



Final Report

Mid-Size Sustainable Energy Financing Facility (MidSEFF)

Edincik III Wind Power Plant: Non-Technical Summary (NTS)

June 2016

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European Bank for Reconstruction and Development

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Acronyms

dBa	decibel
EBRD	European Bank for Reconstruction and Development
EMRA	Energy Market Regulatory Authority
ETL	Energy Transmission Line
MidSEFF	Mid-Size Sustainable Energy Financing Facility
NTS	Non-Technical Summary
PC	Project Consultant
PIR	Project Information Report
The Sponsor	E.N.A Tekstil A.Ş. and Umut İnşaat Turizm Sanayi ve Ticaret A.Ş.
WPP	Wind Energy Power Plant

1. General Plant Description

Edincik I-II WPP is a 56.4 MWe wind power plant located in Balıkesir Province of Turkey, Bandırma District, Edincik Township.

The Sponsor, Edincik Enerji, is expanding the wind farm installing 7 additional turbines (N117/3000 IEC) 3 MW each, for a total of 21 MW. After extension, the overall plant capacity will increase to 77.4 MWe and will generate approximately 270.9 GWh/y of electricity. Table 1-1 includes key project summary data.

For the capacity extension, the Sponsor got the approval of the amendment of the Electricity Generation License based on new coordinates of 7 turbines and 77.4 MWe on 13th August 2015 by Energy Market Regulatory Authority (EMRA).

The Sponsor has applied to the Ministry of Environment and Urbanization for the second capacity extension. It is concluded that there is no need for an amendment for the “EIA is not required” decision on 15th October 2015 by the Provincial Directorate of Environment and Urbanization.

The construction phase of the Edincik III extension project has already started and it is expected to end in November 2016. The map showing the location of existing plant (Edincik I-II) and extension turbines are given in Figure 1-1 and Figure 1-2, respectively.



Figure 1-1: Location of the existing plant

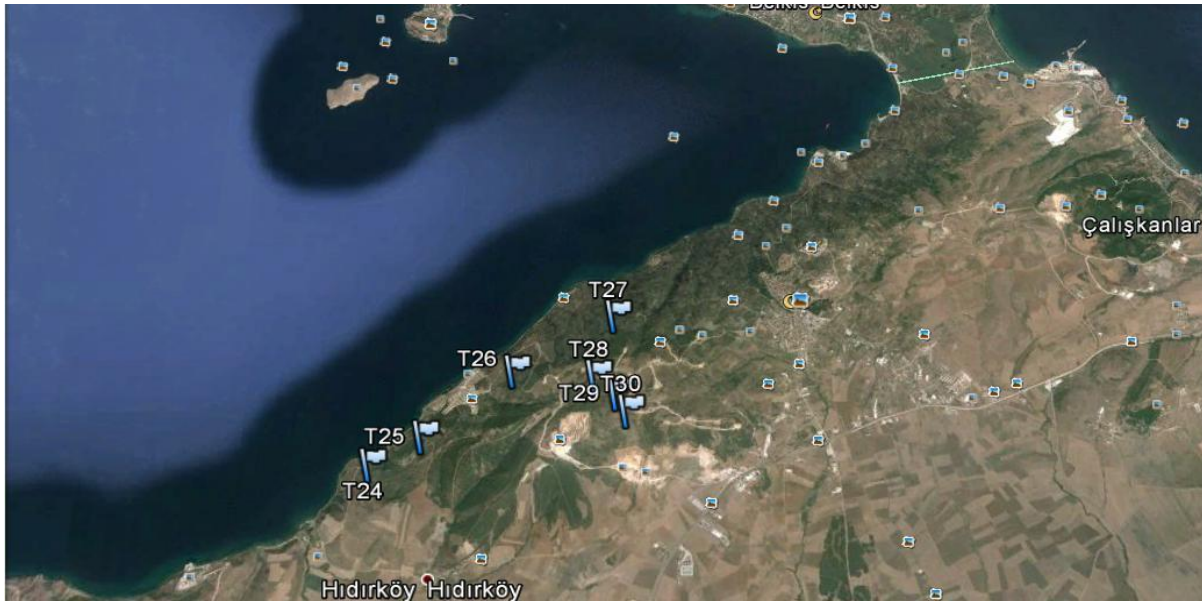


Figure 1-1: Locations of the Extension Turbines

Table 1-1: Key Project Summary Data

Key Project Summary Data	
Project Borrower	Edincik Enerji Üretim A.Ş.
Project Sponsors	E.N.A Tekstil A.Ş. and Umut İnşaat Turizm Sanayi ve Ticaret A.Ş.
Project Description / Business Purpose:	Edincik (I-II) Wind Power Plant (WPP) is constructed approximately 13 km west of Bandırma District on the southern shore of Turkey’s Sea of Marmara. Edincik (I-II) WPP has a total capacity of 56.4 MWe. The Sponsor, Edincik Enerji, is expanding the wind farm installing 7 additional turbines 3 MW each, for a total of 21 MWe. NORDEX N117/3000 IEC wind turbines with 117-meter rotor diameter and 91-meter hub tower height will be used in the extension project. After the extension, the overall plant capacity will increase to 77.4 MWe and will generate approximately 290.7 GWh/y of electricity.
Key Parties Involved:	EBRD EIB Edincik Enerji Üretim A.Ş. Isbank
Project Name	Edincik III Wind Power Project
Project Type	Wind Power Plant
Base Case Scenario:	
Installed Capacity	21 MW for extension, 77.4 MW for overall plant
Annual Electricity Production	93.3 GWh/y for extension; 290.7 GWh/y for overall plant

2. Environmental and Social Baseline

2.1 Environmental description of the project area

The plant area overlooks to the east of Edincik Village, from where it is easily accessible through an existing road of about 1.4 km. The installation of the wind turbines is planned on the ridges of a hilly area broadly aligned in the East-West direction, approximately parallel to the southern coast of the Marmara Sea.

There are two more WPPs around the project area, the nearest wind power plant to the project site, Bandırma III, is just two (2) kilometers (air distance) far and it is also owned by Edincik’s Sponsor. Other WPP, Ayyıldız WPP, is 1.7 km (air distance) to the Edincik WPP.

The nearest protected area is Manyas Bird Sanctuary (Lake Manyas) which is approximately 15 km (air distance) far from the project location. The project area is also located between a major and secondary migration route that crosses the Anatolian Peninsula from the North-West to the South-East as can be seen from the figure 2.1.



Figure 2.1: Wide Scale Bird Migration Routes

Table 2-1: Environmental Characteristics

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use	The project area located on forestry lands	Final forest permit must be obtained.
Water surface	Manyas Lake	-
Protected area	Manyas Bird Sanctuary (approximately 20 km far away from the site)	-
Flora and Fauna	75 flora species, 8 reptiles and 14 mammals living/likely living in the project site. None of the	A biota monitoring campaign is required for the first two years of operation phase.

	fauna or flora species around the project area is endangered, under protected or endemic.	
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2.2 Social condition of the project area

According to the year 2015 census, the total population of the Balıkesir province and Bandırma district were approximately 1,186,688 and 146,688 people, respectively.

The plant location is within forest areas and there is no residential area close to the power plant location. The closest house to the turbines is in the holiday villages which is about 400 meters far from the Turbine 26. The other closest village on the south-east is Hidirköy, which is 1,750 m far from Turbine 24. The distance between Edincik Village and T27 Turbine is about 2 km. Hence, the distances between the closest residential area and turbines vary from 400 m to 2 km.

At the project site and in close vicinity, there is no historically, culturally and archeologically important place.

3. Social and Environmental Impact

3.1 Land Use

All of the lands are classified as forestry and there is no settlement in the project area. Preliminary “Forest Permit” for the forest land to be used in the extension project has already been obtained. The Final forest permit must be obtained by the Sponsor and shared with the PC.

3.2 Wastewater

In the PIR of the project, domestic wastewater produced in the construction and operation phases are estimated as 5.7 m³/day and 1.9 m³/day, respectively. Domestic wastewater generated by workers will be collected in impermeable septic tanks constructed in line with local environmental regulation. The domestic wastewater will be collected by vacuum trucks of the Municipality of Bandırma.

According to the above information, the Project will not cause degradation in environmental quality in terms of the water component.

3.3 Waste Production and Management

Sources of solid waste during the construction works will be excavation waste mainly from the preparation of tower foundations and solid waste mainly domestic waste and construction waste (paper, plastics, glass etc.).

The recyclables must be separated from the domestic waste. The domestic solid waste will be stored in containers on site and sent to Manyas Municipality’s disposal site regularly. In the PIR, daily average domestic solid waste production amounts are estimated as 33.6 kg/day in the construction phase and 11.2 kg/day in the operation.

A major part of the excavation material will be used as filling material. Excess material must be managed in compliance with the local regulations.

Waste oil arising from the vehicles during the construction phase must be delivered to licensed companies to be disposed of as stated in “Regulation on Control of Waste Oil”.

3.4 Birds and other species

The project is between a major and a secondary bird migration routes. The main bird migratory road which is known to be closest to the area where Edincik WPP is planned to be built is in the line that passes over Bosphorus and is approximately 125 km distance to the project area. The secondary migration route passes through Dardanelles Strait over Şarköy in Trakya, follows Aegean shores, and is in approximately 100 km west of the area where Edincik III WPP will be built. Moreover, 20 km far away from the project area, there is Manyas Bird Sanctuary that it’s a very important birds’ habitat.

The Sponsor must implement a biota monitoring campaign in the first two years of operation phase to ensure no interference with the bird’s migration. Based on monitoring, the mitigation/compensation measures must be implemented by the Sponsor, if any.

3.5 Emissions: Noise and Particulate

Noise emissions will be generated during construction due to equipment/machinery operation and noise emissions are expected during operation due to turbines working. According to the related EIA study, the noise level at the closest settlements (Edincik, Tatil Sitesi ve Hidirköy) will be under the regulatory

limit of 70 dBA during the construction phase. The PC requires noise monitoring twice a year during the operational period in case any possible complaint from locals is received.

Dust is generated from earth-moving and material storage, and air emission from the operation of construction machinery and equipment. The Sponsor stated to work in compliance with the related local regulations and take all the measures stated in the PIR.

During operation, minimal dust emissions can be appear not directly associated with plant operation but with traffic, maintenance etc.

3.6 Landscape

The project area is mainly covered by sparse coniferous trees and other maquis shrubland plant species.

The site is potentially visible from a quite long distance such as the nearest neighborhood (at 0.4 km distance), the Southern Coast of Marmara Sea (about 1-2 km far): considering what above, the PC considers this aspect as potentially critical. In order to properly assess the landscape impact, the PC requires to the Sponsor the implementation of Visuals Impact Assessment study with a detailed photo-simulation which shows the turbines and project area from significant or sensitive viewpoints such as nearest settlements, main roads and the coast.

Table 3-1: Impact Quantification

COMPONENT	IMPACT	QUANTIFICATION
Land use	<u>Different use of the land</u>	224.921,79 m ² forest land will be used
Water	<u>Utilization and Discharge</u>	5.7 m ³ /day during the construction phase 1.9 m ³ /day during the operation phase
Waste	<u>Production of solid waste</u>	40.2 kg/day in the construction phase and 13.4 kg/day in the operation phase (assuming 30 workers during construction and 10 workers during operation)
	<u>Excavation waste</u>	4,389 m ³ (The majority of excavation waste will be reused)
Birds and other fauna and flora species	<u>Interference with migration routes/interference with protected species-</u>	The project is located between a major and a secondary migration route. The PC requires proceeding bird monitoring for the first two years of operation by covering all turbines and other WPPs in the proximity.
Emissions	<u>Noise</u>	Construction phase < local reg. limit of 70 dBA Operational phase < local reg. limit of 65 dBA
	<u>Particulate</u>	0.080 kg/h (local reg. limit = 1 kg/h)
Landscape	<u>Changes in the aspect of the area</u>	A detailed Visuals Impact Assessment study with cumulative photo simulation study must be prepared to assess the impacts.

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