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Final Report

Mid Size Sustainable Energy Financing Facility (MidSEFF)

Sayalar II Wind Power Plant:
Non Technical Summary (NTS)

November 2011

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Sayalar II Wind Power Plant: Non Technical Summary (NTS)

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The European Bank for Reconstruction and Development (EBRD) launched in January 2011 a financing facility aimed at scaling up Renewable Energy and Energy Efficiency investments in Turkey, to increase the country's energy savings and decrease its carbon emissions. The Turkish Mid Size Sustainable Energy Financing Facility (MidSEFF) launched by the EBRD with support from the European Investment Bank (EIB) and European Commission (source of the Technical Cooperation funds) will provide a total of EUR 900 million in loans through 5 Turkish banks for on-lending to private sector borrowers.

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Project Name: Sayalar II WPP - Non Technical Summary (NTS)				Controlled Copy	
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00	29th November 2011	Final Report	M. Compagnino, A. Yol	M. Compagnino	R. Zakaria

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1. Project Description

The Sayalar II (WPP) is projected to be built in Aegean Region in Manisa Province, Kırkağaç District, Sayalar Village, Kızıltepe, Koca Kaya Tepe and Koçu Dağı locations. It is an expansion of the existing wind power plant (Sayalar WPP: 38 turbines, 34.2 MW total), in operation since 2008, and consist in 10 x 2.3 MW wind turbines with a 70-82 meter rotor diameter mounted on a 78-85 meter height hub tower. The existing plant is located on a hilly area between 800-900 meters (Figure 1-1, Figure 1-2 and Figure 1-3).

Sayalar WPP project has been granted with Energy Production License given by the Energy Market Regulatory Office (EMRA) 13.04.2004 for Sayalar and revised for expansion (Sayalar II) on April 8.2010. In the table 1 is summarised the key aspects of the project.

Figure 1-1: View of the existing plant

Figure 1-2: View of the existing plant

Figure 1-3: View of the existing plant

2. Environmental and Social Baseline

2.1 Environmental Description of the Project Area

The plant location is on three different crests of a hilly area; all existing generators appear to be located in a stony or scarsely vagetated area mainly consisting of maquis and brushwood. Most of the project area is classified as forest area only a small part is used for agriculture.

Considering the presence of low vegetation and the elevation of the area, in case of particularly favourable weather conditions, the generators could be seen from long distances: during site survey, a couple of nearest settlements (Dere Mah. and Ardıçlı Mah.) were visited: the existing plant was visible but the sight was not so impressive or intrusive.

A study on the flora and fauna presence in the project area has been conducted and the area isn't result highly valuable under naturalistic viewpoint. Furthermore no protected or designated areas were found around the project location at least within 40 km from it. The nearest relevant areas are historical theatre in Akhisar and natural thermal bath in Soma.

Considering the type of project, a dedicated study has been implemented about presence of the birds and birds migration routes in the wider region of the project. In western Anatolia, there is only one main bird migration route and three ancillary routes. The main migration route is 200 km away from the project site whereas the nearest ancillary route is 60 km away from the wind plant.

The noise level (present scenario) caused by the existing plant doesn't cause unacceptable disturbance or damage, as interviewed people said, in fact only in particular condition the noise can be eared from nearest settlements.

Table 2-1: Environmental characteristic

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use	Private: 22,512 m^2	Forestry licence is going to be received
	Agriculture: 5,066 m^2	
	Forestry:159,487 m^2	
Water Surface	N.A.	-
Designated Area	N.A.	-
Flora and Fauna	No valuable presence neither migration routes	Main migration route is 200 km away.

2.2 Social Condition of the Project Area

Generally speaking the plant location area is in a natural status with no particular evidence of human structures and infrastructures only a road runs along the existing project area. No residential areas in the project area nor in the proximities are present: the nearest settlement, Kireçli, is located more than 1.2 km far away from the wind turbines (Table 2-2). Other settlements in the surroundings are: Dere Mah and Ardıçlı, they were both visited during the site visit. Main economic activities of these villagers is animal breeding (sheep and coat).

Table 2-2: Distances from villages/roads

VILLAGES/ROADS	MINIMUM DISTANCE
*Dere Mah.	2 km
*Ardıçlı Mah.	1.3 km
*Kireçli mah	1.2 km
*Sayalar mah	2 km

**All these settlement belong to Dualar Village*

Figure 2-1: Dere Mah. Settlement

Figure 2-2: Ardiçli Settlement

As required in this type of project, local people have been informed about the project. A local stakeholder consultation meeting took place on June 6, 2011 at 14.00 in Dualar village near the project location, according to Gold Standard (GS) procedure.

The stakeholders to the project activity were defined jointly by the project owner and the consultant to the GS project cycle, taking into account the characteristics and possible impacts of the project activity. Since the project is the capacity addition of an existing wind farm and there had been a stakeholders consultation meeting on 3rd of July 2007, the stakeholders defined at that time were also identified as stakeholders for the capacity addition and were invited to the stakeholders meeting held on 6th of June 2011.

No negative comments were received from the stakeholders' consultation meeting. The issues brought to discussion during the meeting (such as employment) was already known to the project participants on beforehand and was reflected in the sustainable assessment. No comments were received during the LSC (Local Stakeholder Consultation) meeting that requires modification in the project design.

3. Social and Environmental Impact

Main typologies of WPP related impacts are:

- impacts on the environment and nuisance to local people during construction activities;
- impacts on biota and especially on birdlife (during operation);
- impacts on landscape (during operation);
- noise impact (during operation);
- land use.

Other typical related issues are:

- water usage and discharge;
- waste production,

Further statement is dedicated to working conditions.

The Sayalar II project is an extension of an existing plant so some of the typical related issues are mailnly avoided using the existing infrastructures:

- the power connection to the grid will be the same of the existing one which is dimensioned also for the extended power capacity;
- the access to the project area will be through the existing access road to be only extended to reach the new generators' location;
- the auxiliary equipment areas will be kept also for the extended plant (service building, electric substation, etc); only the transformer will be substituted with a larger one within the same area.

The documents submitted by Sponsor show that no limits of the law for any environmental component will be exceeded. The following paragraphs show how the environmental and social problems, related to the expansion of the plant, are addressed. In the following table 3.1 some technical data, about project impacts, are showed.

Table 3-1: Impact Quantification

COMPONENT	IMPACT	QUANTIFICATION
Land use	Different use of the land	Forestry:159,487 m^2 Private: 22,512 m^2 Agriculture: 5,066 m^2
Water	Utilization and Discharge	2.25 m^3/day for construction*
Waste	Production of solid waste	1.34 kg/person/day (15 workers for construction)
	Excavation waste	6,720 m^3
Birds	collision with turbines	No presence of migratory routes, no evidence of birds communities
Emissions	Noise	Construction phase< 70dBA (law limit) Operational phase: No disturbance for the nearest receptors(54 dBA for 250 m, the nearest settlement is 1.2 km away
	Particulate	< 1.5 kg/h (law limit)

**No additional employee to the existing ones*

3.1 Impacts on Biota and Birdlife

The baselines studies showed that no valuable habitats/species are present in the area, so that no relevant impacts are expected. Considering the kind of project, a deeper analysis was devoted to birdlife, because birds' collision with the turbines could be a problem in case of the proximity with some migratory or ancillary routes. A dedicated study about the presence of birds and migratory routes has been implemented by the sponsor: the study confirm that the project location is far from migration routes (in detail: 200 km from the nearest main route and 60 km from the nearest ancillary route) so that no relevant issues related to birds' collision is expected. Furthermore, the sponsor informs that no bird death has been seen during the operational life of existing Plant (since 2008), confirming the above finding.

3.2 Landscape

The impact on landscape due to the presence of the wind generator is quite a typical issue considering the location of this kind of plants (usually on the crests of hills) and the dimensions of each tower.

The site visit confirmed that the existing plant is visible from great distances, especially in particular weather conditions; in any case the sight of the plant is not so impressive or intrusive in visual path from the surrounding settlements. The extension of the existing plant will increase the visibility of the whole Sayalar WPP considering that new areas will be interested for the installation of the new generators and considering their bigger dimensions.

3.3 Land use

As described in Table 2-1, most of the area to be used for Sayalar II is classified as forest area and the Forest Area Usage Permit has been made and the final approval is expected. For the private lands the sponsor's intention is to purchase these lands or acquire passage rights from the owners; in case of some difficult to agree with owners, the sponsor has obtained the right to expropriate these areas through Energy Market Regulatory Authority (EPDK) according to Expropriation Law No. 4650, Electricity Market Law No. 4628 and law No. 5496.

3.4 Water

The workers employed during the construction phase will be using construction site to be built for their daily needs. The water usage and discharge will be related to the civil use and during the construction phase some water will be used to prevent the dust. Potable and utility water to be used in the project will be supplied by being purchased from Gelenbe or Kırkağaç. Residential type waste water to emerge will be collected at an impermeable cesspool in compliance with "Directive on Holes Built in Locations Where Sewer Vault Construction is not Possible".

3.5 Waste

The residential type solid waste produced by staff to be employed during field preparation/construction phases of the project and operation will be collected and kept in covered trash bins located at several locations within the field to be used as construction site. Solid waste collected as such will be disposed by being sent to Kırkağaç Municipality solid waste collection system on regular basis.

Lump iron, steel, sheet metal and iron, packaging materials and similar solid waste will emerge during field preparation and construction phases of the project and the amount cannot be predicted since it will vary. Waste material will be collected as scrap to be stored at a suitable location within the project area, possible solid waste will be recycled to be reused or handed to licensed recycling companies. Waste not viable for recycling will be disposed by being sent to Gelenbe Subdistrict solid waste disposal site.

There will not be any hazardous waste emerging during the field preparation and construction phases of the project in compliance to “Directive on Controlling Hazardous Waste Materials”.

Employees will be warned about the prohibition on dumping all solid wastes (like waste food etc) to emerge during the field preparation, construction and operation phases of the project into seas, lakes, streets and similar recipient environment as mentioned in “Directive on Controlling Solid Wastes”.

The excavated material collected due to construction works will be temporarily stored around the excavated area dumped by shovels and buckets. After the excavation and concrete laying processes, stored excavated material will be used at filling material. Remaining parts will be used in environmental arrangements, landscape works and road preparation.

3.6 Emissions: Particulate and Noise

3.6.1 Particulate Emissions

During construction phase emissions to atmosphere have been assessed referring to dusting caused by construction activities.

The estimated overall dust emission to atmosphere is lower than the dust generation limit regulated by the Air Pollution Due to Industrial Facilities Control Regulation (1.5 kg/h). Therefore no dust modeling is found to be necessary to perform.

To minimize impacts on air quality by the project, the following precautions will be taken:

- setting a speed limit for vehicles moving inside the project area;
- covering the truck dampers while loaded.

3.6.2 Noise Emissions

The noise emission for the construction phase has been assessed considering the yard’s equipment, obtaining noise level against distance from the yard’s area and comparing the generated level to directive limit values; it’s to point out that total noise level approximately 100 m away from the yard is observed to be below Lday 63.8 dBA limit.

The noise emissions during operational phase are associated with the work of the Wind plant with in new configuration: Sayalar I+Sayalar II. A comprehensive noise model simulation has been prepared by project sponsor: the results show that the noise level generated by the plant in its final configuration is far behind the regulation limits. In any case, noise measurement will be performed during operation.

3.7 Working Conditions

Provided documents and notes by the project sponsor state that construction and operation activities will be executed in line with the existing legislations, namely: “Regulation of Occupational Safety and Health” and “Regulation of Occupational Safety and Health In Constructive Works”.

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