MIDSEFF

European Bank
for Reconstruction and Development

Final Report

Mid Size Sustainable Energy Financing Facility (MidSEFF)

Amasya Wind Power Plant:
Non Technical Summary (NTS)

January 2017

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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 European Bank for Reconstruction and Development (EBRD) with the support from the European Investment Bank (EIB) and European Commission (source of the Technical Cooperation funds) provided a total of EUR 1 billion (which includes EUR 300 million provided by EIB) in loans through 7 Turkish banks for on-lending to private sector borrowers for financing mid-size investments in renewable energy, waste-to-energy and industrial energy efficiency in the scope of MidSEFF I-II.

In response to growing demand, the European Bank for Reconstruction and Development (EBRD) expanded its support for sustainable energy financing in Turkey with an additional €500 million under MidSEFF III with the support from European Union. The Mid-size Sustainable Energy Financing Facility (MidSEFF), now totalling €1.6 billion (which includes EUR 100 million provided by the EIB), will benefit renewable energy and resource efficiency projects in Turkey including solar, hydropower, wind, geothermal, waste-to-energy and energy efficiency ventures as well as water saving and waste minimisation projects.

This report has been prepared by MWH Mühendislik ve Müşavirlik Ltd. Şti, GTE and Frankfurt School of Management and Finance (hereinafter the "Consortium") for the European Bank for Reconstruction and Development (EBRD) in relation to the above-captioned project and is confidential to the client. Neither the Consortium nor any person acting on their behalf, including any party contributing to this report, makes any warranty, expressed or implied, with respect to the use of any information disclosed in this report; or assumes any liability for direct, indirect or consequential loss or damage with respect to the use of any information disclosed in this report. Any such party relies upon this report at their own risk.

Project Name: Amasya WPP - Non Technical Summary (NTS)				Controlled Copy	
Rev. N.	**Date**	**Description Amendment**	**Edited by**	**Revised by**	**Approved by**
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Acronyms

dBA	decibel
EBRD	European Bank for Reconstruction and Development
ETL	Energy Transmission Line
MidSEFF	Mid Size Sustainable Energy Financing Facility
MoFAL	Ministry of Food, Agriculture and Livestock
NTS	Non-Technical Summary
PC	Project Consultant
TEDAS	Turkish Electricity Distribution Company
The Sponsor	GNCR Group
WPP	Wind Energy Power Plant

1. General Plant Description

The project includes construction of 14 Vestas V126 3.3 MW_m/3 MW_e wind turbines on a hill's ridge in Amasya Province, Merkez District, Beydağı Village and construction of the 13 km-long energy transmission line (ETL) which connects Amasya WPP with 154 kV Yenidere Havza Transformer Station.

Amasya WPP project has been granted the Energy Production License (EU/3053-8/1802) by the Energy Market Regulatory Office (EMRA) in 2013. The certificates stating that "EIA not required" have also been obtained for the construction of the power plant and the energy transmission line.

There are not any cultural heritage area, bird sanctuary, wetland or any wildlife development area in the close proximity of the project area. The most important natural structure of the region is Yeşilırmak River which is approximately 30 km away from the project site.

Figure 1.1: The project location

Table 1-1: Key project summary data

Project Name	Amasya WPP
Project Borrower	Sehzade Enerji Üretim Ticaret Sanayi Limited Sirketi
Project Sponsors	GNCR Group
Project Description / Business Purpose:	The construction of Amasya Wind Power Plant (WPP) has been started in July 2015 and completed in July 2016. Amasya WPP will produce 125 GWh/year of electricity based on a probability level of 75%. The project will enable reduction of 74,500 tonnes of CO_2 equivalent per year, as calculated for the P75 scenario.
Key Parties Involved:	EBRD Sehzade Enerji Üretim Ticaret Sanayi Limited Sirketi Akbank
Installed Power	42 MW_e/46.2 MW_m
Annual Electricity Production	125,000,000 kWh (P75)

2. Environmental and Social Baseline

2.1 Environmental description of the project area

The project site of Amasya WPP is classified as forestry area and no residential house is found on the site. The ETL will be passing through agricultural and forestry areas and through some private lands.

There is not any bird sanctuary, wetland or any wildlife development area in the proximity of project area. The closest protected area, Sahin Yaylası Natural Park, is 17 km away from project site. One of the most important natural structure of the Central Black Sea Region is Yeşilırmak River and, is approximately 30 km away from the project site. The site is not located along an important migration route as shown in the figure below:

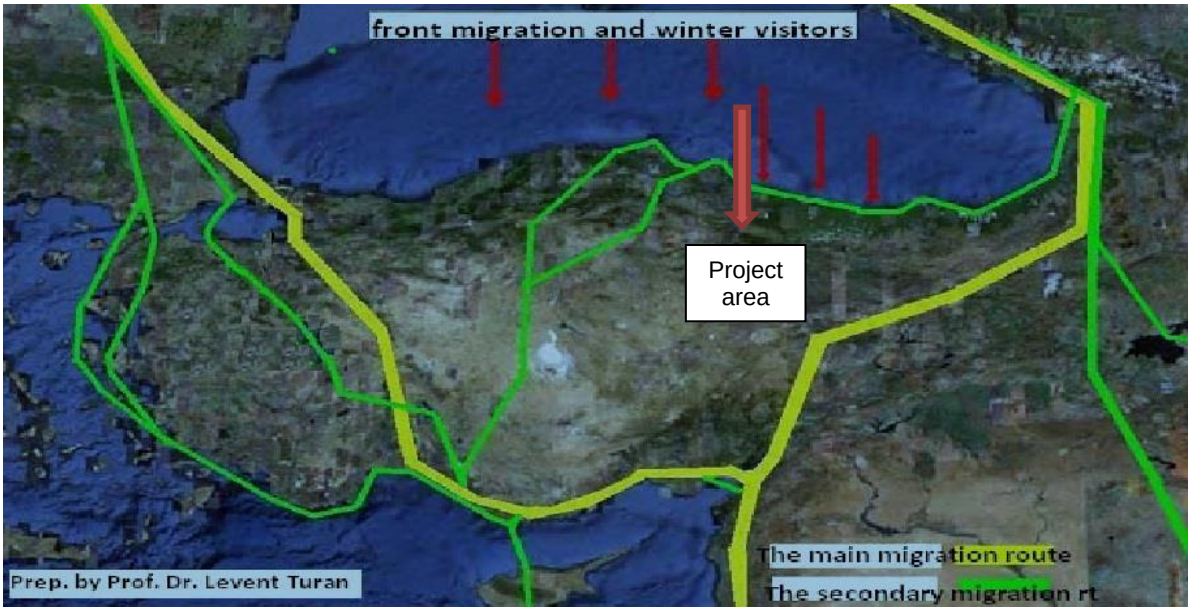

Figure 2.1: Wide Scale Bird Migration Routes (by Prof. Dr. Levent Turan)

A flora & fauna study has been conducted by a biologist within the scope of preparation of the PIR. According to the study, there are no endangered flora and fauna species within the project site. However, among the species in the project area, there are 3 fauna species, namely *Ciconia Ciconia, Canis Lupus, Ablepharus Kitaibeli*, are considered as Strictly Protected Fauna Species under BERN Convention of Appendix-II.

Table 2-1: Environmental characteristic

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use/characteristic	The project area consists of agricultural and forestry areas and private lands	Final forestry permit and non-agricultural land use permit to be received
Water surface	• Yedikır Dam Lake (48 km away) • Yeşilırmak River (30 km away)	-
Protected area	• Şahin Yaylası Natural Park (17 km away) • Yedikır Dam Lake (48 km away)	-
Flora and Fauna	No endangered flora and fauna species are found within the project site. There are 3 Strictly Protected Fauna Species under BERN Convention Appendix-II; *Ciconia Ciconia, Canis Lupus, Ablepharus Kitaibeli.*	Bird monitoring during construction and operation phases to be performed.

2.2 Social condition of the project area

According to the year 2015 census, total population of Amasya Province and Merkez District are 322,167 and 137,549, respectively.

There is no privately owned area or any settlement currently exists in the project area. The closest settlement to the project site is Beldağı Village (1.4 km) with a small population of about 500. Agriculture and animal breeding are the main economic activities in the village. The turbines (being on hills' ridge) will be visible from the Village.

3. Social and Environmental Impacts

3.1 Land Use

Within the scope of the project, 13 km power transmission line which will be connected to Yenidere Havza Transformer Station will be constructed.

Regarding the land use of the project and ETL; land acquisition is not needed for the project site. However, the energy transmission line will be passing through agricultural and forestry areas as well as some private land. Forestry permit and a “Non-Agricultural Utilization Permit” for agricultural areas have been obtained from related authorities for the project site. Land acquisition is needed for the Energy transmission Line. All private lands which are almost 70 percent of the total area of ETL are already purchased by mean of mutual agreements. The Sponsor has completed the expropriation procedures to get authorization from related authorities.

3.2 Emission to Air

Dust and air emissions (exhaust gases) will be generated by the construction machinery mainly during the earth-moving works. A study in the PIR shows that air emissions will be at acceptable level and the supplied documents indicate that the Sponsor will comply with the related Turkish regulations on environmental air quality. Dust emission which will arise from construction activities is estimated to be 0.35 kg/h. Considering that the legal limit for dust emissions is 1 kg/h, the expected dust emission during construction is acceptable.

During operation, minimal emissions can be observed not directly associated with plant operation but related with vehicle traffic and maintenance works.

To conclude, dust and air emissions will be at an acceptable level during construction and operation phases of the project.

3.3 Water Use and Discharge

The needed water for the workers will be supplied from nearby water network and transferred by tankers to the construction site.

As a result of water consumption, domestic wastewater will be generated during both construction and operation phases. Based on the assumption that the daily water requirement is 150 litres per capita, considering 20 employees during the construction phase and 5 employees during the operation phase, the domestic wastewater generation are estimated to be 3 m^3/day and 0.75 m^3/day, respectively. Domestic wastewater generated by project workers will be collected in impermeable septic tanks constructed in line with Turkish regulation. The domestic wastewater will be collected by vacuum trucks of the related Municipality.

According to the above mentioned information, the WPP project will not affect the water component negatively.

3.4 Waste Generation and Management

The main waste types that is expected to be generated during Amasya WPP project are excavation waste (during preparation of turbine tower foundations), construction waste (paper, plastics, glass etc.), and domestic solid waste.

Assuming a daily domestic solid waste production amount of 1.34 kg per capita, total domestic solid waste production will be 26.8 kg/day and 6.7 kg/day during construction phase (20 workers) and operation phase (5 workers) of the project. Domestic solid waste will be sent by the municipal trucks to the landfill area of the related Municipality.

The excavation waste (app. 65,941 m^3 according to the PIR) will be kept under cover during laying of the foundations to prevent dust generation. Most of the excavation waste will be used as filling material. Considering that the new configuration foresees a decrease in the number of turbines, it seems reasonable to assume that fewer amounts of excavation waste will be produced than it was calculated in the PIR.

According to the PIR, the recyclable waste (paper, plastics, glass etc.) will be stored in separate waste containers. Waste oil which is expected to be generated during the maintenance of construction machinery and equipment will be managed according to the related regulations.

3.5 Noise

Noise emissions will be generated during construction and operation due to equipment/machinery operation.

The nearest residential area sensitive to noise emissions is located at approximately 1.4 km to the project site. The noise level at 250 m distance is estimated to be 56 dBA which is under allowed limit level of 70 dBA.

In the PIR, no information is available about the noise level at the operation phase for the final configuration. Therefore, the PC requires the implementation of a noise evaluation for the operation phase and also a noise monitoring campaign during operation phase for the sensitive points (closest houses).

3.6 Landscape

Landscape is usually a sensitive aspect for this kind of project. Considering the position of the project (on a hill), the PC requires the implementation of a dedicated Visual Impact Assessment study which includes the photo-impact simulations from sensitive viewpoints to assess the impact on landscape. In case of not negligible impact, some compensation/mitigation measures could be prescribed.

Table 3-1: Impact Quantification

COMPONENT	IMPACT	QUANTIFICATION
Land use	Different use of the land	-
Water	Utilization and Discharge	3 m^3/day during construction phase 0.75 m^3/day during operation phase
Waste	Domestic solid waste	26.8 kg/day during construction 6.7 kg/day during operation
	Excavation waste	65,941 m^3 (vast amount of excavation waste will be reused as fill material)
Birds and other fauna and flora species	Interference with migration routes/interference with protected species-	No interference with primary or secondary migration routes. Monitoring campaign will be conducted during construction and operation phases (2 years).
Emissions	Noise	Construction phase< 70 dBA (regulatory limit) Operational phase: Monitoring campaign is required before the operation phase.
	Particulate	< 1 kg/h (regulatory limit) for construction phase No particulate emissions for operation phase

Landscape	Visual impacts	The Visual Impact Assessment study is required for the sensitive points to assess the change in landscape.

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