



Gold Standard[®]
for the Global Goals

TEMPLATE

MONITORING REPORT

PUBLICATION DATE 14.10.2020

VERSION v. 1.1

RELATED SUPPORT – TEMPLATE GUIDE Monitoring Report v. 1.1

This document contains the following Sections

Key Project Information

SECTION A - Description of project

SECTION B - Implementation of project

SECTION C - Description of monitoring system applied by the project

SECTION D - Data and parameters

SECTION E - Calculation of SDG Impacts

SECTION F - Safeguards Reporting

SECTION G - Stakeholder inputs and legal disputes

KEY PROJECT INFORMATION

Key Project Information

GS ID (s) of Project (s)	GS 436
Title of the project (s) covered by monitoring report	Akbük Wind Farm Project, Turkey
Version number of the PDD/VPA-DD (s) applicable to this monitoring report	10
Version number of the monitoring report	04
Completion date of the monitoring report	22/11/2023
Date of project design certification	17/03/2009
Date of Last Annual Report	08/12/2022
Monitoring period number	1 st
Duration of this monitoring period	04/10/2021 to 18/03/2023 (both days are included, 2 nd Crediting period, 1 st Monitoring period)
Project Representative	Ayen Enerji A.Ş.
Host Country	Turkey
Activity Requirements applied	<input type="checkbox"/> Community Services Activities <input checked="" type="checkbox"/> Renewable Energy Activities <input type="checkbox"/> Land Use and Forestry Activities/Risks & Capacities <input type="checkbox"/> N/A
Methodology (ies) applied and version number	ACM0002 – “Grid-connected electricity generation from renewable sources” Version 20
Product Requirements applied	<input checked="" type="checkbox"/> GHG Emissions Reduction & Sequestration <input type="checkbox"/> Renewable Energy Label

N/A
Table 1 - Sustainable Development Contributions Achieved

Sustainable Development Goals Targeted	SDG Impact	Amount Achieved	Units/ Products
SDG 13 Climate Action	Emissions Reductions	Emission Reduction: 94,543 tCO ₂	VERs
SDG 8 Decent work and economic growth	The project provides employment. Trainings to be held.	10 employees work at the WPP. Training is given to employees at the plant.	Number of employ and number of training
SDG 7 Affordable and clean energy	MWh of renewable energy generated	145,858.06 MWh renewable energy.	MWh
SDG 6 Clean water	Wastewater avoidance discharge to the environment	3,616,069 m ³ wastewater avoidance discharge to the environment	m ³

Table 2 – Product Vintages

Start Dates	End Dates	Amount Achieved			
		VERs	Employment	Net Energy Generation	Wastewater avoidance discharge to the environment
04/10/2021	31/12/2021	14,701 tCO ₂	10	22,680.65 MWh	562,291.83 m ³
01/01/2022	31/12/2022	66,472 tCO ₂	10	102,549.64 MWh	2,542,379.72 m ³
01/01/2023	18/03/2023	13,370 tCO ₂	10	20,627.77 MWh	511,397.45 m ³

*Employment amount is not addition but current employment.

SECTION A. DESCRIPTION OF PROJECT

A.1. General description of project

The Akbük Wind Farm Project (Akbük WFP) involves a 31.5 MWm onshore wind farm with 15 turbines in the region of Aydın Province, Didim District in Turkey.

The purpose of the project is to generate electricity and to feed it into the public grid. The Akbük WFP project shall be registered as a Voluntary Emission Reduction project in order to enable the project implementation by means of financial inflows coming from the credits sale. Because of its significant contribution to climate protection and to sustainable development in the region, this project is expected to fulfil the requirements of the Gold Standard.

The project helped Turkey to stimulate and commercialize the use of grid connected renewable energy technologies and markets. Furthermore, the project demonstrated the viability of grid connected wind farms which can support improved energy security, improved air quality, alternative sustainable energy futures, improved local livelihoods and sustainable renewable energy industry development. The specific goals of the project are to:

- reduce greenhouse gas emissions in Turkey compared to the business-as-usual scenario;
- help to stimulate the growth of the wind power industry in Turkey;
- create local employment during the construction and the operation phase of the wind farm;
- reduce other pollutants resulting from power generation industry in Turkey, compared to a business-as-usual scenario;
- help to reduce Turkey's increasing energy deficit;
- And differentiate the electricity generation mix and reduce import dependency.

As the project developer, Ayen Enerji 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 is gained by the realization of the project compared to the business-as-usual scenario can be summarized under four main indicators which are environmental, economic, social and technological.

The project activities have 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, soil, flora and faunas and transfers these natural resources and the additional supply of these primary energy sources to

the future generations as well. 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 (CO₂, CH₄) 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.

This project has helped accelerating 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 have been encouraged to invest in wind power generations. It has also assisted reducing Turkey’s increasing energy deficit and diversify the electricity generation mix while reducing import dependency, especially natural gas. Importantly, rural development has been maintained in the areas around the project site by providing infrastructural investments to these remote villages.

The employment of local people who have necessary technical qualifications for the required position has been the priority and enhanced by all project activities during construction and operation of wind farm. As a result, local poverty and unemployment have been partially eliminated by increased job opportunities and project business activities. Although turbines have been transported from abroad, the other components (such as transformers, switchboards, substation components, cabling) have been supplied from local manufacturers. Moreover, as contribution of the project to welfare of the region, the quality of the electricity consumed in the region has been increased by local electricity production, which also contributes decreasing of distribution losses.

During the monitoring period total electricity generation is 145,858.06 MWh and achieved total emission reduction is 94,543 tCO₂. The connection of the project to the National Electricity System done through a Substation.

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

The coordinates of the turbines are given in Table 3.

Table 3. Turbine Coordinates (WGS84)

Wind Turbine No.	E	N
T1	27.376061227743467	37.45188916412236
T2	27.37803858077886	37.45164850149274

Wind Turbine No.	E	N
T3	27.380004387047652	37.45136277484733
T4	27.38192403843467	37.45089689237578
T5	27.38383259037231	37.450476082868605
T6	27.385821509916195	37.45029834784256
T7	27.387811350421966	37.450300848640936
T8	27.392051013666386	37.45029587394949
T9	27.39176762051417	37.45015259589335
T10	27.39377931170909	37.45001070595952
T11	27.395641838854797	37.44945465501276
T12	27.398452295704157	37.44644367907704
T13	27.400303106283783	37.445833512419085
T14	27.402234516541533	37.44550246467628
T15	27.40416527917468	37.4450542105697



Figure 1. Project Location on Turkey Map

A.3. Reference of applied methodology

For the determination of the baseline, the official methodology ACM0002 version 20.0, "Large-scale Consolidated baseline methodology for grid-connected electricity generation from renewable sources", is applied, using conservative options and data as presented in the following section. This methodology refers to six Tools, which are:

1. TOOL07 - Tool to calculate the emission factor for an electricity system (v. 07.0.0)
2. TOOL01 - Tool for the demonstration and assessment of additionality (v. 07.0.0)
3. TOOL02 - Combined tool to identify the baseline scenario and demonstrate additionality (07.0.0)
4. TOOL03 - Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (v. 3.0.0)
5. TOOL10: Tool to determine the remaining lifetime of the equipment (v. 01.0.0)
6. 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)

The first tool is not used due to the fact that Ministry of Energy provided Turkish grid emission factors, however, for additionality assessment the second tool is used. As third tool is the combination of the first and second tool, it is not used. Since no project emission or leakage calculation is required for wind power project fourth tool is not used, and to determine the remaining lifetime of the equipment, fifth tool is used. Moreover, the sixth 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

A.4. Crediting period of project

The first crediting period of the project was 19/03/2009 and 18/03/2016.

The second crediting period is between 19/03/2016-18/03/2023 both dates are included (Crediting period of the project is 7 years which is twice renewable.). However, VERs can be claimed between 04/10/2021-18/03/2023 due to delay crediting period renewal process.

SECTION B. IMPLEMENTATION OF PROJECT

B.1. Description of implemented project

Akbiik WFP has 15 turbines each with an installed capacity of 2.1 MW and total of 31.5 MWe. Commissioning of the project is 19/03/2009. The project was constructed on single project site which is on Didim District of Aydın Province in Turkey. Milestones and their dates of the project is given in the table below.

Table 4. Milestones of the Akbiik Wind Farm Project

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
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

B.1.1. Forward Action Requests

There is one FAR from Design Certification Renewal which is:

FAR #1:

The monitoring of the second crediting period shall commence on 04/10/2021 and end 18/03/2023 due to the delay of submission of PDD for renewal of crediting period. VVB shall take into account that period during the next verification.

This FAR has been satisfied since the monitoring period is in between 04/10/2021 and 18/03/2023.

B.2. Post-Design Certification changes

B.2.1. Temporary deviations from the approved Monitoring & Reporting Plan, methodology or standardized baseline

N/A

B.2.2. Corrections

N/A

B.2.3. Changes to start date of crediting period

For the first crediting period, the 7-year renewable crediting period starts on 07/11/2008 in accordance with the PDD. Due to a later commissioning, this starting date has been postponed to 19/03/2009 and a notification of this change was sent to Gold Standards.

B.2.4. Permanent changes from the Design Certified monitoring plan, applied methodology or applied standardized baseline

N/A

B.2.5. Changes to project design of approved project

N/A

SECTION C. DESCRIPTION OF MONITORING SYSTEM APPLIED BY THE PROJECT

The data processing and archiving are performed in accordance with the PDD. The main source of the electricity generation is the balancing and settlement made between Ayen Enerji A.Ş. and EPIAS (EXIST = Turkish Energy Exchange). The electricity meters are being read by automatic meter reading continuously and at the end of each month, the monthly values are finalized. The screenshots taken from the EPIAS web site constitute the primary source of electricity generation monitoring.

In addition, a manual and remote reading is done by TEIAS at the end of each month. The officials from TEIAS perform monthly the measurements for both the primary and secondary device, under the control of the plant personnel Ayen Enerji A.Ş. Both parties sign a reading protocol. These reading protocols constitute the secondary or supportive source of electricity generation monitoring.

The connection of the project to the National Electricity System done through 154 kV Akbük Transformer Centre.

For Ayen Enerji A.Ş., Mr. Hakan Demir is responsible for monitoring issues within the project. Operation and management diagram is presented in Figure 2.

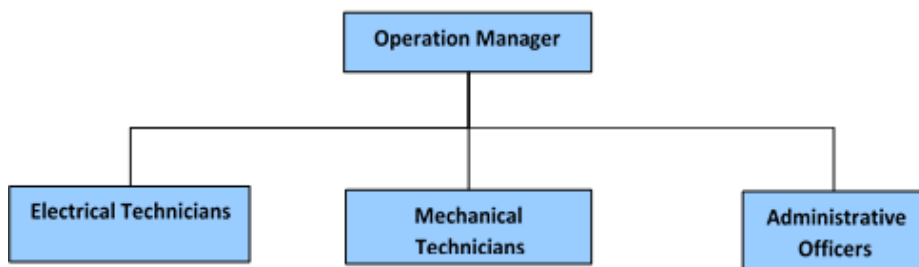


Figure 2. Operation and Management Diagram

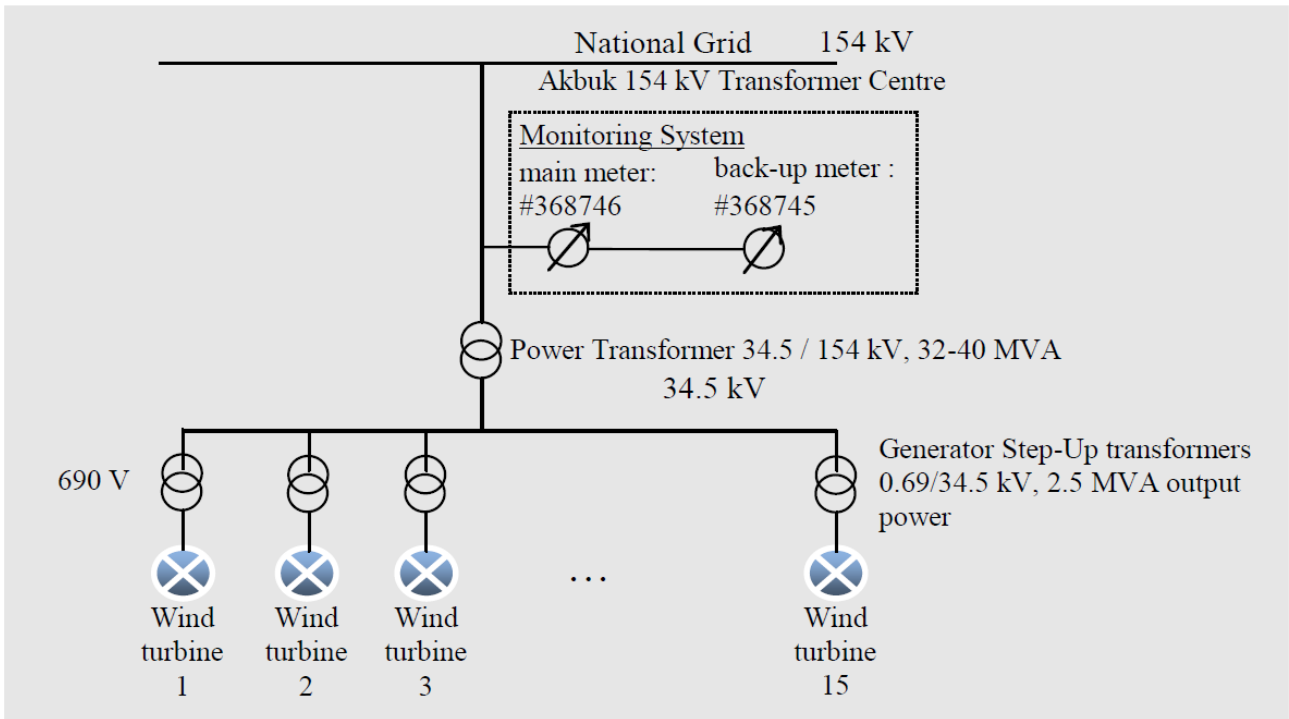


Figure 3. Single Line Diagram of Monitoring System and Related Components

“The companies producing or importing the electricity meters are required to guarantee the accuracy and calibration of the meters. According to the legislation, electricity and other meters must be periodically examined. This procedure is intended for calibration and controlled by Ministry of Science, Industry and Technology. This can be considered as a validation of meters.

Paragraph b) of the Article 9 of the 'Regulation of Metering and Testing of Metering Systems' (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 are planned to be done every 10 years.

Also, according to Article 67 (page 20) of this regulation, the calibration shall be done in calibration stations which have been tested and approved by Ministry of Trade and Industry. Article 10 d) of Communiqué requires the meters shall be three phase four wire and Article 64 of Regulation clearly states how calibration shall be performed for this kind of meters.

As above mentioned, the data acquisition and management and quality assurance procedures that are anyway in place, no additional procedures necessarily to be established for the monitoring plan. “

Table 5. Specification of the Electricity Meters

Name	Serial Number	Accuracy Class	Test Dates (from Test Report)
Main Meters	5271033	0.2 S	10/12/2018 22/10/2020 10/11/2022
Back-up Meters	5271034	0.2 S	10/12/2018 22/10/2020 10/11/2022

SECTION D. DATA AND PARAMETERS

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Relevant SDG Indicator	SDG 13
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 2019 was used.
Source of data	Please see the link below: https://enerjiapi.enerji.gov.tr/Media/Dizin/ETKB/DuyuruIar/0c6b62ea-bf2f-4fea-b9b3-28bc6f48ddf2_Bilgi_Formu_-_Web_Sitesi.pdf
Value(s) applied)	0.6482 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 ₂ e reduction in order to monitor the SDG 13 Indicator.
Additional comments	Other parameters are not specified as they are used in calculations in accordance with the registered PDD.

D.2. Data and parameters monitored

Relevant SDG Indicator/Safeguarding Principle	SDG 13: Climate action Target: 13.3 by emission reduction Indicator: 13.3.1
Data / Parameter	ER _y
Unit	tons of CO ₂ e
Description	Amount of CO ₂ emission
Source of data	Monthly meter readings for the source of emission reduction calculation
Value(s) applied	Reductions of proportionate amount in described emissions during operational life of the project activity. For this monitoring period, CO ₂ emission avoidances with project implementation is 94,543 tCO ₂ e.
Measurement methods and procedures	Amount of annual net electricity generation, which is calculated by monthly settlement notifications on monthly meter readings, is used to calculate estimated CO ₂ emission reduction by project activity.
Monitoring frequency	Annually.
QA/QC procedures	Calculation of amount of emission reduction will be calculated on an excel document and provided in each monitoring period
Purpose of data	Emission reduction.
Additional comment	-

Relevant SDG Indicator	SDG 7: Affordable and clean energy Target: 7.2 by using renewable energy systems Indicator: 7.2.1
Data/parameter:	EG_{PJ,y}
Unit	MWh/yr
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Measured/calculated/default	Measured
Source of data	Monthly meter readings
Value(s) of monitored parameter	145,858.06 MWh

<p>Monitoring equipment</p>	<ul style="list-style-type: none"> • Regarding the electricity meters: two meters have been placed (one main and one backup) for electricity generation. The fact that two meters are installed in a redundant manner keeps the uncertainty level of the only parameter for baseline calculation low. High data quality of this parameter is not only in the interest of the emission reduction monitoring, but paramount for the business relation between the plant operator and the electricity buyer. • On the last day of each month, the production index will be taken from the main as well as the reserve meters by Market Financial Settlement Center (in Turkish EPIAŞ, a state institution responsible for electricity market settlement operations). In following month, EPIAŞ issue electricity generation records for each generation unit which can be accessed by plant operators via logging to secured website. These records are used to monitor net monthly generation of the power plant. For each month, the net electricity amount supplied to the grid will be calculated by electricity fed into grid minus electricity withdrawn from the grid available in EPIAŞ records. • Monthly meter reading protocols, which are kept by staff, are used to cross-check the EPIAŞ records. <p>Since the meters are reading electricity supplied to the system and withdrawn from the system separately, the net electricity amount supplied to the grid will be calculated by electricity supplied minus electricity withdrawn.</p> <p>Thus, this procedure is sufficient and no extra</p>
-----------------------------	---

¹ See: <http://www.epdk.org.tr/mevzuat/yonetmelik/elektrik/dengeleme/yeni/degisiklik06112010.doc> page 13

Measuring/reading/recording frequency:	During the monitoring period, the specifications of the meters along with the calibration dates are shown below:															
Calculation method (if applicable):	<table border="1" data-bbox="619 374 1439 689"> <thead> <tr> <th data-bbox="619 374 711 488">Name</th> <th data-bbox="716 374 820 488">Serial Number</th> <th data-bbox="825 374 986 488">Brand & Model and Year of Manufacturing</th> <th data-bbox="991 374 1094 488">Accuracy Class</th> <th data-bbox="1099 374 1439 488">Calibration Dates (from Test Report)</th> </tr> </thead> <tbody> <tr> <td data-bbox="619 488 711 593">Main Meters</td> <td data-bbox="716 488 820 593">5271033</td> <td data-bbox="825 488 986 593">EMH LZQJ-XC (2015)</td> <td data-bbox="991 488 1094 593">0.2 S</td> <td data-bbox="1099 488 1439 593">10/12/2018 22/10/2020 10/11/2022</td> </tr> <tr> <td data-bbox="619 593 711 689">Back-up Meters</td> <td data-bbox="716 593 820 689">5271034</td> <td data-bbox="825 593 986 689">EMH LZQJ-XC (2015)</td> <td data-bbox="991 593 1094 689">0.2 S</td> <td data-bbox="1099 593 1439 689">10/12/2018 22/10/2020 10/11/2022</td> </tr> </tbody> </table> <p data-bbox="619 734 1439 824">-</p>	Name	Serial Number	Brand & Model and Year of Manufacturing	Accuracy Class	Calibration Dates (from Test Report)	Main Meters	5271033	EMH LZQJ-XC (2015)	0.2 S	10/12/2018 22/10/2020 10/11/2022	Back-up Meters	5271034	EMH LZQJ-XC (2015)	0.2 S	10/12/2018 22/10/2020 10/11/2022
Name	Serial Number	Brand & Model and Year of Manufacturing	Accuracy Class	Calibration Dates (from Test Report)												
Main Meters	5271033	EMH LZQJ-XC (2015)	0.2 S	10/12/2018 22/10/2020 10/11/2022												
Back-up Meters	5271034	EMH LZQJ-XC (2015)	0.2 S	10/12/2018 22/10/2020 10/11/2022												

QA/QC procedures:	<p>TEIAS was responsible for the electricity meter measurements and testing and control of electricity meters as per "Measuring and Measuring Instruments Inspection Regulation".</p> <p>TEIAS performs periodic tests on every electricity meter, and the meters are sealed after each test, according to the System Usage Agreement made between the project proponent and TEIAS. These seals can only be broken and re-sealed only by TEIAS authorized personnel.</p> <p>Apart from the periodic tests, the companies producing or importing the electricity meters are required to guarantee the accuracy and calibration of the meters. According to the legislation, electricity and other meters must be periodically examined. This procedure is intended for calibration and controlled by Ministry of Science, Industry and Technology. This can be considered as a validation of meters. On the other hand, control of the meters is under the control of TEIAS and can be considered as a verification of meters.</p> <p>The data of PMUM (EPIAS, etc.) is used as the electricity measurement data of TEIAS. This data is reliable since it is only accessible to project owner apart from PMUM (EPIAS, etc.), and used for invoicing purposes.</p>
Purpose of data:	Calculation of Baseline and Project Emission
Additional comments:	-

Relevant SDG Indicator/Safeguarding Principle	SDG 8: Decent work and economic growth Target: 8.8 by employment and decent work Indicator: 8.8.2
Data / Parameter	Quality of employment
Unit	Number of 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	3 trainings were delivered to 10 employees.

Measurement methods and procedures	Necessary health and safety measures have been taken during construction and operation phase, relevant staff have been trained to be able to work with high voltages. Also, suitable weekly working hours and fair wage have been guaranteed to the employers.
Monitoring frequency	Each monitoring period
QA/QC procedures	-
Purpose of data	To exhibit employment performance of the plant
Additional comment	Quality of employment

Relevant SDG Indicator/Safeguarding Principle	SDG 8: Decent work and economic growth Target: 8.8 by employment and decent work Indicator: 8.8.2
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	Social security records
Value(s) applied	10 workers
Measurement methods and procedures	By checking the number of jobs created by the project, the job contracts, and the SGK (Social Security Institution) records.
Monitoring frequency	Each verification period
QA/QC procedures	-
Purpose of data	To exhibit employment performance of the plant
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	SDG 6: Clean Water and Sanitation Target 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 Indicator 6.3.1: Proportion of wastewater safely treated
Data / Parameter	Water Quality and Quantity
Unit	m ³ /year
Description	Avoidance wastewater discharge to the environment
Source of data	Monthly meter readings
Value(s) applied	According to official data, cooling wastewater avoidance due to the renewable electricity generation in 2018 are:

	24.8 m ³ /MWh. When this baseline values are treated with electricity generation value measured in this monitoring period, total cooling wastewater avoidance yielded as 3,616,069 m ³ in this monitoring period.
Measurement methods and procedures	Coefficient for wastewater avoidance from potential cooling water operations calculated by taking Total Wastewater 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 EPIAŞ based on monthly meter readings.
Purpose of data	To demonstrate how the WPP avoids wastewater discharge into natural environments with respect to a baseline scenario.
Additional comment	

Relevant SDG Indicator/Safeguarding Principle	Safeguarding 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 sewage truck and statement of the wastewater treatment plant
Value(s) applied	Wastewater has been transferred 5 times by municipality's vacuum truck.
Measurement methods and procedures	Proper management and disposal of waste water has been monitored by collecting the relevant documentation as evidence, and by other appropriate means, if necessary.
Monitoring frequency	Every monitoring period.
QA/QC procedures	-
Purpose of data	Avoidance wastewater discharge to the environment

Additional comment	-
--------------------	---

Relevant SDG Indicator/Safeguarding Principle	Safeguarding 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	There was no waste oil generation during monitoring period and total of 920 kg of hazardous waste generated and disposed during monitoring period.
Measurement methods and procedures	Proper management and disposal of waste oil has been monitored by collecting the relevant documentation as evidence, and by other appropriate means, if necessary.
Monitoring frequency	Every monitoring period.
QA/QC procedures	-
Purpose of data	There is no waste oil pollution originating from the project activity. Necessary precautions and measures has been taken for the proper management and removal of the waste oil produced during the turbine maintenance according to the related legislation.
Additional comment	-

D.3. Comparison of monitored parameters with last monitoring period

N/A

D.4. Implementation of sampling plan

N/A

SECTION E. CALCULATION OF SDG IMPACTS

E.1. Calculation of baseline value or estimation of baseline situation of each SDG Impact

Used Formulas:

FOR SDG 13

The total emission reductions can be calculated with the results of the below described equations. The emission reduction is equal to the baseline emissions minus project emissions and leakage emissions. Leakage emissions in this project are considered to be negligible. There are no project emissions in this kind of project. The general equation is as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (t CO₂/yr).

BE_y = Baseline emissions in year y (t CO₂/yr).

PE_y = Project emissions in year y (t CO₂/yr).

PE_y ; The project does not result in greenhouse gas emissions.

Where:

BE_y = Baseline emissions in year y (tCO₂/yr).

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

$EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system". It was calculated as 0.6482 tCO₂e/MWh.

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

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

Where:

$EG_{PJ,y}$ = 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)

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

The project activity does not result in greenhouse gas emissions, so:

$$PE_y = 0, \text{ then } ER_y = BE_y$$

FOR SDG 8

In case of project is not implemented, no employment activities within the region from renewable sector. Thus, in this scenario, potential capacity building and technical trainings will not be held.

$$\text{Baseline}_{\text{employment,training}} = 0$$

FOR SDG 7

There is no renewable electricity generation in case project is not implemented.

$$\text{Baseline}_{\text{electricity generation}} = 0$$

FOR SDG 6

There would be a potential fossil fuel generation activity if this WPP would not come into implementation. In this scenario of electricity generation, there is a significant wastewater that is to be discharged into natural environments. The baseline value for a potential wastewater discharge due to a fossil fuel fired energy generation is calculated as follow:

$$\text{Average Amount of Wastewater Discharged per each GWh Electricity Generation} = \frac{\text{Total Waste Water Discharged by Thermal Power Plants in the baseline year}}{\text{Total Electricity Generation in the baseline year}}$$

This yields as 24.8 m³ wastewater/GWh

$$\text{Wastewater avoidance discharge to the environment by Project Activity per year} = \text{Annual Electricity Generation of Project Activity (GWh/y) within the MP} \times \text{Average Amount of Waste Water Discharged per each GWh Electricity Generation}$$

E.2. Calculation of project value or estimation of project situation of each SDG Impact

FOR SDG 13

CO₂ Emission Avoidance via CM calculation

According to the applied methodology version, the emission reduction is the baseline emissions calculated as the net electricity supplied to the grid multiplied by the grid emission factor. In other saying, the value of “Combined margin CO₂ emission factor for grid connected power generation in year *y* ($EF_{grid, CM, y}$) *in* needed to multiply with the value of Net electricity supplied to the Grid (EG_y) in order to reach Baseline emissions (BE_y). Calculations for reaching $EF_{grid, CM, y}$ and (EG_y) values have already been explained in PDD.

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

Where:

BE_y = Baseline emissions in tonnes CO₂

$EF_{grid, CM, y}$ = Combined margin CO₂ emission factor for grid connected power generation in year *y* calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” [tCO₂/MWh].

EG_y = Net electricity supplied to the Grid in MWh

y = Refers to a given period

Emission Reduction in vintage level and monitoring period is given in the table below:

Vintage		ER _y (tCO ₂ e)
04/10/2021	31/12/2021	14,701 tCO ₂
01/01/2022	31/12/2022	66,472 tCO ₂
01/01/2023	18/03/2023	13,370 tCO ₂
Total		94,543 tCO₂

FOR SDG 8

The employment of local people that have necessary technical qualifications for the required post has been the priority and enhanced by all project activities during construction and operation of wind farm. As a result, local poverty and unemployment has been partially eliminated by increased job opportunities and project business activities. Moreover, as contribution of the project to welfare of the region, the quality

of the electricity consumed in the region has been increased by local electricity production, which also contributes decreasing of distribution losses.

In this monitoring period, 10 workers have been employed. 4 of them were locally performed. Also, HSE trainings have been given to employees at the plant.

FOR SDG 7

Quantity of net electricity generation supplied by the project plant to the grid in the related year has been calculated by subtracting the value of “Electricity consumption from the grid (MWh)” from “Electricity supplied to the grid (MWh)”

Calculation of Electricity Generation of Akbük WFP:

Electricity Generation of Akbük WFP = Electricity supplied to the grid (MWh) - Electricity consumption from the grid (MWh)

Electricity Generation of Akbük WFP for the first verification period = 145,858.06 MWh

FOR SDG 6

Calculation of wastewater avoidance discharge to the environment formula is given below:

$$\text{Wastewater Avo.} = \frac{\text{Wastewater discharge from power plants in m}^3}{\text{Net electricity generation in the related year in MWh}} \times \text{Electricity Generation}$$

Vintage		Wastewater Avoided (m ³)
04/10/2021	31/12/2021	562,291.83
01/01/2022	31/12/2022	2,542,379.72
01/01/2023	18/03/2023	511,397.45
Total		3,616,069

E.3. Calculation of leakage

LE_y is 0, as it is not considered according to ACM0002. PE_y is 0 because project is a wind power generation activity (Only for geothermal and hydro project activities, it should be considered according to ACM0002).

E.4. Calculation of net benefits or direct calculation for each SDG Impact

SDG	SDG Impact	Baseline estimate	Project estimate	Net benefit
13	CO ₂ Emission Reduction & Air Quality	94,543 tCO ₂	0 tCO ₂	94,543 tCO ₂
8	Quantitative Employment And Income Generation & Qualitative Employment	Quantitative Employment: No employment. Qualitative Employment: No training	Quality of Employment: Training certificates are provided. Health & Safety Trainings have been held and 10 plant employees have attended to those trainings. Current employment records are presented. There are 10 employees working in the plant in total and 4 of them are local.	Quality of Employment: Training certificates are provided. Health & Safety Trainings have been held and 10 plant employees have attended to those trainings. Current employment records are presented. There are 10 employees working in the plant in total and 4 of them are local.
7	Electricity Generation	Energy is generated by using renewable energy systems throughout the project. There is no electricity generation in the baseline scenario in which Akbük WFP is not being implemented.	Energy (145,858.06 MWh) is generated by using renewable energy systems throughout the project (WFP)	Energy (145,858.06 MWh) is generated by using renewable energy systems throughout the project (WFP)
6	Wastewater avoidance discharge to the environment	Estimated amount of wastewater avoidance discharge to the environment: 3,616,069 m ³	Estimated wastewater generation is 832 m ³	Actual amount of wastewater avoidance: 3,616,069 m ³
Others	Disposal of wastewater	No wastewater generation	Disposal of wastewater by local municipality	Wastewater has been transferred by municipality's vacuum truck

Others	Solid Waste	No waste oil generation	Waste oil might be generated due to gearbox maintenance and solid waste will be generated due to daily activities of employees	920 kg of hazardous waste has been generated during MP and solid waste has been transferred and treated 14 times by the municipality during monitoring period.
--------	-------------	-------------------------	--	--

E.5. Comparison of actual SDG Impacts with estimates in approved PDD

SDG	Values estimated in ex ante calculation of approved PDD for this monitoring period	Actual values achieved during this monitoring period
13	Emission Reduction: 115,482 tCO ₂	Emission Reduction: 94,543 tCO ₂
8	<p>Quality of Employment: Health&safety training certificates are provided.</p> <p>Quantitative Employment and Income Generation: Current employment rates.</p>	<p>Quality of Employment: Health&safety training certificates are provided. The list of the certificates can be found directly under the table.</p> <p>Quantitative Employment and Income Generation: Current employment records are presented. 10 employees work at the WFP. (4 of them are local)</p>
7	<p>Energy is generated by using renewable energy systems throughout the project. This generation amount was estimated as 178,156.76 MWh.</p>	<p>Energy (145,858.06 MWh) is generated by using renewable energy systems throughout the project.</p>
6	<p>Estimated amount of wastewater avoidance discharge to the environment: 4,412,537</p>	<p>Actual amount of wastewater avoidance discharge to the environment: 3,616,069 m³</p>
Others	Disposal of wastewater by local municipality	Wastewater has been disposed 2 times during monitoring period.

Others	Waste oil etc. (gearbox oil waste, oil filters etc.) is collected on site and disposed by licensed companies according to legal requirements and solid waste disposed properly.	920 kg of hazardous waste has been generated during MP and solid waste has been transferred and treated 14 times by the municipality during monitoring period.
--------	---	--

During the monitoring period, total of three training has been delivered to employees which are occupational health & safety, first aid and firefighting.

E.5.1. Explanation of calculation of value estimated ex ante calculation of approved PDD for this monitoring period

Estimated emission reduction in ex ante calculation of registered PDD is 79,380 tCO₂, which corresponds for 365 days and 115,482 tCO₂ for monitoring duration (for (04/10/2021-18/03/2023), 531 days).

E.6. Remarks on increase in achieved SDG Impacts from estimated value in approved PDD

Estimated emission reduction in ex ante calculation of registered PDD is 79,380 tCO₂ for 365 days and 115,482 for monitoring duration which is 531 days. Actual emission reduction achieved during this monitoring period is 94,543 tCO₂). When they are compared, actual emission reduction achieved during this monitoring period is less than the estimated figure. The deviation between estimated and actual emission reduction is around 18%.

SECTION F. SAFEGUARDS REPORTING

Principles	Mitigation Measures were added to the Monitoring Plan
Principle 9.4 Release of pollutants	<p>Solid Waste: During the operation phase, domestic and hazardous waste from daily operations is disposed of properly as well as waste oil. Waste oil etc. (gearbox oil waste, oil filters etc.) is collected on site and disposed by licensed companies according to legal requirements. Akbük WFP performs verification process every regularly, Akbük WFP carries out the 1st verification of the 2nd crediting period. During monitoring, required documents (waste collection out-of-area letter and waste oil invoices) are regularly and completely provided.</p>
Principle 9.4 Release of pollutants	<p>Disposal of Wastewater: During the operational phase wastewater is generated due to daily activities of employees. The wastewater is collected in septic tanks and then transferred by municipality’s vacuum truck and treated in its treatment plant. Wastewater transfer records is collected and provided.</p>

There are no assessment that have been 'potentially' answered or where requirements require regular re-assessment. (Please see approved GS Transition document)

SECTION G. STAKEHOLDER INPUTS AND LEGAL DISPUTES

G.1. List all Inputs and Grievances which have been received via the Continuous Input and Grievance Mechanism together with their respective responses/mitigations.

For the Akbük WFP, stakeholder engagement procedure was conducted with Akyeniköy village head and the local stakeholders on 09/06/2023.

As validated during the audit, muhtar (head of the village) had already taken the contact information of Company Executive of the company so that the local stakeholders will be able to reach company executive whenever they have any complaints, suggestions or ideas about the project.

Since muhtar and made men are the head of the village, they will be the contact persons between the project owner and the local stakeholders. Muhtar will make sure that there's continuous communication between the two parties. During the site visit, it is validated that there were no negative comments from the stakeholders. Moreover, logbook was delivered to the muhtar of the Akyeniköy village. This logbook is checked in the verifications to see whether there is any complaints from the local stakeholders.

Since this project is about the complete its 1st verification of the 2nd crediting period and it does not result in different impacts with respect to different vintages, the grievance mechanism mainly relies on the existed grievance mechanism by use of logbook. There would not be requirement to use further grievance tools throughout the project life cycle.

G.2. Report on any stakeholder mitigations that were agreed to be monitored.

There have been no stakeholder mitigations agreed to be monitored.

G.3. Provide details of any legal contest that has arisen with the project during the monitoring period

No legal contest or dispute that has arisen with the project during the monitoring period.

Revision History

Version	Date	Remarks
1.1	14 October 2020	<p>Hyperlinked section summary to enable quick access to key sections</p> <p>Improved clarity on Key Project Information</p> <p>Section for POA monitoring</p> <p>Forward action request section</p> <p>Improved Clarity on SDG contribution/SDG Impact term used throughout</p> <p>Clarity on safeguard reporting</p> <p>Clarity on design changes</p> <p>Leakage section added for VER/CER projects</p> <p>Addition of Comparison of monitored parameters with last monitoring period</p> <p>Provision of an accompanying Guide to help the user understand detailed rules and requirements</p>
1.0	10 July 2017	Initial adoption