



DENIZLI WIND POWER PROJECT, TURKEY

MONITORING REPORT: 2ND

VERIFICATION

Korda Enerji Üretim Pazarlama İthalat ve İhracat A.Ş. (as Project Owner)

Life İklim ve Enerji Ltd. Şti. (as Carbon Consultant)

Project title	Denizli Wind Power Project,Turkey
Project ID	1908
Monitoring period	01-June-2022 to 31-December-2023
Original date of issue	02-February-2024
Most recent date of issue	08-April-2024
Version	03
VCS Standard Version	4.6
Prepared by	Korda Enerji Üretim Pazarlama İthalat ve İhracat A.Ş.& Life İklim ve Enerji Ltd. Şti.

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Korda Enerji Üretim Pazarlama İthalat ve İhracat A.Ş. (hereafter referred to as “Korda”) invested into a new Wind Power project called Denizli Wind Power Project (hereafter referred to as the “Project” or “Denizli WPP”), which involves installation and operation of Siemens SWT-3.4-108 wind turbines. The project is involved of 22 wind turbines. The key parameters about the technical design of the selected model Siemens SWT-3.4-108 turbines are listed below in Table 1.

Table 1. Technical specifications of Siemens SWT-3.4-108 turbines¹

Specifications	SWT-3.4-108
<i>Rated Power (kW)</i>	3400
<i>Rotor Diameter (m)</i>	108
<i>Hub Height (m)</i>	79.5
<i>Num. of Blades</i>	3
<i>Cut-out wind speed (m/s)</i>	25

The generated energy will be fed to the grid Tavas TM. An estimated electricity net generation of 186,100 MWh per year by the efficient utilization of the available wind energy by project activity will replace the grid electricity, which is constituted of different fuel sources, mainly fossil fuels. The electricity produced by project activity will result in a total estimated emission reduction of 105,622 tonnes of CO₂e/year. The total emission reduction by the project activity is estimated to be 1,056,220 tonnes of CO₂e for the first crediting period, which is 13/09/2019 to 12/09/2029. Moreover, project activity will contribute further dissemination of wind energy and extension of national power generation.

This second monitoring period covers the period from 01-June-2022 to 31-December-2023 (both days included). Generated net electricity achieved during this monitoring period is 307,261 MWh, and total actual emission reduction is achieved as 174,401 tonnes of CO₂e for this monitoring period. A table which indicates the estimated and achieved emission reduction amounts is provided below.

¹ Please See; Technical Description document and Wind and Energy Yield Assessment Report

Vintage		Actual ERy (tCO ₂ e)	Estimated ERy (tCO ₂ e)
01-June-2022	31-December-2022	63,856	61,926
01-January-2023	31-December-2023	110,545	105,622
Total		174,401	167,548

According to the registered PD, estimated emission reduction in ex ante calculation is 167,548 tCO₂ for this monitoring period. Moreover, actual emission reduction achieved during this monitoring period is 174,401 tCO₂. When they are compared, actual emission reduction achieved during this monitoring period is higher than the estimated figure. This situation has occurred because between 12/06/2022 and 30/09/2023, TEİAŞ has allowed the power plants to use full mechanical capacity for electricity generation purposes. The practice was available for a short amount of time and other power plants in Türkiye benefited by 15% capacity increases. However, when it is compared, actual emission reduction achieved during this monitoring period is acceptable. Because net difference between estimated and actual emission reduction for the project activity is 4% and difference between this two emission reduction values is lower 10% range calculated in the registered PD.

1.2 Audit History

Audit type	Period	Program	Validation/verification body name	Number of years
Validation	13-Sept-2019 to 12-Sept-2029	VCS	RINA Services S.p.A	10 years
Verification	13-Sept-2019 to 31-May-2022	VCS	Earthood	2 years 8 months
Verification	01-June-2022 to 31-Dec-2023	VCS	Earthood	1 year 7 months

1.3 Sectoral Scope and Project Type

Sectoral scope ²	No. 1 "Energy Industries (renewable/non-renewable)"
Project activity type	Renewable Energy (REN), wind power project

² Projects, activities, or methodologies may be developed under any of the 16 VCS sectoral scopes: <https://verra.org/programs/verified-carbon-standard/vcs-program-details/#sectoral-scopes>

Sectoral scope	N/A
AFOLU project category ³	N/A
Project activity type	N/A

1.4 Project Proponent

Organization name	Korda Enerji Üretim Pazarlama İthalat ve İhracat A.Ş.
Contact person	Melis Ünal
Title	Energy and Carbon Markets Manager
Address	Turan Güneş Bulvarı Galip Erdem Cad. No: 3 Çankaya/ANKARA
Telephone	+90 (0312) 408 10 00
Email	munal@akfen.com.tr

1.5 Other Entities Involved in the Project

Organization name	Life İklim ve Enerji Ltd. Şti.
Role in the project	Project Representative
Contact person	Aslı Yağmur Özcan
Title	Carbon Consultant
Address	Oğuzlar Mahallesi, 1377. Sk. No:19, 06520 Çankaya/Ankara/ Türkiye
Telephone	+90 312 481 21 42
Email	asli.ozcan@life-climate.com

1.6 Project Start Date

Project start date	13-September-2019 ⁴
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³ See Appendix 1 of the VCS Standard

⁴ See Provisional Acceptance Protocol

Justification	The Project was commissioned and started to feed energy to the grid on 13-Sept-2019. This is the date on which the project started to produce emission reductions. This is the official start date of the project.
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1.7 Project Crediting Period

Crediting period	☐ Seven years, twice renewable ☐ Ten years, fixed ☒ Other In accordance with VCS Version 3 rules, the project crediting period is 10 years, and it will be renewed twice.
Start and end date of first or fixed crediting period	13-September-2019 12-September-2029 (both days included)

1.8 Project Location

The project is located in Denizli Province, Babadağ District, Demirli Village. Location of the project is given in Figure 1. Some parts of the plant are located in Aydın Province, Karacasu District. Moreover, the coordinates of the project activity are given under Table 1.

Figure 1. Location of the plant

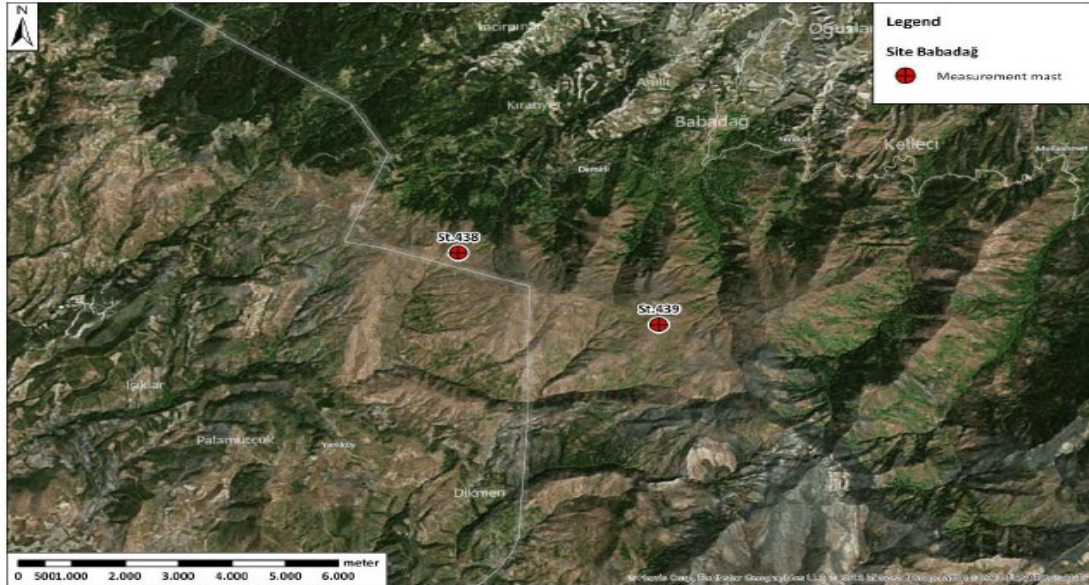


Table 1. Geographic coordinates of the project activity of Denizli WPP⁵

Wind Turbine No.	Latitude (N)	Longitude (E)
1	37° 47' 20.6232"	28° 46' 23.1853"
2	37° 47' 12.2208"	28° 47' 01.8137"
3	37° 47' 03.9120"	28° 47' 14.8588"
4	37° 47' 01.2264"	28° 47' 27.2621"
5	37° 47' 00.8664"	28° 47' 48.5921"
6	37° 46' 57.2304"	28° 48' 07.8802"
7	37° 46' 48.7524"	28° 48' 21.2862"
8	37° 46' 40.6128"	28° 48' 27.3013"
9	37° 46' 28.7040"	28° 48' 38.1288"
10	37° 46' 27.5160"	28° 49' 06.7112"
11	37° 46' 22.2780"	28° 49' 16.2287"
12	37° 46' 20.9208"	28° 49' 30.3374"
13	37° 46' 16.3164"	28° 49' 51.1912"
14	37° 46' 10.6140"	28° 50' 03.2709"
15	37° 46' 12.4608"	28° 50' 38.6291"
16	37° 46' 03.8532"	28° 50' 43.5239"

⁵ Please see Generation License for the coordinates and <https://coordinates-converter.com/en/decimal/47.375267,-109.638758?karte=OpenStreetMap&zoom=8> for the conversion. Also, please see registered PD (Dated: 08-December-2021)

17	37° 45' 55.1196"	28° 50' 46.0450"
18	37° 45' 45.2808"	28° 50' 54.7502"
19	37° 45' 36.4392"	28° 51' 02.1310"
20	37° 45' 28.4112"	28° 51' 11.2480"
21	37° 45' 19.0440"	28° 51' 25.1119"
22	37° 45' 24.4980"	28° 51' 55.5690"

1.9 Title and Reference of Methodology

Type (methodology, tool or module).	Reference ID, if applicable	Title	Version
Methodology	ACM0002 (Version 19.0)	Grid Connected Electricity Generation from Renewable Sources	Version 19.0 ⁶
Tool	Tool 07	Tool to calculate the emission factor for an electricity system	Version 07.0 ⁷
Tool	Tool 01	Tool for the demonstration and assessment of additionality	Version 07.0.0 ⁸
Tool	Tool 02	Combined tool to identify the baseline scenario and demonstrate additionality	Version 07.0 ⁹
Tool	Tool 03	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion	Version 03.0 ¹⁰
Tool	Tool 10	Tool to determine the remaining lifetime of the equipment	Version 01 ¹¹

⁶ Please see ACM0002 Version 19: <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQCOPiWPGWDN8ED5PG>

⁷ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

⁸ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

⁹ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-02-v7.0.pdf>

¹⁰ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-03-v3.pdf>

¹¹ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-10-v1.pdf>

1.10 Double Counting and Participation under Other GHG Programs

1.10.1 No Double Issuance

Is the project receiving or seeking credit for reductions and removals from a project activity under another GHG program?

☐ Yes ☒ No

1.10.2 Registration in Other GHG Programs

Is the project registered or seeking registration under any other GHG programs?

☐ Yes ☒ No

1.11 Double Claiming, Other Forms of Credit, and Scope 3 Emissions

1.11.1 No Double Claiming with Emissions Trading Programs or Binding Emission Limits

Are project reductions and removals or project activities also included in an emissions trading program or binding emission limit? See the VCS Program Definitions for definitions of emissions trading program and binding emission limit.

☐ Yes ☒ No

1.11.2 No Double Claiming with Other Forms of Environmental Credit

Has the project activity sought, received, or is planning to receive credit from another GHG-related environmental credit system? See the VCS Program Definitions for definition of GHG-related environmental credit system.

☐ Yes ☒ No

1.11.3 Supply Chain (Scope 3) Emissions

Do the project activities affect the emissions footprint of any product(s) (goods or services) that are part of a supply chain?

☐ Yes ☒ No

1.12 Sustainable Development Contributions

This project has been carried out to provide a social and economic contribution to the region in a sustainable way. The benefits that are gained by the realization of the project can be summarized under some main indicators. Electricity generated by the project is fed into the

national electricity grid, displacing energy that would otherwise be generated by fossil fuels. The project facilitated 307,261 MWh renewable electricity generation, 174,401 tCO₂e during its second monitoring period. Considering regional development efforts, the project owner has employed 8 workers. Wastewater transfer invoices regarding the are provided for this monitoring period.

Table 2: Sustainable Development Contributions

Row number	SDG target	SDG indicator	Net impact on SDG indicator	Current project contributions	Contributions over project lifetime
1)	13.2	13.2.2 Total greenhouse gas emissions per year	Electricity generation from Wind Power Plant to decrease CO ₂ emission	174,401 tCO ₂ emission reduction during this MP (01-June-2022 to 31-December-2023)	469,388 tCO ₂ emission reduction over the project lifetime (13-Sept-2019 to 31-Dec-2023)
2)	7.2	7.2.1 Renewable energy share in the total final energy consumption	Electricity generation from Wind Power Plant	307,261 MWh during this MP (01-June-2022 to 31-December-2023)	826,971 MWh over the project lifetime-net renewable electricity generated over project lifetime (13-Sept-2019 to 31-Dec-2023)
3)	8.5	Number of individuals hired in long-term, full-time positions	Increase in the number of employments with the help of Wind Power Plant construction and operation	8 employees have been working at the Plant during this MP (01-June-2022 to 31-December-2023)	7 employees were employed by the the project activity over the first MP (13-Sept-2019 to 31-May-2022) 8 people were employed by the project activity over this MP (01-June-2022 to 31-December-2023)
4)	6.3	6.3.1 Proportion of domestic and industrial wastewater flows safely treated	Implemented activities to increase. Activity: Domestic wastewater discharge prevented	Wastewater transfer invoices regarding the are provided for this MP (01-June-2022 to 31-December-2023)	Wastewater transfer protocol is same since the project has become operational. The records are and will continue to be provided by the Project Activity over the project lifetime (13-Sept-2019 to 31-Dec-2023)

1.13 Commercially Sensitive Information

No commercially sensitive information has been excluded from the public version of the monitoring report.

2 SAFEGUARDS AND STAKEHOLDER ENGAGEMENT

2.1 Stakeholder Engagement and Consultation

2.1.1 Stakeholder Identification

This part is not applicable to the project activity. N/A.

2.1.2 Stakeholder Consultation and Ongoing Communication

Ongoing consultation	A logbook is available for comments of local stakeholders. What's more, thanks to the Grievance Mechanism, local stakeholders will have a chance to submit their requests and complaints to the project owner about the project. The logbook and contact information of the authorized person from the owner company is available at village head's office so that the local stakeholders can reach these people whenever they have any complaints, suggestions or ideas about the project.
Date(s) of stakeholder consultation	Logbook is available since the last monitoring period.
Communication of monitored results	The logbook and contact information of the authorized person from the owner company is available at village head's office so that the local stakeholders are able to reach these people whenever they have any complaints, suggestions or ideas about the project.
Consultation records	Logbook and declaration
Stakeholder input	No feedback is provided to the logbook.

2.1.3 Free, Prior, and Informed Consent

There are no ongoing conflicts or issues with stakeholders.

Consent	N/A
Outcome of FPIC	N/A

2.1.4 Grievance Redress Procedure

No grievance is received during this monitoring period.

Grievances received	Resolution and outcome
N/A	N/A

2.1.5 Public Comments

No public comments were received for the project.

Summary of comments received	Actions taken
N/A	N/A

2.2 Risks to Stakeholders and the Environment

	Risk identified	Mitigation or preventative measure taken
Risks to stakeholder participation	No risk identified.	N/A
Working conditions	No risk identified.	N/A
Safety of women and girls	No risk identified.	N/A
Safety of minority and marginalized groups, including children	No risk identified.	N/A
Pollutants (air, noise, discharges to water, generation of waste, release of hazardous materials)	Prevention of wastewater discharge to the environment.	The wastewater is stored in a septic tank and is transferred to a waste water treatment plant regularly. Records of transfer of wastewater by sewage truck will be used as evidence.

2.3 Respect for Human Rights and Equity

2.3.1 Labor and Work

Discrimination and sexual harassment	No discrimination or sexual harassment has occurred.
Management experience	The management is an experienced one with years of expertise.
Gender equity in labor and work	Equal opportunities have been provided in the context of gender equity and pay for labor and work.
Human trafficking, forced labor, and child labor	The project does not use victims of human trafficking, forced labor, and child labor.

2.3.2 Human Rights

The project continues to recognize, respect, and promote the protection of the rights of IPs, LCs, and customary rights holders in line with applicable international human rights law, and the United Nations Declaration on the Rights of Indigenous Peoples and ILO Convention 169 on Indigenous and Tribal Peoples.

2.3.3 Indigenous Peoples and Cultural Heritage

There are no cultural heritage or sensitive communities at or near the project site.

2.3.4 Property Rights

Disputes over rights to territories and resources	N/A
Respect for property rights	N/A

2.3.5 Benefit Sharing

Summary of the benefit sharing plan	No demand was made by stakeholders regarding the project activity or other matters.
Benefit sharing during the monitoring period	N/A

2.4 Ecosystem Health

	Risk identified	Mitigation or preventative measure taken during the monitoring period
Impacts on biodiversity and ecosystems	Number of bird strikes to the turbines and the adverse effects over the natural habitat	There was no negative impact on bats, migratory birds and vertebrate fauna. ¹²
Soil degradation and soil erosion	N/A	N/A
Water consumption and stress	N/A	N/A
Usage of fertilizers	N/A	The project activity does not use fertilizers.

2.4.1 Rare, Threatened, and Endangered species

Species or habitat	4 endemic plant species were identified in the project site. These species are <i>Centaurea cadmea</i> Boiss., <i>Picris olympica</i> Boiss., <i>Draba bruniifolia</i> Stev. subsp. <i>heterocoma</i> (Fenzl) Coode & nana (Stapf) Schulz and <i>Muscari aucheri</i> (Boiss.) Baker. Whenever these species are detected the following are applied: The peeling of the fertile part of the soil should be kept according to the method and this soil should be laid as the top layer again in order to restore the route. In the sections where the turbines are located, the vegetation in a circle of approximately 100 m diameter will be cleaned and these sections will preferably be covered with gravel. It is recommended that the towers of wind turbines be painted in light color and the ends of the wind turbines are painted in a contrasting manner. It is recommended to place a light source at the top of the tower.
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¹² See Ornithology Report

2.4.2 Introduction of species

No species were introduced.

Species introduced	Classification	Justification for use	Adverse effect and mitigation
N/A	N/A	N/A	N/A

No invasive species existed.

Existing invasive species	Mitigation measures to prevent spread or continued existence of invasive species
N/A	N/A

2.4.3 Ecosystem conversion

N/A since the project is not an ARR, ALM, WRC or ACoGS project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Denizli WPP started to generate and provide electricity to the Turkish National Grid on 13/09/2019. During the monitoring period, there was no event or situation that occurred, which may impact the applicability of the methodology.

Table 3. Milestone Table of the Project

Date (DD/MM/YYYY)	Activity
15/07/2011	"EIA is not required" certificate
18/08/2011	Issuance of the License
20/10/2014	Site Related Wind Potential Analysis and Energy Yield Assessment Report at the Babadağ Site
19/03/2018	EPC Agreement
19/03/2018	Turbine Maintenance Agreement
23/03/2018	Construction Start Date (Notice to Proceed for Execution of Works)
03/08/2018	Loan Agreement

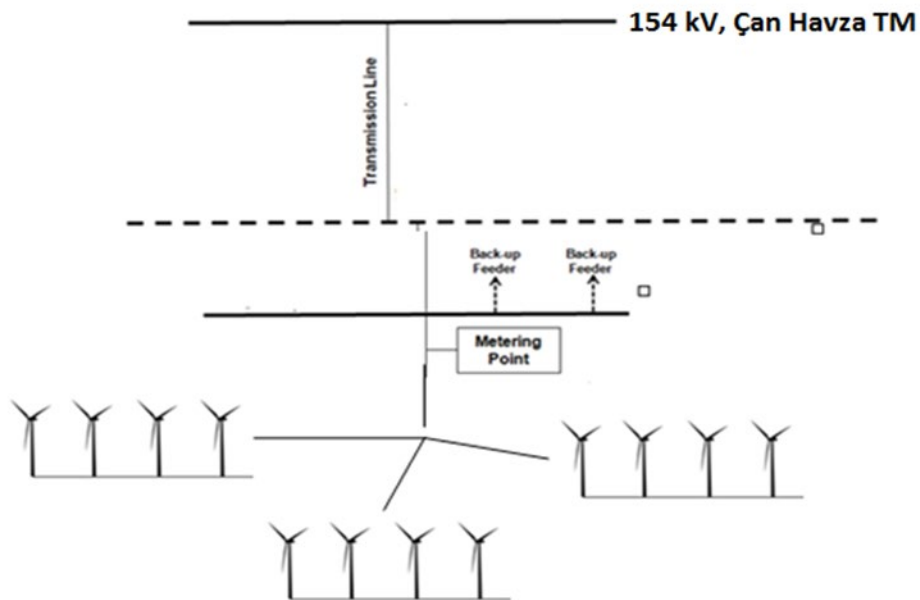
10/08/2018	Facility Supplement Agreement
13/09/2019	Project start date, date which plant start to generate electricity, start date of the first crediting period
13/09/2019	Start date of the first crediting period
12/09/2029	End date of the first crediting period
13/09/2019	Start of the first monitoring period
31/05/2022	End of the first monitoring period
01/06/2022	Start of the second monitoring period
31/12/2023	End of the second monitoring period

Table 4. Technical Specifications of Electricity Meters¹³

Name	Brand & Model	Serial Number	Accuracy Class	Protocol Date
Main Meter-I	ITRON & SL761W071	84051056	0.2S	13/09/2019 (First Index Protocol) 10/06/2021 (Test Report of Meters) 02/06/2023 (Test Report of Meters)
Main Meter-II	ITRON & SL761W071	84051121	0.2S	13/09/2019 (First Index Protocol) 10/06/2021 (Test Report of Meters) 02/06/2023 (Test Report of Meters)

¹³ First Index Test Protocol and Test Protocols of Meters have been provided to VVB.

Back-up Meter-I	ITRON & SL761W071	84051120	0.2S	13/09/2019 (First Index Protocol) 10/06/2021 (Test Report of Meters) 02/06/2023 (Test Report of Meters)
Back-up Meter-II	ITRON & SL761W071	84051122	0.2S	13/09/2019 (First Index Protocol) 10/06/2021 (Test Report of Meters) 02/06/2023 (Test Report of Meters)



3.2 Deviations

3.2.1 Methodology Deviations

There are no methodology deviations.

3.2.2 Project Description Deviations

There are no project description deviation impacts the applicability of the methodology, additionality or the appropriateness of the baseline scenario for this monitoring period.

3.3 Grouped Projects

The project activity is not a grouped project.

3.4 Baseline Reassessment

Did the project undergo baseline reassessment during the monitoring period?

☐ Yes ☒ No

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EGy
Data unit	MWh
Description	Net electricity generated by power plant/unit m, k or n (or in the project electricity system in case of EGy) in year y or hour h
Source of data	Turkish Electricity Transmission Company (TEIAS), Annual Development of Turkey's Gross Electricity Generation by Primary Energy Sources (2000-2017) TEIAS, see https://www.teias.gov.tr/tr-TR/turkiye-elektrik-uretim-iletim-istatistikleri or https://webapi.teias.gov.tr/file/09f91243-aa67-48ec-b092-86f9a18f04cc?download
Value applied	See, Registered PD ; Table 13, Table 14, Table 15

Justification of choice of data or description of measurement methods and procedures applied	TEIAS is the national electricity transmission company, which makes available the official data of all power plants in Turkey. Thus, for reliability, TEIAS data is used. Net electricity generation is calculated using gross and net production for all fuel types. This data is used to find relation between the gross and net electricity delivered to the grid by fossil fuel fired power plants (Table 14). Also, gross and net electricity production for related fuel types and Import and Export data are used to find total net electricity fed into the grid in the years of 2015, 2016 and 2017 (Table 15).
Purpose of data	Data used for emission reduction calculation
Comments	No additional comments

Data / Parameter	HVi,y
Data unit	Mass or volume unit
Description	Heating Values of fuels consumed for electricity generation in the years of 2015, 2016 and 2017
Source of data	Heating Values of Fuels Consumed in Thermal Power Plants in Turkey by The Electric Utilities, TEİAŞ. See: https://webapi.teias.gov.tr/file/780b9f4b-7e97-4e64-a264-20669a820b79?download
Value applied	Please see: Table 7 Heating Values of Fuels (Tcal) in registered PD
Justification of choice of data or description of measurement methods and procedures applied	TEİAŞ is the national electricity transmission company, which makes available the official data of all power plants in Turkey. There is no national NVC data in Turkey. However, TEİAŞ announces Heating values of fuels. This data is used to calculate annual NCVs for each fuel type.
Purpose of data	Data used for emission reduction calculation
Comments	No additional comments

Data / Parameter	FCi,y
Data unit	Mass or volume unit

Description	Amount of fuel type i consumed in the project electricity system in year y
Source of data	Heating Values Of Fuels Consumed In Thermal Power Plants In Turkey By The Electric Utilities, TEİAŞ. See: https://webapi.teias.gov.tr/file/780b9f4b-7e97-4e64-a264-20669a820b79?download
Value applied	See, registered PD Excel Table 8: Fossil Fuel Consumption Amounts
Justification of choice of data or description of measurement methods and procedures applied	TEİAŞ is the national electricity transmission company, which makes available the official data of all power plants in Turkey.
Purpose of data	Data used for emission reduction calculation
Comments	No additional comments

Data / Parameter	NCVi,y
Data unit	GJ/mass or volume unit
Description	Net Calorific Value of fuel types in the years of 2015, 2016 and 2017
Source of data	Calculated by using HVi,y to FCi,y as Net Calorific Values of fuel types are not directly available in Turkey.
Value applied	Please see registered PD: Heating Values of Fuels, Excel Table 8: Fossil Fuel Consumption Amount , Excel Table 9: Net Calorific Values of Fuels and Emission Factor
Justification of choice of data or description of measurement methods and procedures applied	TEİAŞ is the national electricity transmission company, which makes available the official data of power plants in Turkey. Calculation of NCVs from national HVi,y and FCi,y data is preferred to default IPCC data as these are more reliable.
Purpose of data	-
Comments	No additional comments

Data / Parameter	Sample Group for BM emission factor
Data unit	Company names, plant names, licence dates, licence numbers, fuel types, plant capacities in MW and provisional acceptance dates.
Description	Most recent power plants which compromise 20% of total capacity
Source of data	Energy Investments, Ministry of Energy and Natural Sources: https://enerji.gov.tr/eigm-raporlari
Value applied	See, Table 11: Sample Group for BM in registered PD.
Justification of choice of data or description of measurement methods and procedures applied	Ministry of Energy and Natural Sources is the governmental authority for energy investments and natural sources in Turkey.
Purpose of data	For determining sample group for BM calculation
Comments	No additional comments

Data / Parameter	EFCO2 i,y
Data unit	tCO2/GJ
Description	CO2 emission factor of fossil fuel type i in year y
Source of data	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the IPCC Guidelines on National GHG Inventories. http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
Value applied	See, Registered PDD Excel Table 10: Total CO2 Emission due to Fossil Fuels for Electricity Generation
Justification of choice of data or description of measurement methods and procedures applied	No plant specific and national emission factor data is available in Turkey. So, IPCC default data is used.

Purpose of data	-
Comments	No additional comments
Data / Parameter	$\eta_{m,y}$
Data unit	-
Description	Average energy conversion efficiency of power unit m in year y
Source of data	Appendix, Table 2 of the “Determining the baseline efficiency of thermal or electric energy generation systems”(v.02)
Value applied	See Table 11: Sample Group for BM in registered PD
Justification of choice of data or description of measurement methods and procedures applied	For efficiency rates of Natural Gas, Coal and Lignite Power Plants See Appendix, Table 2 of the Tool (highest rate is applied to be conservative): https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-09-v2.0.pdf
Purpose of data	-
Comments	No additional comments

4.2 Data and Parameters Monitored

Data / Parameter	$EG_{m,y}$
Data unit	MWh/yr
Description	Quantity of net electricity generation supplied to the grid in year y
Source of data	On site measurement from the meters
Description of measurement methods and procedures to be applied	Two electricity meters will be placed (one main and one reserve) at the substation. These meters are sealed by TEIAS and intervention by project proponent is not possible. 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 buyers. Main data source will be the PMUM (EPIAŞ) data¹⁴. TEIAŞ reciprocal agreement meter records will be used for cross checking. • Monthly settlement notifications of EPIAŞ consist hourly electricity production and withdrawn from the grid. • Since the meters are reading electricity supplied to the system and withdrawn from the system separately, the net electricity amount supplied to the grid is calculated by electricity supplied minus electricity withdrawn which is taken from monthly settlement notifications.																									
Frequency of monitoring/recording	Continuous measurement and at least monthly recording																									
Value monitored	307,261 MWh (for this monitoring period)																									
Monitoring equipment	<table><tr><th>Name</th><th>Serial Number</th><th>Brand&Model</th><th>Accuracy Class</th><th>Calibration Date¹⁵</th></tr><tr><td>Main Meter 1</td><td>84051056</td><td>ITRON & SL761W071</td><td>0.2S</td><td>13/09/2019</td></tr><tr><td>Main Meter 2</td><td>84051121</td><td>ITRON & SL761W071</td><td>0.2S</td><td>13/09/2019</td></tr><tr><td>Back-up Meter 1</td><td>84051120</td><td>ITRON & SL761W071</td><td>0.2S</td><td>13/09/2019</td></tr><tr><td>Back-up Meter 2</td><td>84051122</td><td>ITRON & SL761W071</td><td>0.2S</td><td>13/09/2019</td></tr></table> Readings of the two electricity meters. Main data source will be the EPIAŞ data. TEIAŞ reciprocal agreement meter records will be used for cross checking.	Name	Serial Number	Brand&Model	Accuracy Class	Calibration Date ¹⁵	Main Meter 1	84051056	ITRON & SL761W071	0.2S	13/09/2019	Main Meter 2	84051121	ITRON & SL761W071	0.2S	13/09/2019	Back-up Meter 1	84051120	ITRON & SL761W071	0.2S	13/09/2019	Back-up Meter 2	84051122	ITRON & SL761W071	0.2S	13/09/2019
Name	Serial Number	Brand&Model	Accuracy Class	Calibration Date ¹⁵																						
Main Meter 1	84051056	ITRON & SL761W071	0.2S	13/09/2019																						
Main Meter 2	84051121	ITRON & SL761W071	0.2S	13/09/2019																						
Back-up Meter 1	84051120	ITRON & SL761W071	0.2S	13/09/2019																						
Back-up Meter 2	84051122	ITRON & SL761W071	0.2S	13/09/2019																						
QA/QC procedures to be applied	According to the Article 2 of the Communiqué of Meters in Electricity Sector ¹⁶ : ‘The meters to be used in the electricity market																									

¹⁴ On 01/09/2015, PMUM was renamed as EPIAŞ.

¹⁵ First Index Protocols for Calibration Dates have been provided to VVB.

¹⁶ See, <https://www.epdk.gov.tr/Detay/DownloadDocument?id=+6B2PMv4N4A=>

	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. Also according to Article 11 of this Communiqué, meters shall be in class of 0.5s, which means error interval for measuring is in $\pm 0.5\%$ range which is well acceptable according to rules. 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 will be done every 10 years according to the regulation but per the system usage agreement, TEİAŞ carries out periodic tests every two years as long as possible in practice. There is no law or regulation in Turkey regarding the frequency of the test protocol. This situation changes according to the system usage agreement signed by the project owners with TEİAŞ. 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 have to be established for the monitoring plan. Meter Reading Protocols based on the EPIAŞ data is used as a main source. Cross-check is done by using the TEİAŞ data.
Purpose of the data	Calculation of baseline emissions
Calculation method	The net electricity is calculated by: a) Subtracting self-consumption value from gross generation value for each month to find the net electricity supplied to the grid.

	b) Adding up all monthly net electricity values to calculate the total net electricity supplied to the grid during the monitoring period. c) Multiplying the total net electricity value with the CM emission factor.
Comments	No additional comments

4.3 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 Denizli WPP. 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.

Under data handling process, the meter is read remotely at the end of every month and published through website of TEİAŞ which can be accessed by project owner to check the correctness of the data. Besides, project owner carries monthly protocol to cross-check the data. By this way a cross check is done. Once the meter data is correct then the amount is also published in EPIAŞ website which is also accessible by project owner. When all data is correct, an invoice (receipt of sale) is prepared by Korda Enerji and delivered to TEİAŞ. The electricity generation amount, the collected data, are kept in both hardcopy and softcopy in daily and monthly basis indefinitely. Moreover, these data are submitted to several authorized people. Thus, several additional copies of these data are stored at different computers. The collected data during the monitoring period will be kept by the project owner at least two years after the last issuance of VCUs.

Denizli Personnel at the plant keep records for electricity generation amount and reports to operation manager on a monthly basis. Records are kept in electronic format for 2-years basis. The data is monitored via electricity meters. Meter is read by Denizli WPP staff monthly. Yearly electricity generation will be calculated by summing up monthly meter reading records. Data monitored will be kept in electronic form and hard copy until the end of second year after the end of crediting period. These records can be used for monitoring in case of any problem will arise in meters.

The collected data will be kept by Denizli during the crediting period and until two years after the last issuance of VCUs for the Denizli WPP activity for that crediting period.

Given a data vintage based on ex ante monitoring and selection of a renewable 10-year crediting period, the Combined Margin will be recalculated at any renewal of the crediting period using the valid baseline methodology.

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 Denizli 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 Denizli 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 elaboration and quality assurance of the monitoring report, Life Enerji, an expert in the project mechanisms who already supported in the project design, is assigned. However, in order to continue improving the monitoring procedures and therefore also the future monitoring reports, internal quality check shall be fulfilled by Life Enerji. The monitoring reports are checked and in cases of mistakes and inconsistencies in the monitoring report, revisions with improvements shall be done. Furthermore, external year verification assures that the emission reductions calculations are transparent and traceable.

Denizli will keep all the data needed for the calculation of emission reductions during the crediting period and until two years after the last issuance of VCS VCUs for Denizli WPP. Organizational structure is as follows:

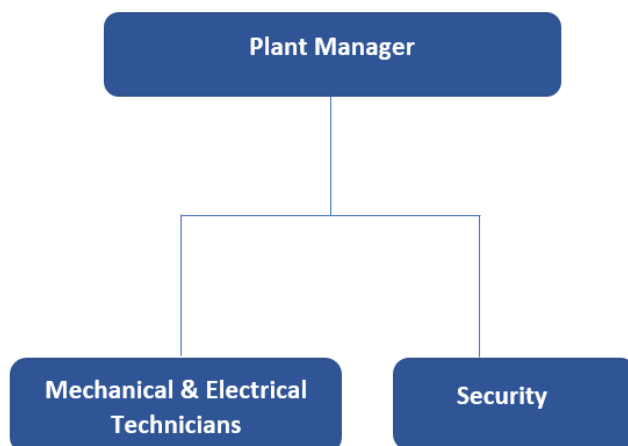


Figure 2. The Operational Flow of Denizli WPP

There are 8 employees within Denizli WPP covering this monitoring period. The list of employees and their roles are provided by Table 5.

Table 5. List of Employees¹⁷

Employee	Roles
Ertan E.	Plant Manager
Güven A.	Mechanical & Electrical Technician
Tugay Ç.	Mechanical & Electrical Technician
Tarık Z.	Mechanical & Electrical Technician
Ali Z.	Mechanical & Electrical Technician
Fatih A.	Mechanical & Electrical Technician
Müderris D.	Mechanical & Electrical Technician
Ahmet Ç.	Mechanical & Electrical Technician

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

¹⁷ See

5.1 Baseline Emissions

The baseline scenario is identified according to the “Baseline Methodology Procedure” of ACM0002 Version 19¹⁸. Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants.

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

$$BE_y = (EG_y - EG_{baseline}) \times EF_{grid,CM,y}$$

Where:

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

EG_y = Electricity supplied by the project activity to the grid (MWh).

$EG_{baseline}$ = Baseline electricity supplied to the grid in the case of modified or retrofit facilities (MWh). For new power plants this value is taken as zero.

$EF_{grid,CM,y}$ = 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 (v6)”.

The project activity is the installation of a new grid-connected renewable power plant so,

$$EG_{baseline} = 0$$

The Combined margin CO₂ emissions factor in year y (tCO₂/MWh), $EF_{grid,CM,y}$, is fixed ex-ante for the duration of the crediting period, and is 0.5676 tCO₂e/MWh.

¹⁸ Please visit the methodology.

https://cdm.unfccc.int/filestorage/5/8/I/58IAGB7SZUDEO2VN6LYM30K41HFPRQ/EB100_repan06_ACM0002.pdf?t=NVd8cmgwd2InfDBjL21aAHeRz-pj2lxT2S7q

5.2 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 tCO₂/year.

5.3 Leakage Emissions

There is no leakage related to the project activity.

5.4 GHG Emission Reductions and Carbon Dioxide Removals

According to ACM0002, emission reductions are calculated as:

$$ER_y = BE_y - PE_y - LE_y$$

where

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

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

PE_y Project emission in year y (t CO₂/yr)

LE_y Leakage emissions in year y (t CO₂/yr)

$$ER_y = BE_y - EG_{\text{facility}, y} * EF_{\text{grid}, CM, y}$$

With an actual annual project electricity generation of amounts which was given in the Appendix 1 of this report, and EF_{grid,CM,y} calculated in Registered PD as 0.5676 tCO₂/MWh¹⁹, net GHG emission reductions/removals are:

Vintage period	Baseline emissions (tCO ₂ e)	Project emissions (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Reduction VCU (tCO ₂ e)	Removal VCU (tCO ₂ e)	Total VCUs (tCO ₂ e)
01-Jun-2022 to 31-Dec-2022	63,856	0	0	63,856	0	63,856
01-Jan-2023 to 31-Dec-2023	110,545	0	0	110,545	0	110,545
Total	174,401	0	0	174,401	0	174,401

¹⁹ Registered PD (Dated: 25-October-2021)

Vintage period	Ex-ante estimated reductions/removals	Achieved reductions/removals	Percent difference	Explanation for the difference
01-Jun-2022 to 31-Dec-2022	61,926	63,856	3%	Legislative framework
01-Jan-2023 to 31-Dec-2023	105,622	110,545	5%	Legislative framework
Total	167,548	174,401	4%	Legislative framework

Between 12/06/2022 and 30/09/2023²⁰, TEİAŞ²¹ has allowed the power plants to use full mechanical capacity for electricity generation purposes. The practice was available for a limited amount of time and other power plants throughout Türkiye benefited by 15% capacity increases²². Nevertheless, Denizli WPP only generated in line with its mechanical capacity and the difference is less than 5%.

²⁰ <https://www.resmigazete.gov.tr/eskiler/2022/05/20220513-24.pdf>

²¹ <https://www.teias.gov.tr/haberler/12-mayis-2022-tarih-ve-10971-sayili-kurul-karari-uyarinca-yapilan-guc-asimi-basvurulari-hakkinda>

²² <https://www.kap.org.tr/en/Bildirim/1037192>

APPENDIX 1: COMMERCIALY SENSITIVE INFORMATION

Section	Information	Justification
N/A	N/A	N/A

APPENDIX 2: NET ELECTRICITY GENERATION DATA

Main Data

Months	Electricity supplied to the grid (MWh) Group1 (1)	Electricity supplied to the grid (MWh) Group2 (2)	Electricity consumption from the grid (MWh) Group1 (3)	Electricity consumption from the grid (MWh) Group2 (4)	Net electricity supplied to the grid[MWh] (5) $= (1+2)-(3+4)$
Jun.22	9,041.89	8,205.36	9.11	10.45	17,227.69
Jul.22	12,221.65	10,219.03	9.03	9.27	22,422.38
Aug.22	3,998.00	3,542.54	32.46	32.04	7,476.04
Sep.22	6,200.10	5,656.94	31.27	29.23	11,796.54
Oct.22	7,436.51	6,570.18	21.00	20.77	13,964.92
Nov.22	10,558.37	8,766.68	14.05	16.16	19,294.84
Dec.22	10,949.94	9,422.72	25.65	26.58	20,320.43
Sum 2022	60,406	52,383	142.57	144.50	112,502.00
Jan.23	8,636.28	6,985.65	45.06	46.93	15,529.94
Feb.23	8,359.86	6,474.65	23.49	33.68	14,777.34
Mar.23	11,735.58	9,659.54	13.84	19.95	21,361.33
Apr.23	12,861.27	10,866.12	17.25	19.42	23,690.72
May.23	4,147.39	3,626.35	27.58	29.78	7,716.38
Jun.23	5,299.11	4,314.39	31.43	32.70	9,549.37
Jul.23	13,504.77	11,906.56	8.52	8.67	25,394.14
Aug.23	2,666.08	2,621.16	26.32	28.19	5,232.73
Sep.23	5,433.02	5,034.00	22.66	22.18	10,422.18
Oct.23	5,728.42	4,758.40	29.24	29.34	10,428.24
Nov.23	13,707.44	10,762.86	12.23	18.81	24,439.26
Dec.23	14,123.34	12,126.08	14.34	16.94	26,218.14
Sum 2023	106,203	89,136	271.96	306.59	194,759.00
Total Sum 01/06/2022-31/12/2023	166,609	141,519	415	451	307,261.00

Cross Check Data

Months	Metering Device Electricity Supplied To The Grid Group1 (Mwh) (1)	Metering Device Electricity Supplied To The Grid Group2 (Mwh) (2)	Metering Device Electricity Consumption From The Grid Group1 (Mwh) (3)	Metering Device Electricity Consumption From The Grid Group2 (Mwh) (4)	Metering Device Net Electricity Supplied To The Grid[Mwh] (5) =(1+2)-(3+4)
Jun.22	9,041.89	8,205.35	9.11	10.45	17,227.68
Jul.22	12,221.65	10,219.03	9.04	9.27	22,422.37
Aug.22	3,998.00	3,542.54	32.45	32.04	7,476.05
Sep.22	6,200.10	5,656.94	31.38	29.35	11,796.31
Oct.22	7,436.51	6,550.18	20.99	20.66	13,945.04
Nov.22	10,558.37	8,766.68	14.06	16.15	19,294.84
Dec.22	10,949.94	9,422.72	25.65	26.58	20,320.43
Sum 2022	60,406.46	52,363.44	142.68	144.50	112,482.72
Jan.23	8,636.28	6,985.65	45.05	46.93	15,529.95
Feb.23	8,359.86	6,474.65	23.49	33.68	14,777.34
Mar.23	11,735.58	9,659.54	13.84	19.96	21,361.32
Apr.23	12,861.27	10,866.12	17.25	19.41	23,690.73
May.23	4,147.39	3,626.35	27.58	29.79	7,716.37
Jun.23	5,299.11	4,314.39	31.44	32.70	9,549.36
Jul.23	13,504.78	11,906.56	8.25	8.67	25,394.42
Aug.23	2,666.08	2,621.16	26.32	28.19	5,232.73
Sep.23	5,433.02	5,034.00	22.66	22.18	10,422.18
Oct.23	5,728.42	4,758.40	29.24	29.34	10,428.24
Nov.23	13,707.43	10,762.86	12.23	18.81	24,439.25
Dec.23	14,123.35	12,126.08	26.32	16.94	26,206.17
Sum 2023	106,203	89,136	283.67	306.60	194,748.06
Total Sum 01/06/2022-31/12/2023	166,609.03	141,499.20	426.35	451.10	307,230.78

APPENDIX 3: SUPPORTING EVIDENCE FOR SDGs

Row 1- SDG13: Air Quality

Current Project Contributions/ Contributions Over Project Lifetime: The project's emissions reduction has been verified as 174,401 tCO₂e during the first monitoring period. The amount of emission reduction over project lifetime is equal to the amount of emission reduction achieved in the first verification, as the project carries out its first verification.

Monitoring Period 2	tons CO ₂
2 nd Verification	174,401
Total	174,401

Row 2- SDG7: Renewable energy share in the total final energy consumption

Current Project Contributions/ Contributions Over Project Lifetime: The project's net renewable electricity generation has been verified as 307,261 MWh during the first monitoring period. The amount of electricity generation over project lifetime is equal to the amount of emission reduction achieved in the first verification, as the project carries out its first verification.

Monitoring Period 2	MWh
2 nd Verification	307,261
Total	307,261

Row 3- SDG8: Quantitative employment and income generation

Current Project Contributions/ Contributions Over Project Lifetime: The project owner has employed 8 workers.²³

Row 4- SDG6: Water quality and quantity

Current Project Contributions/ Contributions Over Project Lifetime: Wastewater discharge records (for 2022-2023 years) have been provided.²⁴

²³ SGK records have been provided to VVB.

²⁴ Necessary documents have been provided to VVB.