Gold Standard
for the Global Goals

TEMPLATE

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION **v. 1.2**
RELATED SUPPORT
- **TEMPLATE GUIDE Key Project Information & Project Design Document v.1.2**

This document contains the following Sections

KEY PROJECT INFORMATION

GS ID of Project	GS2542
Title of Project	Çeşme Wind Power Project, Turkey
Time of First Submission Date	07/01/2016
Date of Design Certification	04/02/2016
Version number of the PDD	7~~6~~
Completion date of version	11~~02~~/03~~1~~/2024
Project Developer	VEGA RÜZGAR ENERJİSİ ELEKTRİK ÜRETİM A.Ş.
Project Representative	SEKANS ENERJİ LTD. ŞTİ.
Project Participants and any communities involved	VEGA RÜZGAR ENERJİSİ ELEKTRİK ÜRETİM A.Ş. SEKANS ENERJİ LTD. ŞTİ.
Host Country (ies)	TURKEY
Activity Requirements applied	☐ Community Services Activities ☒ Renewable Energy Activities ☐ Land Use and Forestry Activities/Risks & Capacities ☐ N/A
Scale of the project activity	☐ Micro scale ☐ Small Scale ☒ Large Scale
Other Requirements applied	-
Methodology (ies) applied and version number	ACM0002: Grid-connected eletricity generation from renewable sources --- Version 21.0
Product Requirements applied	☒ GHG Emissions Reduction & Sequestration ☐ Renewable Energy Label ☐ N/A
Project Cycle:	☒ Regular ☐ Retroactive

Table 1 – Estimated Sustainable Development Contributions

Sustainable Development Goals Targeted	SDG Impact (defined in B.6.)	Estimated Annual Average	Units or Products
13 Climate Action	Emission Reductions	34,757	tCO2
SDG 7 Affordable and clean energy	MWh of renewable energy generated	53,572[1]	MWh
SGD 8 Decent Work and Economic Growth	Quality and Quantitative Employment in the region	6 Employees 1 Training (All employees to be trained)	Number of employees and training

SECTION A. DESCRIPTION OF PROJECT

A.1 Purpose and general description of project

Vega Rüzgar Enerjisi Elektrik Üretim A.Ş. built the Çeşme Wind Power Project, Turkey (Çeşme WPP) with an installed capacity of 18 MWm/16 MWe in Çeşme District of İzmir Province of Turkey. The Project Proponent has been granted a 49-year generation licence by the Turkish Energy Market Regulatory Authority for the proposed Project under the provisions of Law No. 4628 governing the electricity market in the Republic of Turkey.

In the baseline scenario, the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants. Since Turkey's grid mainly consists of thermal power plants, this would have resulted in GHG emissions. However, in the project scenario, the project whose characteristics are summarized below will generate electricity from wind power and will result in emission reductions in parallel with its electricity generation figures. The project boundary is

[1] Please see the registered PDD. (Version 05, dated 29/09/2015)

defined as the national grid which includes all power plants/units connected physically to the electricity system (national grid) and excludes the off-grid power plants.

The purpose of the Project is to produce renewable electricity using wind as the power source and to contribute to Turkey's growing electricity demand through a sustainable and low carbon technology. The project will displace the same amount of electricity generated by the grid dominated by fossil fired power plants. The annual emission reduction estimated by the project is 34,757 tonnes of CO2. During the crediting period, 243,299 tonnes of CO2 are expected to be reduced.

The project involves 6 Nordex N117 wind turbines, each with a capacity of 3.0 MWm/2.67 MWe. The annual electricity production of the project is 53,572 MWh/year. The Çeşme Wind Farm Project, Turkey is connected to the Çeşme RES transmission line and the generated electricity will be supplied to Turkey's national electricity grid.

The Siemens brand, 3-phase generators have a frequency of 50 Hz and a power factor of 0,87. Two power meters are installed at the grid interface of the project. One is the main meter (Serial number: 4213167) and the other one is the back-up meter (Serial number: 4213168) of the main meter for cross-checking. Both meters have an accuracy class of 0.2S.

The project will produce positive environmental and economic benefits through the following aspects:

- Displacing the electricity generated by fossil fuel fired power plants by utilising the renewable resources so as to avoid environmental pollution and GHG emissions,
- Contributing the economic development of the region by providing sustainable energy resources,
- Increasing the income and local standard of living by providing job opportunities for the local people,
- Reducing the blackout because of low voltage by lowering required capacity of the transformer.

The construction of the project started on 02/01/2014. The project was operational on 23/05/2015 and registered on 04/02/2016 under the Gold Standard Registry with the registration number GS2542.

Table 2 – Milestones of the Çeşme WPP

Date	Milestone
29.05.2008	Issuance of the initial license
2008	Çeşme WPP Project Introductory File
03.06.2013	Agreement with Lifenerji for Carbon Consultancy
19.08.2013	Board Decision Date
11.09.2013	Agreement with Equipment Provider (Nordex)
02.01.2014	Start Date of Construction
23.05.2015	Start Date of Operation of the first 3 turbines
20.06.2015	Start Date of Operation of the other 3 turbines
23.05.2015-31.07.2017	1st Monitoring Period
28.04.2022	Local stakeholder meeting (revised meeting requested by GS)
01.08.2017-22.05.2022	2nd Monitoring Period
13.02.2023	Site visit for 2nd monitoring period and CP Renewal

A.1.1. Eligibility of the project under Gold Standard

The project activity meets the eligibility criteria according to section 3.1.1 of GS4GG Principles & Requirements document as below.

- The project applies ACM0002: Grid-connected electricity generation from renewable sources --- Version 21.0, which is an approved methodology under Gold Standard.
- The project type is wind and an eligible project type as per the 1.1. Eligible Project Types & Scope under Renewable Energy Activity Requirements.

  (a) Project shall generate and deliver energy services (e.g., mechanical work/electricity/heat) from non-fossil and renewable energy sources.

  (b) Project shall comprise of renewable energy generation units, such as photovoltaic, tidal/wave, wind, hydro, geothermal, waste to energy and renewable biomass.

- The project activity results in displacement of electricity from thermal power stations while contributing to sustainable development of Turkey. Hence, the project contributes to the Gold Standard Vision and Mission.
- Wind is an approved project type.
- Project is not included in any other voluntary or compliance standards programme. The existing 18 MWm/16 MWe capacity is not included in IREC.[2]

General Eligibility Criteria

- Type of project: Wind
- Location of project: The project is located in İzmir Province, Turkey. Therefore, the project is eligible.
- Project Area, Boundary and Scale: The registered project activity is 16 MWe as large scale.
- Project activity is in compliance with Host Country's legal, environmental, ecological and social regulations.
- Contact details of the project owner could be found in Appendix 2.
- Legal owner of the products is VEGA RÜZGAR ENERJİSİ ELEKTRİK ÜRETİM A.Ş.
- Official Development Assistance (ODA) Declaration is also signed by the Project Developer.

The project activity meets additional requirements:

- Project activity does not have any change as related to the General Eligibility Criteria and is in line with Gold Standard Requirements.

- Principle 1- Contribution to Climate Security & Sustainable Development as contributing to SDG 7, 8 and 13.
- Principle 2 – Safeguarding Principles (Please see Appendix 1)

[2] Signed declaration by the PO is available to the VVB.

- Principle 3 – Stakeholder Inclusivity as Stakeholder Consultation Processes was already implemented, and grievance mechanism is already in place.
- Principle 4 – Demonstration of Real Outcomes as the Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period", Version 03.0.1 has already been applied. Baeline has been revised accordingly.
- Principle 5 – Financial Additionality & Ongoing Financial Need (Please see section B.5.2) Project activity's IRR analysis has been revised with the realized generation from the commissioning date of the project. As a result of an assessment with the realized generation, IRR has decreased to 7.82%.

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

Vega Rüzgar Enerjisi Elektrik Üretim A.Ş.

A.2 Location of project

Çeşme District of İzmir Province, Aegean Region in Turkey.

Table 3 - Turbine Coordinates[3]

	E	N
T1	44 09 16	42 40 120
T2	44 12 41	42 39 870
T3	44 15 15	42 39 705
T4	44 09 49	42 39 200
T5	44 07 61	42 38 827
T6	44 07 84	42 38 478

[3] The Generation License

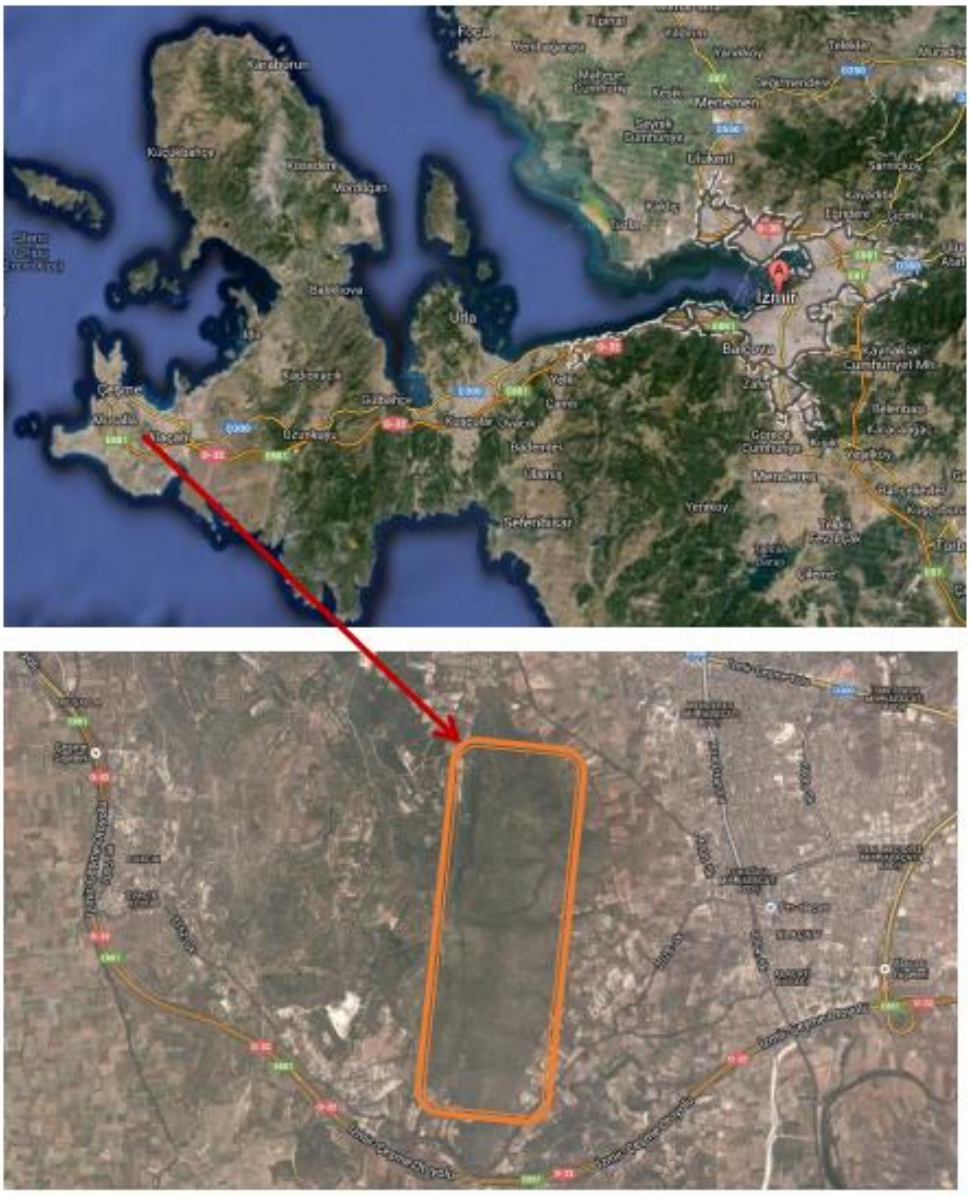

Figure 1. Map and Satellite View of Project Area

A.3 Technologies and/or measures

The Project Scenario entails the installation of six Nordex N117 wind turbines, each with a capacity of 3.0 MWM/2.67 MWe.The total installed capacity of the project activity is 18 MWm/16 MWe. The turbines are 3 bladed with a horizontal axis. The turbine blades have the ability to change angles according to wind direction. The turbines are connected to the Çeşme Substation, then to the grid via a 154 kV electricity transmission line. The metering has been done at substation before electricity is fed into the grid.

The technical life of Çeşme WPP is 25 years, as the 'Tool for determining remaining life of equipment' (v.1) states the assumed lifetime for onshore wind turbines to be 25 years.

The amount of electricity generated by the project is not influenced by factors outside the project boundary such as other power plants or demand for electricity. Rather, the governing factor is the wind speed at the project site. Regarding the actual operation of the project activity, the first temporary acceptance protocol signed by the Ministry of Energy and Natural Resources is dated 23/05/2015[4] for the commissioning of the 3 turbines. The second temporary acceptance protocol with the Ministry was signed on 20/06/2015 for the remaining three turbines. Please see below the technical specifications of the installed turbines.

Table 4 - Technical specifications of the installed turbines

Model of Turbine	Parameter	Unit	Value
Nordex N117	Rater Power	kW	3000
	Rotor Diameter	m	116.8
	Cut-out wind speed	m/s	25
	Hub Height	m	91

[4] Start date of operation

Table 5 - Technical specifications of the generators

Parameter	Values
Manufacturer	Siemens AG
Type	DFIG, 3-phase
Power	3400 kW
Hub Height	m
Voltage	660 V
Frequency	50 Hz
Revs	1010 per min.
Power factor	0,87

The main meter and backup meter are EMH branded. The serial numbers are "4213167" for the main meter and "4213168" for the spare meter. Both meters have an accuracy class of 0.2S. The latest test date of the meters is 19/09/2020. This date is valid for both meters.

A.4 Scale of the project

Large scale

A.5 Funding sources of project

Private funding and funding from bank. The project activity does not have any public funding or Official Development Assistance (ODA) funding.

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

B.1. Reference of approved methodology (ies)

Project type: Type I – Renewable Energy Projects

Category: D – Electricity Generation for a System

Methodology: ACM0002: "Large- scale Consolidated Methodology - Grid-connected electricity generation from renewable sources", Version 21.0

Sectoral Scope: 01 Energy industries (renewable - / non-renewable sources)

ACM0002 refers to:

- "Tool to calculate the emission factor for an electricity system", Version 07.0[5]
- "Tool for the demonstration and assessment of additionality", Version 07.0.0[6]
- "Combined tool to identify the baseline scenario and demonstrate additionality", Version 07.0[7]
- "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion", Version 03.0[8]
- Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period", Version 03.0.1[9]

B.2. Applicability of methodology (ies)

The methodology ACM0002: Grid-connected electricity generation from renewable sources is applicable to grid-connected renewable power generation project activities that a) install a Greenfield power plant; b) involve a capacity addition to (an) existing plant(s); c) involve a retrofit of (an) existing operating plants/units; d) involve a rehabilitation of (an) existing plant(s)/unit(s); or e) involve a replacement of (an) existing plant(s)/unit(s).

The project activity installs a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield), ACM0002:

[5] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v7.0.pdf
[6] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf
[7] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v7.0.pdf
[8] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v3.pdf
[9] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf

Grid-connected electricity generation from renewable sources is applicable. The applicability criteria are listed and justified below:

The choice of methodology ACM0002 Version 21.0 is justified as the proposed project activity meets relevant applicability criteria:

Table 6 - Applicability of ACM0002, Version 21.0

Applicability Criteria	**Justification**
This methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Install a Greenfield power plant; (b) Involve a capacity addition to (an) existing plant(s); (c) Involve a retrofit of (an) existing operating plants/units; (d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s)	The project is installation of a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity.
In case the project activity involves the integration of a BESS, the methodology is applicable to grid-connected renewable energy power generation project activities that: (a) Integrate battery energy storage systems (BESS) with a Greenfield power plant; (b) Integrate a BESS together with implementing a capacity addition to (an) existing solar photovoltaic or wind power plant(s)/unit(s);	

(c) Integrate a BESS to (an) existing solar photovoltaic or wind power plant(s)/unit(s) without implementing any other changes to the existing plant(s); (d) Integrate a BESS together with implementing a retrofit of (an) existing solar photovoltaic or wind power plant(s)/unit(s).	The project does not involve an integration of a BESS.
The methodology is applicable under the following conditions: (a) The project activity may include renewable energy power plant/unit of one of the following types: hydro power plant/unit with or without reservoir, wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit; (b) In the case of capacity additions, retrofits, rehabilitations or replacements (except for wind, solar, wave or tidal power capacity addition projects) the existing plant/unit started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion, retrofit, or rehabilitation of the plant/unit has been undertaken between the start of this minimum historical reference period and the implementation of the project activity (c) In case of Greenfield project activities applicable under paragraph 5 (a) above, the project participants shall demonstrate that the BESS was an	The project is a wind power plant.

integral part of the design of the renewable energy project activity (e.g. by referring to feasibility studies or investment decision documents); (d) The BESS should be charged with electricity generated from the associated renewable energy power plant(s). Only during exigencies 2 may the BESS be charged with electricity from the grid or a fossil fuel electricity generator. In such cases, the corresponding GHG emissions shall be accounted for as project emissions following the requirements under section 5.4.4 below. The charging using the grid or using fossil fuel electricity generator should not amount to more than 2 per cent of the electricity generated by the project renewable energy plant during a monitoring period. During the time periods (e.g. week(s), months(s)) when the BESS consumes more than 2 per cent of the electricity for charging, the project participant shall not be entitled to issuance of the certified emission reductions for the concerned periods of the monitoring period.	
In case of hydro power plants, one of the following conditions shall apply: (e) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or	The project is not a hydropower plant.

(b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density, calculated using equation (3), is greater than 4 W/m2; or I The project activity results in new single or multiple reservoirs and the power density, calculated using equation (3), is greater than 4 W/m2. (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m2, all of the following conditions shall apply: (i) The power density calculated using the total installed capacity of the integrated project, as per equation (8), is greater than 4 W/m2 ; (ii) Water flow between reservoirs is not used by any other hydropower unit which is not a part of the project activity; (iii) Installed capacity of the power plant(s) with power density lower than or equal to 4 W/m2 shall be: a. Lower than or equal to 15 MW; and b. Less than 10 per cent of the total installed capacity of integrated hydro power project.	
In the case of integrated hydro power projects, project participants shall: (a) Demonstrate that water flow from upstream power plants/units spill directly to the downstream reservoir and that collectively constitute to the generation capacity of the integrated hydro power project; or	The project is not a hydropower plant.

(b) Provide an analysis of the water balance covering the water fed to power units, with all possible combinations of reservoirs and without the construction of reservoirs. The purpose of water balance is to demonstrate the requirement of specific combination of reservoirs constructed under CDM project activity for the optimization of power output. This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account	
The methodology is not applicable to: (a) Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site; (b) Biomass fired power plants/units.	The project does not involve switching from fossil fuels to renewable energy sources and is not a biomass fired power plant.
In the case of retrofits, rehabilitations, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, that is to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	The project does not involve retrofits, rehabilitations, replacements, and it's not a capacity addition.

Additionally, the proposed project activity meets applicability criteria of the following tools:

TOOL01: Tool for the demonstration and assessment of additionality, Version 07.0.0	Para 10: Once the additionality tool is included in an approved methodology, its application by project participants using this methodology is mandatory.

	Since this tool is included in ACM0002, this tool is used.
TOOL07: Tool to calculate the emission factor for an electricity system, Version 07.0	• Para 3: This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g., demand-side energy efficiency projects). *Project activity that substitutes grid electricity that is where a project activity supplies electricity to a grid. There is only one national grid in Türkiye.* • Para 4: Under this tool, the emission factor for the project electricity system can be calculated either for grid power plants only or, as an option, can include off-grid power plants. In the latter case, two sub-options under the step 2 of the tool are available to the project participants, i.e., option IIa and option IIb. If option IIa is chosen, the conditions specified in "Appendix 1: Procedures related to off-grid power generation" should be met. Namely, the total capacity of off-grid power plants (in MW) should be at least 10 per cent of the total capacity of grid power plants in the electricity system; or the total electricity generation by off-grid power plants (in MWh) should be at least 10 per cent of the total electricity generation by grid power plants in the electricity system; and that factors which negatively affect the reliability and stability of the grid are primarily due to constraints in generation and not to other aspects such as transmission capacity.

	The emission factor for only grid power plants (off grid power plants are not taken into account) have been used by Turkish Ministry of Energy and Natural Resources to calculate emission factor. • Para 5: In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country. *Tool restricts use of Tool 07 to non-annex 1 countries but that is for CDM application, this project is GCC project and thus can apply the Tool 07 in Türkiye (Annex-1) country. Especially Türkiye has special circumstances and did not take any place withing compliance market.* • Para 6: Under this tool, the value applied to the CO2 emission factor of biofuels is zero. The calculation of the emission factor does not involve any biofuels. The calculation of the emission factor does not involve any biofuels. In conclusion, Tool 07 is applicable to the project activity.
TOOL10: Tool to determine the remaining lifetime of equipment, Version 01	Project participants may use one of the following options to determine the remaining lifetime of the equipment: (a) Use manufacturer's information on the technical lifetime of equipment and compare to the date of first commissioning; (b) Obtain an expert evaluation; (c) Use default values.

	As per the tool, (option c) using default value has been taken into consideration. In this option, project participants may use the following default values for the technical lifetime and determine the remaining lifetime as the difference of the technical lifetime and the operational time. This option can only be applied if: (i) The project participants can demonstrate that the equipment has been operated and maintained according to the recommendations of the equipment supplier; (ii) There are no periodic replacement schedules or scheduled replacement practices specific to the industrial facility, that require early replacement of equipment before the expiry of the technical lifetime; and (iii) The equipment has no design fault or defect and did not have any industrial accident due to which the equipment cannot operate at rated performance levels. *Since the project is a greenfield project, use newly produced equipment and is operated under the control of turbine supplier, above criteria are satisfied.* *According to EMRA, average lifetime of wind turbines is between the 20 and 25 years and it is accepted as 20 years.*
TOOL24: Common Practice, Version 03.1	This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", or baseline and monitoring

	methodologies that use the common practice test for the demonstration of additionality. *Since the project activity has used the tool, "Tool for the demonstration and assessment of additionality", common practice is applicable.*
TOOL27: Investment analysis, Version 11.0	This methodological tool is applicable to project activities that apply the methodological tool "Tool for the demonstration and assessment of additionality", the methodological tool "Combined tool to identify the baseline scenario and demonstrate additionality", the guidelines "Non-binding best practice examples to demonstrate additionality for SSC project activities", or baseline and monitoring methodologies that use the investment analysis for the demonstration of additionality and/or the identification of the baseline scenario. *Since the project activity has used the tool, "Demonstration of additionality of small-scale project activities", investment analysis is applicable.*
TOOL11: Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" Version 03.0.	Since CP Renewal of the project activity is executed, this tool has been used. Please see section B.4.

B.3. Project boundary

The project boundary encompasses the physical, geographical site of the renewable generation source. The wind power plant with all installation is the project boundary.

As the electricity generated by the project displaces the electricity generated by national grid, the baseline boundary is defined as the national grid. This includes the project site

and all power plants connected physically to the national grid and excludes the off-grid power plants. Please see the diagram below:

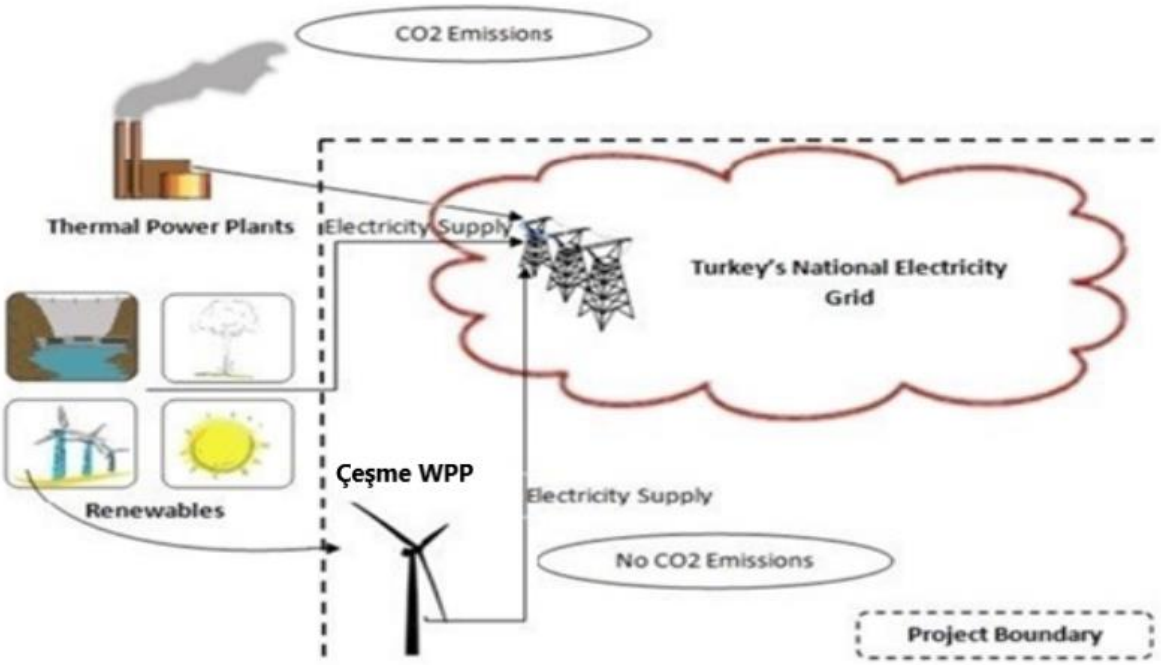

Figure 2. Project Boundary

The greenhouse gases and emission sources included in or excluded from the Project boundary are compiled as below:

Source		GHG	Included?	Justification/Explanation
Baseline	CO2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO2	Yes	Main source. The dominant emissions from power plants are in the form of CO2, therefore CO2 emissions from fossil fuel fired power plants connected to the grid will be accounted for in baseline calculations.
		CH4	No	Minor
		N2O	No	Minor
Project Activity	Emissions as a result of Project Activity	CO2	No	Not applicable
		CH4	No	Not applicable
		N2O	No	Not applicable

B.4. Establishment and description of baseline scenario

According to ACM0002 (Version 21.0)[10], if the project activity is the installation of a new grid connected renewable power plant, the baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the operation of grid-connected power plants and by the addition of new generation sources. In line with the tool, "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" Version 03.0.1[11], the development of the Turkish energy mix and thus the baseline scenario have been reanalyzed as it may been seen below.

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

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

Step 1.2: Assess the impact of circumstances

Through Figure 3, the development of Turkey's installed capacity by primary energy resources between the years, 2009-2019, the electricity generation has mainly been done by fossil fuel fired power plants in Turkey. Total Installed electricity generation capacity in Turkey has reached 91,267 megawatts (MW) as of 2019. As having a share of 8.32%, wind power projects have an installed capacity of 7,591.2MW.

[10] https://cdm.unfccc.int/methodologies/DB/HF3LP6O41YY0JIP1DK6ZRJO9RSCX3S
[11] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf

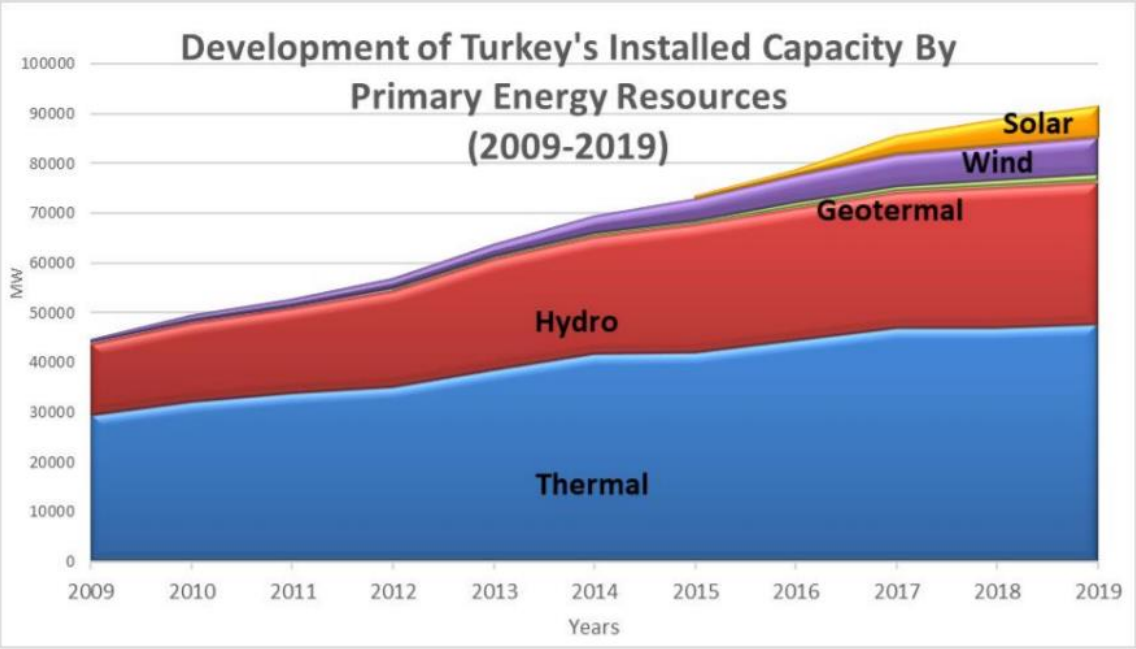

Figure 3. The development of Turkey's installed capacity by primary energy resources, 2009-2019

In reference to 5-year capacity projection[12], it is clear that fossil fuels will remain the main sources for electricity generation through until 2024. Fossil fuels will continue to dominate the market. Hydro will account for 15% of the mix whereas all non-hydro renewable combined (geothermal/ biomass/ solar/ wind) will only account for 11% of all electricity generation capacity. This projection is consistent with continuing fossil fuel dependent characteristics of Turkish electricity sector.

[12] https://webapi.teias.gov.tr/file/abeac87d-3abc-4532-9cf4-d6f3a9d34c17?download

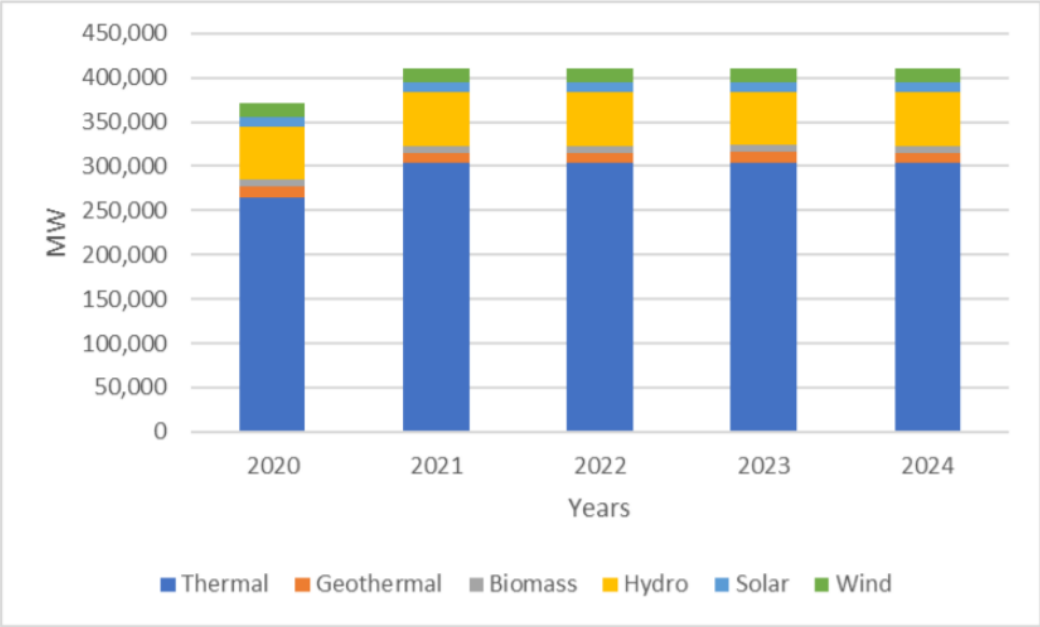

Figure 4. 5-year capacity projection

The current baseline has been updated with the latest data and projections available by the official bodies. It's clear that the baseline scenario is still valid for the second crediting period in accordance with the tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period".

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

This sub-step is not applicable since the baseline scenario identified at the validation of the project activity was not the continuation of use of the current equipment(s) without any investment.

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

Sections B6 and B7 have been updated.

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

Step 2.1: Update the current baseline.

The current baseline emissions for the subsequent crediting period have been updated.

Step 2.2: Update the data and parameters.

Sections B6 and B7 have been updated.

B.5. Demonstration of additionality

Referred by the Baseline Methodology, the "Tool for the Demonstration and Assessment of Additionality (Version 07.0.0)" outlines a step-by-step approach for the assessment of additionality or in other words the emission reductions that would have occurred in the absence of the project. The additionality has been evaluated in first validation and that the information is repeated in this PDD, and no new additionality assessment is done.

Step 2. Investment analysis

Sub-step 2a: Appropriate analysis method

With the help of the investment analysis, it shall be demonstrated that the proposed project activity is not economically or financially feasible without the revenue from the sale of VERs. Therefore, the benchmark analysis shall be applied, as there is no alternative project activity for a comparison of the attractiveness of an investment.

Sub-step 2b: Option III: Benchmark analysis

While applying the Benchmark Analysis, Option III, the Equity IRR is selected as the financial indicator for the demonstration of the additionality of the project as permitted in the additionality tool.

Benchmark rate is calculated in line with "Tool for the demonstration and assessment of additionality" (v.7) which suggests to use the government bond rates, increased by a suitable risk premium. The government bonds are used for determining the Benchmark because there is no pre-determined value for IRR or any other financial indicator for wind power projects in Turkey at the investment decision date of the project.

As a common means to evaluate the attractiveness of investment projects and compare them with possible alternatives, the equity IRR (Internal Rate of Return) shall be used.

According to the Tool, benchmark can be derived from 'Estimates of the cost of financing and required return on capital (e.g., commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds'. As a banker view, according to Worldbank loan appraisal document, threshold equity IRR for wind power investments (i.e., required returns of equity for wind power investors) in Turkey is 15%.

Sub-step 2c: Calculation and comparison of the equity IRR

In paragraph 12 of the 'Guidance on the Assessment of Investment Analysis' version 5, it is stated that: 'Required/expected returns on equity are appropriate benchmarks for equity IRR'. Since, benchmark identified in Sub-step 2b is required/expected returns on equity, equity IRR (after tax) of the project activity shall be calculated for comparison. Parameters used for investment analysis of the project activity are given below:

Table 7 - Parameters used in Financial Analysis of Project Activity

Parameter	Amount	Unit	Reference
Installed Power	18/16	MWm/MWe	Licence issued by Energy Market Regulatory Authority (EMRA)
Annual Generation	53,572	MWh	Energy Assessment Analysis

Main Investment Costs	21,428.604	EUR	Project Proponent (IRR calculation of the first validation)
Operational Expenses	704,161	EUR/yr	Project Proponent (IRR calculation of the first validation)
Electricity tariff	73	USD per MWh	http://www.epdk.gov.tr/documents/elektrik/mevzuat/kanun/Elk_Kanun_Yek_Kanun.doc (table 1) on page 9
Operational lifetime of the project	25	Years	Tool to determine the remaining lifetime of equipment

Technical lifetime of the Çeşme WPP is determined by using the 'Tool to determine the remaining lifetime of equipment'' (v.1). In the tool it is said that default lifetime for the onshore wind turbines is 25 years. The depreciation rate has been taken as 10 years. In addition to this, feed in tariff is used which grants further incentives for period of five years if local content sourced from Turkey. Fair value is taken as 10 % to be on a more conservative side and is added to the last year of the cash flow in the IRR analysis.

The equity IRR (after tax) of Çeşme WPP is calculated on the basis of expected cash flows (investment, operating costs and revenues from electricity sale), as used in the financial analysis for the feasibility assessment of the project. The parameters and values used for the IRR calculation are available to DOE during validation. The resulting IRR for 25 years is stated in the table below.

Table 8 - Equity IRR value for project activity (after tax)

Period	IRR
25 years	9.01 %

Without adding any risk premium to the benchmark, which is 15%, it does clearly exceed the resulting equity IRRs, thus rendering the project activity economically unattractive.

Sub-step 2d: Sensitivity analysis

While the main parameter determining the income of the project is the electricity sales revenue, investment cost and operation cost, a variation of the accordant values shall demonstrate the reliability of the IRR calculation. Key parameters are varied with +/- 10%. The worst, base and best-case results for each parameter variation are given below in Table 9.

The sensitivity analysis confirms that the proposed project activity is unlikely to be economically attractive without the revenues from VERs as even the maximum IRR result for the best-case scenario (11.43 %) is below the benchmark, which is 15%. Assessment of likelihood conditions for each parameter to reach benchmark IRR is provided below:

Electricity Price

In order to reach %15 equity IRR benchmark, electricity price shall increase to 90.70 USD/MWh which is about 24% higher than assumed price (73 USD/MWh). Even 10% increase from base case is not likely to occur. Thus, it is not likely for project activity to sell electricity with benchmark threshold price.

Investment Cost

In order to reach benchmark IRR, investment costs shall be decreased about 23% and be 16,489,311 EUR, comparing with investment costs used in financial analysis

(21,428,604 EUR). Since the equipment contract which has the higher share (approximately 77% of the total cost) of the total costs is fixed, 30% decrease in the investment cost is unlikely. Thus, it is not likely for project activity to have threshold investment cost and reach benchmark IRR.

Energy Yield

To have benchmark IRR, annual energy yield amount shall increase to 66,564 MWh/yr, which is about 33.56% more than base case electricity generation amount used in financial analysis. Although most of the wind power projects use p90 electricity generation amount from energy yield reports, to be conservative in financial investment analysis of the project activity, p75 is used (54,900 MWh/yr). Even p50 figure of the project activity (59,200 MWh/yr41) is less than threshold energy yield amount. Using electricity generation amount in financial analysis, which have less than 50% probability of occurrence is not rational. Thus, it is not likely for project activity to generate threshold energy yield to reach benchmark IRR.

Operation Cost

In order to reach benchmark IRR, annual operation costs shall decrease about 100%, meaning there will not be any operational costs. Such a decrease in annual operation cost is not likely.

Table 9 - Equity IRR results according to different parameters (for other parameters 55 €/MWh EP is applied)

Parameter	**Power Price**			**Investment Cost**			**Energy Yield**			**Operating Cost – 73 USD/MWh**		
Variance	-10%	0	+10%	-10%	0	+10%	-10%	0	+10%	-10%	0	+10%
Equity IRR Before Tax (for 25 years)	6.63%	9.01%	11.43%	11.18%	9.01%	7.26%	6.63%	9.01%	11.43%	9.59%	9.01%	8.43%

Step 2 Conclusions:

Based on the above provided information, it can be stated the benchmark of 15% (World Bank Benchmark) does clearly exceed the resulting equity IRRs, thus rendering the project activity economically unattractive.

Barrier analysis

This step is not implemented for the project.

Common practice analysis

The common practice analysis was done first validation and that the information is not repeated in this PDD, and no new common practice analysis has been done.

Conclusion

As the project activity satisfied all the criteria of "Tool for the demonstration and assessment of additionality". Therefore, the project is still additional.

B.5.1 Prior Consideration

The project activity is under regular cycle and no approved design change has been conducted.

B.5.2 Ongoing Financial Need

Previously issued VERs have given support to the ongoing financial sustainability of the project. The Project Owner had difficulties commercializing the VERs. Both low demand for VERs and a sharp decrease in prices caused Project Owner not to benefit from carbon revenue as expected. Despite the fact that the sales prices were so lower, the Project Owner has continued its efforts for carbon revenue, and completed the first issuance. Due to unique situation of the project activity (Gold Standard allowed the Project Owner to continue its GS processes after completion of the 2nd Stakeholder Consultation Process), the Project Owner could not sell all its VERs and benefit from carbon revenue

as it was expected. Currently, 1st MP has been issued and 2nd MP is completed. The Project Owner expects the VERs to provide contribution of the ongoing financial sustainability of the project. [13] The process itself brought additional costs to the Project Owner rather than bringing revenue. Additionally, the carbon process itself may entail additional expenses for the Project Owner, rather than resulting in Verified Emission Reduction (VER) revenue. The revenue derived from the issuance and sale of carbon credits would also contribute to the monitoring and verification activities of the project[14].

During the 1st CP the below verifications have been realized:

No	Monitoring Period	Amount of Issued GS VERs
1st MP	23/05/2015 – 31/07/2017	48,088
2nd MP	01/08/2027 - 22/05/2022	149,953

Considering the certification related costs for the project activity, approximately 1% of the revenues were spent.

As per the GS4GG Requirements (Section 4.1.52), this would be considered a FAR for the next Issuance since no revenue is realized from Gold Standard certification.

B.6. Sustainable Development Goals (SDG) outcomes

Relevant Target/Indicator for each of the three SDGs

	SDG Impact

[13] The signed declaration of the PO is available to the VVB.
[14] Revised investment analysis with the realized generation values shows that the project is still under benchmark rate and needs additional revenue.

Sustainable Development Goals Targeted	Most relevant SDG Target	Indicator (Proposed or SDG Indicator)
13 Climate Action	13.3. Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	Emission Reductions
7 Affordable and Clean Energy	7.2. By 2030, increase substantially the share of renewable energy in the global energy mix	MWh of renewable energy generated
8 Decent Work and Economic Growth	8.5. By 2030, achieve full and productive employment and decent work for all women and men 8.8. Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment	Number of employees and training

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

- **Goal 7 Affordable and Clean Energy**

The project produces electricity from renewable energy sources using wind as the power source and to contribute to Turkey's growing electricity demand through a sustainable and low carbon technology. The project displaces the same amount of electricity generated by the grid dominated by fossil fired power plants.

The project is expected to generate 53,572 MWh annually. The project contributes to the following target 7.2. and following indicator 7.2.1.

- **Goal 8 Decent Work and Economic Growth**

During construction and operational period, the project has created employment opportunities for the local community. The project contributes to the economic development of the region by providing sustainable energy resources.

Considering the operational phase, 6 personnel are working permanently. The target will be monitored by the number of full-time employees with the SGK records during the verification process. Due to job requirements and demographics of the project area, employment of woman and persons with disabilities has not been possible, yet.

The positions at the wind projects require skilled workers, which will be achieved by adequate training. Attendance records or training certificates will be provided during the verification process. The project provides workers with a safe and healthy work environment and is not complicit in exposing workers to unsafe work environments.

The project contributes to the following targets 8.5.; 8.8.and following indicators 8.5.2.; 8.8.1

- **Goal 13 Climate Action**

The annual emission reduction estimated by the project is 34,757 tonnes of CO2eq, approximately. While this amount of emissions are mitigated, technology transfer is also realized as benefitting from wind energy.

The project contributes to improving the environmental situation in the region and in the country as avoiding fossil fuel-based electricity will enhance the air quality and help to reduce the adverse effects on the climate. Through renewable technologies and wind-based electricity sustainable and climate friendly development is promoted.

The project contributes to the following target 13.3. and following indicator 13.3.2.

For the calculation of the emission reductions of the project activity, "Tool to calculate the emission factor of an electricity system" Version 07.0 and the emission factor published by T.C. Ministry of Energy and Natural Resources are taken into consideration.

Baseline Emissions

In accordance with ACM0002 (Version 21.0), the baseline emissions are calculated as the net electricity generated by the project activity, multiplied with the baseline emission factor of the project grid.

$$\boldsymbol{BEy} = \boldsymbol{EG_{PJ,y}} \times \boldsymbol{EF_{grid,y}} \qquad \text{Equation (1)}$$

where:

BE_y	=	Baseline Emissions in year y (tCO2e)
$EG_{PJ, y}$	=	Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)
$EF_{grid, y}$	=	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)

The net electricity is measured continuously by a power meter at the grid interface and recorded monthly. EPIAS records are the source of the exact electricity generation of the project and the imports from the grid. The quantity of net electricity delivered to the grid is cross checked with the meter reading records (OSF forms-OSOS) which are provided to the company by TEIAS.

Net electricity generation supplied	=	Electricity supplied to	-	Electricity consumption

by the project plant to the grid [MWh]	the grid [MWh]	from the grid [MWh]

Project Emissions

The proposed project activity involves the generation of electricity by wind energy. In accordance with the ACM0002, Version 21.0, the generation of electricity does not result in greenhouse gas emissions, therefore PE_y = 0 tCO2/year,

$PE_y = 0$.

Leakage

In accordance with the ACM0002 (Version 21.0), leakage is taken as zero since the project is a new power plant is taken as zero,

$LE_y = 0$.

Emission Reductions

$ER_y = BE_y - PE_y - LE_y$ Equation (2)

$ER_y = BE_y$

B.6.2 Data and parameters fixed ex ante

SDG13

Data/parameter	$EF_{grid, CM, y}$
Unit	tCO2/MWh
Description	Emission factor of the Turkish grid determined ex-ante. It's been published by the Ministry of Energy for 2020 on 20/09/2022.
Source of data	Ministry of Energy. Please see: https://enerji.gov.tr/duyuru-detay?id=20283
Value(s) applied	0.6488
Choice of data or Measurement methods and procedures	Official data
Purpose of data	Calculation of the baseline emissions-to demonstrate contribution to SDG Target 13.3.: Improve education, awareness-raising and human and institutional capacity on

	climate change mitigation, adaptation, impact reduction and early warning
Additional comment	-

B.6.3 Ex ante estimation of SDG Impact

Calculation of the Operating Margin Emission Factor

It's been published as 0.7424 tCO2/MWh by the Ministry of Energy.[15]

Calculation of the Build Margin Emission Factor

It's been published as 0.3680 tCO2/MWh by the Ministry of Energy.[16]

Calculating of the Combined Margin Emission Factor

It's been published as 0.6488 tCO2/MWh by the Ministry of Energy.[17]

Baseline Emissions

In accordance with ACM0002, the baseline emissions are calculated as the net electricity generated by the project activity, multiplied with the baseline emission factor of the project grid.

[15] https://enerji.gov.tr/evced-cevre-ve-iklim-turkiye-ulusal-elektrik-sebekesi-emisyon-faktoru (please click the pdf at the bottom of the page)
[16] https://enerji.gov.tr/evced-cevre-ve-iklim-turkiye-ulusal-elektrik-sebekesi-emisyon-faktoru
[17] https://enerji.gov.tr/evced-cevre-ve-iklim-turkiye-ulusal-elektrik-sebekesi-emisyon-faktoru

$$BEy = EG_{PJ,y} \times EF_{grid,y}$$ Equation (1)

where:

BEy = Baseline Emissions in year y (tCO2e)

EGPJ,y = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

EFgrid,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"(t CO2/MWh)

= 53,572 x 0.6488

= 34,757 tCO2/MWh

The net electricity is measured continuously by a power meter at the grid interface and recorded monthly. EPIAS records are the source of the exact electricity generation of the project and the imports from the grid. The quantity of net electricity delivered to the grid is cross checked with the meter reading records (OSF forms-OSOS) which are provided to the company by TEIAS.

Net electricity generation supplied by the project plant to the grid [MWh]	=	Electricity supplied to the grid [MWh]	-	Electricity consumption from the grid [MWh]

Project Emissions

Since the project activity is a wind project,

$PE_y = 0$.

Leakage

In accordance with the ACM0002 Version 21.0, leakage is taken as zero since the project is a new power plant is taken as zero,

$LE_y = 0$.

Emission Reductions

$ER_y = BE_y - PE_y - LE_y$ Equation (2)

ER_y = 34,757 tCO2/MWh

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

Net Benefit to SDG 7

Year	Baseline estimate	Project estimate	Net benefit
2022 (23.05.2022-31.12.2022)	0	32,730.29	32,730.29
2023	0	53,572.00	53,572.00
2024	0	53,572.00	53,572.00
2025	0	53,572.00	53,572.00
2026	0	53,572.00	53,572.00
2027	0	53,572.00	53,572.00
2028	0	53,572.00	53,572.00
2029 (01.01.2029-22.05.2029)	0	20,841.71	20,841.71
Total	**0**	**375,004.00**	**375,004.00**
Total number of crediting years	**7**		

Annual average over the crediting period	**0**	**53,572.00**	**53,572.00**

Net Benefit to SDG 13

Year	Baseline estimate	Project estimate	Net benefit
2022 (23.05.2022-31.12.2022)	21,235	0	21,235
2023	34,757	0	34,757
2024	34,757	0	34,757
2025	34,757	0	34,757
2026	34,757	0	34,757
2027	34,757	0	34,757
2028	34,757	0	34,757
2029 (01.01.2029-22.05.2029)	13,522	0	13,522
Total	**243,299**	**0**	**243,299**
Total number of crediting years		**7**	
Annual average over the crediting period	**34,757**	**0**	**34,757**

Net Benefit to SDG 8

If the project hadn't been realized, there wouldn’t be employment opportunity for employees. Therefore, the achieved impact for this SDG 8.5 is 6. The project provides workers with a safe and healthy work environment and is not complicit in exposing

workers to unsafe work environments. The achieved impact for this SDG 8.8 is 1 as all employees to be trained on Health & Safety Trainings.

The project contributes to the following targets 8.5.; 8.8.and following indicators 8.5.2.; 8.8.1

B.7. Monitoring plan

B.7.1 Data and parameters to be monitored

SDG 13

Data / Parameter	ER_y (SDGI 13.3.2)
Unit	tCO2/y
Description	Emission reductions by the project activity in year y (t CO2/yr) In accordance with ACM0002, baseline emissions include CO2 from electricity generation in powerplants that are displaced due to the project activity. And baseline emissions correspond to emission reductions and are calculated as the net electricity generated by the project activity, multiplied with combined margin CO2 emission factor for grid connected power generation in year y.
Source of data	Both measured and calculated Emission reductions will be calculated as considering the EPİAŞ records for the net electricity generated and the emission factor for the grid, 0.6488 tCO2/MWh, published by the Ministry of Energy.
Value(s) applied	34,757
Measurement methods and procedures	Please check sections B.6.1-B.6.3 and B.7.3 for more detailed description of the monitoring plan.
Monitoring frequency	Once for each year of operation

QA/QC procedures	Please check section B.7.3 for the monitoring plan.
Purpose of data	Calculation of combined margin CO2 emission factor and thus the baseline emissions-to demonstrate contribution to SDG Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.
Additional comment	-

SDG 7

Data / Parameter	$EG_{facility,y}$
Unit	MWh/yr
Description	Net electricity exported to the grid in the year y
Source of data	EPIAS records
Value(s) applied	The annual electricity fed to the grid is estimated as 53,572 MWh
Measurement methods and procedures	The net electricity is measured continuously by a power meter at the grid interface and recorded monthly. EPIAS records are the source of the exact electricity generation of the project and the imports from the grid. The quantity of net electricity delivered to the grid is crosschecked with the meter reading forms which are provided to the company by TEIAS
Monitoring frequency	Net electricity exported is crosschecked with Meter Reading Forms issued by Project owner and approved by governmental officers. The Meter Reading Forms were issued by the governmental officers and signed by both parties. Currently, the forms are filled in by the project owner and approved by the governmental officers. Additionally, remote reading by the governmental body is also available. EPİAS records are considered as the main source.

	Power meters: **Çeşme WPP** / **Main meter** / **Spare Meter** Brad / EMH / EMH Serial Number / 4213167 / 4213168 Latest Test Date / 19/09/2020 / 19/09/2020 Accuracy / 0.2S / 0.2S
QA/QC procedures	A secondary meter is used for crosschecking the accuracy and both meters are calibrated if required[18]. EPİAS records are considered as the main source for the net electricity and the values are crosschecked with the data measured by meters. Net electricity exported is crosschecked with Meter Reading Forms issued by Project owner and approved by governmental officers.
Purpose of data	To measure the electricity produced and supplied to the grid and thus calculation of emission reductions.
Additional comment	-

SDG 8

Data / Parameter	Quality of employment
Unit	N/A
Description	Health & Safety Trainings
Source of data	Attendance list
Value(s) applied	

[18] https://www.mevzuat.gov.tr/anasayfa/MevzuatFihristDetayIframe?MevzuatTur=7&MevzuatNo=6381&MevzuatTertip=5

	2 types of trainings will be given to employees: 1. First Aid 2. Occupational and health and safety
Measurement methods and procedures	N/A
Monitoring frequency	Annually (Once at the end of each monitoring period). Safety measures and equipment will be shown to VVB during each site visit for verification.
QA/QC procedures	Attendance list of the trainings will be provided.
Purpose of data	Sustainability monitoring parameters
Additional comment	-

Data / Parameter	Quantitative employment and income generation
Unit	a) Number
Description	a) Number of local employments b) Expropriation documents.
Source of data	a) For number of local employments: SGK Records b) Supporting documents related to expropriation were provided.
Value(s) applied	a) 6 number of people b) Expropriation was finalized.
Measurement methods and procedures	N/A
Monitoring frequency	a) Annually, for the number of local employments. b) For the expropriation; only during the first verification.
QA/QC procedures	a) For number of local employments: SGK Records b) Supporting documents related to expropriation were provided.
Purpose of data	Sustainability monitoring parameters
Additional comment	-

B.7.2 Sampling plan

N/A

B.7.3 Other elements of monitoring plan

The plant manager is responsible for the whole management of the Project Activity and the switchboard technicians are responsible for the implementation of the Project Activity. In addition to this, there is one plant office personnel and one gardener working for the power plant.

Please see below the management structure for the plant operation:

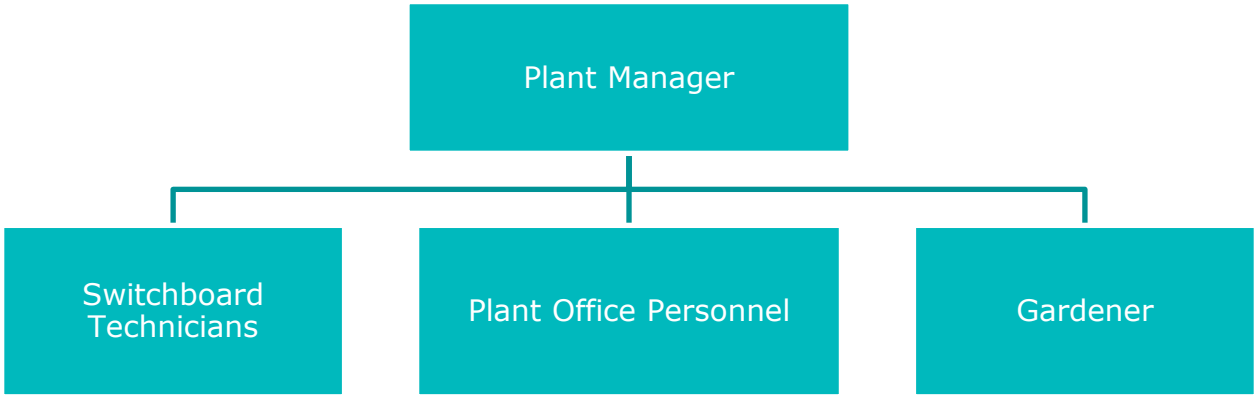

Figure 5. Organization Chart of Çeşme WPP

The Project Owner will be responsible for the overall management of the monitoring procedures including recording, data collection and store. The consultant will calculate emission reductions based on these monitored data and prepare a monitoring report.

According to the methodology applied, the electricity supplied to the national grid by the project and the electricity consumed by the project activity shall be monitored. The

net electricity is the difference between the electricity supplied and consumed by the project and shall be taken into account for emission reduction calculations.

Two power meters are installed at the grid interface of the project. One is the main meter and the other one is the back-up meter of the main meter for cross-checking. Both meters are jointly inspected and sealed in order to be protected from interference by any of the parties.

The capacity of the transmission line connected is 154 kVA, the accuracy class for main power meters has been defined in the Communiqué for Power Meters as 0.2S class. The back-up meters have the same accuracy class of 0.2S. The calibration will be implemented in accordance with the related standard procedures (IEC-EN 62053-22 and 62053-23) by either Turkish Electricity Transmission Corporation (TEIAS) or the provider company in the name of TEIAS. The meters are calibrated every two years. The latest calibration was made on 19/09/2020.

TEİAŞ is performing remote reading of the meters and monthly power meter readings are the basis for monitoring net electricity fed into the grid. EPİAŞ records will used as the source of net generated electricity value and meter reading forms or OSF forms issued by TEİAŞ will be used for the crosscheck.

The website of EPİAŞ (https://cas.epias.com.tr/cas/login) is accessible to Project owner with their unique user ID and password. Once accessed, the Project owner is able to call electricity generation and consumption reports of their own projects. The same reports are used by the Project owner for invoicing TEİAŞ. The electricity generation data is reported monthly.

Please see the single line diagram as below:

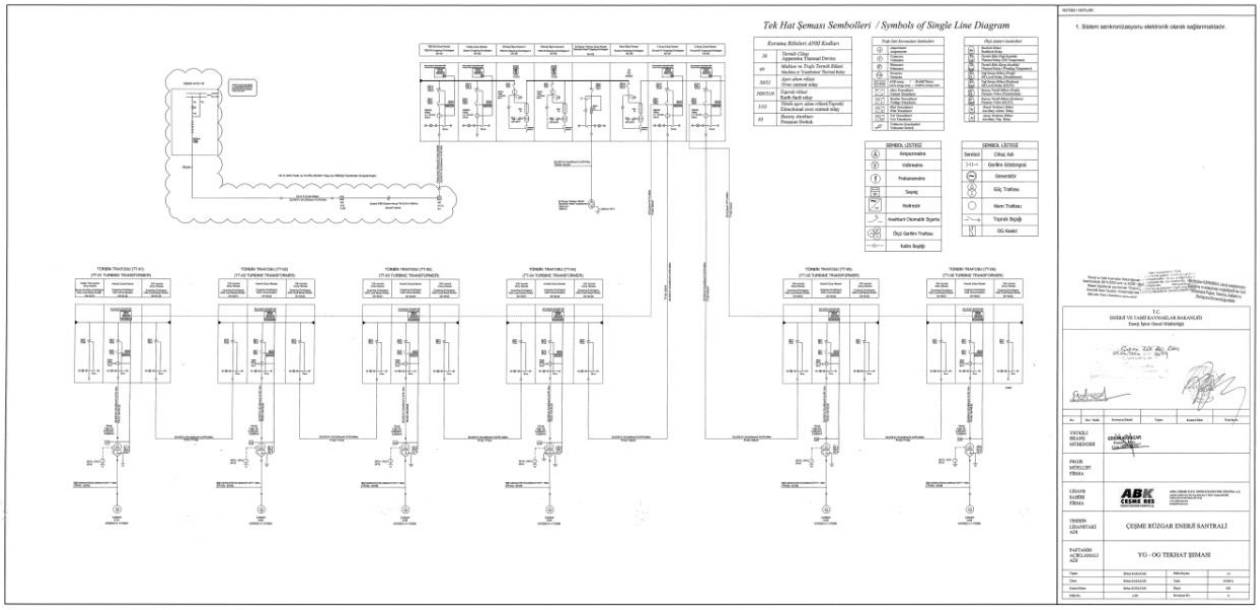

Figure 6. Single line diagram of the project activity

All data collected as part of monitoring will be archived electronically by the project owner and be kept at least for 2 years after the end of the last crediting period.

Considering the Sustainable Development Matrix Indicators stated in the first crediting period have been simplified in section B.7.1. The parameters not stated to be monitored separately during the second crediting period may be seen below:

The Parameter Not to Be Monitored

No	Indicator	Explanation
1	Air Quality	Dust emissions have been reduced by watering the roads frequently. Additionally, Reduction of CO and NMVOC Emission Amounts for Air Quality Indicator has been removed since SDG 13 is already monitored.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1 Start date of project

23/05/2015

C.1.2 Expected operational lifetime of project

25 years

C.2. Crediting period of project

C.2.1 Start date of crediting period

Start date of the first crediting period: 23/05/2015

End date of the first crediting period: 22/05/2022

Start date of the second crediting period: 23/05/2022

End date of the second crediting period: 22/05/2029

C.2.2 Total length of crediting period

7 years renewed once.

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1 Safeguarding Principles that will be monitored

Data / Parameter	Water Quality and Quantity
Unit	m^3/y

Description	Amount of Wastewater discharged to the environment
Source of data	No other sources than the statistics and payment receipt.
Value(s) applied	Wastewater produced by workers during operation is not released to the environment but collected in an impermeable septic tank and periodically transferred by sewage truck. The payment receipt of the transferred wastewater will be provided to VVB on site. Amount of Avoided Wastewater Discharge by Project Activity per year (m^3/MWh): 45.28 This value has been calculated by using the latest available statistics of TUIK (year 2020). 2,425,842.22m^3 of wastewater has been avoided.
Measurement methods and procedures	N/A
Monitoring frequency	Annually
QA/QC procedures	Amount of annual net electricity generation, which is calculated by monthly settlement notifications of EPIAS based on monthly meter readings, will be used to calculate estimated amount of avoided wastewater discharge by project activity. Records of transfer of wastewater from power plant by sewage truck, if it was performed, will be used to demonstrate proper wastewater management.
Purpose of data	Sustainability monitoring parameters
Additional comment	Monitoring process was handled by statistics from TUIK[19] and statement from Mayor of the village.

[19] https://data.tuik.gov.tr/Bulten/Index?p=Su-ve-Atiksu-Istatistikleri-2020-37197

Relevant Safeguarding Principle	Safeguarding Principle 3.9.33: High Conservation Value Areas and Critical Habitats
Data / Parameter	Biodiversity
Unit	N/A
Description	Number of observed bird strikes
Source of data	Ornithology report An ornithology report dated in October 2012, bat monitoring reports dated in March 2017 and September 2017 also proves that there isn't any negative impact by the project activity.[20] Project coordinator appointed by the Project Owner monitors and then informs bird/bat carcasses and nests in site. In case of any case, he reports to the management in his reports. Annual declarations signed by the coordinator have been provided to the VVB.
Value(s) applied	There is no negative impact of the project on birds
Measurement methods and procedures	Especially in the breeding periods, the fish population, fish density will be monitored. For the quality of the fish, some samples will be taken, and the general quality parameters will be measured (size, brightness etc) shows that the constructed fish passage has positive effects on the fish life.
Monitoring frequency	Once during each verification

[20] https://www.vegaenerji.com/eng/our-environmental-reports/

QA/QC procedures	Project coordinator appointed by the Project Owner monitors and then informs bird/bat carcasses and nests in site. In case of any case, he reports to the management in his reports. Annual declarations signed by the coordinator have been provided to the VVB.
Purpose of data	Sustainability monitoring parameters
Additional comment	-

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

Question 1 - Explain how the project reflects the key issues and requirements of Gender Sensitive design and implementation as outlined in the Gender Policy?	The Project provide equal opportunity for women and men to contribute both in volunteer and working positions. The project owner takes into account participation by both men and women. The access of women or men, as the case may be, to Project participation and benefits is not limited.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practices	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. Turkey signed the convention of International Labour Organization. The related articles are 100 and 111. The project owner respects Article 5/8425 of Labour Law, which states no discrimination based on gender, race,

	religion, sexual orientation or any other basis is allowed.
Question 3 - Is an Expert required for the Gender Safeguarding Principles & Requirements?	No
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	No

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

E.1 Summary of stakeholder mitigation measures

The stakeholder meeting was held on 25th of November 2014 in the meeting room at the project site at 12:00. At the meeting besides project developers, participants from the villages and members of Muhtar committee of Ovacık village attended. All local people are informed about meetings in advance by local announcements. In the meeting, the questions of local people were listened to. The most prominent issue was whether the project would employ local people. The project manager stated that priority will be given to the local people during the construction and operation phase of the project. At the end of the meeting, there were no negative comments and local people expressed their support for the project.

Regarding the renewable crediting period, a physical site-visit with VVB was made on 13/02/2023. During the 1st Crediting Period, two monitoring periods have been verified and required site visits by the VVB were realized. Local stakeholders were interviewed and consulted during the whole project cycle. The contact information of the plant responsible exists at the Mukhtar, the project owner and local community are always in touch. The project owner regularly checks with the Mukhtar if any complaint or a request exists. Signed letters by the Mukhtars have been provided as declaring that the related information has been available to the villagers. Any complaint or need from the local community could directly be received by the project owner and appropriate contributions or improvements are made to the local community. Therefore, no

complimentary consultation has been conducted with stakeholders regarding CP renewal.

E.2 Final continuous input / grievance mechanism

Method	Include all details of Chosen Method (s) so that they may be understood and, where relevant, used by readers.
Continuous Input / Grievance Expression Process Book (mandatory)	The contact information of the plant responsible exist at the Mukhtar, the project owner and local community are always in touch. The grievance logbook exists at Mukhtar of Ovacık village. The project owner regularly checks with the Mukhtar if any complaint or a request exists. Signed letter by the Mukhtar has been provided as declaring that the related information has been available to the villagers. Any complaint or need from the local community could directly be received by the project owner and appropriate contributions or improvements are made to the local community.
GS Contact (mandatory)	help@goldstandard.org
Other	

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

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

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or	Yes	1. Turkey is a party to European Convention on Human Rights since 18.May. 1954.[21]	Not required

[21]Please See Official Website of Ministry of Foreign Affairs of Turkey: http://www.mfa.gov.tr/the-european-convention-on-human-rights.en.mfa

human rights abuses of any kind as defined in the Universal Declaration of Human Rights 2. The Project shall not discriminate with regards to participation and inclusion		2. The project owner respects internationally proclaimed human rights including dignity, cultural property and uniqueness of indigenous people. The project is not complicit in Human Rights abuses.	
Principle 2. Gender Equality			
1. The Project shall not directly or indirectly lead to/contribute to adverse impacts on gender equality and/or the situation of women 2. Projects shall apply the principles of nondiscrimination, equal treatment, and equal pay for equal work	Yes	1. a. No, the project does not reduce access to or control of resources for women. b. No, the project does not involve in any form discrimination in any kind of form.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.	Not required

3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)		c.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. d.No, the project does not discriminate on basis of gender. e. No, the project design does not contribute to an increase in women's workload that adds to their care responsibilities or that prevents them from engaging in other activities. f.No,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. g.No, the project is not complicit in restrictions of any	

		freedoms and rights; and does not involve and is not complicit in any form of discrimination based on gender, race, religion, sexual orientation or any other basis. h.No, the project does not expose women and girls to further risks or hazards. 2. a.The project does not lead or contribute sexual harassment and/or any forms of violence against women. b. There is no such risk for the project. Participation in the project is voluntary. c. The project does not restrict women's rights or access to resources (natural or economic). d.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. 3.a. The Project provide equal opportunity for women and men to contribute both in volunteer and working positions. b. The project owner takes into account participation by both men and women. 3. The access of women or men, as the case may be, to Project participation and benefits is not limited. 4. 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.	

		Turkey signed the convention of International Labour Organization. The related articles are 100 and 111. The project owner respects Article 5/8425 of Labour Law; which states no discrimination based on gender, race, religion, sexual orientation or any other basis is allowed.	
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health risks and shall not adversely affect the health of the workers and the community	Yes	The Project avoids community exposure to increased health risks[3] and does not adversely affect the health of the workers and the community.	Not required
Principle 4.1 Sites of Cultural and Historical Heritage			

Does the Project Area include sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture? >>	No	During the construction and operation of the project, there was not any damage, alteration or removal to the critical cultural heritage. Because the project location does not involve any critical cultural heritage. Cultural and environmental heritage is protected against alteration, damage or removal by the law.[22]	Not required
Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples	No	The Project shall not involve and shall not be complicit in	Not required

[22] Reference: "Law on Protection of Cultural and Environmental Assets"
http://mevzuat.basbakanlik.gov.tr/Metin.Aspx?MevzuatKod=1.5.2863&MevzuatIliski=0&sourceXmlSearch=

(temporary or permanent, full or partial)?		the involuntary relocation of people.	
Principle 4.3 Land Tenure and Other Rights			
a. Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership? b. For Projects involving land use tenure, are there any uncertainties with regards to land tenure, access rights, usage rights or land ownership?	No	a. There is no resettlement issue associated with the Project. The project does not cause any resettlement. All the lands to be used for the project are treasury lands. Therefore, there is no private lands and resettlement included in this project. The site is located on bare hills with poor vegetation like grass and bush land. b. There are no uncertainties with regards land tenure,	Not required

		access rights, usage rights or land ownership.	
Principle 4.4 - Indigenous people			
Are indigenous peoples present in or within the area of influence of the Project and/or is the Project located on land/territory claimed by indigenous peoples?	No	There is no resettlement issue associated with the Project. There was not house in the project area, thus the project did not cause any resettlement.	Not required
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	No	The Project does not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	Not required

Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all employment is in compliance with national labour occupational health and safety laws and with the principles and standards embodied in the ILO fundamental conventions 2. Workers shall be able to establish and join labour organisations 3. Working agreements with all individual workers shall be documented and implemented and include: a) Working hours (must not exceed 48 hours	Yes	1. The Project Developer shall ensure that there is no forced labour and that all employment is in compliance with national labour and occupational health and safety laws, with obligations under international law, and consistency with the principles and standards embodied in the International Labour Organization (ILO) fundamental conventions. 2. Workers are able to establish and join labour organisations. 3. Working agreements with all individual workers are documented and implemented.	Not required

per week on a regular basis), AND b) Duties and tasks, AND c) Remuneration (must include provision for payment of overtime), AND d) Modalities on health insurance, AND e) Modalities on termination of the contract with provision for voluntary resignation by employee, AND f) Provision for annual leave of not less than 10 days per year, not including sick and casual leave.		The employment model applied is locally and culturally appropriate. 4. Child labour, as defined by the ILO Minimum Age Convention is not allowed. 5. The use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures are provided.	

4. No child labour is allowed (Exceptions for children working on their families' property requires an Expert Stakeholder opinion) 5. The Project Developer shall ensure the use of appropriate equipment, training of workers, documentation and reporting of accidents and incidents, and emergency preparedness and response measures			
Principle 6.2 Negative Economic Consequences			

1. Does the project cause negative economic consequences during and after project implementation?	No	1. Financial Sustainability of the project has been discussed under Section B.5. The calculations are for the entire life of the project. 2. There are no negative economic impacts or potential risks to the local economy deriving the project activity.	Not required
Principle 7.1 Emissions			
Will the Project increase greenhouse gas emissions over the Baseline Scenario?	No	The project activity is a wind power project and does not cause any greenhouse gas emissions in project scenario.	Not required
>>			
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to	Yes		Not required

a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?		The auxiliary consumption of the Project is met from the national grid.	
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, groundwater and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?	No	The project operation does not consume surface or groundwater, or discharge wastewater containing heat of chemicals. Also, the wastewater and other wastes during the construction were collected in tanks/containers since the project area is in the rural area and there is no municipal sewer system in the vicinity and these wastes were transported and disposed by the local municipality. Drinking	Not required

		water is supplied by bottled water.	
Principle 8.2 Erosion and/or Water Body Instability			
a. Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion? b. Is the Project's area of influence susceptible to excessive erosion and/or water body instability?	No	a. No. The project activity has developed activities for prevention of soil erosion. The planning has been done in a way that the amount of excavation soil is equalized to the filling volume and excavation soils are utilized within the operation area. b. No.	Not required
>>			
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil for	No	The project activity does not involve the use of land and	Not required

production of crops or other products?		soil for production of crops or other products.	
Principle 9.2 Vulnerability to Natural Disaster			
Will the Project be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions?	No	The Project will not be susceptible to or lead to increased vulnerability to wind, earthquakes, subsidence, landslides, erosion, flooding, drought or other extreme climatic conditions.	Not required
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting,	No	The project is not impacted by the use of genetically modified organisms or GMOs.	Not required

commercial development, or take place in facilities or farms that include GMOs in their processes and production)?			
Principle 9.4 Release of pollutants			
Could the Project potentially result in the release of pollutants to the environment?	No	As being a renewable energy power project, the project activity does not lead to release of any pollutants. The project complies with the related regulations of Ministry of Environment and Urbanization. The electricity delivered to the grid by the project activity substitutes the same amount of electricity generated from the generation mix of Turkey,	Not required
>>			

		which is dominated by fossil fuels. During the online site visit, the stakeholders were interviewed and there wasn't any complaint on noise or shadow flickering of the turbines	
Principle 9.5 Hazardous and Non-hazardous Waste			
Will the Project involve the manufacture, trade, release, and/ or use of hazardous and non-hazardous chemicals and/or materials? >>	No	During operation of the project activity, there are no positive nor negative impacts expected. During excavation and construction no hazardous, toxic or flammable materials have not been used. Hazardous wastes are handled appropriately in closed containers and transported by licensed transporters to the	Not required

		licensed processing and disposal facilities.	
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers?	No	The Project will not involve the application of pesticides and/or fertilisers.	Not required
Principle 9.7 Harvesting of Forests			
Will the Project involve the harvesting of forests?	No	The Project does not involve the harvesting of forests.	Not required
Principle 9.8 Food			

Does the Project modify the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives?	No	The Project does not have any impact on the quantity or nutritional quality of food available such as through crop regime alteration or export or economic incentives.	Not required
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	No	The Project will not involve animal husbandry.	Not required
Principle 9.10 High Conservation Value Areas and Critical Habitats			
Does the Project physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified?	No	The Project does not physically affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats,	Not required

		landscapes, key biodiversity areas or sites identified. Regarding ornithology, EIA report including the ornithological studies have been approved by the Ministry of Environment and Urbanization. No negative impact by the project activity has been observed and this has also been verified during the interviews by the local people.[23]	

[23]The Ornithological Studies are available to the VVB.

		As per provided ornithology report, dated in February 2017, a migratory route linked with Kizilirmak Delta has been discovered. However, it was considered that the implementation of the project is ornithologically appropriate. Site personnel appointed by the Project Owner monitors bird/bat carcasses and nests in site. In case of any case, he would report to the management. Additionally, ornithology reports for spring and autumn periods were finalized in June 2022 and November 2022, respectively. It was reported that migration movements in which migratory herds can be observed have not occurred. And endangered bird species	

		could not be identified within the study period[24].	
Principle 9.11 Endangered Species			
a. Are there any endangered species identified as potentially being present within the Project boundary (including those that may route through the area)? b. Does the Project potentially impact other areas where endangered species may be present through transboundary affects?	No	a. There are not any endangered species identified as potentially being present within the Project boundary (including those that may route through the area) b. The Project does not potentially impact other areas where endangered species may be present through transboundary affects.	Not required

[24] Ornithology reports, June 2022 and November 2022

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	Vega Rüzgar Enerjisi Elektrik Üretim A.Ş.
Registration number with relevant authority	
Street/P.O. Box	Atatürk cad. No:174/1
Building	Ekim apt. Kat: 2 D: 4
City	İzmir
State/Region	Alsancak
Postcode	35220
Country	Türkiye
Telephone	+90 232 483 43 48
E-mail	info@vegaenerji.com
Website	www.vegaenerji.com
Contact person	Erman Kaya
Title	Mr.
Salutation	General Manager
Last name	Kaya
Middle name	-

First name	Erman
Department	
Mobile	-
Direct tel.	-
Personal e-mail	erman.kaya@vegaenerji.com

APPENDIX 3 - LUF ADDITIONAL INFORMATION

Risk of change to the Project Area during Project Certification Period:	
Risk of change to the Project activities during Project Certification Period:	
Land-use history and current status of Project Area:	
Socio-Economic history:	
Forest management applied (past and future)	
Forest characteristics (including main tree species planted)	
Main social impacts (risks and benefits)	
Main environmental impacts (risks and benefits)	
Financial structure	
Infrastructure (roads/houses etc):	

Water bodies:	
Sites with special significance for indigenous people and local communities - resulting from the Stakeholder Consultation:	
Where indigenous people and local communities are situated:	
Where indigenous people and local communities have legal rights, customary rights or sites with special cultural, ecological, economic, religious or spiritual significance:	

APPENDIX 4 - DESIGN CHANGES

A4.1. Details of proposed or actual design change

>>

A4.2. Describe the impacts of design change on the following

a. Additionality

>>

b. Applicability of methodology and other methodological regulatory documents with which the project activity has been certified

>>

c. Compliance with the monitoring plan of the applied methodology

>>

d. Level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan

>>

e. Scale of the project activity

>>

f. Stakeholder consultation

>>

g. Sustainable development criteria

>>

h. Safeguarding assessment

>>

i. Compliance with applicable legislation

>>

j. <u>Only for LUF Projects</u>: Transparent summary of all approved changes in Project Area, Eligible Area and accompanying changes in ex-ante emissions removals.

DATE OF APPROVED	PROJECT AREA (HA)	ELIGIBLE AREA (HA)	EX-ANTE ESTIMATE (TCO2E)

DESIGN CHANGE (MM/DD/YYYY)	INCREASE OR DECREASE ?	VALUE (HA)	INCREASE OR DECREASE?	VALUE (HA)	INCREASE OR DECREASE ?	PERCENTAGE (%)