JIANGSU DONGTAI PHASE II WIND POWER PROJECT

Document Prepared by Demeter Venture UK Limited

Project Title	**Jiangsu Dongtai Phase II Wind Power Project**
Version	3.2
Date of Issue	06/12/2021
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1 PROJECT DETAILS

1.1 Summary Description of the project

Jiangsu Dongtai Phase II Wind Power Project (hereinafter referred to as "the Project") is sited within the Jianggang Town, Dongtai County, Yancheng City, Jiangsu Province, in the East China. The Project involves the installation of 100 turbines, each of which have a capacity of 2000kW, providing a total installed capacity of 200MW. The annual operating hours of the Project are 2030 hours and it is expected to generate 406,020 MWh per year to be sold into the Jiangsu Power Grid, which is part of the East China Power Grid (ECPG).

The scenario existing prior to the start of the implementation of the project is: the same electricity output by the project activity would have otherwise been generated by the operation of ECPG connected power plants and by the addition of new generation sources. That is the same as the baseline scenario.

When the project is operated, the electricity generated will displace part of the electricity from fossil fuel-fired plants connected to the ECPG, and thus greenhouse gas (GHG) generated by coal-fired power plants could be reduced. The estimated annual GHG emission reductions in the first crediting period are 338,011 tCO_2e/yr, and are 280,488 tCO_2e/yr during the second crediting period.

The construction of the project began on 26/05/2010. The first turbine started operation on 10/12/2010. All the turbines were operation on 31/12/2012. The first crediting period is from 10/12/2010 to 09/12/2020 (10 years, renewable). The project operated normally in the first crediting period. The project is applying for the crediting period renewal and the second crediting period is expected from 10/12/2020 to 09/12/2030 (10 years).

1.2 Sectoral Scope and Project Type

The project falls in the sectoral scope 1: energy industries (renewable-/non-renewable sources).

Project type: Renewable (wind) power project

The project is not a grouped project.

1.3 Project Eligibility

The project is a wind power project, which reduces CO_2 by replacing electricity from fossil fuel power plants. This complies with the scope of VCS program.

1.4 Project Design

This project is a single project. It is not designed to include multiple project activity instances, or as a grouped project.

The project involves the installation of 100 turbines, each of which have a capacity of 2 MW, with a total capacity of 200 MW.

Eligibility Criteria

N/A as this is not a grouped project.

1.5 Project Proponent

Organization name	Guohua (Jiangsu) Wind Power Co., Ltd.
Contact person	Yuan Liang
Title	Project Manager
Address	No.15 Yingbin Avenue, Economic Development District, Dongtai City, Jiangsu Province,China
Telephone	+86 138 5103 5341
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1.6 Other Entities Involved in the project

Organization name	Demeter Venture UK Limited
Role in the project	Project Developer
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Title	Manager
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1.7 Ownership

The approval of Environmental Impact Assessment (EIA), Feasibility Study Report (FSR), and Letter of Approval for the project as a CDM Project issued by China National Development and Reform Commission, established the project ownership of Guohua (Jiangsu) Wind Power Co., Ltd. The purchasing contract of turbines, and the purchasing power agreement are the evidences for the property and contractual right in the plant, equipment and electricity.

1.8 Project Start Date

10/12/2010 (The Project started commissioning on 10/12/2010).

1.9 Project Crediting Period

The first CDM crediting period of the project is from 01/04/2012 to 31/03/2019, which could be renewed twice. The total crediting periods under CDM is from 01/04/2012 to 31/03/2033.

The first VCS crediting period of the Project is from 10/12/2010 to 09/12/2020 (10 years). The project is applying for the second crediting period, which is from 10/12/2020 to 09/12/2030.

As the project lifetime is 20 years, that is from 10/12/2010 to 09/12/2030. Therefore, the total crediting period will be from 10/12/2010 to 09/12/2030.

1.10 Project Scale and Estimated GHG Emission Reductions or Removals

Project Scale	
Project	√
Large project	

Year	Estimated GHG emission reductions or removals (tCO_2e)
10/12/2020-31/12/2020 (22 days)	16,906
01/01/2021-31/12/2021	280,488
01/01/2022-31/12/2022	280,488
01/01/2023-31/12/2023	280,488

01/01/2024-31/12/2024	280,488
01/01/2025-31/12/2025	280,488
01/01/2026-31/12/2026	280,488
01/01/2027-31/12/2027	280,488
01/01/2028-31/12/2028	280,488
01/01/2029-31/12/2029	280,488
01/01/2030-09/12/2030 (343 days)	263,582
Total estimated ERs	2,804,880
Total number of crediting years	10
Average annual ERs	280,488

1.11 Description of the project Activity

The main parts of the Project include wind turbine, transformer, and substation. Totally 100 sets of W2000M-93-80 turbines with a unit capacity of 2000kW were selected for the Project, providing a total installed capacity of 200MW. The W2000M-93-80 turbines are manufactured by local supplier Sewind Co. Ltd. According to the turbine layout, each turbine will have a 690V-to-35kV transformer. The Project consist two area, north wind farm with 60 sets of turbines and south wind farm with 40 sets of turbines. The expected operational lifetime of the project activity is 20 years.

The electricity generated by the Project from north wind farm will be delivered to the Jiangsu Power Grid through the Guohua Dongtai Phase II Wind Farm North 220kV substation. The electricity generated by the Project from south wind farm will be delivered to the Jiangsu Power Grid through Guohua Dongtai Phase I Wind Farm 220kV substation. Electricity meters were installed to measure the electricity generated by the Project.

The annual operating hours of the Project are 2,030 hours and it is expected to generate 406,020 MWh per year to be sold into the Jiangsu Power Grid, which is part of the East China Power Grid, and generate emission reductions for 280,488 tCO_2e annual average in the second crediting period.

There was no technology transfer occurred in the project activity. Key technical parameters of turbines are listed in the following table 1.

Table 1. Key Technical Parameters of Turbines

Item	Unit	Index

Manufacturer	/	Sewind Co. Ltd.
Model	/	W2000M-93-80
Nominal capacity	kW	2000
Number of blades	piece	3
Rotor diameter	m	93
Cut-in speed	m/s	3
Cut-out speed	m/s	25
Rated voltage of generator	V	690
Frequency	Hz	50
Estimated life time	Year	20

The technical structure of the project is shown in figure 1.

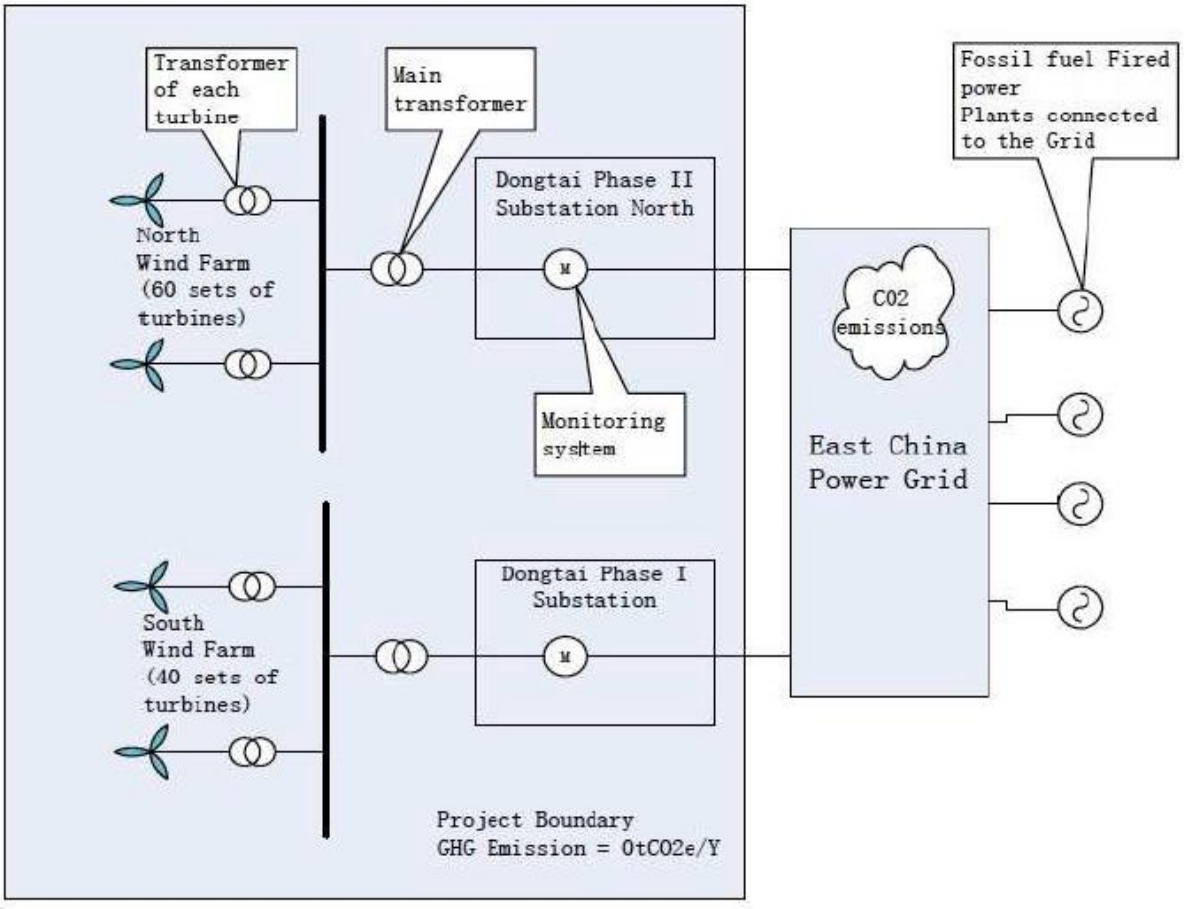


Figure 1. The technical structure

1.12 Project Location

The project is located in Jianggang Town, Dongtai County, Yancheng City, Jiangsu Province, P.R.China. The coordinates of the project are E120° 54’ 11” and N32° 39’ 35” . The project location is shown in the Figure 2.

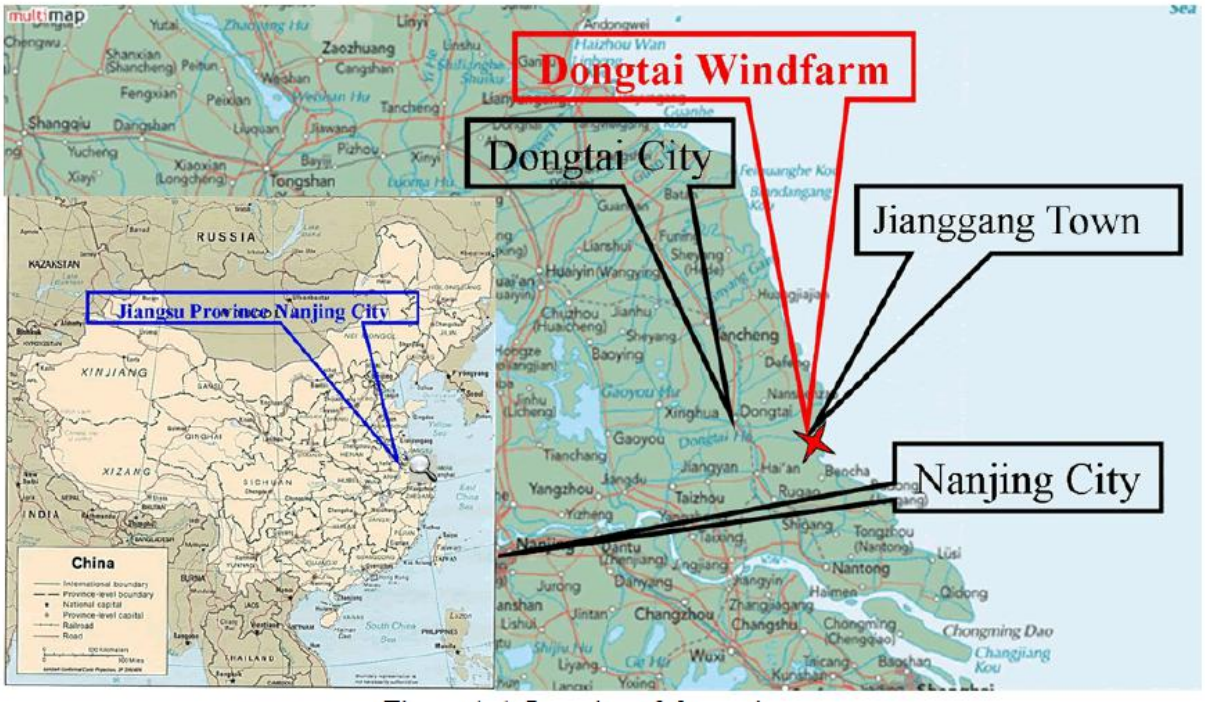


Figure2. The Project location

1.13 Conditions Prior to Project Initiation

Electricity delivered to the grid (ECPG) by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources. It is the same as the baseline scenario.

1.14 Compliance with Laws, Statutes and Other Regulatory Frameworks

The project is in the field of renewable energy. The Environmental Impact Assessment (EIA) report was approved by General Office of Ministry of Environmental Protection of the People’s Republic of China on 12/12/2008, and the Feasibility Study Report of the project was approved by National Development and Reform Commission on 20/01/2010. The project has got LOA from China DNA on 31/12/2010. These approvals demonstrate that the project meets the requirement of national laws and regulations, including Renewable Energy Law of the People's Republic of China and Environmental Protection Regulation for Wind Power Project, etc.

This project is also in line with current laws and regulations, such as Safe Production Law of the People's Republic of China,.Regulation on the Quality Management of Construction Projects, etc.

1.15 Participation under Other GHG Programs

1.15.1 Projects Registered (or seeking registration) under Other GHG Program(s)

This project has been registered as a CDM project in UNFCCC on 26/03/2012, and the registration number is 5924, for which a renewable crediting period of 3×7 years will be used under the CDM GHG Program. The project has not claimed any other forms of environment credit. The first 7-year renewable crediting period under CDM is from 01/04/2012 to 31/03/2019. 60,714 CERs from 01/04/2012 to 31/10/2012 and 567,533 CERs from 01/11/2012 to 31/05/2014 have been issued under CDM mechanism.

1.15.2 Projects Rejected by Other GHG Programs

The project has not been rejected by any other GHG programs.

1.16 Other Forms of Credit

1.16.1 Emissions Trading Programs and Other Binding Limits

The project has been registered as a CDM project in UNFCCC on 26/03/2012 (UNFCCC Ref. 5924), for which a renewable crediting period of 3×7 years will be used under the CDM GHG Program. The first 7-year renewable crediting period under CDM is from 01/04/2012 to 31/03/2019. And the crediting period renewal is no longer possible.

The credits from 01/04/2012 to 31/10/2012 and from 01/11/2012 to 31/05/2014 have been issued under CDM mechanism.

The project has not been counted or used under GS project or under any other voluntary carbon crediting scheme. In the future, the emission reductions that apply for issuance under VCS will not be issued under CDM or GS project or under any other voluntary carbon crediting scheme. The project does not involved in ETS or other binding limits.

1.16.2 Other Forms of Environmental Credit

The project has been registered as a CDM project in UNFCCC on 26/03/2012 (UNFCCC Ref. 5924), for which a renewable crediting period of 3×7 years will be used under the CDM GHG Program. The first 7-year renewable crediting period under CDM is from 01/04/2012 to 31/03/2019. And the crediting period renewal is no longer possible.

The credits from 01/04/2012 to 31/10/2012 and from 01/11/2012 to 31/05/2014 have been issued under CDM mechanism.

The project does not apply for other forms of environmental credit.

1.17 Additional Information Relevant to the project

Leakage Management

N/A.

Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the project description.

Sustainable Development

The Project clearly fits into the development priority of the PRC, and will support China in stimulating and accelerating the commercialization of grid-connected renewable energy technologies and the green-power market development. The Project will contribute to the sustainable development of the host country and the local community mainly by:

As the wind power plants of the project will generate clean and renewable electricity without GHG emission, the project can help local areas in reducing GHG emissions and replacing some part of the electricity from coal-fired power plants. The project also helps decrease the local environmental pollution caused by coal burning, which has remarkable environmental benefits. The estimated annual GHG emission reductions of the project activity are 280,488 tCO2e/yr in the second VCS crediting period. Thus, the project achieved SDG 13 Climate Action[1].

During the 2nd VCS crediting period, 406,020 MWh of electricity from renewable sources will be supplied to the power grid annually. The project makes good use of the local wind resource to solve the difficulties of lack of power and unstable voltage, which help improve local life quality. Thus, the project achieved SDG 7 Affordable and Clean Energy[2].

During the construction, operation, and maintenance of this project, the project, directly and indirectly, generates more job opportunities, which helps improve local employment and reduce local poverty. Thus, the project achieved SDG 8 Decent Work and Economic Growth[3].

Further Information

[1] https://sdgs.un.org/goals/goal13

[2] https://sdgs.un.org/goals/goal7

[3] https://sdgs.un.org/goals/goal8

There's not any further information.

2 SAFEGUARDS

2.1 No Net Harm

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

2.2 Local Stakeholder Consultation

Investigate Form: Questionnaires.

The Project owner conducted a survey on the local villagers and residents possibly affected by the Project on 06/01/2010. The survey was conducted through distributing questionnaires and collecting responses. During the process, the announcement on introducing the project and survey was broadcasted in the nearest village. Meanwhile, the announcement was published on the village billboard by the village commission. Totally 30 questionnaires distributed to the villagers and residents were returned. The investigation had taken full account into the public advice of different ages, civilizations and occupations. The brief summary of the survey was circulated to all of the local stakeholders. The opinions expressed by the stakeholders were recorded and are available on request.

Summary of the comments received

The survey was conducted through distributing questionnaires and collecting responses to the questionnaire. Totally questionnaires returned with response rate. The following is a summary of the key comments based on 30 returned questionnaires. Questions and topics for discussion are as follows:

- Are they satisfied with their surrounding environment?

- Do they know the wind power?

- Will the project improve the local development or increase job opportunities?

- Will the project have negative impacts on their livelihood?

- What impacts on environment should be considered?

- Will they support the construction of the project?

Statistic of the comments:

- All respondents (100%) are satisfied with their living conditions and surrounding environment.

- 24 (80%) persons of the respondents know well about wind power, and 6 (20%) persons know a little.

- The respondents consider construction and operation of the Project may improve living level (57%), increase employment opportunities (27%) and income (10%), mitigate air pollution (30%), and decrease local electricity price (6%).

- Among the negative impacts mentioned, the main issues concerned are garbage (50%).

- 28 (93%) persons of the respondents support the local constructed wind farm.

- All of the 30 respondents support the construction of the Project.

This survey shows that people all agree the Project actively decrease environment pollution and mitigate local environmental quality. In addition, the construction of this Project will promote development of other industries, and partly address local employment pressure. All the stakeholders support the Project.

Consideration of comments received

The residents and local government are all very supportive to the Project. Therefore, there has been no need to modify the project due to the comments received.

In order for on-going communicate with local stakeholders, the project owner put a grievance notebook on the bulletin board outside the company office. Anyone can put their comments on the book. Since this project has been operated for several years, all local stakeholders know the telephone of the office. When people has comments on the project, he or she can call the project owner directly and leave message.

2.3 Environmental Impact

In accordance with relevant Chinese environmental laws and regulations, the environmental impact assessment (EIA) report of the Project was complied by Jiangsu Electric Power Design Institute, and has been approved by the General Office of Ministry of Environmental Protection of the People's Republic of China on 12/12/2008.

The environmental impacts arising from the Project are analyzed in the following two phases:

Construction Phase

1. Land use

Construction occupied land is just minor part for the whole wind farm.The Project mainly takes wasteland and wetland ground for permanent and temporary construction use. Inside the project location, there are few trees, so it doesn't cut trees during the constructing phase, and no need to pay the compensation of the seeding for the peasants. There are no households within the site area. The immigration and disturbing of the residents do not exist. The vegetation, which is destroyed by the project construction, can resume in short-term

time because of the vital life-force. During the construction, the problems of soil-erosion cannot be produced. Temporarily occupied land will be restored according to its characteristics after construction and will ensure its re-utilization. Overall, land use impact on the local residents arising from the Project is considered to be insignificant.

2. Noise

The running noise of mechanical facilities and the traffic noise are the main source in the construction process. There are no households within the site area, so the noise influence to the residents during the construction does not exist. And the Project owner will control and manage the noise pollution source to be in line with the relevant rules on the environment noise during the construction period around the construction site.

3. Dust and exhaust gas

Due to the earthwork excavation and the running of construction vehicles dust, re-entrainment of dust and tail gas are generated around. The Project owner will take measure, by means of dust wetting, adoption of advanced environment friendly equipments strengthening the workers' protection devices and so on, to control and minimize the air pollution of dust and exhaust gas.

4. Waste water

Certain amount of production wastewater and sanitary wastewater will be generated during the construction period. In order to reduce the pollution to the water environment nearby production wastewater and sanitary wastewater will not be directly discharged into the surrounding waters. The waste water will be treated by separation sedimentation tank, and will be recycled. Since construction workers are lived near the substation, the living wastewater produced in construction period will be collected and disposed by temporary waste water treatment facilities located in the substation.

5. Solid waste

The extra excavated earthwork during the construction period will be directly used, whose impact on the environment is insignificant. As to the municipal waste the Project owner will arrange garbage cans classified by areas and types of garbage and ask the environmental sanitation service company to clean and transport them.

<u>Operation Phase</u>

1. Noise

The operating noise of wind power turbine generator system comes from the friction between wind and blades and the running mechanical parts inside it. The wind farm is located in the area of wasteland and wetland, so there are no houses and local residents. As a result, the operating noise from the wind power turbine produces little impact on the surrounding residents. It is regulated in the Code for Noise Control Design of Industrial Enterprises that

the noise limit in the workshop of industrial enterprises is 96~104db(A) and the noise level at 500m from the tower foundation of the generator system is estimated to be much lower than the national standards (45db). The operators mainly work in the control tower, so it is believed that the wind farm will not do harm to the operators physically.

2. Electromagnetic radiation

Electromagnetic waves can be reflected for the rotation of the blades, so it can disturb the signals quality of radio and television programs. But the wind farm is located in the area of wasteland and wetland, there are no houses and local residents. So the electromagnetic radiation influences don't take into account.

3. Sanitary wastewater

The sanitary wastewater from the management staff of the wind farm will be discharged into waste water treatment facilities, which are located in the substation. The qualities of disposed wastewater meet the national standard grade one of wastewater discharging comprehensive standards (GB8978-96). So the wastewater influence is minor to the environment.

4. Impacts on bird and vision

Few birds live and feed in the Project area. The probability of this type of bird colliding with the turbine blades is nearly zero. Therefore the wind farm impact on birds living and feeding is negligible. At the same time, the construction of the wind farm can provide pleasing feeling from vision. The local residents also enjoy the wind farm. So the wind farm will be an attractive tour resource.

Through the assessment of the EIA, this project has no harm to environment.

2.4 Public Comments

No public comments were received during the public comment period.

2.5 AFOLU-Specific Safeguards

This is not an AFOLU project. Therefore, this section is not applicable.

3 APPLICATION OF METHODOLOGY

3.1 Title and Reference of Methodology

The approved methodology applied in the project activity is ACM0002 - "Grid-connected electricity generation from renewable sources (version 20.0)[4].

Related tools are:

-Tool to calculate the emission factor for an electricity system (version 07.0)

-Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0)

-Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (version 03.0.1)

3.2 Applicability of Methodology

The criteria and assessment of ACM0002 (version 20.0) are in the following table.

Criteria	Assessment
This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	the project is the installation of a wind power project. Therefore, a) is applicable.
The methodology is applicable under the following conditions: a) the project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	the project activity includes a wind power plant. Therefore, a) is applicable.
In case of hydro power plants, one of the following conditions shall apply: (a) the project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or	Not applicable. the project is a wind power project, not hydro power plant.

[4] https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG

(b) the project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (7), is greater than 4 W/m^2; or (c) the project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m^2; or (d) the project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m^2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m^2; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m^2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
In the case of integrated hydro power projects, project proponent shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or (b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.	Not applicable. the project is a wind power project, not an integrated hydro power project.
The methodology is not applicable to: a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; b) Biomass fired power plants/units	The project activity does not involve switching from fossil fuel to renewable energy sources at the site of the project activity. The project is not a biomass fired power plant/unit.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual	Not applicable. the project is not retrofit, rehabilitation, replacement, or capacity addition project.

maintenance".	

The criteria and assessment of "Tool to calculate the emission factor for an electricity system (version 07.0)" are in the following table.

Criteria	Assessment
This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).	Applicable. the project generates electricity to national grid. This tool is used to calculate the OM, BM and CM.
Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e. option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.	Since the project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.
In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.	Not applicable. the project is not located in annex I country.
Under this tool, the value applied to the CO_2 emission factor of biofuels is zero.	Not applicable. the project is a wind power project and does not involve emissions from biofuels.

Applicability conditions of "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (version 03.0)" are in the following table.

Criteria	Assessment
If emissions are calculated for electricity consumption, the tool is only applicable if one out of the following three scenarios applies to the sources of electricity consumption: (a) Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and either no captive power plant(s) is/are installed at the site of electricity consumption or, if any captive power plant exists on site, it is either not operating or it is not physically	Applicable. The electricity consumption lies to Scenario A: Electricity consumption from the grid. The electricity is purchased from the grid only, and no captive power plant is installed at the site

able to provide electricity to the electricity consumer; (b) Scenario B: Electricity consumption from (an) off-grid fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants are installed at the site of the electricity consumer and supply the consumer with electricity. The captive power plant(s) is/are not connected to the electricity grid; or (c) Scenario C: Electricity consumption from the grid and (a) fossil fuel fired captive power plant(s). One or more fossil fuel fired captive power plants operate at the site of the electricity consumer. The captive power plant(s) can provide electricity to the electricity consumer. The captive power plant(s) is/are also connected to the electricity grid. Hence, the electricity consumer can be provided with electricity from the captive power plant(s) and the grid.	of electricity consumption..
This tool can be referred to in methodologies to provide procedures to monitor amount of electricity generated in the project scenario, only if one out of the following three project scenarios applies to the recipient of the electricity generated: (a) Scenario I: Electricity is supplied to the grid; (b) Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or (c) Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.	Applicable. The project scenario lies to Scenario I: Electricity is supplied to the grid.
This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO2 emissions.	There is no captive renewable power generation technologies installed to provide electricity in the project activity, in the baseline scenario or to sources of leakage.

Applicability conditions of "Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period" (version 03.0.1) are in the following table.

Criteria	Assessment
This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a	Applicable. The baseline in this PD is at the renewal of

crediting period	the crediting period. The baseline is assessed by the procedure of this tool.

The applicability criteria stated in methodology ACM0002 (Version 20.0) and the tools are met on the basis of the reasons above.

For standardized baseline, it's not applicable.

3.3 Project Boundary

According to the methodology ACM0002, the spatial extent of the project boundary includes the project power plant/unit and all power plants/units connected physically to the electricity system that the CDM project power plant is connected to.

According to 2019 Baseline Emission Factors for Regional Power Grids in China issued by the Ministry of Ecology and Environment of China (China DNA) on 29/12/2020, ECPG consists of Shanghai Power Grid, Jiangsu Power Grid, Zhejiang Power Grid, Anhui Power Grid and Fujian Power Grid.

The GHG emission sources included in or excluded from the project boundary are as follows:

Table 2. GHG emission sources of the project

Source		Gas	Included?	Justification/Explanation
Baseline	Emissions from fossil fuels fired power plants supplying to the North China Power Grid	CO_2	Included	Main emission source.
		CH_4	Excluded	Minor emission source.
		N_2O	Excluded	Minor emission source.
Project	Emissions caused by the project activity	CO_2	Excluded	According to ACM0002 (Version 20.0), project emission is excluded as a wind power project.
		CH_4	Excluded	
		N_2O	Excluded	

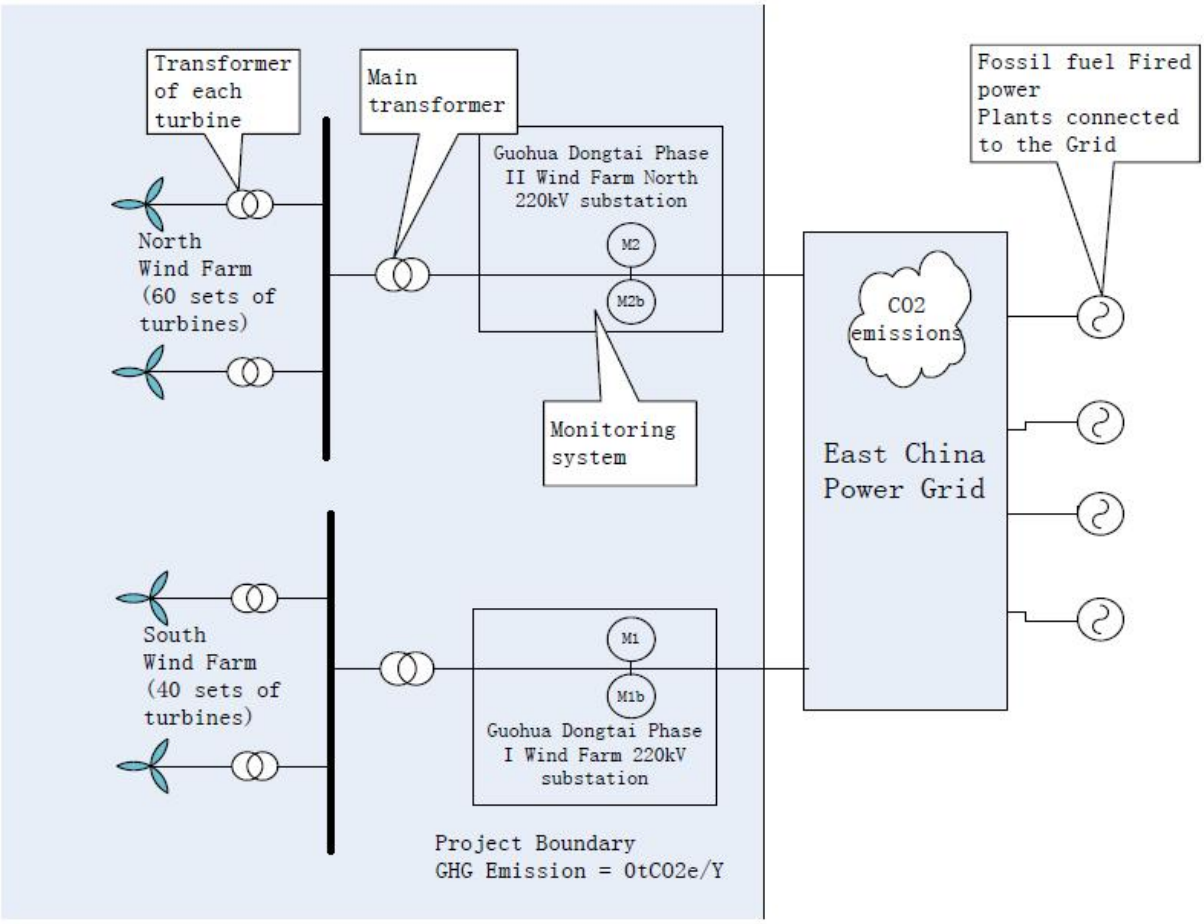


Figure 3. Flow diagram of the project boundary

3.4 Baseline Scenario

The baseline scenario of the project is electricity delivered to ECPG by the project that would otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources into the grid. According to the methodology ACM0002 (version 20.0), the baseline emissions are the electricity produced by the project multiplied by the emission factor of ECPG.

For the second crediting period, the continued validity of the original baseline should be assessed.

According to the Methodological Tool "Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period" (version03.0.1), the stepwise procedure as follows should be adopted to assess the continued validity of the baseline and to update the baseline:

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

There are no new national and/or sectoral policies that could affect the baseline scenario during the renewal of the crediting period. Although national policies favour the development of renewable energy sources, total renewable resources based power generation accounts for less than 50% of total generation of the ECPG in the latest 5 years respectively. Hence in the absence of the project activity electricity would still have been generated in the existing fossil fuel power plants or by the addition of new fossil fuel power plants connected to the ECPG.

Step 1.2: Assess the impact of circumstances

Firstly, the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment;

Secondly, the mainly investment environment or market characteristics especially the feed-in tariff, the policy in terms of market access permit have no significant change which would impacts the current baseline. The current practice for the baseline emissions is still the GHG emitted by ECPG: the equivalent electricity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources within the ECPG;

Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which the renewal is requested

The current baseline scenario is the continuation of the current practice. In the absence of the project, the electricity would have been supplied by ECPG, and it will not request an investment by the project proponent or third party. So, this step is not applicable.

Step 1.4: Assessment of the validity of the data and parameters

Since there are some parameters, which were determined at the start of the first crediting period and not monitored during the first crediting period, are not valid anymore, therefore, the current baseline emissions needs to be updated for the second crediting period according to this tool.

Before the time of requesting renewal of the crediting period, the china DNA has issued the latest Notice "2019 Baseline Emission Factors for Regional Power Grids in China" on 29/12/2020[5], so the emission factor of ECPG is updated for the second crediting period according to this Notice.

In summary, the emission factor of ECPG and all values have been updated to the latest data for the second crediting period according to this Notice.

[5] http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml

Application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline is valid for the second crediting period, but data and parameters need to be updated. Therefore step 2 is used.

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline

The baseline emissions for the second crediting period have been updated, without reassessing the baseline scenario, based on the latest approved version of the methodology ACM0002. More details for the updated baseline emissions for the second crediting period can be seen in section 4.

Step 2.2: Update the data and parameters

As mentioned in step 1.4 above, all parameters regarding the grid emission factor calculation have been updated for this second crediting period. More details can be seen in section 4.

3.5 Additionality

According to VCS standard 4.0, a full reassessment of additionality is not required.

The validity of the original baseline scenario is demonstrated in Section 3.4, and it was concluded that the current baseline is still valid for the next crediting period. Only EF related parameters should be updated for the second crediting period.

Project has no change compared with the original status. Therefore, the project description is the same as in the first crediting period.

The demonstration of regulatory surplus is provided below.

The project activity is in compliance with current laws and regulations in China, such as Renewable Energy Law of the People's Republic of China and Environmental Protection Regulation for Wind Power Project, etc. The law and regulations are described in section 1.14. There is no other regulatory requirement for the implementation of a wind power technology.

3.6 Methodology Deviations

There are no methodology deviations for this project.

4 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

4.1 Baseline Emissions

According to the methodology, the baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad (1)$$

where

BEy	Baseline emissions in year y (t CO_2/yr)
$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$	Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

Calculation of $EG_{PJ,y}$

As the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, the following applies:

$$EG_{PJ,y} = EG_{facility,y} \quad (2)$$

Where:

$EG_{PJ,y}$	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EG_{facility,y}$	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

Calculation of $EF_{grid,CM,y}$

The baseline emission factor (EF_y) is calculated as a combined margin ($EF_{grid,CM,y}$), consisting of the combination of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BM,y}$) factors according to the following seven steps defined in the "Tool to calculate the emission factor for an electricity system".

Data for the calculations are based on official public data on 2019 China Regional Power Grid Baseline Emission Factors[6].

Step 1. Identify the relevant electricity systems

[6] http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/t20201229_815386.shtml

For determining the electricity emission factors, identify the relevant project electricity system.

China DNA has published a delineation of the project electricity system and connected electricity systems, therefore these delineations are used in accordance with the Tool:

- the project electricity system is the North China Power Grid (ECPG), consisting of six provincial grids:Beijing, Tianjin, Heibei, Shanxi, Shandong and Inner Mongolia.

For the purpose of this tool, the reference system is the project electricity system. Hence electricity transfers from a connected electricity system to the project electricity system are defined as electricity imports, and electricity transfers from the project electricity system to connected electricity systems are defined as electricity exports.

For the purpose of determining the build margin emission factor, the spatial extent is limited to the project electricity system, except where recent or likely future additions to the transmission capacity enable significant increases in imported electricity. In such cases, the transmission capacity may be considered a build margin source.

There are no recent or likely future additions to transmission capacity that would enable significant increases in imported electricity; the data that imports are relatively small and have not changed significantly in the period covered. Therefore, the transmission capacity is not considered a build margin source.

For the purpose of determining the operating margin emission factor, use one of the following options to determine the CO_2 emission factor(s) for net electricity imports from a connected electricity system:

(a) 0 tCO_2/MWh; or

(b) The weighted average operating margin (OM) emission rate of the exporting grid, determined as described in Step 4 (d) below; or

(c) The simple operating margin emission rate of the exporting grid, determined as described in Step 4 (a), if the conditions for this method, as described in Step 3 below, apply to the exporting grid; or

(d) The simple adjusted operating margin emission rate of the exporting grid, determined as described in Step 4 (b) below.

Following the calculations of China DNA, the simple operating margin option (b) is used to calculate the CO_2 emission factors for net electricity imports ($EF_{grid,import,y}$).

For imports from connected electricity systems located in Annex-I country(ies), the emission factor is 0 tonnes CO_2 per MWh.

There are no imports from Annex-I country (ies).

Electricity exports should not be subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

Electricity exports from the project electricity system to the connected electricity system are not subtracted from electricity generation data used for calculating and monitoring the electricity emission factors.

Step 2. Choose whether to include off-grid power plants in the project electricity system (optional)

Project participants may choose between the following two options to calculate the operating margin and build margin emission factor:

Option I: Only grid power plants are included in the calculation.

Option II: Both grid power plants and off-grid power plants are included in the calculation.

Following the calculations of the DNA and the availability of statistical data availability, Option I is chosen.

Step 3. Select a method to determine the operating margin (OM)

According to the tool, the calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

(a) Simple OM; or

(b) Simple Adjusted OM; or

(c) Dispatch data analysis OM; or

(d) Average OM

According to the Tool, the simple OM method (option a) can only be used if low-cost / must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production.

This criterion is met and therefore the project participants chose to use the simple OM method (option a).

The Simple OM emissions factor can be calculated using either ex-ante or ex-post data vintages. the project participants have chosen to use the ex-ante option, and $EF_{grid,OM,y}$ is fixed for the duration of the second crediting period.

Ex ante option: If the ex-ante option is chosen, the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required. For grid power plants, use a 3-year generation-weighted average, based on the most recent data available at the time of submission of the CDM-PDD to the DOE for validation.

Step 4. Calculate the operating margin emission factor according to the selected method

(a) Simple OM

The Simple Operating Margin emission factor $EF_{grid,OM,y}$ is defined as the generation-weighted average emissions per unit net electricity generation (tCO_2/MWh) of all generating sources serving the system, not including low-operating cost and must-run power plants. Two options can be selected to calculate the simple OM:

Option A: Based on the net electricity generation and a CO_2 emission factor of each power unit; or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

Option B can only be used if:

(a) The necessary data for Option A is not available; and

(b) Only nuclear and renewable power generation are considered as low-cost / must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and

(c) Off-grid power plants are not included in the calculation (i.e. if Option I has been chosen in Step 2).

The criteria for Option B are met, as (a) the necessary data for Option A is not available as indicated in the calculations of the DNA, (b) only nuclear and renewable power generation are considered as low-cost / must-run power sources and the quantity of electricity supplied to the grid by these sources is known, and (c) Option I is chosen in Step 2.

Option B – Calculation based on total fuel consumption and electricity generation of the system

According to the Tool, where Option B is used, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost / must-run power plants / units, and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_y} \quad (3)$$

Where:

$EF_{grid,OM\ simple,y}$	Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
$FC_{i,y}$	The amount of fossil fuel type i consumed in the project electricity system in year y (mass or volume unit)

$NCV_{i,y}$	Net calorific value (energy content) of fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO2,i,y}$	CO_2 emission factor of fossil fuel type i in year y (tCO_2/GJ)
EG_y	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year y (MWh)
i	All fossil fuel types combusted in power sources in the project electricity system in year y
y	The relevant year as per the data vintage chosen in Step 3

On the basis of the data available, the three-year average operating margin emission factor is calculated by the DNA as a full-generation-weighted average of the emission factors.

$EF_{grid,OM\ simlpe,y}$ =0.7921tCO_2/MWh

Step 5. Calculate the build margin (BM) emission factor

In terms of vintage of data, the project participants chose Option 1, the ex-ante option (as for the OM calculation), and $EF_{grid,BM,y}$ is fixed for the duration of the second crediting period:

Option 1: ex-ante. For the first crediting period, calculate the build margin emission factor ex-ante based on the most recent information available on units already built for sample group m at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

The latest statistical data available (from the China Power Yearbook) is used by the DNA to determine the most recent year from which the added generation capacity is equal to or just exceeds 20% of the latest statistic. The added generation capacity is the sample group of power units m used to calculate the build margin.

The sample group of power units m used to calculate the build margin consists of the set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. This option is chosen as it comprises larger annual generation than the five units built most recently.

The build margin emissions factor is the generation-weighted average emission factor (tCO_2/MWh) of all power units m during the most recent year y for which power generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (4)$$

Where:

$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y(t CO_2/MWh)
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
$EF_{EL,m,y}$	CO_2 emission factor of power unit m in year y (tCO_2/MWh)
m	Power units included in the build margin
y	The most recent historical year for which power generation data is available

As it is difficult to obtain the detailed data on the power generation, fuel consumption and thermal efficiency of each newly built power unit from public documents, a deviation of TOOL07 (07.0) is adopted following the clarifications[7] given by the CDM EB concerning the BM emission factor calculation:

(1) The CDM EB suggested using the efficiency level of the best technology commercially available in the provincial/regional or national grid of China, as a conservative proxy, for each fuel type in estimating the fuel consumption to estimate the build margin.

(2) The EB agreed the use of capacity additions during last 1 ~ 3 years for estimating the build margin emission factor for grid electricity.

(3) The EB also agreed to use of weights estimated using installed capacity in place of annual electricity generation.

The newly built power plants in the past few years are bundled into "grouped new power plant" according to their construction year, their province and their fuel type. The annual net electricity generation in the year y of each "grouped new power plant" $EG_{m,y}$ is estimated according to their total capacity and the average utilization hours, as the following equation:

$$EG_{m,y} = CAP_m \times H_{m,y} \quad (5)$$

Where:

$EG_{m,y}$	Annual net electricity generation the unit m in year y (MWh)
CAP_m	Installed capacity of the unit m (MW)
$H_{m,y}$	Utilization hour of the unit m in the year y (h), determined according to the average utilization hour of the same type of unit in the same province
m	grouped new power plant
y	The most recent year for which the generation data is available. For the calculation of BM in 2019, y = 2017

[7] "Request for clarification on use of approved methodology AM0005 for several projects in China", the EB's guidance on DNV deviation request.

http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZAK6V5YXPQKK7WYJ

Since the newly built power plants in the same province (A), in the same year (t) and using the same fuel type (k) are grouped into "a grouped new power plant", CAP_m represents the total installed capacity of fuel type k power plants located in the province A and in the year t:

$$CAP_m = CAP_{A,t,k} \quad (6)$$

CAP_m	Installed capacity of the unit m (MW), with m representing the specified combination of A, t, and k
$CAP_{A,t,k}$	Total installed capacity of fuel type k power plants located in the province A and in the year t
A	Provinces covered by the ECPG, namely, Shanghai City, Jiangsu Province, Zhejiang Province, Anhui Province and Fujian Province
t	Years related to the grouped new power plants, for the 2019 calculation, t represents 2017, 2016, 2015…. Until the aggregated electricity generation of the grouped new power plants reaches 20% of the total electricity generation of the ECPG
k	Fuel type of the grouped new power plants, including hydro, thermal (coal, gas, oil, waste incineration, other thermal), nuclear, wind, solar and others.

Figure 4 shows the procedure to determine the sample group of power units m.

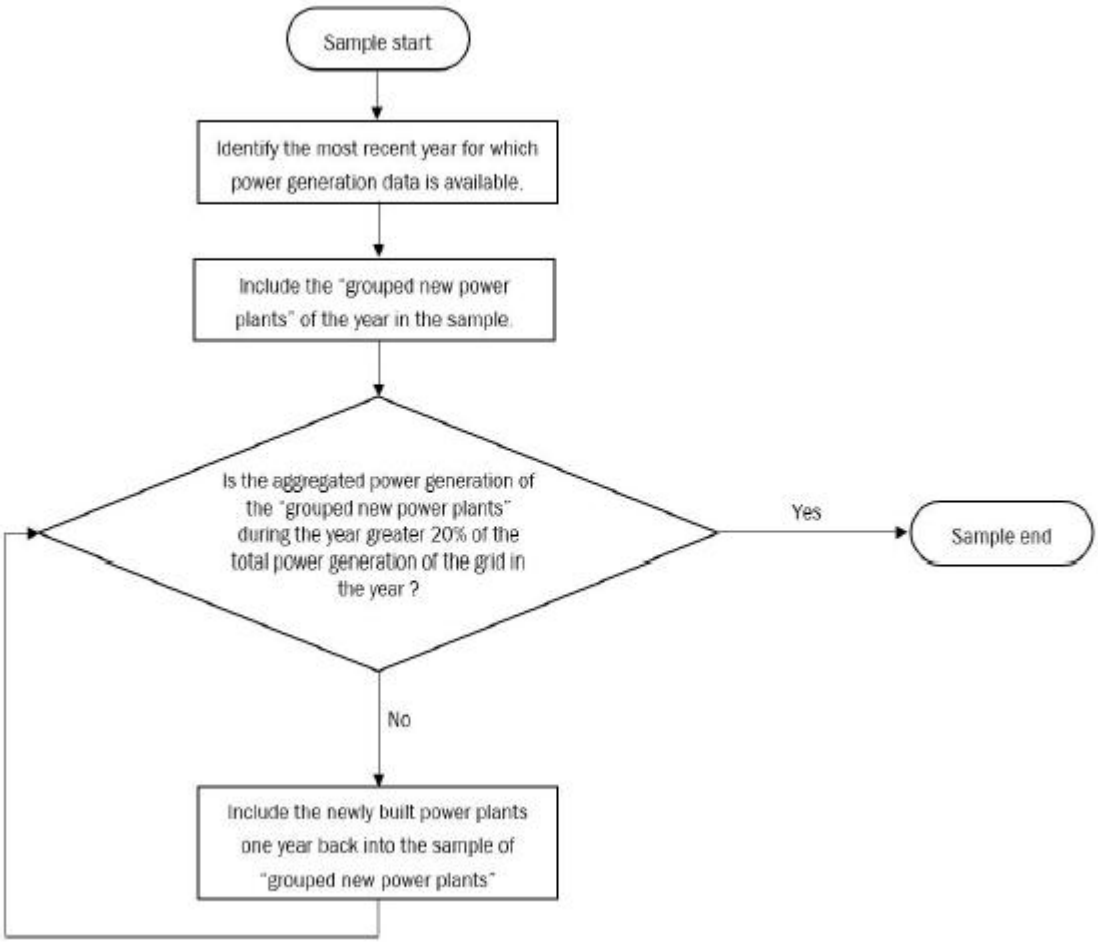


Figure 4 Procedure to determine the sample group of power units m used for the BM emission factor calculation

The emission factors of each fuel type are determined according to the Option A2 in the TOOL07, as the following equation:

$$EF_{EL,m,y} = \frac{EF_{CO2,m,i,y} \times 3.6}{\eta_{m,y}} \quad (7)$$

$EF_{EL,m,y}$	CO_2 emission factor of power unit m in year y (tCO_2/MWh)
$EF_{CO2,m,i,y}$	Average CO_2 emission factor of fuel type i used in power unit m in year y (tCO_2/GJ)
$\eta_{m,y}$	Average net energy conversion efficiency of power unit m in year y (ratio)
m	All power units serving the grid in year y except low-cost / must-run power units
3.6	Conversion factor (GJ/MWh)

Among the fuel types, the emission factors of hydro, nuclear, wind, solar, other thermal and others are 0. Concerning the emission factors of coal, gas, oil and waste incineration, Equation (B-14) takes the following form due to conservativeness:

$$EF_{best,m,y} = \frac{EF_{CO_2,m,i,y} \times 3.6}{\eta_{best,y}} \quad (8)$$

Where:

$EF_{best,m,y}$	Emission factor of power unit m with the best technology commercially available in year y (tCO_2/MWh)
$\eta_{best,y}$	Power generation efficiency of the best technology commercially available in year y
m	Power units serving the grid with coal, gas, oil or waste incineration in year y

According to the latest and available data at the time of this PDD submission, $EF_{grid,BM,y}$ is calculated to be 0.3870 tCO_2e/MWh.

Step 6. Calculation of the combined margin emission factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:

(a) Weighted average CM; or

(b) Simplified CM.

The weighted average CM method (option a) should be used as the preferred option.

The simplified CM method (option b) can only be used if:

- the project activity is located in a Least Developed Country (LDC) or in a country with less than 10 registered projects at the starting date of validation; and

- The data requirements for the application of step 5 above cannot be met.

Option a is the preferred option. Option b cannot be used as the project activity does not take place in an LDC or in a country with less than 10 registered CDM projects. Therefore, option a is chosen.

Weighted average CM

The combined margin emissions factor is calculated as follows:

$EF_{grid,CM,y} = w_{OM} \times EF_{grid,OM\ simple,y} + w_{BM} \times EF_{grid,BM,y}$

$$EF_{grid,CM,y} = \omega_{OM} \times EF_{grid,OMsimple,y} + \omega_{BM} \times EF_{grid,BM,y} \quad (9)$$

Where:

$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{grid,OM\ simple,y}$	Simple operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM}	Weighting of operating margin emissions factor (%)
w_{BM}	Weighting of build margin emissions factor (%).

The default weights are used, i.e. for the wind farm projects in the first crediting period and the subsequent crediting periods, w_{OM} = 0.75 and w_{BM} = 0.25.

On the basis of these weights for the second crediting period, the combined margin emission factor is calculated, and are fixed ex-ante for the duration of the second crediting period as follows:

	CO_2 emission factor (tCO_2/MWh)	Weighting
Simple operating Margin Emissions Factor ($EF_{grid,OM\ simple,y}$)	0.7921	0.75
Build Margin Emissions Factor ($EF_{grid,\ BM,y}$)	0.3870	0.25
Baseline Emissions Factor ($EF_{grid,CM,y}$)	0.690825	

Thus,

$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$ = 406,020 MWh × 0.690825 tCO_2/MWh =280,488 tCO_2

4.2 Project Emissions

According to the methodology, for most renewable energy project activities, PE_y = 0. However, the methodology prescribes project emission calculations for geothermal, solar thermal and hydro power plant. the project is a wind power project, therefore, there are no project emissions according to the methodology:

$PE_y = 0$

4.3 Leakage

According to the methodology, no leakage is considered for the project activity.

4.4 Net GHG Emission Reductions and Removals

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad (10)$$

Where:

ER_y	Emission reductions in year y (t CO_2e/yr)
BE_y	Baseline emissions in year y (t CO_2/yr)
PE_y	Project emissions in year y (t CO_2e/yr)

The summary of ex ante estimates of emission reductions is shown as follows:

Year	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)
10/12/2020-31/12/2020 (22 days)	16,906	0	0	16,906
01/01/2021-31/12/2021	280,488	0	0	280,488
01/01/2022-31/12/2022	280,488	0	0	280,488
01/01/2023-31/12/2023	280,488	0	0	280,488
01/01/2024-31/12/2024	280,488	0	0	280,488
01/01/2025-31/12/2025	280,488	0	0	280,488
01/01/2026-31/12/2026	280,488	0	0	280,488
01/01/2027-31/12/2027	280,488	0	0	280,488
01/01/2028-31/12/2028	280,488	0	0	280,488
01/01/2029-31/12/2029	280,488	0	0	280,488
01/01/2030-09/12/2030 (343 days)	263,582	0	0	263,582
Total	2,804,880	0	0	2,804,880

5 MONITORING

5.1 Data and Parameters Available at Validation

Data / Parameter	$EF_{grid,OM\ simple,y}$
Data unit	tCO_2/MWh
Description	Simple operating margin CO_2 emission factor in year y
Source of data	"2019 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA [8]
Value applied	0.7921
Justification of choice of data or description of measurement methods and procedures applied	Official public data from MEE
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build margin CO_2 emission factor in year y
Source of data	"2019 Baseline Emission Factors for Regional Power Grids in China" issued by China DNA [9]
Value applied	0.3870
Justification of choice of data or description of measurement methods and procedures applied	Official public data from MEE
Purpose of Data	Calculation of baseline emissions
Comments	/

[8] http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/W020201229610353816665.pdf

[9] http://www.mee.gov.cn/ywgz/ydqhbh/wsqtkz/202012/W020201229610354442145.pdf

Data / Parameter	w_{OM}
Data unit	%
Description	Weighting of operating margin emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value applied	75
Justification of choice of data or description of measurement methods and procedures applied	Based on the requirements of "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of Data	Calculation of baseline emissions
Comments	/

Data / Parameter	w_{BM}
Data unit	%
Description	Weighting of build margin emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value applied	25
Justification of choice of data or description of measurement methods and procedures applied	Based on the requirements of "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of Data	Calculation of baseline emissions
Comments	/

5.2 Data and Parameters Monitored

Data / Parameter	$EG_{facility,y}$
Data unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y.
Source of data	Calculated based on the data of $EG_{out,y}$ and $EG_{in,y}$
Description of	Measurement will be performed continuously with electricity meters M1 (Accuracy: 0.2s), M1b (backup meter, Accuracy: 0.2s),

measurement methods and procedures to be applied	M2 (Accuracy: 0.2s) and M2b (backup meter, Accuracy: 0.2s). Meter M1 and its backup meter M1b were installed at Guohua Dongtai Phase I Wind Farm 220kV substation to measure the electricity delivered to grid and electricity imported from grid by south wind farm of the project. Meter M2 and its backup meter M2b were installed at Guohua Dongtai Phase II Wind Farm North 220kV substation to measure the electricity generated from the north wind farm of the project. And they will be monitored continuously and recorded monthly. Monitoring staff, on-site engineers and internal audit staff are responsible for the collection of the data and information required in the monitoring plan. The collected data and information is documented and sent to the VCS manager monthly. Data will be archived for 2 years following the end of the crediting period by means of electronic and paper backup.
Frequency of monitoring/recording	Measured continuously and recorded monthly.
Value applied	406,020 MWh per year at full capacity. $EG_{facility,y}$ is electricity net of exports and imports, and is estimated as 406,020 MWh.
Monitoring equipment	Electricity meters (M1, M1b, M2,M2b)
QA/QC procedures to be applied	The metering equipment are calibrated and checked for accuracy periodically (once a year) according to the industry standards so that the metering equipment shall have sufficient accuracy. Data measured by meters will be cross checked by receipts of sales and purchasing.
Purpose of data	Calculation of baseline emissions
Calculation method	$EG_{facility,y} = EG_{out,y} - EG_{in,y}$ $EG_{out,y}$: Electricity delivered to grid in year y $EG_{in,y}$: Electricity imported from grid in year y
Comments	/

Data / Parameter	$EG_{out,y}$
Data unit	MWh/yr
Description	Electricity delivered to grid in year y.
Source of data	Electricity meters (M1, M1b, M2,M2b)
Description of measurement methods and procedures to be applied	Measurement will be performed continuously with electricity meters M1 (Accuracy: 0.2s), M1b (backup meter, Accuracy: 0.2s), M2 (Accuracy: 0.2s) and M2b (backup meter,, Accuracy: 0.2s). Meter M1 and its backup meter M1b were installed at Guohua Dongtai Phase I Wind Farm 220kV substation to measure the electricity delivered to grid and electricity imported from grid by south wind farm of the project. Meter M2 and its backup meter

	M2b were installed at Guohua Dongtai Phase II Wind Farm North 220kV substation to measure the electricity generated from the north wind farm of the project. And they will be monitored continuously and recorded monthly. Monitoring staff, on-site engineers and internal audit staff are responsible for the collection of the data and information required in the monitoring plan. The collected data and information is documented and sent to the VCS manager monthly. Data will be archived for 2 years following the end of the crediting period by means of electronic and paper backup.
Frequency of monitoring/recording	Measured continuously and recorded monthly.
Value applied	406,020 MWh/y
Monitoring equipment	Electricity meters (M1, M1b, M2,M2b)
QA/QC procedures to be applied	The metering equipment are calibrated and checked for accuracy periodically (once a year) according to the industry standards so that the metering equipment shall have sufficient accuracy. Data measured by meters will be cross checked by receipts of sales.
Purpose of data	Calculation of baseline emissions
Calculation method	/
Comments	/

Data / Parameter	$EG_{in,y}$
Data unit	MWh/yr
Description	Electricity imported from grid in year y.
Source of data	Electricity meters (M1, M1b, M2,M2b)
Description of measurement methods and procedures to be applied	Measurement will be performed continuously with electricity meters M1 (Accuracy: 0.2s), M1b (backup meter, Accuracy: 0.2s), M2 (Accuracy: 0.2s) and M2b (backup meter,, Accuracy: 0.2s). Meter M1 and its backup meter M1b were installed at Guohua Dongtai Phase I Wind Farm 220kV substation to measure the electricity delivered to grid and electricity imported from grid by south wind farm of the project. Meter M2 and its backup meter M2b were installed at Guohua Dongtai Phase II Wind Farm North 220kV substation to measure the electricity generated from the north wind farm of the project. And they will be monitored continuously and recorded monthly. Monitoring staff, on-site engineers and internal audit staff are responsible for the collection of the data and information required in the monitoring plan. The collected data and information is documented and sent to the VCS manager monthly.

	Data will be archived for 2 years following the end of the crediting period by means of electronic and paper backup.
Frequency of monitoring/recording	Measured continuously and recorded monthly.
Value applied	0 MWh/y
Monitoring equipment	Electricity meters (M1, M1b, M2,M2b)
QA/QC procedures to be applied	The metering equipment are calibrated and checked for accuracy periodically (once a year) according to the industry standards so that the metering equipment shall have sufficient accuracy. Data measured by meters will be cross checked by receipts of purchasing.
Purpose of data	Calculation of baseline emissions
Calculation method	/
Comments	/

5.3 Monitoring Plan

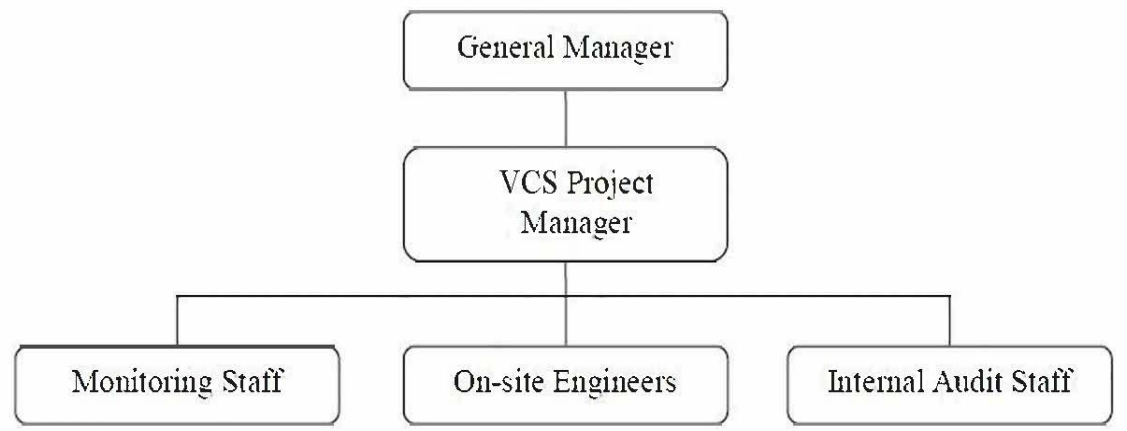
Baseline emission factor the project is determined ex ante. Therefore the electricity delivered by the project to the East China Power Grid is defined as the key data to be monitored. The monitoring plan is drafted to focus on monitoring the electricity delivered by the project to the East China Power Grid.

1. Introduction

The Project adopts the approved consolidated monitoring methodology ACM0002 (version 20.0.0) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” to determine and monitor the emission reductions from the net electricity generation from the Project.

2. Monitoring organization

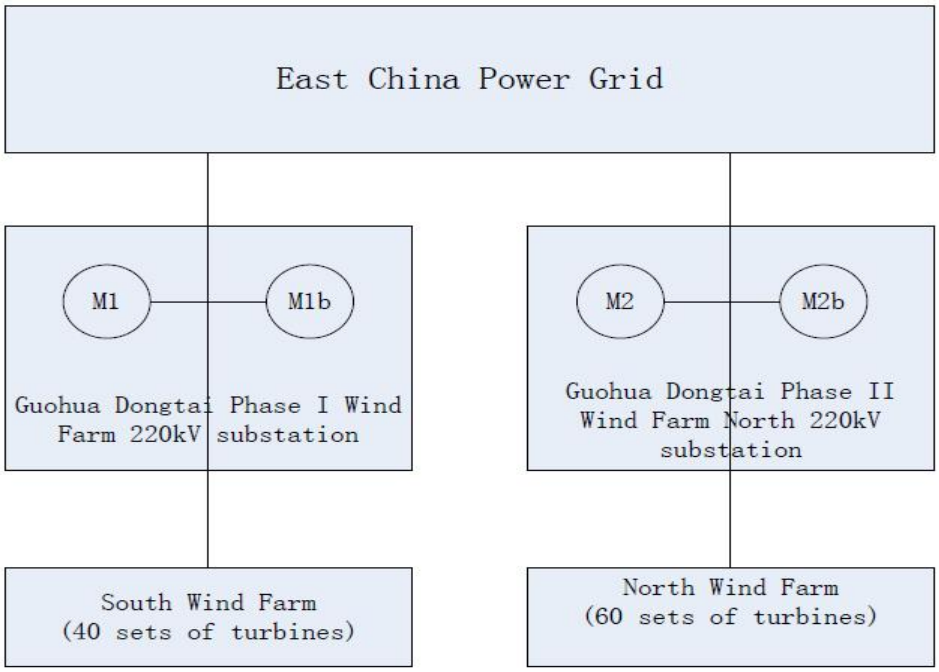
Project owner will organize a special VCS work group to take charge of the monitoring work of the whole project. The general manager of the project entity will appoint a VCS project manager. Monitoring staff, on-site engineers and internal audit staff are responsible for the collection of the data and information required in the monitoring plan. The collected data and information will be documented and sent to the VCS manager monthly. The VCS manager will be in charge of the implementation of the monitoring plan and report to the general manager of the project owner. The general manager will make the confirmations on monitoring, calculation data and reports. The management framework is illustrated as follows:



3. Monitor devices and calibration

The project consists two wind farms, 60 sets of turbines is installed in north wind farm and the other 40 sets of turbines is installed in south wind farm. Two pairs bidirectional electricity meters are installed for the measurement of net electricity delivered to grid. One pair (meter M1 and its backup meter M1b) were installed at Guohua Dongtai Phase I Wind Farm 220kV substation to measure the electricity export to the grid and electricity import from the grid by south wind farm of the project. Another pair (meter M2 and its backup meter M2b) will be installed at Guohua Dongtai Phase II Wind Farm North 220kV substation to measure the electricity generated from the north wind farm of the project. The metering equipment will be properly configured and checked according to the requirement from Technical Administrative Code of electric energy metering (DL/T448-2016). The metering equipment will be checked by the project owner and Grid Company before operation. The main meter will be owned, operated and maintained by East China Power Grid, and the backup meter will be owned, operated and maintained by the owner company. When the main meter is out of order, the readings from the backup meter will be used for reference.

The calibration of electric energy meter should be periodically carried out according to relevant national electric industry standards or regulations. Calibration is carried out by the authorized entity with the records being provided to the project owner, and these records will be maintained by the proposed project owner and the third party designated. The indicative grid connection diagram is provided in figure below.



4. Data monitored and collection

The emission factors of the baseline are based on ex-ante calculation; therefore the main data to be monitored will be the amount of electricity supplied to the East China Power Grid by the Project.

VCS project manager is responsible for supervising and checking data and whole data record process as well as keeping receipt of sales and purchasing for cross check. The backup meter will be maintained by the project owner and read by the site engineer with the same frequency of data reading of main electricity meter.

If the main meter is inaccurate by detecting errors larger than the allowable one, or functions improperly, the grid-connected electricity generated by the proposed project shall be determined by the reading of its backup meter.

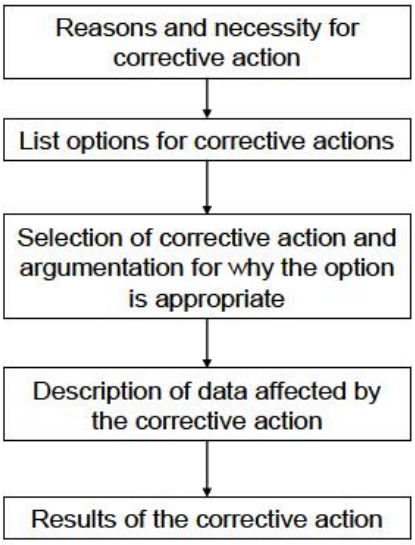
5. Data Management System

This provides information on record keeping of the data collected during monitoring. Record keeping is the most important exercise in relation to the monitoring process.

In order to facilitate auditor's reference, monitoring results will be indexed. All paper-based information will be stored by the Project owner and kept at least in one copy. And all data collected should be archived electronically and be kept for at least 2 years after the end of the last crediting period.

6. Corrective actions

Specific staff will log all corrective actions and will report in the monitoring report. In case corrective actions are considered necessary, these actions will be implemented according to the procedure outlined below.



7. Training

The monitoring officers will attend a training session. The training session will include the following:

- Background of VCS scheme
- Contents of PD and monitoring plan (including monitoring procedures)
- Practical requirements for monitoring (including metering, calibration)
- Audit procedures / project performance review / corrective actions
- Worksheet (excel) containing monitoring data and calculations
- Monitoring report template
- Practical training exercise

8. Verification

The table below outlines the key documents relevant to monitoring and verification of the emission reductions from the Project. With all these documents compiled, the Project owner will sign a verification service agreement with specific DOE.

I.D. No.	Document Title	Main Content	Source

F-1	PD, including the electronic spreadsheets and supporting documentation (assumptions, estimations, measurement, etc)	Calculation procedure of emission reduction and monitoring items	the Project owner, or directly download from VCS website
F-2	Record on maintenance and calibration of metering equipment	Information of the metering equipment (senarial number, accuracy, calibration date, etc.)	the Project owner
F-3	Monitoring report, including the electronic spreadsheets and supporting documentation.	CO_2 emission reduction calculation	the Project owner

9. Quality assurance and quality control

The quality assurance and quality control procedures for recording, maintaining and archiving data shall be improved as part of this VCS project activity according to EB rules and real practice in terms of the need for verification of the emission reductions on an annual basis according to this PD.

10. Monitoring Report

Monitoring report, including monitoring data, process and results of reduction calculation, will be prepared by project owner and designed consultative organization together. Relevant maintenance records of monitoring equipment will be provided to DOE for the future verification.