



**Verified Carbon
Standard**

ÜÇPINAR WIND POWER PROJECT, TURKEY

MONITORING REPORT: 1ST

VERIFICATION

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

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

Project Title	Üçpınar Wind Power Project, Turkey
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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

Derbent Enerji Üretim Pazarlama İthalat ve İhracat A.Ş. (hereafter referred to as “Üçpınar”) invested into a new Wind Power Project called Üçpınar Wind Power Project, Turkey (hereafter referred to as the “Project” or “Üçpınar WPP”), which involves installation and operation of 3 Mwe/3.4 MWm wind turbines. The project consists of 33 wind turbines. The key parameters about the technical design of the selected model Siemens SWT-3.4-108 turbines are listed below in **Error! Reference source not found..**

Error! Reference source not found.. Technical specifications of Siemens SWT-3.4-108 turbines¹

Specifications	SWT-3.4-108
Rated Power (kW)	3000 ²
Rotor Diameter (m)	108
Blade Length (m)	53
Num. of Blades	3
Swept Area (m²)	9144
Cut-out wind speed (m/s)	29

The generated energy will be fed to the grid Çan Havza TM. An estimated electricity net generation of 317,500 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 emission reduction of 180,199 tonnes of CO₂e/year. The total emission reduction by the project activity is estimated to be 1,801,990 tonnes of CO₂e for the first crediting period, which is 18/06/2019 to 17/06/2029. Moreover, project activity will contribute further dissemination of wind energy and extension of national power generation.

This first monitoring period covers the period from 18-June-2019 to 31-May-2022 (both days included). Generated net electricity achieved during this monitoring period is 1,009,952 MWh, and total actual emission reduction is achieved as 573,248 tonnes of CO₂e for this monitoring period. A table which indicates the estimated and achieved emission reduction amounts is provided below.

Vintage		Actual ERy (tCO ₂ e)	Estimated ERy (tCO ₂ e)
18-June-2019	31-December-2019	99,152	97,258
01- January -2020	31-December-2020	195,330	180,199
01January -2021	31-December-2021	200,624	180,199
01-January -2022	31-May-2022	78,142	74,548

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

² Please see license of the project

Total	573,248	532,204
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Estimated emission reduction is 532,204 tCO₂ for this monitoring period (18/06/2019-31/05/2022). And actual emission reduction achieved during this monitoring period is 573,248 tCO₂. When they are compared, actual emission reduction achieved during this monitoring period is more than the estimated figure. This situation is arisen from the unexpected wind trend in Üçpınar. Wind potential might have changed. 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 7.71 %.and difference between this two emission reduction values is lower than 10% range calculated in the registered PDD.

1.2 Sectoral Scope and Project Type

According to guidance from VCS, Üçpınar WPP falls under sectoral scope no. 1 "Energy Industries (renewable/non-renewable)".¹ The project type is Renewable Energy. More specifically, it is a wind power project. Üçpınar WPP is not a grouped project if referring to the relevant VCS rules. Referring to CDM rules it is also neither a project bundle nor a debundled component of a large-scale project activity.

1.3 Project Proponent

Organization name	Derbent Enerji Üretim Pazarlama İthalat ve İhracat A.Ş.
Contact person	Melis Ünal
Title	Energy and Carbon Markets Manager
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1.4 Other Entities Involved in the Project

Organization name	Life İklim ve Enerji Ltd. Şti.
Role in the Project	Project Representative
Contact person	Hazal Öztürk
Title	Carbon Consultant

Address	Oğuzlar Mahallesi, 1377. Sk. No:19, 06520 Çankaya/Ankara/ TURKEY
Telephone	+90 312 481 2142
Email	hazal.ozturk@lifeenerji.com

1.5 Project Start Date

The Project was commissioned and started to feed energy to the grid on 18-June-2019³. This is the date on which the project started to produce emission reductions. This is the official start date of the project.

1.6 Project Crediting Period

The start date of the crediting period is 18-June-2019. Project started operating on 18-June-2019, therefore starting date of first crediting and monitoring period were taken as 18-June-2019.

In accordance with VCS rules, the project crediting period is 10 years, and it will be renewed twice. First crediting period is 18-June-2019 to 17-June-2029 (both days included).

1.7 Project Location

The project is located in Çanakkale Province, Lapseki District, Üçpınar Village. Location of the project is given in Figure 1. The coordinates of the project activity are given under Table 1.

³ Provisional Acceptance Protocol

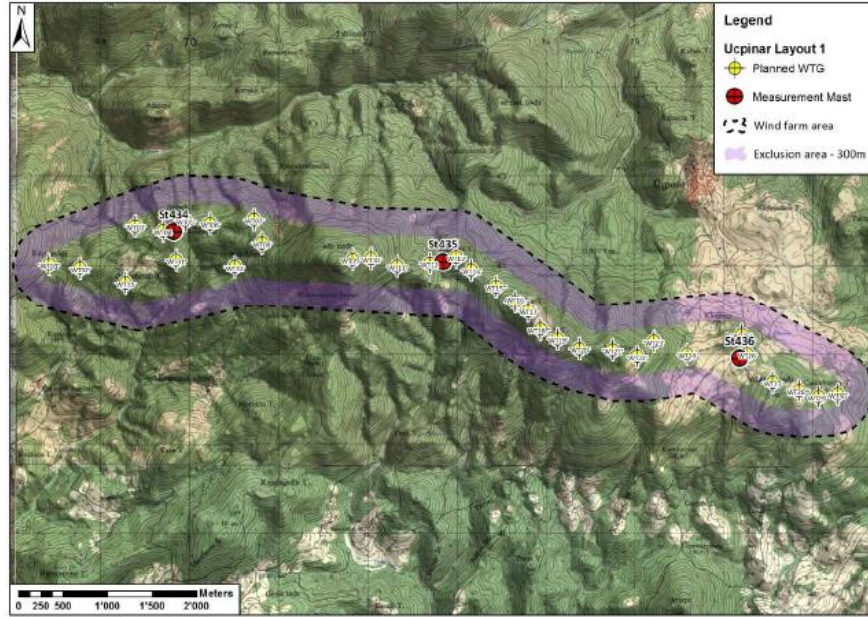


Figure 1. Location of the plant

Table 1. Geographic coordinates of the project activity of Üçpınar WPP⁴

Wind Turbine No.	Latitude (N)	Longitude (E)
1	40° 08' 45.1824"	26° 37' 45.4110"
2	40° 08' 43.7676"	26° 38' 00.1718"
3	40° 08' 59.2908"	26° 38' 26.3783"
4	40° 08' 57.5160"	26° 38' 39.7017"
5	40° 09' 01.2780"	26° 38' 50.2911"
6	40° 09' 00.2412"	26° 39' 01.9621"
7	40° 09' 01.7964"	26° 39' 22.7919"
8	40° 08' 53.1456"	26° 39' 26.6395"
9	40° 08' 47.4000"	26° 40' 09.1445"
10	40° 08' 47.7168"	26° 40' 17.9340"
11	40° 08' 45.0276"	26° 40' 30.3304"
12	40° 08' 46.0752"	26° 40' 45.9211"
13	40° 08' 48.3504"	26° 40' 58.3363"
14	40° 08' 43.6992"	26° 41' 05.5428"
15	40° 08' 37.6008"	26° 41' 17.4892"
16	40° 08' 32.2080"	26° 41' 26.5157"
17	40° 08' 28.8204"	26° 41' 32.7858"
18	40° 08' 22.1532"	26° 41' 38.6478"
19	40° 08' 18.6396"	26° 41' 46.7775"

⁴ 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)

20	40° 08' 15.1296"	26° 41' 57.1889"
21	40° 08' 14.7840"	26° 42' 12.9531"
22	40° 08' 12.3792"	26° 42' 24.6692"
23	40° 08' 17.8476"	26° 42' 32.6751"
24	40° 08' 13.2828"	26° 42' 48.4994"
25	40° 08' 20.3496"	26° 43' 14.2907"
26	40° 08' 13.3836"	26° 43' 16.8970"
27	40° 08' 03.1956"	26° 43' 29.2355"
28	40° 08' 00.2112"	26° 43' 41.8400"
29	40° 07' 57.9612"	26° 43' 51.1876"
30	40° 07' 58.9224"	26° 44' 00.1000"
31	40° 08' 46.8636"	26° 38' 45.8011"
32	40° 08' 44.5452"	26° 39' 13.7920"
33	40° 08' 38.5512"	26° 38' 21.7541"

1.8 Title and Reference of Methodology

Title: Grid Connected Electricity Generation from Renewable Sources

Reference: ACM0002 (Version 19.0)

Version 19 of 'ACM0002: Large-scale Consolidated baseline methodology for grid-connected electricity generation from renewable sources' is applied as baseline and monitoring methodology to the project activity.

For the determination of the baseline, the official methodology ACM0002 version 19, "Large-scale Consolidated baseline methodology for grid-connected electricity generation from renewable sources"⁵, is applied, using conservative options and data as presented in the following section.

This methodology refers to five tools, which are:

1. Tool to calculate the emission factor for an electricity system (Version 07.0)⁶;
2. Tool for the demonstration and assessment of additionality (Version 07.0.0)⁷;
3. Combined tool to identify the baseline scenario and demonstrate additionality (Version 07.0)⁸;

⁵ Please see ACM0002 Version 19: <https://cdm.unfccc.int/methodologies/DB/XP2LKUSA61DKUQC0PIWPGWDN8ED5PG>

⁶ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v7.0.pdf>

⁷ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-01-v7.0.0.pdf>

⁸ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-02-v7.0.pdf>

4. Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (Version 03.0)⁹.
5. Tool to determine the remaining lifetime of the equipment (Version 01.)¹⁰

The first tool (*Tool to calculate the emission factor for an electricity system (Version 07.0)*) is used for baseline calculation and second tool (*Tool for the demonstration and assessment of additionality (Version 07.0.0)*) is used for additionality assessment. As third tool (*Combined tool to identify the baseline scenario and demonstrate additionality (Version 07.0)*) 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 (*Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion (Version 03.0)*) is not used. To determine the remaining lifetime of the equipment, fifth tool (*Tool to determine the remaining lifetime of the equipment (Version 01)*) is used.

Since the project activity is a wind power plant, the respective sectoral scope is scope 1: “Energy Industry – Renewable/Non-renewable Sources”. Project participant hereby confirms that this is not a grouped project.

1.9 Participation under other GHG Programs

Üçpınar WPP does not participate in any GHG program other than the VCS.

1.10 Other Forms of Credit

No GHG related environmental credits are applied to the Turkish power sector. Moreover, the project is not included in an ETS or other GHG trading mechanism. Since an ETS is not implemented in Turkey, an emission reduction cap has not been enforced for any sector.

1.11 Sustainable Development Contributions

This project helps to develop the wind power industry and implementation of the project contributes to wider deployment of the wind technology in local and national level. For social aspect, during the construction and operation of the wind farm, local employment is enhanced, and local poverty and unemployment can be partially eliminated by increasing job opportunities. Electricity generated by the Üçpınar WPP is fed into the national electricity grid, displacing energy that would otherwise be generated by fossil fuels. The project facilitated 1,009,952 MWh renewable electricity generation, 573,248 tCO₂e during its first monitoring period. Considering regional development efforts, the

⁹ Please see <https://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-03-v3.pdf>

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

project owner has employed 12 workers. Furthermore, project prevented domestic wastewater discharge.

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	573,248 tCO ₂ emission reduction during this MP	573,248 tCO ₂ emission reduction over the project lifetime (18-June-2019 to 31-May-2022)
2)	7.2	7.2.1 Renewable energy share in the total final energy consumption	Electricity generation from Wind Power Plant	1,009,952 MWh during this MP	1,009,952 MWh over the project lifetime (18-June-2019 to 31-May-2022)
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	There are 12 employees have been working at the Plant during this MP	12 employees were provided by the project activity over the project lifetime (18-June-2019 to 31-May-2022)
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.	Transfer records were provided by the Project Activity over the project lifetime

2 SAFEGUARDS

2.1 No Net Harm

No negative environmental and socio-economic impacts have been observed/recorded for this project. Detailed information of Üçpınar Wind Power Plant Project's social and environmental performance can be gained via Sustainable Development chapter. According to the relevant Environmental Impact Assessment Regulation for Üçpınar WPP, an Environmental Impact Assessment was not required¹¹.

Based on interviews with local stakeholders and feedback from stakeholders during the site visit, mitigation measure against potentially negative indicators was discussed under this section. Indicators to be discussed under this section are Dust, Noise, Status of Roads, Water Quality and Quantity, Livelihood of the Poor and Biodiversity.

Monitoring way of dust, noise, status of the roads and livelihood of the poor parameters is to interview with locals according to the registered PDD. During the remote site visit, discussed with the mukhtar (head of the village), local people and Üçpınar WPP personnel about these parameters and no negative feedback was received regarding these indicators for this monitoring period. So, these indicators did not have a negative impact on the Üçpınar Wind Power Project.

Wastewater transfer invoices regarding the Water Quality and Quantity indicator are provided for this monitoring period¹². So, this indicator did not have a negative impact on the Üçpınar Wind Power Project.

For the biodiversity indicator, photos and videos of power plant have been provided to VVB. No nest or carcass in the project area has been observed during the operation for this monitoring period. So, this indicator did not have a negative impact on the Üçpınar Wind Power Project.

¹¹ EIA Not Required document has been provided to VVB.

¹² Transfer records have been provided to VVB.

2.2 Local Stakeholder Consultation

Remote audit was performed on 19-July-2022 for this monitoring period.

As validated during the site visit, although the general outcome of the discussions with the local people is positive verbally, the project owner will regularly follow up with the local people whether they have any problems or requests. Also, 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 are able to reach these people whenever they have any complaints, suggestions or ideas about the project.

Since muhtar is the head of the village, he will be the main contact person between the project owner and the local stakeholders. Muhtar will make sure that there's continuous communication between the two parties.

The village head also confirmed that during the period that covers the first monitoring period, no negative comments or complaints were received regarding the operation of Üçpınar WPP.

2.3 AFOLU-Specific Safeguards

It is not a AFOLU project. So, not applicable.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

Üçpınar WPP started to generate and provide electricity to the Turkish National Grid on 18/06/2019. 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
02/03/2009	"EIA is not required" Certificate
29/09/2011	Issuance of the License
11/07/2014	Site Related Wind Potential Analysis and Energy Yield Assessment Report at the Üçpınar 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
18/06/2019	Project start date, date which plant will start to generate electricity, start date of the first crediting period
17/06/2029	End of the first crediting period
18/06/2019	Start date of the first monitoring period
31/05/2022	End date of the first monitoring period

Table 4. Technical Specifications of Electricity Meters¹³

Name	Brand & Model	Serial Number	Accuracy Class	Protocol Date
Main Meter-I	ITRON & SL761W071	84051115	0.2S	25/04/2019 (First Index Protocol) 12/07/2021 (Test Report of Meters)
Main Meter-II	ITRON & SL761W071	84051116	0.2S	25/04/2019 (First Index Protocol) 12/07/2021 (Test Report of Meters)
Back-up Meter-I	ITRON & SL761W071	84051117	0.2S	25/04/2019 (First Index Protocol) 12/07/2021 (Test Report of Meters)
Back-up Meter-II	ITRON & SL761W071	84051118	0.2S	25/04/2019 (First Index Protocol) 12/07/2021 (Test Report of Meters)

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

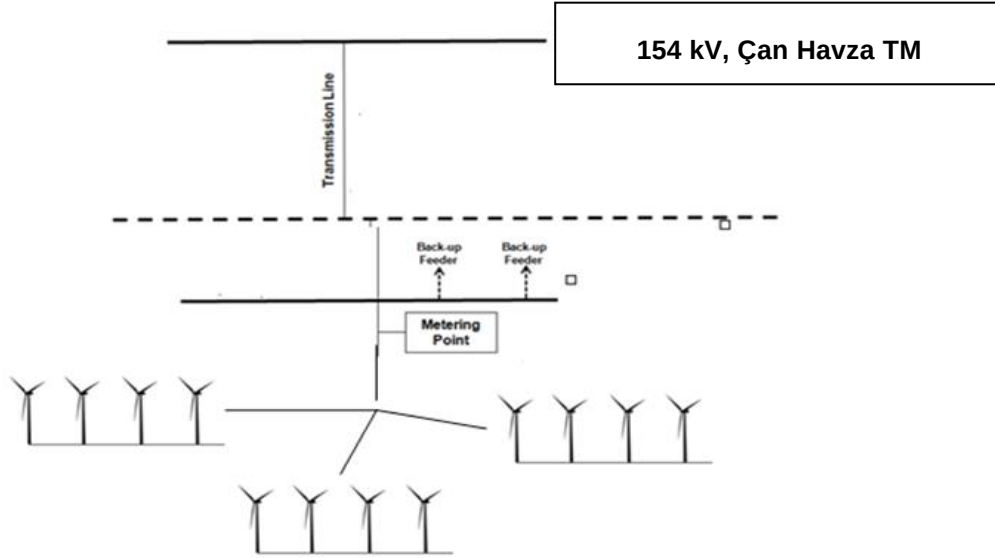


Figure 2. Project Boundary Diagram

3.2 Deviations

3.2.1 Methodology Deviations

There has been not any methodology deviation during this monitoring period.

3.2.2 Project Description Deviations

There was no change in the number of turbines or installed capacity of the project. Üçpınar WPP still has 33 units (3.4 MWm / 3.0 MWe) with a total installed capacity of 112.2 MWm / 99 MWe, as in the approved registered PD under VERRA registry. When the official generation license of the project is examined, it is seen that the project still has 33 units (3.4 MWm / 3.0 MWe) with a total installed capacity of 112.2 MWm / 99 MWe. So, number of turbines, installed capacity of project or characteristics of the turbines have not changed.

Each turbine was producing electricity according to 3.0 MWe under normal conditions. In line with the statement from TEİAŞ, each turbine is permitted to generate electricity in such a way that it can reach its mechanical power/maximum capacity (3.4 MWm). So, the only change in the project is that each turbine is now permitted to produce electricity according to their maximum capacity (3.4 MWm), while they normally generate electricity according to 3.0 MWe. The statement sends by TEİAŞ to PO say that “this increase will be done in case of any need and this PO will be notified one day before the increase actualized” and this decision would be implemented until 30/09/2022. So, since this situation will continue for only 4 months, there is no need for a major change such as

methodological deviation. This is a temporary decision taken by the government due to Turkey's energy deficit. This is a temporary change, not a permanent change. Therefore, this change will not be impacting the project methodology, additionality, or the appropriateness of the baseline scenario. Also, this situation (increase of electricity generation) can be easily observed during the next verification period.

In addition, the aforementioned statement was sent to the project owner from TEİAŞ on 12/05/2022 and it was stated that it would be put into effect as of June 2022 and that this decision would be implemented until 30/09/2022. Since the end date of the monitoring period is 31/05/2022, respective alteration will not affect this monitoring period of Üçpınar WPP.

3.3 Grouped Projects

Üçpınar Power Plant Project is a single project not a grouped project activity.

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 (TEİAŞ), Annual Development of Turkey's Gross Electricity Generation by Primary Energy Sources (2000-2017) TEİAŞ, 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	TEİAŞ is the national electricity transmission company, which makes available the official data of all power plants in Turkey. Thus, for reliability, TEİAŞ 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	FC_{i,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	NCV_{i,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	See, Excel Table 7: 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	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.

methods and procedures applied	
Purpose of Data	-
Comments	No additional comments

Data / Parameter	$HV_{i,y}$
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	$EF_{CO_2,i,y}$
Data unit	tCO ₂ /GJ
Description	CO ₂ 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 CO ₂ Emission due to Fossil Fuels for Electricity Generation
Justification of choice of data or description	No plant specific and national emission factor data is available in Turkey. So, IPCC default data is used.

measurement methods and procedures applied	
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	$\eta_{m,y}$
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	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):

methods and procedures applied	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
Description	Net quantity of electricity generated and delivered to the grid by power unit m 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. TEIAS 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	1,009,952 MWh (for this monitoring period)
Monitoring equipment	Readings of the two electricity meters. Main data source will be the EPIAŞ data. TEIAS reciprocal agreement meter records will be used for cross checking.

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

	Name	Serial Number	Brand&Model	Accuracy Class	Calibration Date
	Main Meter 1	84051115	ITRON & SL761W071	0.2S	25/04/2019 ¹⁵
	Main Meter 2	84051116	ITRON & SL761W071	0.2S	25/04/2019
	Back-up Meter 1	84051117	ITRON & SL761W071	0.2S	25/04/2019
	Back-up Meter 2	84051118	ITRON & SL761W071	0.2S	25/04/2019
QA/QC procedures to be applied	According to the Article 2 of the Communiqué of Meters in Electricity Sector¹⁶: '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. Also according to Article 11 of this Communiqué, meters shall be in class of 0.5s, which means error interval for measuring is in +- 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. 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.				

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

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

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 Üçpınar 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 Isider 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.

Üçpınar 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 Üçpınar 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 Üçpınar during the crediting period and until two years after the last issuance of VCUs for the Üçpınar 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 ($EG_{m,y}$) 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 Üçpınar 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 Üçpınar 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.

Üçpınar 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 Üçpınar WPP. Organizational structure is as follows:

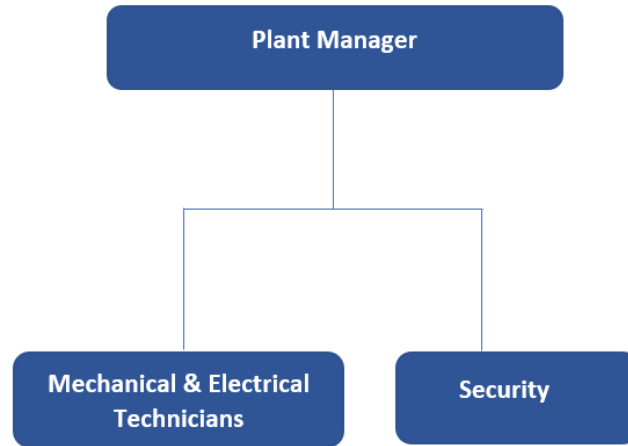


Figure 3. The Operational Flow of Üçpınar WPP

There are 12 employees within Üçpınar WPP covering this monitoring period. The list of employees and their roles are provided by Table 5.

Table 5. List of Employees

Employee	Roles
Emre Ç.	Plant Manager
Fethi A.	Deputy Manager
Burak T.	Mechanical & Electrical Technician
İsmail K.	Mechanical & Electrical Technician
Ali T.	Mechanical & Electrical Technician
Orkun T.	Mechanical & Electrical Technician
Cengiz Ş.	Mechanical & Electrical Technician
Oğuz A.	Mechanical & Electrical Technician
Sinan A.	Security
Orçun T.	Security
Sedat Y.	Security
Hasan Y.	Security

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

The baseline scenario is identified according to the “Baseline Methodology Procedure” of ACM0002 Version 19¹⁷. 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,

$$EG_{baseline} = 0$$

Then:

$$BE_y = ER_y = EG_y \times EF_{grid,CM} = 1,009,952 \text{ MWh} \times 0.5676 \text{ tCO}_2/\text{MWh} = 573,248 \text{ tCO}_2$$

¹⁷ Please visit the methodology. (https://cdm.unfccc.int/filestorage/5/8/I/58IAGB7SZUDEO2VN6LYM30K41HFPRQ/EB100_repan06_ACM0002.pdf?t=eW18cmhmemVzfDBM8V6VmaxShwaQoCdQDkcD)

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.

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

There is no leakage related to the project activity.

5.4 Net GHG Emission Reductions and 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)

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

$$EF_{grid,OMsimple,y} = 0.6601 \text{ tCO}_2/\text{MWh}^{18}$$

$$EF_{grid,BM,y} = 0.2900 \text{ tCO}_2/\text{MWh}^{19}$$

$$EF_{grid,CM,y} = w_{OM} * EF_{grid,OMsimple,y} + w_{BM} * EF_{grid,BM,y}$$

According to the Tool for wind power generation project activities: $w_{OM} = 0.75$ and $w_{BM} = 0.25$.

Based on the formula above, baseline emission factor is calculated as;

$$EF_{grid,CM,y} = 0.6601 \text{ tCO}_2/\text{MWh} * 0.75 + 0.2900 \text{ tCO}_2/\text{MWh} * 0.25$$

¹⁸ Registered PD (Dated: 08-December-2021)

¹⁹ Registered PD (Dated: 08-December-2021)

$$EF_{\text{grid, CM, y}} = 0.5676$$

With an actual annual project electricity generation of amounts which was given in the Appendix 1 of this report, and $EF_{\text{grid, CM, y}}$ calculated in Registered PD as 0.5676 tCO₂/MWh²⁰, net GHG emission reductions/removals are:

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
18/06/2019-31/12/2019	99,152	0	0	99,152
01/01/2020-31/12/2020	195,330	0	0	195,330
01/01/2021-31/12/2021	200,624	0	0	200,624
01/01/2022-31/05/2022	78,142	0	0	78,142
Total Sum 18/06/2019-31/05/2022	573,248	0	0	573,248

²⁰ Registered PD (Dated: 25-October-2021)

APPENDIX 1: NET ELECTRICITY GENERATION DATA

Months	METERING DEVICE Electricity supplied to the grid (MWh) Group1 (1)	METERING DEVICE Electricity supplied to the grid (MWh) Group2 (2)	Electricity consumption from the grid (MWh) Group1 (3)	Electricity consumption from the grid (MWh) Group2 (4)	METERING DEVICE Net electricity supplied to the grid [MWh] (5)=(1+2) (3+4)
18.Jun.19	2,507.37	4,407.59	9.07	7.75	6,898.13
Jul.19	11,704.21	12,038.92	22.51	24.00	23,696.62
Aug.19	21,036.06	20,974.03	1.91	1.75	42,006.43
Sep. 19	16,166.92	16,851.55	17.56	16.2	32,984.71
Oct. 19	9,887.18	11,658.53	30.42	24.4	21,490.89
Nov. 19	11,442.61	11,264.35	19.63	14.82	22,672.51
Dec. 19	12,667.09	12,308.50	19.21	18.27	24,938.11
Sum 19	85,411	89,503	120.31	107.19	174,687
Jan.20	13,868.99	15,446.74	15.96	14.79	29,284.98
Feb.20	14,620.46	14,138.96	13.13	14.64	28,731.65
Mar. 20	17,144.84	16,818.75	12.76	12.85	33,937.98
Apr. 20	15,979.53	15,345.63	12.89	11.72	31,300.55
May. 20	9,479.23	9,716.44	17.41	17.02	19,161.24
Jun. 20	6,500.35	7,023.56	36.08	37.09	13,450.74
Jul. 20	19,827.36	20,553.17	0.16	0.09	40,380.28
Aug. 20	16,203.43	17,109.86	2.71	0.77	33,309.81

Months	METERING DEVICE Electricity supplied to the grid (MWh) Group1 (1)	METERING DEVICE Electricity supplied to the grid (MWh) Group2 (2)	Electricity consumption from the grid (MWh) Group1 (3)	Electricity consumption from the grid (MWh) Group2 (4)	METERING DEVICE Net electricity supplied to the grid [MWh] (5)=(1+2) (3+4)
Sep. 20	17,951.20	18,385.65	17.74	14.74	36,304.37
Oct. 20	6,518.32	7,498.02	28.74	31.96	13,955.64
Nov. 20	14,800.97	15,663.87	5.46	6.00	30,453.38
Dec. 20	16,924.80	16,946.33	4.03	4.13	33,862.97
Sum 20	169,819	174,647	167.07	165.80	344,133
Jan. 21	20,783.82	18,697.45	2.68	3.62	39,474.97
Feb. 21	17,789.37	17,913.48	4.83	5.58	35,692.44
Mar. 21	12,624.14	12,926.40	10.86	12.96	25,526.72
Apr. 21	11,765.98	11,636.43	11.16	10.73	23,380.52
May. 21	10,665.59	12,290.00	20.5	21.72	22,913.37
Jun. 21	3,968.02	4,784.00	34.80	30.22	8,687.00
Jul. 21	12,719.78	15,009.58	10.57	9.73	27,709.06
Aug. 21	11,018.23	13,210.11	16.60	14.50	24,197.24
Sep. 21	15,205.42	17,392.16	6.62	7.05	32,583.91
Oct. 21	16,626.64	18,752.56	8.30	8.72	35,362.18
Nov. 21	16,462.57	17,303.15	12.90	14.70	33,738.12
Dec. 21	23,244.20	20,961.93	3.71	6.37	44,196.05
Sum 21	172,874	180,877	143.53	145.90	353,461
Jan. 22	15,711.66	15,018.16	10.94	12.63	30,706.25

Months	METERING DEVICE Electricity supplied to the grid (MWh) Group1 (1)	METERING DEVICE Electricity supplied to the grid (MWh) Group2 (2)	Electricity consumption from the grid (MWh) Group1 (3)	Electricity consumption from the grid (MWh) Group2 (4)	METERING DEVICE Net electricity supplied to the grid [MWh] (5)=(1+2) (3+4)
Feb. 22	14,269.64	13,543.61	9.16	10.19	27,793.90
Mar. 22	16,194.09	16,549.58	6.16	6.09	32,731.42
Apr. 22	13,235.74	13,419.50	14.4	15.27	26,625.57
May. 22	9,412.38	10,458.29	29.97	26.71	19,813.99
Sum 22	68,824	68,989	70.63	70.89	137,671
Total Sum	496,928	514,017	501.54	489.78	1,009,952

APPENDIX 2: 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 573,248 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 #	tons CO ₂
1 st Verification	573,248
Total	573,248

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 1,009,952 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 #	MWh
1 st Verification	1,009,952
Total	1,009,952

Row 3- SDG8: Quantitative employment and income generation

Current Project Contributions/ Contributions Over Project Lifetime: The project owner has employed 12 workers and 7 of them were locally performed.²¹

Row 4- SDG6: Water quality and quantity

Current Project Contributions/ Contributions Over Project Lifetime: Wastewater discharge records (for 2020-2021-2022 years) have been provided.²²

²¹ SGK records have been provided to VVB.

²² Necessary documents have been provided to VVB.