



Final Report

Mid Size Sustainable Energy Financing Facility (MidSEFF)

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

February 2015

Final Report

European Bank for Reconstruction and Development

Akpınar Hydro Electric Power Plant: Non-Technical Summary (NTS)

February 2015

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 1 billion in loans through 7 Turkish banks for on-lending to private sector borrowers.

This report has been prepared by MWH S.p.A., D'Appolonia S.p.A., GFA 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.

This publication has been produced under the Mid Size Sustainable Energy Financing Facility which received a financial assistance from the European Union. The content of this publication is the sole responsibility of the Consortium and can in no way be taken to reflect the views of the EU or the EBRD.

This disclaimer shall apply notwithstanding that the report may be made available to other persons for an application for permission or approval to fulfill a legal requirement.

Project Name: Akpınar HEPP - Non Technical Summary (NTS)				Controlled Copy	
Rev. N.	Date	Description Amendment	Edited by	Revised by	Approved by
00	February 2015	Final Report	A. Karadiş	M. Compagnino	D.Yurtsever

Table of Contents

1.	Project Description	4
2.	Environmental and Social Baseline	5
2.1	Environmental description of the project area.....	5
2.2	Social condition of the project area	5
3.	Environmental and Social Impact	6
3.1	Land Use	6
3.2	Water	6
3.3	Waste	6
3.4	Fisheries.....	6
3.5	Emissions: Noise and Particulate.....	7
3.6	Landscape.....	7

1. Project Description

This investment consists of the construction of run of the river hydroelectric power plant in the Mediterranean Sea Region. The project area is located in Kahramanmaraş Province, Pazarcık District. The project area is located on Aksu River around Küçükören and Zonpa Village, Pazarcık District, situated in the southeast of Kahramanmaraş Province. The main water source of the project is Aksu River, in the downstream of Kısık River and the outlet of the Gölbaşı, Azaplı and İneklı Lakes. The Aksu River originates in Engizek Mountain hills and flows through Çağlayancerit settlement area directed to southeast. .

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

- Regulator and a fish passage;
- Sedimentation pool;
- Water transmissions channels;
- Head pond;
- Penstock;
- Energy transmission line.

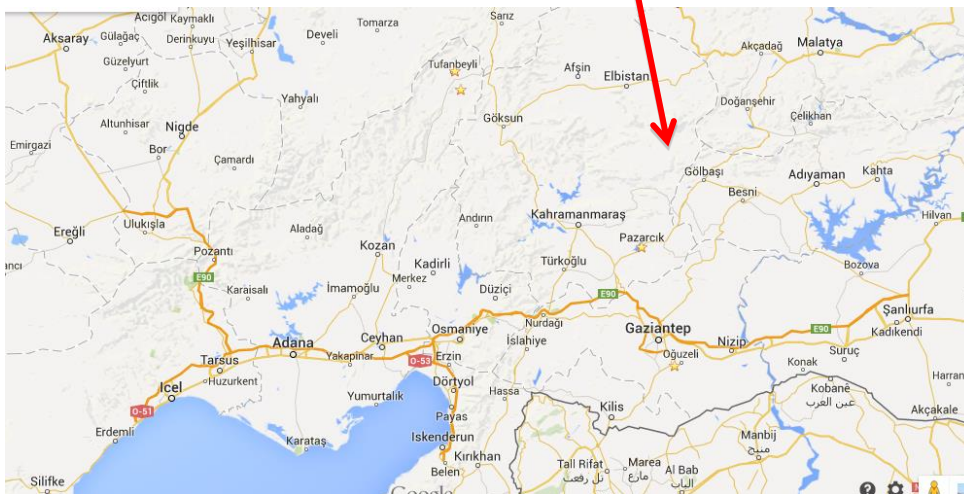


Figure 1-1: Akpınar Hydro Electric Power Plant – Project Location

2. Environmental and Social Baseline

2.1 Environmental description of the project area

Kahramanmaraş is a large city in the Mediterranean region of Turkey. The province is 1710 km² in size and lies on the north east part of Kahramanmaraş. The province is surrounded by the Taurus Mountains and located at the junction point of Eastern Anatolian Region, South-Eastern Anatolian Region and Mediterranean Region, and the province is under the effect of these regions' climate. For this reason, the flora of the project site predominant vegetation type is steppe and mainly scrubs.

Pazarcık district is settle down on the plain mountainous surroundings, consist of forested steep terrain. Land and Soil structure of the Pazarcık district divided into two topographical section: the first section, located in the southwest which is productive areas that constitute Narlı lowland; The second part is mountainous and hilly sections. Irrigated farming is carried out in the southern and western part of the Narlı lowland and Aksu River surrounding.

There are 3 amphibian and 2 reptile species observed in the project area. None of the species found in the project area are endemic, endangered, or threatened.

Table 2-1: Environmental characteristic.

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use	Forest and Agricultural	All permits (forest and agriculture) have been obtained from the related authority except ETL forest permit
Water surface	N.A.	-
Protected area	N.A	-
Flora and Fauna	Some endemic species in the region	-

2.2 Social condition of the project area

According to the 2013 "Address Based Census" results, the total population of Pazarcık District, including the suburban population, is 66843.

Düzharman Hill is in the west of the regulator at a distance of 1.6 km, Sakarya Village in the northwest at a distance of 2.5 km, and Küçükören Village in the northeast at a distance of 1.36 km. The nearest settlement area, Aliheme, is situated in the west of the head pond at a distance of 0.7km. In the southwest of the head pond at a distance of 1.12 km Çayüstü Hill and in the northeast of power house at a distance of 1.6 km Akdüzü Hill are the other settlement areas surrounding the project site.

In order to assess the project acceptance by potentially affected communities a stakeholder engagement plan will be implemented.

3. Environmental and Social Impact

3.1 Land Use

The area of the project is classified as Forestry and Agricultural land area. The sponsor obtained from the related authority except ETL forest permit.

The Private lands will be expropriated by mutual agreement in compliance with 4650 Numbered Expropriation Law.

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 Project Information Report show that water discharge will be managed according the Water Pollution Control Regulation. Domestic waste water amount is calculated as 15 m³/day considering 100 employees during construction phase and 1.35 m³/day for 9 employees during operation phase.

3.3 Waste

The hazardous waste is expected in negligible amounts 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 due to the employees is calculated as to be around 134 kg/day during construction phase and 12.06 kg/day during operation phase. Recyclable waste such as wood, glass 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.

The excavation material will be used firstly for upgrading the surrounding of regulator area and power plant area. The excess excavation material will be stored in a special storage yard. The storage will be made in accordance with the Turkish regulations: "The Regulation on Control of Excavation Material, Construction and Residue Waste" which was released on 18.03.2004 on Official Gazette n. 25406.

3.4 Fisheries

The flora and fauna section of the Project Information Report includes information on resident fish communities which are *Cyprinus carpio*, *Leuciscus cephalus*, *Capoeta capoeta angorae*, *Capoeta barroisi*, *Alburnus orontis*, *Silurus glanis*, *Clarias lazera*, *Salaria fluviatilis*, *Salmo trutta macrostigma*, *Acanthobrama marmid*, *Barbus rajanorum*, *Aphanius cyprii*, *Nemachaeilus angorae*, *Nemachaeilus tsyhienchus*, *Phoxinellus zeregii*, *Rutilus tricolor*, *Garra rufa*, *Cobittid sp.* According to the Project Information Report, none of these species are endemic.

The project will affect the fish habitat in the river but the developer will take precautions such as constructing a fish passage and grid device with an appropriate mesh size which will impede the entrance of small fish into the tunnel/channel and water intake structure during operation. In any case a monitoring campaign during operation phase as well as the construction phase will put in place and compensation measure (repopulation, increasing of the water in the river bed, etc) will implemented. Particular attention will be paid during construction and operation to avoid the negative effects on endemic fishes as well as other aquatic organisms.

3.5 Emissions: Noise and Particulate

Dust will be generated by earth-moving and material storage; air pollutant emissions are generated by the operation of construction machinery and equipment. Some considerations are included in the PIR Report and show that the levels of air-emissions are mostly acceptable (below 1 kg/h). The dust emissions originated by excavation activities, related to the construction works, are expected to be lower than 1 kg/h except one point. Dust produced during head pond blasting is estimated as 20.61 kg/h, which is over the limit value defined in the Regulation (1.0 kg/h). For this reason, a modeling study has been conducted considering the worst case scenario and it has been determined that the nearest settlement area, Aliheme Neighborhood, is not affected by the dust produced. In regard to the other construction activities, measures for controlling dust emissions has been proposed, such as water spraying of non-asphalted access roads, setting speed limit for vehicles and periodic control and maintenance for vehicles.

The Sponsor will conduct an air monitoring plan during construction phase as a PIR (Tekstila 2009) commitment and to put in place the engineering action to reduce dust issues.

3.6 Landscape

Landscape is usually not a really sensitive aspect. A site survey should be done after construction activities are finished: in case of not negligible impact, some compensation/mitigation measures (in particular morphological arrangement or trees planting) could be prescribed.

The Sponsor should implement necessary activities for the protection, storage and reuse of the removed vegetal layer during the construction phase, in areas previously selected, to guarantee the protection of the physical-biotic resource after the construction.

Table 3-1: Impact Quantification

COMPONENT	IMPACT	QUANTIFICATION
Land use	Different use of the land	Forestry, Private and treasury (quantity to be defined)
Water	Utilization and Discharge	15 m ³ /day during construction 1.35 m ³ /day during operation
Waste	Production of solid waste	134 kg/day (100 workers) during construction 12.06 kg/day (9 workers) during operation
	Excavation waste	92,910 m ³
Fish life	Loss of fish/habitat	Monitoring campaign suggested during operation phase and repopulation in case
Emissions	Noise	Construction phase < 70dBA (law limit) Operational phase: No disturbance for the nearest receptors
	Particulate	>1.0 kg/h (law limit) monitoring campaign during construction phase
Landscape	Visual Impact	To be verified after the construction phase, some compensation measures could be put in place

MidSEFF Office

Cevatpasa Sokak No. 20

Kosuyolu

34718 Kadikoy, Istanbul

TURKEY

www.midseff.com