Gold Standard for the Global Goals

Climate Security & Sustainable Development

KEY PROJECT INFORMATION & PROJECT DESIGN DOCUMENT (PDD)

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VERSION **v. 1.2**

RELATED SUPPORT

- **Key Project Information & Project Design Document v.1.2**

This document contains the following Sections

Key Project Information

Section A – Description of project

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

Section C – Duration and crediting period

Section D – Summary of Safeguarding Principles and Gender Sensitive Assessment

Section E – Outcome of Stakeholder Consultations

Appendix 1 – Safeguarding Principles Assessment (mandatory)

Appendix 2 - Contact information of Project participants (mandatory)

KEY PROJECT INFORMATION

GS ID of Project	GS 436
Title of Project	Akbük Wind Farm Project, Turkey
Time of First Submission Date	30/06/2008
Date of Design Certification	17/03/2009
Version number of the PDD	15
Completion date of version	14/02/2024
Project Developer	Ayen Enerji A.S.
Project Representative	Life İklim ve Enerji Ltd.Şti.
Project Participants and any communities involved	Ayen Enerji A.S.
Host Country (ies)	Turkey/Aydın
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	01 - ACM0002 Grid-connected electricity generation from renewable sources, v. 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
SDG 13: Climate action	**Amount of GHGs emission avoided**	CO_2: 79,453	tCO_2/year
SDG 8: Decent work and economic growth	**Total number of jobs**	10	employee
	Total trainings	1	Training/employee /Monitoring Per.
SDG 7: Affordable and clean energy	**Amount of renewable energy**	122,461.80	MWh/year
SDG 6: Clean Water	**Avoided Wastewater**	3,188,395.61	m^3/year

SECTION A. DESCRIPTION OF PROJECT

A.1. Purpose and general description of project

The purpose of Akbük Wind Farm Project (in the following: Akbük WFP) is to utilize wind energy potential in Turkey and to compensate energy requirement through a sustainable, environmentally and cost-effective way. Ayen Enerji A.S. installed Akbük WFP with 30.75 MWe total installed capacity (15 turbines) with estimated 122,461.80 MWh electricity generation per annum, in borders of Akbük town of Didim District of Aydın, Turkey. Akbük WFP was commissioned on 19/03/2009.

The nearest settlements to the project site are Denizköy town, which is located about 800 m northwest, and Fevzipaşa town, which is located about 2.5 km south. Ayen obtained the "Electricity Power Generation License" from the Energy Market Regulatory Authority (EMRA) for the project site.

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

General Eligibility Criteria:

- Type of project: Wind
- Location of project: The project is located in Turkey. Therefore, the project is eligible.
- Project Area, Boundary and Scale: The registered project activity is 30.75 MWe as large scale.

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

Ayen Enerji A.S. which is the legal developer and owner of the project and has the legal rights for the VER credits that will be issued under Gold Standard.
As the project developer, **Ayen** believes that efficient utilization of all kinds of natural resources with a harmony coupled with responsible environmental considerations is vital for sustainable development of Turkey and the World. This has been a guiding factor for the shareholders towards the concept of designation and installation of a wind power project. Other than the objective of climate change mitigation through significant

reduction in greenhouse gas (GHG) emissions, the project has been carried out to provide social and economic contribution to the region in a sustainable way. The benefits that will be gained by the realization of the project compared to the business-as-usual scenario can be summarized under four main indicators:

Environmental

The project activities will replace the grid electricity, which is constituted of different fuel sources causing greenhouse gas emissions. By replacing in the consumption of these fuels, it contributes to conservation of water, soil, flora and faunas and transfers these natural resources and also the additional supply of these primary energy sources to the future generations. In the absence of the project activity, an equivalent amount of electricity would have been generated from the power plants connected to the grid, majority of which are based on fossil fuels. Thus, the project is replacing the greenhouse gas emissions (CO_2, CH_4) and other pollutants (SO_X, NO_X, particulate matters) occurring from extraction, processing, transportation and burning of fossil-fuels for power generation connected to the national grid.

Economical

The project will help to accelerate the growth of the wind power industry and stimulate the designation and production of renewable energy technologies in Turkey. Then, other entrepreneurs irrespective of sector will be encouraged to invest in wind power generations. It will also assist to reduce Turkey's increasing energy deficit and diversify the electricity generation mix while reducing import dependency, especially natural gas. Importantly, rural development will be maintained in the areas around the project site by providing infrastructural investments to these remote villages.

Social

The employment of local people that have necessary technical qualifications for the required post will be the priority and enhanced by all project activities during construction and operation of wind farm. As a result, local poverty and unemployment will be partially eliminated by increased job opportunities and project business activities. Construction materials for the foundations, cables and other auxiliary equipment will preferentially be sourced locally. Moreover, as contribution of the project to welfare of the region, the quality of the electricity consumed in the region will be increased by local electricity production, which also contributes decreasing of distribution losses.

Technological

Implementation of the proposed project will contribute to wider deployment of wind power technology in local and national level. It will demonstrate the viability of larger grid connected wind farms, which will support improved energy security, alternative sustainable energy, and also renewable energy industry development. This will also strengthen pillars of Turkish electricity supply based on ecologically sound technology.

A.2. Location of project

Akbük Wind Farm Project (Akbük WFP) is located in Aydın.

The nearest settlements to the project site are Denizköy town, which is located about 800 m northwest, and Fevzipaşa town, which is located about 2.5 km south.

Figure 1: Location of Akbük WFP

The coordinates of the turbines are given below. Project licence is for 15 turbines.

Table 2: Geographical coordinates of the turbines of Akbük WFP[1]

Wind Turbine No.	E	N
T1	53 33 10	41 45 247

[1] See; Generation License

Wind Turbine No.	E	N
T2	53 34 85	41 45 221
T3	53 36 59	41 45 190
T4	53 38 29	41 45 139
T5	53 39 98	41 45 093
T6	53 41 74	41 45 074
T7	53 43 50	41 45 075
T8	53 47 25	41 45 076
T9	53 47 00	41 45 060
T10	53 48 78	41 45 045
T11	53 50 43	41 44 984
T12	53 52 93	41 44 651
T13	53 54 57	41 44 584
T14	53 56 28	41 44 548
T15	53 57 99	41 44 499

A.3. Technologies and/or measures

The project will have a total power of 30.75 MWe with 15 wind turbines each having 2.1 MWm/2.05 MWe output power and hub height of 79 m. Wind energy will be transformed to the electric energy and the energy produced will be transmitted to the Akbük Transformer Center of 154 kV. Apart from that there are two meters to (one main and one backup) measure electricity supplied to the grid. Specifications of these meters are given in the table below.

Table 3: Meter Specifications

Name	Brand & Model	Serial Number	Accuracy Class
Main Meters	EMH – LZQJ-XC	5271033	0.2 S
Back-up Meters	EMH – LZQJ-XC	5271034	0.2 S

Operational life time of the Akbük WFP is determined by using the 'Tool to determine the remaining lifetime of equipment'' (v.1). In the tool it is stated that; 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. For the project option (c) is used. So, in the tool it is said that default lifetime for the on-shore wind turbines is 25 years. In addition to this, operational lifetime of the project is 49 years.

The project activity will achieve emission reductions by avoiding CO_2 emissions from the business-as usual scenario electricity generation produced by mainly fossil fuel-fired power plants within the Turkish national grid (Figure 3) since the project converts wind energy to electricity which is clean and emission free energy generation. Simple illustration of the wind energy conversion is given in the figure below.

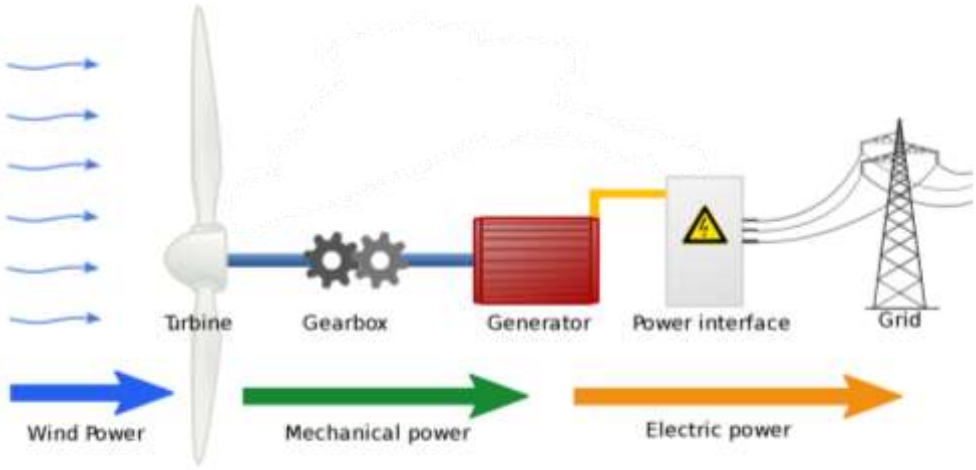

Figure 2: Wind Energy to Electricity Power Diagram

Total emission reduction over the 7 years crediting period is expected to reach **556,171 tCO_2e** with the assumed total net electricity generation of **122,461.80 MWh/year**.

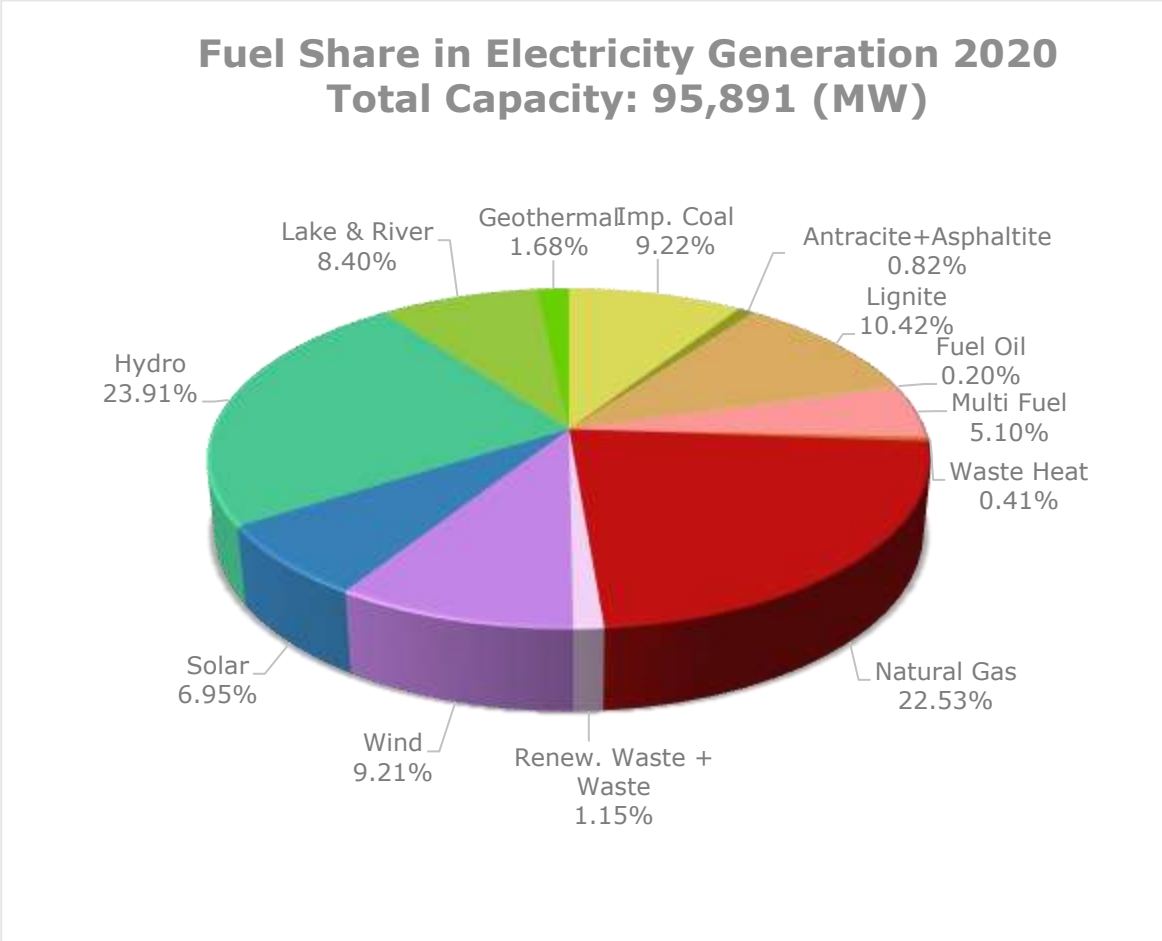

Figure 3: Share of Sources in Electricity Generation 2020[2]

Although Turkey has a very good wind resource, substantial space, a reasonably good electrical infrastructure and an approaching shortage of electricity; it uses vert less capacity (less than 10%) of its onshore potential, which is estimated as 39,791 MW by Renewable Energy General Directorate.[3] Lack of attractive incentives and tax advantages, limited grid access and restricted turbine supply constitutes the major barriers in front of the wind energy.

These numbers and figures show the contribution of a wind power project like Akbük WFP to the development of environmental friendly electricity generation instead of above described Turkish mix of hydroelectric and fossil fuelled power plants, which are

[2] See, TEİAŞ, Annual Development of Electricity Generation- Consumption and Losses in Turkey (2020):, https://www.teias.gov.tr/tr-TR/turkiye-elektrik-uretim-iletim-istatistikleri
[3] See, https://www.mmo.org.tr/sites/default/files/T%C3%BCrkiyeEnerjiG%C3%B6r%C3%BCn%C3%BCm%C3%BC_2018_Sunumu_%2812.04.2018%29.pdf

better known and financially more attractive from an investor's point of view. The emission reductions would not occur in the absence of the proposed project activity because of various real and perceived risks that impede the provision of financing.

Akbük WFP, as a large wind power plant project, will serve as a perfect project to demonstrate long-term potential of wind energy as a means to efficiently reducing GHG emissions as well as to diversifying and increasing security of the local energy supply and contributing to a sustainable development. Wind driven turbines will rotate in generators and electricity generated here will be transferred to the grid for consumer without any greenhouse gas emissions. The Gold Standard certification shall help to realize this seminal technology by providing an adequate compensation for the lacking financial incentives in the Turkish renewable energy market.

The first 7-year of crediting period was from 19/03/2009 to 18/03/2016.

The second 7-year of crediting period is from 19/03/2016 to 18/03/2023.

The third 7-year of crediting period is expected to be from 19/03/2023 to 18/03/2030.

A.4. Scale of the project

Since the installed capacity of the project per license issued by EMRA (Energy market Regulatory Authority) is 30.75 MWe and 31.5 MWm which consist of 15 turbines (15 x 2.1 MWm), Akbük WFP project is a large scale project.

A.5. Funding sources of project

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)

For the determination of the baseline, the official methodology ACM0002 version 21.0.0, "Grid-connected electricity generation from renewable sources"[4] , is applied, using conservative options and data as presented in the following section. This methodology refers to four Tools, which are:

1. TOOL07 -Tool to calculate the emission factor for an electricity system (Version 07.0.0)[5];
2. TOOL01 - Tool for the demonstration and assessment of additionality (Version 07.0.0)[6];
3. TOOL10 - Tool to determine the remaining lifetime of equipment (Version 01.0.0)[7];
4. TOOL11 - Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1)[8]

B.2. Applicability of methodology (ies)

The choice of methodology ACM0002 v21 is justified as the proposed project activity meets its applicability criteria:

Applicability Condition as per ACM0002 v21	Description
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 plant(s)/unit(s);	(a) Akbük WFP is a grid-connected renewable power generation project activity that install a new wind power plant at a site where no renewable power plant was operated prior to the implementation of the

[4] https://cdm.unfccc.int/methodologies/documentation/meth_booklet.pdf#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-10-v1.pdf
[8] https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf

(d) Involve a rehabilitation of (an) existing plant(s)/unit(s); or (e) Involve a replacement of (an) existing plant(s)/unit(s).	project activity (Greenfield plant); (b) NA (c) NA (d) NA (e) NA
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 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).	There is no BESS in the project.
The methodology is applicable under the following conditions: (a) 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 project is wind power plant.

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 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 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: (a) The project activity is implemented in existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or (b) The project activity is implemented in existing single or multiple reservoirs, where the volume of the reservoir(s) is increased and the power density,	The project is not a hydro power plant project.

calculated using equation (7), is greater than 4 W/m2 ; or (c) The project activity results in new single or multiple reservoirs and the power density, calculated using equation (7), is greater than 4 W/m2 ; or (d) The project activity is an integrated hydro power project involving multiple reservoirs, where the power density for any of the reservoirs, calculated using equation (7), is lower than or equal to 4 W/m2 , all of the following conditions shall apply: (i) The power density calculated using the 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 (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.	The project is not an integrated hydro power plant project.

This demonstration has to be carried out in the specific scenario of water availability in different seasons to optimize the water flow at the inlet of power units. Therefore, this water balance will take into account seasonal flows from river, tributaries (if any), and rainfall for minimum of five years prior to the implementation of the CDM project activity.	
The 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.	(a) Akbük WFP is a grid-connected renewable power generation project activity that install a new wind power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); (b) The project is not 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".	There is no retrofit, rehabilitation, replacement or capacity addition.

"Tool to calculate the emission factor for an electricity system" 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. Once the additionally tool is included in an approved methodology, its application by project participants using this methodology is mandatory.

B.3. Project boundary

As per the Approved Large Scale Consolidated Methodology ACM0002, the project boundary is "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." Correspondingly, in this project activity the project boundaries include the project site and all power plants attached to the Turkish National Grid.

The project uses wind energy to produce electricity. Kinetic power of the wind is converted to electrical energy, which then will be transferred to the grid. Back-up power generators in the wind farm will only be used when the wind farm is out of service and power cannot be supplied from grid. Hence, emissions due to usage of back-up power generation are expected to be very low and are taken to be zero complying with the Tool.

The greenhouse gasses and emission sources are defined for the project activity and the baseline scenario. As a result, the project boundary for Akbük WFP is as demonstrated in the figure 3 below:

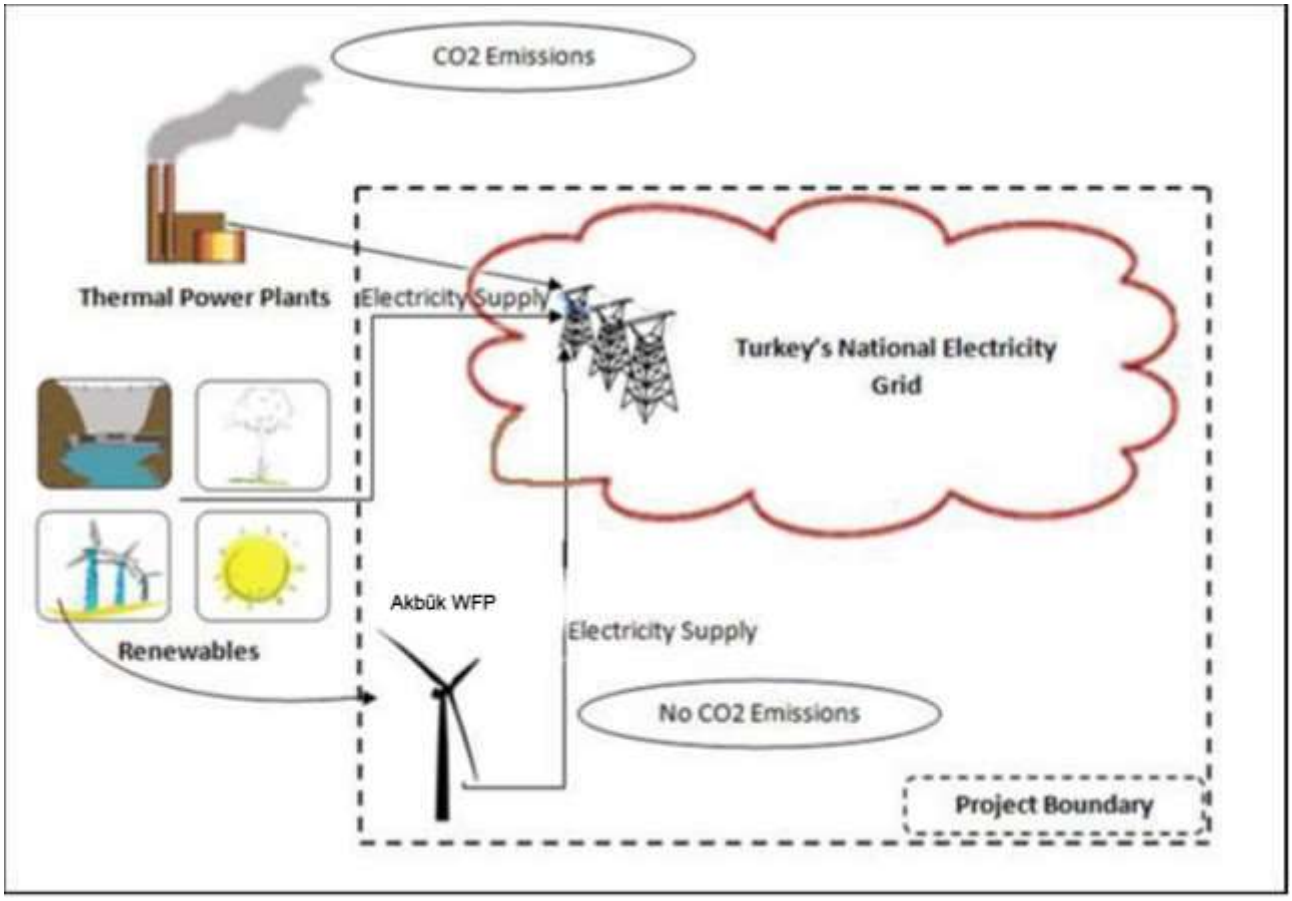

Figure 4: Project Boundary

Based on the above operation diagram, the baseline and project activity related greenhouse gases which are considered in baseline calculation is given below, in Table 4:

Table 4: Emissions sources included in or excluded from the project boundary

Source		GHGs	Included?	Justification/Explanation
Baseline scenario	CO_2 Emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source: Fossil fuels fired for electricity generation cause CO_2 emissions. It is included to baseline calculation to find the displaced amount by the project activity.
		CH_4	No	Minor emission sources: Even though there may be some CH_4 and N_2O emissions during electricity generation, these emissions are negligible and not included in baseline calculation to be conservative and comply with the methodology (ACM0002 v21).
		N_2O	No	
Project scenario	Emissions during construction and operation of the project activity	CO_2	No	Under normal conditions, no CO_2, CH_4 or N_2O emissions will occur apart from normal domestic activities of the personnel like heating and cooking. And those emissions resulting from these domestic activities will be very low to be taken into account in the calculations. So, these are neglected and not included.
		CH_4	No	
		N_2O	No	

B.4. Establishment and description of baseline scenario

The baseline scenario is identified according to the "Baseline Methodology Procedure" of ACM0002 ver.21. The project activity is installation of a new grid-connected wind farm with 15 turbines and is not modification/retrofit of an existing grid-connected power plant. So, first identification of this procedure is selected for proposed project activity, which is described as:

"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) calculation of Ministry of Energy and Natural Resources of Turkey".

The methodological tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" (version 03.0.1) is adopted to assess the continued validity of the baseline and to update the baseline. This tool provides a stepwise procedure to assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism. According to this tool the following steps are applied.

Step 1: Assess the validity of the current baseline for the next crediting period
The validity of the current baseline is assessed using the following Sub-steps:
Step 1.1 Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies
The baseline scenario is defined according to the ''ACM0002 Grid-connected electricity generation from renewable sources'', as stated in the project's PDD registered for the first crediting period. During the First Crediting Period, the baseline scenario for the project had been defined as:
"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants''.
The current baseline of the project is the same as the first crediting period and second crediting period complies with the existing legal framework. No additional that came into force that has an impact on the project activity and the project activity is still in line with the available law and regulations.
Step 1.2 Assess the impact of circumstances

The new national circumstances have an impact on the EF of the grid and thus on the project's current baseline emissions. Accordingly, the EF is updated for the third crediting period in conformity with the latest version of the Tool to calculate the emission factor for an electricity system. There has been no major deviation or change in the market characteristic during the second crediting period.

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

The technical lifetime of the project activity (including wind turbines) is defined as 25 years and the equipment's lifetime exceeds the crediting period for which renewal is requested. Equipment only requires regular maintenance. The baseline scenario identified at the validation of the project activity was the continuation of grid-connected electricity generation from renewable sources. Under this scenario, no investment from the project's proponent or third party (or parties) has been envisioned later specifically for the project.

Step 1.4 Assessment of validity of the data and parameters

The emissions reduction calculations are based on two main parameters: the energy produced and the grid emission factor. The latter will be updated as explained in the next paragraph.

The emission factors and values for the calculation of the baseline emissions have been determined for the whole crediting period and parameters not monitored have been changed. Therefore, Step 2 has been applied.

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

This step is applicable since Step 1.4 showed that the emission factor needs to be updated accordingly with the new officially published national emission factor data.

Step 2.1: Update the current baseline

The baseline scenario is defined according to the ''ACM0002 Grid-connected electricity generation from renewable sources'', as stated in the project's PDD registered for the first and second crediting period. As confirmed in Step 1, the project baseline scenario for the new crediting period is the same as the first and second crediting period and complies with the existing legal framework. No additional that came into force that has an impact on the project activity and the project activity is still in line with the available law and regulations.

This is conformed to the provisions of the latest version of the approved applicable methodology to the project activity namely: ACM0002 version 21.0, "Grid-connected electricity generation from renewable sources".

Step 2.2: Update the data and parameters

The new national circumstances impact the emission factor of the grid and thus on the project's current baseline emissions. For this reason, only the grid emission factor is updated accordingly with the Turkish Ministry of Energy and Natural Resources publication, which indicates the National Electric Grid Emission Factor for the year 2020 for Turkey. So that this newly published emission factor was used to calculate estimated emission reductions.

To describe the baseline and its development for the project activity, long-term electricity demand and supply projections for Turkey are assessed.

Demand for electricity in Turkey is growing rapidly with average 3.8%[9] for previous ten years. TEİAŞ, who is responsible from the grid reliability has prepared an electricity demand projection for next ten years period (2022-2031) for Turkey and announced on December 2021, given in Figure 5 and Figure 6, reflecting the continuation of current demand growth[10].

Table 5: Low and High Demand Projection Scenarios for Ten Years Period (GWh)

Scenarios	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
High Scenario	340,810	354,446	371,927	391,806	409,551	425,790	439,739	455,387	471,572	491,224
Low Scenario	308,903	317,755	329,911	344,265	357,757	369,703	378,902	389,682	400,825	415,042

[9] See, https://www.teias.gov.tr/tr-TR/ilgili-raporlar 10 Yıllık talep tahminleri raporu
[10] See, https://www.teias.gov.tr/tr-TR/ilgili-raporlar 10 Yıllık talep tahminleri raporu

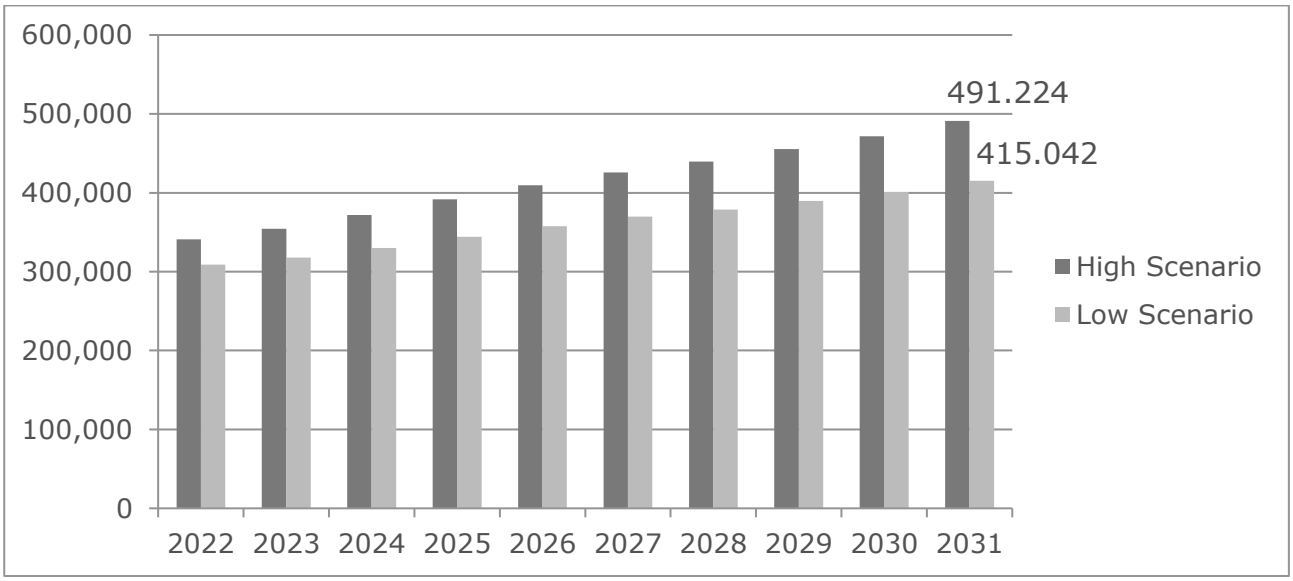

Figure 5: Electricity Demand Projections for Ten Years

In this projection, electricity supplies are also forecasted considering all power plants, which are operational, under construction and newly licensed. Generation projection based on project generation is given in Figure 6.

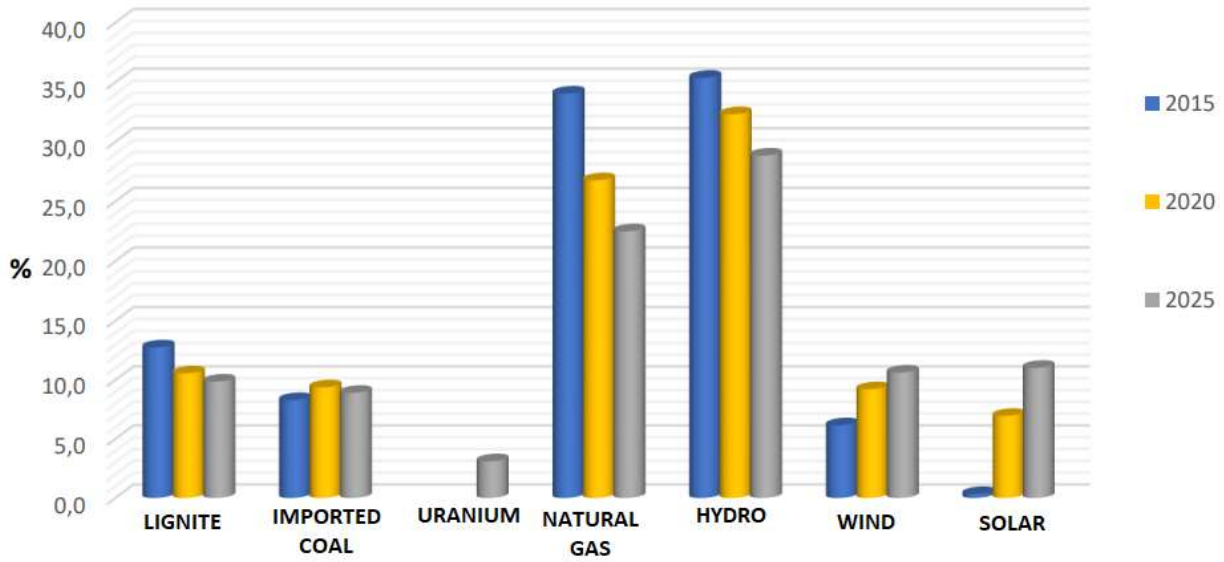

Figure 6: Total Installed Capacity in Turkey as of the Resources shares (%)[11]

[11] See, https://www.epdk.gov.tr/Detay/Icerik/3-0-66-3/elektrikuretim-kapasite-projeksiyonlari# (page 111)

According to the 5-year projection it is clear that fossil fuels will remain the main sources for electricity generation (41.3 % in 2025). Natural gas will continue to dominate the market while total imported coal will still be at 8.9 %. Hydro will account for 28.8% of the mix whereas all non-hydro renewable combined (geothermal/biogas/waste/wind/solar) will be account for 25% of all electricity generation. This projection is consistent with continuing fossil fuel dependent characteristics of Turkish electricity sector.

Table 6: **By Primary Energy Resources, Installed Capacity of Turkey** (2010-2020)[12]

Unit :MW

	Coal	Fuel Oils	Natural Gas	Ren. Waste+ Waste	Multi Fuel	Hydro	Geothermal	Wind	Solar	TOTAL
2010	11.950,3	1.593,3	13.302,1	107,2	5.325,6	15.831,2	94,2	1.320,2	-	49.524,1
%	24,13	3,22	26,86	0,22	10,75	31,97	0,19	2,67	-	100,00
2020	19.613,0	189,4	21.599,4	1.502,8	4.889,1	30.983,9	1.613,2	8.832,4	6.667,4	95.890,6
%	20,45	0,20	22,53	1,57	5,10	32,31	1,68	9,21	6,95	100,00

In the shed, which is given by Table 5, analysis for the baseline scenario (continuation of current situation) it can be concluded that:

- **Conclusion-1:** Energy demand in Turkey has been increasing with significant rates since ten years, and it is expected to continue at least for next ten years.

- **Conclusion-2:** Even all operational plants, construction phase plants and licensed ones are taken into account lack of supply is projected after the year of 2025. So, there is significant need for electricity generation investments to satisfy demand, which means electricity to be generated by the project activity would otherwise be generated by new power plants to avoid power shortage in coming years.

- **Conclusion-3:** Fossil fuels will hold the dominance in generation mix for at least midterm period (till the end of 2025) with 41.3% share. Hydro included renewable will remain low with 53.8% share and non-hydro energy contribution will stay negligible with only 25% of total share by the end of that period. This also shows that most of new capacity additions will be fossil fuel fired power plants. Finally, when we look at Turkey's national grid structure in

[12] See, https://www.teias.gov.tr/turkiye-elektrik-uretim-iletim-istatistikleri

2025, even if we say that 53.8% of the grid consists of renewable energy power plants, we will see a different picture regarding electricity production compared to the installed capacity. In the figure below, it can be seen that at least 56.1% of the electricity production predicted for 2025 will supply from fossil fuels and 4.9% will supply from nuclear power plants.

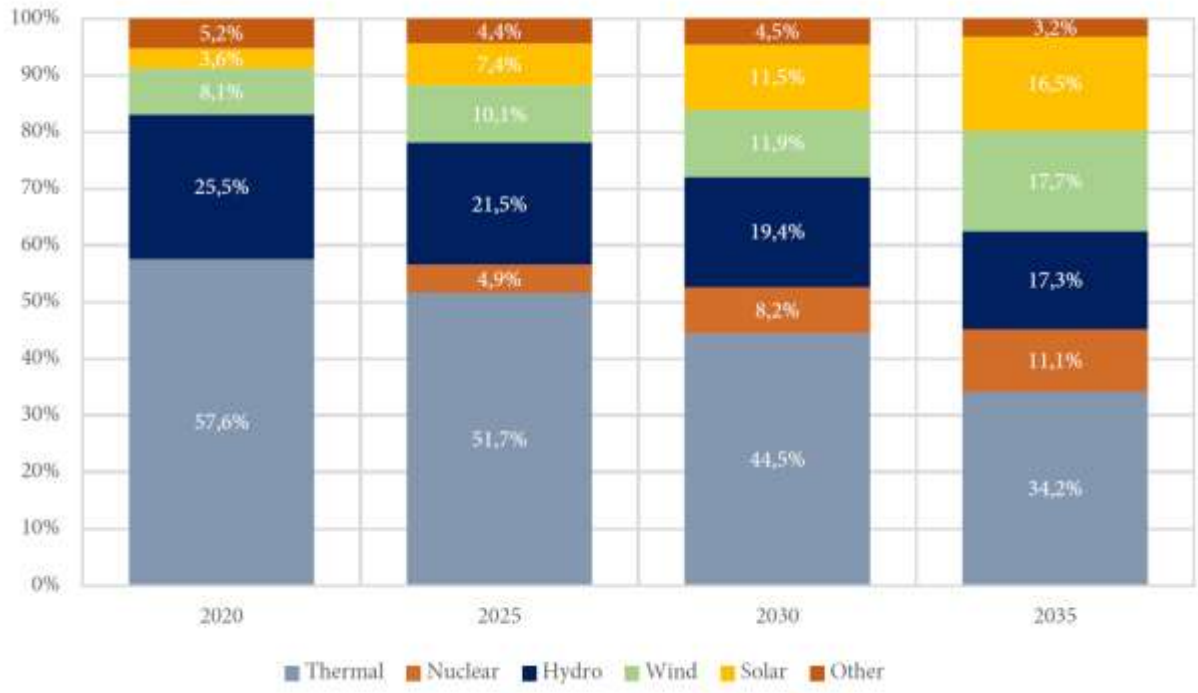

Figure 7: Distribution of Electricity Generation by Source (%)[13]

The combination of aforementioned trends indicates that continuation of energy generation of Akbük WFP would decrease the power amount from a new grid-connected thermal plants.

B.5. Demonstration of additionality

For the explanation of how and why the project activity leads to emission reductions that are additional to what would have occurred in the absence of the project activity, the Baseline Methodology refers to the consolidated "Tool for the demonstration and assessment of additionality"[14] version 7.0.0 (Tool), which defines a step-wise approach to be applied to the proposed project.

[13] https://enerji.gov.tr/Media/Dizin/EIGM/tr/Raporlar/TUEP/T%C3%BCrkiye_National_Energy_Plan.pdf (page 36)
[14] Version 7, http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf (page 4) (page 4)

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations.

Sub-step 1a. Define Alternatives to the project activity

To identify the realistic and credible alternative scenario(s) for project participants, scenarios in the Tool are assessed:

a) The proposed project activity undertaken without being registered as a GS VER project activity

This alternative is realistic and credible as Ayen Enerji A.S. may undertake project activity if it sees no risk for project and/or if the project turns out to be financially attractive without GS VER credit income. However, investment analyses shows that the project is not economically feasible without GS VER credit income. Detail information is given in Step-3.

b) Other realistic and credible alternative scenario(s) to the proposed GS VER project activity scenario that deliver electricity with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;

The project activity is power generation activity without any greenhouse gas emission harnessing the energy of the wind. Being a private entity, Ayen Enerji A.S doesn't have to invest power investments even proposed project activity. Also, since Ayen Enerji A.S has a licence only for wind power investment and since in the proposed project area there is no hydro or other sources for electricity generation, other project activities delivering same electricity in the same project area is *not* realistic for project participant.

c) Continuation of the current situation, i.e. Akbük WFP would not have built

The decision in favour or against a project investment depends on the expected revenues and risks, like for every other private investment. Investment decisions other than Akbük WFP are independent from the question whether Akbük WFP would not have built or not. This alternative is also realistic and credible.

According to baseline scenario, which is described in B.4, there is a need for energy investment to satisfy increasing demand and if the Akbük WFP would not continue operating, the same amount of energy will be supplied by other private investors to the grid. Forecasts shows that electricity supplied in the absence of Akbük WFP will be

mainly based on fossil fuels as the projections for the year of 2031 forecasts 41.3% share for fossil fuels in the energy mix.
In the absence of the project the power will be produced by new and existing power plants in accordance with the baseline in ACM0002 version 21.

Outcome of Step 1.a: Therefore, two realistic and credible alternative scenarios are identified for the project activity:

a) The proposed project activity undertaken without being registered as a GS VER project activity.

b) Continuation of the current situation, i.e. Akbük WFP would not continue its operation.

Sub-step 1b. Consistency with mandatory laws and regulations
Both alternatives are (building or not building the project activity) in compliance with the following identified applicable mandatory laws and regulations:

Relevant Laws	Number/ Enactment Date	Aim and Scope
Environmental Law[15] *Environmental Impact Assessment Regulation	Nr. 2872 / 17/07/2008	The approval is requested for power plants from Ministry of Environment and Forest as Electricity Licence Regulation requests project to be in line with the environmental law.
Electricity Market Law *Electricity Licence Regulation *Electricity Market Balancing and Conciliation Regulation[16]	Nr. 4628 / 03/03/2001	Regulating procedures of electricity generation, transmission, distribution, wholesale, retail for legal

[15] http://www.mevzuat.gov.tr/MevzuatMetin/1.5.2872.pdf
[16] http://www.stern.nyu.edu/~adamodar/pc/archives/ctryprem08.xls

		entities. Two regulations issued under the law; one for generation licence and the other for market price balancing and conciliation.
Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy[17]	Nr. 5346 / 18/05/2005	Aims to extend the utilization of renewable energy for electricity generation and identifies method and principles for power generation from renewable resources in an economical and conservative manner as well as certification of the electricity generated from renewable resources.
Energy Efficiency Law[18]	Nr. 5627 / 02/05/2007	Identifies method and principles for industry, power plants, residential buildings and transport to imply necessary measures for energy efficiency during electricity generation, transmission, distribution and consumption.

Table 7: Project Implementation Schedule

Date	Activity
30/06/2008	Start of Construction / Project Start Date
17/03/2009	Registration Date
19/03/2009	Start of operation and commissioning of the first eight turbines (ID no. 1, 2, 3, 4, 5, 6, 10 and 15) / Crediting Period Start Date
03/04/2009	Start of operation and commissioning of the remaining seven turbines (ID no. 7, 8, 9, 11, 12, 13 and 14)
19/03/2009 - 31/03/2010	First Monitoring Period

[17] https://www.epdk.org.tr/Detay/DownloadDocument?id=kvZVO0DFQ3E=
[18] https://www.resmigazete.gov.tr/eskiler/2007/05/20070502-2.htm

Date	Activity
01/04/2010 - 31/03/2011	Second Monitoring Period
01/04/2011 - 31/12/2011	Third Monitoring Period
01/01/2012 - 31/12/2012	Fourth Monitoring Period
06/11/2014 - 18/03/2016	Fifth Monitoring Period
18/03/2016	Crediting Period End Date
04/10/2021	Creditable period start date of second crediting period
18/03/2023	Second Crediting Period End Date
19/03/2023	Third Crediting Period Start Date
18/03/2030	Third Crediting Period End Date

According to Turkish regulations, to get necessary permits for further project implementation, license issued by EMRA is required. Hence, issuance of license cannot be considered as 'Project Start Date' but a prerequisite to proceed for further project development activities. According to the "Glossary of CDM terms"[19] the start date of a project activity is defined as follows:

"In the context of a CDM project activity or CPA, the earliest date at which either the implementation or construction or real action of a CDM project activity or CPA begins. In the context of a CDM PoA, the date on which the coordinating/managing entity officially notifies the secretariat and the DNA of their intention to seek the CDM status or the date of publication of the PoA-DD for global stakeholder consultation in accordance with the relevant CDM rules and requirements."

The project was developed as a Gold Standard Voluntary Emission Reduction (GS VER) project, under the rules of Gold Standard Version 2.1. Gold Standard

[19] Glossary of CDM terms (Version 08.0). UNFCCC > CDM > Rules and Reference. "Start Date" Definition. Page 20. http://cdm.unfccc.int/sunsetcms/storage/contents/stored-file-20150226124446845/glos_CDM.pdf

Version 2.1 Requirements allow a project to apply Regular Project Cycle if the time of first submission is before the start date of construction or implementation, making a distinction and also permitting a selection between these two dates[20].In addition, for VER project activities proceeding under the regular project cycle, the start date of the Gold Standard Crediting Period is indicated as the date of start of operation or a maximum of two years prior Gold Standard registration, whichever occurs later[21].

Along with this explanations, construction beginning date is assumed as the start date of the project activity. Please visit C.1.1.

Therefore, the start date of the project activity is 30/06/2008.

Although second crediting period started in 19/03/2016, revalidation for second crediting period was done in 04/10/2021. That is why creditable period of the second crediting period is between 04/10/2021 and 18/03/2023.

Step 2: Investment analysis

According to "Tool for the demonstration and assessment of additionality (Ver. 5)", the economical or financial attractiveness of the proposed project should be determined compared to one of the alternatives identified in step 1, without taking into consideration the VER revenues. To conduct the investment analysis, the tool refers to the following sub-steps:

Sub-step 2a. Determination the appropriate analysis method:

According to "Tool for the demonstration and assessment of additionality (Ver 5)" simple cost analysis can only be applied to projects that do not generate any other financial benefits than the VER related incomes. As the electricity produced by the

[20] Gold Standard Requirements Version 2.1, pages 26, 27, 35.
http://www.cdmgoldstandard.org/wp-content/uploads/2011/10/GSv2.1_Requirements-11.pdf
[21] Gold Standard Version 2.1 Requirements, Section V.a.2. Start of the Gold Standard Crediting Period, page 36.
http://www.cdmgoldstandard.org/wp-content/uploads/2011/10/GSv2.1_Requirements-11.pdf

proposed project will be sold to the national grid and is expected to create revenues, the simple cost analysis is discarded. Instead, investment cost analysis (option II) will be used considering that one of the alternatives to the proposed project is construction of a hydroelectric power plant.

Sub-step 2b. Option II. Apply investment comparison analysis:

Ayen Enerji A.•., which is the project participant of Akbük Wind Farm, has been active in the energy sector as a project developer since August 1990. [22]So far, the company has been mostly involved in hydroelectric power plant investments. The capacity and type of their investments do range from small scale run-off-river type projects to large scale hydro plant projects with reservoir.

An investment comparison analyses will be applied through demonstrating the IRR's of the proposed wind farm project and an alternative hydro-electric project that Ayen Enerji A.•. have developed in the past, named ''Kadıncık HES'' (hereafter referred as the Hydro Project). The reason to use IRR as the financial indicator is that Ayen Enerji A.•. frequently uses this indicator for its own decision making process. Ayen Enerji A.•. has prepared a technical and financial feasibility for the 20 MW installed capacity ''Kadıncık'' hydro project to be constructed in Mersin Province and submitted the feasibilities to the Ministry of Energy and Natural Resources [23] and State Water Works. The financials of this hydro project is used for investment comparison analysis as the financials represent most up to date information on costs and financial structure of a hydro electric power plant investment.

Sub-step 2c. Calculation and comparison of financial indicators:

The financial figures of both projects, Akbük Wind Farm Project and Kadıncık Hydro Project are presented in below.

[22] Reference: www.ayen.com.tr (Official website of Ayen Enerji A.S.)
[23] Reference: Official correspondence between Ayen Enerji and The Ministry.

Table 8. Comparison of wind and hydro plant projects[24]

	Akbük Wind Farm	Kadıncık Run-off-River
Location	Aydın Province	Mersin Province
Installed capacity	31.5 MW	20 MW
Annual electricity generation	122.5 GWh	70 GWh
Total project cost	100 %	100%
Construction works	100%	287%
Electro-mechanical equipment	100%	10%
Annual depreciation cost	100%	23%
Operation period	49 years	49 years
Total depreciation cost	100%	46%
Equity	100%	75%
Loan	100%	45%

Electricity sales price: For both projects, a sales price of 6 €cent/kWh has been taken as an assumption for the electricity. This is based on the actual figures of the market. The guaranteed sales price for electricity generated by renewable energy sources are set between 5 €cent/kWh and 5.5 €cent/kWh as defined under the ‘‘Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy’’ article 6.

Based on the financials of both projects, which are summarized in table 4 above, the IRRs can be calculated as followed:

Table 9. IRR comparison of wind and hydro plant projects[25]

[24] The comparative values of the projects are indicated as ratios of one to another due from confidentiality reasons
[25] The detailed financial feasibilities of both projects were submitted to the VVB during the validation phase.

	IRR		
	10 years	***15 years***	***25 years***
Akbük Wind Farm	N/A	-0.36	11.43
Kadıncık Run-off-River	-13.11	13.57	18.2

Based on the calculated IRRs of the projects, it can be concluded that the hydroelectric power plant alternative to the proposed project activity is significantly much more profitable investment compared to a wind farm project. In other words, the proposed VER project activity cannot be considered as financially attractive.

Sub-step 2d. Sensitivity analyses:

In order to demonstrate whether the conclusion regarding the financial attractiveness is robust to reasonable variations in the critical assumptions a sensitivity analyses is included. For the proposed project, the following parameters were taken as uncertain factors for sensitivity analysis of the financial attractiveness:

- Annual electricity generation
- Electricity sales price
- Project expenses

Since the impact of annual electricity generation deviations on the cash flow is the same impact of electricity sales price deviations, both factors are considered to be variations of project income. The project expenses do cover annual expenses including operational costs, depreciation, TEIAS and EMRA expenses and maintenance costs.

The impacts of annual project income and project expenses on IRR of total investment for 15 year were analyzed. The results of sensitivity analyses for the proposed wind farm project are shown below.

Table 10. IRR of total investment sensitivity to different financial parameters of the project (without VER sales

Parameters	Range		
	-10%	***0***	***+10%***
Project Income	N/A	-0.36	7.28
Project Expenses	3.36	-0.36	-4.45

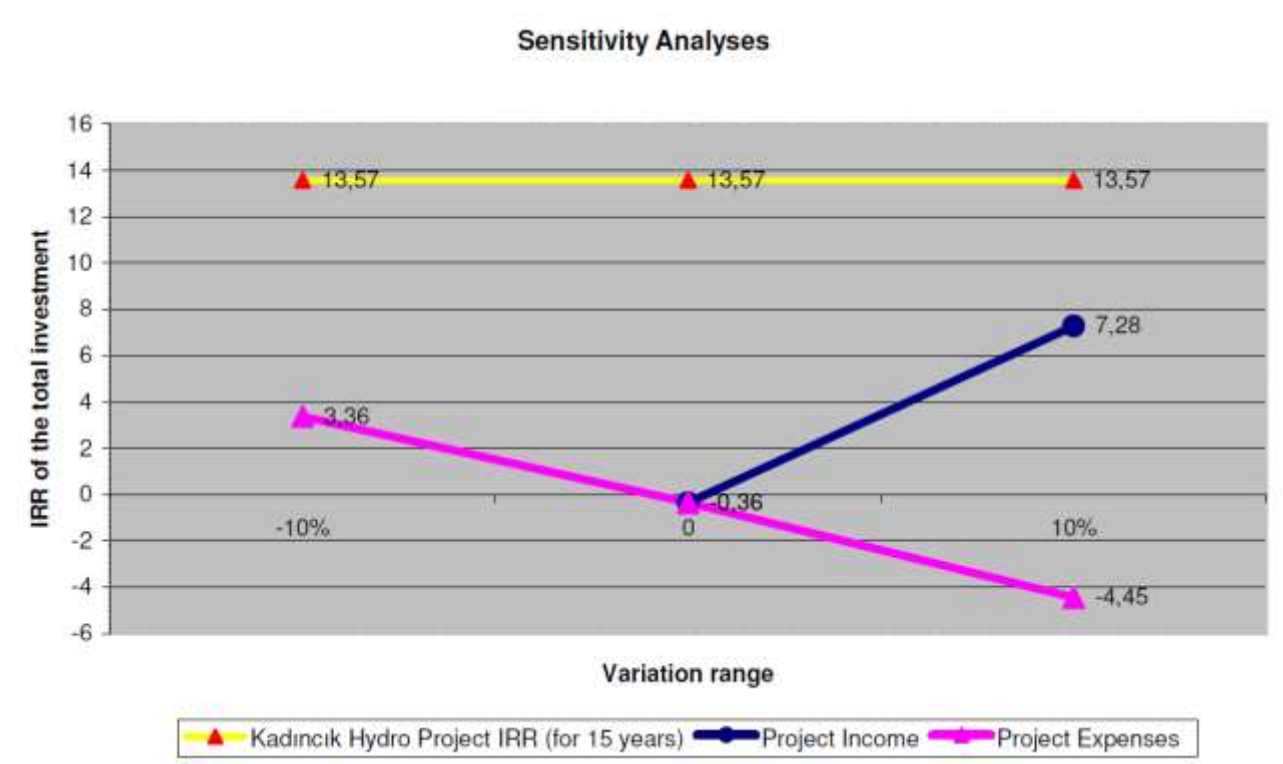

Figure 7: IRR of the total investment to different financial parameters of the project and comparison to the IRR of the alternative scenario

As shown in the sensitivity analyses, even the variation range of the uncertain factors reaches +10%, the IRR of the total investment of the proposed project could not reach the IRR value of the hydroelectric power plant project and the additionality of the project would not be influenced.

If the proposed project can be successfully registered as a VER project, the VER revenues will significantly improve the financial indicators of the project. The impact of VER revenues to the proposed project activity is demonstrated below.

Table 11. Impact of VER revenues to the project financials

Estimated VER price	IRR		
	10 years	***15 years***	***25 years***
5 €/tCO_2eq	-10.83%	4.67%	13.77%
8 €/tCO_2eq	-5.33%	7.49%	15.25%
10 €/tCO_2eq	-2.3%	9.30%	16.28%

As demonstrated above, considering of the VER sales revenues, the IRR of the total investment of the Project will be significantly improved.

Step 3. Barrier analysis

Sub-step 3a. Identify barriers that would prevent the implementation of the proposed VER project activity:

Implementation of the project without the VER revenues (alternative A defined under sub-step 1a) faces barriers that prevent the realisation of this alternative. An overview of the barriers is presented in Table 8. Each barrier is described in more details in the section below.

Table 12. Identified barriers for development of the project activity

Type of barrier	Identified barrier	Internal/External
Investment	Low project IRR	INT
	High level of financing and long pay back period	INT
	Development of grid connection	EXT
	Transmission line fee	EXT
Technical	No Turkish manufacturers of wind turbines	EXT
Prevailing practice	Wind capacity constitutes a low share of the total generation capacity	EXT

Other	Bureaucratic and legislative	EXT

Investment Barriers

Part of barriers for the development of the project is related to finance, which can be summarized as followed:

- *Low project IRR:* The Internal Rate of Return (IRR) of the project without the income from VERs is not enough to be financially attractive to the project participants. The project participant is mainly involved in hydroelectric power plant investments. Akbük Wind Farm Project will be the first wind farm project within the company's investment portfolio. As demonstrated under step 2 ''investment analyses'' a hydroelectric power plant investment is financially much more attractive compared to the proposed project financials. However, as demonstrated in the sensitivity analyses, the VER revenues significantly improves the financial figures of the proposed project activity.

- *High level of financing and long pay back period:* Wind farms require a high level of financing and have long pay back periods compared to other investment options.

- *Country risk:* In the international markets the risk for investments in Turkey is considered high. After an economic crisis in 2001, Turkish economy has seen a positive development. However investments in Turkey are still considered as relatively high risk investments. In early-to-mid 2006 the raise of interest rate in major industrial countries has strongly affected the Turkish economy, the currency depreciated significantly, long-terms interest rates rose and inflation accelerated. Together with the high current account deficit, a still high public debt ratio, a large stock of rapid foreign investments and non-supportive political environment Turkey is vulnerable to a sudden stop in capital inflows.

[26]It can be concluded that the economical and political situation has an adverse impact on the international perception of Turkey as investment country and, this is an important barrier to the Project.

Other investment barriers identified for the project are:

- *Development of grid connection:* The Akbük Wind Farm is connected to the national grid by the construction of 2.7km, 154 kV High Voltage overhead transmission line. Also 9 electricity poles will be erected. The investment cost is approximately 500,000 €. This investment will be covered totally by Ayen Enerji A.•. and later this grid connection will be transferred to TEIAŞ (Turkish Electricity Transmission Company) [27]. The compensation of this investment cost is done through internal price tariffs of TEIA• (not based on actual costs nor up to date prices), which results to a loss on behalf of the project owner.

- *Transmission line fee*: Each project that delivers electricity to the Turkish national grid is obliged to pay a 'transmission line use fee'. The amount of the fee is determined by the location of the project. For this Turkey is divided into 23 zones. The proposed project activity falls in as identified zone 6[28]. This zone has the highest transmission line fee, namely 10.333,23 €/MWyear[29], while the lowest fee is 40,29 €/MWyear. [30]This results in extra costs for the operation of the project activity.

Barriers due to prevailing practice

Wind capacity constitutes a low share of the total generation capacity: As a country whit a rapid growing economy, Turkey's demand for electricity has also been continuously growing during the past decade. In 2006 the electricity demand was

[26] Reference: IMF Fifth Review – Turkey 2007, http://www.imf.org/external/pubs/ft/scr/2007/cr07161.pdf ; OECD Economic Survey of Turkey 2006
http://www.oecd.org/dataoecd/50/53/37529636.pdf
[27] TEIAS is the state owned monopolized company responsible for the whole transmission system of Turkey http://www.teias.gov.tr
[28] Reference: (website accessed on 08.11.2007)
[29] Calculation based on exchange rate on 12.11.2007: 1€ = 1,7660 YTL (source: European Central Bank)
18.248,49YTL = 10.333,23€; 71,16YTL = 40,29€
[30] Reference: (website accessed on 08.11.2007)

174,230 GWh this is an increase of 8.3% compared to the previous year. The increase or decrease rates for electricity are presented below.

Year	Energy Demand [GWh]	% of increase
1997	105,517	11.3
1998	114,023	8.1
1999	118,485	3.9
2000	128,276	8.3
2001	126,871	-1.1[31]
2002	132,553	4.5
2003	141,151	6.5
2004	150,018	6.3
2005	160,974	7.2
2006	174,230	8.3

It is expected that on the long term the share of wind will not change and remain insignificant within the long-term projections for energy supply. In below table, the projection of the installed capacity for Turkey until 2016 is given. The share of wind energy (including other sources of renewable energy sources) in 2016 is foreseen to be 2.8%. The majority share belongs to thermal plants with 61%.

Table 13. Projection of installed capacity balance of Turkey[32]

Energy Source	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Thermal (MW total)	27,778	28,101	28,939	31,039	34,029	36,749	39,464	42,544	46,059	48,074
Hydro (MW total)	13,614	14,302	15,899	18,209	20,044	21,814	23,412	24,970	26,415	27,898
Wind + Other renewables	786	1,113	1,328	1,453	1,578	1,703	1,828	1,953	2,078	2,203

[31] On 21 February 2001, Turkey's economy hit by a crisis, where the exchange rate system collapsed. For more detail please refer to http://www.econ.brown.edu/fac/Herschel_Grossman/courses/122readings/Ozatay&Sak.pdf (website accessed on 20.12.2007)
[32] Reference: Turkish Electricity Transmission Company, Turkish Electrical Energy 10 Year Projection of Generation Capacity (2007-2016) (p.35 table 22)/ http://www.teias.gov.tr/

(MW total)										
MW TOTAL	42,178	43,515	46,166	50,701	55,651	60,266	64,704	69,467	74,552	78,175

Note: the actual realised installed wind capacity in 2008 is 333 MW, while in the projection, this was estimated as 1,113 MW.

A breakdown of the installed capacity is presented in table 11 below; this is based on official 2006 statistics of TEIAS.

Table 14. Breakdown of installed capacity of the Turkish grid[33]

Primary Energy Source	2006 [MW]	% of installed capacity 2006
Lignite	8,210.8	20.2
Hard + Imported Coal	1,986.0	4.9
Natural Gas	11,462.2	28.3
Fuel Oil	2,123.2	5.2
Diesel Oil	251.9	0.6
LPG	0	0
Naphtha	21.4	0.1
Solid + Liquid	471.0	1.2
Natural Gas + Liquid	2,852.4	7.0
Hydro	13,062.7	32.2
Renewable and Waste	41.3	0.1
Geothermal + Wind	81.9[34]	0.2
TOTAL	40,564.8	100

Based on the above can be concluded that wind farms constitute a small share of the total electricity generation capacity of Turkey. This results in barriers for the development of wind farms as a result of limited experience in construction and operation of wind farms.

[33] Reference: Turkish Electricity Transmission Company Statistics / derived from the distribution of installed capacity by primary energy resources and the electric utilities in Turkey http://www.teias.gov.tr/ist2006/7.xls .
[34] The figure of geothermal and wind differs from the sum given in Table 11 due to frequency of updating internal information within TEIAS.

Other Barriers

Bureaucratic and legislative:

Uncertainties in the market: The legal basis of renewable energy generation, including wind energy, is laid down in the ‘‘Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electricity Energy’’ enacted on 18 May 2005 [35]. This law provides a guaranteed electricity price over a period of time, which is defined as 10 years. However, the guaranteed electricity sales price is limited to a max value of 5.5 €cent/kWh for renewable energy. Taking into consideration the competitive market values for the electricity, the guaranteed price is deficient to give any real security or clarity to the
investors.

Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity):

The same amount of electricity produced by other facilities not under the control of the project participants, is not hindered by the identified barriers.

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

Wind farms constitute of small share of the installed generation capacity. The generation mix of the grid is dominated by fossil fuel fired power plants and this share is expected to grow. The total installed capacity of wind farms in Turkey is relatively small compared to the total installed capacity The current wind power projects in Turkey add up to 333 MW., where the total where the total installed capacity equals 40,564.8 MW.

Location Year	Company	Installed	Developed as	Year

[35] Reference: Official website of Energy Market Regulatory Authority http://www.epdk.gov.tr/mevzuat/diger/yenilenebilir/reseng.doc

		Capacity (MW)		
İzmir Çeşme	Alize A.Ş.	1.5	BOT	1998
İzmir Çeşme	Güçbirliği A.Ş.	7.2	BOT	1998
Çanakkale Bozcaada	Bores A.Ş.	10.2	BOT	2000
İstanbul hadımköy	Sunjüt A.Ş.	1.2	BOT	2003
Balıkesir Bandırma	Bares A.Ş.	30	VER	I-2006
Istanbul Silivri	Ertürk A.Ş.	0.85	BO	II-2006
İzmir Çeşme	Mare A.Ş.	39.2	VER	I-2007
Manisa Akhisar	Deniz A.Ş.	10.8	VER	I-2007
Çanakkale İntepe	Anemon A.Ş.	30.4	VER	I-2007
Çanakkale Gelibolu	Doğal A.Ş.	14.9	VER	II-2007
Hatay Samandağ	Deniz A.Ş.	30	VER	I-2008
Manisa Sayalar	Doğal A.Ş.	30.6	VER	I-2008
İzmir Aliağa	İnnores A.Ş.	42.5	VER	I-2008
İstanbul Gaziosmanpaşa	Lodos A.Ş.	24	VER	I-2008
İstanbul Çatalca	Ertük A.Ş.	60	VER	I-2008
TOTAL	333.35			

Note: BOT = Build Operate Transfer; BO = Build Operate, VER = developed with income from the sale of carbon credits. All older wind farms have been developed as BOT project.

Many of the projects seen in above table are either developed as BOT projects, which had been developed before the liberalization of the electricity market in 2001 or as

VER projects. BOT was an initiated by the Turkish Government in order to decrease the external debt of the National Treasury. In
these kinds of projects the debt is on the investor company. On the other side the Government issues various financial incentives for these projects. Therefore, BOT projects have a low risk profile. The various advantages preceded by the Government for BOT projects such as:

- Exemption from customs
- Discount on investment
- Exemption from and postponement of VAT

Apart from these advantages the investment company who has undertaken a BOT project signed a Guarantee Agreement with the National Treasury. This agreement assures the sales of the electricity produced by the project.

That is if the designated public entity could not buy the electricity produced by the project, the National Treasury shall pay and buy the produced amount.

It should also be noted that BOT projects are not private investments. By definition they actually are government projects developed a private company and operated by a public entity at a later stage.

Sub-step 4b. Discuss any similar options that are occurring:

The most recent wind farms of comparable size to the project activity, based on installed capacity, were developed as VER project.

The additionality analysis shows that the project activity faces barriers that prevent the implementation of the project without VER revenues. Therefore, the project activity can be considered as 'additional'.

B.5.1. Prior Consideration

Investment analyses have not been re-performed and these analyses have been taken from the first validation PDD.

B.5.2. Ongoing Financial Need

It should look at the VER sales made by the project during the crediting periods, the purpose for which these sales are used and what is the current balance of income and expenses in the management corresponds to it. Let us look at what the project activity did/finished/accomplished during crediting periods.

The 2nd crediting period of the project had finished as of 18th March 2023. The VERs sales of the project were occurred only in the 1st crediting period. The project has not been able to obtain VERs for the period from 19 March 2016 to 4 October 2021, which is the beginning of the 2nd crediting period. Also, there is an on-going verification process for the remaining part of the 2nd crediting period, which is from 5 October 2021 to the end of 18 March 2023. However, no issuance has yet been made for VERs as of now. Therefore, the project activity was able to export only 324,764 VERs during its lifetime.

When take a glance at latest registered PDD[36], which is available publicly, the calculated equity IRR value of the project is 9.57% with VER sales, while the benchmark discount rate is 18.09%. Moreover, it should be considering that VER prices per unit was taken as 11.29 USD in the investment analysis. However, it's obvious to observe the average prices of VER in 2011 had significantly depression in the prices in 2010 according to Figure 21 of the 'State of the Voluntary Carbon Markets 2012'. After that, it's most known that average price of VERs started to drop from 2012.

Considering the above situation during project's 1st and 2nd crediting period, the project owner has sold all of the 324,764 VERs issued, however it is clear that the sales price per tonne does not exceed 4 USD, even with the most conservative estimate. Even if we take as a basis the very high average price of 4 USD per tonne, there is a fact that it corresponds to at most 3.57% of the bank loan used during the construction of the project. Because, a significant amount of bank loan has been received for this project and loan repayment is still ongoing. The income from GS certification is used for loan repayment. Therefore, carbon revenues derived from Gold Standard certification have been playing a very important role in helping the project owner to loan repayment.

[36] Please refer to page 36 of the pdf document.

In addition, the Project Owner (Ayen Enerji A.S., from now on 'PO') didn't continue any verification process during 2nd crediting period although verification processes are conducted during 1st crediting period. Because the VER credits prices were relatively low during those times in which the project should have continued its 2nd crediting period. Also, considering the cost of consultancy, VVB, and GS fees for a verification process and considering that the credits issued in the 1st crediting period do not bring enough income it was an additional financial burden for PO to conduct any verification process during 2nd crediting period. Therefore, PO was not able to continue any verification process back then. However, PO and the consultant never gave up their carbon certification right. As soon as the conditions prevailed, the PO and consultant continued with the certification process together with design renewal for 3rd crediting period. Thus, the gap between the 1st crediting period and 2nd crediting period of the project activity should be considered normal to wait until these difficult conditions pass and enable a meaningful income. Apart from aforementioned reasons, the electricity generation is also significantly decreased according to expected amounts due to lack of wind also a reason to obtain the VERs for financial need of the project.

Conclusion:

In the light of the information provided above, the project activity satisfies all the criteria of "Tool for the demonstration and assessment of additionality". Therefore, the project is additional, it has still ongoing financial need.

B.6. Sustainable Development Goals (SDG) outcomes

Sustainable Development Goals Targeted	Most relevant SDG Target	SDG Impact
		Indicator (Proposed or SDG Indicator)
SDG 13: Climate Action (mandatory)	13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	Emission Reduction
SDG 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
SDG 8: Decent work and economic growth	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 employment, Number of Trainings
SDG 6: Clean Water and Sanitation	6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally	Avoided wastewater discharge in m3

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

- **SDG 6**

The project activities replace the grid electricity, which is constituted of different fuel sources causing greenhouse gas emissions. By replacing in the consumption of these fuels, it contributes to conservation of water. Amount of wastewater to be discharged to the environment is decreased.

The project activity avoids a domestic wastewater discharge, which is calculated as follow:

1)

Average Amount of Wastewater Discharged per each GWh Electricity Generation in a year (x1000 m3/GWh)	=	Total Wastewater Discharged by Thermal Power Plants in 2020 (x1000 m3)	÷	Total Electricity Generation in 2020 (GWh)

2)

Amount of Avoided Wastewater Discharge per year by Project Activity (x1000 m3/y)	=	Annual Electricity Generation of Project Activity (GWh)	x	Average Amount of Wastewater Discharged per each GWh Electricity Generation in 2020

3)

Net Amount of Avoided Wastewater Discharge by Project Activity per year (x1000 m3/y)	=	Amount of Avoided Wastewater Discharge per year by Project Activity (x1000 m3/y)	-	Amount of Produced Wastewater by Project Activity per year (x1000 m3/y)

In order to calculate wastewater avoidance from the facility (by taking cooling water discharge in thermal power plants into account), the first step is to calculate a factor showing estimated wastewater discharge per GWh generated electricity. This factor is derived by dividing "Total Wastewater Discharged by Thermal Power Plants in the related year (2020 in this case, because of the publication of Municipal Wastewater Statistics by TURKSTAT -Turkish Statistical Institute- biennially) with "Total Electricity Generation in 2020 in the related year in GWh". Then, the wastewater discharge in the baseline scenario is reached by multiplying this factor with the estimated electricity generation of the WPP. This output also refers to "Amount of Avoided Wastewater Discharge". According to calculation in excel sheet, project is expected to avoid amount of 3,189.1[37] (x1000 m3) wastewater discharge per year.

[37] Please visit ER sheet for more details

As a result, "Net Amount of avoided wastewater discharge by project activity per year" is expected to be 3,188.4 (x1000 m3/y) wastewater discharge to the environment. It contributes to the following target 6.3. and following indicator 6.3.1

The project activities replace the grid electricity, which is constituted of different fuel sources causing greenhouse gas emissions. By replacing the consumption of these fuels, it contributes to the conservation of water. The amount of wastewater to be discharged to the environment is decreased.

- **SDG 7**

Firstly, the project helps to accelerate the growth of the wind power industry and stimulates the designation and production of renewable energy technologies in Turkey. Then, other entrepreneurs irrespective of sector are encouraged to invest in wind power generations. It also assists to reduce Turkey's increasing energy deficit and diversify the electricity generation mix while reducing import dependency, especially natural gas. Importantly and rural development are maintained in the areas around the project site by providing infrastructural investments to these remote villages.

The project is expected to generate 122,461.80 MWh/annually. The project contributes to the following indicators 7.2.1 "Renewable energy share in the total final energy consumption" and following target: 7.2 ''By 2030, increase substantially the share of renewable energy in the global energy mix"

- **SDG 8**

The employment of local people that have necessary technical qualifications for the required post is the priority and enhanced by all project activities during operation of wind farm. As a result, local poverty and unemployment are partially eliminated by increased job opportunities and project business activities. Construction materials for the foundations, cables and other auxiliary equipment were/are preferentially sourced locally. Moreover, as contribution of the project to welfare of the region, the quality of the electricity consumed in the region is increased by local electricity production, which also contributes decreasing of distribution losses.

The project leads to employment opportunities which would not have been possible in the baseline scenario. The project provides local employment during the operation phase. It contributes to the following target 8.8. and following indicator 8.8.2.

Furthermore, all workers are trained on health and safety issues during per each monitoring period. Training records or certificates will be provided during each monitoring period.

- **SDG 13**

The annual emission reduction estimated by the project is 79,453 tonnes of tCO_2/year, approximately. While this amount of emissions are mitigated, technology transfer is also realized as benefitting from wind energy.

The project contributes to improve 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.

This project is expected to remove of CO_2: 79,453 tCO2/year.

It contributes to the following target 13.3 and following indicator 13.3.1.

For the emission factors, that were used to calculate estimated emission reductions, publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor for the year of 2020 was used. Publication includes calculated Emission Factor values that are Operating Margin (OM), Growth Based Margin (Build Margin-BM) and Combined Margin (CM) Emission Factors, for the relevant year with usage of the IPCC's Clean Development Methodology Tool 07-V07.0. For this calculation, information regarding used data set is given below in detail;

- TEİAŞ Turkey's electricity generation-consumption and loss statistics,
- Common prepared report under Turkey's National Greenhouse Gas Inventory Reporting Format. - Common Reporting Format (CRF) tables for electricity generation (1.A.1.a.i) emission values
- Chronological order of power generation plants from TEİAŞ Load Dispatch Department with commissioning dates, plant names, fuel types, installed power values, electricity generation for the calculated year
- Checking off Volunteers from the websites of Gold Standard (GS) and Verified Carbon Standard (VCS) for the ownership status of the carbon reduction certificate and,

- From Clean Development Mechanism (CDM) Tool 009- V3.0, Power plant efficiency figures are used

According to this publication;

- Operating Margin-OM; **0.7424** tCO_2/MWh
- Build Margin-BM; **0.3680** tCO_2/MWh
- Combined Margin-CM (for solar and wind); **0.6488** tCO_2/MWh[38]

Project emissions

The proposed project activity involves the generation of electricity by development of a wind farm. The generation of electricity does not result in greenhouse gas emissions and therefore is taken as 0 tCO_2/year.

Leakage

eakage emission is not considered according to ACM0002. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Then: $ER_y = BE_y$

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y} \quad \textbf{(6)}$$

Where:

BE_y = Baseline emissions in year y (tCO_2/yr).

$EG_{PJ,y}$ = Electricity supplied by the project activity to the grid (MWh).

[38] https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Bform2020.pdf

$EF_{grid,CM,y}$ = Combined margin CO_2 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". (tCO_2/MWh) (v.4).

Then:

$ER_y = BE_y = EG_y * EF_{grid,CM,y}$ = 122,461.8 MWh/year * 0.6488 tCO_2/MWh = 79,453 tCO_2/year

Baseline scenario is identified and described in B.4. Emission reductions due to project activity will be calculated according to "Tool to calculate the emission factor for an electricity system" (Tool) version 7.0.0 as indicated in ACM0002 ver. 21.0.

A brief explanation of this methodology is given in Tool as:

This methodological tool determines the CO_2 emission factor for the displacement of electricity generated by power plants in an electricity system, by calculating the "combined margin" emission factor (CM) of the electricity system.

B.6.2. Data and parameters fixed ex ante

Data/parameter	**$EF_{grid,CM,y}$**
Unit	tCO_2/MWh
Description	For the combined margin CO_2 emission factor that were used to calculate estimated emission reductions, publication of Turkish Ministry of Energy and Natural Resources which is indicating Turkey's National Electric Grid Emission Factor for the year of 2020 was used.
Source of data	Please see: https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Bform2020.pdf

Value(s) applied	0.6488 tCO_2/MWh
Choice of data or Measurement methods and procedures	The baseline emissions are the product of electrical energy baseline expressed in MWh of electricity produced by the renewable generating unit multiplied by an emission factor.
Purpose of data	To show CO_2e reduction in order to monitor the SDG 13 Indicator.
Additional comment	

SDG 13

B.6.3. Ex ante estimation of SDG Impact

Calculation of the Operating Margin Emission Factor

For OM factor calculation, Chronological order of power generation plants from TEİAŞ Load Dispatch Department with, fuel types, electricity generation for the calculated year were used as input data. By using all of the data which were mentioned above, Turkish Ministry of Energy and Natural Resources calculated $EF_{grid,OM,simple,y}$[39]. :

➔ **$EF_{grid,OMsimple,y} = 0.7424(ktCO_2/GWh)$**

Calculation of the Build Margin Emission Factor

For BM factor calculation, Chronological order of power generation plants from TEİAŞ Load Dispatch Department with commissioning dates, plant names, fuel types, installed power values, electricity generation for the calculated year were used as input data. Consequently, Turkish Ministry of Energy and Natural Resources calculated $EF_{grid,BM,y}$[40].

➔ **$EF_{grid,BM,y} = 0.3680\ tCO_2/MWh$**

[39] https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Bform2020.pdf

[40] https://enerji.gov.tr//Media/Dizin/EVCED/tr/%C3%87evreVe%C4%B0klim/%C4%B0klimDe%C4%9Fi%C5%9Fikli%C4%9Fi/TUESEmisyonFktr/Belgeler/Bform2020.pdf

Calculating of the Combined Margin Emission Factor

The combined margin emission factor is calculated by using weighted average CM as per tool formula below:

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

According to the Tool for wind power generation project activities;

w_{OM} = 0.75 and w_{BM} = 0.25

Then:

***$EF_{grid,CM,y}$* = 0.7424 tCO_2/MWh * 0.75 + 0.3680 tCO_2/MWh * 0.25 = 0.6488 tCO_2/MWh**

➔ ***$EF_{grid,CM,y}$*= 0.6488 tCO_2/MWh**

Emission reductions are calculated as follows:

$ER_y = BE_y - PE_y$ **(5)**

Where:
ER_y = Emission reductions in year *y* (t CO_2/yr). Z
BE_y = Baseline emissions in year *y* (t CO_2/yr).
PE_y = Project emissions in year *y* (t CO_2/yr).

Baseline emissions

Baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity, calculated as follows:

$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$ **(6)**

Where:

BE_y = Baseline emissions in year *y* (tCO_2/yr).
$EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh/yr)
$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system". (tCO_2/MWh) (v.4).

If the project activity is the installation of a Greenfield power plant with or without the BESS, then:

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

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

Leakage
Leakage emission is not considered according to ACM0002. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

Then: $ER_y = BE_y$

Emission Reduction

The project activity is the installation of a new grid-connected renewable power plant so, $EG_{baseline} = 0$
Then:
$ER_y = BE_y = EG_y * EF_{grid,CM,y}$ = 122,461.8 MWh/year * 0.6488 tCO_2/MWh = 79,453 tCO_2/year

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

SDG 13 Climate Action

Year	Baseline estimate	Project estimate	Net benefit
19.03.2023-31.12.2023	62,474	0	62,474
2024	79,453	0	79,453
2025	79,453	0	79,453
2026	79,453	0	79,453
2027	79,453	0	79,453
2028	79,453	0	79,453
2029	79,453	0	79,453
01.01.2030-18.03.2030	16,979	0	16,979
Total	**556,171**	**0**	**556,171**
Total number of crediting years	**7**		
Annual average over the crediting period	**79,453**		**79,453**

SDG 8 Decent Work and Economic Growth

The project will lead to employment opportunities which would not have been possible in the baseline scenario. The project provides local employment. Also, project activity improves the quality of employment by giving training to employee. Thus, there will be series of training organized on with different focuses such as health and safety within Akbük WFP.

Year	Baseline estimate	Project estimate	Net benefit
19.03.2023-31.12.2023	0	11	11
2024	0	11	11
2025	0	11	11
2026	0	11	11

2027	0	11	11
2028	0	11	11
2029	0	11	11
01.01.2030-18.03.2030	0	11	11
Total	**0**	**11**	**11**
Total number of crediting years	**7**		
Annual average over the crediting period	**0**	**11**	**11**

SDG 7 Affordable and Clean Energy

The baseline for the project is no project, thus leading to generation in the relevant grid which is dominated by fossil fuel. The clean energy generated by the project is calculated based on the amount of electricity generated by the project per annum.

The project is expected to generate 122,461.80 MWh of clean energy per annum.

Year	Baseline estimate	Project estimate	Net benefit
19.03.2023-31.12.2023	0	96,291.88	96,291.88
2024	0	122,461.80	122,461.80
2025	0	122,461.80	122,461.80
2026	0	122,461.80	122,461.80
2027	0	122,461.80	122,461.80
2028	0	122,461.80	122,461.80
2029	0	122,461.80	122,461.80
01.01.2030-18.03.2030	0	26,169.92	26,169.92
Total	**0**	**857,232.60**	**857,232.60**
Total number of crediting years	**7**		
Annual average over the crediting period	**0**	**122,461.80**	**122,461.80**

SDG 6 Clean Water and Sanitation

The project activities replaced the grid electricity, which is constituted of different fuel sources causing greenhouse gas emissions. By replacing in the consumption of these fuels, it contributes to conservation of water. Amount of wastewater to be discharged to the environment is decreased since the cooling water operations are not being implemented in renewable energy projects. 3,188,395.61 m^3 water will be prevented to be discharged to the environment per annum.

Year	Baseline estimate	Project estimate	Net benefit
19.03.2023-31.12.2023	2,507,039.42	0	2,507,039.42
2024	3,188,395.61	0	3,188,395.61
2025	3,188,395.61	0	3,188,395.61
2026	3,188,395.61	0	3,188,395.61
2027	3,188,395.61	0	3,188,395.61
2028	3,188,395.61	0	3,188,395.61
2029	3,188,395.61	0	3,188,395.61
01.01.2030-18.03.2030	681,355.77	0	681,355.77
Total	**22,318,769.27**	**0**	**22,318,769.27**
Total number of crediting years	**7**		
Annual average over the crediting period	**3,188,395.61**		**3,188,395.61**

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

SDG 13 Climate Action

Target: 13.3

Indicator: 13.3.1

Data / Parameter	ERy
Unit	tons of CO_2e/year
Description	Baseline emissions correspond to emission reductions and are calculated as the net electricity generated by the project activity, multiplied with combined margin CO_2 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 EPIAS records for the net electricity generated and the emission factor for the grid, 0.6488 tCO_2/MWh, which is calculated and published by The Ministry of Energy and Natural Resources of Turkey[41] As per monitoring plan sheet of registered CM Excel. During the verification, the results shall be obtained from the Actual ER excel file.
Value(s) applied	79,453 tCO_2/year
Measurement methods and 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 CO_2 emission reduction by project activity.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	Calculation of combined margin CO_2 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	-

[41] https://enerjiapi.etkb.gov.tr/Media/Dizin/ETKB/Duyurular//0c6b62ea-bf2f-4fea-b9b3-28bc6f48ddf2_Bilgi_Formu_-_Web_Sitesi.pdf

SDG 7 Affordable and Clean Energy

Target: 7.2

Indicator: 7.2.1

Data / Parameter	$EG_{facility,y}$
Unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Source of data	Electricity meter(s)
Value(s) applied	Electricity generation estimated 122,461.80 MWh/y by using renewable energy system (wind).
Measurement methods and procedures	Electricity generation data will be monitored monthly according to PDD. This generation value will be multiplied by the ex-ante emission reduction amount per MWh to calculate the realized emission reduction amount.
Monitoring frequency	Monthly
QA/QC procedures	The calibration of the monitoring equipment was carried out according to the information provided in the GS-VER PDD. The GS-VER PDD mainly includes the following obligation for the calibration of the appropriate meters: "The Turkish Electricity Market Regulation Agency (EPDK) sets rules on the accuracy of electricity meters that are used by power plants feeding into the grid. The rules are part of the EPDK regulation 25056 from 22 March 2003. The table in Article 11 of the regulation specifies the use of electricity meters of the accuracy class 0.5S for power plants between 10 MW and 100 MW and refers to compliance with International Electro technical Commission's norm EN 60687. TEIAŞ conducts remote reading. In addition, another technician, employee of the Project, conducts reading from the project site and sends to TEIAŞ. By this way, a crosscheck is done. Also, with the readings from project site, continuously these meters are compared with each other and if any differences are detected the necessary control measures are taken. By this way, a cross-check is done. Moreover, continuously these meters are compared with each other and if any differences are detected the necessary control measures are taken. According to the Article 2 of the Communiqué: 'The meters to be used in the electricity market shall be compliant with the standards of Turkish Standards Institute or IEC and have obtained "Type and System Approval" certificate from the Ministry of Trade and Industry.' Therefore, Ministry of Trade and Industry (Ministry) is responsible from control and calibration of the meters.

	paragraph b) of the Article 9 of the 'Regulation of Metering and Testing of Metering Systems' 7 (Regulation) of Ministry states that: ' b) Periodic tests of meters of electricity, water, coal gas, natural gas and current and voltage transformers are done every 10 years' . Therefore, periodic calibration of the meters will be done every 10 years. As above mentioned, the data acquisition and management and quality assurance procedures that are anyway in place, no additional procedures have to be established for the monitoring plan.
Purpose of data	To exhibit renewable electricity generation performance the plant to monitor its contribution to SDG 7.
Additional comment	-

SDG 8 Decent Work and Economic Growth

Target: 8.8

Indicator: 8.8.2

Data / Parameter	**Quality of employment**
Unit	Number trainings given to employees
Description	The trainings' data has been monitored to indicate the contribution to the SDG 8
Source of data	Attendance documents from the trainings & Interviews with the employees
Value(s) applied	HSE trainings will be held for all employees at the plant.
Measurement methods and procedures	Training records
Monitoring frequency	Each monitoring period.
QA/QC procedures	Attendance records or training certificates are provided during each monitoring period.
Purpose of data	To exhibit employment performance of the plant and to monitor Principle 6.1.
Additional comment	

Data / Parameter	**Quantitative employment and income generation**
Unit	Number of employment
Description	The employment data has been monitored to indicate the contribution to the SDG 8
Source of data	SGK (Social Security Institution) Records of the company
Value(s) applied	The company will provide job opportunities for at least 11 employees.
Measurement methods and procedures	SGK (Social Security Institution) Records of the company
Monitoring frequency	Each monitoring period.
QA/QC procedures	
Purpose of data	To exhibit employment performance of the plant
Additional comment	-

SDG 6- Clean Water and Sanitation

Target 6.3

Indicator: 6.3.1

Data / Parameter	**Water quality and quantity**
Unit	m3/year
Description	Average Amount of Waste Water Discharged per MWh
Source of data	EPİAŞ based on monthly meter readings
Value(s) applied	Avoidance of around 3,188,395.61 m^3 wastewater discharge to the environment per year.
Measurement methods and procedures	Coefficient for wastewater avoidance from potential cooling water operations calculated by taking Total Waste Water Discharged by Thermal Power Plants in the related year and Net Electricity Generation in the related year.
Monitoring frequency	Annually
QA/QC procedures	Amount of annual net electricity generation, which is calculated by monthly settlement notifications of EPİAŞ based on monthly meter readings.
Purpose of data	Avoidance wastewater discharge to the environment
Additional comment	

Principle 9.4 - Release of pollutants

Data / Parameter	**Water quality and quantity**
Unit	-
Description	Disposal of wastewater
Source of data	Records of transfer of wastewater by sewerage truck and statement of the wastewater treatment plants
Value(s) applied	Wastewater transfer records
Measurement methods and procedures	Wastewater generated will be collected in tanks/containers, and these waters will be transported and disposed of by the local municipality.
Monitoring frequency	At least one wastewater disposal record in one monitoring period.
QA/QC procedures	
Purpose of data	Avoidance of wastewater discharge to the environment
Additional comment	-

Principle 9.4 - Release of pollutants

Data / Parameter	**Solid Waste**
Unit	-
Description	a) Solid household waste b) Waste oil etc. (gearbox oil waste, oil filters etc.)
Source of data	a) Garbage bins' photos b) Removal invoices.
Value(s) applied	a) Garbage bins' photos b) Removal invoices will be provided.
Measurement methods and procedures	a) Solid household waste: By visual inspection. b) Waste oil: By checking invoices.
Monitoring frequency	a) Each monitoring period b) At least one waste oil (gearbox oil waste, oil filters etc.) disposal record in a one monitoring period.
QA/QC procedures	-
Purpose of data	Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss.
Additional comment	-

Principle 9.10 - High Conservation Value Areas and Critical Habitats

Data / Parameter	**Nest and carcass observation**
Unit	-
Description	Ensuring that the project creates no disturbance to the regional habitat
Source of data	Assigned personnel will be responsible for observation of project site bi-weekly. The personnel will record their observations and report them to the project manager every 3 months.
Value(s) applied	Nest and carcass observation by assigned personnel
Measurement methods and procedures	To ensure that the project creates no disturbance to the regional habitat, monitoring method will be conducted by assigned personnel to observe carcasses. In case of observation of carcass or nest, the project manager is informed by providing a letter by the assigned personnel every 3 months. If there will be action/s taken in the upcoming monitoring periods, observation and actions will be reported in the upcoming monitoring period of the project.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to Principle 9.10 High Conservation Value Areas and Critical Habitats.
Additional comment	-

B.7.2. Sampling plan

N/A

B.7.3. Other elements of monitoring plan

As the necessary baseline emission factors are all defined ex ante (Operating and Built Margin, see baseline description), the most important information to be monitored is the amount of electricity fed into the grid by Akbük WFP. This value will be monitored continuously by redundant metering devices, one of them being the main one in the substation, which provides the data for the monthly invoicing to TEİAŞ. The collected data will be kept by Ayen Enerji A.S. during the crediting period and until two years after the last issuance of VERs for the Akbük WFP activity for that crediting period.
Given a data vintage based on ex ante monitoring and selection of a renewable 7 year crediting period, the Combined Margin will be recalculated at any renewal of the crediting period using the valid baseline methodology.

In case of a backup power generator would be installed in power plant for emergency cases the emission on the generator will be negligible according to the Methodology ACM0002 version 21.

Potential leakage emissions in the context of power sector projects are emissions arising due to activities such as power plant construction, fuel handling and land inundation. However, according to the methodology, those emission sources do not need to be taken into account.

Operational and Management Structure

As described before, there are two main factors important for the calculation of emission reductions. The only relevant data that have to be monitored is only net electricity generation ($EG_{facility,y}$) per year. Since project emission is zero no additional monitoring is required. The generation data are subject to the strict internal quality control systems of both parties. The monthly meter reading documents are stored by Ayen Enerji A.S. and TEİAŞ. The settlement notification, which is issued by TEİAŞ and includes the meter reading data, is stored on a TEİAŞ file server and accessible for Akbük via a secured website. The meters themselves can always be read as plausibility check for verification. The other important parameter is the emission factor. It is approved according to strict quality control parameters from an independent external party. With this, no additional structures or processes have to be implemented to insure the availability and high quality of the necessary data for monitoring.

At the end of each monitoring period, which is planned to generally last one year, from the monthly meter reading records the net electricity generation amounts as calculated by electricity supplied to the grid minus withdrawn from the system, will be added up to the yearly net electricity generation and total project emissions will be subtracted from this amount and result data will be multiplied with the combined margin emission factor with the help of an excel spread sheet that also contains the combined margin calculation. Thus, the complete baseline approach is always transparent and traceable.

For the operation of Akbük WFP, below hierarchy is planned:

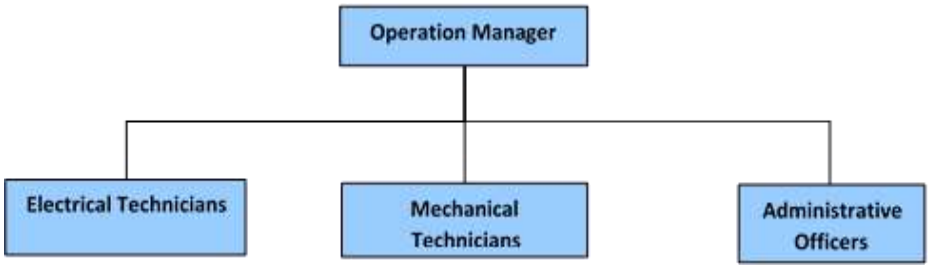

Figure 8: Operation and Management diagram

Ayen Enerji A.S. keeps all the data needed for the calculation of emission reductions during the crediting period and until two years after the last issuance of GS VERs for Akbük WFP.

Because of the data acquisition and management and quality assurance procedures that are anyway in place, no additional procedures have to be established for the monitoring plan. Dedicated emergency procedures are not provided, as there is no possibility of overstating emission reductions due to emergency cases.

SECTION C. DURATION AND CREDITING PERIOD

C.1. Duration of project

C.1.1. Start date of project

Starting date of the project activity is the construction beginning date of the power plant which is 30/06/2008.

C.1.2. Expected operational lifetime of project

The expected lifetime of the Akbük WFP is 49 years.

C.2. Crediting period of project

C.2.1. Start date of crediting period

Start date of the first crediting period: 19/03/2009
End date of the first crediting period: 18/03/2016 (Crediting period of the project is 7 years which is twice renewable)

Start date of the second (ongoing) crediting period: 19/03/2016 (but creditable period start date is 04/10/2021)
End date of the second crediting period: 18/03/2023

Start date of the third crediting period: 19/03/2023
End date of the third crediting period: 18/03/2030

C.2.2. Total length of crediting period

7 years, renewable twice.

SECTION D. SUMMARY OF SAFEGUARDING PRINCIPLES AND GENDER SENSITIVE ASSESSMENT

D.1. Safeguarding Principles that will be monitored

Principles	Mitigation Measures added to the Monitoring Plan
Principle 6.1 Labour Rights	The company will provide job opportunities to local people. SGK records of employees will be provided during each monitoring period. Moreover, health and safety training will be provided to all of the employees
Principle 9.4 Release of pollutants	1. Wastewater generated will be collected in septic tanks and transported to the Municipality's wastewater treatment plant. In this way, discharge of wastewater will not be allowed. 2. Waste oil will be vacuumed by vacuum truck regularly. By this way, discharge of plant sourced waste oil will not be allowed. 3. Garbage bins' photos will be provided for solid household waste. In this way, solid waste disposal will not be allowed.
Principle 9.10 High Conservation Value Areas and Critical Habitats	The Project is not located in a high conservation value area or within critical natural habitats or critical biodiversity areas or sites identified. Therefore, the project activity does not affect or alter ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. However, bird nests and carcasses on the project site will be observed by appointed personnel periodically.

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?	Gold Standard Gender Policy (https://globalgoals.goldstandard.org/101-1-g-gold-standard-gender-policy/), p. 10 "Foundational gender-sensitive requirement - This strengthens Gold Standard's 'do no harm' approach and addresses safeguards to prevent or mitigate adverse impacts on women or men and girls and boys. Such action is mandatory for all projects seeking Gold Standard certification and includes compliance with the gender 'do no harm' safeguards, gender gap analysis and gender sensitive stakeholder consultations." The project is a renewable energy project and not gender sensitive project. The project does not impact women or men, negatively.
Question 2 - Explain how the project aligns with existing country policies, strategies and best practicesd	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. 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.
Question 4 - Is an Expert required to assist with Gender issues at the Stakeholder Consultation?	No. At the Stakeholder Consultation, women are free to say anything regarding the project. Their opinions and comments are also taken into account while evaluating the project at the Stakeholder Consultation.

SECTION E. SUMMARY OF LOCAL STAKEHOLDER CONSULTATION

E.1. Summary of stakeholder mitigation measures

In order to develop the project as a Gold Standard VER project two Local Stakeholder Consultation Meeting which is in line with Gold Standard Requirements was held on 04-05/07/2007. The Gold Standard Organization process for VER includes two round stakeholder process. The second part of the Consultation is Stakeholder Feedback Round which was held between 27/10/2015 to 27/12/2015. The participants were provided information about ongoing activities of the project and let them to provide their comments. The comments from the participants were positive for Akbük WFP. Project Documents and Feedback forms were enabled for the stakeholders to access from 01/05/2008 to 27/07/2008 and within this period comments were positive. The comments from the participants were positive for Akbük WFP. During the first crediting period, general concerns of the participants were regarding the employment opportunities that project activity would enable, the noise effect of the turbines, radiation effect of the turbines, the effects of turbines on the fauna and biodiversity and the grazing area available for the animals. The project proponent ensured that the project activity enables more employment opportunities in the area, and the employees are selected from the local people.

Regarding the noise effect of the turbines, the project proponent ensured that the noise level studies conducted in accordance with the applicable laws and requirements and the noise of the turbines in operation that is heard from the closest settlement to

the nearest turbine stay under the threshold value given in the relevant law and requirement. Regarding grazing areas, the project proponent ensured that separate fences surround each turbine to avoid closing all the space, and thus, the animals still can graze between the turbines. Turbines give no harm to the animals. In terms of the turbines' radiation effect, the project proponent clarified the concerns by explaining that the sources of low electromagnetic radiation are the electrical generator and medium voltage transformer in the wind power plant. The wiring system is underground between the turbines to keep the exposure minimal. The electromagnetic field of a wind turbine is weak and effective only at short distances and at the height of 80ms. For this reason, no significant exposure is possible at ground level or away from the turbine. In terms of fauna and the biodiversity, project proponent explained that as part of the environmental process, the flora and the fauna of the region are studied and reported. No endemic species have been determined. As the habitats are continuous and complimentary through the area, no adverse impacts are expected on terrestrial fauna. The effect on migrating birds is expected to be negligible as the vegetation on top of the hills is rare, and the birds generally prefer the area around for breeding.

Furthermore, a grievance mechanism was established with the support of the Mukhtar for stakeholders to forward their requests or concerns regarding the project activities. In Turkey, mukhtars are the most relevant persons in the villages for establishing a grievance mechanism. Their offices are some of the few places the locals visit very often for different purposes, such as requesting some official letters. Whenever a problem arises in the village as the first thing, locals go to the mukhtars office to express their concerns, situations to find solutions and reflect on their issues with the Mukhtar. It has been decided that the Mukhtar will also take an active role in monitoring the participants' requests so that a grievance mechanism situating the Mukhtar at the centre was established for this project activity. Mukhtar was provided all the contact information of the responsible persons from the project activity. Whenever a complaint arises from the local people or Mukhtar himself arises a concern regarding the project activity, he can directly contact the relevant responsible persons.

Regarding the renewable crediting period, a site visit with VVB was made by online meeting. The local people were interviewed and the general outcome of the interviews was positive verbally.
Opinions of the stakeholders have been taken in online site visit and no complaints or problems were recorded regarding the Akbük WFP. So, no negative feedback has been received from Akbük WFP personnel or local people regarding of this project.
Moreover, when the outcome was evaluated in general, it was seen that the project had a positive effect on the stakeholders.

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 • Electronically Grievance Expression	• Continuous Input Process Book was provided to Muhtar of Akyeniköy neighbourhood. Muhtar is the representative of the neighbourhood and most appropriate person to handle the book and complaints from the neighbourhood. • All project information regarding project will be on the website of Life Enerji enabling stakeholders to reach and comment.
GS Contact (mandatory)	help@goldstandard.org
Muhtar of Akyeniköy:	Ahmet Yarımkaya

APPENDIX 1 - SAFEGUARDING PRINCIPLES ASSESSMENT

Assessment Questions/ Requirements	Justification of Relevance (Yes/potentially/no)	How Project will achieve Requirements through design, management or risk mitigation.	Mitigation Measures added to the Monitoring Plan (if required)
Principle 1. Human Rights			
1. The Project Developer and the Project shall respect internationally proclaimed human rights and shall not be complicit in violence or human rights abuses of any kind as defined in the Universal	1.No 2.No	The project respects internationally proclaimed human rights including dignity, cultural property. Turkey is a party to Universal Declaration of Human Rights: http://ua.mfa.gov.tr/detay.aspx?2634	Turkey is a party to the Universal Declaration of Human Rights, therefore does not violate these rights and it's not a matter of discussion for Turkey. No mitigation measure is needed for the Principle 1.

Declaration of Human Rights 2. The Project shall not discriminate with regards to participation and inclusion			
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 non-discrimination, equal treatment,	1.No 2.No 3.No 4.N/A	The project does not involve in any form discrimination in any kind of form. Turkey is also party to Convention on Discrimination since 1967 to prevent any form of discrimination; http://ua.mfa.gov.tr/files.ashx?872	In the main office of the project owner company there are women employees as well. Therefore, project contributes to recognition of women rights implicitly. No mitigation measure is needed for the Principle 2.

and equal pay for equal work 3. The Project shall refer to the country's national gender strategy or equivalent national commitment to aid in assessing gender risks 4. (where required) Summary of opinions and recommendations of an Expert Stakeholder(s)			
Principle 3. Community Health, Safety and Working Conditions			
1. The Project shall avoid community exposure to increased health	1.No	1. The project will take all the necessary precautions for all the hazards that by mitigating their impacts in line with the	No mitigation measure is needed for the Principle 3.

risks and shall not adversely affect the health of the workers and the community		legal limits. (ie. level of dust, noise and flickering effect). Since it is a renewable energy project, it is not creating any kind of pollution like in fossil fuel-based energy plants. Therefore, there is no air pollution caused by emissions. Both workers and community are not exposed to any health risks. Moreover, Turkey ratified ILO convention 155 about work safety and precautions.	
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?	1.No	The project does not occupy any high value cultural area.	No mitigation measure is needed for the Principle 4.1.
>>			

Principle 4.2 Forced Eviction and Displacement			
Does the Project require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)?	1.No	The project does not require or cause the physical or economic relocation of peoples (temporary or permanent, full or partial)	No mitigation measure is needed for the Principle 4.2.
>>			
Principle 4.3 Land Tenure and Other Rights			
Does the Project require any change, or have any uncertainties related to land tenure arrangements and/or access rights, usage rights or land ownership?	1.No	No, the project does not cause any type of change with respect to land tenure or impact any legal rights of the nearby people. The land use permission has been certified by notarization.	No mitigation measure is needed for the Principle 4.3.
>>			
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? >>	1.No	Turkey does not host any indigenous people community	No mitigation measure is needed for the Principle 4.4.
Principle 5. Corruption			
1. The Project shall not involve, be complicit in or inadvertently contribute to or reinforce corruption or corrupt Projects	1.No	The project does not involve any kind of corruption. Turkey is a party to United Nation Convention against Corruption since 2006; http://ua.mfa.gov.tr/detay.aspx?15042	The Project owner has not any negative track record related to corruption or any such activity whatsoever. No mitigation measure is needed for the Principle 5.
Principle 6.1 Labour Rights			
1. The Project Developer shall ensure that all	1.No 2.No 3.No	Project owner protects labours rights of all employees within this company. Workers might have occupational accidents during	Necessary health and safety measures will be taken during operation

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:	4.No 5.No	construction and operation phase. According to project developer, during construction and operational phase of the project "Health and Occupational Safety Regulation" will be followed. Regulation could be found under this link too: http://www.mevzuat.gov.tr/MevzuatMetin/1.5.6331.pdf	phase according the regulation of health and safety requirements in construction Works (http://www.resmigazete.gov.tr/eskiler/2013/10/20131005-2.htm)., Additionally, relevant staff will be trained to be able to work with high voltages, high heights and heavy machineries. No mitigation measure is needed for the Principle 6.1.

a) Working hours (must not exceed 48 hours 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. 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?	1.No	On the contrary, it supplies job opportunities for local people. By this way, it contributes improvement of economy.	No mitigation measure is needed for the Principle 6.2.
>>			
Principle 7.1 Emissions			

Will the Project increase greenhouse gas emissions over the Baseline Scenario?	1.No	On the contrary, it helps to reduce GHG emissions by producing green energy.	No mitigation measure is needed for the Principle 7.1.
>>			
Principle 7.2 Energy Supply			
Will the Project use energy from a local grid or power supply (i.e., not connected to a national or regional grid) or fuel resource (such as wood, biomass) that provides for other local users?	1.Potentially	Plant sometimes can use energy from local grid in the absence of wind. However, this amount is really less when it is compared with its production of green energy amount.	This amount will be tried to decrease as far as possible. It can be check during the verification process with the monthly meter readings and EPİAŞ records.
>>			
Principle 8.1 Impact on Natural Water Patterns/Flows			
Will the Project affect the natural or pre-existing pattern of watercourses, ground-	1.No	Since there is no water use in the generation of electricity, Project does not affect the natural or pre-existing pattern of watercourses, groundwater and/or the	No mitigation measure is needed for the Principle 8.1.

water and/or the watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity?		watershed(s) such as high seasonal flow variability, flooding potential, lack of aquatic connectivity or water scarcity. Only water use in the project side is for domestic purposes.	
>>			
Principle 8.2 Erosion and/or Water Body Instability			
Could the Project directly or indirectly cause additional erosion and/or water body instability or disrupt the natural pattern of erosion?	1.No	The project is being implemented in a proper way (by considering the concerns indicated via the entire principle 4.2.2 Erosion and/or Water Body Instability): There is no interruption to the hydrological systems in a WPP	No mitigation measure is needed for the Principle 8.2.
>>			
Principle 9.1 Landscape Modification and Soil			
Does the Project involve the use of land and soil	1.No	The project is being implemented in a proper way (by considering the concerns	No mitigation measure is needed for the Principle 9.1.

for production of crops or other products? >>		indicated via the entire principle Landscape Modification and Soil): Only potential impact to soil would be observed due to construction activities of the project, and these negligible impacts are not permanent. Furthermore, there is an access road to the project area so that there is no problem in accessing the area. The necessary attention to be paid to the speed limits of the trucks and the material inside the trucks will be covered. Trucks to be loaded in line with the axle load and will not be overloaded, the top 10% of the material to be moisturised.	
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	1.No	The project is being implemented in a proper way (by considering the concerns indicated via the entire principle Vulnerability to Natural Disaster): The project area is not a place to specific extreme climatic conditions and harmful natural events such as earthquake.	No mitigation measure is needed for the Principle 9.2.

extreme climatic conditions?			
>>			
Principle 9.3 Genetic Resources			
Could the Project be negatively impacted by or involve genetically modified organisms or GMOs (e.g., contamination, collection and/or harvesting, commercial development, or take place in facilities or farms that include GMOs in their processes and production)?	1.No	The project is being implemented in a proper way (by considering the concerns indicated via the entire principle 4.3.3 Genetic Resources): There is no relevance to GMO of a Wind Power Plant.	No mitigation measure is needed for the Principle 9.3.
>>			
Principle 9.4 Release of pollutants			
Could the Project potentially result in the	1.No	Only wastewater and solid waste production results from daily water use (eg.	Wastewater produced will be collected in an impermeable septic

release of pollutants to the environment? >>		domestic wastewater) and daily domestic consumption (eg. domestic solid waste). These domestic wastes are removed from the project facility in line with the associated legislative framework.	tank and will be periodically transferred to treatment plant of Akyeniköy Municipality. This process will be handled according to the Regulation of Ministry of Environment and Forestry. Waste oil will be vacuumed by vacuum truck regularly. By this way, discharge of plant sourced waste oil will not be allowed. Following PIF, all waste generated by the workers and machines will be collected in separate closed bins (plastic, metals etc.) and then they will be collected by the Municipality. Non recyclable wastes will be collected in impermeable closed bins. Garbage bins' photos will be provided for solid household waste. By this way, solid waste disposal will not be allowed.

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? >>	1.No	The proposed project activity is a renewable energy project and doesn't involve any hazardous chemicals & other materials. the host party has its credible legislation "Health and Occupational Safety Regulation". Regulation could be found under this link too: http://www.resmigazete.gov.tr/eskiler/2012/06/20120630-1.htm	The following mitigation measures will be applied to the project activity. Hazardous wastes are collected and treated by the third authorized party in accordance with local laws and related regulations. Non-hazardous wastes are collected and treated in accordance with local laws and related regulations.
Principle 9.6 Pesticides & Fertilisers			
Will the Project involve the application of pesticides and/or fertilisers? >>	1.No	There is no operation which requires pesticide fertilizer use for this project.	No mitigation measure is needed for the Principle 9.6.
Principle 9.7 Harvesting of Forests			

Will the Project involve the harvesting of forests? >>	1.No	The project is being implemented in a proper way (by considering the concerns indicated via the entire principle 4.3.7 Harvesting of Forests): There has not been a significant forestation during the construction phase (i.e. project has been approved as EIA positive) and the project does not involve an operation that requires forest harvesting.	No mitigation measure is needed for the Principle 9.7.
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? >>	1.No	The project is being implemented in a proper way (by considering the concerns indicated via the entire principle 4.3.8 Food): The project does not involve any operation that disrupt husbandry and agriculture in the region.	No mitigation measure is needed for the Principle 9.8.
Principle 9.9 Animal husbandry			
Will the Project involve animal husbandry?	1.No	The project is being implemented in a proper way (by considering the concerns	No mitigation measure is needed for the Principle 9.9.

>>		indicated via the entire principle 4.3.9 Animal husbandry): The project does not involve any operation that disrupt husbandry and agriculture in the region.	
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?	1.Yes	The Project physically does not affect or alter largely intact or High Conservation Value (HCV) ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified.	The Project is not located in a high conservation value area or within critical natural habitats or critical biodiversity areas or sites identified. Therefore, the project activity does not affect or alter ecosystems, critical habitats, landscapes, key biodiversity areas or sites identified. However, bird nests and carcasses on the project site will be observed by appointed personnel periodically.
>>			
Principle 9.11 Endangered Species			
Are there any endangered species identified as potentially being present within the	1.No	The Project does not potentially impact other areas where endangered species may be present through transboundary affects. With this respect, there is no damage or	No mitigation measure is needed for the Principle 9.11.

Project boundary (including those that may route through the area)? AND/OR Does the Project potentially impact other areas where endangered species may be present through transboundary affects?		alteration of any flora or fauna due to the project activity.	
>>			

APPENDIX 2- CONTACT INFORMATION OF PROJECT PARTICIPANTS

Organization name	Ayen Enerji A.S.
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Revision History

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