Monitoring report form

(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT		
Title of the project activity	CANTA WPP	
UNFCCC reference number of the project activity	GS1235	
Version number of the monitoring report	05	
Completion date of the monitoring report	01/06/2018	
Monitoring period number and duration of this monitoring period	1st Period 02/02/2015 - 31/10/2016 (21 Months)	
Project participant(s)	1- Boydak Enerji Üretim ve Ticaret Anonim Şirketi (Project Owner) 2- GTE Karbon (Private Entity, Project Developer)	
Host Party	Turkey	
Sectoral scope(s)	Sectoral scope 1: Energy Industries (Renewable-/non-renewable sources)	
Selected methodology(ies)	Applied methodology: ACM0002 v.13.0.0	
Selected standardized baseline(s)	-	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	Annual estimated GHG emission reduction is 96,072 tCO_2e in registered PDD. Therefore; 2015 –87,780 tCO_2e (for 11 months) (02/02/2015 –31/12/2015) 2016 –80,060 tCO_2e (for 10 months) (01/01/2016 –30/10//2016) Total: 167,840 tCO_2e (21 months)	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	-	162,305 tCO_2e (for 21 months)

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

The proposed project is a large scale wind power plant project located within the boundaries of Silivri District of Istanbul province.

The project is licensed on 18/08/2011 as 45MWe. As per the license issued by Energy Market Regulatory Authority (EMRA) all legal rights of the project is given to BORA A.Ş. for 49 years including pre-construction and construction periods. Purpose of the proposed project is to generate electricity by utilizing the renewable energy potential to meet increasing electricity demand and thus reduce fossil fuel consumption. On 14/08/2012, the company was merged with the mother company and the name of the project owner was changed as Boydak Enerji Üretim ve Ticaret Anonim Şirketi (Boydak).

The proposed project involves installation of 19 turbines each having 2.5 MW capacity (Total capacity is 47.5 MWm and 45MWe). Total output capacity ise 163.2 GWh. Turbine output is transmitted to the switchyard area via underground cabling. Total land used for the project is estimated as 1,900 m2 for turbines, 350m2 for office and facility buildings and about 150m2 for switchyard area1. Electricity generated at project is fed to the national grid via Silivri substation. Length of transmission line is around 11.5 km2
Although, in the Generation License and the Project Introduction File (PIF) of the project the total output has been stated as 159.75 GWH, the final expected output has been augmented as a result of micro siting and optimization studies where several layouts have been compiled using different turbines. Finally, 2.5MW Nordex N100/2500kW R100 turbines have been selected for the project which results in 163.2 GWh annual generation. Estimated generation corresponds to 96,072 tCO2 avoided annually. Average lifetime of turbines are assumed as 25 years as per the tool relevant tool.

Main goals of the Proposed Projects include;

- Utilization of the renewable energy potential of Turkey in order to meet rapidly increasing electricity demand and contribute achieving energy security.
- Increase share of WPPs in electricity generation mix of Turkey and reduction of GHG emissions.
- Contribute to the national economic development by creating direct and indirect job opportunities during construction and operation phases.
- Reduce import dependency of fossil fuel dominated electricity sector and diversify generation mix through use of local resources.
- Contribution to sustainable development through supporting local community and local economy.

Project not only contributes to emission reduction through use of renewable resources; but also creates job opportunities and thus contributes to sustainable development. In terms of environmental impact, project is considered to have positive impact on air quality due to avoided NOx, PM and SO2 emissions whereas no negative impact on water quality other pollutants and biodiversity has been identified. As per the national regulations, a Project Introductory File (PIF) (i.e. Preliminary EIA) has been prepared for the project to assess the environmental impacts. In the current monitoring period a total of 275.561 GWh of net electrical energy was generated which leads to a reduction of 162,305 tCO2e GHG emissions. Milestones for the project activity are given in Table 1.

Table 1: Project's Milestones

Milestone	Date
Preliminary EIA	January 2009
EIA Decision	13/02/2009

License Issuance	18/08/2011
Board Decision	01/01/2012
EM Equipment Purchase Contract*	26/03/2012
LSC Meeting	16/04/2012
License Revision	18/04/2012
Bankable Report	13/06/2012
Forest Permission	24/10/2013
Grid Connection Agreement	03/10/2012
Loan Proposal	2110/2012
Construction Start Date	01/03/2013
Agreement on construction of transmission line, wind park, assembly and test operation (ABB)	13/09/2013
Subcontractor Agreement for Substation Construction (Bilmer)	22/02/2013
Commissioning Date	24/07/2014
1st Monitoring Period	02/02/2015 – 30/10/2016

A.2. Location of project activity

Project is located within boundaries of Silivri District of İstanbul Province of Turkey. Nearest settlement to the project boundaries is Canta village which is about 650 m from the project nearest turbine.

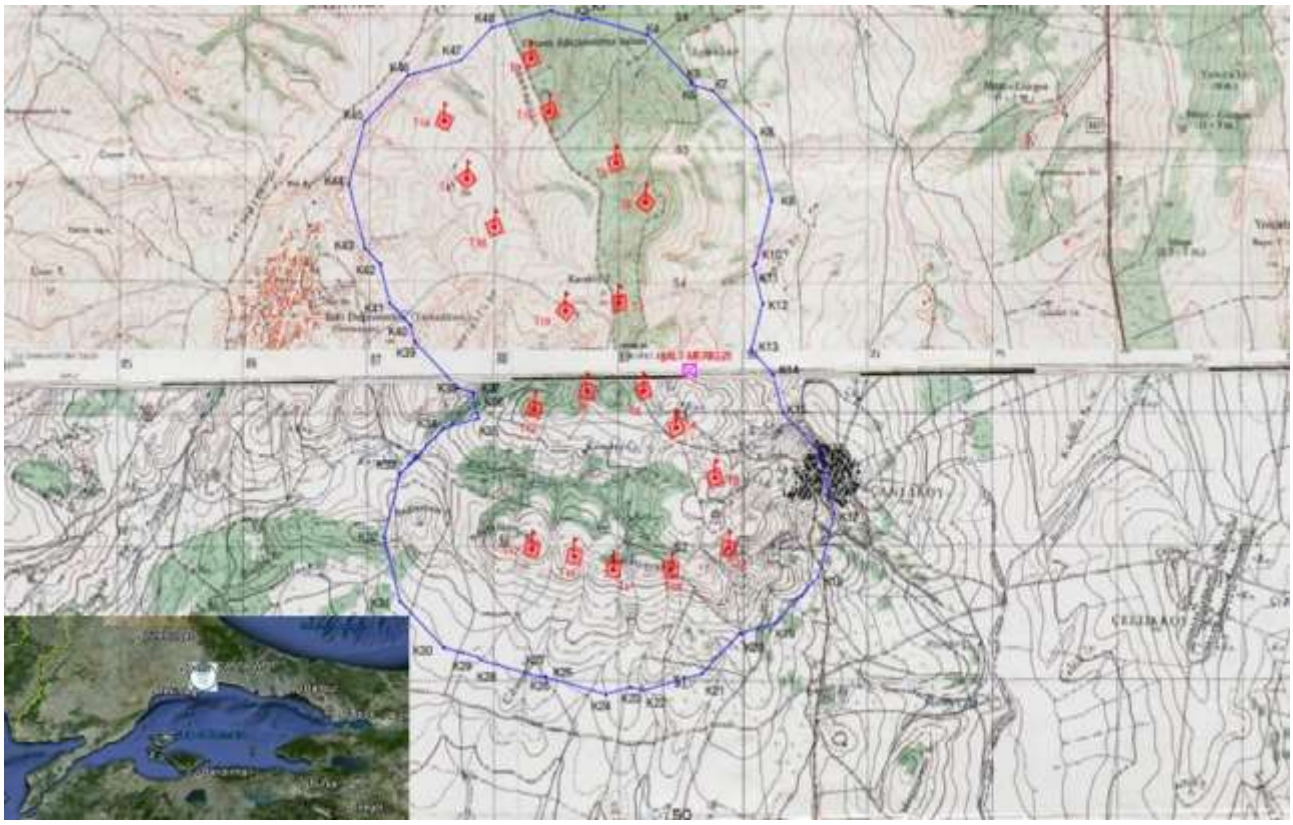

Figure 1: Project Location

Figure 1 illustrates the location of the project activity. The coordinates of the project are shown in Figure 2.

Table 2: Turbine and Switchyard Coordinates

Zone(35S)	Y	X	Zone(35S)	Y	X
T1	588962.66	4551829.82	T11	587786.26	4554771.83
T2	589777.07	4552521.47	T12	588329.00	4553037.87
T3	588300.79	4555674.25	T13	588008.00	4554405.00
T4	589467.97	4552896.92	T14	587605.00	4555205.00
T5	589203.81	4553173.74	T15	588444.80	4555276.18
T6	588751.61	4553173.50	T16	588649.29	4551930.17
T7	589008.37	4553837.01	T17	588308.91	4551986.34
T8	589221.71	4554592.04	T18	589425.02	4551827.16
T9	588982.15	4554889.46	T19	589885.99	4551989.56
T10	588578.19	4553777.76	Switchyard	589572.25	4553327.41

Figure 2: Turbine and Switchyard Coordinates

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
Turkey	1- Boydak Enerji Üretim ve Ticaret Anonim Şirketi (Private Entity, Project Owner) 2- GTE Carbon (Private Entity, Project Developer)	No

A.4. Reference of applied methodology and standardized baseline

>>

The United Nations approved consolidated baseline methodology applicable to this project is ACM0002 “Consolidated methodology for grid-connected electricity generation from renewable sources”, Version 13.0.0 has been applied for the project.

ACM0002 refers to the following tools:

- “Tool for the demonstration and assessment of additionality”, Version 07.0.0 and
- ‘‘Tool to calculate the emission factor for an electricity system’’, Version 03.0

A.5. Crediting period of project activity

The project uses two times renewable crediting periods. (7 years, 0 months)
This is the first crediting period. (02/02/2015 -01/02/2022)

A.6. Contact information of responsible persons/entities

Contact Person	Company	Position	E-mail
Nejdet Tayyar Irgaç	Boydak Ruzgar Elektrik Üretim Sanayi ve Ticaret A.Ş.	Project Manager	Tayyar.IRGAC@boydakenerji.com

M. Kemal Demirkol	GTE Carbon	Managing Director	kemal@gtecarbon.com

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>>Wind Power Plants use wind energy converters (WEC), called wind turbines to convert the wind energy into electrical energy. The project uses 19 WEC's of Nordex N100/2500kW R100 MW however electrical output is limited to 45 MWe. The annual electricity generation from these turbines are estimated to be 163.2 GWh. This energy is converted at the site switchyard and fed to the national grid.

Table 3: Characteristics of the 2.5MW turbines used

	N100/2500 kW
Rotor	
Number of blades	3
Rotor speed	9.6 – 14.9 rpm
Rotor diameter	99.8 m
Swept area	7,823 m²
Power regulation	Pitch
Cut-in wind speed	3 m/s
Cut-out wind speed	20 m/s
Rated output at	12.5 m/s
Survival wind speed	52.5 m/s
Pitchregulation	Individual blade pitch
Weight	Approx. 90,500 kg
Blades	
Blade length	48.7 m
Material	GRP
Weight	Approx. 9,800 kg
Gearbox	
Type	Planetary/spur gear or differential gear box
Gear ratio	1:77.4 (50 Hz)/1:82.9 (60 Hz)
Generator	
Power	2,500 kW
Voltage	660 V
Type	Double-fed asynchronous generator with partial frequency converter
Frequency	50 or 60 Hz

	N100/2500 kW
Yaw system	
Yaw bearing	Ball bearing
Brake	Hydraulic, disc brake
Yaw drive	Asynchronous motors with integrated brakes
Speed	Approx. 0.4 deg/s
Control system	
Type	SPS, Remote Field Controller (RFC)
Grid connection	Via IGBT converter
Scope of monitoring	Remote monitoring of over 300 different parameters, e.g. temperature, hydraulic pressure, pitch parameters, wind speed and direction
Recording	Production data, event lists with filter function, long and short-term trends
Visualisation	Panel PC in control cabinet and Web-based access possible from any PC, adapter for laptop at the bottom of tower or in nacelle
Brakes	
Design	Three independent brake systems (single pitch)
Aerodynamic	Individual pitching of blades
Mechanical	Disc brake
Tower	
Type	Modular, steel tube tower
Hub height	100 m, certificate DiBt 2, IEC 3a

B.2. Post-registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

N/A

B.2.2. Corrections

Project owner has decided to use EPIAS records as the primary source of data for electricity generation since the billing is based on the EPIAS records.

B.2.3. Changes to start date of crediting period

Start date of the crediting period has been revised as 02/02/2015 as per the GS rules.

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

N/A

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

B.2.6. Project owner has decided to use EPIAS records as the primary source of data for electricity generation since the PMUM is now operated by EPIAS and billing is based on the EPIAS records.Changes to project design of registered project activity

No design change has occurred compared to registered PDD.

B.2.7. Types of changes specific to afforestation or reforestation project activity

N/A

SECTION C. Description of monitoring system

Monitoring plan has been applied according to the selected methodology (ACM0002). According to the applied methodology, all data collected as part of monitoring will be archived electronically and be kept at least for 2 years after the end of the last crediting period. Essential parameters will be monitored if not indicated otherwise in the tables below. All measurements will be conducted with calibrated measurement equipment according to relevant standards. The monitoring system organization chart is shown in Figure below, in which the authority and responsibility of project management are defined.

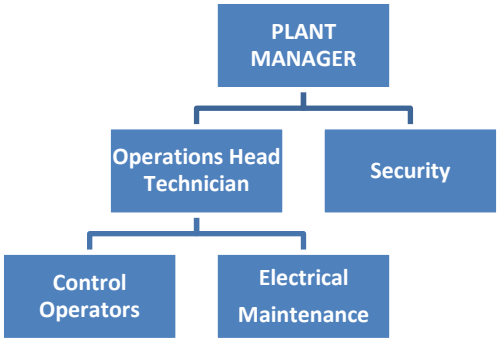

Figure 3: Monitoring System Organization Chart

Plant Manager:
Responsibility for running the plant and compliance with VER monitoring plan

Accounting Management (Operations Head Technician):
Responsible for keeping data about generation and consumption.

GTE Carbon:
GTE Carbon is responsible for emission reduction calculations, preparing monitoring report and periodical verification process.

Installation of meter and data monitoring has been carried out according to the regulations by TEIAS. Two metering devices (one of them used as spare) have been installed in project area and other two metering devices (one of them used as spare) have been installed at transformer center and responsibility of all of them is belonged to TEIAS. Although registered PDD indicates to use metering devices at project site to monitor electricity generation, project owner has decided to use EPİAS records as the primary source of data for electricity generation since the billing is based on the EPİAS records. Electricity generation of the Canta WPP has been cross checked by using the records of metering devices at project site.

SECTION D. Data and parameters

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

Data/parameter:	**FCi,y**
Unit	Tons or 1000 m3 for gases
Description	Amount of fuels consumed by thermal power plants for electricity generation in terms of fossil fuel type i in year y
Source of data	TEIAS web page http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/yak%C4%B1t46-49/47.xls
Value(s) applied)	See Annex 4 of registered PDD
Choice of data or measurement methods and procedures	Data from Grid Operator has been used
Purpose of data	Data used for OM calculation
Additional comments	-

Data/parameter:	**EGy,**
Unit	GWh

Description	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must run power plants in year y
Source of data	For gross generation electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must run power plants in year y: http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/kgucunkullan%C4%B1m(13-21)/13.xls For net generation and imported electricity http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/uretim%20tuketim(22-45)/23.xls http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/uretim%20tuketim(22-45)/33(84-11).xls
Value(s) applied)	150,333 in 2009 149,750 in 2010 162,713 in 2011 462,796 GWh between 2009-2011. (References provided above)
Choice of data or measurement methods and procedures	Data from Grid Operator has been used
Purpose of data	Data used for emission reduction calculation (for calculation of OM, Net-to-Gross electricity ratio and share of low-cost must-run sources)
Additional comments	-

Data/parameter:	**$EF_{CO2, i, y}$**
Unit	tCO_2/TJ
Description	CO2 emission factor of fossil fuel type “i” in year “y”
Source of data	For EF of fossil fuels, IPCC values[1] at the lower limit have been used.
Value(s) applied)	

Fuel Source	**EF(tCO2/Tj)**
Coal	89,5
Lignite	90.9
Fuel Oil	75.5
Diesel	72.6
LPG	61.6
Naphtha	69.3
Natural Gas	54.3

[1] http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf

Choice of data or measurement methods and procedures	According to the applied tool, IPCC default values at lower limit of 95% confidence interval can be used. Although, the actual emission reduction is expected to be higher due to high EF of fuels consumed in existing power plants, IPCC values have been used for conservativeness as requested by the methodology.
Purpose of data	EF calculations
Additional comments	-

Data/parameter:	$\eta_{m,y}$
Unit	-
Description	Average net energy efficiency of power unit m in year y
Source of data	Default values provided in Annex I of the "Tool to calculate the emission factor for an electricity system".
Value(s) applied)	See Annex 4 of registered PDD
Choice of data or measurement methods and procedures	Data source is selected as per the applied tool.
Purpose of data	Data used for BM calculation
Additional comments	-

Data/parameter:	**NCVi,y**
Unit	TJ/kt
Description	Net calorific value (energy content) of fossil fuel type i in year y
Source of data	TEIAS web page http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2011/yak%C4%B1t46-49/47.xls
Value(s) applied)	See Annex 4 of registered PDD
Choice of data or measurement methods and procedures	Data has been calculated from Grid Operator's (TEIAS) statistics
Purpose of data	Data used for OM and BM calculation
Additional comments	-

D.2. Data and parameters monitored

Data/parameter:	**$EG_{facility, y}$**
Unit	GWh/year
Description	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y
Measured/calculated/default	Measured
Source of data	Electricity meter(s)
Value(s) of monitored parameter	$EG_{facility,2015}$ (11 months) = 142.042 GWh $EG_{facility,2016}$ (10 months) = 133.519 GWh Total : 275.561 GWh for 21 months and 157.463 GWh/year

<table>
<tr><td>Monitoring equipment</td><td>Specifications of the metering devices (installed at project site) are as follows:

<table>
<tr><td>Manufacturer
Device Model</td><td>Serial Number</td><td>Last Calibration</td><td>Accuracy Class</td></tr>
<tr><td>Elster A 1500/ (main)</td><td>004710642012</td><td rowspan="2">26/03/2014</td><td>0.5 S</td></tr>
<tr><td>Elster A 1500 (secondary or back-up)</td><td>004710662012</td><td>0.5 S</td></tr>
</table>

Calibration for both (main and back-up meters) were performed on 26.03.2014 which was also mentioned and verified in the PDD. As per the related regulations, meters should not require calibration before 10 years (till 26.03.2024). Moreover, maintenance tests of meters were done two times at 19/06/2015 and 14/06/2016. Related documents were provided to DOE</td></tr>
<tr><td>Measuring/reading/recording frequency:</td><td>Continuous measurement and at least monthly recording</td></tr>
<tr><td>Calculation method (if applicable):</td><td>Monthly gross generation and monthly internal consumption figures which are provided by the EPIAS which are also used for billing purposes. On-site metering records are used for cross-checking purposes.</td></tr>
<tr><td>QA/QC procedures:</td><td>Cross check measurement results with records for sold electricity.</td></tr>
<tr><td>Purpose of data:</td><td>ER Calculations</td></tr>
<tr><td>Additional comments:</td><td>-</td></tr>
</table>

D.3. Implementation of sampling plan

N/A

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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

$$\mathbf{BE_y = EG_y \times EF_y}$$

Where:
BE_y = Baseline emissions in year y (tCO_2/yr)
EG_y = Net electricity delivered to the grid by the project activity in year *y* excluding transmission losses of the grid (GWh)
EF_y = Emission factor calculated according to selected methodology (tCO_2/GWh)

Realized baseline emissions:

EF_y =0.589 tCO_2/GWh
$EG_{facility,2015}$ (11 months) = 142.042 GWh
$EG_{facility,2016}$ (10 months) = 133.519 GWh

BE_{2015} = (157.069 GWh) x (0.589 tCO2/GWh) = 83,663 tCO_2e
BE_{2016} = (133.519 GWh) x (0.589 tCO2/GWh) = 78,643 tCO_2e

TOTAL: 162,305 tCO_2e

E.2. Calculation of project emissions or actual net GHG removals by sinks

The project activity involves the generation of electricity by a wind power plant; therefore it does not result in any significant GHG emissions.

$$PE_y = 0$$

E.3. Calculation of leakage

The energy generating equipment is not transferred from or to another activity. Therefore leakage is also considered as "0".

$$LE_y = 0$$

As a result, total emission reductions are calculated as follows:

$$ERy = BEy$$

Where:
ER_y = Emission reductions in year y (t CO_2e/yr)
BE_y = Baseline emissions in year y (t CO_2e/yr)

ER_y = 162,305 tCO_2e

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	GHG emission reductions or net GHG removals by sinks (t CO_2e) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	162,305	0	0	-	162,305	162,305

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	167,840	162,305

E.6. Remarks on difference from estimated value in registered PDD

Estimated and realized emission reduction amounts are quite in agreement. Wind energy is believed to be very consistent in the long term but might show little deviations in the monthly figures. Generated electricity is directly affected by the wind speed and seasonal effects. Since the annual generation estimations are based on a whole year and the monitoring report involves partial years, the differences are acceptable. As per the ex-ante calculations in the registered PDD, emission reductions corresponding to 21 months of this monitoring period have been calculated as 167,840 tCO_2e and 96,072 tCO_2e yearly. In the current monitoring period between 02/02/2015 and 30/10/2016 the realized emission reductions have been observed to be 162,305 tCO_2e and slightly below the expected amount. Difference between estimated and actual emission reduction during monitoring period is 5,535 tons. Thus, the deviation from the estimations was calculated as around 3.3%. And the realized emission reductions are proved to be around 97 % of the expected amount. It should be kept in mind that electricity generation may be affected negatively or slightly positively due to external weather conditions which are beyond project owner control.

E.7. Discussion of the FARs

FAR ID	FAR Description	Explanations
FAR 1	It is stated in validation site visit that permission from Ministry of Forestry is not yet obtained. DOE will raise a FAR for the inspection of the permit by verification DOE in first verification.	Permission from Ministry of Forestry has been obtained, which is valid for from 24.10.2013 to 18.08.2060 Documentation regarding permission letter and land permit payments is sent to DOE. Date of the Forest Permission has been changed accordingly in the MR within *Table-1: Project Milestones*.
FAR 2	Emergency action plan is provided in PIF pg 47. In this section, 4 types of trainings are foreseen for employees. This FAR is raised so that the realization of these trainings are checked during first verification and refresher trainings are stated in the training plan for future years.	Realization of 4 types of trainings is checked during first verification and mentioned in the MR. Future targets for the parameter are stated. The most recent training certificates sent by the company are shared with DOE.
FAR 3	Please provide “contract with licensed waste oil collector” to verification DOE as a proof of “waste oil being disposed in line with regulations. Also, verification DOE should check if municipal solid waste is disposed adequately.	Waste oil delivery to the licenced company are mentioned with their dates in the MR. The documentation regarding the disposal of waste oil has previously been shared with DOE. The waste records for 2016 were also received from the firm and shared with DOE.
FAR 4	The verification DOE shall please check information electricity meters, if they are in line with the regulations by means of model, accuracy and calibration essentials.	The documentation regarding the electricity meters have previously been shared with DOE. Information on electricity meters are mentioned in the MR.
FAR 5	Please provide “Firefighter report” as stated in the PIF.	Firefighter Report is sent to DOE.
FAR 6	A FAR is raised so that during first verification DOE makes sure the logbooks are collected back at end of SFR and PP acted appropriately to answer any comments raised by stakeholders via logbooks or other means.	During first verification, PP acted appropriately to answer any comments raised by stakeholders via logbooks or other means. Also, the situation regarding expropriation is mentioned in the MR. This FAR will be monitored during the second verification.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Person/entity responsible for completing the CDM-MR-FORM
Organization name	Boydak Ruzgar Elektrik Üretim Sanayi ve Ticaret A.Ş.
Street/P.O. Box	Ziya Gökalp Mahallesi
Building	No:3
City	İstanbul
State/region	Başakşehir
Postcode	34306
Country	Turkey
Telephone	+ 90 212 267 42 06
Fax	+ 90 212 267 42 09
E-mail	
Website	http://www.boydakenerji.com.tr/
Contact person	
Title	Project Manager
Salutation	Mr.
Last name	Irgaç
Middle name	Tayyar
First name	Nejdet
Department	
Mobile	-
Direct fax	
Direct tel.	+ 90 531 306 16 61
Personal e-mail	Tayyar.IRGAC@boydakenerji.com

Project participant and/or responsible person/ entity	☒ Project participant ☒ Person/entity responsible for completing the CDM-MR-FORM
Organization name	GTE CARBON
Street/P.O. Box	Ehlibeyt Mah 1259. Sokak
Building	7/2
City	Ankara
State/region	-
Postcode	06520
Country	Turkey
Telephone	+90 312 472 35 00
Fax	+90 312 472 33 66
E-mail	gte@gtecarbon.com
Website	www.gtecarbon.com
Contact person	
Title	Managing Partner
Salutation	Mr.

Last name	Demirkol
Middle name	Kemal
First name	Mehmet
Department	Management
Mobile	-
Direct fax	+90 312 472 35 00
Direct tel.	+90 312 472 33 66
Personal e-mail	kemal@gtecarbon.com

Appendix 2. Monitoring of Sustainable Development Parameters

Indicator		**1. Air Quality**
Mitigation measure		Not required
Chosen Parameters		1- SO_2 emissions from grid connected plants 2- NO_x emissions from grid connected plants
Current Situation of the Parameters		Total SO_2 emission related to electricity generation is about 413.78 Gg in 2010 according to National Inventory of Turkey[2]. Considering that electricity generation in 2010 is 211,208 GWh[3], SO_2 emission per MWh is calculated as 1.96 kg/MWh. Total NO_x emission related to electricity generation is about 317.45 Gg in 2010 according to National Inventory of Turkey. NO_x emission per MWh is calculated as 1.5 kg. In parallel to the electricity generation of this monitoring period which is 275,561.00 MWh, actual SO_2 emission reduction has been realized as about 539 tons during monitoring period. NOx emission reduction corresponding to realize generation is calculated as 414 tons.
Future Target for Parameters		SO_2 and NO_x emission reductions corresponding to annual generation.
Way of Monitoring	How	Electricity generated by Canta WPP
	When	Yearly
	By Who	Project Owner

Indicator	**2. Air Quality**
Mitigation measure	Sprinkling construction area
Chosen Parameters	Measures issued to minimize dust emissions

[2] http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/tur-2010-crf-15april.zip

[3] http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/%C4%B0statistik%202010.htm

Current Situation of the Parameters		As stated in the First Environmental Monitoring Form (which is a legal requirement as per the national legislation), the Project Owner has taken measures against dust emissions due to excavation works held during construction. Dampening (sprinkling) trucks were used to keep the upper soil at 10% humidity (see the picture illustrating the sparkling process below). 
Future Target for Parameters		N/A
Way of Monitoring	How	Documentation of measures (pictures etc.)
	When	Once after construction
	By Who	Project Owner

Indicator		**3. Water quality**
Mitigation measure		Mitigation measure is not required
Chosen Parameters		Disposal of the wastewater
Current Situation of the Parameters		Waste water is kept and stored under confined conditions and disposed in line with the regulations. Accumulated wastewater was removed by an authorized company on 07/06/2016, 26/08/2015 and 04/03/2015. Related documents were provided to DOE
Future Target for Parameters		Disposal of wastewater as required by the relevant regulations
Way of Monitoring	How	Assessing disposal methods during site visits and checking waste disposal records.
	When	Annually
	By Who	Project Owner

Indicator		4. Soil Condition
Mitigation measure		No mitigation measure is required
Chosen Parameters		Amount of non-hazardous solid wastes during construction and operational phases. Appropriate management of all waste in line with regulations[4]
Current Situation of the Parameters		Wastes are being handled as per the regulations. Disposals were done on 13/05/2015 and 06/11/2015. Related documents were provided to DOE
Future Target for Parameters		Recyclable and non-recyclable wastes will be stored temporarily and will be disposed by the Silivri Municipality. Excavated soil will be used for landscaping.
Way of Monitoring	How	Site visit and checking waste disposal records.
	When	Annually
	By Who	Project Owner and expert

Indicator		5.1. Other Pollutants-Waste Oil
Mitigation measure		All waste oil will be delivered to the licensed company to be handled.
Chosen Parameters		Delivery protocols
Current Situation of the Parameters		Waste Oil delivered to the licenced company on 26.06.2015 and on 26.05.2016. Related documents were provided to DOE.
Future Target for Parameters		All waste oil will be delivered to the licensed company.
Way of Monitoring	How	Through evaluation waste oil delivery protocols
	When	Yearly
	By Who	Project owner
Indicator		**5.2. Other Pollutants-Noise**
Mitigation measure		The technology chosen is the most recent and silent technology
Chosen Parameters		Complaints by the locals
Current Situation of the Parameters		Current situation will be determined at site visit during interview with locals
Future Target for Parameters		No complaints received by the locals due to noise
Way of Monitoring	How	Meeting with locals, GS Grievance Notebook
	When	Yearly
	By Who	Project owner
Indicator		**5.3. Other Pollutants-Top soil and aggregates**
Mitigation measure		Topsoil will be stored appropriately and used for land rehabilitation.
Chosen Parameters		Land rehabilitation is complete
Current Situation of the Parameters		The excavated top soil was used for site rehabilitation, in line with the permit received from Istanbul Metropolitan Municipality Environmental Protection and Control Department[5].
Future Target for Parameters		-

[4] http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.7557&sourceXmlSearch=&MevzuatIlis

[5] The letter dated 13/05/2013 from the Environmental Protection and Control Department of Istanbul Metropolitan Municipality

Way of Monitoring	How	Meeting with locals, GS Grievance Notebook
	When	Yearly
	By Who	Project owner

Indicator		**6. Biodiversity**
Mitigation measure		Migration of birds
Chosen Parameters		Number of bird species and affected species
Current Situation of the Parameters		During the interview conducted with the Biologist of the WPP, she stated that they witnessed 3 bird strikes. It is stated in the Ornithology Report that Detection of dead birds is very difficult due to the presence of predatory mammals. Other than these strikes, natural flora & fauna of the region is not affected negatively due to project activities. Ornithology report was provided to DOE
Future Target for Parameters		N/A
Way of Monitoring	How	Ornithology report
	When	Once
	By Who	Project Owner and Ornithologist

Indicator	**7. Quality of Employment**
Mitigation measure	All recruited technical staff is trained for operation and maintenance of equipment and Health and safety measures. Also, staff working with high voltage equipment during operation phase will be certified (also required by regulations). The trainings will be renewed for new staff if necessary.[6]
Chosen Parameters	Number of personnel certified/trained during operation phase

[6] http://www.ilo.org/public/turkish/region/eurpro/ankara/about/sozlesmeler.htm

Current Situation of the Parameters

Certified trainings given in this monitoring period can be followed below.

Attendee	Provided By	Subject	Date
Emrah Pamuk	Turkish Red Crescent Çorlu	Basic First Aid	22.07.2015 - 23.07.2015
Mehmet Düzkaya	Turkish Red Crescent Çorlu	Basic First Aid	22.07.2015 - 23.07.2015
Selçuk kaynar	Turkish Red Crescent Çorlu	Basic First Aid	12.03.2016 - 13.03.2016
Mehmet Ergün	Turkish Red Crescent Çorlu	Basic First Aid	06.06.2016 – 07.06.2016
Şakir Erdal	Turkish Red Crescent Çorlu	Basic First Aid	09.08.2016 – 10.08.2016
Hasan Aşıcı	Turkish Red Crescent Çorlu	Basic First Aid	09.08.2016 – 10.08.2016

Attendee	Provided By	Subject	Date
Selçuk Kaynar	T.R. Ministry of National Education	Hygiene Training for Workers in Food and Water Sector	25.02.2016 (8 hours)
Hasan Aşıcı	T.R. Ministry of National Education	Hygiene Training for Workers in Food and Water Sector	29.09.2016 (8 hours)

Attendee	Provided By	Subject	Date of Issue
Emrah Pamuk	Turkish Electricity Transmission Company	Work permit in electrical heavy current installations training	18.03.2016

Attendee	Provided By	Subject	Date
Ufuk Savaş	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Mehmet Düzkaya	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Hasan Aşıcı	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Emrah Pamuk	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Selçuk Kaynar	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Şakir Erdal	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Halim İçmez	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)
Mehmet Ergün	Başaran İş Sağlığı ve Güvenliği	Occupational health and safety training Health and Safety	09.08.2016 - 05.09.2016 (16 hours)

Future Target for Parameters		All technical staff will be provided with necessary trainings.. All Health and Safety measurements will be applied according to local regulations[7]
Way of	How	Through review employment records and training documents/certificates

[7] http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.5461&MevzuatIliski=0&sourceXmlSearc

	When	Yearly
	By Who	Project owner

Indicator		**8. Livelihood of the poor**
Mitigation measure		Compensation for expropriation
Chosen Parameters		Compensations made to locals
Current Situation of the Parameters		Related documents were shared with DOE
Future Target for Parameters		During on site visit, it was confirmed through the interview with PP and Mukhtars that the compensation process of expropriation is still ongoing. Compensation will be made if expropriation is still necessary in the final layout of the turbines and for transmission lines
Way of Monitoring	How	Interview with owner of the expropriated land
	When	Once after construction
	By Who	Project Owner

Indicator		**9. Access to affordable and clean energy services**
Mitigation measure		No mitigation action is required for this indicator.
Chosen Parameters		Fossil fuel replaced
Current Situation of the Parameters		During monitoring period, about 73.412 million m^3 NG has been saved which corresponds to around 17,684,409 €.
Future Target for Parameters		Approximately consumption of 7.78 million m3 of natural gas is expected to be avoided
Way of Monitoring	How	Through comparing electricity generated by proposed project and natural gas that would be used to produce the same amount of electricity by a thermal power plant
	When	Yearly
	By Who	Project Owner

Indicator	**10. Quantitative employment and income generation**
Mitigation measure	Mitigation measure is not required
Chosen Parameters	Payments made to staff
Current Situation of the Parameters	Currently 8 personnel are employed. Social security documents were provided to DOE.

No	**Name of Personnel**	**Social Security No**	**Occupation**
1	Ufuk Savaş	11708264526	Operating Chief
2	Mehmet Düzkaya	16894959102	Electrical technician
3	Hasan Aşıcı	29410525132	General Service
4	Emrah Pamuk	30709494916	Electrical technician
5	Selçuk Kaynar	68176084910	General Service
6	Şakir Erdal	11165392862	Electrical technician
7	Halim İçmez	17630790744	Electrical technician
8	Mehmet Ergün	43195897444	Electrical technician

	It should be noted that birthplace of 1 staff is one of the surrounding provinces; however all the listed staff reside in Istanbul.
Future Target for Parameters	Project will create new job opportunities compared to baseline scenario

Way of Monitoring	How	Through evaluation documents for wages paid and social security documents.
	When	Yearly
	By Who	Project owner

Indicator		**11. Balance of payments and investment**
Mitigation measure		Not required
Chosen Parameters		Currency saving due to avoided fuel import
Current Situation of the Parameters		In 2010, about 21.8 billion m3 natural gas been used 51 for about 98,143.7 GWh electricity generation[8] and about € 7 billion has been spent. Source for NG price: http://www.esgaz.com.tr/dogalgazfiyatlari.asp During monitoring period, about 61.209 million m^3 NG has been saved which corresponds to around 14,744,750 €.
Future Target for Parameters		Approximately consumption of 7.78 million m3 of natural gas is expected to be avoided corresponding to € 2.5 million annually.
Way of Monitoring	How	Through comparing electricity generated by proposed project and natural gas that would be used to produce the same amount of electricity by a thermal power plant.
	When	Yearly
	By Who	Project owner

Indicator		**12. Calibration of meters**
Mitigation measure		Continuous reading and cross-check between the meters; regular calibration
Chosen Parameters		Meters are calibrated in line with the Bylaw on Metering and Metering Devices.[9]
Current Situation of the Parameters		The meters are calibrated on 26/03/2014 before the first 6 turbines were taken into operation in May 2014.
Future Target for Parameters		Meters work correctly and calibrated in line with the by law
Way of Monitoring	How	Meters are under the control of TEİAS and the project has no control over them nor, has the right to intervene. As the Bylaw suggests, the meters have to be calibrated in every 10 years unless there is a problem with them. All calibration work needs to be approved by TEIAS. Calibration reports will be kept by the facility manager and will be disclosed to the DOE during site visits.
	When	Once for each verification
	By Who	Project Owner and DOE

Indicator	**13. Conservation of tumulus**
Mitigation measure	The tumulus area remains outside of the project site. Thus, not mitigation measure is required

[8] https://www.teias.gov.tr/tr/turkiye-elektrik-uretim-iletim-istatistikleri/2010

[9] http://www.mevzuat.adalet.gov.tr/html/21179.html

Chosen Parameters		Tumuslus area not impacted from the project activity
Current Situation of the Parameters		Tumulus remains as it used to be before the project
Future Target for Parameters		Tumuslus area not impacted from the project activity
Way of Monitoring	How	DOE talks to the locals or the authorities as necessary
	When	Once for each verification
	By Who	Project Owner and DOE

Indicator		**14. Traffic management**
Mitigation measure		Using alternative roads for vehicles that do not go through the village. Regular maintenance of vehicles. Speed control of vehicles.
Chosen Parameters		Number of complaints from the locals
Current Situation of the Parameters		Roadside warnings and speed limit signs were placed on project site. Related photographs were provided to DOE
Future Target for Parameters		No complaints from the locals
Way of Monitoring	How	DOE talks to the locals or the authorities as necessary
	When	Once for each verification
	By Who	Project Owner and DOE