

**GOLD STANDARD – VOLUNTARY EMISSION REDUCTION
MONITORING REPORT
YUNTDAĞ 42.5 MW WIND POWER PROJECT, TURKEY**

Monitoring Period: 07/03/2008 – 30/04/2009

25 / August / 2009

BY

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CONTENTS

A. General Project Activity and Monitoring

- A.1 Title of the Project Activity
- A.2 Gold Standard Registration
- A.3 Short Description of the Project Activity
- A.4 Monitoring Period
- A.5 Methodology Applied to the Project Activity
- A.6 Status of Implementation Including Time Table for Major Project Parts
- A.7 Intended Deviations or Revisions to the Registered PDD or Monitoring Plan
- A.8 Person Responsible for the Preparation and Submission of the Monitoring Report

B. Carbon Monitoring

- B.1 Key monitoring activities
- B.2. Quality assurance and quality control measures
- B.3. Calculation of GHG emission reductions

C. Sustainability Monitoring

- C.1 Sustainable Development Indicators
- C.2 Employment Created During Project Activity

Annexes

Annex 1: Definitions and acronyms

SECTION A GENERAL PROJECT ACTIVITY

This document has been prepared to report emission reductions generated by Yuntdağ 42.5 MW Wind Power Project in the following Monitoring Period:

07/03/2008 – 30/04/2009

A.1. Title of the Project Activity

Yuntdağ 42.5 MW Wind Power Project - Turkey

A.2. Gold Standard Registration

Validation date: 18 Mar 2008

Registration date: 31 Jul 2008

A.3. Short Description of the Project Activity

Innores Elektrik Üretim AŞ (in the following: Innores) has installed a 42.5 MW wind power plant in Yuntdağ/Bergama/İzmir in Turkey. The purpose of the project is to generate electricity and to feed it into the public grid. By replacing fossil fuel power generation the greenhouse gas emission in Turkey is reduced. Yuntdağ WPP consists of 17 wind turbines Nordex N90 of the 2.5 MW output, 90m diameter and 80m hub height. The wind turbines are connected to the wind farm substation through 34.5 kV underground cables. The voltage is raised to 154 kV and is transferred to the National Electricity System (ALOSBİ Transformer Station) via a 26 km long transmission line.

A.4. Monitoring Period

Monitoring period covered by this report: 07/03/2008 – 30/04/2009 (both days are included)

A.5. Methodology Applied to the Project Activity

The reference for Baseline and Monitoring methodology is the following;

“Consolidated baseline methodology for grid-connected electricity generation from renewable sources (ACM0002) Version 6”¹

A.6. Status of Implementation Including Time Table for Major Project Parts

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

¹ http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_BW759ID58ST5YEEV6WUCN5744MN763

Date	Milestone
25.07.2007	Initial Stakeholder Consultation in Koyuneli Village
07.03.2008	Commissioning of the first 6 turbines: Start of the first crediting period and first monitoring period
18.03.2008	Final Validation Report
04.06.2008	Commissioning of all Turbines.
31.07.2008	Gold Standard Registration
30.04.2009	End of the first monitoring period

A.7. Intended Deviations or Revisions to the Registered PDD or Monitoring Plan

No deviations to the monitoring procedure documented in the registered monitoring plan occurred.

A.8. Person Responsible for the Preparation and Submission of the Monitoring Report

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SECTION B CARBON MONITORING**B.1 Key Monitoring Activities According to the Monitoring Plan for the Monitoring Period as Stated in A.4****B.1.1 Monitoring Equipment****B.1.1.1 Table Providing Information on the Equipment Used:**

Serial Number	Device	Manufacturer	Model	Date of installation	Date of Initial-calibration
342724941	Main Electricity Meter	CIRWAT	402-LT5A-29D	30.11 2007	30.11.2007
342731903	Back-up Electricity Meter	CIRWAT	402-LT5A-29D	26.12. 2007	26.12. 2007

B.1.1.2 Calibration Procedures:

The calibration of the monitoring equipment was carried out according to the information provided in the GS-VER PDD. The GS-VER PDD mainly includes the following obligation for the calibration of the appropriate meters:

“The Turkish Electricity Market Regulation Agency (EPDK) sets rules on the accuracy of electricity meters that are used by power plants feeding into the grid. The rules are part of the EPDK regulation 25056 from 22 March 2003. The table in Article 11 of the regulation specifies the use of electricity meters of the accuracy class 0.5S for power plants between 10 MW and 100 MW and refers to compliance with International Electrotechnical Commission’s norm EN 60687. TEIAS, whose employees will monthly visit the plant for the meter readings, is in charge of ensuring the adherence to these rules. Calibration and maintenance procedures will follow the requirements.”

B.1.2. Data Collection (Accumulated Data for the Whole Monitoring Period)**B.1.2.1. Data concerning GHG emissions by sources of the baseline:**

ID	Data variable	Source of data	Data unit	Measured (m), calculated (c), estimated (e)	Recording frequency	Comment
1. GEN_y	Net electricity delivered to the grid	Electricity Meter	MWh	m	Continuously	The data will be taken from the monthly meter readings, documented in the “meter reading record”.

B.1.2.2. List of fixed default values:

Parameter	Default value	Description
EF	0.7086 tCO ₂ /MWh	Emission factor of the Turkish grid determined ex- ante

B.1.2.3. Data concerning leakage:

There is a diesel generator in Yuntdağ 42.5 MW WPP project for emergency cases; however this generator has not been used since installations of the project except for testing. The leakage from generator is considered to be negligible.

B.1.2.4. Data concerning environmental impacts:

For this data we refer to the Sustainability Monitoring under Section C

B.1.3. Data Processing and Archiving

Data handling is carried out according to the description in the PDD. The officials from TEİAŞ perform monthly the measurements for both the primary and secondary device, under the control of the plant personnel of Innores. The TEİAŞ personnel comes to the plant in the first days of the month for reading the recorded values obtained at 24:00 of the last day of the month before. A reading protocol is then signed by both parties. An invoice (receipt of sale) is prepared by Innores and delivered to TEİAŞ.

B.1.3.1. A Backup Unit for Systematic Storage (Availability of the Manually Read Data in the PCs of the Project Developer)

Monthly data from TEİAŞ are stored electronically on TEİAŞ website and this data can be accessed by login of Project Developer². Innores also stores a hardcopy of the monthly meter reading protocols for back up of systematic storage of data.

B.1.4. Special Events

There is no special event other than described in A.6.

² <http://pmum.teias.gov.tr/UzlasmaWeb/>

B.2 Quality Assurance and Quality Control Measures

The Project owner is Innores Elektrik Üretim A.Ş and is therefore responsible for the operation and the monitoring of the project activities.

B.2.1. Documented Procedure and Management Plan**B.2.1.1 Roles and Responsibilities**

For Innores A.Ş Mr. İsa Alkan is the plant manager responsible for monitoring issues within this project.

B.2.1.2. Operational Handbook with its Relevant Documents

The operational handbook for maintenance of turbines exists in Turkish and English version, to guarantee maximum understanding and acceptance by all involved participants.

B.2.1.3 Trainings:

The plant engineers have been trained. The rest of staff of the Yuntdağ wind farm has already been trained in 2008.

B.2.2. Involvement of Third Parties

Support and consultancy regarding the Gold Standard VER obligations is provided by FutureCamp GmbH.

B.2.3. Data Audits and Control Measures

There is analysis and maintenance system operated by Nordex. This system records automatically all electricity generation data and wind parameters of each single wind turbines. In this way any times of abnormal operation can immediately be identified and accordant measures can be initiated.

B.2.4. Troubleshooting Procedures

As the measuring devices are sealed by TEİAŞ, Innores 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 TEİAŞ has to be informed for necessary maintenance and calibration. There is an agreement between Innores and TEİAŞ that in case of problems or failures of the meters TEİAŞ reacts as fast as possible to solve the problem.

B.3 Calculation of GHG Emission Reductions

B.3.1. 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 zero. There are no project emissions in this kind of project. The general equation is as follows:

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

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 (EG_{export}) and the electricity consumption from the grid (EG_{import}). To achieve the net amount of supplied electricity, the difference has to be calculated:

$$GEN_y = EG_{export} - EG_{import} \quad (2)$$

Where:

GEN_y	= Net electricity supplied to the Grid in MWh (ID 1)
EG_{export}	= Electricity supplied to the Grid in MWh
EG_{import}	= 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.

$$BE_y = GEN_y * EF \quad (3)$$

Where:

BE_y	= Baseline emissions in tonnes CO ₂ e
EF	= Grid emission factor for the electricity displaced due to the project activity during the year y [tCO ₂ e/MWh].
GEN_y	= Net electricity supplied to the Grid in MWh (ID 1)
y	= Refers to a given period

B.3.2. GHG emission reductions (referring to B.2. of this document):**B.3.2.1. Project Emissions:**

There are no project emissions in this kind of project.

B.3.2.2. Baseline emissions:

The baseline emissions for the project activity according to the PDD are included in the following table:

Emission Factor (EF)	0.7086 tCO₂/MWh.
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Month	Electricity supplied to the grid [MWh] (1)	Electricity consumption from the grid [MWh] (2)	Net electricity supplied to the grid [MWh] (3) =(1)-(2)	Baseline emission (acc. formula 2): (ER = GEN * EF) [tCO₂e]
Mar 2008	2,491.566	5.854	2,485.712	1,761.376
Apr 2008	3,013.891	15.894	2,997.997	2,124.381
May 2008	7,191.606	18.551	7,173.055	5,082.827
Jun 2008	12,041.719	12.636	12,029.083	8,523.808
July 2008	15,130.872	11.710	15,119.162	10,713.438
Aug 2008	20,027.157	5.324	20,021.833	14,187.471
Sep 2008	9,437.774	14.524	9,423.250	6,677.315
Oct 2008	12,886.996	20.141	12,866.855	9,117.453
Nov 2008	8,910.672	15.599	8,895.073	6,303.049
Dec 2008	5,574.527	8.529	5,565.998	3,944.066
Jan 2009	8,364.347	10.905	8,353.442	5,919.249
Feb 2009	13,508.524	7.917	13,500.607	9,566.530
Mar 2009	7,382.368	29.591	7,352.777	5,210.178
Apr 2009	7,638.447	16.471	7,621.976	5,400.932
Sum	133,600.466	193.646	133,406.820	94,532.073

B.3.2.3. Leakage:

Leakage is considered to be zero (see also section B.2.3).

B.3.2.4. Summary of the emissions reductions during the monitoring period:

According to the general equation

$$ER_y = BE_y = EF * GEN_y$$

$$\text{Emission reduction} = \text{Baseline emissions} = \text{Emission Factor} * \text{Supplied Net Electricity}$$

Emission reductions generated during the first monitoring period (7 March 2008 to 30 April 2009)	94,532 tCO₂e
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Thereof, the following emission reductions were generated in 2008 and 2009:

Emission reductions generated in 2008 (7 March 2008 to 31 December 2008)	68,435 tCO₂e
Emission reductions generated in 2009 (1 January 2009 to 30 April 2009)	26,097 tCO₂e

SECTION C	SUSTAINABILITY MONITORING
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C.1. Sustainable Development Indicators
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According to the requirements of Gold Standard, the project activity must be assessed against a matrix of sustainable development indicators. Project activity's contribution to sustainable development is based on indicators of;

- environmental sustainability,
- social sustainability & development
- economic & technological development

3 indicators were added to the monitoring plan. All documents regarding these indicators presented to DOE during the on-site visit:

Sustainable Development Indicators	Data Variable	Measured (m), calculated (c), or estimated (e)	Rationale
Local job creation	Number and type of jobs and completed trainings	m	The direct creation of new jobs is one major positive social impact of the project activity. It could be shown that the project activity creates a respectable number of permanent and high qualified jobs (See C 2.1 and C.2.2). Various of these additional positions are filled by local people as well. Moreover, additional jobs are created at technology suppliers and service and consultancy providers. Employed staff was trained for new technology and all training certificates and measures can be presented during on-site visit.
Use of the new road		e	The new road is one of positive effect of the project activity which enables less traffic through the village center and a better connection to the surroundings, especially as the road is asphalted. This positive impact can be documented by interviewing with the village's officials, including the mayor of the village about their impression of changes in the traffic.
Bird collisions	Number of observed bird strikes	m	Regarding affects of Turbines on biodiversity, mayors of villages have reported no bird strikes. This can be presented to Verifier.

C.2. Employment Created During Project Activities**C.2.1 Employment Created During Operation of the WPP.**

Employment	Description	Number of employee	Duration of the Contract	Training?
Technical Manager	Responsible for operational organizations and Izmir technical office. Coordinates the works with grid and turbine supplier companies.	1	Salaried employee. Min. 1 year, rest is undefined.	Yes
Plant Manager	Responsible for all kind of operational activities as well as maintenance and management. Reports to Izmir technical office and head office in Istanbul.	1	Salaried employee. Min. 1 year, rest is undefined.	Yes
Electric Technicians:	Work on alternating shifts. Apart from routine controls, intervene to electrical breakdowns.	4 + 1	1 year	Yes
Turbine Supplier Technicians (Nordex):	Intervene to serious breakdowns.	2+1	5 years	Yes
Security Guards:	Work on alternating shifts, maintain security of plant.	4	1 year	Yes

C.2.2 Employment Created During Construction of the WPP.

Employment and Description of the works	Number of Employee
Project and site management works	5 employees
Transportation	20 employees
Erection and turbine installation	26 employees
Civil works	40 employees
Electric installation	30 employees
Safety Engineers	2 employees
Security Guards	4 employees

Annex 1: Definitions and Acronyms

ACM	: Approved Consolidated Methodology
CDM	: Clean Development Mechanism
DOE	: Designated Operational Entity
GS	: Gold Standard
PDD	: Project Design Document
TEİAŞ	: Turkish Electricity Transmission Company
ALOSBİ	: Administration of Aliğa Organized Industry Location
WPP	: Wind Power Project