhui Electric Power Measurement & Testing Center	03/11/2010	03/11/2010 - 02/11/2011
						02/11/2011	02/11/2011 - 01/11/2012
						01/11/2012	01/11/2012 - 31/10/2013
$FR_{f,m}$	Weighbridge	20091203	S/ZCS-60	III	Guzhen county Quality Supervision Technology Institute	21/09/2010	21/09/2010 - 20/03/2011
						20/03/2011	20/03/2011 - 19/09/2011
						19/09/2011	19/09/2011 - 18/03/2012
						18/03/2012	18/03/2012 - 17/09/2012
						17/09/2012	17/09/2012 - 16/03/2013
						16/03/2013	16/03/2013 - 15/09/2013
Biomass residues quantities used in the project activity	Weight belt	P0070452	N20-2-1200	1.0	Guzhen county Quality Supervision Technology Institute	21/09/2010	21/09/2010 - 20/09/2011
						20/09/2011	20/09/2011 - 19/09/2012
						19/09/2012	19/09/2012 - 18/09/2013
Moisture content of the biomass residues	Moisture analyzer	3510024c	SDTGA 300c	0.5e	Guzhen county Quality Supervision Technology Institute	21/09/2010	21/09/2010 - 20/09/2011
						20/09/2011	20/09/2011 - 19/09/2012
						19/09/2012	19/09/2012 - 18/09/2013

$FC_{diesel,project,y}$	Flow meter	101522488	SKDS-2001A	0.3%	Guzhen county Quality Supervision Technology Institute	21/09/2010	21/09/2010 - 20/09/2011
						20/09/2011	20/09/2011 - 19/09/2012
						19/09/2012	19/09/2012 - 18/09/2013

Table 2 Balance for Biomass Purchase Quantity and Stock Changes

Year	Purchase Quantity (tones)	Combusted quantity (tones)	Stocks at the beginning of the period (tones)	Stocks at the end of the period (tones)
01/01/2011-31/12/2011[6]	321,158	319,826	64,839	66,171
01/01/2012-30/11/2012	340,872	292,636	66,171	114,407
Total 01/01/2011-30/11/2012	662,030	612,462	64,839	114,407

From the table above, it is showed that annually biomass consumption is less than purchase quantity, which is in line with actual situation and energy balance.

Table 3 The energy input and electricity generation in the project activity in this period

Year	Biomass residues type	Combusted amount, wet base (tones)	moisture content (%)	Combusted amount, dry base (tones)	NCV_i (GJ/t)[7]	Energy (GJ)
03/01/2011-31/12/2011	Rice straw	48,775	37.55%	30,458	12.545	382,095
	Peanut straw	32,468	32.31%	21,977	15.15	332,945
	Maize straw	159,375	43.24%	90,468	15.079	1,364,169
	Wood residues	79,208	55.41%	35,317	17.212	607,868
	total					2,687,077
	Electricity generation	188,586.650 MWh			3.6 GJ/MWh	678,912
	Efficiency					25.27%
01/01/2012-06/11/2012	Rice straw	51,355	41.26%	30,165	12.545	378,424
	Peanut straw	23,666	33.08%	15,838	15.15	239,946
	Maize straw	101,504	45.77%	55,041	15.079	829,966
	Wood residues	97,081	57.64%	41,124	17.212	707,822
	total					2,156,159
	Electricity generation	159,706.68 Wh			3.6 GJ/MWh	574,944
	Efficiency					26.67%

[6] The project owner conducted stock-taking of biomass at the last day of each month, so the values of stock at the start date and end date of monitoring period (i.e. 03/01/2011 and 06/11/2012) were not available. Therefore, the period of Balance for Biomass Purchase Quantity and Stock Changes is not fully consistent with the monitoring period. There was no biomass combusted in the first two days of January 2011, because the plant was not operated during that period.

[7] The value is from Feasibility Study Report

The total inputs of all types of fuels combusted and useful output of electricity from the projects are presented in table 4, which shows that efficiency of the project in 2011 and 2012 are calculated as 25.27% and 26.67% separately. The efficiency of project estimated in Feasibility Study Report is 24.94%.

Table 4. Balance for fossil fuel purchase quantity and stock changes

Year	$FC_{diesel,project,y}$ Purchase Quantity (tones)	$FC_{diesel,project,y}$ consumed (tones)	Stocks at the beginning of the period (tones)[8]	Stocks at the end of the period (tones)[9]
01/01/2011-31/12/2011[10]	274.348	274.649	0.880	0.579
01/01/2012-31/10/2012	225.345	223.079	0.579	2.845
Total (01/01/2011-31/10/2012)	499.693	497.728	0.880	2.845

6. Emergency procedures

If the monitoring system occurred emergency accident, the data handling and reporting manager would report to project manager immediately and record the monitored data when the accident occurred and settled. And the emission reduction during this period would be estimated on conservative measures. If conservative measures were not available, the emission reduction should not be claimed during the failure period.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

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

Where:

BE_y =Baseline emissions during year y (tCO_2)

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

$EG_{PJ,gross,y}$ =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 (MWh)

$EG_{PJ,aux,y}$ =Total auxiliary electricity consumption required for the operated of the power plants the project site (MWh)

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

[8] The data is from the Stock Records of Diesel

[9] The data is from the Stock Records of Diesel

[10] The project owner conducted the stock-taking of diesel at the last day of each month, so the values of stock at the start date and end date of monitoring period (i.e. 03/01/2011 and 06/11/2012) were not available. Therefore, the period of "Balance for fossil fuel purchase quantity and stock changes" is not fully consistent with the monitoring period.

year	Parameter	Unit	Value	Source or Equation
03/01/2011 – 31/12/2011	**BE_y**	**tCO_2e**	**140,782**	**$BE_y = BE_{EL,y}$**
	$BE_{EL,y}$	tCO_2e	140,782	$BE_{EL,y} = (EG_{PJ,gross,y} – EG_{PJ,aux,y})^* EF_{grid,CM,y}$
	$EG_{PJ,gross,y}$	MWh	188,586.650	Monitored
	$EG_{PJ,aux,y}$	MWh	739.060	Monitored
	$EF_{grid,CM,y}$	tCO_2e/MWh	0.74945	2011 Baseline Emission Factors for Regional Power Grids in China
01/01/2012 - 06/11/2012	**BE_y**	**tCO_2e**	**119,507**	**$BE_y = BE_{EL,y}$**
	$BE_{EL,y}$	tCO_2e	119,507	$BE_{EL,y} = (EG_{PJ,gross,y} – EG_{PJ,aux,y})^* EF_{grid,CM,y}$
	$EG_{PJ,gross,y}$	MWh	159,706.680	Monitored
	$EG_{PJ,aux,y}$	MWh	247.380	Monitored
	$EF_{grid,CM,y}$	tCO_2e/MWh	0.74945	2011 Baseline Emission Factors for Regional Power Grids in China

4.2 Project Emissions

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

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

$PE_{FF,y} = FC_{diesel,project,y} * NCV_{diesel,y} * EF_{CO2e,diesel,y}$

Where:

PE_y =Project emissions during year y (tCO_2)

$PE_{TR,m}$ = Project emission from road transportation of freight in monitoring period m (tCO_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 (gCO_2/t km)

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

$FC_{i,project,,y}$ =Quantity of fossil fuel type i combusted at the project site and off site attributable to the project activity during the year y (mass unit per year).

NCV_i =Net calorific value of fossil fuel type i (GJ / mass unit)

$EF_{CO2,i}$ =CO_2 emission factor for fossil fuel type i (tCO_2e/GJ)

Year	Parameter	Unit	Value	Source or Equation
03/01/2011 - 31/12/2011	**PE_y**	**tCO_2e**	**8,726**	**$PE_y=PE_{FF,y}+PE_{TR,y}$**
	$PE_{TR,y}$	tCO_2e	7,842	$PE_{TR,y} = \sum D_{f,m} \times FR_{f,m} \times EF_{CO2,f} \times 10^{-6}$
	$PE_{FF,y}$	tCO_2e	884	$PE_{FF,y} = FC_{project,diesel,y} \times NCV_{diesel,y} \times EF_{CO2e,diesel,y}$
	$FR_{f,m}$	t	320,067.40	Monitored
	D_{fm}	km	100	Monitored

	$EF_{CO2,f}$	$gCO_2e/t\ km$	245	Project and leakage emissions from road transportation of freight
	$FF_{project,diesel,y}$	t	272.996	Monitored
	$NCV_{diesel,y}$	GJ/ton	43.300	China Energy Statistical Yearbook
	$EF_{FF,diesel,y}$	tCO_2e/GJ	0.0748	2006 IPCC Guidelines for National Greenhouse Gas Inventories
01/01/2012 - 06/11/2012	**PE_y**	**tCO_2e**	**8,573**	**$PE_y=PE_{FF,y}+PE_{TR,y}$**
	$PE_{TR,y}$	tCO_2e	7,834	$PE_{TR,y} = \sum D_{f,m} \times FR_{f,m} \times EF_{CO2,f} \times 10^{-6}$
	$PE_{FF,y}$	tCO_2e	739	$PE_{FF,y} = FC_{project,diesel,y} \times NCV_{diesel,y} \times EF_{CO2e,diesel,y}$
	$FR_{f,m}$	t	319,740.46	Monitored
	D_{fm}	km	100	Monitored
	$EF_{CO2,f}$	$gCO_2e/t\ km$	245	Project and leakage emissions from road transportation of freight
	$FF_{project,diesel,y}$	t	228.104	Monitored
	$NCV_{diesel,y}$	GJ/ton	43.300	China Energy Statistical Yearbook
	$EF_{FF,diesel,y}$	tCO_2e/GJ	0.0748	2006 IPCC Guidelines for National Greenhouse Gas Inventories

4.3 Leakage

There is no leakage caused by the project activity.

4.4 Summary of GHG Emission Reductions and Removals

Years	Estimated baseline emissions or removals (tCO_2e)	Estimated project emissions or removals (tCO_2e)	Estimated leakage emissions (tCO_2e)	Estimated net GHG emission reductions or removals (tCO_2e)
03/01/2011-31/12/2011	140,782	8,726	0	132,056
01/01/2012-06/11/2012	119,507	8,573	0	110,934
Total	**260,289**	**17,299**	**0**	**242,990**

A comparison of actual values of the emission reductions achieved during the monitoring period with the estimations in the VCS-PD is shown below:

period	Values applied in ex-ante calculation of the VCS-PD (tCO_2e)	Actual values reached during the monitoring period (tCO_2e)
03/01/2011-31/12/2011 (363days)	131,348	132,056
01/01/2012-06/11/2012 (311days)	112,225	110,934
Total	**243,573**	**242,990**

5 ADDITIONAL INFORMATION

No information