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Gold Standard Validation Report

GOLD STANDARD VALIDATION OF
GS PROJECT NO. GS-4813
SIDRAP WIND FARM PROJECT PHASE 1

Report No. [10379SD]

~~17 11 August~~ ~~June~~ 2018

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Date of first issue of this report	Revision No. of this report
05-02-2018	032
Project Participant (contractor): PT UPC Sidrap Bayu Energi Pusat Niaga Duta Mas Fatmawati Block C1 No. 02-03, Jl. R.S. Fatmawati No. 39 Jakarta Selatan DKI Jakarta 12150	Project Site(s): Latitude : -40.717773° Longitude : -73.011488° Mattirotasi and Lainungan Villages, Watang Pulu Sub-district, Sidrap Regency, South Sulawesi Province. Host Country: Indonesia
Applied Methodology / Version: ACM0002 / Version 17	Scope(s): 01 Technical Area(s): 1.2
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VALIDATION OPINION

TÜV SÜD has performed a validation of the aforementioned GS project activity. Standard auditing techniques have been used for the validation of the project. An internal validation checklist has been prepared to conduct the validation process in a transparent and comprehensive manner.

The review of the passport, project design document and stakeholder consultation report followed by subsequent follow-up interviews, and further verification of references have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria in the checklist. In the opinion of TÜV SÜD, the project meets all relevant Gold Standard requirements for the VER if the underlying assumptions do not change. TÜV SÜD recommends the project for registration by the GS Technical Advisory Committee.

An analysis, as provided by the applied methodology, demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are additional to any that would occur in the absence of the project activity. The approximate coordinates of the project location are between the 03°57'17.37" – 04°0'14.43" S and 119°41'54.35"– 119°43'14.52" E. Considering that the project will be implemented as designed, the project is likely to achieve the estimated amount of annual emission reductions of 141, 248 tCO₂e for the fixed crediting period of 10



years. The List of Findings describes total of 09 findings which include: *Eight (08)* Corrective Action Requests (CARs); One (01) Clarification Requests (CRs); One Forward Action Request (FAR) was raised during this validation; and all findings i.e. CARs and CRs have been closed satisfactorily and the FAR would be assessed by the DOE during the first verification.

The validation has been performed following the GS v2.2 requirements and Validation and Verification Standard for project activities v1.0 (VVS) of UNFCCC. The single purpose of this report is its use during the registration process as part of the GS project cycle. Based on the work described in this report, nothing has come to our attention that causes us to believe that any project component or issue has not been covered by the validation process.

Pune, ~~1147/086/2018~~

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Certification Body "Environment and Energy"
TÜV SÜD South Asia

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
VER	Verified Emission Reduction
CR	Clarification Request
DNH	Do No Harm
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
GHG	Greenhouse gas(es)
GS	Gold Standard
LSC	Local Stakeholder Consultation
MDG	Millennium Development Goals
MP	Monitoring Plan
PDD	Project Design Document
SFR	Stakeholder Feedback Round
PP	Project Participant
SD	Sustainable Development
TÜV SÜD	TÜV SÜD South Asia Pvt. Ltd
TAC	Technical Advisory Committee
UNFCCC	United Nations Framework Convention on Climate Change



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1 INTRODUCTION

1.1 Objective

The objective of the validation process is to provide an independent assessment by a third party, a Designated Operational Entity (DOE), of a proposed project activity against the applicable GS requirements. The assessment involves the evaluation whether the proposed project activity complies with the requirements of Gold Standard and its toolkit, the applicability conditions of the selected methodology and any applicable guidance issued by UNFCCC GS. Validation is part of the GS project cycle and results in a conclusion by the executing DOE on whether or not a project activity is valid to be submitted for registration to the Gold Standard. The ultimate decision on the registration of a proposed project activity rests with the GS-TAC.

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of GS project activities, the scope is set by:

- Gold Standard v2.2 requirements
- Gold Standard Toolkit v2.2
- Clean Development Mechanism Validation And Verification Standard (VVS) published under <http://cdm.unfccc.int>
- Baselines and monitoring methodologies (including GHG inventories)
- Environmental issues relevant to the applicable sectoral scope
- Applicable environmental and social impacts and aspects of GS project activity
- Current technical and operational knowledge of the specific sectoral scope and information on best practice
- Stakeholder consultation and feedback

The validation process is not meant to provide any form of consulting for the project participant (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the project design.

Once TÜV SÜD receives the PDD/Passport/LSC report, it is made available on the GS Registry through a dedicated interface on the Gold standard website. The Validation shall commence only after the project documents are listed on the registry.

2 VALIDATION METHODOLOGY

The information provided by the project participants is assessed by applying the means of validation specified in the GS Toolkit as well as the CDM Validation and Verification Standard (VVS) and using appropriate standard auditing techniques.

Before the assessment begins a competent team to perform the validation is selected. The team is selected to cover the technical scope(s), sectoral scope(s), prior experience in GS projects and relevant host country experience for evaluating the GS project activity. Once the project is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up actions, resolution of issues identified, and the preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB "Environment and Energy" before being submitted to the GS-TAC.



2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body “Environment and Energy”.

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Validator (V);
- Validator Trainee (T);
- Technical Experts (TE);
- Country expert (CE);
- Technical reviewer (TR).

It is required that the sectoral scope(s) and the technical area(s) (TA) linked to the methodology and project has to be covered by the assessment team. A technical review is conducted to perform a check on quality and completeness.

Assessment Team:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect	Host country experience	Conducted On-site visit
Srikanth Meesa	Validator and Host country expert	X	X	X	X	X
Supratik Dutta	Assessment team Leader	X	X	X		

Technical Reviewer:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect
Eswar Murty	X	X	X	X

Appointment certificates are attached to this report in Annex 3.

2.2 Review of Documents

The initial PDD/Passport/LSC report was submitted to the DOE in March 2017. The final PDD/Passport was submitted to the DOE in January 2018. The PDD/Passport/LSC report and additional background documents related to the project have been reviewed to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between in-



formation provided and information from other sources has been done as an initial step of the validation process. A complete list of all documents and evidence material reviewed is attached as Annex 2 to this report.

2.3 Follow-up Interviews

TÜV SÜD performed interviews, telephone conferences, and physical site inspections during 13th - 14th April 2017 with project stakeholders to confirm relevant information and to resolve issues identified in the first document review. A list of all persons interviewed in this process is presented in Annex 2 to this report.

2.4 Cross-check

During the validation process the team has made reference to available information related to similar projects or technologies as the GS project activity. Project documentation has also been reviewed against the approved methodology applied to confirm the appropriateness of formulae and correctness of calculations.

2.5 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which need to be clarified for TÜV SÜD's conclusion on the project design. The CARs and CLs raised by TÜV SÜD are resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in Annex 1 to this report.

2.6 Internal Quality Control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after closure of findings. The internal quality control in the validation process is given by the final decision (Validation Opinion) made by the CB "Environment and Energy".



3 CARBON VALIDATION

The assessment work and the main results are described below in accordance with the Gold Standard Toolkit v2.2^{12/}. The reference documents indicated in this section and Annex 1 are stated in Annex 2 of this report.

3.1 Project Description

The project is located in Mattirotasi, Kecamatan Wattang Pulu and Lainungan Villages, Watang Pulu Sub-district, Sidrap Regency, South Sulawesi Province, Indonesia. The project entails the installation of 75 MW wind farm that consists of 30 No.s of 2.5 MW Wind Energy Generators (WEGs)^{15/12/3/}.

Geographical Positioning System Co-ordinates of the 30 WEGs are stated below:

Turbine Location	GPS Coordinates		Turbine Location	GPS Coordinates	
	Longitude	Latitude		Longitude	Latitude
1	119° 42' 51.9988" E	3° 58' 33.5045" S	16	119° 42' 19.0839" E	3° 59' 2.3718" S
2	119° 42' 51.9970" E	3° 58' 42.8413" S	17	119° 42' 19.2062" E	3° 59' 10.0491" S
3	119° 42' 48.5883" E	3° 58' 50.4977" S	18	119° 42' 17.2542" E	3° 59' 17.4079" S
4	119° 42' 45.2797" E	3° 58' 59.0321" S	19	119° 42' 5.7585" E	3° 59' 28.6045" S
5	119° 42' 41.9361" E	3° 59' 6.7533" S	20	119° 41' 57.8229" E	3° 59' 38.8459" S
6	119° 42' 41.3780" E	3° 59' 14.4003" S	21	119° 41' 55.8704" E	3° 59' 46.0746" S
7	119° 42' 39.5263" E	3° 59' 22.6696" S	22	119° 41' 54.7289" E	3° 59' 53.6260" S
8	119° 42' 37.6711" E	3° 59' 29.8980" S	23	119° 42' 32.6180" E	3° 58' 10.7632" S
9	119° 42' 37.7291" E	3° 59' 37.6730" S	24	119° 42' 39.4591" E	3° 58' 2.7052" S
10	119° 42' 37.1390" E	3° 59' 45.4177" S	25	119° 42' 43.4214" E	3° 57' 55.9579" S
11	119° 42' 33.1794" E	3° 59' 53.0109" S	26	119° 42' 50.7150" E	3° 57' 47.6056" S
12	119° 42' 28.1872" E	4° 00' 1.8112" S	27	119° 42' 52.4401" E	3° 57' 40.2151" S
13	119° 42' 27.6293" E	3° 58' 40.5143" S	28	119° 42' 55.5587" E	3° 57' 32.9827" S
14	119° 42' 23.6030" E	3° 58' 47.5546" S	29	119° 43' 0.3978" E	3° 57' 26.9158" S
15	119° 42' 21.5862" E	3° 58' 54.8811" S	30	119° 43' 13.0366" E	3° 57' 18.7086" S

The produced electricity is exported to the local grid Southeast Southwest Sulawesi. The project exports net electricity of 220.7 GWh per annum to the local grid in South Sulawesi Island^{30/}. This is confirmed after reviewing the submitted FSR and the PPA^{6/7/}. Thus the plant load factor is determined conservatively as ~32 % (After consideration of all losses and efficiency) as per the energy assessment report provided by the third party (engineering company) DNVGL^{29/}. The electricity produced is measured using the standard energy meters. The produced electricity is transmitted through 150 kV voltage line and the substation is located at a distance of 2.5 km away from the wind site^{7/}.



The technical features of the wind turbines are stated below^{13/} :

Parameter	Unit	Value
Rated turbine power	kW	2,500
Number of turbines	-	30
Turbine type	-	Gamesa G114-2.5 MW
Rotor	-	3 blades
Rotor diameter	M	114
Hub height	M	80
Generator design	-	690 V _{AC} (50/60 Hz)
Annual net estimated power production (P90)*	GWh	220.7
Capacity factor	-	~32%

* P90 is the PLF level that a wind turbine is 90 per cent likely to exceed in a given year.

It is found that net capacity factor for the wind farm is 32% and it was verified by reviewing the energy assessment report provided by the third party DNVGL dated 2nd March 2016^{29/}.

Further, the name of the project owner is clearly presented in section A.4 of the latest version of the PDD^{2/}. Validation team has conducted a site visit during April 2017 and confirmed that the project was under construction stage and it is anticipated the proeject would be fully commissioned by July 2018^{2/}. The project produces net annual energy of 220.7Gwh and expected annual emission reductions 141,248 t CO₂e over the fixed crediting period.

Project start date : Project start is defined as the earliest date on which the project’s real action or implementation takes place. As per these guideline the project start is 29th July 2016^{20/}. On this date wind turbine supply agreement took place and it is the earliest date on which the real action took place.

Project Boundary :

As per the applied methodology ACM0002, version 17.0.0^{25/}. “The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to.”

Validation team has conducted a physical site inspection to the wind project site and has reviewed the progress on the project activity and checked out the measures taken by the project participants towards it’s implementation^{21/}. The geographical boundary of the project consists of the energy producing wind turbines site and their energy transmission lines till its export to the South Southeast west Sulewasi regional grid in Indonesia^{7/}.

The spatial boundary includes only the CO₂ baseline emissions which are abated by the project activity. There are no project and leakage emission from the project activity.



As prescribed by the methodology "ACM0002, version 17.0.0"^{25/}, project boundary of the project is identified as the physical, geographical site of the renewable generation source. The project supplies electricity to South Southeast west Sulewasi regional grid of Indonesia.

DOE confirms that there are no other sources that could contribute more than 1% of overall emission reductions that are not addressed by the applied approved methodology^{5/}.

3.2 Baseline and Monitoring methodology check

Through document check and background research it is verified that the project has applied valid versions of an approved CDM baseline and monitoring methodology as well as approved CDM tools are as follows :

- "ACM0002:Grid-connected electricity generation from renewable sources", (version 17.0.0).^{25/}
- "Tool to calculate the emission factor for an electricity system", (version 04.0.0)^{17/}.
- "Tool for the demonstration and assessment of additionality", (version 07.0.0)^{19/}.

The project is a green field large scale wind energy generation project. It is neither a retrofit nor a capacity addition project. Remaining all other applicability conditions are not suitable to the project activity. Thus, the project meets the applicability criteria of the applied methodology^{25/}.



Assessment of all the applicability conditions is stated below:

ACM0002 Applicability	Proposed project activity	TUV SUD's Assessment
<p>This methodology is applicable to grid-connected renewable energy power generation project activities that:</p> <ul style="list-style-type: none"> (a) install a greenfield plant; (b) involve a capacity addition to (an) existing plant(s); (c) involve a retrofit of (an) existing operating plants/units; or (d) involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s). 	<p>✓ Applicable. The project activity will involve installing a new wind power plant at the site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plants)</p>	<ul style="list-style-type: none"> • Based on the document review and validation site visit, it is confirmed that the project is the installation of a green field wind power plant.^{1/1/15/}.
<p>The methodology is applicable under the following conditions:</p> <ul style="list-style-type: none"> ➢ (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; 	<p>✓ Applicable The Project will consist of the installation of a wind power plant.</p>	<ul style="list-style-type: none"> • Based on the document review and validation site visit, it is confirmed that the project involves the installation of new wind farm to produce the renewable energy^{1/1/15/}.
<ul style="list-style-type: none"> ➢ In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant 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 addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project 	<p>✓ Not relevant as the project activity does not involve capacity addition, retrofit or replacement of any existing wind power plant.</p>	<ul style="list-style-type: none"> • As discussed above the project involves the installation of new wind farm power plant. Through the document review and site visit, it is confirmed that there is no capacity addition, retrofit and replacement.



activity;		
<p>➤ In case of hydro power plants using multiple reservoirs where the power density of any of reservoirs is lower than 4 W/m² after the implementation of the project activity all of the conditions must apply:</p> <ul style="list-style-type: none"> ○ The power density calculated for the entire project activity using equation 5 is greater W/m²; ○ All reservoirs and hydro power plants are located at the same river and were designed to function as an integrated project that collectively constitutes the generation capacity combined power plant; ○ The water flow between the multiple reservoirs is not used by any other hydropower which is not a part of the project activity; ○ The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/m², is lower than 15 MW; ○ The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/m², is less than 10% of the total installed capacity of the project activity from multiple reservoirs. 	<p>✓ Not relevant as the project activity will consist of a wind farm power plant.</p>	<ul style="list-style-type: none"> • As discussed above the project involves the installation of new wind farm power plant. Hence, it is not applicable to this project.
<p>In the case of integrated hydro power projects, project proponent shall:</p> <ul style="list-style-type: none"> ➤ 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 ➤ Provide an analysis of the water 	<p>✓ Not relevant as the project activity will consist of a wind farm power plant</p>	<ul style="list-style-type: none"> • As discussed above the project involves the installation of new wind farm power plant. Hence, it is not applicable to this project.



<p>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 five years prior to implementation of CDM project activity.</p>		
<p>The methodology is not applicable to:</p> <ul style="list-style-type: none"> ➢ (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. 	<p>✓ Not relevant for project activity since The project activity will be a Greenfield wind energy project, so there will be no fuel switching.</p>	<ul style="list-style-type: none"> • As discussed above the project involves the installation of new wind farm power plant. Hence, it is not applicable to this project.
<p>In the case of retrofits, rehabilitations, replacements, or capacity additions, this</p> <ul style="list-style-type: none"> ➢ 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”. 	<p>✓ Not relevant . The project activity is not a case of retrofit, replacement or capacity addition. The project activity is a Greenfield project.</p>	<ul style="list-style-type: none"> • As discussed above the project involves the installation of new wind farm power plant. Hence, it is not applicable to this project.

The project fulfils all applicability criteria of the above mentioned methodologies and tools.



3.3 Project Eligibility

The assessed project falls under the category "Renewable Energy Supply" and inline with Annex C^{/12/}. It produces the renewable energy using the wind source through the wind turbines. The Project Type also corresponds to category ACM0002, version 17^{/25/} of those qualifying for large-scale project status under the CDM and GS. Hence, the project type is eligible for the Gold Standard.

Assessment of the project eligibility criteria:

1. General Eligibility Requirements: The project is real, additional and contributes to the sustainable development. It is assessed that it can achieve the measurable and verifiable emission reductions.

2. Previous Announcement Check: Validation team has checked whether the project was previously announced for implementation without the carbon revenues and found that the board has taken a resolution to go ahead with the project first time in September 2015 and carbon revenues were seriously considered for the viability of the project.^{/15/}

3. Eligible project activity location: The project is located in Indonesia which is a non-annex -1 party. This is confirmed by accessing the UNFCCC webpage http://unfccc.int/kyoto_protocol/status_of_ratification/items/2613.php. PP has provided a transparent description stating that the project is not located in Annex -1 party[/]. Moreover, it was also confirmed during the on-site interviews that there are no other requirements such as renewable energy credits (RECs) in the host country that could lead to double counting of the emission reductions.

4. Eligible project activity gases: From the project description it is evident that the project reduces the potential CO₂ emissions^{/2/}. As per the GS requirements^{/12/} the projects that reduce CO₂, CH₄ and N₂O are eligible to apply for GS registration. Hence, this wind energy generation project meets this eligible criterion.

5. Scale of project activity: The project is categorised as a large scale project as the capacity of the project is 75 MW which is higher than the threshold limit of a small scale project defined in the latest version of the glossary of CDM terms^{/30/}. Hence, it can be concluded that the project is large scale project.

6. ODA: During the site visit, it was confirmed that the project does not involve any ODA^{/3/} financing for its implementation. PP has also submitted a declaration in order to confirm the same.

7. Project Cycle: Project falls in a regular project category as per the GS requirements. The project is still under progress and expected to be commissioned by June or July 2018. as per the GS requirements^{/2/3/}.

8. Other GHG mechanisms: The project is located in an Indonesia. Based on the document review site visit interviews validation team confirms that the project is not applied for any other GHG programmes. Moreover, TUV SUD's local expertise confirmed that there are no country specific mechanisms that encourage renewable energy credits^{/2/}.



3.4 Additionality

3.4.1 Previous public announcement check

There has been no public announcement of the project going ahead without the CDM/GS/other carbon schemes, prior to any payment being made for the implementation of the project. The PP has considered CDM/GS/other carbon schemes benefits for this project activity right from the conceptualization stage and this has been validated from the investment decision document^{15/}. As per the GS rules, the PP has also submitted an undertaking that they have never gone ahead without consideration of carbon credits.

3.4.2 Additionality Tool/Guidance

The PP has selected and applied the “Tool for the Demonstration and Assessment of Additionality (Version 07.0.0)^{19/}” to demonstrate additionality. This criteria has been checked by the audit team and the same is compliant with relevant guidance as provided by UNFCCC.

As per the applied and valid version of the additionality tool, this step 0 “**Demonstration whether the proposed project activity is the first-of- its-kind**” is optional. PP has chosen this step to demonstrate the additionality as the project activity is the first of its kind in the host country Indonesia.

Validation team has reviewed the PDD and confirms that PP has provided all the relevant steps in section B.5 that are required to demonstrate that the project is a first of its kind in line with the methodological tool “Additionality of first of its-kind project activities,” version 03.^{18/}

Assessment of the steps is described below:

1. Applicable geographical area: The host country Indonesia is a country with many islands. However, PP did not choose any specific region in the host country. The whole country is chosen and no other countries are included while considering the geographic area. Based on the site visit and local expertise of TUV SUD’s assessment team, it is confirmed that there are no other large scale wind energy projects in the host country Indonesia.

2. Measure: The project falls in the measure option (b). i.e. switch of technology with or without change of energy source including energy efficiency improvement as well as use of renewable energies (example: energy efficiency improvements, power generation based on renewable energy); The project is a renewable energy wind project and exports the energy to the local grid.^{7/}.

3. Output: The Output from the project activity is the energy production from the wind turbines^{2/}

4. Different Technologies: Based on the site visit, it is confirmed that in the baseline the energy is generated from the fossil fuel based power plants.

It is confirmed that there were no large scale wind energy projects in the host country at the time of webhosting of the project in the GS registry and the same was also re-confirmed during the site visit. At the time of site visit during April 2017, there were no large scale wind energy generation



projects installed in the host country Indonesia. A letter dated 7th November 2017^{16/}, from the Indonesian Wind Energy Association was provided stating that the project is first of its kind large scale wind project in Indonesia. In addition to it, validation team has conducted a web search and found the reliable source " a workshop presentation at 2nd Asia Renewable Energy Workshop conducted during 4th and 5th December 2015^{27/}. It was evident from the document that there were no large scale wind projects that are under construction, though a few wind projects are at their early stages and the project at Sidrap is the first large scale wind project that is expected to be commissioned by 2017-18^{27/}. In addition to it, the latest publicly available data enforces the statement that project is first large scale wind project in Indonesia." Hence, validation team is convinced and confirmed that the project is a first of its kind large scale wind project in the host country Indonesia.

TÜV SÜD confirms that the project is additional based on the GS and VVS requirements.

3.5 Conservative approach check

As per the methodology "ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 17.0.0"^{125/}

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

Overall, through document review, on-site inspection and interview, it is verified that the baseline scenario is identified according to the methodology; the validation team hereby confirms the following statements:

- a) All the assumptions and data used by the project participants are listed in the PDD^{2/}, including their references and sources;
- b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD^{2/};
- c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

The selected baseline scenario was thus correctly determined as per the applicable guidance of applied methodology. The application of the applied baseline methodology in the context of the selection of the baseline scenario is thus transparent and correct.

¹ <http://www.thejakartapost.com/news/2018/07/02/jokowi-inaugurates-first-indonesian-wind-farm-in-sulawesi.html>



Baseline Emission:

“ACM0002 “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” version 17.0.0”^{125/}

“Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants”.

Thus the baseline emissions are product of net energy export to the grid and the grid emission factor.

The formula to calculate the baseline emissions is presented below:

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$$

Where:

BE_y Baseline emissions in year y (tCO₂/yr)

EG_{facility,y} Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the 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)

Determination of the emission factor :

Grid emission factor is determined by applying the latest version of the “Tool to calculate the emission factor for an electricity system” (version 04.0.0)^{177/}.It is to be noted that the Ministry of energy and mineral resources is the entity that publishes the emission factor data. As per the latest available data and information they have considered the version 04 for the determination of the operation margin and build margin emission factor,^{128/} Hence version 04 of the tool is applied.

EG_{facility,y} is determined as 220,700 MWh/yr. The third party engineering company has provided a report confirmed the load factor as ~ 32 %^{29/}. Accordingly the energy production is estimated as 220,700 MWh/yr.^{129/} Validation team has reviewed the document and confirms that the chosen value is reliable and verifiable.

The combined emission factor (EF_{grid,CM,y}) is calculated as 0.640 t CO₂/MWh. The assessment of the determination of combined margin emission factor is presented in the steps below as per the applied version of the “tool to calculate the emission factor for an electricity system” version 4.0.0^{177/}.

STEP 1: Identify the relevant electricity systems:

The project electricity system is identified as the South and West Sulawesi grids, DNA Indonesia conducted the emission factor calculation combining two grids as one as described in the PDD.^{128/2/}



There is no electricity import from the connected electricity system during the past three years 2013 until 2015. Hence, the CO₂ emission factor is 0.

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

Off – grid plants are not relevant to the project’s grid displacement so therefore they are not included for operating margin and build margin emission factor calculation.

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

The Tool offers several options for the calculation of the OM emission factor:

- (a) Simple OM; or
- (b) Simple adjusted OM; or
- (c) Dispatch data analysis OM; or
- (d) Average OM

In the PDD, it is clearly stated the average OM is the suitable method as most of the data is publicly not available. Thus, the grid OM emission factor will be calculated *ex ante* and is based on a 3-year generation-weighted average, based on the most recent data available at the time of submission of the PDD^{2/} as once at the validation stage. In this case, no monitoring and recalculation of the emission factor during the crediting period is required.

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

Option A is applied for the calculation of the average OM emission factor. As per that the net electricity generation and a CO₂ emission factor of each power unit, including low-cost/ must-run power plants/units.

The average OM emission factor is calculated as follows:

$$EF_{\text{grid,OM-ave,y}} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

- EF_{grid,OM-ave,y} = Average operating margin CO₂ emission factor in year y (tCO₂/MWh)
- EG_{m,y} = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
- EF_{EL,m,y} = CO₂ emission factor of power unit m in year y (tCO₂/MWh)
- m = All power units serving the grid in year y including low-cost/must-run power units



For grid power plants, $EG_{m,y}$ is determined as per the provisions in the monitoring tables of the applied tool i.e. electricity utility, PLN's official publications for power generation. Also as mentioned in Step 2, the off grid power plants are not included in the analysis.

The result shows that the three year generation weighted Operating Margin Emission factor for the South-West Sulawesi Grid over the years 2013-2015 is 0.595 tCO₂/MWh. The required data is presented in Section B.6 and Annex-3 of the PDD^{2f}. All these data is furnished by the government entity Ministry of energy and mineral resources, Indonesia^{28f}. Hence, the data is reliable and authentic.

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

As per the guidance provided in the "tool to calculate the emission factor for an electricity system, version 04,^{17f} 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. This option does not require monitoring the emission factor during the crediting period.
- (b)
- (c) **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 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 emissions 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.

It was found option 1 was selected by the DNA in terms of vintage of data.

According to the 'Tool to calculate the emission factor for an electricity system' version 04.0.0^{17f}, the sample group of power units m used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage

The build margin emissions factor is the generation-weighted average emission factor (tCO₂/MWh) of all power units during the most recent y, i.e. 2015, the most recent year for which power generation data is available.

$$EF_{grid, BM, y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \tag{3}$$

Where:



- $EF_{grid,BM,y}$ = Build Margin CO₂ emission factor in year y (tCO₂/MWh)
- $EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)
- $EF_{EL,m,y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh)
- m = Power units included in the build margin
- y = Most recent historical year for which electricity generation data is available

Result shows a Build Margin for the grid of 0.776 tCO₂/MWh. All these data is furnished by the government entity Ministry of energy and mineral resources, Indonesia^{28/}. Hence, the data is reliable and authentic.

Step 6. Calculate the combined margin (CM) emission factor

The Baseline Emission Factor is calculated as a Combined Margin, using a weighted average of the Operating Margin and Build Margin.

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

The “Tool to calculate the emission factor for an electricity system” provides the following default weights for wind power projects: Operating Margin, $w_{OM} = 0.75$; Build Margin, $w_{BM} = 0.25$

Applying these default weights and the calculated emission factors, we calculate a combined margin Baseline Emission Factor **0.640 tCO₂e/MWh**.

The final emission factor is determined as 0.640 tCO₂/MWh and the same been used in the registered CDM-PDD. Hence the PDD and the Gold Standard Passport clearly demonstrates that the most convincing baseline scenario has been chosen, and that all assumptions and parameters comply with the conservativeness criteria. Hence the Validation team confirms that the baseline has been developed in a conservative manner.

Project Emission:

The project is a renewable wind energy project. According to the methodology ACM0002, version 17^{/25/}, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”^{75/}, project emission is zero for wind energy generation projects. The same was also confirmed from the site visit as no source of project emissions could be identified.

Leakage:

As per the applied methodology ACM0002, version 17^{/25/}, “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”^{75/} leakage emissions are not required to be considered.



Calculation of Baseline Emissions:

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

Therefore, the BE_y is calculated for each year as below:

$$BE_y = EG_{facility,y} \times EF_{grid,CM,y}$$

$$BE_y = 227,000 \text{ MWh} \times 0.640 \text{ t CO}_2/\text{MWh}$$

$$BE_y = 141,248 \text{ t CO}_2$$

In conclusion, all values used in the PDD^{2/} to calculate emission reductions are considered reasonable in the context of the proposed CDM project activity and calculation approach is correct.

The emission reductions (ER_y) are *ex-ante* estimated to be on the average 141,248 t CO₂e per year^{2/} over the selected 10 year fixed crediting period^{2/}. The *ex-ante* estimation of emission reductions can be reproduced using data and parameter values provided in the latest version of the PDD^{2/} and supporting files submitted to validation team. The selection and determination of all used factors and parameters are deemed reasonable and acceptable. In summary, the GHG calculations are complete and transparent, and data accuracy has been verified.

Monitoring Plan :

Document check, background research and follow-up interview are used as means of validation for monitoring plan.

All the ex-post parameters to be monitored are assessed in the table below:

Parameter	Description in the PDD	Assessment
EG _{facility,y} Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)	There will be metering systems installed at the project site switchyard, at which the interconnection and transaction point begins. Interconnection point here is defined as the physical points of on-going operational interconnection and jurisdictional boundary between the Plant and the PLN's Grid System. The parameter will be monitored in accordance with the power purchase agreement (PPA) signed with PLN ^{7/} . The metering systems shall	Based on the document review and physical inspection to the site visit, validation team understands that the PP has implemented the monitoring plan in line with the description provided in section B.7.1 of the PDD. ^{2/} Validation team confirmed that provided description is inline with the applied methodology ^{25/} and also feasible. As illustrated in the PDD ^{2/} accuracy of the installed meters



	<p>consist of two groups, viz, primary and check, of irreversible solid-state metering devices. Such systems shall be capable of measuring for each direction of current flow and/or transfer of real and reactive power at 150kV level between PLN and the plant, i.e.: the quantity of electricity supplied by the project plant/unit to the grid (export) and the quantity of electricity delivered to the project plant/unit from the grid (import). The net electricity generation will be a result of calculation, i.e. the quantity of measured exported electricity subtracted by the quantity of measured imported electricity.</p> <p>This can be cross checked against the invoices raised to PLN by the project owners. The energy meters will be calibrated annually in accordance with the PPA signed with PLN. The accuracy class of the meters will follow the provision in the PPA with relevant standards/Accuracies & Class</p> <p>13: (a) CT-IEC 61869-1, IEC 61869-2 (b) VT – IEC 61869-5 (c) Meters IEC IEC 62053-22 or latest update, IEC 1268 or latest update.</p> <p>Metering: (a) Class 0.2 for CT&VT (b) Class 1.0 for Wh meters and (c) Class 2.0 for VARh meters.</p>	<p>are 0.2. The meters are calibrated annually according to the relevant standards. It has to be noted there is no defined calibration frequency stated in the PPA⁷⁷.</p>
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3.6 Pre Feasibility Assessment

This is not relevant as the project is not a retroactive project.



4 SUSTAINABILITY VALIDATION

The audit team has assessed the sustainable development parameters which are presented in the below sections.

4.1 Do No Harm Assessment

The Do No Harm Assessment principles have been derived from UN Millennium Development Goals (MDG). According to GS, these principles are considered applicable to any project location. The PP has used the Do No Harm assessment matrix as required by the GS. The eligibility to the GS for each parameter is complied with, as follows:

Requirement	Description in the passport ^{4/3/}	Assessment
Human Rights :		
1. The project respects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project is not complicit in Human Rights abuses.	<p>The project respects internationally proclaimed human rights including dignity, cultural property.</p> <p>Indonesia, as the host country of the project, is a party to Universal Declaration of Human Rights:</p> <p>http://www.komnasham.go.id/profilThe risk of breaching the principle is stated as low.</p>	<p>Through the document review and site visit, it is confirmed that the project is not complicit in human right abuses. It was found that Indonesia has proclaimed the international human rights as per the reviewed website (https://epthinktank.eu/2014/10/29/indonesia-human-rights-situation/).</p> <p>The review of ESIA documents and site visit assessment made it clear that the project does respect human rights including dignity, cultural property and uniqueness of indigenous people. Hence, the chosen risk of breaching as low is assessed as correct.</p>
2. The project does not involve and is not complicit in involuntary resettlement.	<p>Not relevant since there is no involuntary resettlement existing within the project area.</p> <p>The risk of breaching the principle is stated as low.</p>	<p>Based on the document review^{3/2/1/} and site visit, it is identified that the project area is does not fall in the residential zone. Hence, there is no involuntary settlement.</p>



		Hence, the chosen risk of breaching as low is assessed as correct.
3. The project does not involve and is not complicit in the alteration, damage or removal of any critical cultural heritage.	Based on the site visit, it is confirmed that the project does not involve and is not complicit in the alteration, damage or removal of any critical cultural heritage. The risk of breaching the principle is stated as low.	Based on the site visit and document review ^{3/21} , it is found the project area does not fall in the any cultural heritage area. Hence, the chosen risk of breaching as low is assessed as correct.
Labour Standards		
4. The project respects the employees freedom of association and their right to collective bargaining and is not complicit in restrictions of these freedoms and rights.	Indonesia has ratified the ILO convention 87 (freedom of association)in 1998 and 98 (right to collective bargaining) since 1957. http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102938 The project respects the employees' freedom of association and their right to collective bargaining and is not complicit in restrictions of these freedoms and rights. The risk of breaching the principle is stated as low.	Validation team has conducted the web seach and found Indonesia has rafied the ILO convetions including 87 and 98 (http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102938)i.e. freedom of association and right to collective bargaining. Further, during the site visit, it was found the project is following all the ILO convetions ratified by Indonesia. Hence, the chosen risk of breaching as low is assessed as correct.
5. The project does not involve and is not complicit in any form of forced or compulsory labour.	Indonesia is a party to ILO convention 29 (since 1950) and 105 (since 1999) on elimination of forced and compulsory labour. http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102938 The project does not involve in any form forced labour.	Based on the document review ^{3/21} and site visit observations, validation team has found the project does not involve in any activies that contribute to forced or compulsory labour. It is also not complicit in any from of forced or compulsory labor. Hence, the chosen risk of breaching as low is



	The risk of breaching the principle is stated as low.	assessed as correct.
6. The project does not employ and is not complicit in any form of child labour.	<p>The project does not involve in any form child labour. Indonesia is also a party to convention 138 on Minimum Age since 1999 and Convention 182 on Worst Forms of Child Labour since 2000:</p> <p>http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102938</p> <p>There is not any child labour engaged by the company. The minimum age is 18 years for company employees.</p> <p>The risk of breaching the principle is stated as low.</p>	Based on the document review ^{3/21/} and site visit observations, the project does not involve any activities that encourage any form of child labour. Hence, the chosen risk of breaching as low is assessed as correct.
7. The project does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis.	<p>The project does not involve in any form discrimination in any kind of form. Indonesia is also party to Convention 100 (Equal remuneration) since 1958 and 111 on Discrimination in employment/occupation since 1999 to prevent any form of discrimination:</p> <p>http://www.ilo.org/dyn/normlex/en/f?p=1000:11200:0::NO:11200:P11200_COUNTRY_ID:102938</p> <p>There were no particular instances identified with respect to discrimination against workers during the assessment.</p> <p>The risk of breaching the principle is stated as low.</p>	<p>Based on the document review^{3/21/}, web search and site visit interviews, it is found that the project does not involve in any form of discrimination based on gender, race, religion and sexual orientation. The ratified ILO conventions are available at the following weblink :</p> <p>http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:11200:0::NO::P11200_COUNTRY_ID:102938</p> <p>Hence, the chosen risk of breaching as low is assessed as correct.</p>
8. The project provides workers with a safe and	Following the EIA report, the project owner UPC is	Validation team has reviewed the EIA report



<p>healthy work environment and is not complicit in exposing workers to unsafe or unhealthy work environments.</p>	<p>committed to provide workers with a safe and healthy work environment under Company Policies and Environmental, Health & Safety Management Systems.</p> <p>The RKL/RPL (EIA Report²¹) report also confirmed that the new personnel and staffs will be trained about occupational safety and health. Moreover, strict observance and implementation of occupational safety and health are also given to assigned personnel and staff working for the project.</p> <p>The risk of breaching the principle is stated as low.</p>	<p>and interviewed the contractors during the site visit^{3/21}. It was noticed all the project participant is following all the required occupational, safety and health norms through the trained and competence personnel and is also ensuring that all the stakeholders follow it.</p> <p>Hence, the chosen risk of breaching as low is assessed as correct.</p>
<p>Environmental protection</p>		
<p>9. The project takes a precautionary approach in regard to environmental challenge and is not complicit in practices contrary to the precautionary principle. This principle can be defined as "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.</p>	<p>The project takes a precautionary approach in regard to environmental challenges and is not complicit in practices contrary to the precautionary principle. Detailed impacts assessment was conducted under supervision of Environmental Management Bureau, Department of Environment and Natural Resources, Indonesia and is elaborated in the ESIA report²¹, and the outcomes are reflected in the SD matrix in section F.2.</p> <p>The risk of breaching the principle is stated as low.</p>	<p>Based on the review of the provided ESIA report and site visit observations it is found that the project has undergone a thorough scrutiny in terms of study of environmental impacts and its mitigation plans prior to obtaining all the approvals. It is also found that construction activity is also following the required precautionary norms and a system is in place to ensure the robust implementation of the environmental management plan.</p> <p>Hence, the chosen risk of breaching as low is assessed as correct.</p>



<p>10. The project does not involve and is not complicit in significant conversion or degradation of critical natural habitats, including those that are (a) legally protected (b) officially proposed for protection, (c) identified by authoritative sources for high conservation value or (d) recognised as protected by traditional local communities.</p>	<p>The project is a greenfield project, so there is a certain amount of land to be used. Based on the ESIA report²¹, the project area is mostly forest land but without potential effects on critical natural habitats and not revealed any risks. However, the project owner has established Environmental Management Plan and conducted Environmental Monitoring Plan to monitor the project.</p> <p>The risk of breaching the principle is stated as low.</p>	<p>As discussed, in the above sections, the project does not have a critical impact on the natural habitats and the forest area as per the ESIA²¹ studies and the approvals were obtained. Further, a robust system is in place for the implementation of the environmental management plan.</p> <p>Hence, the chosen risk of breaching as low is assessed as correct.</p>
<p>Anti- Corruption</p>		
<p>11. The project does not involve and is complicit in corruption.</p>	<p>Indonesia is a party to United Nation Convention against Corruption since 18 Dec 2003:</p> <p>https://treaties.un.org/pages/viewdetails.aspx?src=ind&mtdsg_no=xviii-14&chapter=18&lang=en#EndDec</p> <p>The project does not involve any kind of corruption. The project does not involve any kind of corruption. Following the EIA report, no major concerns were observed with regard to the current UPC environmental, health and safety management systems. UPC has a current framework and EHS Policy in place, as well as formal company acceptance to the national regulation regarding to avoid corruption, bribery and illegal practices in business dealings; including Law No. 31/1999 and Law No.20/2001, Law No. 8/2010 and other related regulation.</p> <p>The risk of breaching the principle</p>	<p>Indonesia has ratified the UN convention against corruption and it verified at the following weblink :</p> <p>https://www.unodc.org/unodc/en/corruption/ratification-status.html.</p> <p>Validation team found that the project participant has developed the robust policies against the corruption in line with national regulations. Hence, the project does not involve and is complicit in corruption. Hence, the chosen risk of breaching as low is assessed as correct.</p>



	is stated as low.
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Hence the audit team confirms that none of the components have been identified to have high risk and the Do no Harm assessment has been carried out in accordance with GS requirements.

4.2 Sustainable Development Matrix

The PP has used the sustainable development assessment matrix as required by the GS and all the information is provided in the GS passport^{3/}. The project activity has been checked against a series of SD indicators in three categories, viz. Environmental, Social Development and Economic & Technological Development.

Parameter	Assessment as per Passport (negative, neutral or positive)	Documents / References	Mitigation plan (in case negative)	Auditor conclusion
Air quality	Neutral	GS passport ^{3/2/} /ESI A Report ^{2/1/}	The GS passport includes a detailed description on whether the project would have any impact on the air quality and it is clearly stated that there is negligible impact as per the conducted Environmental Social impact assessment studies.	The project entails the installation of 30 no. of 2.5 MW wind turbines at Sidrap regency of South Sulawesi Island ^{3/} . As per the conducted EIA study the impact due to vehicular emissions and machine is anticipated. However, PP has followed the required measures to mitigate the impact of such emission as illustrated in the passport. Hence, It does not have any adverse impact on the air quality and it remains same in the baseline and in the project activity too. ^{2/1/} The local stakeholders were interviewed during the site visit and was concluded that there is no adverse impact of



				the project on air quality to confirm this. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, and appropriate <u>and reproducible.</u>
Water quality and quantity	Neutral	PDD ^{2/} /ESI A Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the water quality and it is clearly stated that there is negligible impact as per the conducted Environmental Social impact assessment studies.	Based on the review of the documents ^{3/21/} , validation team has noticed that there are no surface and ground water sources that could be contaminated. Further, a mitigation measure was proposed to collect the wastewater produced from washing in the batch plant. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, and appropriate <u>and reproducible.</u>
Soil condition	Neutral (0)	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the soil condition and it is clearly described that there is negligible impact as per the conducted Environmental Social impact assessment studies.	Based on the document review ^{3/21/} and site visit observation, validation team has found that the project does not have any significant negative impacts on the soil conditions. The soil could be disturbed during the construction stage and PP has adopted the greening measures to ensure the soil condition. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, and appropriate <u>and reproducible.</u>
Biodiversity	Neutral	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the biodiversity condition and it is described that	Based on the review of the documents ^{3/21/} , validation team has understood that EIA study revealed that the project would have negligible impact <u>negligible impact</u>



			there is negligible impact as per the conducted Environmental Social impact assessment studies. However, the number of bird and bat strikes is monitored.	on the flora and fauna. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable and appropriate. However, PP has chosen number of bird and bat strikes as part of the sustainability monitoring plan. <u>Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, appropriate and reproducible.</u>
Other Pollutants	Neutral	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the soil condition and it is clearly described that there is negligible impact as per the conducted Environmental Social impact assessment studies.	Based on the review of the documents ^{3/21/} and site visit, validation team has identified the noise production levels are within the permissible range and would not have major impact on the environment. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, and appropriate <u>and reproducible.</u>
Quality of Employment	Positive	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the quality of employment condition and it is clearly described that there is positive impact as the project would create skilled professionals in the host country Indonesia.	The project is the first large scale wind project in Indonesia. Hence, it is training the local people to be competent to ensure the smooth implementation of the project and has a positive impact on the local community in terms of livelihood. Therefore, validation team is of the opinion that '+' scoring to the indicator is reasonable, and appropriate <u>and reproducible.</u>
Livelihood of the poor	Neutral	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the live-	Based on the document review ^{3/21/} -and site visit observations, validation team has found the project has recruitment many people and ena-



			likelihood of the poor and it is clearly described that there is positive impact. However, PP chose the neutral score (0) on a conservative basis.	bled the people to have better life; However, it is noticed PP chose the score as neutral on a conservative basis. Validation team is of the opinion that '0' scoring to the indicator is reasonable, and appropriate and <u>reproducible</u> .
Access to affordable and clean energy services	Neutral (0)	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{2/1}	The GS passport includes a detailed description on whether the project would have any impact on the access to affordable and clean energy resources and it is stated it has positive impact. However, due to the lack credible data this couldn't be quantified. Hence, PP chose the score as neutral instead of positive.	The project is large scale renewable energy project that produces clean energy. Thus, it encourages other players to come forward to implement similar renewable energy projects in Indonesia. Though, the project has positive impact with respect to "Access to affordable and clean energy services", PP stated due to the lack of credible data, they chose the neutral score. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, acceptable <u>and reproducible</u> .
Human and institutional capacity	Positive	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{2/1}	The GS passport includes a detailed description on whether the project would have any impact on the human institutional capacity and it is clearly described that there is negligible impact as per the conducted Environmental Social impact assessment studies. The project leads to local employment and also the helps the local women to take up the jobs in the wind project. Hence, PP	As discussed above, the project contributes to the skill improvement of the local people so that they have the knowledge to work on renewable energy projects and contribute to the human and institutional capacity development in Indonesia. It is found it has employed the local people including women. Thus, it certainly contributes to human and institutional capacity. Therefore, validation team is of the opinion that that '+' scor-



			chosed positive score for the indicator.	ing to the indicator is reasonable, and appropriate <u>and reproducible</u> .
Quantitative employment and income generation	Positive	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the quantitative employment and income generation and it is clearly described that there is a positive impact as the project is generating more employment opportunities. Hence, PP has chosen the positive score.	Validation team has found that project have provided employment to the local people and has improved their income. In addition to it, their CSR activities have improved the livelihoods of the people living in the project vicinity. Therefore, validation team is of the opinion that '+' scoring to the indicator is reasonable, and appropriate <u>and reproducible</u> .
Balance of payments and investment	Neutral	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description that the project would have positive impact on the communities as it brings investments to foster the growth of renewable energy in the host country Indonesia. PP found it is difficult to measure. Hence, chose neutral scoring.	The project involves the production of renewable energy and thus it reduces the dependence on the fossil fuels. So, it reduces the government spending on the import of fossil fuel resources. However, this impact is difficult to measure. Therefore, validation team is of the opinion that '0' scoring to the indicator is reasonable, and appropriate <u>and reproducible</u> .
Technology transfer and technological self-reliance	Positive	PDD ^{2/} , GS Passport ^{3/} ESIA Report ^{21/}	The GS passport includes a detailed description on whether the project would have any impact on the <u>technology transfer and technological self-reliance</u> and it is clearly described <u>described</u> that there is a <u>positive</u> negligible impact as per the conducted Environmental Social impact assessment studies.	Validation team has observed that the project is a first of its kind project and thus it encourages other players to enter the renewable energy market and promotes the technological self-reliance in Indonesia. Therefore, validation team is of the opinion that '+' scoring to the indicator is reasonable, and appropriate <u>and reproducible</u> .



Hence the audit team confirms that none of the components have been identified to have a negative score. Therefore, the criteria for SD matrix have been complied with.

4.3 Sustainability Monitoring Plan

The validation team has verified that the Monitoring Plan is in accordance with the applied monitoring methodology ACM0002 version 17^{25/}. The assessment team has checked all the parameters presented in the monitoring plan against the requirements of the methodology and no deviations relevant for the project activity have been found in the plan. The monitoring procedures have been reviewed by the assessment team through document review and interviews with the relevant personnel. All parameters that are deemed necessary for the estimation of emission reductions have been included in the PDD^{2/}.

The parameters to be monitored as indicated in the GS Passport^{3/} to further confirm that the project is contributing positively to sustainable development are as follows:

- Water quality and quantity
- Biodiversity
- Other pollutants
- Quality of employment
- Quantitative employment and income generation
- Technological self reliance
- Human and institutional capacity

S.No.	Sustainability Indicator	Description provided by PP in the GS passport ^{3/}	Assessment
1.	Water quality	The project participant (PP) has used the existing standards for drainage sedimentation or compare with rivers reputed as having none or minimal erosion. Thrice a year per river during construction & operation: one during after storm, one during dry season & one during ordinary rain. And/or following request by related local authorities. PP chose to monitor the water quality parameter sediment load during the construction period as it is anticipated to produce the load only during the construction period and thrice in a year.	Validation team assessed based on the review of the ESIA report ^{21/} that the baseline situation is the water resources are not contaminated. However, during construction phase project is expected to produce wastewater which would be treated and the water quality is maintained within the standard. However, the sediment load is included as monitoring parameter and it is found this load would occur only during the construction period. Hence, the monitoring of the indicator is feasible.
2.	Biodiversity	The white color of the turbines will reduce the risk of collision by nocturnal birds against the turbines. The PP may install	Validation team assessed that the project has minimum or not significant impact on the biodiversity after reviewing the ob-



		<p>the obstruction lights on the wind turbines in case the proposed measure would not be useful.</p> <p>The PP may apply some technological approaches as below:</p> <ul style="list-style-type: none"> Regular monitoring and the presence of birds and bat during the operation of the power plant. <p>PP has chosen number of bird and bat strikes as the monitoring parameter. A third party will be hired to by the project owner to monitor this parameter and photographs will be kept as records</p>	<p>servations made in the ESIA ^{21/} study and also the site visit observations. However, PP chose to monitor the number of bird and bat strikes.</p>
3.	Other pollutants (temporary)	<p>PP chose noise as one of the monitoring parameters for this indicator. It will be monitored both construction and operational phase. The information will be documented and will be ensured the noise levels are within the permissible standards. This parameter would be monitored one time during the 1st monitoring period, so as to ensure that the noise level issue gets resolved if identified during the 1st monitoring period itself and does not get carried forward throughout the crediting period.</p>	<p>Based on the review of the ESIA report^{21/}, validation team understood the project has no significant impact on other pollutants. However, PP chose to monitor noise during the construction and <u>during the 1st monitoring period only, operational phases.</u> Validation team found that <u>choice made by PP is reasonable as there is no chance of increasing the noise during the operation phase, would be monitoring it regularly and ensure it is within the permissible limits.</u></p>
4.	Quality of employment	<p>Training of staff and labor conditions Without the Project, local people have no such opportunities to be trained on the technology and the monitoring of the plant Operation, and the emergency and safety procedures. In addition to it the labor conditions would be improved. In the baseline, local people have no such opportunities to be trained on the technology and the monitoring of the plant operation, and the emergency and safety procedures. Together with the technology supplier, the Project will organize training for the staff on the technology and the monitoring of the plant operation, and the emergency and safety procedures as much as possible.</p>	<p>It has to be noted that the project was operational at the time of site visit. So, validation team has observed the number of local staff and foreign staff and interviewed the employees on their roles and trainings received and working conditions would be improved. Further they have received on job training so far. In the future, they will be provided training on the operation of the wind farm. Hence, the validation team is able to confirm that the description provided by the PP in the Passport is adequate and the monitoring of training of staff and labor conditions is feasible during</p>

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			the crediting period.
5.	Quantitative employment and income generation	<p>Number of job opportunities created/income generation</p> <p>Without the Project, local people have no such job opportunities from the Project, and their income may have no increase. In the baseline, local people have no such job opportunities from the Project, and their income may have no increase. The number of jobs created during operational period and the salary of employees if they are increased.</p>	Validation team assessed that the description on the monitoring of the chosen parameter number of job opportunities created/income generation is feasible during the crediting period.
6.	Technology transfer and technological self-reliance	<p>Number of trainings and/or seminars, and/or site visits for Masons and/or external audience (such as local guests, outsiders, etc.).</p> <p>In the baseline, local people have no such opportunities to be known about the technology. The project will project organize will training organize training seminars or seminars or site visits for masons and/or external audience (such as local guests, outsiders, etc.) as much as possible.</p>	Validation team assessed that the description on the monitoring of the chosen parameters is feasible during the crediting period.
7	Human and institutional capacity	<p>PP chose <u>the</u> number of jobs and positions for women. Without the Project, local women have no such opportunities to work in Sidrap wind farm project. In the baseline, local women have no such opportunities to work in Sidrap wind farm project. The records will be kept by the company's human resource department. <u>PP will try to maximize local employment in the long term through a number of trainings that would be conducted for local human resources of UPC to enhance their capacity.</u></p>	Validation team has reviewed the Passport ^{3/} and ESIA ^{21/} document and found project has positive impact on the human and institutional capacity. The monitoring method is adequately described in the GS passport.

As described in the GS passport, PP will be monitoring the above parameters and implement the sustainability monitoring plan. Thus, the project complies with the GS requirements.

4.4 Stakeholder Consultation

4.4.1 Local Stakeholder Consultation

A comprehensive public stakeholder meeting was carried out at Sidrap Regency Office, South Sulawesi Province, Indonesia on 23.11.2015^{23/}, for the project activity, as a part of GS process. The audit team has checked the following to confirm the proceedings of the LSC meeting^{5/}.



- The stakeholders were invited through personal invitations and pamphlets. The copies of invitations are available and are been checked by the audit team.
- A non technical summary in local language Bahasa has been included/not included in the LSC report.
- Participant list
- Stakeholder evaluation forms available/not available
- Minutes of the meeting available/not available
- Blind exercise done by participants in the initial SD matrix available/not available
- Comments from the stakeholders available/not available and have been evaluated appropriately.

No objections or negative comments were raised about the project. All the stakeholders were of the opinion that the project activity would be beneficial and would contribute toward the sustainable development, thus fulfilling the GS criterion. The entire proceedings of the stakeholder consultation meetings have been verified by the audit team.

4.4.2 Stakeholder Feedback Round

A Stakeholder Feedback Round has been conducted on 8nd March 2017 after making the following documents publicly available for comments for a period of 60 days:

- Gold Standard Passport^{3/},
- Gold Standard LSC Report^{5/},
- GS PDD^{2/},
- Non-technical summary of the project

The above documents were also provided through email to the Gold Standard NGOs. The hard copy of the documents have been made available to local people of the region at the Sidrap. The local stakeholder consultation report addresses all the comments that were made by stakeholders during the consultation process including the stakeholder feedback round. It was assessed that the PP has contacted more stakeholders including those that have participated in the local stakeholder consultation programme and the information is also furnished in the Annex 3 of the latest GS passport^{3/}. Hence the audit team confirms that the criterion is fulfilled by the project as per the GS requirements.

There were 4 Forward Action Requests (FARs) raised by the Gold Standard TAC during the local stakeholders consultation^{31/}. They are assessed in the table below:

S.No.	FAR Raised by GS	Response from the PP	Assessment of the DOE
1	The DOE shall validate whether expropriation has been carried out as per the local requirements or not and provide their opinion in the GS validation report.	PP is clearly performing national level preparation of AMDAL/EIA and also undertaking preparation of International standard (IFC) ESIA. These documents set up monitoring and management of Environmental and Social issues that will be conducted by the PP. Furthermore, as mentioned in the LSC report and other documents including EIA and ESIA reports, there is no involuntary	Validation team has performed the site visit and understood the site is away from the villages. Further, most of it is acquired from the government. Some part of it is acquired land belongs to the farmers and they were interviewed. They were found happy as they got the required



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		<p>resettlement existing within the project area. UPC has designed, and will continue to keep the project from affecting residence. They have been conducting the AMDAL and ESIA studies to identify and prepare mitigations for any environmental and social impact on the community and stakeholders. Additionally, UPC will also keep a regular communication with the affected stakeholders throughout the lifetime of the project. UPC compensation package to Project Affected People (or PAP) will be fair and transparent for the benefit of both parties. In this regard, the following actions will be taken place:</p> <ul style="list-style-type: none"> • Market Research and Appraisal process will be applied and considered an integral standard to determine the value of a PAP's compensation. This will allow UPC to have a fair and transparent compensation package for all PAPs; • Transaction will be transparent and include the participation of witnesses and family member to ensure credibility for the transaction. 	<p>compensation^{32/} and they believe the wind project would be helpful to the local community to enhance their livelihood and get the clean electricity. Project participant has also illustrated the same in the response above. Thus, validation team is found that the PP has conducted the required expropriation. Hence, this FAR is closed.</p>
2	<p>The PP shall include "Number of bird and bat strikes" parameter to the monitoring plan and will be monitored and reported each verification. The monitoring will be conducted by an independent third party.</p>	<p>The "Number of bird and bat strikes" parameter has been included in the monitoring plan and will be monitored and reported each verification. The monitoring will be conducted by an independent third party.</p>	<p>Based on the review of the response provided by PP and the passport document^{3/}, validation team confirmed that the "Number of bird and bat strikes" is included in the list of monitoring parameters and would be monitored by independent third party. Hence, this FAR is closed.</p>
3	<p>The drainage channels which</p>	<p>The drainage channels will be built to</p>	<p>During the validation site</p>



	will be built to the roads will be verified by the DOE during the first verification site visit.	collect the wastewater that may be discharged to local watercourses.	visit, validation team noticed that the project was in inception stage and drainage channel related work was about to begin. Hence, it will be verified by the DOE during the first verification.
4	The DOE at the time of validation must verify that there is an adequate Environmental Management Plan & and a Monitoring plan to monitor the project impacts in the project area and critical natural habitats (if any).	There is an adequate Environmental Management Plan & and a Monitoring plan to monitor the project impacts in the project area and critical natural habitats	Based on the site visit and document review, validation team confirmed that the project has a sound Environmental Management Plan prepared by competent consultant and it was clear that the project does not have any significant negative impacts on the project area and also the critical natural habitats. However, Project Participant has included the number of bird and bat strikes as part of the monitoring plan. Hence, the FAR is closed.

4.5 Environmental and Social Impact Assessment

The project conformed to the host country environmental regulations Law No. 32 Year 2009 on Environment Protection and Management – relevant reference^{26/} for AMDAL (Analisis Mengenai Dampak Lingkungan) and ESIA study^{21/}, and national relevant regulations. Further, it also comply with the IFC (International Finance Corporation) Performance Standards.

The project has obtained the environmental clearance from the local Government with Recommendation Letter No. 660/2564/I/BLHD dated 25th June 2015^{26/}. Validation team has reviewed the EIA report and the clearance letter obtained from the concerned regulatory authority. Section D of the PDD^{2/}, clearly illustrates the environmental impacts and it's management plan. Hence, validation confirmed that the project meets all the relevant Gold Standard requirements.

Annex 1 List of Findings

Compilation and Resolutions of CARs, CRs and FARs

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	<u>Accuracy and completeness of information and data</u>	<input checked="" type="checkbox"/> Closed
GS Requirement	Application of latest version of the methodology	
Corrective Action Request	<u>CAR 1:</u> In page no: 1 of the webhosted PDD, it is stated ACM0002, version 16 of the methodology is applied. However, version 16 of ACM0002 was valid until 8 th January 2017. Hence, PP is required to apply the latest version of the methodology including the weblinks at all the relevant sections of the PDD.	
Response	The PDD has been updated to version 17 of ACM002.	
Assessment Means of validation	Validation team has reviewed the PDD and found that applicable version 17 of the applied methodology is applied in the revised PDD. Hence, the CAR is closed.	
Adjustment on Changes in the monitoring report or supporting annexes		

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	<u>Accuracy and completeness of information and data</u>	<input checked="" type="checkbox"/> Closed
GS Requirement	Application of conservative values	
Corrective Action Request	<u>CAR 2:</u> In table.3, section A.3 of the webhosted PDD, it is stated the net Annual Energy Production (AEP) (P50) is 226.27 Gwh/anum and accordingly the net capacity factor is 36.9%. However,	



Corrective Action Requests by the assessment team		
	<p>as per the “Guidelines for the reporting and validation of plant load factors” the PLF has to be considered from one of the following three:</p> <ol style="list-style-type: none"> 1. The PLF value provided to bankers or equity financiers 2. Value submitted to Government for the project approval to implement it 3. Value determined by a third party (engineering company) by the project participant. <p>Hence, PP is required to update the same in order to meet the guidelines in the relevant sections of the PDD and the ER sheet.</p>	
Response	The PLF value provided by a contracted third party (i.e. DNV-GL) who conducted Energy Assessment Report on 02 March 2016 for Sidrap Wind Farm Project. The PDD has been updated for consistency.	
Assessment Means of validation	Validation team has reviewed the submitted Energy Assessment Report prepared by a third party DNVGL and as per that PLF value is considered for P90 instead of P50 as per the guidelines. Thus, the PLF value is found 32% and net energy at P90 is 220.7Gwh/year. Hence, the CAR is closed.	
Adjustment on Changes in the PDD or supporting annexes	Section A.3 Energy Assessment Report	

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	<u>Accuracy and completeness of information and data</u>	
GS Requirement	GS requirements related to completeness and conservative data usage	☑



Corrective Action Requests by the assessment team		
Corrective Request	Action	<p><u>CAR 3:</u> For the sake of transparency and completeness, section B.3 of the webhosted PDD needs to be updated with respect to the following two points :</p> <ol style="list-style-type: none"> 1. There is no information related to the type of grids in Indonesia and which grid does the project falls in. Hence, PP is required to correct the same. 2. Further, the flow diagram included in the webhosted PDD, is not accurate as the box depicting the internal transformer is not clear. Hence, PP needs to update the same to include the actual scenario on-site.
Response		<ol style="list-style-type: none"> 1. The grid of project has been addressed clearly in the revised PDD. 2. The flow diagram has been updated.
Assessment Means of validation		Validation team has reviewed the section B.3 of the submitted revised PDD and found section B.3 is updated to include the correct grid name of the project and flow diagram is also updated. Hence, the finding is closed.
Adjustment on Changes in the monitoring report or supporting annexes		PDD
Closed		

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	<u>Accuracy and completeness of information and data</u>	<input checked="" type="checkbox"/> Closed
GS Requirement	Project's additionality	
Corrective Action	<u>CAR 4:</u>	



Corrective Action Requests by the assessment team		
Request	<p>For the sake of transparency and completeness, section B.5 of the webhosted PDD needs to be updated with respect to the following points :</p> <ol style="list-style-type: none"> 1. Demonstration of Step 0 needs to be presented with respect to each condition of the step 0, preferably in a table. 2. In order to demonstrate the first of it's kindness of the project, PP has presented data by the end of 2008. However, there is publicly available data that there are other wind projects in the region. Latest data is required to be presented to illustrate that the project is first of it's kind in the host country Indonesia. 	
Response	<ol style="list-style-type: none"> 1. Demonstration of step 0 has been presented with respect to each condition in a table. 2. The latest available data together with the Statement letter emphasizing that a project is a first of its kind by Indonesian Wind Energy Association dated on 07/11/2017 have been added to illustrate that the project is first of its kind in Indonesia. Please refer to the updated PDD for review. 	
Assessment Means of validation	<p>Validation team has reviewed section B.5 of the revised PDD and found the step 0 is explained to demonstrate the project is first of it's kind. PP has submitted the statement from Indonesian Wind Energy Association along with the translated copy to declare the project is first of it's kind in the country.</p>	
Adjustment on Changes in the monitoring report or supporting annexes	<ol style="list-style-type: none"> 1. Letter from the Indonesian Wind Energy Association stating the project is a first of it's kind in Indonesia 	

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL



Corrective Action Requests by the assessment team		
Issue	<u>Accuracy and completeness of information and data</u>	<input checked="" type="checkbox"/> Closed
GS Requirement	Emission factor determination	
Corrective Action Request	<u>CAR 5:</u> For the sake of transparency and completeness, section B.6 of the webhosted PDD needs to be updated with respect to the following points : <ol style="list-style-type: none"> 1. PP is required to include the identified relevant electricity system for the project. 2. Para 21 of the tool is mentioned in the page no: 15 of the PDD which is not correct. Hence it shall be corrected. 3. Step 3 provides various options to determine the Operating Margin (OM). However, the reason for choosing the Average OM was not illustrated as per figure 2: flow chart: Overview of application of O&M methods. 4. Data related to calculation of OM and BM needs to be published in the PDD and authentic translated document needs to be furnished to the DOE. 	
Response	<ol style="list-style-type: none"> 1. The PP has identified the relevant electricity system for the project in the updated PDD 2. The applied emission factor is the most recent value published by Indonesian Government. Accordingly, version 04 is applied. Hence, latest tool to calculate the emission factor is not relevant here. 3. The applied emission factor is the most recent value published by Indonesian Government. Accordingly, version 04 is applied. Hence, latest tool to calculate the emission factor is not relevant here. 4. Data related to calculation of OM and BM has been provided in Appendix 4 of the PDD. And the authentic translated documents have been also submitted to DOE for review. 	
Assessment Means of validation	Validation team has reviewed the submitted PDD and confirms the following : <ol style="list-style-type: none"> 1. Relevant electricity system for the project is stated in section B.6. 	



Corrective Action Requests by the assessment team		
	<p>2. As addressed by the PP, the applied emission factor is the most recent data that is published by the respective authority of the country and the documents were furnished. It was noticed the emission factor was calculated using version 04 of the tool to calculate the emission factor. Thus, latest version of the tool is not applicable. However, it is observed the most recently available data is for the year 2015. Hence, PP is required to update the data and determine the emission factor as per the latest available data.</p> <p>CAR is not closed.</p>	
Response	The EF 2015 has been calculated following version 04 of "Tool to calculate the emission factor for an electricity system" by Directorate General of Electricity, Ministry of Energy and Mineral Resources on 22 December 2017 and been updated in the PDD.	
Assessment Means of validation	Validation team has reviewed the submitted PDD and other documents to determine the emission factor and confirmed that version 04 of the "Tool to calculate the emission factor for an electricity system" was applied the Ministry of Energy and Mineral Resources which is the government authority that publishes data on the emission factors. Accordingly, the emission factor is calculated as 0.640 tCO ₂ /MWh. Thus, the CAR is closed.	
Adjustment on Changes in the monitoring report or supporting annexes	Emission factor data sheet provided by the Ministry of Energy and Mineral Resources	

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	<u>Accuracy and completeness of information and data</u>	<input checked="" type="checkbox"/>



Corrective Action Requests by the assessment team		
GS Requirement	Complete information on the monitoring mechanism	Closed
Corrective Action Request	<p><u>CAR 6:</u> For the sake of transparency and completeness, section B.6 of the webhosted PDD needs to be updated with respect to the following points :</p> <ol style="list-style-type: none"> 1. Accuracy class of the energy meters 2. Calibration frequency of the energy meters 3. Organization chart for the monitoring team 	
Response	The section B.6 and B.7 of the PDD has been updated as request.	
Assessment Means of validation	Validation team has reviewed the PDD section B.6 and B.7.2 and found that the accuracy class, calibration frequency and organization chart of the monitoring plan is included.	
Adjustment on Changes in the monitoring report or supporting annexes	Updated PDD	

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	<u>Accuracy and completeness of information and data</u>	<input checked="" type="checkbox"/> Closed
GS Requirement	Project start date as per the CDM glossary	
Corrective Action Request	<p><u>CAR 7:</u> It is included in section C.1 of the PDD, the project start date is 28th December 2016. However, the agreement to supply the wind turbines was happened on 29th July 2016. <i>As per the CDM</i></p>	



Corrective Action Requests by the assessment team		
	<i>glossary, the project start date is the earliest date on which the construction or real action or implementation has taken place.</i> Hence, PP needs to correct the project start date inline with the guidelines.	
Response	The project start date has been corrected.	
Assessment Means of validation	Validation team has assessed section C.1 of the revised PDD and found the start date is updated correctly as indicates the earliest date on which the real action has taken place towards the implementation of the project activity.	
Adjustment on Changes in the monitoring report or supporting annexes	Updated PDD	

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue		
GS Requirement	Accuracy and completeness of information and data	<input checked="" type="checkbox"/> Closed
Corrective Action Request	<p>CAR 8 : For the sake of transparency and completeness, PP is required to make the following corrections in the GS passport :</p> <ol style="list-style-type: none"> 1. Project start date needs to be corrected in order to make it consistent with section C.1 of the webhosted PDD. 2. Estimated energy production and the emission reductions need to be corrected after considering the conservative energy production data 	



Corrective Action Requests by the assessment team		
	3. Amended ODA form is included in the page no: 40, which is not relevant.	
Response	<ol style="list-style-type: none"> 1. Project start date has been corrected in order to be consistent with section C.1 of the webhosted PDD. 2. Estimated energy production and the emission reductions need to be corrected after considering the conservative energy production data 3. Amended ODA form is removed from the page no: 40 	
Assessment Means of validation	Validation team has reviewed the submitted revised passport and found the start date of the project; energy production related data is updated. In addition to it, page no :40 is also modified. Hence, the CAR is closed.	
Adjustment on Changes in the monitoring report or supporting annexes	Updated Passport	

Corrective Action Requests by the assessment team		
	Comments and Results	Conclusion and IRL
Issue	Accuracy and completeness of information and data	<input checked="" type="checkbox"/> Closed
GS Requirement	Transparency of the sustainability monitoring parameters	
Corrective Action Request	<u>CR 1:</u> For the sake of transparency and completeness, PP is required to make the following corrections in section G of the GS passport : <ol style="list-style-type: none"> 1. Water quality assessment standard needs to included and the description provided in the cell "When" needs to be revised to make it easy to understand. Further, PP may 	



Corrective Action Requests by the assessment team	
	<p>state the name of the personnel that would be monitoring the water quality.</p> <ol style="list-style-type: none"> 2. Future target of the parameter “biodiversity” is stated as “<i>May install obstruction lights on the wind turbines in case the proposed measure would not be useful</i>”. This description is on the proposed action, however the future target /goal has to be included in the cell and the action needs to be shifted to other cells. 3. Section E.2 of the GS passport is yet to be updated to include the information on the stakeholder feedback round.
Response	<p>The section G of the passport has been updated as per request.</p> <p>However:</p> <p>Water quality indicator: It is hard to state the name of the personnel who would monitor the water quality at the moment since the project is currently under construction period in which a lot of contractors involved. Hence, basically the PP – PT UPC Sidrap Bayu Energi (or UPC) would be mainly in charge of monitoring all environmental indicators including water quality and/or appointed executive contractors with supervision by Environment Agency of Sidrap Regency and South Sulawesi Province.</p> <p>The name of the concerned department has been stated in the Passport.</p> <p>The section E.2 of the GS Passport has been updated to include the information on the stakeholder feedback round.</p>
Assessment Means of validation	<p>Validation team has reviewed the Passport and the provided response and understands it is difficult to state the name of the personnel. However, the designation or the name of the concerned department needs to be stated in the Passport that would monitor the wastewater quality for the sake of transparency. Further, the information on the water quality standard is provided.</p>
Adjustment on Changes in the monitoring report or	<p>Updated Passport</p>



Corrective Action Requests by the assessment team	
supporting annexes	

Forward Action Requests by the assessment team		
	Comments and Results	
Issue	FARs raised during the local stakeholders consultation round by GS TAC	<input checked="" type="checkbox"/> Closed
Requirement	Closure of the all the FARs	
Forward Action Request	1) Forward Action Request # 1: The DOE shall validate whether expropriation has been carried out as per the local requirements or not and provide their opinion in the GS validation report. 2) Forward Action Request # 2: The PP shall include “Number of bird and bat strikes” parameter to the monitoring plan and will be monitored and reported each verification. The monitoring will be conducted by an independent third party. 3) Forward Action Request # 3: The drainage channels which will be built to the roads will be verified by the DOE during the first verification site visit. 4) Forward Action Request # 4: The DOE at the time of validation must verify that there is an adequate Environmental Management Plan & and a Monitoring plan to monitor the project impacts in the project area and critical natural habitats (if any).	
Response	1. PP is clearly performing national level preparation of AMDAL/EIA and also undertaking preparation of International standard (IFC) ESIA. These documents set up monitoring and management of Environmental and Social issues that will be conducted by the PP. Furthermore, as mentioned in the LSC report and other documents including EIA and ESIA reports, there is no involuntary resettlement existing within the project area. UPC has designed, and will continue to keep the project from affecting residence. They have been conducting the AMDAL and ESIA studies to identify and prepare mitigations for	



	<p>any environmental and social impact on the community and stakeholders. Additionally, UPC will also keep a regular communication with the affected stakeholders throughout the lifetime of the project. UPC compensation package to Project Affected People (or PAP) will be fair and transparent for the benefit of both parties. In this regard, the following actions will be taken place:</p> <ul style="list-style-type: none"> • Market Research and Appraisal process will be applied and considered an integral standard to determine the value of a PAP's compensation. This will allow UPC to have a fair and transparent compensation package for all PAPs; • Transaction will be transparent and include the participation of witnesses and family member to ensure credibility for the transaction. <p>2. The “Number of bird and bat strikes” parameter has been included in the monitoring plan and will be monitored and reported each verification. The monitoring will be conducted by an independent third party.</p> <p>3. 3. The drainage channels will be built to collect the wastewater that may be discharged to local watercourses.</p> <p>4. There is an adequate Environmental Management Plan & and a Monitoring plan to monitor the project impacts in the project area and critical natural habitats.</p>	
<p>Means of validation</p>	<p>1. Validation team has performed the site visit and understood the site is away from the villages. Further, most of it is acquired from the government. Some part of it is acquired land belongs to the farmers and they were interviewed. They were found happy as they got the required compensation and they believe the wind project would be helpful to the local community to enhance their livelihood and get the clean electricity. Project participant has also illustrated the same in the response above. Thus, validation team is found that the PP has conducted the required expropriation. Hence, this FAR is closed. The same is also included in the validation report.</p> <p>2. Based on the review of the response provided by PP and the passport document, vali-</p>	



	<p>dation team confirmed that the “Number of bird and bat strikes” is included in the list of monitoring parameters and would be monitored by independent third party. Hence, this FAR is closed.</p> <p>3. During the validation site visit, validation team noticed that the project was in inception stage and drainage channel related work was about to begin. Hence, it will be verified by the DOE during the first verification. This FAR is open.</p> <p>4. Based on the site visit and document review, validation team confirmed that the project has a sound Environmental Management Plan prepared by competent consultant and it was clear that the project does not have any significant negative impacts on the project area and also the critical natural habitats. However, PP is monitoring the number of bird and bat strikes as part of the sustainability monitoring parameters.</p>	
Any resulting changes in the monitoring report or supporting annexes	GS Passport ESIA Report	

Forward Action Requests by the assessment team		
Comments and Results		
Issue	Implementation of the proeject	<input type="checkbox"/> Not closed
Requirement	During the validation site visit, validation team noticed that the project was in inception stage and drainage channel related work was about to begin. Hence, it will be verified by the DOE during the first verification. This FAR is open.	
Forward Action Request	<u>Forward Action Request No. 1</u>	



Annex 2 Information Reference List

Interviewed Persons during the assessment:

Name	Function	Company
Primanyta Swastyastu	Project co-ordinator	UPC Renewables
Kevin Doson	Project Manager and Head	UPC Renewables
Tanta skobar	Social expert	UPC Renewables
Jumardi	Land Owner	Individual
Asi Kadus	Land Owner, Parabeshan	Individual
Kamal	Land Owner	Individual
Yunus	Land Owner	Individual
Aruh Haris	Bappda, SIDRAP	Individual
Aliung	Bappda, SIDRAP	Individual
Trisakti	CSR manager	UPC Renewables
Zainuddin	Kapaladesa, Matritasi	Individual
Waris Sadik	District head, Watangburu	Individual
Andy haruna	Kapaladesa, Lainungan	Individual
Darwis	Khardus, Kulua	Individual



Industrie Service

REF. NO.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
1.	UNFCCC Webpage	"CDM-EB: Validation and Verification Standard for project activities" (version 01)	2017-03-03	
2.	UPC	Project Design Document for GS project: "Sidrap Wind farm project phase 1" version 0504 . Project Design Document for GS project: "Sidrap Wind farm project phase 1" version 01.	2018- 076-2908 2017-03-01	
3.	UPC	GS Passport "Sidrap Wind farm project phase 1" version 043 . GS Passport "Sidrap Wind farm project phase 1" version 01.	2018- 076-2908 2017-03-01	
4.	AECOM	UPC Sidrap Wind Farm Project Environmental and Social Impact Assessment (ESIA)	2016-01-28	
5.	UPC	Initial Local Stakeholders Consultation Report Final Local Stakeholders Consultation Report	2016-10-10 2018-01-09	
6.	UPC	Feasibility Study Sidrap Wind Farm Project Phase-1-75 MW	September 2015	
7.	UPC and PT PLN Persero	Power Purchase Agreement Energy department of Indonesia on the export of produced power to the local grid company PT PLN Persero.	2017-01-10	
8.	IPCC	2006 IPCC Guidelines for National Greenhouse Gas Inventories: work book	2006	
9.	UNFCCC	Kyoto Protocol to the United Nations Framework Convention on Climate Change (1998)	1998	
10.	UNFCCC	UNFCCC: Decision 3/CMP. 1 (Marrakesh – Accords)		Website
11.	UPC	Emission reduction calculation spreadsheet of the GS project " Sidrap Wind farm project phase 1" version 2. Emission reduction calculation spreadsheet of the GS project " Sidrap Wind farm project phase 1" version 1.	2018-01-09 2017-03-01	
12.	Gold Standard	The Gold Standard Requirements	version 2..2	
13.	Gamesa	Characteristics and general description of Gamesa 2.5-2.625 MW wind turbines	2015-04-15	
14.	UPC	Community Grievance handling procedures Community Grievances Mechanism Standard Operation Procedures and Forms	2016-05-08	
15.	UPC	Investment decision by the board member	2015-09-18	
16.	UPC	Proof of additionality: Letter from Indonesian Wind Energy Association asserting that the project is a first of it's kind large scale wind project in the host country Indonesia Wind power development in development in Indonesia	2017-11-07 2016-06-06	



REF. NO.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
17.	UNFCCC	Tool to calculate the emission factor for an electricity system	Version 04	
18.	UNFCCC	Methodological tool: Additionality of first-of-its-kind project activities	Version 03	
19.	UNFCCC	Tool for the demonstration and assessment of additionality	Version 07	
20.	Gamesa	Proof of project start date: Turbine supply agreement with Gamesa	2015-07-29	
21.	UPC	Addendum of Environmental Impact Assessment (ANDAL) and Environmental Management Plan (RKL)- Environmental Monitoring Plan (RPL) :75MW Sidrap Wind Farm Project Phase 1	April 2016	
		Environmental Management Plan Matrix Environmental and Social Impact Assessment of Sidrap Windfarm project	January 2016	
22.	UPC	Invitation letter to invite the stakeholders for the consultation meeting on the project	2015-10-22	
		Invitation letter tracking of the stakeholder feedback round consultation		
		Feedback document from the local stakeholders obtained during the stakeholder feedback round consultation		
23.	UPC	Notification on the stakeholders <u>stakeholders</u> ' consultation meeting	2015-11-23	
		Documents of the stakeholder feedback consultation		
24.	UPC	Single line diagram of the project		
25.	UNFCCC	Large-scale Consolidated Methodology Grid-connected electricity generation from renewable sources, ACM0002	Version 17	
26.	AMDAL	EIA clearance letter	2015-06-25	
27.	IWES	2nd Asia Renewable Energy Workshop at BPPT Building II, Jakarta, Indonesia presentation by Indonesia Wind Energy Association (Asosiasi Energi Angin Indonesia)	2015-12-04 to 2015-12-05	
28.	MoE & MR	Data required for the calculation of the emission factors from the Ministry of energy and mineral resources, The republic of Indonesia.	2017-12-22	
		Email confirmation on the application of version 04 in the calculation of the Emission factor for the regional grid.	2018-01-10	



Industrie Service

REF. NO.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date (dd/mm/yyyy)	Additional Information (Relevance in CDM Context)
29	DNVGL	Energy Assessment Report for the PLF factor	2016-03-02	
30	UNFCCC	Glossary of CDM terms		
31	GS	GS Review comments on the Local Stakeholders Consultation report	2016-11-30	
<u>32</u>	<u>UPC</u>	<u>Land Acquisition framework document</u> <u>Entitlement Matrix for Land Acquisition</u> <u>Right of way valuation report</u> <u>Land spreadsheet showing the details of the paid compensation</u>	<u>December 2016</u> <u>July 2016</u>	



Annex 3 Appointment Certificates



CERTIFICATE OF APPOINTMENT

Mr. Meesa, Srikanth fulfills the requirements of the Certification Body 'Environment and Energy' of TUV SUD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1:2006	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
TA (s)	1.2, 3.1, 7.1, 13.1					

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Further countries						

Technical Area	
1.2_Renewables	<input type="checkbox"/>
3.1_Energy demand	<input type="checkbox"/>
7.1_Transport	<input type="checkbox"/>
13.1_Solid waste and wastewater	<input type="checkbox"/>

This appointment is valid until 31.05.2019 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TUV SUD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0096/005.

Date	Signature
01/03/2018	

IS-CMS-CB-POG-01/05, version 03



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ZERTIFIKAT ♦ CERTIFICATE ♦ 證書 ♦ CERTIFICADO ♦ CERTIFICAT



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ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ CERTIFICADO ◆ CERTIFICAT



CERTIFICATE OF APPOINTMENT

Mr. Dutta, Supratik fulfils the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1: 2006	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	<input checked="" type="checkbox"/>					

TA (s) 1.2, 3.1, 4.1

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Further countries

Technical Area	
1.2_Renewables	<input type="checkbox"/>
3.1_Energy demand	<input type="checkbox"/>
4.1_Cement and lime production	<input type="checkbox"/>

This appointment is valid until 30.05.2018 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
 In case of loss of validity of this certificate as per result of an assessment according to internal procedure or due to any other reason, it will be properly communicated to you.
 Your Certificate has the internal reference no. CB-IND-CCP-0012/006.

Date	Signature
01/06/2017	

IS-CMS-CB-POG-01/05, version 03



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*Not working with TUV SUD now but a part of the project until May 2018”.



ZERTIFIKAT ♦ CERTIFICATE ♦ 証明書 ♦ CERTIFICADO ♦ CERTIFICAT



CERTIFICATE OF APPOINTMENT

Mr. Murty, Eswar fulfils the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	ISO-14064-1:2006	Other
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Qualification as						
Status	Validator	Verifier	ATL	Technical Reviewer	Financial Expert	Technical Expert
	<input checked="" type="checkbox"/>					
TA (s)	1.1, 1.2, 3.1, 4.1, 13.1					

Country Expertise						
Region	1	2	3	4	5	Other
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Further countries						

Technical Area	
1.1_Thermal Energy Generation	<input type="checkbox"/>
1.2_Renewables	<input type="checkbox"/>
3.1_Energy demand	<input type="checkbox"/>
4.1_Cement and lime production	<input type="checkbox"/>
13.1_Solid waste and wastewater	<input type="checkbox"/>

This appointment is valid until 31.05.2019 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.
 In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.
 Your Certificate has the internal reference no. CB-IND-CCP-0031/009.

Date	Signature
01/06/2018	