

TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION **v. 1.2**

RELATED SUPPORT

– **TEMPLATE GUIDE Key Project Information & Project Design Document v.1.2**

This document contains the following Sections

Key Project Information

SECTION A – Description of project

SECTION B - Application of approved Gold Standard Methodology (ies) and/or demonstration of SDG Contributions

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KEY PROJECT INFORMATION

GS ID of Project	2499
Title of Project	Gansu Jinchang Magang and Huangmaopo Bundled Wind Power Project
Time of First Submission Date	/
Date of Design Certification	23/06/2014
Version number of the PDD	02
Completion date of version	12/07/2021
Project Developer	Three Gorges New Energy Jinchang Wind Power Co., Ltd.
Project Representative	Demeter Venture UK Limited
Project Participants and any communities involved	Three Gorges New Energy Jinchang Wind Power Co., Ltd. Demeter Venture UK Limited
Host Country (ies)	China
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Scale of the bundled project activity	☐ Micro scale ☐ Small Scale ☒ Large Scale
Other Requirements applied	N/A
Methodology (ies) applied and version number	ACM0002 Grid-connected electricity generation from renewable sources, Version 20.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☐ Regular ☒ Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted		SDG Impact (defined in B.6)	Estimated Annual Average	Units or Products
13	Climate Action (mandatory)	Emissions Reductions	159,177	VERs
7	Ensure access to MWh affordable, reliable, sustainable and modern energy for all (Affordable and Clean Energy)	MWh of renewable energy generated	204,250.3	MWh
8	Promote inclusive and sustainable economic growth, employment and decent work for all (Decent Work and Economic Growth)	Number of jobs created	22 jobs created respectively for both Magang and Huangmaopo Project	/
		Number of trainings	at least one time a year for both Magang and Huangmaopo Project	Times
		Average salary	Average salary is above the lowest level of local area	RMB/yr

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

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Gansu Jinchang Magang and Huangmaopo Bundled Wind Power Project (hereafter referred to as the Project) is sited in Jinchang City, Gansu Province, P. R. of China, invested and operated by Three Gorges New Energy Jinchang Wind Power Co., Ltd.. The bundled project consists of two projects as follows:

Jinchuan Magang 49.5MW Wind Power Project (hereafter referred to as Magang project) is sited on north of Jinchuan district, Jinchang City. The purpose of Magang project is to install 33 sets of 1.5MW wind turbine-generators to generate clean and renewable electricity with zero emissions. The total installed capacity of the Magang project is 49.5MW. It is estimated that the quantity of net electricity generation supplied by Magang project is approximately 102,868.70MWh per year under full operation. Magang project activity will achieve average greenhouse gas (GHG) emission reductions of 80,168tCO₂e annually.

Yongchang Huangmaopo 49.5MW Wind Power Project (hereafter referred to as Huangmaopo project) is sited in Yongchang County, Jinchang City. The purpose of Huangmaopo project is to install 24 sets of 2MW wind turbine-generators and 1 set of 1.5MW wind turbine-generators to generate clean and renewable electricity with zero emissions. The total installed capacity of Huangmaopo project is 49.5MW. It is estimated that the quantity of net electricity generation supplied by Huangmaopo project is approximately 101,381.60MWh per year under full operation. Huangmaopo project activity will achieve average greenhouse gas (GHG) emission reductions of 79,009tCO₂e annually.

The total installed capacity of the bundled project is 99MW, and annual net power generation amounts to 204250.3MWh. Prior to the implementation of the bundled project activity, the electricity is supplied by the operation of grid-connected power plants and by the addition of new generation sources within the Northwest China Power Grid, which is the same as baseline scenario. the bundled project activity is a renewable energy project and will achieve greenhouse gas (GHG) emission reductions by displacing power generation from those fossil fuel-fired power plants connected to the NWPG under the baseline scenario. In the first crediting period, the emission reductions are 175,000tCO₂e/year and the ER in the second crediting period are 159,177t CO₂e/year.

The bundled project clearly fits into the development priority of China. The Project will not only supply renewable electricity to grid, but also contribute to sustainable development of the local community and the host country by means of:

- reducing the emission of other pollutants resulting from the power generation industry in China, such as SO₂, and NO_x, compared to a business-as-usual scenario;

- helping to stimulate the growth of the wind power industry and, encouraging and promoting the progress of technology advancement and commercial popularization of grid-connected clean renewable energy generation in China;
- creating local employment opportunities during assembly and installation of the electricity generation equipment and during the project construction;
- Providing long-term work positions during the operation of the Project.

The bundled project has been registered as GS project with ID of 2499. The first crediting period is from 11/01/2014 to 10/01/2021. The project is applying for crediting period renewal. The start date of the second crediting period will be from 11/01/2021.

Key events for the Project are as below:

For Magang Project

The earliest contract signing date: 24/05/2013

Construction permission date: 04/06/2013

Full operation start date: 11/01/2014

For Huangmaopo Project

The earliest contract signing date: 30/04/2013

Construction permission date: 05/06/2013

Full operation start date: 11/01/2014

A.1.1. Eligibility of the project under Gold Standard

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The bundled project activity meets the eligibility criteria as per section 3.1.1 of GS4GG Principles & Requirements document as described below:

•Types of project:

The project type is power generation using Wind Energy which is an eligible project type as it is in accordance with 2.1.2 a) and 2.1.2 b) of the Eligible Project Types & Scope under Renewable Energy Activity Requirements.

•Location of the project:

The project is located in China. Thus, the project is eligible.

•Project Area, Project Boundary and Scale:

The project is located in Gansu Province, China. The location and boundary is clearly defined in A.2.

The estimated annual emission reductions of the bundled project activity is 159,177 tCO₂e in the second crediting period, which is greater than 10,000 tCO₂eq, above microscale threshold, which is considered as Non microscale project. The installed

capacity of the bundled project activity is 99 MW, which is larger than 15MW, and thus qualifies under large scale projects.

- The project has not and will not claim in any other voluntary or compliance standards programme except GS.
- The project is in compliance with applicable China's legal, environmental, ecological and social regulations.
- The project is not registered with any other voluntary or compliance schemes.
- The activity is located in Gansu Province, China. China does not have an emission reduction cap enforced OR has the possibility to trade emissions that include the scope of the bundled project activity.
- The full and uncontested legal ownership is demonstrated and listed in A.1.2.
- The project applies methodology ACM0002, Version 20.0, which is an approved methodology under Gold Standard.
- the bundled project activity results in displacement of electricity from fossil fuel power stations while contributing to sustainable development of China. Hence, the project contributes to the Gold Standard Vision and Mission.
- Wind power is an approved project type and does not require approval from Gold Standard.
- The project does not involve any ODA financing. The bundled project is not eligible of receiving ODA.

A.1.2. Legal ownership of products generated by the project and legal rights to alter use of resources required to service the project

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The project owner (Three Gorges New Energy Jinchang Wind Power Co., Ltd.) has full and uncontested legal ownership of the emission reductions that are generated under this Gold Standard project, and has legal rights concerning changes in use of resources required to service the project. The legal ownership of the project can be demonstrated via the following documents:

1. Project FSR approval by DRC of Gansu Province Autonomous Region
2. EIA approval by EPC of Gansu Province Autonomous Region

A.2. Location of project

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The bundled project is sited in Jinchang City, Gansu Province, P. R. of China, and the geographical coordinates of the bundled project are as follows.

Magang project: 102°13'04.74" - 102°15'36.93"E, 38°44'48.19" - 38°47'48.67"N

Huangmaopo project: 101°33'45" - 101°38'41"E, 38°23'04" - 38°25'05"N

Figure 1 shows the location of the Project.

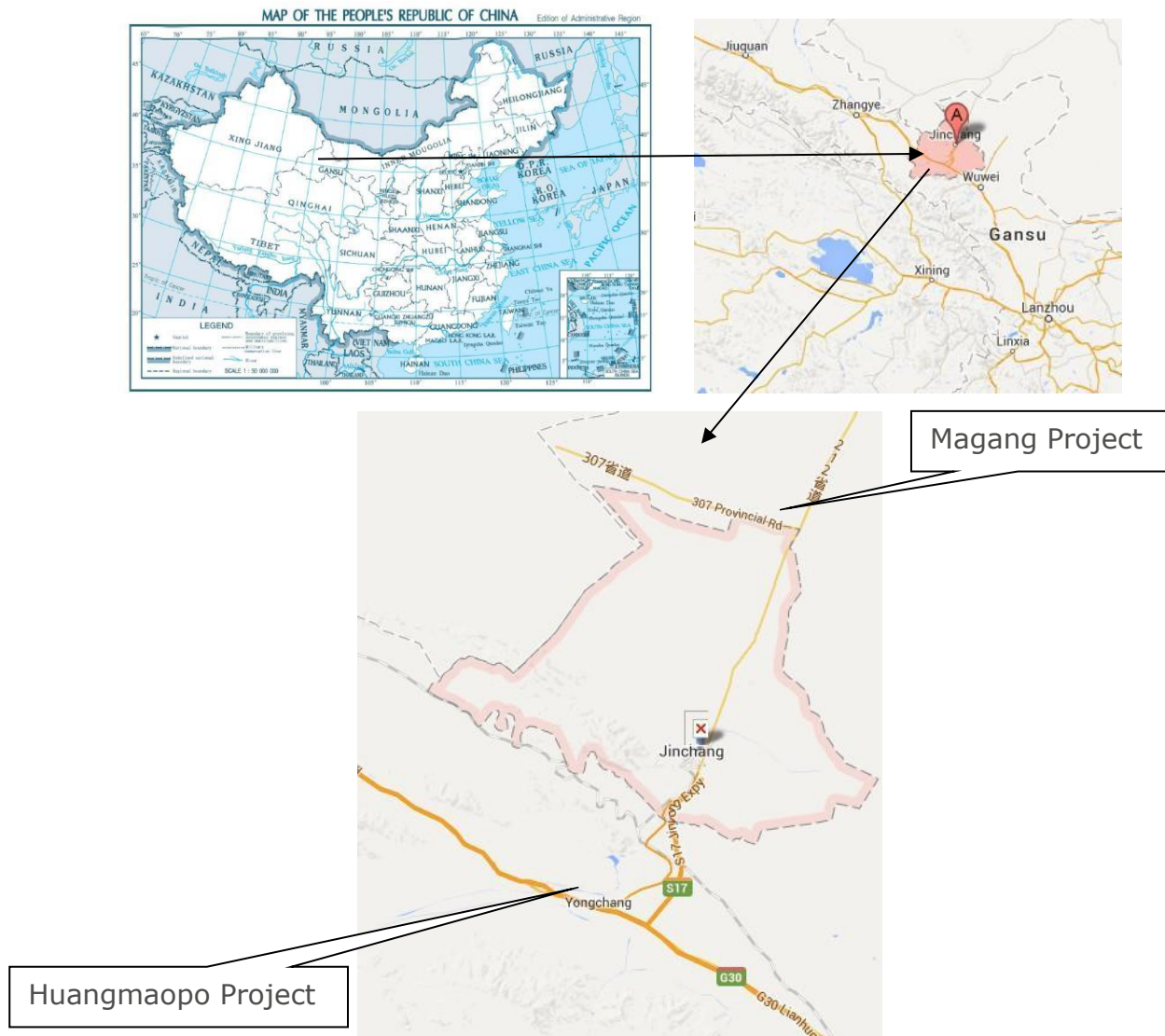


Figure 1 Geographical locations of the project

A.3. Technologies and/or measures

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The total installed capacity of the bundled Project is 99MW. Based on FSR of Magang project, Magang project is consisting of 33 sets of 1.5MW wind turbines. The feed-in electricity from Magang project is approximately 102,868.70MWh per year. The estimated annual equivalent operating hours of Magang project are 2078h and the estimated load factor is 0.2372. Based on FSR of Huangmaopo project, Huangmaopo project is consisting of 24 sets of 2MW wind turbines and 1 set of 1.5MW wind

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turbines. The feed-in electricity from Huangmaopo project is approximately 101,381.60MWh per year. The estimated annual equivalent operating hours of Huangmaopo project are 2048h and the estimated load factor is 0.2338.

Prior to the implementation of the bundled project activity, the electricity is supplied by the operation of grid-connected power plants and by the addition of new generation sources within the NWPG, which is the same as baseline scenario. The bundled project will achieve average greenhouse gas (GHG) emission reductions of 159,177CO₂e annually by displacing power generation by fossil fuel-fired power plants connected into the NWPG.

The electricity produced by Magang project will be sent to the 35kV/ 110kV Substation, and two bidirectional meters (main gateway meter M1 and back-up gateway meter M1') with accuracy not lower than 0.5S, will be installed at the outlet of Substation to measure the electricity exported to the grid by Magang project and the electricity imported from the grid by Magang project.

The electricity produced by Huangmaopo project will be sent to the 35kV/ 110kV Substation, and two bidirectional meters (main gateway meter M2 and back-up gateway meter M2') with accuracy not lower than 0.5S, will be installed at the outlet of Substation to measure the electricity exported to the grid by Huangmaopo project and the electricity imported from the grid by Huangmaopo project. And then both projects delivered to the NWPG via 110 kV transmission line.

The wind turbines and the associated generators were provided by domestic manufacturers, thus no technology transfer will be involved. Major technical parameters of the key equipments employed by the bundled project are illustrated in Table 1.

Table 1 Major technical parameters of the key equipments of the bundled project

	Type		Magang project		Huangmaopo project	
			GW93/1500	EN93/1.5	W2000CH	W1500CH
Wind turbine	Rated power	kW	1500	1500	2000	1500
	Lifetime	year	20	20	20	20
	Cut in wind speed	m/s	2.5	3	3.0	3.0
	Cut out wind speed	m/s	19	20	20	20
	Rated wind speed	m/s	9.5	9.5	10.2	10.2
	survival wind speed	m/s	49	52.5	52.5	52.5
Generator	Rated power	kW	1580	1560	2100	1600
	Rated voltage	V	720	690	690	690

A.4. Scale of the project

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The project is a large scale project utilizing wind power to generate electricity. The total installed capacity of the bundle project is 99 MW (the installed capacity of Magang project and Huangmaopo project are 49.5MW respectively). This is large scale

project as the capacity is greater than stipulated limited of Type I for small scale project of 15 MW.

A.5. Funding sources of project

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The project is financed by the project owner.

There is no public funding from Annex 1 countries and no Official Development Assistance (ODA) involved in the bundled project activity.

SECTION B. APPLICATION OF APPROVED GOLD STANDARD METHODOLOGY (IES) AND/OR DEMONSTRATION OF SDG CONTRIBUTIONS

B.1. Reference of approved methodology (ies)

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Approved methodology applied: ACM0002 "Grid-connected electricity generation from renewable sources" (Version 20.0)

Reference:

<https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

Sectoral Scope: 01

The methodology was applied with the following tools:

- 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)
- 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)

Further information pertaining to the methodology can be obtained at:

<http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html>

B.2. Applicability of methodology (ies)

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Justification for the choice of the selected methodology is given below in the table:

Criteria	Analysis	Applicable for the project?
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 bundled project is a greenfield grid-connected wind power project.	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 bundled project is a new wind power project.	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 (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/m²; 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/m²; 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/m², all of the following conditions shall apply: (i) The power density calculated using the	The bundled project is a wind power project, not hydro power plant. Therefore, this is not applicable.	Not applicable

total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m²; (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/m² 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.	The bundled project is a wind power project, not an integrated hydro power plant. Therefore, this is not applicable.	Not applicable
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 bundled project does not involve switching from fossil fuel to renewable energy. The bundled project is not biomass fired power plant.	Not applicable

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 maintenance".	The bundled project is not retrofit, rehabilitation, replacement, or capacity addition project. Therefore, this item is not applicable.	Not applicable
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The criteria and assessment of "Tool to calculate the emission factor for an electricity system (version 07.0)" are in the following table 3.

Table 3. Applicability analysis of "Tool to calculate the emission factor for an electricity system (version 07.0)"

Criteria	Analysis
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).	The bundled project generates electricity to national grid. This tool is used to calculate the OM, BM and CM. This is applicable
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	Since the bundled project activity is grid connected, this condition is applicable and the emission factor has been calculated accordingly.

capacity.	
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.	The project is not located in annex I country. Therefore, the tool is applicable.
Under this tool, the value applied to the CO ₂ emission factor of biofuels is zero.	The bundled project activity is a grid connected wind power project/ unit and does not involve emission from biofuels. Therefore, this criterion is not applicable.

Applicability conditions of "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (Version 03.0)" are shown in table 4.

Table 4. Applicability analysis of "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation (v03.0)"

Criteria	Analysis
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: 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 able to provide electricity to the electricity consumer; 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 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.	Not applicable

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: Scenario I: Electricity is supplied to the grid; Scenario II: Electricity is supplied to consumers/electricity consuming facilities; or Scenario III: Electricity is supplied to the grid and consumers/electricity consuming facilities.	Scenario I is applicable, as the activity connects to NWPG.
This tool is not applicable in cases where captive renewable power generation technologies are installed to provide electricity in the bundled project activity, in the baseline scenario or to sources of leakage. The tool only accounts for CO₂ emissions.	Not applicable. There are no captive renewable power generation technologies in the bundled 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)" is shown in table 5.

Table 5. Applicability analysis of "Assessment of the validity of the original/current baseline and update the baseline at the renewal of the crediting period (v03.0.1)"

Criteria	Analysis
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.	Applicable. The baseline is assessed by the procedure of this tool.

B.3. Project boundary

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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 the People's Republic of China, NWPG consists of Shanxi, Qinghai, Ningxia, Xinjiang and Gansu power grids.

	Source	GHGs	Included?	Justification/Explanation
Baseline scenario	CO ₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO ₂	Yes	Main emission source
		CH ₄	No	Minor emission source
		N ₂ O	No	Minor emission source
Project scenario	Emission Sources of Project Activity	CO ₂	No	Excluded, as per ACM0002
		CH ₄	No	Excluded, as per ACM0002
		N ₂ O	No	Excluded, as per ACM0002

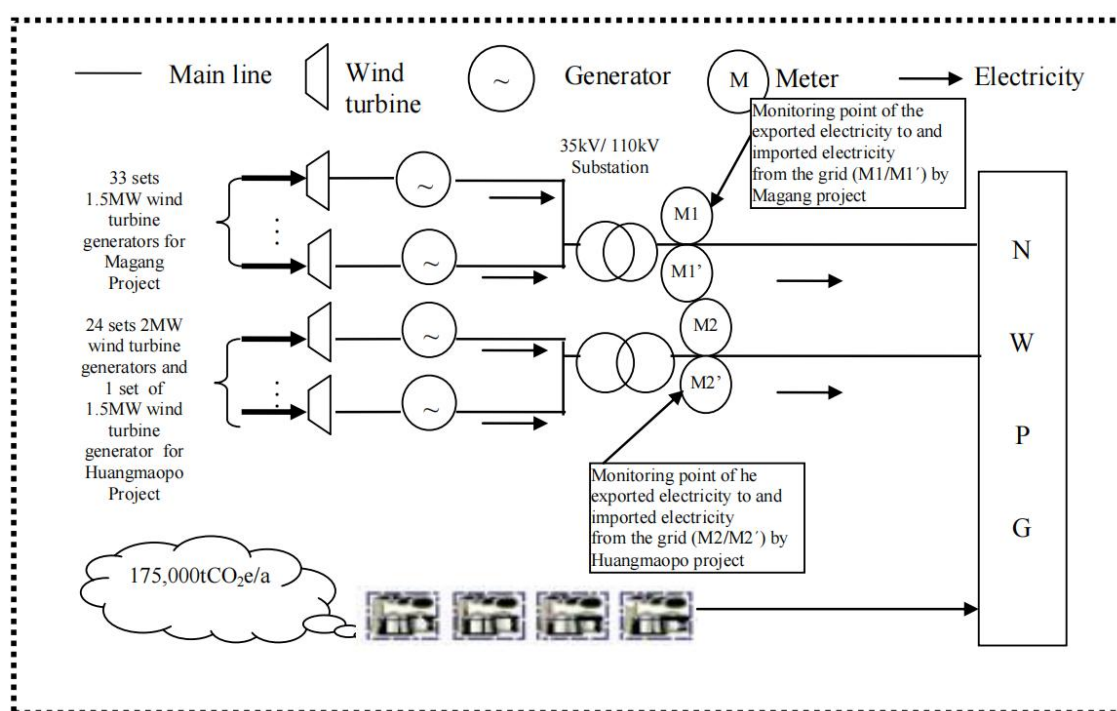


Figure 2. Flow diagram of the project

B.4. Establishment and description of baseline scenario

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The baseline scenario of the Project is electricity delivered to NWPG 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 NWPG.

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” (version 03.0.1), 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 NWPG in the latest 5 years respectively. Hence in the absence of the bundled 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 NWPG.

Step 1.2: Assess the impact of circumstances

Firstly, the baseline scenario identified at the validation of the bundled 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 impact the current baseline. The current practice for the baseline emissions is still the GHG emitted by NWPG: 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 NWPG.

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 NWPG, 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, so the emission factor of NWPG is updated for the second crediting period according to this Notice.

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

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 needs 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 B.6.

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.

B.5. Demonstration of additionality

This section has been assessed and validated in the first crediting period.

B.5.1. Prior Consideration

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As The bundled project was registered as per GS standard version 2.2, no limit on the time span between project start data and first submission.

The project start date of Huangmaopo project was 30/04/2013 when the wind turbines and the auxiliary equipment purchase contract was signed. The project start date of Magang project was 24/05/2013 when the Construction Contract of Engineering Road and Wind Turbine Foundation was signed.

The bundled project submitted documents to GS for preliminary review on 26/09/2013.

B.5.2. Ongoing Financial Need

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Carbon revenues derived from Gold Standard certification have been playing a very important role in helping PO to contribute to preserve 22 jobs respectively for both Magang and Huangmaopo Project, keep the project operation normally to provide electricity to national grid, and conduct SDG monitoring activities, etc. Without carbon revenue, the project is not financially attractive, which has been demonstrated in registered PDD.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

Sustainable Development Goals Targeted		Most relevant SDG Target	SDG Impact	
			Indicator (Proposed or SDG Indicator)	
13 Climate Action (mandatory)		N/A	Emissions Reductions	
7 Affordable and Clean Energy		Target 7.2: By 2030, increase substantially the share of renewable energy in the global generated energy mix	MWh of renewable energy	
8 Decent Work and Economic Growth		Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value	Number of jobs created and productive employment and Number of trainings Average salary is above the lowest level of local area	

B.6.1. Explanation of methodological choices/approaches for estimating the SDG Impact

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SDGs	Method
SDG 7 Affordable and Clean Energy	Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix Indicator: MWh of renewable energy generated Monitoring Parameter: $EG_{\text{facility,Huangmaopo},y}$ Quantity of net electricity supply of Huangmaopo project to the grid in year y $EG_{\text{facility,Magang},y}$ Quantity of net electricity supply of Magang project to the grid in year y Monitoring Method: Electricity meters Calculation Method: $EG_{\text{facility,Huangmaopo},y}$ is calculated by electricity supplied to the grid by Huangmaopo Project minus Electricity supplied from the grid by Huangmaopo Project. $EG_{\text{facility,Magang},y}$ is calculated by electricity supplied to the grid by Magang Project minus electricity supplied from the grid by Magang Project.
SDG 8 Decent Work and Economic Growth	Target 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value Indicator: Number of jobs created; number of trainings provided to the employees per year; average salary of the employees Monitoring Parameter: Quantitative employment and income generation; Quality of employment Monitoring Method: Training Attendance sheets, Employee Records, Salary Record of the employees Calculation Method: N/A
SDG 13 Climate Action	Indicator: Emissions Reductions in tCO_{2e} from the bundled project activity. Monitoring Parameter: ER_y emission reductions in year y and monitoring parameters under SDG7 Monitoring Method: Electricity meters Calculation Method: Details as below.

For SDG 13, the applied methodology ACM0002 is applied in the project in the following four steps:

1. Project Emission

As per ACM0002, the project emission for most renewable energy (including wind farm) project activities is zero ($PE_y = 0$).

2. Baseline Emission

As per ACM0002, baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the bundled project activity, calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y = Baseline emissions in year y (tCO₂/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 CO₂ 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" (tCO₂/MWh)

Emission Factor

The Baseline Emission Factor is calculated as a Combined Margin, using the weighted average of the operating margin and build margin.

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

$EF_{grid,OM,y}$ Operating Margin Emission Factor (tCO₂e/MWh)

$EF_{grid,BM,y}$ Build margin emission factor (tCO₂e/MWh)

W_{OM} Weighting of operating margin emissions factor

W_{BM} Weighting of build margin emissions factor

Based on above equation, the operating margin emission factor ($EF_{grid,OM,y}$) of NWPG is 0.8922 tCO₂e/MWh and the build margin emission factor ($EF_{grid,BM,y}$) is 0.4407 tCO₂e/MWh. The defaults weights for wind power are used as specified in the emission factor tool: $W_{OM} = 0.75$; $W_{BM} = 0.25$. The result of the Baseline Emission Factor ($EF_{grid,CM,y}$) calculation is 0.779325 tCO₂e/MWh. The calculations are presented in Appendix III.

Calculation of $EG_{PJ,y}$

As the bundled 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 bundled project activity, the following applies:

21

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

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

As per methodology ACM0002 version 20.0, the monitoring requirements of $EG_{facility,y}$ should be determined as per tool of "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation". $EG_{PJ,y}$ in the tool equals with $EG_{facility,y}$ of the methodology.

For the bundled project, $EG_{facility,y} = EG_{facility,Huangmaopo,y} + EG_{facility,Magang,y}$

Where:

$EG_{facility,Huangmaopo,y}$ Quantity of net electricity supply of Huangmaopo project to the grid in year y

$EG_{facility,Magang,y}$ Quantity of net electricity supply of Magang project to the grid in year y

3. Leakage

According to ACM0002, no leakage emissions are considered.

4. Emission reductions

Emission reductions of the project are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂e/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

B.6.2. Data and parameters fixed ex ante

SDG13 Data/parameter	$EF_{grid,OM,y}$
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 ¹
Value(s) applied	0.8922
Choice of data or Measurement methods and procedures	Official public data from NDRC
Purpose of data	Calculation of baseline emissions
Additional comment	/

Data/parameter	$EF_{grid,BM,y}$
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 ²
Value(s) applied	0.4407
Choice of data or Measurement methods and procedures	Official public data from NDRC
Purpose of data	Calculation of baseline emissions
Additional comment	/

Data/parameter	W _{OM}
Unit	%
Description	Weighting of operating margin emissions factor

¹ <http://www.mee.gov.cn/ywqz/ymqhbh/wsqtkz/202012/W020201229610353340851.pdf>

² <http://www.mee.gov.cn/ywqz/ymqhbh/wsqtkz/202012/W020201229610353340851.pdf>

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	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
Additional comment	

Data/parameter	WBM
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	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
Additional comment	

B.6.3. Ex ante estimation of SDG Impact

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SDGs	Ex ante estimation of outcomes
SDG 7 Affordable and Clean Energy	Baseline outcomes: 0 Project outcomes: The quantity of net electricity supply of the bundled project to the grid is estimated to be 204,250.3 MWh/yr, which could replace the equivalent electricity from fossil fuel based grid.
SDG 8 Decent Work and Economic	Baseline outcomes: 0 Project outcomes: The project provides 22 employment opportunities for women and men. The project provides healthy

Growth	working environment and trainings periodically (at least one time a year) for the employee on the technology and the monitoring of the plant operation, and the emergency and safety procedures, etc. The average salary is above the latest lowest salary level of local area.
SDG 13 Climate Action	Baseline outcomes: 0 Project outcomes: The project will directly contribute by reducing 159,177 tons of CO ₂ equivalent every year. The estimation is as below.

Project Emissions

In accordance to ACM0002, the project emission for most renewable energy (including wind farm) project activities is zero (PE_y=0).

Leakage

Based on ACM0002, there is no need of leakage calculation or monitoring for this kind of activity, thus leakage is considered to be zero (0 tCO₂e).

Baseline Emissions

Based on ACM0002, baseline emissions (BE_y) include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the bundled project activity activity, which is calculated as follows:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y Baseline emissions in year y (tCO₂/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 CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO₂/MWh)

According to Section B.6.1, the final result for calculating the bundled project's emission reduction is the following:

$$ER_y = EG_{facility,y} * EF_{grid,CM,y} = (EG_{facility,Huangmaopo,y} + EG_{facility,Magang,y}) * EF_{grid,CM,y}$$

The result of emission reduction:

$EG_{\text{facility, Magang, } y}$	Quantity of net electricity supply of Magang project to the grid in year y	102,868.70	MWh/year
$EG_{\text{facility, Huangmaopo, } y}$	Quantity of net electricity supply of Huangmaopo project to the grid in year y	101,381.60	MWh/year
$EF_{\text{grid, CM, } y}$	Combined margin CO ₂ emission factor	0.779325	tCO ₂ e/MWh
ER_y	Emission reductions annually	159,177	tCO ₂ e/year

Note: for the bundled project activity, Quantity of net electricity supply to the grid in year y is the sum of $EG_{\text{facility, Magang, } y}$ and $EG_{\text{facility, Huangmaopo, } y}$, which is 204,250.3 MWh.

B.6.4. Summary of ex ante estimates of each SDG Impact

SDG13

Year	Baseline estimate	Project estimate	Net benefit
11/01/2021-31/12/2021 (355 days)	0	154,816 tCO ₂ e	154,816 tCO ₂ e
01/01/2022-31/12/2022	0	159,177 tCO ₂ e	159,177 tCO ₂ e
01/01/2023-31/12/2023	0	159,177 tCO ₂ e	159,177 tCO ₂ e
01/01/2024-31/12/2024	0	159,177 tCO ₂ e	159,177 tCO ₂ e
01/01/2025-31/12/2025	0	159,177 tCO ₂ e	159,177 tCO ₂ e
01/01/2026-31/12/2026	0	159,177 tCO ₂ e	159,177 tCO ₂ e
01/01/2027-31/12/2027	0	159,177 tCO ₂ e	159,177 tCO ₂ e
01/01/2028-10/01/2028 (10 days)	0	4,361 tCO ₂ e	4,361 tCO ₂ e
Total	0	1,114,239 tCO₂e	1,114,239 tCO₂e
Total number of crediting years	7		
Annual average over the crediting period	0	159,177 tCO ₂ e	159,177 tCO ₂ e

SDG7

Year	Baseline	Project estimate	Net benefit
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	estimate		
11/01/2021-31/12/2021 (355 days)	0	198,654.4 MWh	198,654.4 MWh
01/01/2022-31/12/2022	0	204,250.3 MWh	204,250.3 MWh
01/01/2023-31/12/2023	0	204,250.3 MWh	204,250.3 MWh
01/01/2024-31/12/2024	0	204,250.3 MWh	204,250.3 MWh
01/01/2025-31/12/2025	0	204,250.3 MWh	204,250.3 MWh
01/01/2026-31/12/2026	0	204,250.3 MWh	204,250.3 MWh
01/01/2027-31/12/2027	0	204,250.3 MWh	204,250.3 MWh
01/01/2028-10/01/2028 (10 days)		5,595.9 MWh	5,595.9 MWh
Total	0	1,429,752.1 MWh	1,429,752.1 MWh
Total number of crediting years	7		
Annual average over the crediting period	0	204,250.3 MWh	204,250.3 MWh

SDG8

Year	Baseline estimate	Project estimate	Net benefit
Year 1	0 job, 0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.
Year 2	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest	22 jobs created for both Magang and Huangmaopo Project and the salary is above

		level. At least 1 time of training for both Magang and Huangmaopo Project.	the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.
Year 3	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.
Year 4	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.
Year 5	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.
Year 6	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of

		for both Magang and Huangmaopo Project.	training for both Magang and Huangmaopo Project.
Year 7	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.
Total number of crediting years	7		
Annual average over the crediting period	0 salary, 0 training	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.	22 jobs created for both Magang and Huangmaopo Project and the salary is above the local lowest level. At least 1 time of training for both Magang and Huangmaopo Project.

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 13

Data / Parameter	ER_y
Unit	tCO ₂ /yr
Description	Emission reduction in year y
Source of data	Calculated
Value(s) applied	Bundled project: 159,177

	In which: Magang Project: 80,168 Huangmaopo project: 79,009
Measurement methods and procedures	The ex-post emission reduction is calculated according to the registered PDD description.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	/
Additional comment	/

For Magang Project:

SDG 7

Data / Parameter	EG_{facility,Magang,y}
Unit	MWh
Description	Quantity of net electricity supply of Magang project to the grid in year y
Source of data	Measured by electricity meters
Value(s) applied	102,868.7
Measurement methods and procedures	Directly measured by electricity meters M1/M1' installed at the outlet of the substation with accuracy 0.2s. M1 meter is the main meter, when main meter in error, the readings of back-up meters M1' would be adopted. The project owner is responsible for the monitoring activities.
Monitoring frequency	Continuous measurement and at least monthly recording
QA/QC procedures	Cross check measurement results with records for sold electricity. The electricity meters are calibrated as stated in B.7.2. The proportion of data to be monitored is 100% and the data will be archived and kept at least for two years after the end of the crediting period. Meters will be calibrated

	regularly.
Purpose of data	Calculation of baseline emissions
Additional comment	/

SDG 8

Data / Parameter	Quality of employment
Unit	/
Description	The project organizes trainings for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures, etc.
Source of data	HR records
Value(s) applied	The project owner provides trainings at least one time a year for the workers
Measurement methods and procedures	HR records
Monitoring frequency	Each monitoring period
QA/QC procedures	The trainings are recorded and the record are signed by the trainees. All the records are kept by the PO and will be provided to VVB for verification.
Purpose of data	/
Additional comment	/

Data / Parameter	Quantitative employment and income generation
Unit	Persons
Description	Number of jobs created in the operations of the project and their average salary is above the latest lowest salary level of local area.
Source of data	HR records or report

Value(s) applied	22 employees Average salary is above lowest salary level of local area
Measurement methods and procedures	HR records
Monitoring frequency	Each monitoring period
QA/QC procedures	The employee name list and salary are recorded and kept by HR department of the PO, and will be provide to VVB for verification.
Purpose of data	/
Additional comment	/

Safeguarding Principle Assessment

Data / Parameter	Water Quality and Quantity
Unit	N/A
Description	The industrial wastewater and sanitary wastewater will be generated during the construction period, and sanitary sewage including the discharge from toilets, washrooms, and shower water, etc. during the operation period.
Source of data	
Value(s) applied	N/A
Measurement methods and procedures	According to the EIA form, the industrial wastewater and sanitary wastewater will be generated during the construction period of Magang project. The industrial wastewater includes washing water of the concrete mixing system and other machines. The industrial wastewater will be reused after oil separation and sedimentation without discharge outside. The sanitary wastewater is from the temporary living area, including excrement and urine, washing water, shower water, etc. The sanitary wastewater after collection and treatment by a wastewater treatment facility and will be used as spraying water for dust control. According to the EIA form, the major pollutant during operation period is sanitary sewage, including the discharge from toilets, washrooms, and shower water, etc. will be collected and treated by wastewater treatment

	installation, then re-used as greening water after satisfying the requirement.
Monitoring frequency	Each verification
QA/QC procedures	During the 2nd crediting period, the wastewater treatment system will be checked for each verification period.
Purpose of data	/
Additional comment	/

Data / Parameter	Air quality
Unit	tSO ₂ , tNO _x
Description	Indirect parameter of "Total clean and renewable electricity supplied by the project" is measured in order to calculate the concentrations of SO ₂ and NO _x , as multiplied by default national emission factor from the Chinese government.
Source of data	Measured by electricity meters.
Value(s) applied	SO ₂ emission reduction: 0.26g/KWh*102,868.70MWh=26.746t NO ₂ emission reduction: 0.25g/KWh*102,868.70MWh=25.717t
Measurement methods and procedures	Directly measured by electricity meters and crosschecked with sales records. Since no public data on average atmospheric pollutant emissions per kWh of electricity associated with the largely fossil fuel-based grid electricity in NWPG is available, the average data for China is used. The SO ₂ emission factor is 0.26 g/kWh for sulphur fossil fuel-based power plants. The NO _x emission factor is 0.25 g/kWh for fossil fuel-based power plants ³ .
Monitoring frequency	The electricity will be continuously measured and at least monthly recorded.

³ <http://www.tanjiaoyi.com/article-26959-1.html>

QA/QC procedures	Cross check measurement results with records for sold electricity. The electricity meters are calibrated as stated in B.7.2.
Purpose of data	/
Additional comment	/

Data / Parameter	Soil condition
Unit	N/A
Description	To verify the soil condition recovery after the completion of construction period.
Source of data	Monitored by the project owner
Value(s) applied	N/A
Measurement methods and procedures	During the construction phase, the construction activities including construction of the wind farm, road building as well as the pipeline arrangement will bring about certain soil and water erosion. Measures including the vegetations recovery will be adopted to reduce the water and soil erosion. After the construction is finished, the land will be smoothed, and the greening measures will be implemented as well, so in the operation, the soil erosion will be resumed.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	/
Additional comment	/

Data / Parameter	Other pollutants
Unit	N/A
Description	To check whether solid wastes are still exists and whether

	they are treated.
Source of data	Monitored by the project owner
Value(s) applied	N/A
Measurement methods and procedures	<u>Solid waste</u> Construction period: The solid waste during the construction period consists of discarded earth, building waste, household garbage produced by the construction staff. The residues generated during the construction period will be reused as much as possible, while the remaining will be delivered to the designated disposal site; the household garbage will be cleared and collected to garbage can, then household garbage will be cleared and delivered to be landfilled at regular intervals; therefore, the solid wastes generated during the construction period will not impact the environment in the area. Operation period: After Magang project is put into operation, no discarded residue will be produced by Magang project itself, only the household garbage produced by the operation staff will be collected and cleared by the sanitation department periodically to avoid any impact on the environment. <u>Noise</u> Construction period: The construction noise and the traffic noise are the main sources of noise during the construction period. The construction noise mainly results from all kinds of mechanical equipment operating; the traffic noise mainly results from the road traffic noise from the trucks transporting goods for construction. Considering relatively short time is needed for foundation construction of single set of wind turbine, and no construction will be implemented during night time, thus, the impact of construction noise can be ignored. Operation period: Magang project site is located in the arid desertificational wasteland, and distance between nearest residential area and the wind turbine is more than 500m, so no noise impact on the surrounding environment will be resulted from the operation of Magang project.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	/

Additional comment	/
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For Huangmaopo project

SDG 7

Data / Parameter	EG_{facility,Huangmaopo,y}
Unit	MWh
Description	Quantity of net electricity supply of Huangmaopo project to the grid in year y
Source of data	Measured by electricity meters
Value(s) applied	101,381.6
Measurement methods and procedures	Directly measured by electricity meters M2/M2' installed at the outlet of the substation with accuracy 0.2s. M2 meter is the main meter, when main meter in error, the readings of back-up meters M2' would be adopted. The project owner is responsible for the monitoring activities.
Monitoring frequency	Continuous measurement and at least monthly recording
QA/QC procedures	Cross check measurement results with records for sold electricity. The electricity meters are calibrated as stated in B.7.2. The proportion of data to be monitored is 100% and the data will be archived and kept at least for two years after the end of the crediting period. Meters will be calibrated regularly.
Purpose of data	Calculation of baseline emissions
Additional comment	/

SDG 8

Data / Parameter	Quality of employment
Unit	/
Description	The project organizes trainings for the staff on the technology and the monitoring of the plant operation, and

	the emergency and safety procedures, etc.
Source of data	HR records
Value(s) applied	The project owner provides trainings at least one time a year for the workers
Measurement methods and procedures	HR records
Monitoring frequency	Each monitoring period
QA/QC procedures	The trainings are recorded and the record are signed by the trainees. All the records are kept by the PO and will be provided to VVB for verification.
Purpose of data	/
Additional comment	/

Data / Parameter	Quantitative employment and income generation
Unit	Persons
Description	Number of jobs created in the operations of the project and their average salary is above the latest lowest salary level of local area.
Source of data	HR records or report
Value(s) applied	22 employees Average salary is above lowest salary level of local area
Measurement methods and procedures	HR records
Monitoring frequency	Each monitoring period
QA/QC procedures	The employee name list and salary are recorded and kept by HR department of the PO, and will be provide to VVB for verification.
Purpose of data	/
Additional comment	/

Safeguarding Principle Assessment

Data / Parameter	Water Quality and Quantity
Unit	N/A
Description	The industrial wastewater and sanitary wastewater will be generated during the construction period, and sanitary sewage including the discharge from toilets, washrooms, and shower water, etc. during the operation period.
Source of data	
Value(s) applied	N/A
Measurement methods and procedures	According to the EIA form, the industrial wastewater and sanitary wastewater will be produced by Huangmaopo project during the construction period. The industrial wastewater will be reused after oil separation and sedimentation. For the limited generation and discharge of the wastewater, the impact on surrounding environment is slight. The quantity of the sanitary wastewater is very little, it could be used as spraying water of the construction site, which will not form ground surface runoff, and thus will not enter into the ground surface water system to pollute the water environment. According to the EIA form, the major pollutant during operation period is sanitary sewage, including the discharge from toilets, washrooms, and shower water, etc. will be collected and treated by wastewater treatment installation, then re-used as greening water after satisfying the requirement.
Monitoring frequency	Each verification
QA/QC procedures	During the 2nd crediting period, the wastewater treatment system will be checked for each verification period.
Purpose of data	/
Additional comment	/

Data / Parameter	Air quality
Unit	tSO ₂ , tNO _x

Description	Indirect parameter of "Total clean and renewable electricity supplied by the project" is measured in order to calculate the concentrations of SO ₂ and NO _x , as multiplied by default national emission factor from the Chinese government.
Source of data	Measured by electricity meters.
Value(s) applied	SO ₂ emission reduction: 0.26g/KWh*101,381.6MWh=26.359t NO ₂ emission reduction: 0.25g/KWh*101,381.6MWh=25.345t
Measurement methods and procedures	Directly measured by electricity meters and crosschecked with sales records. Since no public data on average atmospheric pollutant emissions per kWh of electricity associated with the largely fossil fuel-based grid electricity in NWPG is available, the average data for China is used. The SO ₂ emission factor is 0.26 g/kWh for sulphur fossil fuel-based power plants. The NO _x emission factor is 0.25 g/kWh for fossil fuel-based power plants ⁴ .
Monitoring frequency	The electricity will be continuously measured and at least monthly recorded.
QA/QC procedures	Cross check measurement results with records for sold electricity. The electricity meters are calibrated as stated in B.7.2.
Purpose of data	/
Additional comment	/

Data / Parameter	Soil condition
Unit	N/A
Description	To verify the soil condition recovery after the completion of construction period.
Source of data	Monitored by the project owner
Value(s) applied	N/A
Measurement methods and procedures	During the construction phase, the construction activities

⁴ <http://www.tanjiaoyi.com/article-26959-1.html>

	including construction of the wind farm, road building as well as the pipeline arrangement will bring about certain soil and water erosion. Measures including the vegetations recovery will be adopted to reduce the water and soil erosion. After the construction is finished, the land will be smoothed, and the greening measures will be implemented as well, so in the operation, the soil erosion will be resumed.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	/
Additional comment	/

Data / Parameter	Other pollutants
Unit	N/A
Description	To check whether solid wastes are still exists and whether they are treated.
Source of data	Monitored by the project owner
Value(s) applied	N/A
Measurement methods and procedures	<u>Solid waste</u> Construction period: The solid waste produced during the construction period is excavating waste, which should be used as backfilling materials as much as possible to reduce the abandoned slag. The abandoned slag must be cleaned timely, and at the same time land leveling and original plants recovery should be conducted. For the living garbage from the construction period, it will be collected and cleared at regular intervals to designated landfill to be disposed, and this will basically not produce negative impact on the environment. Operation period: After Huangmaopo project is put into operation, no discarded residue will be produced by Huangmaopo project itself, only the household garbage produced by the operation staff will be collected and cleared by the sanitation department periodically to avoid any impact on the environment. <u>Noise</u> Construction period: The main noise during the construction phase results from the mechanical equipment running noise and a little amount of blast

	noise. The construction of Huangmaopo project is implemented during the day. Construction equipments with high efficiency and low noise intensity will be applied as possible. By calculation, the noise intensity will be lower than 55 dB(A) if the distance is 100 m far away from the noise source, satisfying the limit value during the day time stipulated in the Noise limits for construction site (GB12533-2011). As a result, the impact of noise on the surrounding environment during the construction phase is slight. Operation period: Huangmaopo project site is located in the arid desertificational wasteland, and wind turbines equipment with low noise intensity used by Huangmaopo project will be required. The distance between nearest residential area and the wind turbine is more than 150m; consequently, the wind turbine noise will not impact on the nearby residents basically.
Monitoring frequency	Each verification
QA/QC procedures	/
Purpose of data	/
Additional comment	/

B.7.2. Sampling plan

>>

N/A

B.7.3. Other elements of monitoring plan

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Management Structure of the Monitoring Plan

For details regarding the management structure of the monitoring plan, please refer to Figure 3.

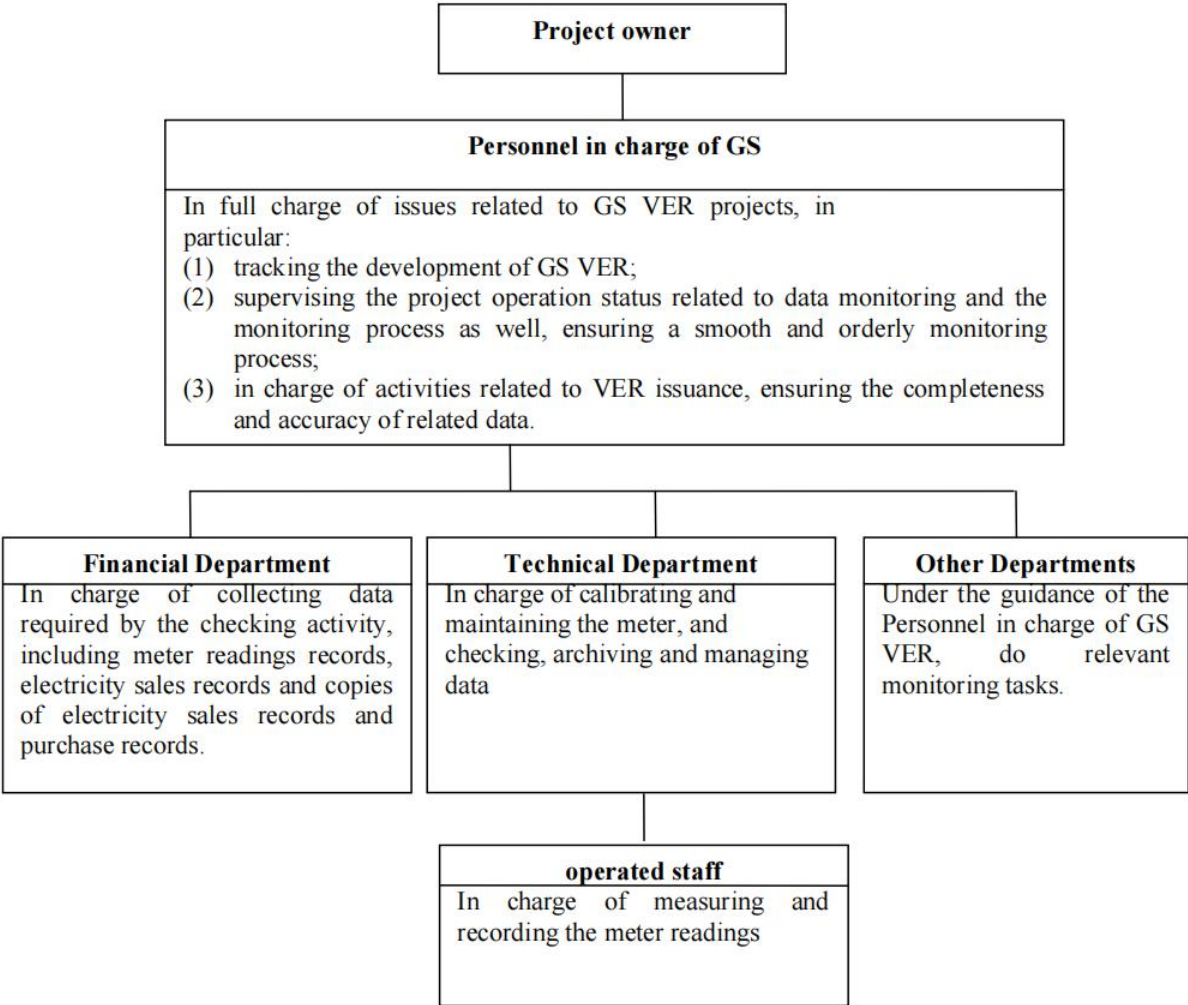


Figure 3. Management Structure of Monitoring Plan

Monitoring Measures

The net electricity supply of the bundled project to the grid will be measured by the electricity meters installed at the outlet of the 35kV/110kV substation. The net electricity supply of the bundled project activity to the grid will be double checked by the records of electricity purchase and sale.

For the relevant monitoring requirements, please refer to the Power Purchase Agreement and Parallel Operation Agreement of the bundled project. The project owner ensures that all of the readings of electricity meters are available for DOE’ s verification.

Installation of monitoring devices

The electricity meters of the bundled project will be installed according to the Technical Administrative Code of Electric Energy Metering (DL/T 448-2016). Before the operation of the bundled project, the project owner and the local grid company will check and accept those electricity meters as per the Technical Administrative Code of Electric Energy Metering.

Calibration of Meters & Metering

The regular calibration and on-site verification should be implemented as per the Technical Administrative Code of Electric Energy Metering (DL/T 448-2016) to ensure the accuracy of electricity meters. Electricity meters should be calibrated every year. After calibration, the electricity meters must be sealed. When the measurement error of electricity meter is larger than the permitted error or the electricity meter must be repaired because of a malfunction, the electricity will be determined as per the Power Purchase Agreement signed between the project owner and the local grid company.

Quality Assurance and Quality Control

The quality assurance and quality control procedures for recording, maintaining and archiving data shall be enhanced in line with the needs for verification of the emission reductions on an annual basis according to this PDD. All calibration records and all metering records will be stored by the bundled project owner for DOE verification.

Data Management System

Specific staff will be appointed by the bundled project owner to take on the overall responsibility for monitoring greenhouse gas emission reductions and keeping all the data collected as part of monitoring. Data shall be archived electronically and kept at least for two years after the end of the last crediting period, or the last issuance of ERs, whichever occurs later.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of project

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For Magang project: 24/05/2013 (the signing date for road engineering and foundation for wind turbines contract of Magang project)

For Huangmaopo project: 30/04/2013 (the signing date for the wind turbines and the auxiliary equipment purchase contract of Huangmaopo project)

C.1.2. Expected operational lifetime of project

>>

20 years and 0 months

C.2. Crediting period of project

C.2.1. Start date of crediting period

>>

The start date of second crediting period is 11/01/2021. The first crediting period is from 11/01/2014 to 10/01/2021.

C.2.2. Total length of crediting period

>>

Seven years for the 2nd crediting period.

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

A completed Safeguarding Principles Assessment is in Appendix 1, ongoing monitoring is summarized below.

Principles	Mitigation Measures added to the Monitoring Plan
Principle 9.4	Refer to B.7.1 Air Quality
Principle 9.4	Refer to B.7.1 Water quality and quantity
Principle 9.1	Refer to B.7.1 Soil condition
Principle 9.4	Refer to B.7.1 Other pollutants
Principle 2.2, 6.1	Refer to B.7.1 Quantitative employment and income generation
Principle 6.1	Refer to B.7.1 Quality of employment

D.2. Assessment that project complies with GS4GG Gender Sensitive requirements

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The project is a renewable energy project and it does not discriminate among gender. The project does not adversely impact women or men. During the project implementation, the project provides employment opportunities equally to men and women. During the local stakeholder consultation on 17/10/2013 (Magang Project) and 18/10/2013 (Huangmaopo Project). For the stakeholder interviews in previous monitoring periods and verifications, both men and women were involved
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	as well. In the project design and implementation, fair chance and gender equality to access the source, information and to reflect their opinions is taken as a main consideration by the project owner.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	The project is aligned with the labor policies which does not discriminate on gender ⁵ . The project also abides the rules of equality accordingly and does not involve and is not complicit in any form of discrimination. Specifically regarding the gender equality, detailed enforcement rules are regulated in ' <i>Law of the People's Republic of China on the Protection of Women's Rights</i> ' ⁶ and in case of lawsuit occurrence, legal aid could be provided as per this law.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	It does not have to include expert's opinion in the project designing as The bundled project was developed according to GS version2.2. However, The bundled project includes expert opinion during the FSR designing and EIA assessment. This is a project using renewable energy to generate electricity and The bundled project is applying for crediting period renewal. No expert opinion is required.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	It does not have to include expert's opinion in the project designing as The bundled project was developed according to GS version2.2. However, The bundled project includes expert opinion during the FSR designing and EIA assessment. The project is a renewable energy project and it does not discriminate among gender. The bundled project is applying for crediting period renewal. No expert opinion is required.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

⁵ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

⁶ http://www.gov.cn/banshi/2005-05/26/content_980.htm

According to the area impacted by the bundled Project, local villagers around the project site are identified as the stakeholders of the Project.

For Magang Project

In the first crediting period, in order to obtain stakeholders' comments regarding the Project, the Stakeholder consultation feedback meeting was held on 17/10/2013. Total 24 people have participated in the Stakeholder consultation feedback meeting. Among the participates, 11 people are male, and 13 people are female. Among the participates who fill in the questionnaire, 1 people is between 31-40, 7 people are between 41-50, and 10 people are above the age of 50. Among the participates who fill in the questionnaire, 10 people finished the education of primary school, 5 people finished the education junior high school, 1 people finished the education of college, and 2 people did not fill in the blank.

The participants included the officer of Jinchang Development and Reform Commission, the staff from Three Gorges New Energy Jinchang Wind Power Co., Ltd., the local residential, the staff of Goldchina Consultancy International Co., Ltd., the validator from TÜV Rheinland Ltd., and anyone who is willing to the meeting.

For Huangmaopo Project

In the first crediting period, in order to obtain stakeholders' comments regarding the Project, the Stakeholder consultation feedback meeting was held on 18/10/2013, the Stakeholder consultation feedback meeting was held. Total 26 people have participated in the Stakeholder consultation feedback meeting. Among the participates, 19 people are male, and 7 people are female.

Among the participates who fill in the questionnaire, 3 people are between 21-30, 4 people is between 31-40, 8 people are between 41-50, and 3 people are above the age of 50. Among the participates who fill in the questionnaire, 3 people finished the education of primary school, 7 people finished the education junior high school, 5 people finished the education of senior high school/technical secondary school, 1 people finished the education of junior college, 2 people finished the education of college.

The participants included the officer of Jinchang Development and Reform Commission, the staff from Three Gorges New Energy Jinchang Wind Power Co., Ltd., the local residential, the staff of Goldchina Consultancy International Co., Ltd., the validator from TÜV Rheinland Ltd., and anyone who is willing to the meeting.

The outcome of feedback round has no negative comments received from the stakeholders, and all comments received show stakeholders have positive attitude and support the bundled project activity. Local residents and government are all very supportive to the implementation of the bundled Project. According to the collected comments received from local stakeholders, it is not necessary to modify the bundled Project.

In the process of crediting period renewal application, the project information is public on local villages by bulletin and oral notice to local stakeholders for 2-month-feedback round (from 29/09/2020 to 28/11/2020). The following picture shows the invitation process.

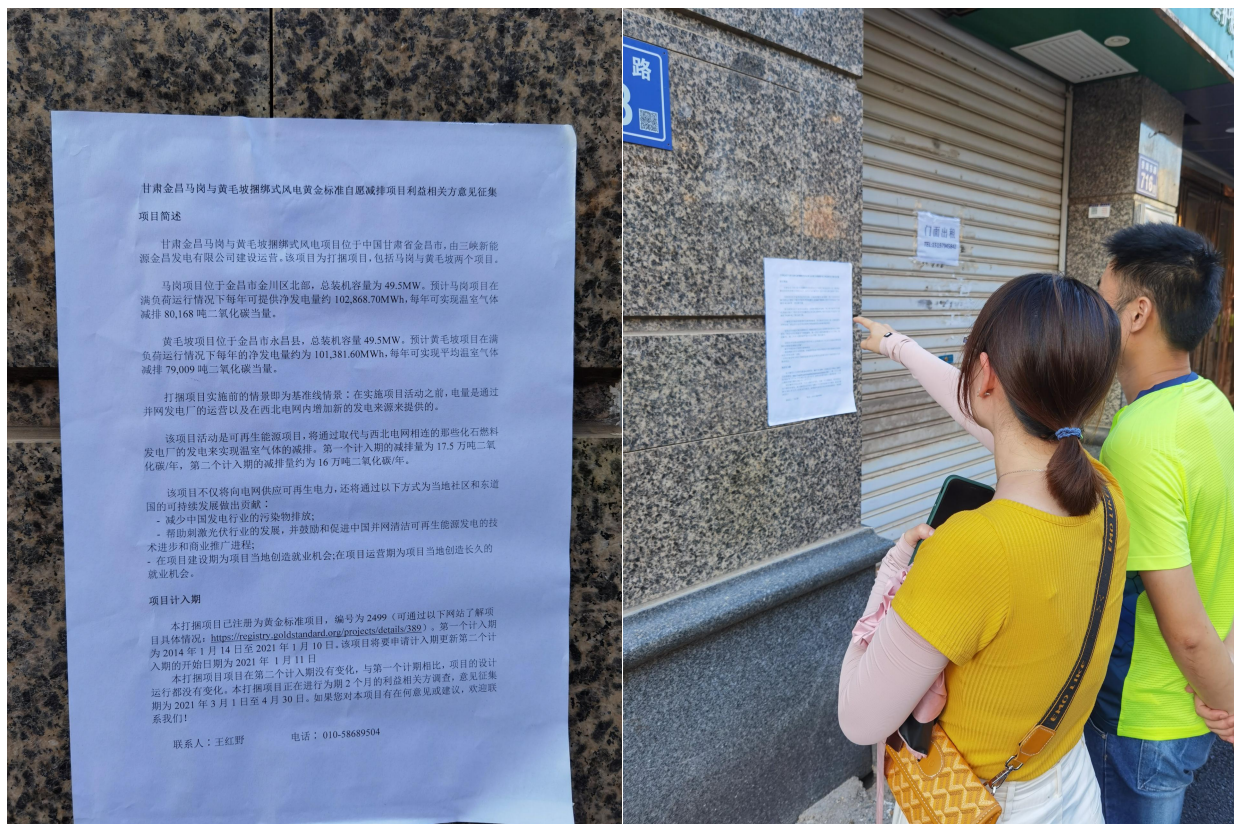


Figure 4. Invitation notice bulletin to local stakeholders for 2-month-feedback round

After the 2-month long stakeholder consultation round, no comments were received from the local stakeholder regarding to the documents or other related influence of the project activity.

E.1. Summary of stakeholder mitigation measures

>>

Since no significant issue had been identified during the local stakeholder consultation meeting on 17/10/2013 and 18/10/2013. Also no comments received during the Stakeholder feedback round in 2021, no mitigation measures were proposed.

E.2. Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Grievance Process (mandatory)	Input / Expression Book Grievance expression book was put at the lodge of Three Gorges New Energy Jinchang Wind Power Co., Ltd. and in local villages, kept by the leader of the villages.
GS Contact (mandatory)	help@goldstandard.org
	Telephone access +86-10-8831-7846 (for project owner) +86 158 1052 7065 (for GS expert) Local stakeholders can call the working staff of the project owner and GS expert to express their comments, suggestion and complaint.
Other	Internet/email access Teng_hp@126.com (for project owner) annyta.luo@goldstandard.org (for GS expert) Local stakeholders can send email to the project owner and GS expert to express their comments, suggestion and complaint.

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Complete the Assessment below and copy all Mitigation Measures for each Principle into SECTION D above. Please refer to the instructions in the Guide to Completing this Form below.

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal Declaration of Human Rights 2. The Project shall not discriminate with regards to participation and inclusion	No	The bundled project respects internationally proclaimed human rights. China has its own legislation in place prohibiting the violation of human rights principle and it actively enforces the compliance of such principle. China has ratified two UN human rights treaties— 1. the International Covenant on Civil and Political Rights, the International Covenant on Economic, Social, and Cultural Rights. China has published relevant regulations and practice into line with the treaties, such as Labor Contract Law⁷. 2. The bundled project does not discriminate with regards to participation and inclusion. The project abides the rules of equality accordingly and does not involve and is not complicit in any form of	N/A

⁷ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

		discrimination. Specifically regarding the gender equality, detailed enforcement rules are regulated in 'Women's Rights Protection Law ⁸ to provide support and benefits to women.	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women. 2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary	No	1. As a bundled project combined of positive environmental, economic, and sustainable development benefits, the project is to generate clean electricity from the wind sources to replace fossil fuel power. The bundled project abides the rules of equality accordingly and does not involve and is not complicit in any form of discrimination. Specifically regarding the gender equality, detailed enforcement rules are regulated in 'Women's Rights Protection Law⁹ to provide support and benefits to women. 2. Qualified local residents, both men and women, are recruited to work for the project. During stakeholders' consultation process, comments were collected from the local people, including both men and women. The details can be seen in registered passport. During previous monitoring periods, stakeholder	

⁸ http://www.gov.cn/banshi/2005-05/26/content_980.htm

⁹ http://www.gov.cn/banshi/2005-05/26/content_980.htm

of opinions and recommendations of an Expert Stakeholder(s)		interviews were conducted to collect comments about impacts of the project from the local people, including both men and women. The details can be seen in previous verification report. 3. The project abides the rules of equality accordingly. Regarding the gender equality, detailed enforcement rules are regulated in 'Labor Contract Law' and Women's Rights Protection Law. 4. No expert required.	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	No	The purpose of the bundled project is to supply electricity from the wind farms to replace fossil fuel power. It is beneficial to local people. The bundled Project has DCS system. Therefore, most of the employees work in indoor environment (at the office), instead of having to standby at the wind farm site. In case of on-site monitoring and device maintenance, the project owner provides safety protection equipment. Since wind turbine does not generate any type of pollutants, employees are not exposed to unsafe or unhealthy environment. The bundled Project site is wasteland without any schools, hospitals, residence communities, etc, and no person resides within 3km from the project site of	N/A

		Magang Project and Huangmaopo Project. There is almost no construction at night, the noise impact from the construction on the project site of Magang Project and Huangmaopo Project is comparatively small. There is no significant impact regarding the noise.	
Principle 4.1 Sites of Cultural and Historical Heritage			
Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture?	No	According to the EIA reports, the Project area of Magang Project and Huangmaopo Project does not include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture.	N/A
>>			
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	No	As described in the EIA reports, both Magang Project and Huangmaopo Project is constructed distanced to residential area, thus the bundled Project does not require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial).	No
>>			
Principle 4.3 Land Tenure and Other Rights			

Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	No	The project area of Magang Project and Huangmaopo Project belongs to the unused collective land of north of Jinchuan district and Yongchang County, Jinchang City. There is no need of resettlement. The land application for the project construction has been approved by local Department of Land and Resources of Gansu Province. There are no uncertainties related to land tenure arrangements and access rights, usage rights or land ownership. The project owner has paid the compensation fee to Jinchang City. Thus, there are no uncertainties related to land tenure arrangements and access rights, usage rights or land ownership.	N/A
>>			
Principle 4.4 Indigenous Peoples			
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	According to the EIA reports, no indigenous peoples present in or within the area of influence of Magang Project and Huangmaopo Project.	N/A
>>			
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to	No	The project is owned by Three Gorges New Energy Jinchang Wind Power Co., Ltd., and there is no governmental subsidy to the project. Therefore, the	N/A

or reinforce corruption or corrupt Projects		project does not involve and is not complicit in corruption and is not prone to entrusted power abuse nor corruption. Moreover, China was ranked 41 out of 100 countries surveyed in Transparency International's Worldwide Corruption Perceptions Index ¹⁰ .	
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions 2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: a) Working hours (must not exceed 48 hours per week	No	1. The Project complies with national labour and occupational health and safety laws, obligations under international law, and the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. Labour rights are protected in the Labour Contract Law¹¹. The project fully respects the employees' rights in accordance with all labour related laws endorsed within China. Law compliance is subject to government's inspection and ruling. 2. The rights to unionize, bargain collectively are highly protected by Labor Contract Law¹². The project fully respects the employees' rights in accordance with all labour related laws endorsed within China. Law compliance is subject to government's inspection and ruling. 3. Working agreements between the company and individual workers are documented and	N/A

¹⁰ <https://www.transparency.org/en/countries/china>

¹¹ http://www.gov.cn/flfg/2007-06/29/content_669394.htm

¹² http://www.gov.cn/flfg/2007-06/29/content_669394.htm

on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave. 4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) 5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and		implemented, including working hours, duties and tasks, remuneration, modalities on health insurance, modalities on termination of contract, provision for annual leave, etc. The employment model applied is locally and culturally appropriate. 4. China has published protection laws on the minors¹³. Employment regulations are described in this Law. The Project requires skilled employees to operate, maintain, and manage the wind farm, as opposed to manufacturing industries, which may require abundant low-skilled labour. Therefore, the project does not employ and is not complicit in any form of child labour. According to the Employee list, it could be confirmed that the Project does not employ any child labour. 5. All equipment in the Project are operated properly according to the work procedures and safety regulation rules. The Project organizes employee training with topics on technical, environmental/safety code, and operational/maintenance procedures. The Project has established guard again and response procedure, which also regulates the documentation and reporting of accidents and incidents. Thus the Project owner ensures the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency	
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¹³ http://www.npc.gov.cn/zgrdw/npc/zfjc/zfjcelys/2014-05/08/content_1862530.htm

reporting of accidents and incidents, and emergency preparedness and response measures		preparedness and response measures.	
Principle 6.2 Negative Economic Consequences			
1. Does the project cause negative economic consequences during and after project implementation?	No	The project could supply job opportunities to local people, which is good to local economy. As the Project's purpose is to supply energy from the wind farms, there is no potential risks of the project to the local economy.	N/A
>>			
Principle 7. Climate and Energy			
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The bundled Project will reduce the emission of 159,177 tCO ₂ e compared to the Baseline Scenario as it replaces electricity generated from fossil fuel fired power plants with zero emissions electricity from the wind farms.	N/A
>>			

Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	No	The purpose of the bundled project is to supply energy from the wind farm. It may use some electricity from the national grid when the equipment are in maintenance. It does not use energy from a local grid or power supply or fuel resource that provides for other local users.	N/A
>>			
Principle 8. Water			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The purpose of the bundled project is to supply energy from the wind farms. According to the EIA report, the impact of the Project on the natural or pre-existing pattern of watercourses, ground-water and/or the watershed(s) is negligible.	N/A
>>			
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or	No	The purpose of the bundled project is to supply energy	N/A

indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?		from the wind farms. Therefore, the impact of the Project on the erosion and/or water body stability is negligible.	
>>			
Principle 9. Environment, ecology and land use			
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for production of crops or other products?	No	The bundled project is a wind power project. And the project uses waste land. It does not involve the use of land and soil for production of crops or other products.	N/A
>>		The project would not emit any pollutants to the soil during the construction and operation period, with no negative impact on the soil quality. The ground would be disturbed to some extent during the construction period, while the project owner will adopt greening measures to better the ecological environment of the site after the construction completion of the project. So the soil condition will not be affected by the project. During the previous verification, soil condition was verified and the project brings landscape benefits to local area.	
Principle 9.2 Vulnerability to Natural Disaster			

Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The purpose of the bundled project is to supply energy from the wind farms. Therefore, the Project is not susceptible to and does not lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	N/A
>>			
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	No	The purpose of the bundled project is to supply energy from the wind farms. Therefore, the Project is not negatively impacted by the use of GMOs.	N/A
>>			
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants	No	The purpose of the bundled project is to supply energy	N/A

to the environment?		from the wind farms. Therefore, the bundled project does not potentially result in release of pollutants to the environment. As a wind power project. the project actually reduces SO_x, NO_x and TSP emissions deriving from the electricity generated in the grid-connected fossil fuel fired power plants. As to the wastewater, the major pollutant during construction period is washing water of concrete mixing system and other machine. The industrial wastewater will be reused after oil separation and sedimentation. For the limited generation and discharge of the wastewater, the impact on surrounding environment is slight. The major pollutant during operation period is sanitary sewage, including the discharge from toilets, washrooms, and shower water, etc. will be collected and treated by wastewater treatment installation, then re-sued as greening water after satisfying the requirement. The environmental protection measures were assessed and approved by local environment protection agency. And the wastewater treatment system was verified during previous monitoring period.	
>>			

Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/or use of hazardous and non-hazardous chemicals and/or materials?	No	The purpose of the bundled project to supply energy from the wind farms. Therefore, the Project does not involve the manufacture, trade, release, and/or use of hazardous and non-hazardous chemicals and/or materials.	N/A
>>		Solid wastes produced during the construction period are excavating waste, which will be recycled for filling lower land or to be used as materials of road construction. Finally, no solid waste will be discarded to pollute the ambient environment. For the living garbage from the construction and operation period, it will be collected and cleared at regular intervals to landfill to be disposed, and this will basically not produce negative impact on the environment. During the operation period, the solid wastes are transported to the solid waste disposal site. The waste oil is delivered to waste oil recycling company.	
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The bundled project is a wind power project. Therefore, the bundled project does not involve the application of pesticides and/or fertilizers.	N/A

>>			
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The bundled project is a wind power project. It does not involve the harvesting of forests.	N/A
>>			
Principle 9.8 Food			
Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The purpose of the bundled project is to supply energy from the wind farms, which does not occupy agriculture land. Therefore, the bundled project does not modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	N/A
>>			
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The purpose of the bundled project is to supply energy from the wind farms, which does not occupy agriculture or livestock land. Therefore, the bundled project does not involve animal husbandry.	N/A
>>			
Principle 9.10 High Conservation Value Areas and Critical Habitats			

Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The project is a wind power project. According to the EIA reports, the bundled project is not located in the area of HCV ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. Therefore, it does not physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified.	N/A
>>			
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	According to the EIA report, there are no endangered species identified as potentially being present within the Project boundary (including those that may route through the area), and the bundled project would not potentially impact other areas where endangered species may be present through transboundary affects.	N/A
>>			

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	Three Gorges New Energy Jinchang Wind Power Co., Ltd.
Registration number with relevant authority	/
Street/P.O. Box	No.56 Guilin Road, Economic & Technological Development Area
Building	/
City	Jinchang City
State/Region	Gansu Province
Postcode	737100
Country	China
Telephone	+86-(0) 13810323772
E-mail	Teng_hp@126.com
Website	/
Contact person	Du Shuxiao
Title	Manager
Salutation	Mr
Last name	Du
Middle name	/
First name	Shuxiao
Department	/
Mobile	/

Direct tel.	/
Personal e-mail	/

Organization name	Demeter Venture UK Limited
Registration number with relevant authority	/
Street/P.O. Box	/
Building	Chase Business Centre-CHD, 39 – 41 Chase Side
City	London
State/Region	/
Postcode	N14 5BP
Country	United Kingdom of Great Britain and Northern Ireland
Telephone	+86 13801359997
E-mail	yfp@vip.163.com
Website	/
Contact person	Yan Feipeng
Title	/
Salutation	Mr.
Last name	Yan
Middle name	/
First name	Feipeng
Department	/
Mobile	+86 13801359997
Direct tel.	/

Personal e-mail

/

APPENDIX 3- FURTHER BACKGROUND INFORMATION ON EX ANTE CALCULATION OF EMISSION REDUCTIONS

According to the “Tool to calculate the emission factor for an electricity system”, six steps shall be applied for calculating the emission factor:

STEP 1. Identify the relevant electric system

For determining the electricity emission factors, identify the relevant project electricity system. 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 Northwest China Power Grid (NWPG), consisting of five provincial grids: Shanxi, Qinghai, Ningxia, Xinjiang and Gansu power grids.

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 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 CO₂ emission factor(s) for net electricity imports from a connected electricity system:

- (a) 0 tCO₂/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.

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)

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 first 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 (tCO₂/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 CO₂ 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:

$$EF_{grid,OMsimple,y} = \frac{\sum_i FC_{i,y} \times NCV_{i,y} \times EF_{CO_2,i,y}}{EG_y} \quad (4)$$

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 fossil 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 fossil fuel type i in year y (GJ/mass or volume unit)
$EF_{CO_2,i,y}$	the CO ₂ emission factor of fossil 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 fossil fuel types combusted in power sources in the project electricity system in year y
y	when using the ex-ante option, is the three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation.

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.

$$EF_{grid,OMsimple,y} = 0.8922tCO_2/MWh \quad (5)$$

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

In terms of vintage of data, project participants can choose between one of the following two options:

(a) Option 1: 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. The option does not require monitoring the emission factor during the crediting period.

(b) Option 2: For the first crediting period, the build margin emission factor shall be updated annually, ex post, including those units built up to the year of registration of the bundled project activity or, if information up to the year of registration is not

yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emission factor shall be calculated ex ante, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

Option 1 is selected to calculate the build margin emission factor for the bundled project activity.

In accordance to the calculation method proposed by the Chinese NDRC¹⁴ which was approved by CDM EB¹⁵, since it is impossible to separate the different generation technology capacities based on coal, oil or gas fuel etc from the generic term "thermal power" in the present energy statistics, the following calculation measures is taken: First, according to the energy statistics of the selected period in which approximately 20% capacity has been added to the grid, the ratio of CO₂ emissions produced by solid, liquid, and gas fuel consumption for power generation is determined; then this ratio is multiplied by the respective emission factors based on commercially available best practice technology in terms of efficiency. Finally, this emission factor for thermal power is multiplied with the ratio of thermal power identified within the approximation for the latest 20% (close but not lower than 20%) of installed capacity addition to the grid. The result is the BM emission factor of the grid. The sample group of power units chosen to calculate the build margin is therefore the set of power capacity additions in the electricity system that comprise 20% of the system capacity (in MW) that have been built most recently¹⁶. In terms of vintage of data, Option 1 is chosen.

BM emission factor of the grid is calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (6)$$

Where:

$EF_{grid,BM,y}$ the Build margin CO₂ emission factor in year y (t CO₂/MWh);

$EG_{m,y}$ the Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh);

¹⁴ The build margin calculations is derived from the "Bulletin on the baseline emission factor of the Chinese Electricity Grid", which has been published by the Chinese DNA (Office of National Coordination Committee on Climate Change) on 20/10/2011.

¹⁵ This is in accordance with the request for guidance: Application of AM0005 and AMS-I.D in China, a letter from DNV to the Executive Board, dated 07/10/2005, available online at: <http://cdm.unfccc.int/UserManagement/FileStorage/6POIAMGYOEDOTKW25TA20EHEKPR4DM>. This approach has been applied by many registered CDM projects using methodology ACM0002 so far.

¹⁶ Note: According to the Tool to calculate the emission factor for an electricity system "If 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation."

$EF_{EL,m,y}$	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 power generation data is available.

The CO₂ emission factor of each power unit m ($EF_{EL,m,y}$) should be determined as per the guidance in step 4 (a) for the simple OM, using options A1, A2 or A3, using for y the most recent historical year for which power generation data is available, and using for m the power units included in the build margin.

Due to the limited availability of data on individual power units, the DNA uses the deviation above to calculate the build margin emission factor and the CO₂ emission factor of thermal power units as follows.

The added generation capacity is taken instead of generation in formula (5) above, as with the determination of the group of plant included in the build margin. Therefore, the calculation following the deviation is as follows:

$$EF_{grid,BM,y} = \sum m (CAP_{m,y} \times EF_{EL,m,y}) / \sum m CAP_{m,y} = \sum m Share_{CAP,m,y} \times EF_{EL,m,y} \quad (7)$$

Where:

$EF_{grid,BM,y}$	the build margin CO ₂ emission factor in year y (tCO ₂ /MWh)
$CAP_{m,y}$	the added generation capacity by plant type m in year y (MW)
$EF_{EL,m,y}$	the CO ₂ emission factor of plant type m in year y (tCO ₂ /MWh)
$Share_{CAP,m,y}$	the share of added generation capacity by plant type m in year y (%)
m	the plant type included in the build margin (thermal, hydro, nuclear, other)
y	the most recent historical year for which electricity generation data is available

The CO₂ emission factor of plant types other than thermal power plants is taken as zero.

The CO₂ emission factor of thermal power plants is the weighted average emission factor of the best thermal power plant technologies commercially available in China, as required by the approved deviation, using option A2.

Using the equation of option A2, the CO₂ emission factor of advanced (best commercially available) power plants using fuel type i can be calculated as follows:

$$EF_{m,Adv,y} = EF_{CO_2,m,y} \times 3.6 / \eta_{m,y}. \quad (8)$$

Where:

$EF_{m,Adv,y}$	the CO ₂ emission factor of advanced power plants using fuel m in year y (tCO ₂ /MWh)
$EF_{CO_2,m,y}$	the average CO ₂ emission factor of fuel type m in year y (tCO ₂ /GJ)
$\eta_{m,y}$	the average net energy conversion efficiency of advanced power plants using fuel type m in year y (%)
m	the fuel type of thermal plant (coal/solid, oil/liquid, gas)
y	the relevant year as per the data vintage chosen

The weighted average CO₂ emission factor of thermal power plants is weighted on the basis of the emissions from each of these fuel types in the latest year for which data is available, and using the average net energy conversion efficiency for each fuel type of the best technologies commercially available in China.

$$EF_{thermal,y} = \sum m (EF_{m,Adv,y} \times \lambda_{m,y}) \quad (9)$$

Where:

$EF_{thermal,y}$	the weighted average CO ₂ emission factor of thermal power plants in year y (tCO ₂ /MWh)
$EF_{m,Adv,y}$	the CO ₂ emission factor of advanced power plants using fuel type m in year y (tCO ₂ /MWh)
$\lambda_{m,y}$	the share of emissions of fuel type m in year y (%)
m	the fuel type of thermal plant (coal/solid, oil/liquid, gas)
y	the relevant year as per the data vintage chosen

The build margin emission factor is calculated by the DNA using this methodology:

$$EF_{grid,BM,y} = 0.4407 \text{ tCO}_2/\text{MWh}. \quad (10)$$

STEP 6. Calculate the combined margin (CM) 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 bundled 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 bundled 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.

(a) Weighted average CM

The combined margin emissions factor is calculated as follows:

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

Where

$EF_{grid,BM,y}$ the build margin CO₂ emission factor in year y (tCO₂/MWh)

$EF_{grid,OM,y}$ the operating margin CO₂ emission factor in year y (tCO₂/MWh)

w_{OM} the weighting of operating margin emissions factor (%)

w_{BM} the 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 period, $w_{OM} = 0.75$ 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
Operating Margin Emissions Factor ($EF_{grid,OM,y}$)	0.8922	0.75
Build Margin Emissions Factor ($EF_{grid,BM,y}$)	0.4407	0.25
Baseline Emissions Factor ($EF_{grid,CM,y}$)	0.779325	

$$EF_{grid,CM,y} = 0.779325 \text{ tCO}_2/\text{MWh}$$

APPENDIX 4-SUMMARY OF APPROVED DESIGN CHANGES

No post registration design changes.

Revision History

Version	Date	Remarks
1.2	14 October 2020	Hyperlinked section summary to enable quick access to key sections Improved clarity on Key Project Information Inclusion criteria table added Gender sensitive requirements added Prior consideration (1 yr rule) and Ongoing Financial Need added Safeguard Principles Assessment as annex and a new section to include applicable safeguards for clarity Improved Clarity on SDG contribution/SDG Impact term used throughout Clarity on Stakeholder Consultation information required Provision of an accompanying Guide to help the user understand detailed rules and requirements
1.1	24 August 2017	Updated to include section A.8 on 'gender sensitive' requirements
1.0	10 July 2017	Initial adoption