Monitoring report form for CDM project activity
(Version 07.0)

Complete this form in accordance with the instructions attached at the end of this form.

MONITORING REPORT		
Title of the project activity	Süloğlu Wind Power Plant, Turkey	
UNFCCC reference number of the project activity	GS2763	
Version number of the PDD applicable to this monitoring report	7	
Version number of this monitoring report	5	
Completion date of this monitoring report	02/03/2021	
Monitoring period number	Period 2	
Duration of this monitoring period	01/05/2017-30/04/2019	
Monitoring report number for this monitoring period	n/a	
Project participants	Steag Rüzgar Süloğlu Enerji Üretim ve Ticaret Anonim Şirketi	
Host Party	Turkey (Host Country)	
Applied methodologies and standardized baselines	ACM0002 Version 16 Grid-connected electricity generation from renewable sources	
Sectoral scopes	Energy industries (renewable -/non-renewable sources)	
Amount of GHG emission reductions or net anthropogenic GHG removals achieved by the project activity in this monitoring period	Amount achieved before 1 January 2013	Amount achieved from 1 January 2013
	0 tCO2e	252,742 tCO2e
Amount of GHG emission reductions or net anthropogenic GHG removals estimated ex ante for this monitoring period in the PDD	232,580 tCO2e	

SECTION A. Description of project activity

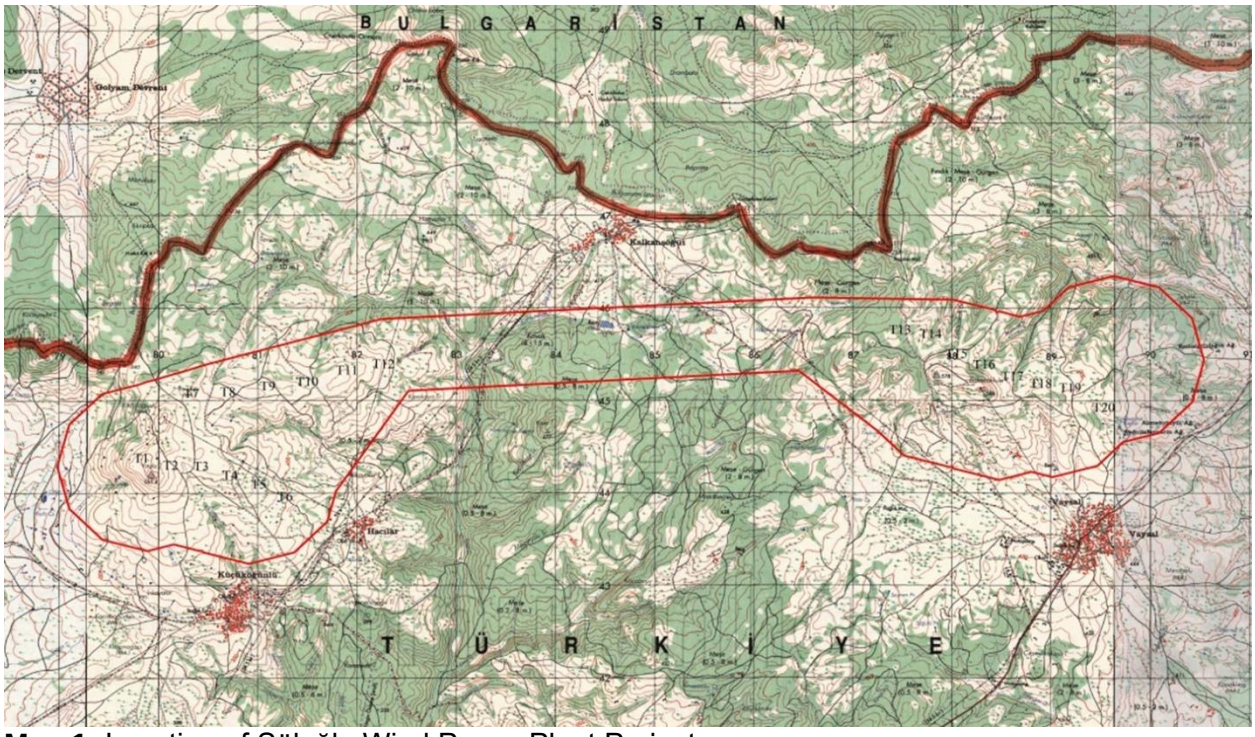
A.1. General description of project activity

Steag Rüzgar Süloğlu Enerji Üretim ve Ticaret Anonim Şirketi (hereafter referred to as "Steag Enerji"), invested in to a new power project called Süloğlu Wind Power Plant, Turkey (hereafter referred to as the "Project" or "Süloğlu WPP"), and Installed Capacity of Süloğlu WPP is 66 MWm / 60 MWe with 20 turbines. The license of the project is issued by Energy Market Regulatory Authority (EMRA) in 16/03/2011. The generated electricity is fed to grid at Ediçim TM, 154 kV . While the project is located in the district of Lalapaşa, city of Edirne, Turkey, the connection point is Ediçim Transformer center. Süloğlu WPP is in line with the Greenfield description of the methodology.

The estimated net electricity generation of the plant is 207.20 GWh per year. By the efficient utilization of the available wind energy 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 116,290 tonnes of CO2e per year. Moreover, project activity will contribute further dissemination of wind energy and extension of national power generation. Construction work started on 31/07/2014, and operation of the plant started on November 2015.

A.2. Location of project activity

The project site is located about 15 km northeast of Lalapaşa District. The closest settlement is Hacılar village by 580 m[1]. The turbine towers will be built in a 5 km long strip placed approximately 200-400 m apart. Location of the project is given below in the Hata! Başvuru kaynağı bulunamadı..



Map 1: Location of Süloğlu Wind Power Plant Project

[1] See, Süloğlu PIF page 4.

The coordinates of the turbines are given below. The key parameters about the technical design of the selected model **Vestas V126 3.3MW** with 20 turbines of **Vestas V126 3.3MW**

Table 1: Geographical coordinates[2] of the wind turbines of the project activity[3]

Wind Turbine No.	Latitude (N)	Longitude (E)
1	41º 57’ 01.1412’’	26º 45’ 19.9155’’
2	41º 56’ 58.6392’’	26º 45’ 32.7383’’
3	41º 56’ 58.4088’’	26º 45’ 46.1170’’
4	41º 56’ 55.2264’’	26º 45’ 58.7681’’
5	41º 56’ 52.1052’’	26º 56’ 11.2015’’
6	41º 56’ 47.8824’’	26º 46’ 22.9435’’
7	41º 57’ 23.9184’’	26º 45’ 41.6785’’
8	41º 57’ 24.4368’’	26º 45’ 57.7492’’
9	41º 57’ 26.6112’’	26º 46’ 15.2041’’
10	41º 57’ 28.1988’’	26º 46’ 31.0107’’
11	41º 57’ 32.1912’’	26º 46’ 48.3731’’
12	41º 57’ 34.4556’’	26º 47’ 04.3084’’
13	41º 57’ 46.8504’’	26º 50’ 50.6524’’
14	41º 57’ 45.4068’’	26º 51’ 04.0799’’
15	41º 57’ 38.4516’’	26º 51’ 15.3911’’
16	41º 57’ 34.7364’’	26º 51’ 27.5198’’
17	41º 57’ 30.5712’’	26º 51’ 39.9097’’
18	41º 57’ 28.0224’’	26º 51’ 52.3826’’
19	41º 57’ 26.5464’’	26º 52’ 26.5464’’
20	41º 57’ 19.6560’’	26º 52’ 19.9839’’

[2] See, Süloğlu Generation Licence.
[3] See, (Convert UTM to Lat/Lon Coordinates), for unit conservation See; http://www.rcn.montana.edu/resources/tools/coordinates.aspx?nav=11&c=UTM&md=83&mdt=NAD83/WGS84&z=35&e=591938&n=4469295&h=N

A.3. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Turkey (host)	Steag Rüzgar Süloğlu Enerji Üretim ve Ticaret Anonim Şirketi (private entity)	No

A.4. References to applied methodologies and standardized baselines

For the determination of the baseline, the official methodology ACM0002 version 16.0.0, "Grid-connected electricity generation from renewable sources"[4], 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 04.0.0)[5];
2. Tool for the demonstration and assessment of additionality (Version 07.0.0)[6];
3. Combined tool to identify the baseline scenario and demonstrate additionality (Version 05.0.0)[7];
4. Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (Version 02.0.0)[8].
5. Tool to determine the remaining lifetime of the equipment[9]

A.5. Crediting period type and duration

19/09/2015-18/09/2022 (Crediting period of the project is 7 years which is twice renewable.)

SECTION B. Implementation of project activity

B.1. Description of implemented project activity

The project installation is completed according to the description in the PDD and completely operational. The project consists only one site. The most important milestones are included in the following table:

Table 2: Milestones of the project

Date (DD/MM/YYYY)	Activity
16/03/2011	Issuance of the License
22/05/2012	"EIA is not required" certificate
04/12/2012	Date of agreement with carbon consultant (Prior Consideration of VER)
24/06/2014	Power Production Assessment
21/01/2014	Local stakeholder meeting held in Hacilar village and Hacıdanişment village
01/10/2014	Loan Agreement Date

[4] ACM0002 Version 16: https://cdm.unfccc.int/methodologies/DB/8W400U6E7LFHHYH2C4JR1RJWWO4PVN

[5] See; http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v4.0.pdf

[6] See; http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-01-v7.0.0.pdf

[7] See; http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-02-v5.0.0.pdf

[8] See; http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf

[9] See; http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-10-v1.pdf

23/10/2014	Agreement with Equipment provider
31/07/2014	Date for start of construction
29/04/2015	Start date of the stakeholder feedback round
01/06/2015	End date of the stakeholder feedback round
18/09/2015	Commissioning the first 6 turbines
19/09/2015	Start date of operation
19/09/2015	Start date of the first crediting period and also the first monitoring period
11/10/2015	Commissioning of 6 turbines
13/11/2015	Commissioning of the last 8 turbines
23/09/2016	Project is registered
30/04/2017	End date of the first monitoring period
01/05/2017	Start date of second monitoring period
30/04/2019	End date of the second monitoring period

B.2. Post-registration changes

B.2.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

There is no revision in the monitoring plan of the project.

B.2.2. Corrections

No corrections

B.2.3. Changes to the start date of the crediting period

No changes

B.2.4. Inclusion of monitoring plan

None

B.2.5. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents

None

B.2.6. Changes to project design

None

B.2.7. Changes specific to afforestation or reforestation project activity

None

SECTION C. Description of monitoring system

The crediting period starts with the commissioning of the plant, exactly with the first day of documented electricity supply to the grid. As the crediting period is to start in 19/09/2015 the estimated emission reductions from the first and last year of the crediting period sum up to the amount of the estimated yearly reductions.

C.1 Data Processing and Archiving

C.1.1. Data Processing

Data handling was slightly revised due to innovation in technology that enables TEİAŞ to read meters remotely. Thus, under this 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 PMUM website which is also accessible by project owner. When all data is correct, an invoice (receipt of sale) is prepared by Süloğlu and delivered to TEIAŞ. 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 VERs.
As the necessary baseline emission factors are all defined ex ante, the only information to be monitored is the amount of electricity fed into the grid by Süloğlu WPP. The data which is base for the invoices and published in PMUM website is used as input for emission reduction calculation.

C.1.2. A Backup Unit for Systematic Storage

There are two main factors important for the calculation of emission reductions. The only relevant data that have to be monitored is only “Quantity of net electricity generation supplied by the project plant to the grid in year *y”* ($EG_{facility,y}$). 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 Steag Enerji 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 Steag Enerji 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.

For the operation of Süloğlu WPP, below hierarchy is planned:

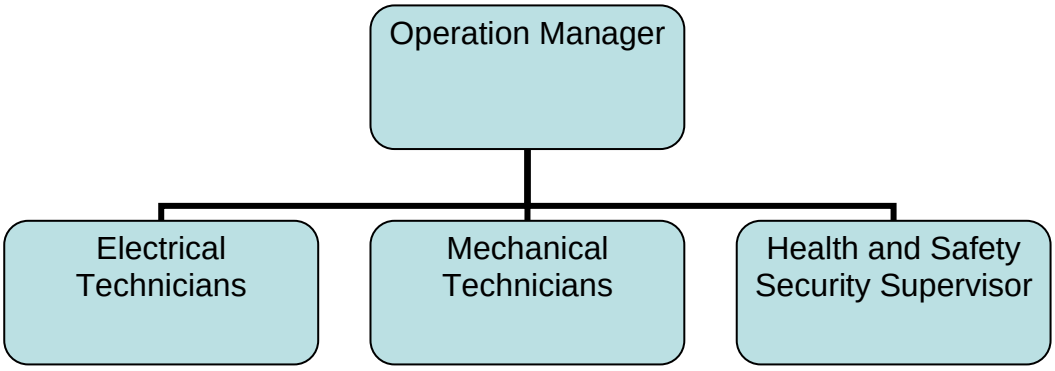


Figure 1: Operation and management diagram

C.1.3 Calibration Procedures:

According to the Article 2 of the Communiqué of Meters in Electricity Sector[10]: '*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'[11] (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.
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.

C.1.4. Troubleshooting Procedures

As the measuring devices are sealed by TEIAŞ, Süloğlu cannot intervene with the devices. In case of unforeseen problems or failures of the meters or if any differences occur between primary and secondary devices TEIAŞ has to be informed for necessary maintenance and calibration. There is an agreement between Süloğlu and TEIAŞ that in case of problems or failures of the meters TEIAŞ reacts as fast as possible to solve the problem.

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante

Data / Parameter	**Gross electricity generation**
Unit	**MWh**
Description	Gross Electricity supplied to the grid by relevant sources (2011-2013)
Source of data	Turkish Electricity Transmission Company (TEİAŞ), Annual Development of Turkey's Gross Electricity Generation of Primary Energy Resources (2006-2013) TEİAŞ https://webapi.teias.gov.tr/file/7a62d8f5-eb81-4214-b27c-1ae11e02469a?download
Value(s) applied	Please see Table 4 in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	TEIAS is the national electricity transmission company, which makes available the official data of all power plants in Turkey.
Purpose of data/parameter	Data used for emission reduction calculation
Additional comment	

[10] See, http://www.epdk.gov.tr/documents/elektrik/mevzuat/teblig/elektrik/sayaclar_hakkinda/Elk_Tblg_Sayaclar.doc
[11] See, http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.6381&MevzuatIliski=0&sourceXmlSearch=

Data / Parameter	Net electricity generation
Unit	**GWh**
Description	Net Electricity supplied to the grid by relevant sources (2011-2013)
Source of data	Turkish Electricity Transmission Company (TEIAS), Annual Development of Electricity Generation- Consumption and Losses in Turkey (1984-2013) TEIAS, See https://webapi.teias.gov.tr/file/3e6bf7c7-6773-4c20-8e7e-3c9bc96f94bf?download
Value(s) applied	Please see Table 5 and Table 6 in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	This data is used to find relation between the gross and net electricity delivered to the grid by fossil fuel fired power plants. (Table 5). Import and Export data is used to identify total net electricity fed into the grid in the years of 2011, 2012 and 2013 (Table 6). TEIAS is the national electricity transmission company, which makes available the official data of all power plants in Turkey.
Purpose of data/parameter	Data used for emission reduction calculation
Additional comment	

Data / Parameter	HVi,y
Unit	**Mass or volume unit**
Description	Heating Values of fuels consumed for electricity generation in the years of 2011, 2012 and 2013
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/3367dc74-86cc-4ac7-b740-ef0f6b9e07c6?download
Value(s) applied	Please see table 7 in the in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	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 TEİAŞ is the national electricity transmission company, which makes available the official data of all power plants in Turkey.
Purpose of data/parameter	Data used for emission reduction calculation
Additional comment	

Data / Parameter	FCi,y
Unit	**Mass or volume unit**
Description	Amount of fuel type i consumed in the project electricity system in year y

Source of data	Annual Development of Fuels Consumed In Thermal Power Plants In Turkey By The Electric Utilities, TEİAŞ. See: https://webapi.teias.gov.tr/file/6c601cb8-c8d6-472f-8059-f93df18fcfa9?download
Value(s) applied	Please see table 8 in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	TEİAŞ is the national electricity transmission company, which makes available the official data of all power plants in Turkey.
Purpose of data/parameter	Data used for emission reduction calculation
Additional comment	

Data / Parameter	**NCVi,y**
Unit	**GJ/mass or volume unit**
Description	Net Calorific Value of fuel types in the years of 2011, 2012 and 2013
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(s) applied	Please see table 9 in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	TEİAŞ is the national electricity transmission company, which makes available the official data of power plants in Turkey. Calculation of NCVs from national HVi,y and FCi,y data is preferred to default IPCC data as these are more reliable.
Purpose of data/parameter	
Additional comment	

Data / Parameter	**Sample Group for BM emission factor**
Unit	Name of the plants, MW capacities, fuel types, annual electricity generations and dates of commissioning.
Description	Most recent power plants which compromise 20% of total generation
Source of data	Energy Investments, Ministry of Energy and Natural Sources: https://enerji.gov.tr/eigm-raporlari
Value(s) applied	Please see table 10 in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	Ministry of Energy and Natural Sources is the governmental authority for energy investments and natural sources in Turkey.
Purpose of data/parameter	For determining sample group for BM calculation.
Additional comment	

Data / Parameter	**$EF_{CO2,i,y}$**
Unit	**tCO_2/GJ**
Description	CO_2 emission factor of 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(s) applied	Please see table 11 in the Appendix of the Monitoring Report.

Choice of data or Measurement methods and procedures	No plant specific and national emission factor data is available in Turkey. So, IPCC default data is used. For Fuel Oil Power Plants: 'Gas/Diesel Oil' data is used for conservativeness. For Coal Power Plants: In the 205th page of official document given in the link below, it is stated that Çolakoğlu and İçdaş utilizes 'Taşkömürü' (Hardcoal). And at the Table-2 in page 157 of the same document, Taşkömürü is dived in two groups: Bituminous and Antharcite. Since Sub-Bituminous Coal is under Brown Coal in the same table and since Other Bituminous Coal has lower EF than Anthracite in 1.4 of IPCC Guidelines, EF for 'Other Bituminous Coal' is used. See: http://www.dpt.gov.tr/DocObjects/Icerik/4225/Enerji_Hammaddeleri_(Linyit_Taskömuru-Jeotermal).
Purpose of data/parameter	
Additional comment	

Data / Parameter	**$EF_{grid,CM,y}$**
Unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor for the project electricity system in year y
Source of data	As per "Tool to calculate the emission factor for an electricity system"
Value(s) applied	0.5612 tCO_2/MWh
Choice of data or Measurement methods and procedures	Combined Margin Emission Factor ($EF_{grid,CM,y}$) is calculated ex ante as the weighted average CO_2 of Operating Margin Emission Factor ($EF_{grid,OM,y}$) and Build Margin Emission Factor ($EF_{grid,BM,y}$)
Purpose of data/parameter	
Additional comment	Calculation of baseline emissions

Data / Parameter	**$EF_{grid,BM,y}$**
Unit	tCO_2/MWh
Description	Build margin CO_2 emission factor for the project electricity system in year y
Source of data	As per "Tool to calculate the emission factor for an electricity system"
Value(s) applied	0.3230 tCO_2/MWh
Choice of data or Measurement methods and procedures	Combined Margin Emission Factor ($EF_{grid,CM,y}$) is calculated ex ante in accordance with "Tool to calculate the emission factor for an electricity system" by using TEIAS values
Purpose of data/parameter	
Additional comment	Calculation of baseline emissions

Data / Parameter	**$EF_{grid,OM,y}$**
Unit	tCO_2/MWh
Description	Operating margin CO_2 emission factor for the project electricity system in year y
Source of data	As per "Tool to calculate the emission factor for an electricity system"
Value(s) applied	0.6407 tCO_2/MWh
Choice of data or Measurement methods and procedures	Operating Margin Emission Factor ($EF_{grid,OM,y}$) is calculated ex ante in accordance with "Tool to calculate the emission factor for an electricity system" by using TEIAS values
Purpose of data/parameter	
Additional comment	Calculation of baseline emissions

Data / Parameter	$\eta_{m,y}$
Unit	-
Description	Average energy conversion efficiency of power unit m in year y
Source of data	Annex I the "Tool to calculate the emission factor for an electricity system"(v.4)
Value(s) applied	Please see table 12 in the Appendix of the Monitoring Report.
Choice of data or Measurement methods and procedures	For efficiency rates of Coal and Lignite Power Plants See Annex-1 of the Tool (highest rate is applied to be conservative) For Natural Gas and Oil plants efficiencies, default value given in the tool is applied: http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-07-v2.pdf
Purpose of data/parameter	
Additional comment	

D.2. Data and parameters monitored

Data / Parameter:	Net electricity generation $EG_{facility,y}$
Unit:	**MWh**
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year *y*
Measured/ Calculated / Default:	Measured
Source of data:	On site measurement
Value(s) of monitored parameter:	450,361.86 MWh **Date** | **Net Electricity Generation (MWh)** 01/05/2017-31/12/2017 | 142,589.16 01/01/2018-31/12/2018 | 224,923.59 01/01/2019-30/04/2019 | 82,849.11
Monitoring equipment:	The specification of electricity meters are provided below: Name | Serial Number | Brand – Model | Date Of Calibration | Year of Manufacture | Accuracy Main Meter | 4784493 | EMH - LZQJ-XC | 20/06/2015 | 2014 | 0.5S Backup meter | 4784494 | EMH - LZQJ-XC | 20/06/2015 | 2014 | 0.5S
Measuring/ Reading/ Recording frequency:	Continuously/daily/daily
Calculation method (if applicable):	The amount of net generated electricity has been calculated by subtracting Electricity consumption from the grid from Electricity supplied to the grid.

QA/QC procedures:	According to the Article 2 of the Communiqué of Meters in Electricity Sector[12]: '*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'[13] (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. 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.
Purpose of data:	Data used for emission reduction calculation
Additional comment:	This monitoring period is between 01/05/2017-30/04/2019. Therefore, this period represents the electricity generation for 730 days.

Data/Parameter	**Air quality (emissions other than GHGs)**
Unit	tons/GWh
Description	a) Amount of CO, NMVOC emissions
Measured/calculated/ default	Measured and Calculated
Source of data	Monthly meter readings
Value(s) of monitored parameter	According to the current data available electricity amount produced (450,361.86 MWh for for 01/05/2017-30/04/2019,730 days) by Süloğlu WPP, amount of avoided emissions are as below: NMVOC =15.4 tons; CO=72.2 tons
Monitoring equipment	-
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	Amount of annual net electricity generation, which is calculated by monthly settlement notifications of PMUM based on monthly meter readings, will be used to calculate estimated CO and NMVOC emission reductions by project activity.
QA/QC procedures	
Purpose of data/parameter	To account for Emissions Reductions of CO, NMVOC.
Additional comments	Assigned technician by Plant Manager or assigned carbon consultant.

Data/Parameter	**Water Quality and Quantity**
Unit	m^3
Description	Disposal of wastewater
Measured/calculated/ default	Measured

[12] See, http://www.epdk.gov.tr/documents/elektrik/mevzuat/teblig/elektrik/sayaclar_hakkinda/Elk_Tblg_Sayaclar.doc
[13] See, http://www.mevzuat.gov.tr/Metin.Aspx?MevzuatKod=7.5.6381&MevzuatIliski=0&sourceXmlSearch=

Source of data	a) Monitoring of the parameter is based on the data available from TUİK and electricity generation of the plant. b) Monitoring process was based on the statement of the plant manager and invoice from the transfer of the waste.
Value(s) of monitored parameter	a) According to the current data of electricity amount produced (450,361.86 MWh for for 01/05/2017-30/04/2019,730 days) by Süloğlu WPP, the amount of avoided waste water is 11,851.411 m^3: b) Waste water is transferred with sewage trucks from power plant. Waste water has been drawn at certain intervals by sewage trucks during this monitoring period. Wastewater transfer receipts; -dated 22/05/2017 -dated 19/12/2017 -dated 14/11/2018 of the transfer of the wastewater are provided for this monitoring period.
Monitoring equipment	-
Measuring/reading/recording frequency	Once each verification period
Calculation method (if applicable)	a) Amount of annual net electricity generation, which is calculated by monthly settlement notifications of PMUM based on monthly meter readings, will be used to calculate estimated amount of avoided wastewater discharge by project activity. b) Records of transfer of waste water from power plant by sewage truck, if it was performed, will be used to demonstrate proper waste water management
QA/QC procedures	-
Purpose of data/parameter	Avoidance wastewater discharge.
Additional comments	a,b) Assigned technician by Plant Manager or assigned carbon consultant

<table>
<tr><td>Data/Parameter</td><td>Quality of employment</td></tr>
<tr><td>Unit</td><td>-</td></tr>
<tr><td>Description</td><td>Health & Safety conditions of employers.</td></tr>
<tr><td>Measured/calculated/
default</td><td>Measured</td></tr>
<tr><td>Source of data</td><td>Training certificates</td></tr>
<tr><td>Value(s) of monitored parameter</td><td>1 training (Health and Safety (HSE)) has been held during the this monitoring period for all employees at the plant.
Occupational health and safety trainings have been provided in 2017,2018 and 7 employees are attended to the trainings. In addition, HSE certificates are provided for this monitoring period.

Table 4 : Training Records for Employees

<table>
<tr><th>Name – Surname</th><th>Training Type</th><th colspan="3">Date</th></tr>
<tr><td>Gazi Erdem</td><td>Occupational health and safety training</td><td>19/10/2017</td><td>(18/19/20/21). 12.2018</td><td>-</td></tr>
<tr><td>Hakan Ekinci</td><td>Occupational health and safety training</td><td>21/09/2017</td><td>06/03/2018</td><td>(18/19/20/21). 12.2018</td></tr>
<tr><td>Mehmet Demil</td><td>Occupational health and safety training</td><td>21/09/2017</td><td>23/05/2018</td><td>(18/19/20/21). 12.2018</td></tr>
<tr><td>İhsan Şahin</td><td>Occupational health and safety training</td><td>21/09/2017</td><td>13/04/2018</td><td>(18/19/20/21). 12.2018</td></tr>
<tr><td>Burak Yılmaz</td><td>Occupational health and safety training</td><td>21/09/2017</td><td>12-13/04/2018</td><td>(18/19/20/21). 12.2018</td></tr>
<tr><td>Devrim Tuna</td><td>Occupational health and safety training</td><td>21/09/2017</td><td>20/09/2018</td><td>(18/19/20/21). 12.2018</td></tr>
<tr><td>Cem Çalışkan</td><td>Occupational health and safety training</td><td>19/10/2017</td><td>12-13/04/2018</td><td>(18/19/20/21). 12.2018</td></tr>
</table></td></tr>
<tr><td>Monitoring equipment</td><td>-</td></tr>
<tr><td>Measuring/reading/recording frequency</td><td>Annually (Once at the end of the each monitoring period). After first verification period, only new cases will be reported.</td></tr>
<tr><td>Calculation method
(if applicable)</td><td>No other sources of data than list or participants and certificates submitted to VVB.</td></tr>
<tr><td>QA/QC procedures</td><td>-</td></tr>
<tr><td>Purpose of data/parameter</td><td>To ensure Employment and decent work for all.</td></tr>
<tr><td>Additional comments</td><td>Assigned technician by Plant Manager or assigned carbon consultant.</td></tr>
</table>

Data/Parameter	**Balance of payment and investments**
Unit	-
Description	Amount of payment for natural gas to be imported for electricity generation.
Measured/calculated/ default	Calculated and Default
Source of data	TEİAŞ statistics for natural gas share in the electricity mix

Value(s) of monitored parameter	According to the current data of electricity amount produced (450,361.86 MWh for for 01/05/2017-30/04/2019, 730 days) by Süloğlu WPP, the total payment avoided for natural gas imported by the project per year is 1,888,037 EUR and the amount of avoided imported natural gas by project activity per year is 4,245,164 m^3.
Monitoring equipment	-
Measuring/reading/recording frequency	Annually
Calculation method (if applicable)	TEİAŞ statistics for natural gas share in the electricity mix shall help to demonstrate the high import dependency. Amount of annual net electricity generation, which is calculated by monthly settlement notifications of PMUM based on monthly meter readings, will be used to calculate correspondent amount of currency saved by project activity with help of above calculated factor.
QA/QC procedures	TEİAŞ statistics for natural gas share in the electricity mix helps demonstrate the high import dependency.
Purpose of data/parameter	To lower the high import dependency of the host country.
Additional comments	Assigned technician by Plant Manager or assigned carbon consultant.

Data/Parameter	**Livelihood of the Poor**
Unit	-
Description	Land acquisition
Measured/calculated/ default	Measured
Source of data	Monitoring process was handled by: interview with the head of village
Value(s) of monitored parameter	According to the outcome of the Treasury, the expropriation of these lands including transfer of ownership title in these lands to the Turkish government (Treasury) had been completed. All legal proceedings in relation to the expropriation of the relevant privately owned lands and payment of expropriation fees have been completed. The expropriation process was carried on and then completed in accordance with the Republic of Turkey regulations. All relevant legal documents (title deeds, final permission for the forestry lands, list of lands regarding which is signed easement and lease agreements) are provided.
Monitoring equipment	-
Measuring/reading/recording frequency	Once the first verification period.
Calculation method (if applicable)	Interviews to check whether the process is carried out properly according to legal requirements and that land owners are compensated fairly.
QA/QC procedures	-
Purpose of data/parameter	Fair land compensation measures.
Additional comments	Assigned technician by Plant Manager or assigned carbon consultant.

D.3. Implementation of sampling plan

N/A

SECTION E. Calculation of emission reductions or net anthropogenic removals

E.1. Calculation of baseline emissions or baseline net removals

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

$$ER_y = BE_y - PE_y - L_y \quad \textbf{(1)}$$

Where:
ER_y = Emission reduction
BE_y = Baseline emissions
PE_y = Project emissions
L_y = Leakage
y = Refers to a given period

The electricity meters are measuring two parameters: The electricity supplied to the grid (EGexport) and the electricity consumption from the grid (EGimport). To achieve the net amount of supplied electricity, the difference has to be calculated:

$$GEN_y = EGexport - EGimport \quad \textbf{(2)}$$

Where:
GEN_y = Net electricity supplied to the Grid in MWh
EGexport = Electricity supplied to the Grid in MWh
EGimport = Electricity consumption from the Grid in MWh

According to the applied methodology version the emission reduction is the baseline emissions calculated as the net electricity supplied to the grid multiplied by the grid emission factor.

$$BE_y = GEN_y * EF \quad \textbf{(3)}$$

Where:
BE_y = Baseline emissions in tonnes CO_2e
EF = Grid emission factor for the electricity displaced due to the project activity during the year y [tCO_2e/MWh].
GEN_y = Net electricity supplied to the Grid in MWh (ID 1)
y = Refers to a given period

E.2. Calculation of project emissions or actual net removals

According to the official methodology ACM0002 version 16.0.0, "Grid-connected electricity generation from renewable sources'', no project emission calculation is required for the wind power project, so there are no project emissions in this kind of project.

E.3. Calculation of leakage emissions

According to the official methodology ACM0002 version 16.0.0, "Grid-connected electricity generation from renewable sources'', no leakage calculation is required for the wind power project, so there are no leakage needs to be considered.

E.4. Calculation of emission reductions or net anthropogenic removals

Months	Baseline GHG emissions or baseline net GHG removals (t CO_2e)	Project GHG emissions or actual net GHG removals (t CO_2e)	Leakage GHG emissions (t CO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (tCO2e)
May 2017	9,825	0.00	0.00	9,825
June 2017	6,217	0.00	0.00	6,217
July 2017	9,551	0.00	0.00	9,551
August 2017	13,489	0.00	0.00	13,489.
September 2017	10,117	0.00	0.00	10,117
October 2017	7,821	0.00	0.00	7,821
November 2017	7,318	0.00	0.00	7,318
December 2017	15,679	0.00	0.00	15,679
Sum 2017	**80,021**	0.00	0.00	**80,021**
January 2018	10,401	0.00	0.00	10,401
February 2018	11,044	0.00	0.00	11,044
March 2018	11,046	0.00	0.00	11,046
April 2018	8,531	0.00	0.00	8,531
May 2018	11,804	0.00	0.00	11,804
June 2018	7,399	0.00	0.00	7,399
July 2018	5,119	0.00	0.00	5,119
August 2018	14,813	0.00	0.00	14,813
September 2018	10,976	0.00	0.00	10,976
October 2018	13,658	0.00	0.00	13,658
November 2018	11,314	0.00	0.00	11,314
December 2018	10,118	0.00	0.00	10,118
Sum 2018	**126,227**	0.00	0.00	**126,227**
January 2019	13,991	0.00	0.00	13,991
February 2019	13,696	0.00	0.00	13,696
March 2019	10,822	0.00	0.00	10,822
April 2019	7,985	0.00	0.00	7,985
Sum 2019	**46,494**	0.00	0.00	**46,494**
Total SUM	**252,742**	0.00	0.00	**252,742**

Item	Actual values achieved during this monitoring period	
Emission reductions or GHG removals by sinks (t CO2e)	**Vintage**	**ERy (tCO2e)**
	01/05/2017 - 31/12/2017	**80,021**
	1/01/2018 - 31/12/2018	**126,227**
	1/01/2019 - 30/04/2019	**46,494**
	Total	**252,742**

E.5. Comparison of emission reductions or net anthropogenic removals achieved with estimates in the registered PDD

Amount achieved during this monitoring period (t CO_2e)	Amount estimated ex ante for this monitoring period in the PDD (t CO_2e)
252,742 tCO2e	232,580 tCO2e

E.5.1. Explanation of calculation of "amount estimated ex ante for this monitoring period in the PDD"

Estimated emission reduction in ex ante calculation of registered PDD is 116,290 tCO2e, which corresponds to 232,580 tCO2e for 730 days. And actual emission reduction achieved during this monitoring period is 252,742 tCO2e (for 01/05/2017-30/04/2019, 730 days).

E.6. Remarks on increase in achieved emission reductions

When estimated emission reduction in ex ante calculation of registered PDD and amount achieved during this monitoring period is 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 the project location. 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 8.67 % and difference between this two emission reduction values is lower than 10% range calculated in the registered PDD.

E.7. Remarks on scale of small-scale project activity

N/A. This project is a large scale project

SECTION F. Remaining FARs from Previous Verification

There are important 3 types of lands within Süloğlu WPP.

1. Forestry Lands: Steag Enerji obtained a final permission from the Ministry of Forestry to use the lands allocated as forestry. Copies of the said final permission are provided in "Note on the Lands within the Project Site" document. (Copies of the said final permission are given as Annex-1 in the "Note on the Lands within the Project Site" document.)

2. Treasury Lands: Steag Enerji signed these agreements with the Treasury: (i) easement agreements for the lands where the facilities are located, and (ii) lease agreements for the lands where the roads are located.
- The lands owned by the Treasury: Steag Enerji signed the relevant agreements with the Treasury.
-The lands owned by the Village Entities: The ownership of lands owned by the Village Entities was transferred to the Treasury. Later on, Steag Enerji signed the relevant agreements with the Treasury.
-The lands which are owned by the Treasury but allocated as "pastures": Steag Enerji received a consent from the Ministry Agriculture to change the allocation purpose of the pastures. Later on, Steag Enerji signed the relevant agreements with the Treasury.

List of the easement and lease agreements that company have signed for these lands are provided in "Note on the Lands within the Project Site" document. (Easement and lease agreements are given as Annex-2 in the "Note on the Lands within the Project Site" document.)

3. Expropriated Lands: Some of lands within the Süloğlu Project site were privately owned lands, and were subject to expropriation.
The proceedings regarding expropriation and registration of these lands in the name of the Treasury were between the Treasury and land-owners. For this reason, Steag Enerji does not have the official letter regarding the outcome of the lawsuit. Steag Enerji had never been a party to these proceedings. Once these lands had been registered in the name of the Treasury, the easement agreements for these lands were signed by the Company and the Treasury for the term of the license. There had been lawsuits between the Treasury and the former land-owners about the amount of the expropriation fees. Based on the information which has been received from the Treasury, as of now, there is no pending lawsuit at the appeal stage for the increase of the expropriation fees, the lawsuits about the expropriation fees have been concluded.
According to the information that received from the Treasury, all legal proceedings in relation to the expropriation of the relevant privately owned lands and payment of expropriation fees have been completed.

'Note on the Lands within the Project Site (it is given as Annex-2 in this document.)" also covers the easement agreements signed with the Treasury for the expropriation lands.

4. Land Owned by the Company: Steag Enerji purchased some of the lands which are within the Süloğlu Project site. These lands currently are idle, but can be used for the purpose of the Süloğlu WPP in the future. The title deed certificates of these lands are also attached as Annex-3 in the "Note on the Lands within the Project Site" document.

In addition to these, Süloğlu WPP is located on a thin and tall land. Purchased or expropriating the lands to be used by the this power plant without dividing it would harm the feasibility of the project. For this reason, some lands were expropriated in the most suitable way for the project area. But on this issue, **The General Directorate of the State Hydraulic Affairs (DSİ)** has recently started a land consolidation (toplulaştırma) process in the region where the Süloğlu Project located. The purpose of land consolidation is to increase agricultural production and productivity by making the most of production factors with less time, labor and capital use.
Steag Enerji is closely following the land consolidation process and will have a right to object the lists and consolidation process of lands when if they are selected in the scope of consolidation

process. Steag Enerji believe that this land consolidation process will be useful for the villagers who have complaints about their small piece of lands as the main purpose of this process to give more appropriate agricultural lands for the farmers.

In conclusion, according to the outcome of the Treasury, the expropriation of these lands including transfer of ownership title in these lands to the Turkish government (Treasury) had been completed. All legal proceedings in relation to the expropriation of the relevant privately owned lands and payment of expropriation fees have been completed. The expropriation process was carried on and then completed in accordance with the Republic of Turkey regulations. All relevant legal documents (title deeds, final permission for the forestry lands, list of lands regarding which is signed easement and lease agreements) has been now provided.
In addition, related information have also been added to the related parameter "Livelihood of the Poor" in section D.2 of the MR and also necessary documents have been provided.

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	Steag Rüzgar Süloğlu Enerji Üretim ve Ticaret Anonim Şirketi
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Building	-
City	Ankara
State/region	
Postcode	
Country	TURKEY
Telephone	
Fax	
E-mail	
Website	
Contact person	
Title	Electrical Engineer
Salutation	Mr
Last name	Girgin
Middle name	
First name	Süleyman
Department	General Director
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Direct fax	
Direct tel.	+90 312 4280760
Personal e-mail	**suleyman.girgin@steag.com**

Project participant and/or responsible person/ entity	☐ Project participant ☒ Responsible person/ entity for completing the CDM-MR-FORM
Organization name	Life İklim ve Enerji Ltd. Şti.
Street/P.O. Box	Oğuzlar Mah. 1377. Sok No:19/9 Balgat
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State/Region	
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E-mail	
Website	www.lifenerji.com
Contact person	Hazal Öztürk
Title	Expert
Salutation	Ms.
Last name	Öztürk
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First name	Hazal
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	hazal.ozturk@lifeenerji.com

Appendix 2. Applicability of methodology and standardized baseline

Table 4 : Gross electricity production by fossil energy sources 2011-2013 (GWh)

Energy Source	2011	2012	2013
Natural Gas	104,047.6	104,499.2	105,116.3
Lignite	38,870.4	34,688.9	30,262
Coal	27,347.5	33,324.2	33,524
Fuel Oil	900.5	981.3	1,192.5
Motor Oil	3.1	657.4	546.4
Naphtha	0.0	0.0	0.0
LPG	0.0	0.0	0.0
Total fossil fuels	**171,169.1**	**174,151.0**	**170,641.2**

Table 5 : Net/gross electricity production 2011-2013 (GWh)

	2011	2012	2013
Gross Production	**229,395.10**	**239,496.80**	**240,153.95**
Net Production	**217,557.70**	**227,707.30**	**228,977.00**
Relation	**94.84%**	**95.08%**	**95.35%**

Table 6 : Electricity supplied to the grid, relevant for OM (GWh)

	2011	2012	2013
Net El. Prod. by fossil fuels	162,336.3	165,578.2	162,699.4
Electricity Import	4,555.8	5,826.7	7,429.4
Electricity supplied to grid by relevant sources	166,892.1	171,404.9	170,128.8

Table 7: Heating Values of Fuels (Tcal)

Energy Sources	2011	2012	2013
Hard Coal+Imported Coal	57,567	71,270	68,785
Lignite	107,210	93,587	81,676
Fuel Oil	5,280	5,625	5,837
Diesel Oil	155	1,884	1,363
Lpg	0	0	0
Naphta	0	0	0
Natural Gas	202,064	203,766	203,244

Table 8 : Fossil Fuel Consumption Amounts (ton, 1000 m3 for Natural Gas)

Energy Sources	2011	2012	2013
Hard Coal+Imported Coal	10,574,434	12,258,462	12,105,930
Lignite	61,507,310	55,742,463	47,120,306
Fuel Oil	531,608	564,796	573,534
Diesel Oil	15,047	176,379	129,359
LPG	0	0	0
Naphta	0	0	0
Natural Gas	22,804,587	23,090,121	22,909,746

1	**Tcal**	**=**	**4.1868**	**TJ**

Table 9 : Net Calorific Values of Fuels and Emission Factor (EFi)

Energy Sources	NCVi 2011 (TJ/Gg)	NCVi 2012 (TJ/Gg)	NCVi 2013 (TJ/Gg)	EFCO2, I (kg/TJ)
Hard Coal+Imported Coal	22.79	24.34	23.79	*89.50*
Lignite	7.30	7.03	7.26	*90.90*
Fuel Oil	41.58	41.70	42.61	*72.60*
Diesel Oil	43.15	44.71	0.00	*72.60*
LPG	0.00	0.00	0.00	*61.60*
Naphta	0.00	0.00	0.00	*69.30*
Natural Gas	37.10	36.95	37.14	*54.30*

Table 10: Sample group generation for BM emission factor calculation (GWh)

Energy Source	2010	2011	2012	Sample Group Total Generation (GWh)
Natural Gas	1,056.3	11,815.1	10,540.0	**23,411.4**
Lignite	0	0.0	40.0	**40.0**
Coal	8,012.0	4,320.0	201.0	**12,533.0**
Fuel Oil	0	701.2	0.0	**701.2**
Hydro	3,336.8	3,730.4	5,354.0	**12,421.2**
Renewable	2.4	150.0	677.0	**829.4**
TOTAL	**12,407.5**	**20,716.7**	**16,812.0**	**49,936.2**

Table 11: Share of Low Cost Resource (LCR) Production 2009-2013 (Production in GWh)

	2009	2010	2011	2012	2013
Gross production	194,812.9	211,207.7	229,395.1	239,496.8	240,153.95
TOTAL LCR Production	38,229.6	55,837.6	58,226.0	65,345.8	69,512.70
Hydro	35,958.4	51,795.5	52,338.6	57,865.0	59,420.47
Renewable and Waste	340.1	457.5	469.2	720.7	1,171.20
Geothermal and Wind	1,931.1	3,584.6	5,418.2	6,760.1	8,921.04
Share of LCRs	19.62%	26.44%	25.38%	27.28%	28.95%
Average of last five years	**25.53%**				

Table 12: BM emission factor calculation

Energy Source	**Sample Group Total Generation (GWh)**	**Effective CO_2 emission factor (tCO_2/TJ)**	**Average Efficiency ($\eta_{m,y}$)**	**CO_2 Emission ($ktCO_2$)**
Natural Gas	**23,411.4**	54.3	60.00%	7,627.4
Lignite	**40.0**	90.9	50.00%	26.2
Coal	**12,533.0**	89.5	50.00%	8,076.3
Fuel Oil	**701.2**	72.6	46.00%	398.4
Hydro	**12,421.2**	0.0	0.00%	0.0
Renewables	**829.4**	0.0	0.00%	0.0
Total	**49,936.2**			**16,128.3**
$EF_{grid,BM,y}$ (tCO_2/MWh)	**0.3230**			

Document information

Version	*Date*	*Description*
07.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Add a section on remarks on the observance of the scale limit of small-scale project activity during the crediting period; • Add "changes specific to afforestation or reforestation project activity" as a possible post-registration changes; • Clarify the reporting of net anthropogenic GHG removals for A/R project activities between two commitment periods; • Make editorial improvements.
06.0	7 June 2017	Revision to: • Ensure consistency with version 01.0 of the “CDM project standard for project activities” (CDM-EB93-A04-STAN); • Make editorial improvements.
05.1	4 May 2015	Editorial revision to correct version numbering.
05.0	1 April 2015	Revisions to: • Include provisions related to delayed submission of a monitoring plan; • Provisions related to the Host Party; • Remove reference to programme of activities; • Overall editorial improvement.
04.0	25 June 2014	Revisions to: • Include the Attachment: Instructions for filling out the monitoring report form (these instructions supersede the "Guideline: Completing the monitoring report form" (Version 04.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for completing the CDM-MR-FORM in A.6 and Appendix 1; • Change the reference number from *F-CDM-MR* to *CDM-MR-FORM*; • Editorial improvement.
03.2	5 November 2013	Editorial revision to correct table in page 1.
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB 70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01.0	28 May 2010	EB 54, Annex 34. Initial adoption.

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