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European Bank
for Reconstruction and Development

Final Report

Mid Size Sustainable Energy Financing Facility (MidSEFF)

Nazar Hydro Electric Power Plant: Non Technical Summary (NTS)

December 2013

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The European Bank for Reconstruction and Development (EBRD) launched in April 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 1 billion in loans through 7 Turkish banks for on-lending to private sector borrowers.

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Project Name: Nazar HEPP - Non Technical Summary (NTS)				Controlled Copy	
Rev. N.	**Date**	**Description Amendment**	**Edited by**	**Revised by**	**Approved by**
00	05th December 2013	Final Report	S. Demir	M. Solari	M. Mancini

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1. Project Description

Nazar HEPP project is a hydroelectric power plant situated within the borders of Bitlis Province in Eastern Anatolia Region, at around 7 kilometres south-east of Hizan County city centre, in Aksar Municipality. Nazar HEPP is fed with water from the Akşar Regulator and is a run-of-the-river type. The project is built on the Sutopu Stream which is one of the many streams in Dicle Basin which originates from Alacabuk Mountain

Nazar HEPP project is intended for energy generation purpose only; no irrigation or water supply facilities have been considered in the design. Nazar HEPP main project items are:

- regulator and fish passage;
- water transmissions tunnel;
- head pond;
- tailwater channel;
- penstock;
- power house;
- switchyard.

Nazar HEPP project has been granted with Energy production license by the Energy Market Regulatory Office (EMRA) with EÜ/3584-20/2191 issue code on 27th December 2011 (referring to the previous design and sponsor and amended for the new Sponsor on 7th February 2013).

Table 1 presents the key aspects of the project.

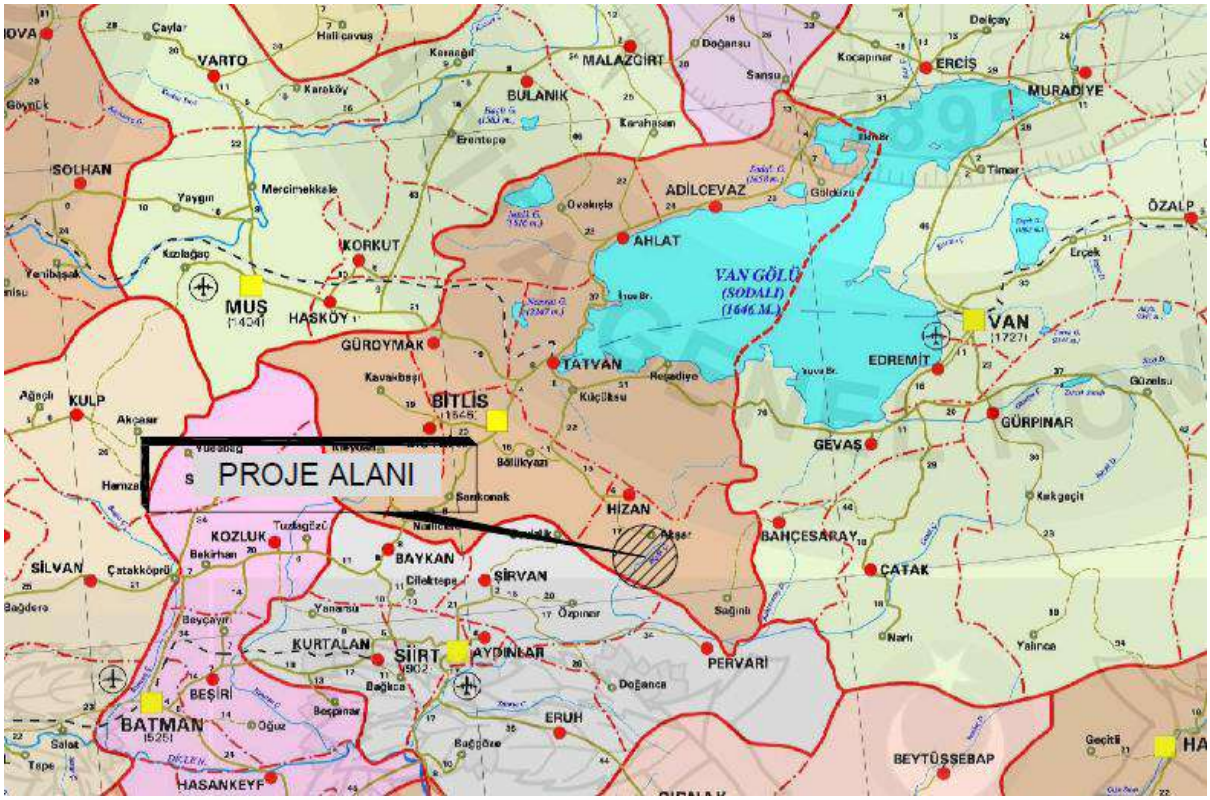

Figure 1.1: Project site

Table 1-1: Key project summary data

Project Name	Nazar Hydro Power Project
Project Borrower	Akşar Nazar Enerji Üretim A.Ş.
Project Sponsors	Kulak İnşaat A.Ş, Kulak Group
EBRD Transaction	Total project cost including, investment period interest, commitment fees and excluding VAT and working capital is USD 66,495,319 (EUR 49,527,275). The proposed financial scheme includes EBRD MidSEFF debt financing in the amount of USD 55,000,000 and the borrower's own contribution in the amount of USD 13,553,465 as equity. The debt to equity ratio is 80:20 %. The loan will be disbursed in tranches: USD 27,500,000 in the last quarter of 2013, USD 27,500,000 in the beginning of 2014.
Project Description / Business Purpose:	Nazar HEPP project is a hydroelectric power plant situated within the borders of Bitlis Province in Eastern Anatolia Region, at around 7 kilometres south-east of Hizan County city centre. The expected date for starting the construction of the power plant is September 2013 and the expected date for commencing operation is September 2015. Nazar HEPP is a run-off-river hydro power plant which is designed with three Francis turbines for a nominal installed power of 30.24 MW and a design flow rate of 37 m3/s. The plant will produce on average 86.04 GWh of electricity annually. Nazar HEPP will be connected to the National Grid through 154 kV Incir HEPP switchyard with 14 km 1272 MCM connector. Later the İncirli HEPP connects to national grid through Bitlis TS via 36 km ETL with 1272 MCM connector. The Akşar Nazar HEPP project will contribute to the share of renewable energy in the Turkish market. The generation of electricity from renewable source will replace electricity from the national grid and enable reduction of 47,064 tCO2 per year.
Installed Power	30.8 MWm / 30.24 MW (2 large and 1 small Horizontal shaft Francis Turbines)
Annual Electricity Production	86.04 GWh/y

2. Environmental and Social Baseline

2.1 Environmental description of the project area

The province is located at an elevation of 1,400 metres, 15 km from Lake Van, in the steep-sided valley of the Bitlis River, a tributary of the Tigris. The province is surrounded by the Şeyhabib Mountain, Kalem Mountain, erupted volcano Nemrut Mountain, a part of Toros Mountain range and located in Eastern Anatolian Region within the transition zone between East Anatolia and South Anatolia. Eventhough 51% of the soil in Bitlis Province is classified as VII. Degree agricultural land, the local economy is still mainly based on agricultural products which include fruits, grain and tobacco. Industry is fairly limited, and deals mainly with leatherworking, manufacture of tobacco products as well as weaving and dyeing of coarse cloth. Bitlis is connected to other urban centres by road, including Tatvan on Lake Van, 25 km to the northeast, and the cities of Muş, 100 km northwest, and Diyarbakır, 200 km to the west. The climate of Bitlis can be harsh, with long winters and heavy snowfalls. Summers are hot, and often humid.For this reason, the steppe formation is dominant in the area.

The project site is located in the hilly sections of the Bitlis valley and it comprises forestry land and meadow area. 21 parcel lands are within the project area and were expropriated by the project sponsor in compliance with 4650 Numbered Expropriation Law. Besides, there is not any residential area nearby to be expropriated. In addition, there are also lands which belong to MoEF and Treasury. No agricultural activities are available along Sutopu creek due to the quality of soil and steep topography of project site.

In the project region there are around 102 flora species belongs to 59 families and some of them are endemic; they are LR/lc, LC category under IUCN criteria and widespread in the region. There are also several fauna species in the project region considered under BERN Convention. There are 3 fish species listed in UICN under LR/lc category, one species listed under LC and one species listed under EN category. In addition there are two species listed within Bern Convention under Appendix III.

Furthermore no protected or designated areas were found around the project location.

Table 2-1: Environmental characteristic

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use	Private, Forestry and Treasury	Sponsor applied for preliminary permit. Distribution between private and treasury not established yet
Waters surface	N.A.	-
Protected area	N.A.	-
Flora and Fauna	2 fish species are protected under Bern Convention, 3 fish species are listed under UICN	Biota monitoring during operation

2.2 Social condition of the project area

The most recent data (December 31st 2010, as checked by PC on the Turkish Statistical Institute's web site) mentions a population of abt. 328,000 of people for Bitlis Province.

The project area is close to some residential areas. The nearest settlement, Deliklitaş, is abt. 500 meter away from the regulator, while Hoçinik and Pagasor Villages are abt. 1 km away. The power house is abt. 500 meter away from the Düztepe settlement.

In general terms the provided documents and general know-how on the project location do not highlight any particular utilization of the river by local people.

In order to assess the project acceptance by potentially affected communities a stakeholder holder engagement plan has been implemented.

3. Environmental and Social Impact

3.1 Land Use

Some parts of the project area are classified as Forestry area. The sponsor received preliminary Forest permit which is valid 24 months. Before this time period ends, they will apply for the final Forest Permit. In accordance with the Turkish legislation, the sponsor has to pay a fee for each cut tree and the Government will use these fees for re-plantation. When the sponsor will apply for the final permission shall supply a trees cutting Plan.

There are 21 parcels of private lands to be purchased; there is no evidence of agricultural activities on these lands.

3.2 Water

There will be household waste water both during construction and operation phase. This is generally employees' daily waste. The pollution is biological and physical. Some considerations included in the Environmental Impact Assessment show that water discharge will be managed according the Water Pollution Control Regulation. Domestic waste water amount is calculated as 7.5 m^3/day during construction phase, and 6.15 m^3/day during operation phase.

3.3 Waste

The hazardous waste is expected in negligible level due to used oils from construction machines, waste batteries and accumulators etc. These will be handled according to the related regulation. The amount of household waste caused by employees is calculated about 134 kg/day during construction phase and 67 kg/day during operation phase. Recyclable waste such as wood and plastic will be collected in separate boxes and will be delivered to licensed companies. All these activities related to waste management will be carried out according to the related regulations such as Solid Waste Control Regulation.

3.4 Fisheries

As indicated in the supplied Ecosystem Assessment Report, there are three endemic fish species in project and one of them is endangered. But as long as particular attention will be paid during construction and operation, the negative effects on endemic fishes as well as other aquatic organisms can be considered low. The project will affect the fish habitat in the river but the developer should take precautions such as constructing a fish passage and put in place a grid device with a proper mash dimension. The biota monitoring during operation is recommended by the PC. Compensation measures (such as repopulation) could be prescribed according to monitoring results in case.

3.5 Emissions: Noise and Particulate

Dust is generated from earth-moving and material storage, and air emission from the operation of construction machinery and equipment. A study in the EIA Report shows that air-emissions are at acceptable levels and the sponsor is obliged to work with the related Turkish regulation (Evaluation and Management of Air Quality). Common good engineering practices are usually enough to cover this aspect. A more "formal" construction yard environmental management plan has been suggested.

During operation minimal emissions can appear not directly associated with plant operation but with traffic, maintenance, etc. So it can be easily concluded that, for what concerns emissions, there are no relevant aspect, both in the construction and in the operation phase.

Noise emissions will be generated during construction due to equipment/machinery operation. Within the EIA report, it was committed that during construction and operation periods all noise levels will be kept at legally agreed level in line with the Turkish Regulation on Noise Control. Minimum noise emissions are expected during operation due to electro mechanic working and water flow/fall. According to EIA report, the noise level will be monitored every 6 month during the construction period. The Sponsor should pay this procedure close attention in order to prevent from possible complaints from locals.

Table 3-1: Impact Quantification

COMPONENT	IMPACT	QUANTIFICATION
Land use	Different use of the land	Private (21 parcels) and forestry (quantity to be defined)
Water	Utilization and Discharge	7.5 m^3/day during construction 6.15 m^3/day during operation
Waste	Production of solid waste	134 kg/day during construction 67 kg/day during operation
	Excavation waste	To be defined
Fisheries	Loss fish/loss Habitat	Monitoring campainn suggested during operation phase and repopulation in case.
Emissions	Noise	Construction phase< 70dBA (law limit) Operational phase: No disturbance for the nearest receptors
	Particulate	< 1.5 kg/h (law limit) monitoring campaign suggested during construction phase

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