Project design document form

(Version 10.1)

BASIC INFORMATION	
Title of the project	Guangdong Taishan Shangchuandao Island Phase I Wind Farm Project
Scale of the project	☒ Large-scale ☐ Small-scale
Version number of the PDD	4.1 (updated addressing to renewal of crediting period)
Completion date of the PDD	07/01/2019
Project participants	CGN Taishanchuandao Wind Power Co., Ltd. Carbon Resource Management Ltd. Carbon Resource Management S.A.
Host Party	People's Republic of China
Applied methodologies and standardized baselines	Methodology: ACM0002 "Grid-connected electricity generation from renewable sources" (Version 19.0)
Sectoral scopes linked to the applied methodologies	Sectoral scope 1: Energy industries (renewable / non-renewable sources)
Estimated amount of annual average GHG emission reductions	66,527 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

>>

The Guangdong Taishan Shangchuandao Island Phase I Wind Farm Project (hereinafter referred as to "the project") locates in the Shangchuandao Island, Chuandao Town, Taishan County, Jiangmen City, Guangdong Province, China. The objective of the project is to generate renewable electricity from wind and the generated power will be accessed to the South China Power Grid (SCPG).

Based on the conditions of the project site, the developer has installed 57 wind turbines, each with a capacity of 850kW. The total installed capacity is 48.45MW. The expected net generation of the project is 96,500MWh per year. As the SCPG is dominated by thermal power generation, the establishment of the proposed project activity could lead to greenhouse gas (GHG) emission reductions.

The project was registered as CDM project on 07/02/2010 with Reference No. 2953. The first crediting period of the project is 14/08/2010-13/08/2017. The second crediting period of the project would be 14/08/2017-13/08/2024. Following the methodology, during the second crediting period, the expected of emission reductions is 66,527 tCO_2e per year and 465,689 tCO_2e totally.

The project can assist China in stimulating and accelerating the commercialisation of grid-connected wind power technologies and markets which are an important objective of the Chinese government. The project can therefore help reduce GHG emissions versus the high-growth, coal-dominated business-as-usual scenario. Furthermore, the project can also improve air quality and local livelihoods, promote sustainable renewable energy industry development.

The baseline scenario, therefore, is the same as the scenario existing prior to the implementation of the project, i.e. generation of electricity by grid connected power plants.

The project will promote the local and national sustainable development powerfully in the following aspects:

- Reduce greenhouse gas emissions in China compared to a business-as-usual scenario;
- Help to stimulate the growth of the wind power industry in China;
- Create local employment opportunity during the assembly and installation of wind turbines, and for operation of the wind farm;
- Reduce other pollutants resulting from the power generation industry, compared to a business-as-usual approach, such as SO_2, NO_x and soot.

A.2. Location of project activity

>>

The project locates on Shangchuandao Island. The coordinates of the wind farm are as follows:

Latitude: 21°34′ 50″(N) to 21°39′ 03″(N)
Longitude: 112°46′ 11″(E) to 112°47′08″(E)

Figure 1: The location of the wind farm

A.3. Technologies/measures

>>

A total of 57 turbines with a capacity 850kW have been installed with an aggregate installed capacity of 48.45MW. Based on the wind conditions, and the specifications of the turbines, net generation is expected to be 96,500MWh per year, once the project is fully operational, which is exported to the SCPG. The project is expected to be operational for 20 years.

The turbine manufacturer has provided on-the-job-training for staff of the proposed wind farm before the start of operation. The project developer has experience with similar wind turbines and has trained staff. The turbines are considered advanced commercial wind-power technology in China.

Table 1 Main technical specifications of the installed wind turbines

Item	Value
Manufacturer	VESTAS
Model	V52-850kW
Rated capacity (kW)	850kw
Rotor diameter (m)	52
Sweep-wind area (m2)	2124
Cut-in speed (m/s)	4
Rated wind speed (m/s)	19
Cut-out speed (m/s)	25
Rated voltage of generator (V)	690

The power generation is monitored by meter installed at the substation. The load factor of 22.7% is derived from the Feasibility Study Report determined by the third independent design institute, and also the value provided to the government while applying the project for implementation approval. Thus, the estimated annual net generation is 96,500MWh once fully operational. The power is exported to the SCPG.

Prior to the implementation of the project, the electricity was generated by grid-connected power plants. Without the implementation of the project, this scenario would have continued and is considered the baseline scenario.

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host Party)	CGN Taishanchuandao Wind Power Co., Ltd.	No
United Kingdom of Great Britain and Northern Ireland	Carbon Resource Management Ltd.	No
Switzerland	Carbon Resource Management S.A.	No

A.5. Public funding of project activity

>>
No public funding from any of the UNFCCC Annex I country governments has been secured for the project.

A.6. History of project activity

>>
The project was registered as CDM project on 07/02/2010, the Reference No. is 2953. The PDD is renewal of crediting period. Therefore, it can be confirmed that:

(a) The proposed CDM project activity has been registered as CDM project with the reference No. 2953 and the PDD is renewal of crediting period. The proposed CDM project activity is not included as a component project activity (CPA) in a registered CDM programme of activities (PoA);
(b) The proposed CDM project activity is not a project activity that has been deregistered.

And confirm that:

(a) The proposed CDM project activity was not a CPA that has been excluded from a registered CDM PoA;
(b) There is no registered CDM project activity or a CPA under a registered CDM PoA whose crediting period has or has not expired (hereinafter referred to as former project) existing in the same geographical location as the proposed CDM project activity.

A.7. Debundling

>>
The project is a large-scale project, therefore, not applicable.

SECTION B. Application of selected methodologies and standardized baselines

B.1. Reference to methodologies and standardized baselines

>>
The selected methodology for the project is ACM0002: "Grid-connected electricity generation from renewable sources" (Version 19.0).

The website for the reference of the methodology is:
http://cdm.unfccc.int/methodologies/DB/VJI9AX539D9MLOPXN2AY9UR1N4IYGD

Tools to which the selected methodology refers are Methodological Tool TOOL01: "Tool for the demonstration and assessment of additionality" (Version 7.0.0) and Methodological Tool TOOL07: "Tool to calculate the emission factor for an electricity system" (Version 7.0).

The website for the reference of the methodological tools are:
http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf

B.2. Applicability of methodologies and standardized baselines

>>

The approved methodology ACM0002 (Version 19.0) is applicable to the project activities, because:

- The project involves electricity capacity additions to the grid from wind power resources; and
- The project does not involve switching from fossil fuels to renewable energy at the site of the project; and
- The geographic and system boundaries of the SCPG can be clearly identified and information on the characteristics of the grid is available.

B.3. Project boundary, sources and greenhouse gases (GHGs)

>>

Emission sources:

For the baseline determination, only CO_2 emissions from electricity generation by fossil fuel fired power plant that is displaced due to the project are taken into account.

Source		GHG	Included?	Justification/Explanation
Baseline	Power supplied by SCPG	CO_2	Yes	Following ACM0002
		CH_4	No	Conservative / according to ACM0002
		N_2O	No	Conservative / according to ACM0002
Project activity	Emissions from backup power generation	CO_2	No	The backup power generation does not exist in the project. According to ACM0002, the project emission of the proposed project activity is not considered.
		CH_4	No	
		N_2O	No	

Spatial boundary:

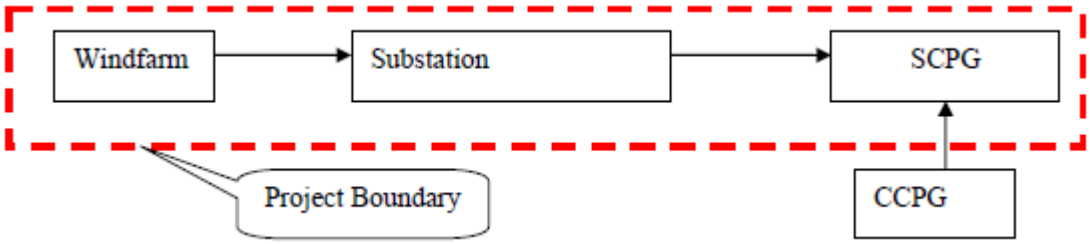
The spatial extend of the project boundary includes the project site and all power plants connected to SCPG. SCPG is an electricity system which is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints.

Using the boundary definitions of the Chinese DNA[1], SCPG consists of Guangdong, Guangxi, Yunnan, Guizhou and Hainan power grids. The electricity transmission between different provinces in SCPG is very large and it is reasonable for the project to regard SCPG as the project boundary.

SCPG connects with Central China Power Grid (CCPG); the electricity transfers from CCPG to SCPG are taken into account.

Figure 2 Flow diagram of the project boundary

[1] http://qhs.mee.gov.cn/kzwsqtpf/201812/P020181220579925103092.pdf



B.4. Establishment and description of baseline scenario

>>

The project is the installation of a new Greenfield power plant, and is not a capacity addition, retrofit, rehabilitation or replacement of existing grid-connected renewable power plant/unit. Therefore, the baseline scenario is prescribed in the methodology:

Electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "*Tool to calculate the emission factor for an electricity system*".

The selected methodology prescribes the baseline scenario; thus, no further analysis is required. The combined margin is calculated in Section B.6 below.

According to the ACM0002 (Version 19.0) and Project Standard (Version 02.0), the methodological tool "*Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period*" (Version 3.0.1) is adopted to assess the continued validity of the baseline and to update the baseline. This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism.

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

If the current baseline complies with all relevant mandatory national and/or sectoral policies which have come into effect after the submission of the project activity for validation or the submission of the previous request for renewal of the crediting period and are applicable at the time of requesting renewal of the crediting period, go to Step 1.2.

- There are no new national and/or sectoral policies that could affect the baseline scenario at the time of requesting renewal of the crediting period. The current baseline complies with all relevant mandatory national and/or sectoral policies. Hence in the absence of the project the electricity would still have been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "*Tool to calculate the emission factor for an electricity system*".

Step 1.2: Assess the impact of circumstances

Assess the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions, without reassessing the baseline scenario.

In the situation where the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment, an assessment of the changes in market characteristics is required for the renewal of the crediting period.

- The baseline scenario identified at the validation of the project was the continuation of the current practice without any investment. Baseline emissions are primarily derived from the fossil fuel power plants in the SCPG. The total electricity generation is still mainly produced by fossil fuel power plants in SCPG in recent 5 years. Therefore, market characteristics do not have impact on the baseline emissions.

Evaluate whether the conditions used to determine the baseline emissions in the previous crediting period are still valid. Assess the availability of new fuels or raw materials and the impact of electricity or fuel prices in the identification of the current practice for the baseline emissions.

- The conditions used to determine the baseline emissions in the previous crediting period are still valid. The availability of new fuels or raw materials or the level of fuel prices has no impact on the identification of the current practice for the baseline emissions. Presently the SCPG is dominated by the fossil fuel power plants. The availability of new fuels or raw materials or the level of fuel prices has no impact on the baseline emissions.

If the new circumstances make a continued validity of the current baseline not plausible, then the current baseline needs to be updated for the subsequent crediting period.

As there are no new circumstances that make a continued validity of the current baseline not plausible, the current baseline does not need to be updated for the second crediting period.

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

This sub-step should only be applied if the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment(s) without any investment and, the projects proponents or third party (or parties) would undertake an investment later due, for example, to the end of the technical lifetime of the equipment(s) before the end of the crediting period or the availability of a new technology.

Assess whether the remaining technical lifetime of the equipment that would have continued to be used in the absence of the project, as determined in the renewal CDM-PDD, exceeds the crediting period for which renewal is requested.

Take into consideration the market penetration of different technologies. Evaluate the penetration rate of different technologies that are available in the market and evaluate how they could affect the baseline.

- As determined in the renewal CDM-PDD, the baseline scenario is that the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources in SCPG, as reflected in the combined margin (CM) calculations described in the "*Tool to calculate the emission factor for an electricity system*". The projects proponents or third party (or parties) would not undertake an investment later due. The combined margin calculation automatically takes account of any issues regarding remaining technical lifetime or market penetration.

If the baseline scenario of the project activity is the continuation of use of the current equipment(s) without any investment and the projects proponents or third party(ies) will undertake an investment later, but before the end of a crediting period, then the current baseline needs to be updated for that crediting period or the crediting of emission reductions should be limited to the period before the baseline equipment would cease its operation.

Therefore, the current baseline does not need to be updated for the second crediting period.

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

Assess whether data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period are still valid or whether they should be updated. Updates should be undertaken in the following cases:

- Where IPCC default values are used, the values should be updated if any new default values have been adopted and published by the IPCC, for example, in guidelines for national GHG inventories, IPCC assessment report or special reports by the IPCC;
- Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project prior to the implementation of the project and cannot be updated because the historical situation does not exist anymore as a result of the CDM project activity.

If any of the data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, the current baseline needs to be updated for the subsequent crediting period.

In accordance with the methodology, the grid emission factor and all the values in its calculation are updated in section B.6.

If the application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline as well as data and parameters are still valid for the subsequent crediting period, then this baseline, data and parameters can be used for the renewed crediting period. Otherwise, proceed to Step 2.

The original baseline scenario needs to be updated to incorporate the latest grid emission factor in accordance with the methodology.

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

This step is only applicable if any of the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated.

Step 2.1: Update the current baseline

Update the current baseline emissions for the subsequent crediting period, without reassessing the baseline scenario, based on the latest approved version of the methodology applicable to the project activity. The procedure should be applied in the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period.

As shown in step 1.1 above, in accordance with the procedures for renewal of the crediting period of a registered CDM project activity, the original baseline, as updated, remains valid taking new relevant national and/or sectoral policies and circumstances into account.

Step 2.2: Update the data and parameters

If the application of Step 1.4 showed that the data and/or parameter(s) that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, project participants should update all applicable data and parameters, following the guidance in Step 1.4.

As discussed above in step 1.4, the grid emission factor and all the values in its calculation are updated in section B.6.

Conclusion regarding the assessment of the validity of the original baseline scenario

In accordance with the procedures for renewal of the crediting period of a registered CDM project activity, the original baseline, as updated in accordance with step 2.2 in section B.6, remains valid taking new relevant national and/or sectoral policies and circumstances into account.

B.5. Demonstration of additionality

>>
Not applicable for the second crediting period.

In accordance with the procedures for renewal of the crediting period of a registered CDM project activity and the applied methodology, it does not require a reassessment of the baseline scenario or additionality, it is only required to assess whether the original project baseline is still valid or has been updated taking account of new data where applicable.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

>>

1. 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. As a wind power plant, therefore, there are no project emissions according to the methodology:

$$PE_y = 0 \quad (1)$$

2. 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. 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:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad (2)$$

Where:

BE_y	=	The baseline emissions in year *y* (tCO_2/yr)
$EG_{PJ,y}$	=	The 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)
$EF_{grid,CM,y}$	=	The combined margin CO_2 emission factor for grid connected power generation in year *y* calculated (tCO_2/MWh)

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for: (a) Greenfield plants, (b) retrofits and replacements; and (c) capacity additions. The project is a Greenfield plant.

(a) Greenfield renewable energy power plants

As the project 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, the following applies:

$$EG_{PJ,y} = EG_{facility,y} \quad (3)$$

Where:

$EG_{PJ,y}$ = The 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)

$EG_{facility,y}$ = The quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh/yr)

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

In line with the methodology, the baseline emission factor 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 steps defined in "*Tool to calculate the emission factor for an electricity system*" .

Details of the calculations and data follow the published data from the Chinese DNA[2], which uses official national statistics.

Step 1. Identify the relevant electricity systems

For determining the electricity emission factors, identify the relevant project electricity system. Similarly, identify any connected electricity system. If a connected electricity system is located partially or totally in Annex-I countries, then the emission factor of that connected electricity system should be considered zero. If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used.

The 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 South China Power Grid (SCPG), consisting of the following provincial grids: Guangdong, Guangxi, Yunnan, Guizhou and Hainan. There are no imports from connected systems.

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 while 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 in the enclosed EF calculation spreadsheet shows 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 simple operating margin emission rate of the exporting grid, determined as described in Step 4 section 6.4.1 of the Tool, if the conditions for this method, as described in Step 3 of the Tool, apply to the exporting grid; or

[2] http://qhs.mee.gov.cn/kzwsqtpf/201812/P020181220579925103092.pdf

(c) The simple adjusted operating margin emission rate of the exporting grid, determined as described in Step 4 section 6.4.2 of the Tool; or
(d) The weighted average operating margin (OM) emission rate of the exporting grid, determined as described in Step 4 section 6.4.4 of the Tool.

- Following the calculations of the 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 statistical data available, Option I is chosen.

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

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

The simple OM method (Option a) can only be used if any one of the following requirements is satisfied:

(a) Low-cost/must-run resources[3] constitute less than 50% of total grid generation (excluding electricity generated by off-grid power plants) in: 1) average of the five most recent years, and the average of the five most recent years shall be determined by using one of the approaches described below; or 2) based on long-term averages for hydroelectricity production.

(i) Approach 1

[3] Low-cost/must-run resources are defined as power plants with low marginal generation costs or dispatched independently of the daily or seasonal load of the grid. They include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation. If a fossil fuel plant is dispatched independently of the daily or seasonal load of the grid and if this can be demonstrated based on the publicly available data, it should be considered as a low-cost/must-run.

$$Share_{LCMR} = \text{average}\left[\frac{EG_{LCMR_{y-4}}}{total_{y-4}}, \ldots, \frac{EG_{LCMR_y}}{total_y}\right]$$

(ii) Approach 2

$$Share_{LCMR} = \frac{average\left(EG_{LCMR_{y-4}}, \ldots, EG_{LCMR_y}\right)}{average\left(total_{y-4}, \ldots, total_y\right)}$$

Where:

$Share_{LCMR}$	=	The share of the low cost/must run resources (%)
EG_{LCMRy}	=	The electricity generation supplied to the project electricity system by the low cost/must run resources in year *y* (MWh)
$total_y$	=	The total electricity generation supplied to the project electricity system in year *y* (MWh)
y	=	The most recent year for which data is available

(b) The average amount of load (MW) supplied by low-cost/must-run resources in a grid in the most recent three years is less than the average of the lowest annual system loads (LASL) in the grid of the same three years.

- The approach 1 is chosen for calculation and low-cost/must-run resources constitute less than 50% of total grid generation in average of the five most recent years[4]. 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.

The date of the publication of the most recent official data for the calculation of the emission factor prior to the start of validation was 06/06/2016.

Power plants registered as CDM project activities should be included in the sample group that is used to calculate the operating margin if the criteria for including the power source in the sample group apply.

- Details of the calculations and data follow the published data from the Chinese DNA, which uses official national statistics. This data does not exclude CDM projects.

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

The Simple OM method (Option a) was chosen in Step 3 above.

(a) Simple OM

[4] http://qhs.mee.gov.cn/kzwsqtpf/201812/P020181220579925103092.pdf

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating sources serving the system, not including low-cost/must-run power plants/units.

The simple OM may be calculated by one of the following options:

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).

Following the calculations of the DNA, Option B is chosen. The criteria for Option B are met:

(a) The necessary data for Option A is not available, as indicated in the calculations of the DNA; 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) Option I is chosen in Step 2.

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

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 based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:

$$EF_{grid,OMsimple,y} = \sum_i (FC_{i,y} \times NCV_{i,y} \times EF_{CO2,i,y}) / EG_y \quad (4)$$

Where:

$EF_{grid,OMsimple,y}$	=	The simple operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
$FC_{i,y}$	=	The amount of fuel type *i* consumed in the project electricity system in year *y* (mass or volume unit)
$NCV_{i,y}$	=	The net calorific value (energy content) of fuel type *i* in year *y* (GJ/mass or volume unit)
$EF_{CO2,i,y}$	=	The CO_2 emission factor of fuel type *i* in year *y* (tCO_2/GJ)
EG_y	=	The 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 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

For this approach (simple OM) to calculate the operating margin, the subscript m refers to the power plants/units delivering electricity to the grid, not including low-cost/must-run power plants/units, and including electricity imports to the grid. Electricity imports should be treated as one power plant.

Based on the data available, the three-year average operating margin emission factor is calculated as a full-generation-weighted average of the emission factors. Details of the calculations and data follow the published data from the Chinese DNA[5], which uses official national statistics.

$EF_{grid,OMsimple,y}$ = 0.8367 tCO_2/MWh

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

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

Option 1: 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.

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 electricity generation data is available, calculated as follows:

$$EF_{grid,BM,y} = \sum_m (EG_{m,y} \times EF_{EL,m,y}) / \sum_m EG_{m,y} \quad (5)$$

Where:

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

Due to the limited availability of data on individual power units, the published grid emission factor calculations from the Chinese DNA uses the approved deviation[6] to calculate the build margin emission factor. The deviation is applied as follows:

- Generation *capacity* is used in formula (5) above, instead of generation.
- The newly added generation capacity that has been added to the grid most recently, and that comprises 20 percent of total installed capacity in the latest year for which data is available is used as the sample group of power units m to calculate the build margin. This option comprises a larger sample than the five units built most recently.
- The efficiency level of the best technology commercially available in the provincial/regional or national grid of China is used, as a conservative proxy, to determine the CO_2 emission factor of thermal power plants using each fuel type.

Therefore, for the Project: First, with the energy balance sheet in *China Energy Statistical Yearbook* for the most recent year, calculating the respective weights of CO_2 emissions from coal fired power generation, oil fired power generation, and gas fired power generation against total CO_2 emissions from fossil fuel fired power generation. Second, calculate the fossil fuel fired power generation emission factor based on the weights indicated above and the emission factors of the best commercially available technology of all kinds of fossil fuel fired power generation in China. Finally, using the share of fossil fuel fired capacity addition in total capacity addition times fossil fuel fired power generation emission factor to calculate the Build Margin emission factor $EF_{grid,BM,y}$, of South China Power Grid.

Sub-step 5.1 *Calculate the proportion of CO_2 emission caused by solid, liquid and gas fuels in the*

[5] http://qhs.mee.gov.cn/kzwsqtpf/201812/P020181220579925103092.pdf

[6] M-DEV0004, DNV (07/10/2005), see http://cdm.unfccc.int/Projects/deviations/87512.

total emission respectively:

$$\lambda_{Coal,y} = \frac{\sum_{i \in COAL, j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,j,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,j,y}} \quad (6)$$

$$\lambda_{Oil,y} = \frac{\sum_{i \in OIL, j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,j,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,j,y}} \quad (7)$$

$$\lambda_{Gas,y} = \frac{\sum_{i \in GAS, j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,j,y}}{\sum_{i,j} F_{i,j,y} \times NCV_{i,y} \times EF_{CO_2,i,j,y}} \quad (8)$$

Where:

$F_{i,j,y}$ = The amount of fuel i (in a mass or volume unit) consumed by province j in year(s) *y*

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

$EF_{CO2,i,y}$ = The CO_2 emission factor of fuel type *i* in year *y* (tCO_2/GJ)

Coal, Oil and Gas are footnote group for solid fuels, liquid fuels and gas fuels.

Step 5.2 *Calculate the emission factor of thermal power generation*

$$EF_{Thermal,y} = \lambda_{Coal,y} \times EF_{Coal,Adv,y} + \lambda_{Oil,y} \times EF_{Oil,Adv,y} + \lambda_{Gas,y} \times EF_{Gas,Adv,y} \quad (9)$$

Where:

$EF_{Coal,Adv,y}$, , $EF_{Oil,Adv,y}$, and $EF_{Gas,,Adv,y}$,are emission factor proxies of efficiency level of the best coal-fired, oil based and gas-based power generation technology commercially available in China.

Sub-step 5.3 *Calculate BM of the grid*

$$EF_{\text{grid,BM},y} = \frac{CAP_{Thermal}}{CAP_{Total}} \times EF_{Thermal} \quad (10)$$

Where:

$CAP_{Total, y}$ = The total amount of incremental installed capacity

$CAP_{Thermal, y}$ = The increased installed capacity of thermal power generation

The build margin emission factor is calculated using this methodology in the enclosed EF calculation spreadsheet:

$EF_{grid,BM,y}$ = 0.2476 tCO_2/MWh

<u>Step 6. Calculate the combined margin emission factor</u>

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.

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

(a) Weighted average CM

The combined margin emissions factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad (11)$$

Where:

$EF_{grid,OM,y}$	=	The operating margin CO_2 emission factor in year y (tCO_2/MWh)
w_{OM}	=	The weighting of operating margin emissions factor (%)
$EF_{grid,BM,y}$	=	The build margin CO_2 emission factor in year y (tCO_2/MWh)
w_{BM}	=	The weighting of build margin emissions factor (%)

According to the Tool, the default values for w_{OM} and w_{BM} for wind projects in the first crediting period and the subsequent crediting period, which should be used, are: w_{OM} = 0.75 and w_{BM} = 0.25 (owing to their intermittent and non-dispatchable nature).

Based on these weights for the second crediting period, the combined margin emission factor is calculated, and fixed ex-ante for the duration of the second crediting period (conservatively rounded down to the fourth digit) as given below.

	CO_2 emission factor (tCO_2/MWh)	**Weighting (%)**
Operating margin (see step 4)	0.8367	75%
Build margin (see step 5)	0.2476	25%
Combined margin	0.6894	-

These parameters will be recalculated at any renewal of the crediting period.

Baseline emissions (BE_y) now can be calculated as the annual net generation of the Proposed Project Activity (EG_y) multiplied by the combined margin CO_2 emission factor ($EF_{grid,CM,y}$).

3. Leakage

No leakage emissions are considered in the methodology. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport). These emissions sources are neglected.

4. Emission reductions

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad (12)$$

Where:

ER_y	=	The emission reductions in year y (tCO_2e/yr)
BE_y	=	The baseline emissions in year y (tCO_2/yr)
PE_y	=	The project emissions in year y (tCO_2e/yr)

B.6.2. Data and parameters fixed ex ante

Data/Parameter	$FC_{i,y}$
Data unit	Mass or volume
Description	The amount of fossil fuel *i* consumed in the project/connected electricity system in year *y*
Source of data	China Energy Statistical Yearbook
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$NCV_{i,y}$
Data unit	GJ/mass or volume unit
Description	Net caloric value of fossil fuel type *i* consumed in the project/connected electricity system in year *y*
Source of data	China Energy Statistical Yearbook
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	National average default values, accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$EF_{CO2,i,y}$ / $EF_{CO2,i,j,y}$
Data unit	tCO_2/GJ
Description	CO_2 emission factor of fossil fuel type *i* in year *y*
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	The IPCC default values at the lower level of 95% confidence interval are accepted and used by the DNA for the official emission factor calculations and are the default value in the tool.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$EF_{CO2,i,y}$
Data unit	tCO_2/GJ
Description	CO_2 emission factor of fossil fuel type i in year y
Source of data	2006 IPCC Guidelines for National Greenhouse Gas Inventories
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	The IPCC default values at the lower level of 95% confidence interval are accepted and used by the DNA for the official emission factor calculations and are the default value in the tool.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	EG_y
Data unit	MWh
Description	Net electricity generated and delivered in the project electricity system in year *y*
Source of data	China Electric Power Yearbook
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$EF_{Coal,Adv,y}$ / $EF_{Oil,Adv,y}$ / $EF_{Gas,Adv,y}$
Data unit	tCO_2/MWh
Description	Emission factor proxies of efficiency level of the best coal-fired, oil based and gas-based power generation technology commercially available in China
Source of data	Chinese DNA
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$CAP_{i,y}$
Data unit	MW
Description	Installed capacity of relevant power source connected to the grid in year y
Source of data	Chinese DNA
Value(s) applied	Same as used by the DNA for the official emission factor calculations
Choice of data or measurement methods and procedures	Data accepted and used by the DNA for the official emission factor calculations.
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

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(s) applied	75
Choice of data or measurement methods and procedures	Follow the “Tool to calculate the emission factor for an electricity system” (Version 07.0)
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

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(s) applied	25
Choice of data or measurement methods and procedures	Follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$EF_{grid,OMsimple,y}$
Data unit	tCO_2/MWh
Description	Simple operating margin CO2 emission factor in year *y*
Source of data	Calculated follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value(s) applied	0.8367
Choice of data or measurement methods and procedures	Calculated follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$EF_{grid,BM,y}$
Data unit	tCO_2/MWh
Description	Build margin CO_2 emission factor in year *y*
Source of data	Calculated follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value(s) applied	0.2476
Choice of data or measurement methods and procedures	Calculated follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

Data/Parameter	$EF_{grid,CM,y}$
Data unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor in year *y*
Source of data	Calculated follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Value(s) applied	0.6894
Choice of data or measurement methods and procedures	Calculated follow the "Tool to calculate the emission factor for an electricity system" (Version 07.0)
Purpose of data	Calculation of baseline emissions
Additional comment	N/A

B.6.3. Ex ante calculation of emission reductions

>>

In accordance with the methodology, emission reductions are calculated as follows:

$ER_y = BE_y – PE_y$

Using the formulae presented in Section B.6.1., the baseline emissions are calculated from the net electricity supplied by the project to the grid and the combined margin emission factor of the grid. The annual net generation is estimated based on long-term averages in the Feasibility Study Report; the combined margin emission factor is calculated in section B.6.1. above. The ex-ante calculations of baseline emissions and emission reductions, therefore, are as follows:

$BE_y = EG_{facility,y} \times EF_{grid,CM,y} =$ 96,500 MWh/yr × 0.6894 tCO_2/MWh = 66,527 tCO_{2e}/yr

$ER_y = BE_y – PE_y$ = 66,527 tCO_{2e}/yr – 0 tCO_{2e}/yr = 66,527 tCO_{2e}/yr

The ex-ante calculations of estimated emission reductions are included in the ER calculation spreadsheet.

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions (t CO_2e)	Project emissions (t CO_2e)	Leakage (t CO_2e)	Emission reductions (t CO_2e)
14/08/2017-13/08/2018	66,527	0	-	66,527
14/08/2018-13/08/2019	66,527	0	-	66,527
14/08/2019-13/08/2020	66,527	0	-	66,527
14/08/2020-13/08/2021	66,527	0	-	66,527
14/08/2021-13/08/2022	66,527	0	-	66,527
14/08/2022-13/08/2023	66,527	0	-	66,527
14/08/2023-13/08/2024	66,527	0	-	66,527
Total	465,689	0	-	465,689
Total number of crediting years	7			
Annual average over the crediting period	66,527	0	-	66,527

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data/Parameter	$EG_{export,y}$
Data unit	MWh
Description	Electricity exported to SCPG in year *y*
Source of data	Electricity meters
Value(s) applied	96,500 (once fully operational)
Measurement methods and procedures	The main and backup meters are bidirectional, which can record the import and export electricity generation. Main meter is installed at substation. Any error resulting from the meter shall not exceed 0.5%. Designated person records the readings of the main meter each month.
Monitoring frequency	Hourly measurement and monthly recording.
QA/QC procedures	1. When the main meter fails to work normally, the readings of the back-up meter will be adopted. 2. The data will be kept during the crediting period and two years after. 3. The main meter and back-up meter will be calibrated once per year by a qualified calibration organization in accordance with industry standards.
Purpose of data	Calculation of baseline emissions

Additional comment	All data collected as part of the monitoring are archived electronically and kept at least for 2 years after the end of the last crediting period. 100% of the data are monitored as indicated in the table. All measurements are conducted with calibrated measurement equipment according to relevant industry standards.

Data/Parameter	**$EG_{import,y}$**
Data unit	MWh
Description	Electricity imported from SCPG in year *y*
Source of data	Electricity meters
Value(s) applied	Supposed to be Zero
Measurement methods and procedures	The main and backup meters are bidirectional, which can record the import and export electricity generation. Main meter is installed at substation. Any error resulting from the meter shall not exceed 0.5%. Designated person records the readings of the main meter each month.
Monitoring frequency	Hourly measurement and monthly recording.
QA/QC procedures	1. When the main meter fails to work normally, the readings of the back-up meter will be adopted. 2. The data will be kept during the crediting period and two years after. 3. The main meter and back-up meter will be calibrated once per year by a qualified calibration organization in accordance with industry standards.
Purpose of data	Calculation of baseline emissions
Additional comment	All data collected as part of the monitoring are archived electronically and kept at least for 2 years after the end of the last crediting period. 100% of the data are monitored as indicated in the table. All measurements are conducted with calibrated measurement equipment according to relevant industry standards.

Data/Parameter	**EG_y**
Data unit	MWh
Description	Net electricity supplied to the grid by the project in year *y*
Source of data	Calculated from $EG_{export,y}$ and $EG_{import,y}$
Value(s) applied	96,500 (once fully operational)
Measurement methods and procedures	$EG_y = EG_{export,y} – EG_{import,y}$
Monitoring frequency	Hourly measurement and monthly recording.
QA/QC procedures	Cross-checked with invoices
Purpose of data	Calculation of baseline emissions
Additional comment	All data collected as part of the monitoring are archived electronically and kept at least for 2 years after the end of the last crediting period. 100% of the data are monitored as indicated in the table. All measurements are conducted with calibrated measurement equipment according to relevant industry standards.

B.7.2. Sampling plan

>>
Not applicable.

B.7.3. Other elements of monitoring plan

>>
The aim of the monitoring plan is to make sure that the net electricity generation delivered to the grid is monitored completely, consistently, reliably and precisely. The details are summarized as follows:

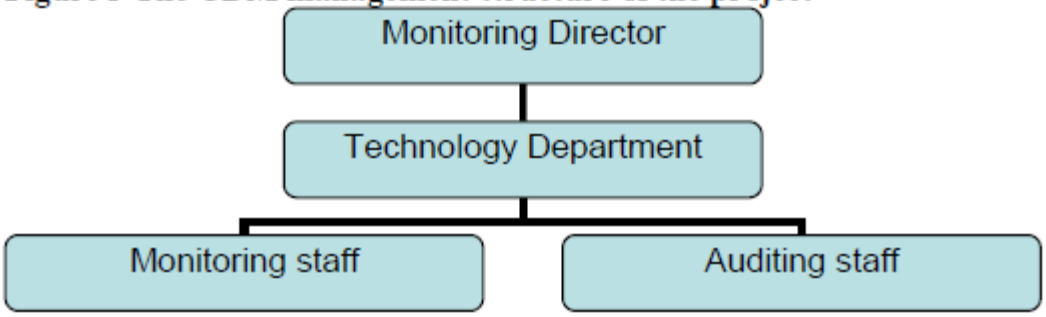
1. Monitoring subject

The data required for the calculation of emission reductions are the export electricity supply to the power grid ($EG_{export,y}$) and the import electricity supply from the power grid ($EG_{import,y}$), the difference of which is the net electricity generation (EG_y).

2. Monitoring management structure

In order to obtain reliable monitoring data, the project developer will establish a monitoring management framework. Clear responsibilities will be assigned to all staff involved in the CDM project. A monitoring director will be appointed who has the overall responsibilities for the monitoring of the project, other staff will be responsible for the data recording, data collecting, data archiving and emission reductions calculation. The detailed structure is as follows:

Figure 3 The CDM management structure of the project



The main responsibility of each department:

CDM Monitoring Director: Cross-check data and submit the monitoring reports and data to DOE; liaise with DOE and CDM consultants.

Technology department: Cross-check import, export and net electricity generation and issuance of invoices to the grid company.

Monitoring staff: Record, report and store the data of export and import electricity generation, calculate the net electricity generation during the crediting period.

Auditing staff: Check the calculation results of the net electricity generation each month.

3. Monitoring apparatus and installation

The main meter will be installed at the substation to the grid and the back up meter will be installed at the substation of the project site; both of the meters are bidirectional meters. The meters will be installed in accordance with the industry standards. The error resulting of the meters will not exceed 0.5%. The main meter and backup meter will be checked and accepted by the grid and the project developer before the project operation. All the installed meters are sealed after installation or calibration.

If the proposed project has to share the same transformer, substation or transmission line with some other wind farms, appropriate additional meters will be installed at the project site so that the electricity generation can be monitored for each wind farm separately so as to calculate the share of this wind farm of the net supply to the grid.

The net electricity supplied by the project will be calculated as follows:

$EG_{export,y} = EG_{export,total} * EG_{project} / (EG_{project} + EG_{others})$
$EG_{import,y} = EG_{import,total}$
$EG_y = EG_{export,y} – EG_{import,y}$

EG_{export}, total is total exported electricity to the grid based on the data metered by the main meter at the substation;
$EG_{import,total}$ is total imported electricity from the grid based on the data metered by the main meter at the substation;
$EG_{project}$ is the electricity generation of the proposed project based metered by separate meters at the project site;
EG_{others} is the electricity generation of other wind farm projects based metered by other separate meters;
EG_y is the net electricity supplied to thr grid by the proposed project.

The $EG_{export,total}$ and $EG_{import,total}$ can be cross checked by sale receipt.

4. Data monitoring

The readings of the main meter are used for calculating the emission reductions when the main meter is in normal operation state. The monitoring processes are as follows:

(1) The designated persons from the grid company and the project company jointly record the main meter readings of the power to/from the grid monthly;
(2) The project developer provides the power grid company with a sale receipt after the power grid company has confirmed the settling accounts sheet, and archives a copy of the sale receipt;
(3) The project developer provides the DOE with the copy of sale receipts.

5. Quality control

1) Calibration of meters

The calibration of meters is conducted by a qualified organization in compliance with the national standard and sectional regulations to ensure the accuracy. Each of the meters is calibrated so that they will have a valid calibration once per year. The meters must be sealed after calibration. The calibration records must be archived together with other monitoring records. When the main meter or back-up meter have a breakdown, the party finding the breakdown should tell another party and inform the qualified calibration organization to check, calibrate, test and treat the meter so as to recover the normal monitoring state.

2) Emergency treatment

When the main meter or back-up meter have a breakdown, the electricity generation difference will be treated as follows:

(1) When one of the two meters has a breakdown, the readings of the other meter will be adopted;
(2) If both the main meter and back-up meter have breakdowns, the net electricity supplied to the grid will be calculated from the readings of other meters and deducting the line losses.

6. Data management

All monitoring data and records will be archived in electronic format as well as on paper. The electronic documents will be backed up on compact disc or hard disc. The project developer will also keep copies of sale receipts and prepare a monitoring report at the end of each year, which includes the net electricity generation, the monitoring data summary, the calibration records, and the emission reductions calculation.

All the electronic and paper documents will be archived during the crediting period plus two years.

7. Training program

The project developer will train all related staff before the start of the crediting period. The training contains CDM knowledge, operational regulations, quality control (QC), data monitoring requirements and data management regulations, etc.

SECTION C. Start date, crediting period type and duration

C.1. Start date of project activity

>>
04/06/2008 (Date of the equipment purchase agreement)[7]

C.2. Expected operational lifetime of project activity

>>
20 y

C.3. Crediting period of project activity

C.3.1. Type of crediting period

>>
A renewable crediting period is chosen. It is the second crediting period.

C.3.2. Start date of crediting period

>>
14/08/2017

C.3.3. Duration of crediting period

>>
7 years 0 month

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

>>
The Environment Impact Assessment was prepared in March 2006 and approved by Environment Protection Bureau of Guangdong Province in May 2006.

According to the Environmental Impact Assessment (EIA), the environment impacts of the project are summarised below:

1. The analysis of the environment impact during the construction period

The environmental impacts during the construction period are as follows:

Noise: the noise during the construction period is mainly caused by the transformation, and the maximum is expected to be 84dB at a distance of 15m.

The project will meet the restrictive construction boundary noise values during the construction stage. Therefore, the noise is not considered to negatively impact local residential areas.

Solid waste: the main solid wastes produced during the construction period are construction waste. Garbage will be collected and will be sent to landfill. The construction wastes will be used for backfilling, foundations and road construction.

Waste water: waste water will be treated and reused.

[7] Equipment Purchase Agreement, 4 Jun 2008

2. The analysis of the environment impact during operation period

The environment impacts during the construction period are as follows:

Waste water: a small quantity of waste water will be produced by the project management staff during operation. The waste water will be treated and will be used for sprinkling the vegetation.

Noise: the noise from the wind turbines is expected to be below 50dB at a distance of 115m, meeting the “Industry Enterprise Factory Boundary Noise Standard”. Therefore, the noise of the wind farm is not considered to have a negative impact on local residents during the operational period.

Solid waste: the main solid waste during the operational period is generated by the project management staff. All the waste produced will be collected and sent to landfill.

D.2. Environmental impact assessment

>>
Environmental impacts are not considered significant. The Environmental Protection Bureau of Guangdong Province approved the EIA.

SECTION E. Local stakeholder consultation

E.1. Modalities for local stakeholder consultation

>>
In October 2007, the project developer has sent out questionnaires to the stakeholders in the directly affected area, requesting comments on the proposed project construction. As the affected area is not densily populated, the stakeholders were consulted in person: 40 copies of questionnaire were distributed, and 40 copies of questionnaire were returned. The age of the participating stakeholders was in the range of 26 to 70 years old, including 35 local residents and 5 government officers of Chuandao Town and Taishan County.

The main contents in the questionnaire are as follows:

1、Do you think the project will influence the natural scenery?	Yes □	No □	Unconcerned □
2、Do you think the project will influence the ecosystem?	Yes □	No □	Unconcerned □
3、Do you think the project will influence the surrounding area?	Yes □	No □	Unconcerned □
4、Do you think the project will be helpful to the local economy?	Yes □	No □	Unconcerned □
5、Do you agree the construction of the project?	Agree □	Disagree □	No opinion □
6、What about your opinion about the proposed project?			

E.2. Summary of comments received

>>
All stakeholders gave a positive opinion to the project and supported the construction of the project.

The results of the questionnaires are as follows:

- 97.5% thought the project would not influence the natural scenery; the others were unconcerned about the problem;
- 92.5% thought the project would not influence the ecosystem; the other people were unconcerned about the problem;
- 95% thought the project would not influence the surrounding area, the other people were unconcerned about the problem;

- 100% thought the project would be helpful to the local economy;
- 100% agreed to the construction of the project.

All of the stakeholders thought the project would have many advantages such as alleviating the local power shortage, promoting the economic development and increasing the income of the local residents. In addition, they also put forward the following issues and suggestions:

- The project owner should establish a good relationship with local municipal and township.
- Work opportunities should provide work for local people.

E.3. Consideration of comments received

>>
Following the consultation and taking the comments of the stakeholders into account, the project owner will take the following measures:

1. The project owner will establish good relationship with local municipal and township. Good communication channels will be set up between the local people and the project owner.

2. More work opportunities will be provided for the local people.

SECTION F. Approval and authorization

>>
The host country Letter of Approval (LoA) of the Project has been issued.

Appendix 1. Contact information of project participants

Organization name	CGN Taishanchuandao Wind Power Co., Ltd.
Country	People's Republic of China
Address	3rd Qiaofu Road, Liufushanzhuang, Taishan, Jiangmen City, Guangdong Province, P. R. China
Telephone	0750-5550678
Fax	0750-5550680
E-mail	quchenwind@163.com
Website	/
Contact person	Chen Qu

Organization name	Carbon Resource Management Ltd.
Country	United Kingdom of Great Britain and Northern Ireland
Address	49 St James's Street, SW1A 1JT, London, UK
Telephone	+44 20 7016 1420
Fax	+44 20 7016 1421
E-mail	nac@carbonresource.com
Website	/
Contact person	Clarke Nicholas

Organization name	Carbon Resource Management S.A.
Country	Switzerland
Address	Boulevard du Pont d'Arve 28, P.O. Box 384, Geneva, 1211 Geneva 4, Switzerland
Telephone	+41 22 322 8329
Fax	+41 22 781 6611
E-mail	deliveries@carbonresource.com
Website	/
Contact person	David Fransen

Appendix 2. Affirmation regarding public funding

Not applicable. There is no public funding from UNFCCC Annex 1 parties for the project.

Appendix 3. Applicability of methodologies and standardized baselines

The applicability of the selected methodology is described in B.2.

Appendix 4. Further background information on ex ante calculation of emission reductions

All the details on ex ante calculation of emission reductions are described in B.6.

Appendix 5. Further background information on monitoring plan

All the details on monitoring plan are described in B.7.

Appendix 6. Summary report of comments received from local stakeholders

Comments received from local stakeholders during registration validation and the corresponding response has been displayed at the project interface.

Appendix 7. Summary of post-registration changes

Not applicable.

- - - - -

Document information

Version	*Date*	*Description*
10.1	28 June 2017	Revision to make editorial improvement.
10.0	7 June 2017	Revision to: • Improve consistency with the "CDM project standard for project activities" and with the PoA-DD and CPA-DD forms; • Make editorial improvement.
09.0	24 May 2017	Revision to: • Ensure consistency with the "CDM project standard for project activities" (CDM-EB93-A04-STAN) (version 01.0); • Incorporate the "Project design document form for small-scale CDM project activities" (CDM-SSC-PDD-FORM); • Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the "Standard: Applicability of sectoral scopes" (CDM-EB88-A04-STAN) (version 01.0).

Version	*Date*	*Description*
06.0	9 March 2015	Revision to: • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.
05.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the “Guidelines for completing the project design document form for CDM project activities” (EB 66, Annex 8).
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
Keywords: project activities, project design document