MONITORING REPORT FORM (CDM-MR) *
Version 01 - in effect as of: 28/09/2010

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MONITORING REPORT
Version 04 - 18/16/2012
Aliağa Wind Farm
GS Reference GS735
Monitoring Period 1 from 09/04/2010 through 31/12/2011

SECTION A. General description of the project activity

A.1. Brief description of the project activity:

Aliağa Wind Farm project (the "Project") has 90 MW of total installed capacity and is located in Aliağa town, İzmir province, Turkey (the "Host Country"). Bergama RES Enerji Üretim Anonim Şirketi is the project owner and the developer (the "Project Developer").

The Project consists of 36 Nordex N90/2500 kW wind turbines, each of 2.5 MW installed power. The purpose of the Project is to export the generated electricity to the regional grid, thereby contributing to Turkey's electricity demand and economy. The Project is expected to generate approximately 294,900 MWh of electricity annually, and to reduce ca. 175,123 tonnes of CO_2 emissions per year.

The Project will generate electricity by utilising wind power to supply the increasing national electricity demand in a cleaner and more sustainable manner. Since the Project generates electricity from renewable energy resources, it makes a significant contribution to climate protection. The Project also stimulates Turkey's economic development, since wind power, being an infinite and natural resource, is more ecologically and financially sustainable than other options. In the absence of the Project, an equivalent amount of electricity would have been generated from grid-connected power plants, the majority of which are fossil fuel based.

Project construction commenced July 2009, with 52.5 MW (i.e. 21 x 2.5 MW) operational as of 09/04/2010. On 16/06/2010 37.5 MW (i.e. 15 x 2.5 MW) began operating. The Project has been operational since.

This first monitoring period covers ca. 19 months from 09/04/2010 to 31/12/2011 (both days included). Total emission reductions achieved in this period are 298,051 tCO_2e.

A.2. Project Participants

Host party: Turkey, indirectly involved; Authorised Participants: Bergama RES Enerji Üretim Anonim Şirketi (Private Entity).

Other parties involved:

- United Kingdom of Great Britain and Northern Ireland, involved indirectly; Authorised Participants: J. P. Morgan Ventures Energy Corporation (Private Entity);
- United States of America, involved indirectly; Authorised Participants: J. P. Morgan Ventures Energy Corporation (Private Entity)

Bergama RES Enerji Üretim Anonim Şirketi is the project owner and developer.

A.3. Location of the project activity:

The project is located in Aliağa Town, Province of İzmir, Turkey with Universal Transverse Mercator ("UTM") co-ordinates:

4294066.25 N & 497422.39 E

Figure 1: İzmir Province, Turkey (Google Map)

Figure 2: Aliağa Town, İzmir (Google Map)

Site selection was based on detailed wind measurements, topography and surface details, suitability for access and construction, available area, and distance to the national grid connection point.

The wind turbines are located on top of four hills (called: “Danişment”, “Dutluyayla”, “Halayık”, and “Sıyırdım”), and the Project area is ca. 145 hectares. Nearby villages are Atçılar, İsmailli and Yüksekköy.

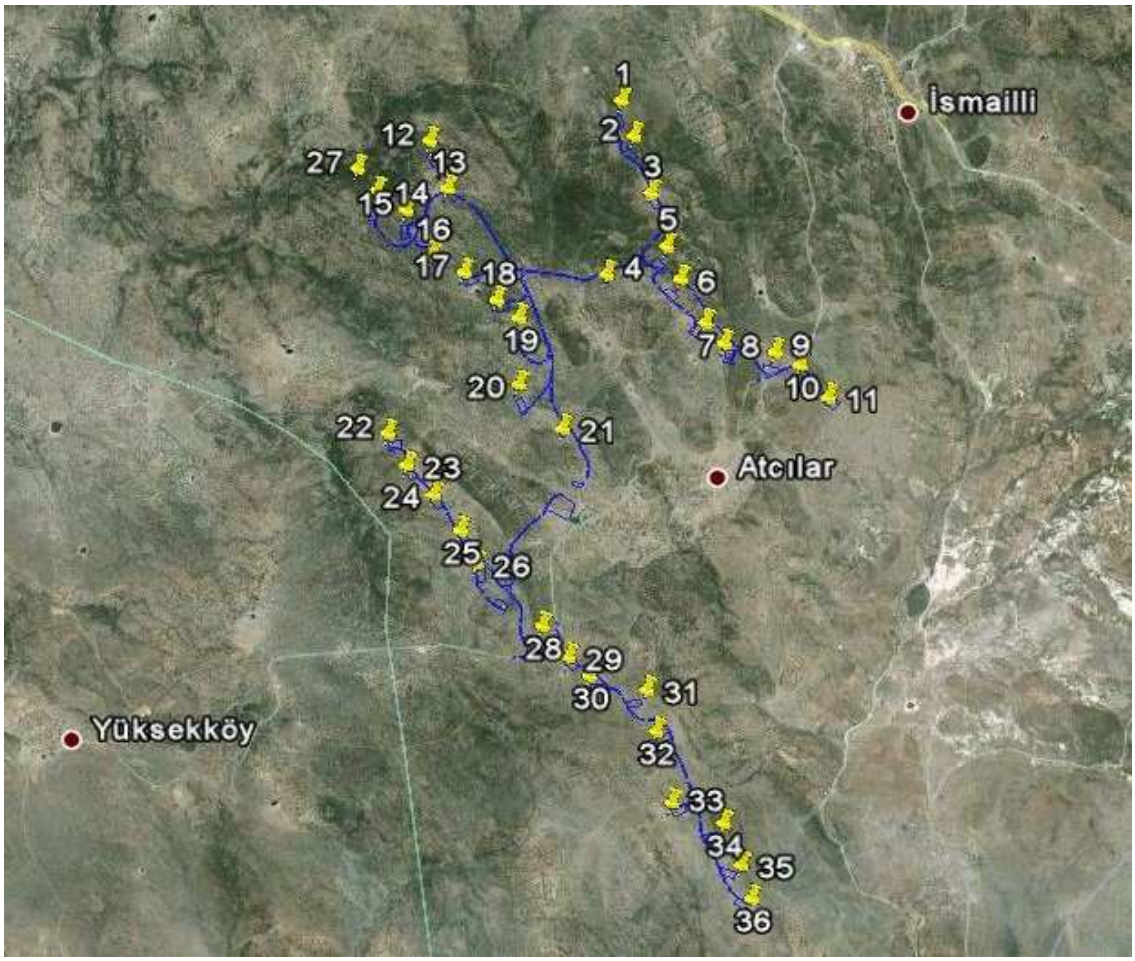

Figure 3: Wind turbine locations (Google Earth)

Turbine #	N	E
1	4309160	516854
2	4308893	516953
3	4308549	517100
4	4308033	516777
5	4308152	517103
6	4307907	517212
7	4307663	517358
8	4307526	517587
9	4307424	517830
10	4307362	518094
11	4307172	518278
12	4308895	515612
13	4308637	515727
14	4308540	515222
15	4308354	515437
16	4308197	515657
17	4308019	515859
18	4307830	516073
19	4307602	516218
20	4307149	516225
21	4306972	516487
22	4306901	515358
23	4306677	515490
24	4306476	515669
25	4306262	515835
26	4306014	515950
27	4308637	514933
28	4305555	516297
29	4305390	516528
30	4305219	516743
31	4305106	516990
32	4304868	517178
33	4304337	517246
34	4304162	517456
35	4303920	517579
36	4303679	517704

Table 1: UTM coordinates of the project wind turbines[1]

[1] Per project generation license

A.4. Technical description of the project

Aliağa Wind Farm Project consists of 36 wind turbines each of 2.5 MW capacity. The Project has 90 MW of installed capacity, and the expected annual generation is 294,900 MWh. The Project's Generation License was issued on 17/07/2008 by the Energy Market Regulation Authority (subsequently "EMRA")[2].

Based on the micrositing studies, each turbine is placed to achieve maximum wind yield. As per the Nordex catalogue[3], Nordex N90 2.5 MW turbines provide energy even at low wind speeds. Overall wind turbine efficiency is dependent on each turbine's placement, which is a function of research conducted prior to project implementation. According to the micrositing report[4] prepared by DEWI GmbH, the overall efficiency of the wind farm is estimated to be 37.4% with 75% probability. Major equipment and structures at the Project site include:

- 36 Turbines, each of 2.5 MW capacity
- 36 step-up transformers (3 MVA)
- 1 transformer (62.5 MVA)
- 1 transformer (100 MVA)
- Switchgear Station
    - Transformers
    - Control Room
    - Switchgear Equipment
- Office/Management facilities
- Control and Protection Equipment
- Channels for cables

Component Name	Quantity
Anchor Parts	36
Tower Section 1	36
Tower Section 2	36
Tower Section 3	36
Tower Section 4	36
Tower Equipment	36
Tower Bolt	36
Blade 1	36
Blade 2	36
Blade 3	36
Nacelle (incl. accessories)	36
Drive Train	36
Cooling Hood	36
Hub	36
Converter Cabinet	36
Accessory & Consumable Container	36
SCADA Equipment	1
Electricity Main Meter	2
Electricity Back-up Meter	2

Table 2: Installed equipment

[2] Turkish name: "Enerji Piyasası Düzenleme Kurumu" (or "EPDK").
[3] Nordex N90/2500 New dimensions in the 3rd generation.(Manufacturer's product brochure, available at http://www.nordex-online.com/fileadmin/MEDIA/Produktinfos/EN/N90_2500_Broschuere_GB_web.pdf)
[4] DEWI Micrositing Report No. DEWI-W WP-193.02A

Nordex N90/2500 kW High Speed 3-blade wind turbines are employed in the Project. The nacelle of the turbine turns to the wind, and the turbine blades have the ability to change pitch according to wind speed (via a pitch control system). The towers are 80m high (to the hub), and the blade diameter is 90m. The electricity produced by each wind turbine is transmitted to the 154 kV substation via underground cabling and 3 MVA step-up transformers. In the substation the 90 MW is dispatched to two main 154 kV transformers, and then transmitted to the national grid system via 154 kV TEİAŞ Viking Substation and 60 utility poles (running for 18 km).

Figure 4 illustrates the schematic representation of the Project and its boundaries.

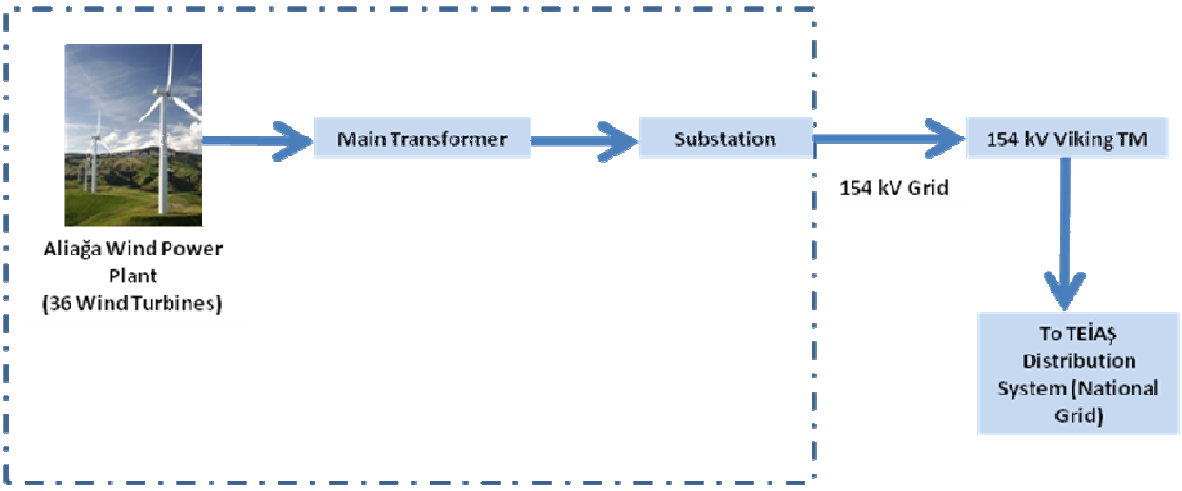

Figure 4: The Project and its boundaries.

A.5. Title, reference and version of the baseline and monitoring methodology applied to the project activity:

Methodology ACM0002 version 12 "Consolidated baseline methodology for grid connected electricity generation from renewable sources" approved by the CDM Executive Board is applied, and is hereafter referred to as the "Baseline Methodology". The Baseline Methodology is employed in conjunction with the approved monitoring methodology Version 12 of ACM0002 (hereafter referred to as the "Monitoring Methodology").

The monitoring report also employs:

- Version 5.2 of the "Tool for the demonstration and assessment of additionality" (from EB39);
- Version 2 of the "Tool to calculate the emission factor for an electricity system" (from EB50).

A.6. Registration date of the project activity:

The Project is registered under the Gold Standard registry with project number GS735 and registration date of 03/04/2012.

A.7. Crediting period of the project activity and related information (start date and choice of crediting period):

Start date of the project activity: 09/04/2010.

Crediting period: 3 x 7 years 0 months (i.e. renewable twice).

A.8. Name of responsible person(s)/entity(ies):

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SECTION B. Implementation of the project activity

B.1. Implementation status of the project activity

The Aliağa WEPP started to generate electricity for the Turkish National Grid on 9/04/2010 as its first 21 2.5 MW turbines (called "T1" to "T21") had commenced operation. On 16/06/2010, the remaining 15 2.5 MW turbines (called "T22" to "T36") became operational and the Project therefore reached 90 MW of total installed capacity.

During this monitoring period:

- The plant became fully operational by 16/06/2010.
- There were no events or situations that occurred during the monitoring period which may impact the methodology's applicability, therefore there were no issues resulting from any event that need to be addressed.
- During the monitoring period, the Project has exported 501,902 MW of electricity to the grid. This is in line with the registered PDD estimates.

B.2. Revision of the monitoring plan

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There has been no revision of the monitoring plan to date.

B.3. Request for deviation applied to this monitoring period

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No request for deviation was applied during this monitoring period.

B.4. Notification or request of approval of changes

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No notification or request of approval of changes has been made.

SECTION C. Description of the monitoring system

Technical Parameters

The monitoring methodology applied to the Project is Version 12 of ACM0002 "Consolidated baseline methodology for grid connected electricity generation from renewable sources" (from EB56). The baseline methodology will be used in conjunction with the approved monitoring methodology Version 12 of ACM0002 (the "Monitoring Methodology").

The Monitoring Plan (subsequently "MP") includes monitoring of electricity generation by the project activity in addition to key sustainable development indicators. The MP (in conjunction with the PDD) is implemented by the Project Developer during all stages of the project activity. The Plant Manager is responsible for monitoring the plant's electricity generation.

The electricity generation is electronically recorded by the main meter and the back-up meter that belong to the distribution company, "TEİAŞ"[5]. Official data is obtained from the control room meters, and is read by an authorised person (assigned by TEİAŞ) at the end of each month. Electricity measurements are compiled into monthly protocols co-signed by TEİAŞ and the Project Developer.

Electricity generation may be cross-checked against the SCADA system employed in the turbines – this shows actual generation per turbine. The MFRC/PMUM[6] data can be accessed via a specific user id and password by the Project Developer. This data is provided to the Verifier in the form of screenshots to facilitate cross-checks and to compare against monthly electricity generation indicated in the signed meter protocols.

Electricity meters' maintenance and calibration is undertaken by TEİAŞ who ensure the accuracy and measurement quality.

Bergama RES Enerji Üretim A.Ş. is responsible for operating the wind power plant and monitoring the project activity in accordance with the Monitoring Manual prepared and updated for the use of Bergama RES Enerji Üretim A.Ş.

Figure 5 shows the organisational structure for the Aliağa Wind Farm Project.

[5] Turkish Electricity Transmission Company/ Türkiye Elektrik İletim Anonim Şirketi

[6] Market Financial Reconciliation Centre

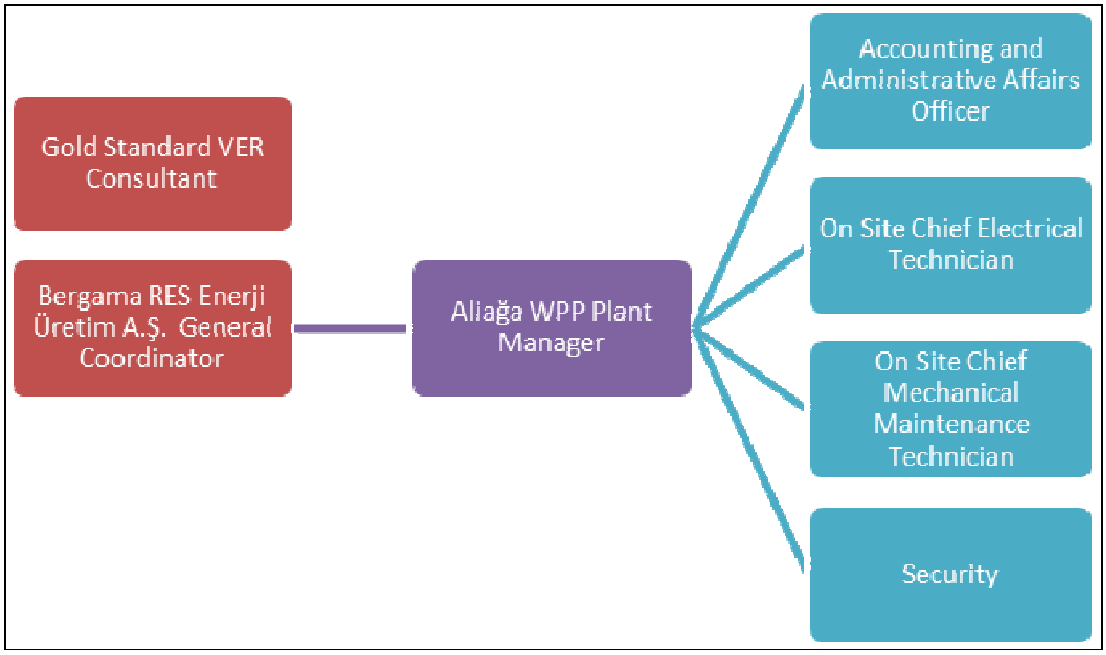

Figure 5: Organisational Structure for Aliağa WPP

The Plant Manager is responsible to maintain credible, transparent, and adequate data estimation, measurement, collection, and tracking systems of the plant's net electricity generation. Those records and monitoring systems will be provided to the verifying DOE during the verification process. The Plant Manager is also responsible for the plant's electricity generation, with support from plant mechanical and electrical engineers.

The roles of the staff that are involved in the implementation of the MP are listed in Table 3.

Who	Role
General Coordinator	Data entry in Excel workbook. Problem solving. Responsible for QA/QC, including archiving. Requests calibration and maintenance certificates.
Plant Manager	Electricity meters' readings. Attends monthly meter reading with TEIAS representative.
GS VER Consultant	Prepares monitoring reports and facilitates verification activies by the DOE. Carries out quality checks of the monitoring data reported in the monitoring workbook.
Grid operator	Carries out maintenance and calibration of main and back-up meters. Electricity meters' readings.

Table 3: Monitoring Roles and Responsibilities of the Staff

Training of Monitoring Personnel

Various trainings were organised for the development of monitoring personnel. Examples include Nordex's service and customer trainings, SEG converter maintenance training, Poliya composite wind turbine repair training etc. All power plant technical staff are trained for work in high voltage environments, as is required by TEİAS. VER team personnel are trained regarding the Project's emission reductions.

Data Quality Assurance and Control (QA/QC)

QA/QC of electricity main and back-up meters: In accordance with Article 9 (b) of the "Inspection of Measurement and Measuring Instruments Regulation" which was published in the Turkish Official Gazette (No. 22000, dated 24/7/1994), the inspection of meters needs to be undertaken every 10 years.

In addition to this statutory requirement, an authorised person from the grid operator (TEİAŞ) visits the project site for the monthly inspection in order to check the accuracy of the main and back-up meters. This is performed per TEİAŞ standards.

For internal records, the project operator retains the original signed copy of the meter protocols at the head office. Furthermore, electronic copies are stored (and backed up) in order to restore the data in case it is corrupted/destroyed. For this purpose, hard and soft copies of meter protocols and PMUM data are also retained by the Plant Manager.

All data (required for verification and issuance) are retained until two years after the end of the crediting period or the last verification, whichever occurs later.

Sustainable Development Parameters

In addition to the technical parameters described above, Bergama RES Enerji Üretim A.Ş. has been monitoring the following parameters per the Sustainability Monitoring Plan of the registered project's Gold Standard:

No		1
Indicator		Air Quality
Mitigation measure		Suppression of dust during construction
Chosen parameter		Indications of dust during construction
Current situation of parameter		-
Future target for parameter		
Way of monitoring	How	Visual inspection and communication with local residents
	When	During construction
	By who	Project Owner

In the context of the Environmental Plan submitted with the project documents to the Ministry of Environment and Forestry, the following measures will be adopted to minimise impacts during construction and operation: Necessary precautions, such as low speed limit signs, watering of roads, careful loading/unloading and covering the top of loaded trucks with tarpaulins have been employed to minimise dust dispersion and erosion during excavation.

No	2
Indicator	Soil Condition
Mitigation measure	Planting of trees to remediate soil movements as a result of the construction of the project
Chosen parameter	Trees planted
Current situation of parameter	Compulsory fee for reforestation activities has been paid in full to the Regional Directorate of Forestry / Turkish Ministry of Environment and Forestry in 2009. The money collected will be used to reforest the area once the project is decommissionned. Regarding voluntary action during the lifetime of the project, 50 trees were planted in May 2012
Future target for parameter	The planting schedule to remediate soil movement in the project

		area is to plant 200 trees over the years 2012 and 2013 at a rate of 100 trees each year. For 2012, 50 additional trees are planned to be planted in September 2012 to complement the 50 already planted in May 2012. 100 trees are planned to be planted in 2013.
Way of monitoring	How	Count number of trees planted and photograph any required remediation
	When	Yearly, over 2012 and 2013
	By who	Project developer. Action taken will be verifiable by the verifying DOE during periodical verifications.

Mitigation measure: Trees cut during construction are replaced in coordination with Forestry Management, and soil condition has been monitored. Furthermore, the project owner observes necessary precautions solid waste disposal, waste water disposal, and waste oils arising from the project. Solid waste undergoes collection, where recyclables are separated and dispatched to recycling centres. Waste oil is collected and transferred to the recycling centre in accordance with Hazardous Waste Control and Waste Oil Control Regulations. All remaining waste is disposed of at the nearest landfill site in coordination with Aliağa Municipality.

No		3
Indicator		Noise
Mitigation measure		
Chosen parameter		Report by independent third party on noise levels from the Project
Current situation of parameter		-
Future target for parameter		-
Way of monitoring	How	Third party measurement and reporting
	When	Once off when all turbines operational
	By who	Project developer to organise the report

A report has been undertaken by a reputable/accredited 3rd party[7] regarding noise levels at the nearest inhabited area to the project site (i.e. Atçılar Village). This resulting report verifies that noise limits do not exceed legal limits in Turkey (i.e. national permissible noise levels per Table 4 of the "Regulation on Assessment and Management of Environmental Noise" ("RAMEN"), specifically 65 dBA during the day, 60 dBA during the evening, and 55 dBA during the night). The project complies with relevant noise pollution environmental laws and regulations.

Coordinates of point in Atçılar Village from which noise measurements were taken: 4306465 N & 517276 E;

No		4
Indicator		Quality of Employment
Mitigation measure		
Chosen parameter		That the project complies with Ministry of Labour and Social Security (No: 25426) on occupational safety and health services
Current situation of parameter		-
Future target for parameter		-
Way of monitoring	How	Developer to write a short report on the key aspects of the law and how it complies
	When	Annually

[7] Alka Environmental Laboratory.

	By who	Project developer

The project site is a safe and secure work environment. Employees are provided a number of benefits that contribute to their well-being, such as annual check-ups in a state hospital, free meals, and free bus service.

The Project complies with Labour Law No. 4857, and the Regulation of the Ministry of Labour and Social Security No.: 25426 on occupational safety and health services. The project management implements a health safety programme as part of the corporate culture. The Project has improved the health and safety system and re-established the monitoring system evaluating employee performance against occupational health and safety targets. A Health & Safety specialist has been assigned to follow up on occupational health and safety employee training, and prepare a report to define relevant Project risks. Employees are given occupational health and safety training, and Health & Safety system rules are clearly defined with relevant signage posted throughout the Project site.

Employees have the opportunity to improve their occupational skills via various trainings, such as the service training of turbine manufacturer, climbing training, composite wind turbine repair, converter maintenance training etc.

No		5
Indicator		Livelihood of the Poor
Mitigation measure		
Chosen parameter		Making various contributions to the poorest people in the vicinity of the project area
Current situation of parameter		-
Future target for parameter		-
Way of monitoring	How	Developer to write a short report regarding the contributions made to the poor people
	When	Annually
	By who	Project Owner

The Project provides jobs to eight people from Aliağa Town, and the Project has made various contributions to the poorest people in the vicinity (e.g. computers and projectors for İsmailli elementary school, relief supply kits for locals during Ramadan, and scholarships for the children of some employees etc.

No		6
Indicator		Quantitative Employment and Income Generation
Mitigation measure		
Chosen parameter		Providing employment for local people in which the wages will be higher than the local average. The Average for the Aegean region will be determined by reference to the statistics published by the Turkish Statistical Institute.
Current situation of parameter		-
Future target for parameter		-
Way of monitoring	How	Developer to write a short report on the employment conditions
	When	Annually
	By who	Project Owner

The Project provides employment opportunities for local people with wages above the local average. This is quantitatively demonstrated by comparing wages at the Project site (during the monitoring period) with the latest available data from the Turkish Statistical Institute for the Aegean region.

Additional monitoring remarks

In accordance with the Environmental Management Plan, the following additional measures are adopted in order to minimise impacts during construction and operation:

7. Water quality and quantity: The Project complies with Turkey's Environmental regulations. Water for domestic use is supplied by tankers, and wastewater is collected in septic tanks and disposed of regularly in accordance with Water Pollution Control Regulations. Additionally, in order to improve the water supply system in the neighbouring village of Atçılar where there has been a water shortage for many years, drilling activities were financed and organized. Water was found as a result of the second trial in June 2011, solving the water supply problem.

8. Biodiversity: The project complies with the terms of the EIA-exemption letter from Ministry of Environment and Forest.

   The project site is not located along the migratory route of birds. Accordingly, no negative impact on migrating birds is observed. Nevertheless the following precautions are taken:

   a. Turbine blades tips are painted a bright red colour to improve their visibility, in contrast to the base colour of the blade, which is white. Installed flashing lights on the nacelles' tops increases turbine visibility at night.

   b. Regular site patrols are conducted by the company's security staff on each shift. The guards look out for dead birds (and bats) that may have been struck by turbines. If such birds (or bats) are found, they are photographed and recorded in a log-book that is kept at the site office. If no birds (or bats) are found on a shift, that will also be recorded.

9. Public Health and Safety: In order to safeguard the public from any potential electricity-related risks, the site is secured, with access only possible with the supervision of security. Furthermore, all the turbines are fenced, and the fences are grounded to avoid any third party injury or accident related to high voltage. The switchgear area, the main control chamber, and the substation are also fenced in and guarded. These precautions are taken in order to protect the public from any potential high voltage hazard.

Further Action Requests (FARs) from Validation

FAR 1: "Clarification 56 has been issued to clarify how different genders have been invited to the stakeholder consultation process. Although invited, women have not attended the meeting. It has been stated that another meeting will also be held at the site. This issue has also been identified as FAR."

Although women were invited to the stakeholder consultation meeting, no women showed up. A new meeting was therefore organised only for women (to circumvent cultural barriers of having men and women at the same event) on 28/06/2011. The meeting was announced in the nearest village (i.e. Atçılar Village). Many women attended this meeting, where they were informed about the power plant and the importance of generating electricity from renewable energy sources. During this meeting, women completed the sustainable development survey. This survey is included indicators such as air pollution, water quality and quantity, soil condition, other pollutants, biodiversity, quality of employment, poverty, income generation, technology transfer etc. Their opinions about the power plant were solicited following completion of the survey forms.

Calculation of Emission Reductions

An Excel spreadsheet is used to calculate Project emission reductions. The Project Developer collects data for electricity generation (EG_y) and net Project electricity supplied to the grid ($EG_{facility,\ y}$). Generation is measured and recorded monthly through two high precision measuring devices sealed and controlled by TEIAS (according to their stringent regulations). Data may also be cross-checked against MFRC/PMUM values.

The quantity of net electricity generated by the plant is monitored in order to demonstrate the emission reduction. Monthly generation data is measured and recorded by both TEIAS and the Project Developer. Data is recorded in an Excel workbook and retained in electronic and paper form, at the project site and at the Project Developer's Head Office in Ankara.

The annual Project emission reductions are calculated by multiplying net electricity generated and combined margin emission factor. Project verification/issuance are undertaken by Bergama RES Enerji Üretim A.Ş. and JP Morgan Ventures Energy Corporation in conjunction with the assigned DOE and the Gold Standard.

The Plant Manager is responsible for maintenance of credible, transparent, and adequate data estimation, measurement, collection, and tracking systems of the net electricity generation of the plant. The relevant data is provided to the selected DOE to verify project performance as part of the verification process.

The Plant Manager is responsible for plant electricity generation, and is assisted by mechanical and electrical engineers as per Figure 6 (below). All relevant data is recorded by the Plant Manager on a monthly basis. Data (in electronic and paper form) is retained by the Project Developer at the project site and at the Head Office in Ankara for two years following the completion of the crediting period.

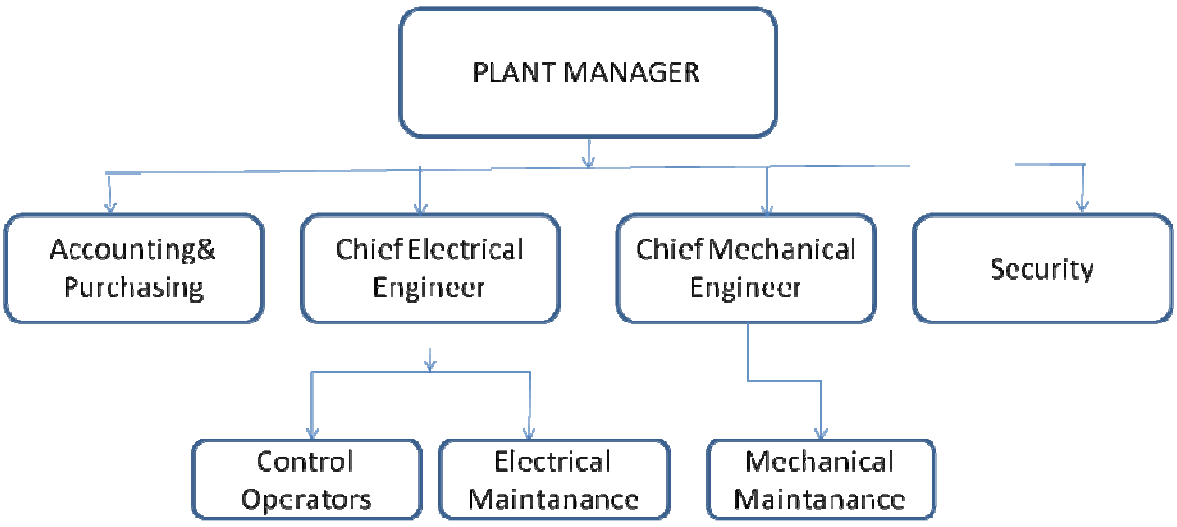

Figure 6: Project organisational structure.

SECTION D. Data and parameters

Parameters used to calculate baseline, project, and leakage emissions, as well as other relevant parameters required by the approved methodology and the monitoring plan:

D.1. Data and parameters determined at registration and not monitored during the monitoring period, including default values and factors

Data / Parameter:	**$FC_{i,y}$**
Data unit:	Mass or Volume Unit (tonnes or m^3)
Description:	Amount of fossil fuel type consumed by relevant power plants in Turkey in years 2006, 2007, and 2008.
Source of data used:	Turkish Electrical Distribution Company (TEİAŞ), link: http://www.teias.gov.tr/istatistik2008/44.xls
Value(s):	Annex 3 of registered PDD.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data is used in the baseline calculations, to calculate the Emission Factor for the grid, OM simple (**$EF_{grid, OMsimple, y}$**)
Additional comment:	Data is published by the transmission company (TEİAŞ) annually. Data will be used only once for each crediting period.

Data / Parameter:	**$NCV_{i,y}$**
Data unit:	TJ/kt
Description:	Net Calorific Values for fossil fuels in years 2006, 2007, and 2008.
Source of data used:	Turkish Electrical Distribution Company web site: http://www.teias.gov.tr/istatistik2008/46.xls http://www.teias.gov.tr/istatistik2008/44.xls
Value(s):	Annex 3 of registered PDD.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data is used in the baseline calculations to calculate the Emission Factor for the grid, OM simple (**$EF_{grid, OMsimple, y}$**)
Additional comment:	Data is monitored once for each crediting period, applied in the calculation of the simple OM, where fuel consumption data is available for all power plants.

Data / Parameter:	**$EF_{CO2, i, y}$**
Data unit:	tCO_2/GJ
Description:	CO_2 emission factor of fossil fuel type i in year *y*
Source of data used:	IPCC default values at the lower limit of uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.
Value(s):	Annex 3 of registered PDD.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data is used both for the calculation of **$EF_{grid,OM,simple,y}$** and **$EF_{EL,m,y}$**
Additional comment:	Monitored once for each crediting period.

Data / Parameter:	**EG_y**
Data unit:	MWh
Description:	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost / must-run power plants / units, in year *y*.
Source of data used:	Turkish Electrical Distribution Company Web Site http://www.teias.gov.tr/istatistik2008/37(06-08).xls www.teias.gov.tr/istatistik2008/30(84-08).xls

Value(s):	Annex 3 of registered PDD.
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data used for the calculation of $EF_{grid,OM,Simple,y}$
Additional comment:	Monitored once for each crediting period.

Data / Parameter:	**$EG_{m,y}$**
Data unit:	MWh
Description:	Net quantity of electricity generated and delivered to the grid by power unit m in year *y*.
Source of data used:	Turkish Electrical Distribution Company Web Site (www.teias.gov.tr). Statistical Reports are taken for the years 2004 and 2005 and capacity projection reports are used for the years 2006, 2007 and 2008.
Value(s):	Annex 3 of the registered PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data used for the calculation of $EF_{grid,BM,y}$
Additional comment:	Monitored once for each crediting period.

Data / Parameter:	$\eta_{m,y}$
Data unit:	-
Description:	Average net energy conversion efficiency of power unit m in year *y*
Source of data used:	The default values provided in Annex 1 of the "Tool to calculate emission factor for an electricity sector version 2" are used.
Value(s):	Annex 3 of the registered PDD
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Data used for the calculation of $EF_{grid,BM,y}$
Additional comment:	Monitored once for each crediting period.

D.2. Data and parameters monitored

Data / Parameter:	**$EG_{facility,\ y}$**
Data unit:	MWh
Description:	Net electricity supplied to the grid by the proposed project.
Measured/Calculated/Default:	Measured
Source of data:	TEİAŞ installed electricity meters.
Value(s) of monitored parameter:	501,902
Indicate what the data are used for (Baseline/ Project/ Leakage emission calculations)	Baseline emissions calculations.
Monitoring equipment (type, accuracy class, serial number, calibration frequency, date of last calibration, validity)	Manufacturer/model: Actaris SL7000 Serial numbers main meters: 53031823 & 53031826 Serial numbers for back-up meters: 53031824 & 53031825 In accordance with Article 9 (b) of the "Inspection of Measurement and Measuring Equipments Regulation" which was published in Turkish Official Gazette dated 24/7/1994 and No. 22000, the maintenance and calibration of meters should be undertaken every 10 years.
Measuring/ Reading/ Recording frequency:	Data will be monitored continuously by redundant metering devices, which will provide the data for the monthly data input to the PMUM system of TEİAŞ. The monthly data is also summarised in Monthly Electricity Metering Statements co-signed by TEİAŞ and Bergama RES Enerji Üretim A.Ş. The collected data is retained by Bergama RES Enerji Üretim A.Ş. until two years after the last issuance of VERs for that crediting period.
Calculation method (if applicable):	N/A
QA/QC procedures applied:	There will be 2 electricity back-up meters. In accordance with Article 9 (b) of the "Inspection of Measurement and Measuring Equipments Regulation" which was published in Turkish Official Gazette dated 24/7/1994 and No. 22000, the maintenance and calibration of meters should be undertaken every 10 years.

SECTION E. Emission reductions calculation

E.1. Baseline emissions calculation

As per the registered PDD, the baseline emissions are calculated using the following equation (See attached spreadsheet calculations):

$$BE_y = EG_{facility,\,y} \times EF_{grid,\,CM,\,y}$$

BE_y	Baseline emissions in year y [tCO_2/yr]	298,051[8]
$EG_{facility,\,y}$	Net electricity supplied by the project activity to the grid [MWh]	501,902
$EF_{grid,CM,\,y}$	Combined margin CO_2 emission factor for grid connected power generation in year *y* calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" [tCO_2/MWh]	0.59384

Since the Simple OM has been applied, the registered PDD value will be applied throughout the crediting period (please refer to the "Tool to calculate the emission factor of an electric system" version 2).

E.2. Project emissions calculation

As per the methodology and registered PDD, project emissions are zero, so:

$$PE_y = 0$$

E.3. Leakage calculation

As per the methodology and registered PDD, there is no leakage related to the project activity, so:

$$LE_y = 0$$

E.4. Emission reductions calculation / table

Net emission reduction achieved by the project activity during monitoring period is calculated as follows:

[8] This value has been rounded down in 2 phases to account for separate calculation of 2010 and 2011 vintages.

$$ER_y = BE_y$$

Where:

ER_y	Emission reductions in year y [tCO_2e/yr]	**298,051**
BE_y	Baseline emissions in year y [tCO_2/yr]	**298,051**

The emission reductions achieved during the first monitoring period which covers the 21 months period from 9/04/2010 to 31/12/2011 (both days included) is shown in the Table 12 (below):

Period	**Baseline Emissions [tCO_2]**	**Project Emissions [tCO_2]**	**Leakage Emissions [tCO_2]**	**Emissions Reductions [tCO_2]**
Apr-10	5,623.77	0	0	5,623.77
May-10	2,765.61	0	0	2,765.61
Jun-10	5,722.41	0	0	5,722.41
Jul-10	19,572.54	0	0	19,572.54
Aug-10	16,955.46	0	0	16,955.46
Sep-10	13,983.76	0	0	13,983.76
Oct-10	14,087.13	0	0	14,087.13
Nov-10	9,437.75	0	0	9,437.75
Dec-10	12,738.83	0	0	12,738.83
Total 2010	**100,887.27**	**-**	**-**	**100,887.27**
Rounded down	**100,887**	**-**	**-**	**100,887**
Jan-11	12,595.64	0	0	12,595.64
Feb-11	14,923.08	0	0	14,923.08
Mar-11	14,466.51	0	0	14,466.51
Apr-11	16,771.53	0	0	16,771.53
May-11	12,112.09	0	0	12,112.09
Jun-11	13,292.52	0	0	13,292.52
Jul-11	13,537.30	0	0	13,537.30
Aug-11	27,308.10	0	0	27,308.10
Sep-11	21,877.70	0	0	21,877.70
Oct-11	17,757.10	0	0	17,757.10
Nov-11	20,338.21	0	0	20,338.21
Dec-11	12,184.76	0	0	12,184.76
Total 2011	**197,164.54**	**-**	**-**	**197,164.54**
Rounded down	**197,164**	**-**	**-**	**197,164**
TOTAL	**298,051**	**0**	**0**	**298,051**

Table 4: Emission reductions achieved by the project activity

E.5. Comparison of actual emission reductions with estimates in the CDM-PDD

This section includes a comparison of actual values of the emission reductions achieved during the monitoring period with the estimations in the registered GS-PDD.

Item	Values applied in ex-ante calculation of the registered CDM-PDD	Actual values reached during the first monitoring period
Emission Reductions [tCO_2e] for the year 2010 (09/04 – 31/12)	131,342	100,887
Emission Reductions [tCO_2e] for the year 2011 (01/01 – 31/12)	175,123	197,164
Total emission reductions for the entire monitoring period (09/04/2010-31/12/2011)	306,465	298,051

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

The actual emission reductions achieved are approximately 23.2% less in 2010, and 12.5% more in 2011 when compared to the estimated values in the PDD. As with any renewable resource, there is a high degree of uncertainty. As such, prior to making a considerable investment in a wind farm, project developers commission detailed and extensive project micro-siting reports which examine wind patterns and probability (to assist in placement of turbines). In the Project's, micro-siting report, the section "probability of exceedance of energy yields" includes assumptions from 5-95% probability for wind generation. 2010 actual wind generation falls within the predictions, and for 2011, actual wind generation is per 30% probability of exceedance (i.e. 332.5 GWh per annum).
In any case, *in summary for the whole monitoring period, actual emission reductions are less than the PDD estimate for the same period.*

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History of the document

Version	Date	Nature of revision
01	EB 54, Annex 34 28 May 2010	Initial adoption.
Decision Class: Regulatory **Document Type**: Guideline, Form **Business Function**: Issuance		