

Gold standard for the global goals
Monitoring report



June 2017, version 1

Title of the project	Gunaydin WPP
Gold Standard project ID	GS1178
Version number of the monitoring report	03
Completion date of the monitoring report	18/05/2020
Date of project design certification	14/06/2013 (Registration date)
Start date of crediting period	01/12/2012
Duration of this monitoring period	(01/07/2018) to (30/11/2019) (17 months) (both dates included)
Duration of previous monitoring period	(01/08/2016) to (30/06/2018) (23 months) (both dates included)
Project representative(s)	MANRES Elektrik Üretim A.Ş. (Project Owner, private entity), GTE Karbon Sürdürülebilir Enerji Eğitim ve Danışmanlık A.Ş. (Project Developer, private entity)
Host Country	Turkey
Certification pathway (activity certification/impact certification)	Impact certification
SDG Contributions targeted (as per approved PDD)	SDG 7, SDG 8, SDG 13
Gold Standard statement/product certification sought (GSVER/ADALYs/RECs etc.)	GS VER
Selected methodology(ies)	ACM0002 “Grid-connected electricity generation from renewable sources”, version 14. 0
Estimated amount of annual average certified SDG impact (as per approved PDD)	Annual estimated GHG emission reduction is 33,300 tCO ₂ in registered PDD. Therefore; 01/07/2018 – 31/12/2018 (6 months): 16,650 tCO ₂ (correlated) 01/01/2019 – 30/11/2019 (11 months): 30,525 tCO ₂
Total amount of certified SDG impact (as per approved methodology) achieved in this monitoring period	01/07/2018 – 31/12/2019 (6 months): 16,872 01/01/2019 – 30/11/2019 (11 months): 31,939

SECTION A. Description of project

A.1. Purpose and general description of project

The project is a large-scale wind power plant project located within the boundaries of Manyas District of Balıkesir province, Turkey. In total, the project involves eight installed turbines as five of them with an installed capacity of 2.5 MW and three of them are 2.75 MW. Total installed capacity is 20.75 MWm/20MWe. As per the license issued by Energy Market Regulatory Authority (EMRA), all legal rights of the project is given to MANRES Elektrik Üretim 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. Project was commissioned on 20/11/2012.

Turbines outputs are transmitted to the switchyard area via underground cabling. Total land used is estimated as 2,000 m² including turbines basements, crane pads, switchyard and access roads¹. Electricity generated at project is fed to the national grid via Mustafa Kemal Pasa SubstationTM 34.5 kV.²

During micro siting and optimization studies, several layouts was compiled using different turbines. Total output of the project is 55.5 GWh as per the Energy Assessment Report. Annual emission reduction is estimated as 33,300 tCO₂ per year. Average lifetime of turbines are assumed as 25 years as per the relevant tool³.

Main goals of the project 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.

In terms of sustainable development, project does not only contribute to the emission reduction through use of renewable resources and creating job opportunities. In terms of environmental impact, project is considered to have positive impacts on air quality due to avoided NO_x, PM and SO₂ emissions whereas no negative impact on water quality and biodiversity has been identified. As per the national regulations, a project introductory file (PIF) was prepared for the project to assess the environmental impacts. In addition to national requirements, a full Environmental and Social Impact Analysis (ESIA) study was carried out for the project for compliance with international standards.

In addition to contribution to local economy, project will also contribute use of local and renewable resources to meet the increasing energy demand of Turkey and reduce dependency on fossil fuels.

¹ Gunaydin WPP ESIA, page 36

² Gunaydin WPP ESIA, page 32

³ <http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf>

Table 1. Milestones for Gunaydin WPP

*Date of investment decision

Milestone	Date
Preliminary EIA	February 2009
Contribution Fee Agreement	24/09/2011
License Issuance	11/11/2011
Collecting Offers for Carbon Agreement	15/11/2011
EM Equipment Purchase Contract*	20/12/2011
Carbon Agreement	24/01/2012
EIA Exemption Letter	25/01/2012
License Revision	09/02/2012
LSC Meeting	21/02/2012
Connection Agreement	03/04/2012
Construction Subcontractor Agreement	03/04/2012
Forest Permission	20/04/2012
Commissioning Date	20/11/2012
Start Date of First Crediting Period	01/12/2012
1 st Monitoring Period	01/12/2012 – 30/04/2014
Loan Agreement for Extension	27/06/2013
LSC Meeting for Capacity Extension	31/10/2013
EIA Exemption Letter for Capacity Extension	05/03/2014
Turbine Agreement for Capacity extension	18/03/2014
Amended License for Capacity Extension	31/03/2014
Start of Construction for Extension	August 2014
Commissioning Date for Extension	21/12/2014 and 26/12/2014
2 nd Monitoring Period	01/05/2014 – 31/07/2015
3 rd Monitoring Period	01/08/2015 – 31/07/2016
4 th Monitoring Period	01/08/2016- 30/06/2018
Transition Approval	09/03/2020
5 th Monitoring Period	01/07/2018 – 30/11/2019

A.2. Location of project

Turkey / Balikesir province /Manyas district

The closest settlement is a village called Yayla Neighbourhood which has about 1 km distance to the project site.

Table 2. Coordinates

Zone(35S)	Y	X
T1	586478	4425918
T2	586566	4425088
T3	586463	4425636
T4	586268	4425305
T5	585994	4425329
T6	586582	4426185
T7	586792	4425776
T8	586249	4425719
Switchyard	586009	4425184

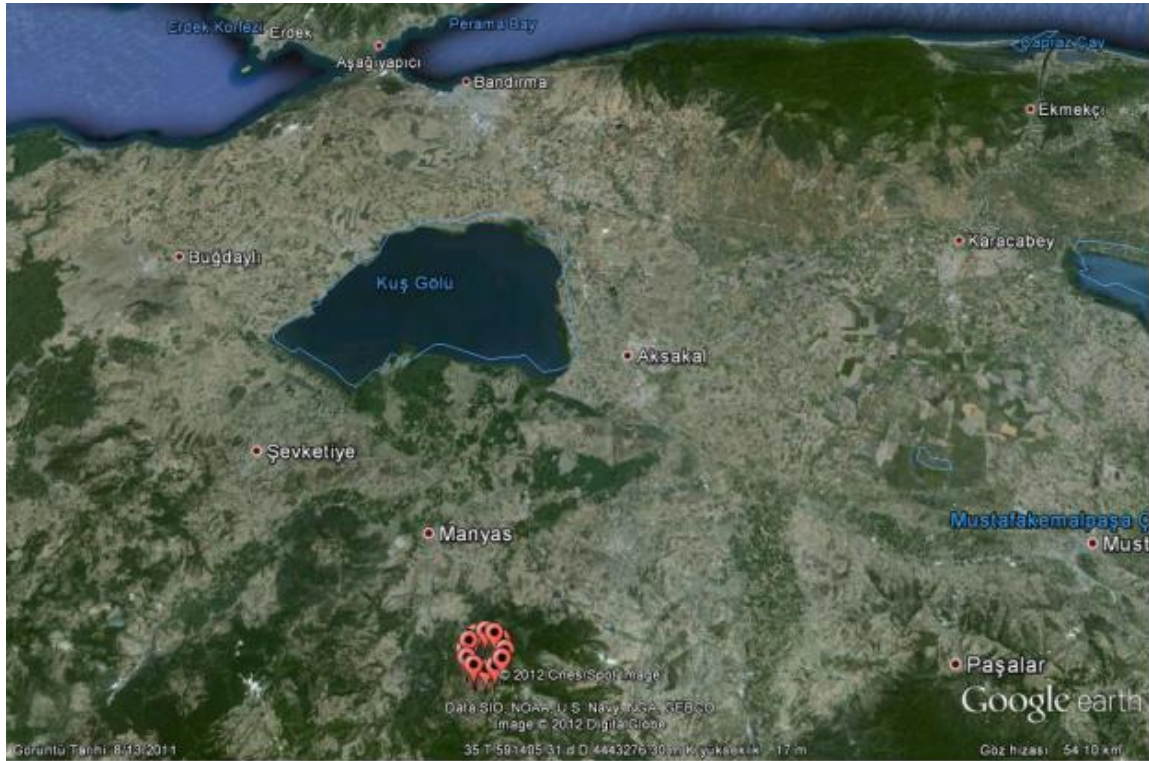


Figure 1. Location of the project area

A.3. Reference of applied methodology

The UNFCCC approved baseline and monitoring methodology ACM0002, version 14.0 was applied for the project activity. Following tools have been used:

- Tool for the demonstration and assessment of additionality, Version 07.0.0
- Tool to calculate the emission factor for an electricity system, Version 02.2.1
- Tool to determine the remaining lifetime of equipment, Version 01

A.4. Crediting period of project

The first crediting period started on 01/12/2012. Total length of crediting period is 7 years.

SECTION B. Implementation of project

B.1. Description of implemented project

Average annual wind speeds measured at the project site at 85 meters hub height is 8.2 meters per second⁴. The project uses 5 Wind Energy Converters (WEC's) of GE 2.5-100 MW and 3 GE 2.75-100 generators with total electrical output of 20MWe. The annual electricity generation from these turbines are estimated to be 55.5 GWh. This energy is converted to 34.5 kV at the site switchyard and connected to the national grid.

Table 3. Technical characteristics of the 2.5 MW wind turbines⁵

Design Limits	
Rotor Diameter	100 m
Cut-in Wind Speed	3.0 m/s
Cut-out Wind Speed	25 m/s
Rated Power Output	2.5 MW
Minimum ambient temperature operation	-15 °C / -20°C
Maximum ambient temperature operation	+ 40 °C
Minimum Humidity	5 g/m ³
Maximum number of grid-induced disconnections per year	30
Maximum altitude with no deareting	1000 m
Tower	
Type	Tubular Steel Tower
Hub Height	85 m
Yaw System	
Yaw rate	0.5 °/sec
Rotor	
Diameter	100 m
Number of rotor blades	3
Swept area	7854 m ²
Rotor speed range	5-14 min ⁻¹
Rotational Direction	Clockwise looking downwind
Maximum speed of the blade tips	73.6 m/s
Orientation	Upwind
Speed regulation	Pitch-controlled
Aerodynamic brake	Blades in feathering position
Cone angle	3°
Inclination angle of rotor axis	4°
Rotor Blades	
Length (blade root – tip)	48.7 m
Pitch System	
Principle	Single blade pitch control
Main Gearbox	
Rated Power	2750 kW
Type	Multi-stage system
Lubrication	1 mechanical and 1 electrical pump
Brake System	
Primary brake system	Single blade pitch control
Secondary brake system	Single blade pitch control
Holding brake	Hydraulically driven brake caliper on high-speed shaft
Generator	
Type	Permanent magnet generator
Rated output	2640 KW
Rated speed	1650 min ⁻¹
Rated voltage	710 V
Apparent Power	2808 kVA
Frequency at rated output	110 Hz
Protection Class	IP54
Insulation Class	F
Function type	S1
Standard	EN 60034-1
Converter System	
Type	Voltage source converter
Rated voltage, line slide	690 V +/-10 %
Rated frequency	50 Hz / 60 Hz
Protection class of the electronics	IP54

⁴ FSR, page 15

⁵ Günaydın WF Extension ESIA, 3-11

Table 4 Technical characteristics of GE 2.75- 100 turbines

Power	
Rated Power	2,750 kW
Rated Wind Speed	13.5 m/s
Cut-in Wind Speed	3.0 m/s
Cut-out Wind Speed	25 m/s
Rotor	
Diameter	100.0 m
Swept Area	7,853.98 m ²
Number of Blades	3
Rotor Speed	4.7 – 14.8 rpm
Blade Material	Glass-fiber reinforced plastic
Gearbox	
Type	Combined spur / Planetary gear
Stages	3
Ratio	1:117
Generator	
Type	Synchronous, permanent magnet
Voltage	690 V
Grid Connection	Via converter
Grid Frequency	50/60 Hz
Control and Protection System	
Power Limitation	pitch
Speed Control	Variable via microprocessor, active blade pitch control
Second brake system	Disk brake
Yaw control system	4 electric gear motor(s)
Tower	
Hub Height	85.0 m
Type	Steel tubular
Shape	conical
Corrosion protection	Multi-coated

B.2. Post-registration changes

B.2.1. Temporary deviations from Certified Key Project Information, Project Design Document, Monitoring & Reporting Plan, applied methodology or applied standardized baseline

N/A

B.2.2. Corrections

None

B.2.3. Changes to start date of crediting period

No changes.

B.2.4. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

In registered PDD, PMUM records were given as reference for electricity generation. However, the name of this institution was changed and electricity generation records have been belonged to EPIAS. Therefore, EPIAS records will be taken into account.

Although PDD states that “all employee will attend trainings on first aid and health & safety, only Mehmet Şenevren got first aid training among Securitas employee. According to the Occupational Health and Safety Regulation #6331, 1 first-aider is sufficient for very dangerous workplaces having people up to 10.⁶ Therefore, it is quite compatible to the relevant regulation.

B.2.5. Changes to project design of approved project

No change.

SECTION C. Description of monitoring system applied by the project

Monitoring plan has been applied according to the selected methodology (ACM0002). According to the applied methodology, all data collected as part of monitoring were archived electronically and kept at least for 2 years after the end of the last crediting period. Essential parameters were monitored if not indicated otherwise in the tables below. All measurements were conducted with calibrated measurement equipment according to relevant standards.

The results of the readings were saved electronically and made available by TEIAS via official website. Invoicing is based on the data published on the website.

The monitoring system organization chart is shown in Figure below, in which the authority and responsibility of project management are defined.

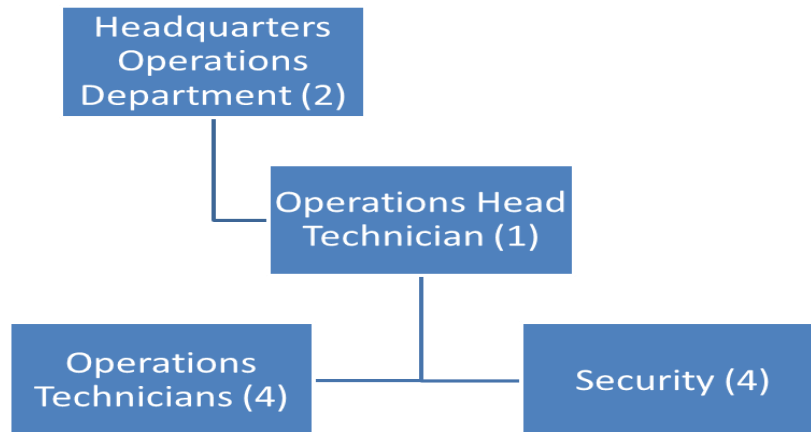


Figure 1: Monitoring System Organization Chart

Plant Manager (Operations Head Technician):

Operations head technician has been assigned as the overall responsible of compliance with VER monitoring plan. He is responsible for day to day running of plant, recording and monitoring of relevant data. Operation technicians are assisting him with the gathering and reporting of the data.

⁶ <https://metropolegitim.com/isyerlerinde-ilk-yardim-egitimi-zorunlulugu>

Accounting Management (Headquarters Operations Department):

Since the company is a part of larger group, financial matters are managed from the headquarters. Operations Department is responsible for accounting, handling data about power sales, social security documents, invoicing and other personnel affairs.

GTE Karbon Sürdürülebilir Enerji Eğitim Danışmanlık Ve Ticaret A.Ş. 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 EPIAS records as the primary source of data for electricity generation since the billing is based on the EPIAS records. Electricity generation of the Gunaydin 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

Relevant SDG Indicator	7.2.1 “Renewable energy share in the total final energy consumption” 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions”																																																
Data/parameter	FC _{i,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/istatistik2010/front%20page%202010-%C3%A7i%C3%A7ek%20kitap/yak%C4%B1t46-49/47.xls)																																																
Value(s) applied	<table><tr><th rowspan="2">Fuel Type</th><th colspan="4">FC_{i,y} unit [Tons, except for Natural Gas (NG) (1000 m³)]</th></tr><tr><th>2008</th><th>2009</th><th>2010</th><th>Total</th></tr><tr><td>Hard Coal</td><td>6,270,008</td><td>6,621,177</td><td>7,419,703</td><td>20,310,888</td></tr><tr><td>Lignite</td><td>66,374,120</td><td>63,620,518</td><td>56,689,392</td><td>186,684,030</td></tr><tr><td>Fuel Oil</td><td>2,173,371</td><td>1,594,321</td><td>891,782</td><td>4,659,474</td></tr><tr><td>Diesel Oil</td><td>131,206</td><td>180,857</td><td>20,354</td><td>332,417</td></tr><tr><td>LPG</td><td>0</td><td>111</td><td>0</td><td>111</td></tr><tr><td>Naphtha</td><td>10,606</td><td>8,077</td><td>13,140</td><td>31,823</td></tr><tr><td>Natural Gas</td><td>21,607,635</td><td>20,978,040</td><td>21,783,414</td><td>64,369,089</td></tr></table>					Fuel Type	FC _{i,y} unit [Tons, except for Natural Gas (NG) (1000 m³)]				2008	2009	2010	Total	Hard Coal	6,270,008	6,621,177	7,419,703	20,310,888	Lignite	66,374,120	63,620,518	56,689,392	186,684,030	Fuel Oil	2,173,371	1,594,321	891,782	4,659,474	Diesel Oil	131,206	180,857	20,354	332,417	LPG	0	111	0	111	Naphtha	10,606	8,077	13,140	31,823	Natural Gas	21,607,635	20,978,040	21,783,414	64,369,089
Fuel Type	FC _{i,y} unit [Tons, except for Natural Gas (NG) (1000 m³)]																																																
	2008	2009	2010	Total																																													
Hard Coal	6,270,008	6,621,177	7,419,703	20,310,888																																													
Lignite	66,374,120	63,620,518	56,689,392	186,684,030																																													
Fuel Oil	2,173,371	1,594,321	891,782	4,659,474																																													
Diesel Oil	131,206	180,857	20,354	332,417																																													
LPG	0	111	0	111																																													
Naphtha	10,606	8,077	13,140	31,823																																													
Natural Gas	21,607,635	20,978,040	21,783,414	64,369,089																																													
Choice of data or Measurement methods and procedures	Data from Grid Operator has been used																																																
Purpose of data	Data used for OM calculation																																																
Additional comment	-																																																

Relevant SDG Indicator	7.2.1 “Renewable energy share in the total final energy consumption” 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions”
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/istatistik2010/front%20page%202010-%C3%A7i%C3%A7ek%20kitap/kgucunkullan%C4%B1m(13-21)/13.xls For net generation and imported electricity http://www.teias.gov.tr/T%C3%BCrkiyeElektrik%C4%B0statistikleri/istatistik2010/front%20page%202010-%C3%A7i%C3%A7ek%20kitap/uretim%20tuketim(22-45)/33(84-10).xls
Value(s) applied	157,706.6 in 2008 151,144.7 in 2009 150,894,2 in 2010 459,745 .428 GWh between 2008-2010
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 comment	-

Relevant SDG Indicator	7.2.1 “Renewable energy share in the total final energy consumption” 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions”
Data/parameter	EFCO ₂ , i, y i
Unit	tCO ₂ /TJ
Description	CO ₂ emission factor of fossil fuel type “i” in year “y”
Source of data	For EF of fossil fuels, IPCC values at the lower limit have been used.

Value(s) applied	Fuel Source	EF (tCO ₂ /Tj)
	Coal	89,5
	Lignite	90.9
	Fuel Oil	75.5
	Diesel	72.6
	LPG	61.6
	Naphtha	69.3
	Natural Gas	54.3
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 comment	-	

Relevant SDG Indicator	7.2.1 “Renewable energy share in the total final energy consumption” 13.3.2 Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions”	
Data/parameter	η m,y	
Unit	-	
Description	Average net energy efficiency of power unit m in year y	
Source of data	Default values provided Annex I of the “Tool to calculate the emission factor for an electricity system	
Value(s) applied	Fuel Source	Generation Efficiency
	Coal	39%
	Lignite	39%
	Fuel Oil	39.5%
	Diesel	39.5%
	LPG	39.5%
	Naphtha	39.5%
	Natural Gas	60%
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 comment	-	

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/istatistik2010/front%20page%202010-%C3%A7i%C3%A7ek%20kitap/yak%C4%B1t46-49/49.xls	
Value(s) applied)	Fuel Source	NCV (Tj/kt) (1000m³ for gas)
	Coal	22.26
	Lignite	6.78
	Fuel Oil	39.84
	Diesel	42.42
	LPG	46.47
	Naphtha	39.78
	Natural Gas	37.06
	Values applied are present in Appendix 4 of registered PDD (version 9)	
Choice of data or measurement methods and procedures	Data has been calculated from Grid Operator's (TEIAS) statistics	
Purpose of data	Data used for BM calculation	
Additional comments	-	

D.2. Data and parameters monitored

Relevant SDG Indicator/Safeguarding Principle	SDG 7 - Indicator 7.2.1 – “renewable energy share in the total final energy consumption” SG Principle 4.1.2 Climate
Data/parameter:	EG_{facility, y}
Unit	GWh
Description	Net Electricity generated and delivered to the grid by the proposed project in year y
Measured/calculated/default	Measured
Source of data	Metering devices used in power plants, monthly generation records will be used.
Value(s) of monitored parameter	EG _{facility,2018} (6 months) = 28.12 GWh EG _{facility,2019} (11 months) = 53.23 GWh Total: 81.35 GWh

Monitoring equipment	Specifications of the metering devices are as follows:				
	Manufacturer	Device Model	Serial Number	Last Calibration	Accuracy Class
				13.07.2012	
	ACTARIS (secondary)	SL7000	65000753		0.5 S
	EMH (main)	LZQJ-XC	5944140	15.08.2017	0.5 S
Measuring/reading/recording frequency:	Continuous measuring, monthly recording				
Calculation method (if applicable):	Generation data will be recorded by two metering devices continuously. This parameter is calculated by using the monthly gross generation and monthly internal consumption figures which are provided by the EPIAS via remote reading. On-site metering records are used for cross-checking purposes and the most conservative data set is opted for calculations where available. Main metering device changed in 15.08.2017. This meter replaced due to request of TEIAS since it was not compatible with the remote meter reading system. Apart from that, there is no problem of calibration of device and reading of electricity generation data. Model, serial number, first index protocol (calibration date) and accuracy information of both replaced main metering device and back-up device is given below in detail. Calibration for beck-up meters was performed on 13/07/2012.As per the regulations, meters should not require calibration before 10 years (till 13/07/2022). In addition, main metering device has been renewed on the date of 15/08/2017 (date of first index protocol and calibration). As per the regulations, main metering device should not require calibration before 10 years (till 15/08/2027).				
QA/QC procedures:	Maintenance and test of the metering devices will be made by TEIAS periodically. In case of significant difference between two devices, maintenance will be done before waiting for periodical maintenance according to regulations of TEIAS.				
Purpose of data:	Calculation of baseline emissions or baseline net GHG removals by sinks				
Additional comments:	-				

Relevant SDG Indicator/Safeguarding Principle	SDG13 : Climate Action 13.2.1. Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development Principle 3.4.3 Release of Pollutants
Data / Parameter	Air Quality
Unit	tons
Description	Reduction of SO ₂ and NO _x emissions due to implementation of project activity that would otherwise be emitted by thermal power plants
Source of data	Electricity generated by Gunaydin WPP and NO _x and SO ₂ emission data from GHG inventory of Turkey will be used as reference in calculation of the emission reduction.

Value(s) applied	Total SO₂ emission related to electricity generation is about 413.78 Gg for 2010 according to National Inventory of Turkey. Considering that electricity generation in 2010 is 211,207.70 GWh, SO₂ emission per MWh is calculated as 1.96 kg/MWh. Total NO_x emission related to electricity generation is about 316.14 Gg for 2010 according to National Inventory of Turkey. Considering that electricity generation in 2010 is 211,207.70 GWh NO_x emission per MWh is calculated as 1.50 kg/MWh. According to the results, calculated achieved reductions are; • 159 tonnes of SO₂ • 121 tonnes of NO_x
Measurement methods and procedures	The net electricity supplied by the Project will be continuously measured and recorded by EPIAS; and will be kept by the Project Owner. NO _x and SO ₂ emission data from GHG inventory of Turkey will be used as reference in calculation of the emission reduction.
Monitoring frequency	Yearly
QA/QC procedures	-
Purpose of data	To calculate the baseline emission value; and also to monitor the contribution to SDG 13 (Take urgent action to combat climate change and its impacts)
Additional comment	-

Relevant SDG Indicator	SDG 8: Decent Work and Economic Growth - 8.8.1 Frequency rates of fatal and non-fatal occupational injuries, by sex and migrant status Principle 3.6.1: Labour Rights
Data/parameter:	Quality of employment
Unit	Number of personnel certificated / trained during operation phase
Description	Contribution to quality of employment by ensuring that the staff is trained and certified for the required positions
Measured/calculated/default	-
Source of data	Training Records (including H&S) & Other Certificates required by certain professions, if necessary

Value(s) of monitored parameter	Some of the trainings & workshops that are given to the respective employees are:				
	#	Attendee	Provided By	Subject	Date
	1	Mehmet Şenevren	Securitas Integrated Security and Solutions and Services	Health and Safety Training	15/04/2019 16/04/2019
				First aid	16/04/2019
	2	Yalçın Başaran	Securitas Integrated Security and Solutions and Services	Health and Safety Training	15/04/2019 16/04/2019
	3	Ümit Tanrıverdi	Securitas Integrated Security and Solutions and Services	Health and Safety Training	15/04/2019 16/04/2019
	4	Fatih Tanrıverdi	Securitas Integrated Security and Solutions and Services	Health and Safety Training	15/04/2019 16/04/2019
	5	Mehmet Ali Sarı	MANRES	Health and Safety Training	30/10/2018 26/11/2019
				First Aid	12/06/2017 (valid through 12/06/2020)
				Safe Driving Training	11/11/2019
	6	Mehmet Selvi	MANRES	Health and Safety Training	30/10/2018 23/11/2019
				First Aid	12/03/2019 (valid through 12/03/2022)
				Safe Driving Training	11/11/2019
	7	Mesut Açık	MANRES	Health and Safety Training	30/10/2018 26/11/2019
				First Aid	12/06/2017 (valid through 12/06/2020)
				Safe Driving Training	11/11/2019

	8	Ömer Özder	MANRES	Health and Safety Training	26/11/2019
				First Aid	10/01/2018 (valid through 10/01/2021)
				Safe Driving Training	11/11/2019
	9	Salih Bircan	MANRES	Health and Safety Training	30/10/2018 23/11/2019
				First Aid	12/06/2017 (valid through 12/06/2020)
				Safe Driving Training	11/11/2019
Monitoring equipment	-				
Measuring/reading/recording frequency:	Annually				
Calculation method (if applicable):	-				
QA/QC procedures:	The training programmes help increase the efficiency of the workforce and provides employees skilled at their job. This not only helps the company but to self-improvement of individual employees.				
Purpose of data:	To monitor the contribution to SGD 8 and Principle 3.6.1.				
Additional comments:	Date of training belonging to the year 2018 is 10/04/2018. However, this date is not included by this monitoring period which is between 01/07/2018 – 3/11/2019. Yet, training records have been provided to DOE. Although PDD states that “all employee will attend trainings on first aid and health & safety, only Mehmet Şenevren got first aid training among Securitas employee. According to the Occupational Health and Safety Regulation #6331, 1 first-aid is sufficient for very dangerous workplaces having people up to 10.⁷ Therefore, it is quite compatible to the relevant regulation.				

⁷ <https://metropolegitim.com/isyerlerinde-ilk-yardim-egitimi-zorunlulugu>

Relevant SDG Indicator/Safeguarding Principle	Principle 4.3.4 Release of pollutants
Data / Parameter	Water Quality and Quantity
Unit	-
Description	Appropriate disposal of wastewater as required by the Law on Water Pollution Control
Source of data	Assessing collection methods during site visits and checking waste disposal records.
Value(s) applied	There are 3 records (in this monitoring period) for vacuum truck which is used for the disposal of wastewater generated at the site. The institution info and the dates of discharges are: Balıkesir Metropolitan Municipality: 12/09/2018 Balıkesir Metropolitan Municipality: 05/12/2018 Balıkesir Metropolitan Municipality: 30/10/2019
Measurement methods and procedures	There will not be any significant activities on ambient water sources during the operational and contraction phases of project. Also IFC wastewater and ambient water quality guidelines are applicable to the project. The guideline states that if sewage from the industrial facility is to be discharged to a septic system, treatment to meet applicable national or local standards for sanitary wastewater discharges is required. The wastewater from the septic tank is transported to a treatment plant where it is treated to meet the standards in according with guidelines and national regulations. ⁸ Collection methods and waste disposal records were checked during site visits.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to Principle 4.3.4.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	Principle 4.3.11 Endangered Species
Data / Parameter	Biodiversity
Unit	-
Description	Ensuring that the project creates no disturbance to the regional habitat
Source of data	Assessments during site visits and observation (ornithology) reports
Value(s) applied	2018: 19 deaths observed (<i>Pipistrellus pipistrellus</i> , <i>Eptesicus serotinus</i> , <i>P. nathusii</i> and <i>Nyctalus leisleri</i>) 2019: 8 deaths observed (<i>Pipistrellus/Hypsugo</i> and <i>Nyctalus</i>) However, the operation of the WPP does not pose a serious risk for the bats according to the experts' opinion as stated in the report.

⁸ Project Introductory Document(PID) page 19

Measurement methods and procedures	Ornithology report, however since the monitoring obligation for birds has been terminated by Directorate of Nature Conservation and National Parks (DMKP), there is no ornithology studies conducted in this monitoring period. Only reports for bats were prepared.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to Principle 4.3.11.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	Principle 4.3.4 Release of pollutants
Data / Parameter	Soil Condition
Unit	-
Description	Proper management of soil use and wastes
Source of data	Site visit and checking waste disposal records
Value(s) applied	Solid waste generated at the site is disposed to the waste storage area located on Kubaş Neighbourhood road and belonging to the Manyas Municipality.
Measurement methods and procedures	Recyclable and non-recyclable wastes will be stored temporarily and will be disposed by the Manyas Municipality.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to Principle 4.3.4.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	Principle 4.3.5 Hazardous and Non-hazardous Waste
Data / Parameter	Other Pollutants
Unit	-
Description	Proper management of waste oil
Source of data	Assessing disposal methods during site visits and checking waste oil disposal records.

Value(s) applied	According to 2018 records submitted by Manres on 25/02/2019, 0.522 tonnes of 2 nd category waste oil was disposed according to the regulation. Transportation firm: TAYSPED Logistics Disposal Facility: PETDER According to 2019 records submitted by Manres on 04/02/2020, 0.417 tonnes of 2 nd category waste oil was disposed according to the regulation.
Measurement methods and procedures	Waste oil from equipment will be collected properly in line with the relevant regulation and disposed via accredited abatement companies. Waste oil will be disposed in line with regulation # 26952 on control of waste oils ⁹ .
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to Principle 4.3.5.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	Principle 4.3.5 Hazardous and Non-hazardous Waste
Data / Parameter	Other Pollutants
Unit	-
Description	Level of noise
Source of data	Site visit observations and interviews
Value(s) applied	During the site visit, the mukhtar was asked whether there is any noise problem caused by the turbines. According to the information gathered from him, there was no grievance received related to the noise so far.
Measurement methods and procedures	Noise measurements have been made at the nearest location and determined as below the limits. The project is not expected to cause noise problem. Related studies have been done for day and night time. ¹⁰ Moreover, updated information will be gathered via visit observations and interviews during the site visits of monitoring activities.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to Principle 4.3.5.
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	SDG 7: Energy – 7.2.1 Renewable energy share in the final energy consumption Principle 4.1.2 Climate and Energy
Data / Parameter	Balance of payments and investment
Unit	-

⁹ Regulation: *Atık Yağların Kontrolü Yönetmeliği*, numbered 26952, dated 30.07.2008

<http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.12290&MevzuatIliski=0&sourceXmlSearch>

¹⁰ Gunaydın WF ESIA page 51

Description	Project has started generating electricity and contributing balance of payments.
Source of data	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.
Value(s) applied	In 2018, about 19.568.140 (1000)m ³ natural gas been used for about 92,482.8 GWh electricity generation.
Measurement methods and procedures	Approximately consumption of 17,213 (1000) m ³ of natural gas is expected to be avoided corresponding to € 3,317,756 in the whole monitoring period.
Monitoring frequency	Annually
QA/QC procedures	-
Purpose of data	To monitor the contribution to SGD 7 and Principle 4.1.2
Additional comment	-

Relevant SDG Indicator/Safeguarding Principle	SDG 8: Decent Work and Economic Growth SDG 8: Decent Work and Economic Growth - 8.5.1 Average hourly earnings of female and male employees, by occupation, age and persons with disabilities Principle 3.6.1: Labour Rights	
Data/parameter:	Quantitative employment and income generation	
Unit	Number of locally recruited staff and their social security records	
Description	Ensuring that the staff receives their full salaries on time	
Measured/calculated/default	Measured	
Source of data	Social Security Records to be provided by the project owner	
Value(s) of monitored parameter	No	Name of Personnel
	1	Mesut Açık (MANRES)
	2	Mehmet Ali Sarı (MANRES)
	3	Mehmet Selvi (MANRES)
	4	Salih Bircan (MANRES)
	5	Ömer Özder (MANRES)
	6	Mehmet Şenevren (SECURITAS)
	7	Fatih Tanrıverdi (SECURITAS)
	8	Ümit Tanrıverdi (SECURITAS)
	9	Yalçın Başaran (SECURITAS)
There are 5 local people working as MANRES employee and 4 local security staff from SECURITAS.		
Monitoring equipment	-	
Measuring/reading/recording frequency:	Annually	
Calculation method (if applicable):	-	
QA/QC procedures:	Evaluation documents for wages paid and social security documents	
Purpose of data:	To monitor the contribution to SDG 8	

Additional comments:	-
----------------------	---

Implementation of sampling plan

None.

SECTION E. Calculation of SDG outcomes

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

SDG 7: Affordable and Clean Energy

There is no clean energy generation for baseline situation of the project site. The project has been expected to generate 55,500 MWh per annum according to generation report and contributes to share of low-cost / must-run sources. The on-site meter and EPIAS records are used in order to calculate the electricity generation during the monitoring period.

Approximately, 11.02 million of natural gas would be used corresponding to € 3,541,666 in the whole monitoring period (17 months) in the “no project” case.

SDG 8: Decent Work and Economic Growth

There is no employment opportunity as project created within the project area and nearby settlements for baseline situation. Project has been expected to contribute to qualified decent work and economic growth could be expressed as following target:

Target 8.5: “By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.”

Target 8.8: “Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment”.

SDG 13: Climate Action

There is no similar activity to combat with climate change on project site and nearby area for baseline situation. This project has been expected to generate clean energy which also does not cause greenhouse gas emission during electricity generation. The project has been expected to lead mitigation of 33,300 tCO₂ per annum contributed to the target of SDG 13. Annual SO₂ and NO_x emission mitigation is 108.78 tonnes and 83.25 tonnes, respectively.

Realized baseline emissions

BE₂₀₁₈ = (28,120.110 MWh) x (0.600 tCO₂/MWh) = 16,872 tCO₂
 BE₂₀₁₉ = (53,233.280 MWh) x (0.600 tCO₂/MWh) = 31,939 tCO₂
 Total: 48,811 tCO₂

EG_{baseline} is considered as zero.

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

LE_y = 0

The project activity involves the generation of electricity by a wind power plant therefore project activity does not result in greenhouse gas emissions.

PE_y = 0

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

SDG 7: Affordable and Clean Energy

The project is expected to generate 78,625 MWh for the whole monitoring period (17 months) according to the Energy Assessment Report and contributes to share of low-cost / must-run sources. Approximately, 11.02 million of natural gas would be used corresponding to € 3,541,666 million in the whole monitoring period (17 months) according to PDD.

SDG 8: Decent Work and Economic Growth

The project is expected to create job opportunity for 8 people including subcontractors (security staff etc). It is also expected to provide required trainings for all employee.

SDG 13: Climate Action

The project is expected to lead mitigation of 47,175 tCO₂ for this monitoring period (17 months). The project is also expected to lead mitigation of 154.04 tonnes of SO₂ and 117.69 tonnes of NO_x for this monitoring period (17 months) according to the values in PDD.

E.3. Calculation of net benefits as difference of baseline and project values or direct calculation for each SDG outcome

SDG 7: Affordable and Clean Energy

Renewable energy generated by the project for this monitoring period is summarized below.

Net Electricity Generation	
2018 (6 months)	28,120.110 MWh
2019 (11 months)	53,233.280 MWh
Total (17 months)	81,353.390 MWh

Approximately consumption of 17,213 (1000) m³ of natural gas is expected to be avoided corresponding to € 3,317,756 in the whole monitoring period.

SDG 8: Decent Work and Economic Growth

There are 5 local people working as MANRES employee and 4 local security staff from SECURITAS 9 people gained required trainings and income by the project. Therefore, the project has net outcomes both in technical and economic aspects. 24 certificates have been provided in the whole monitoring period.

SDG 13: Climate Action

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

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

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

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

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

EGfacility,2018 (6 months) = 28,120.110 MWh

EGfacility,2019 (11 months) = 53,233.280 MWh

Total = 81,353.390 MWh

BE2018= (28,120.110 MWh) x (0.600 tCO₂/MWh) = 16,872 tCO₂

BE2019= (53,233.280 MWh) x (0.600 tCO₂/MWh) = 31,939 tCO₂

Total: 48,811 tCO₂

SO₂ = (81,353.390 MWh) x (1.96 kg/MWh) / 1000 = 159.00 tonnes of SO₂

NO_x = (81,353.390 MWh) x (1.50 kg/MWh) / 1000 = 121.00 tonnes of NO_x

E.4. Summary of ex-post values of each SDG outcome for the current monitoring period

Item	Baseline estimate	Project estimate	Net benefit
SDG 7	There is no clean energy generation for baseline situation of the project site.	Project has been expected to generate 55,500 MWh per annum and total 78,625 MWh for this monitoring period. Approximately, 11.02 million of natural gas would be used corresponding to € 3,541,666 in the whole monitoring period.	57,580 MWh net annual energy. 86,370.367 MWh total net energy. Approximately consumption of 17,213(1000) m ³ of natural gas is expected to be avoided corresponding to € 3,317,756 in the whole monitoring period.
SDG 8	There is no employment opportunities as project created within the project area and nearby settlements for baseline situation.	Project has been expected to contribute to decent work and economic growth could be expressed as following target and indicator: Project is expected to employ local staff as much as possible and provide both income and technical abilities supported with health and safety trainings.	9 staff are to be trained and so skilled based on technical abilities and health and safety perspective. 24 certificates have been provided in the whole monitoring period. Moreover, these staff gained income. 9 people are employed locally for the project activity.
SDG 13	There is no similar activity to combat with climate change on project site and nearby area for baseline situation.	This project has been expected to generate clean energy which also does not cause greenhouse gas emission during electricity generation. The project has been expected to lead mitigation of annual 33,300 Tco2 and 47,175 tCO ₂ for whole monitoring period. The project has been expected to lead mitigation of annual 108.78 tonnes of SO ₂ and 154.04 tonnes of SO ₂ for the whole monitoring period. The values are 83.25 tonnes per annum and 117.69 tonnes for the whole monitoring period for NO _x .	The project has lead mitigation of 34,455 tCO ₂ per annum and 48,811 tCO ₂ for this monitoring period. The project has lead mitigation of 112.23 tonnes of SO ₂ per annum and 159.00 tonnes of SO ₂ in the whole monitoring period. The project has lead mitigation of 85.41 tonnes of NO _x per annum and 121.00 tonnes of NO _x in the whole monitoring period.

E.5. Comparison of actual value of outcomes with estimates in approved PDD

Item	Values estimated in ex ante calculation	Actual values achieved during this monitoring period
SDG 7	The project is expected to generate 55,500 MWh per annum according to generation report and contributes to share of low-cost / must-run sources. Approximately, 11.02 million of natural gas would be used corresponding to € 3,541,666 in the whole monitoring period (17 months) in the “no project” case.	The project generated 57,426 MWh of clean energy per annum and 81,353.390 MWh for the whole monitoring period (17 months) and contributes to share of low-cost / must-run sources. Approximately consumption of 17,213 (1000) m³ of natural gas is expected to be avoided corresponding to € 3,317,756 in the whole monitoring period.
SDG 8	Project has been expected to contribute to decent work and economic growth: Project expected to employ 8 staff and provide both income and technical abilities supported with health and safety trainings.	Training (including H&S) & Other Certification processes required by certain necessary professions provided to employees to protect human health&rights and develop as discussed detail in related parameter. Hence, project contributes awareness of labour rights and safety precautions. As discussed above in related SGD Table and indicator within project activity 9 local staff gained health and safety trainings and income. 24 certificates have been provided in the whole monitoring period. Hence project has net outcomes both in technical and economic gains for the people and this situation as nearly as the estimated plans.
SDG 13	This project has been expected to generate clean energy which also does not cause greenhouse gas emission during electricity generation. The project has been expected to lead mitigation of 33,300 tCO₂ per annum. The project has been expected to lead mitigation of annual 108.78 tonnes of SO₂ and 83.25 tonnes of NO_x.	The project leads to mitigation of 34,455 tCO₂ per annum. The project has lead mitigation of 112.23 tonnes of SO₂ and 85.41 tonnes of NO_x per annum.

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

The project was expected to generate 55,500 MWh according to the Energy Assessment Report. The project generated 57,426 MWh of clean energy per annum and 81,353.390 MWh for the whole monitoring period (17 months) which is related with SDG 7. Correspondingly 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. The wind speed and seasonal effects directly affect generated electricity.

% difference in EG: $[(57,426 - 55,500) / 55,500] \times 100 = 3,47 \%$ (the same percentage for ER), which means the project generated 3,47 % more electricity than expected.

SECTION F. Stakeholder inputs and legal disputes

F.1. List all inputs/grievances which have been received for the project during the monitoring period together with their respective answers/actions

- Continuous communication with local stakeholders was kept during the monitoring period. There was a logbook left for recording the grievances if there are any. However, locals prefer face-to-face communicating due to good and strong communication between mukhtar (Selahaddin Başaran) / project owner. Therefore, there is no written input or grievance in the logbook so far. There is also no grievance received related to the project.

F.2. List all inputs/grievances from previous monitoring period where follow up action is to be verified in this monitoring period

There is a FAR remained from previous verification process:

FAR 1-“The verifying DOE shall check the health & safety training certificates of newly started employee Fatih Tanrıverdi during the next verification.”

Training records of Fatih Tanrıverdi are represented below:

10/04/2018 Fire and Emergency Training

30/10/2018 Environment and Spill Drill

15-16/04/2019 HSE Training

05/11/2019 Emergency and Fire Fighting Drill

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

None

