



Final Report

Mid Size Sustainable Energy Financing Facility (MidSEFF)

Hipot Solar Power Plant: Non Technical Summary (NTS)

January 2017



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European Bank for Reconstruction and Development

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Table of Contents

1.	General Plant Description.....	4
2.	Environmental and Social Baseline	6
2.1	Environmental description of the project area.....	6
2.2	Social condition of the project area	6
3.	Social and Environmental Impact	7
3.1	Land Use	7
3.2	Water	7
3.3	Waste	7
3.4	Emissions: Noise and Particulate.....	7
3.5	Landscape.....	8

1. General Plant Description

Hipot Solar PV project has 36.37 MWp/29.68 MWe rated power capacity, unlicensed and spread out 3 different districts in Konya province of Turkey. Sub-project capacities are arranged as follows; 6.35 MWe in Beyşehir, 3.347 MWe in Cumra, 10.64 MWe in Seydisehir Gokcehuyuk and 9.341 MWe in Seydisehir Tarasci. Solar farms will be installed on mostly open terrains and the site elevations are 1,117 m a.s.l for Beyşehir, 1,075 m a.s.l for Cumra, 1,122 m a.s.l for Seydisehir Gokcehuyuk and 1,147 m a.s.l for Seydisehir Tarasci. The project is expected to generate approximately 54.109 GWh per year. The construction of project started in February 2016. The project is partly (20 sub-projects of total) in operation since November 2016 and will be in fully operational in March 2017.

All sub-project locations are specified as “dry marginal agricultural land” by “Konya Provincial Directorate of Food, Agricultural and Livestock” except for parcels numbered 2360 and 2224 which are specified as dam-area by the same Directorate.

Un-licensed PV plant whose capacity is smaller or equal to 1 MWe does not need to apply for an electricity production license. The Sponsor has received the call letters for all sub-projects and the final connection agreements have been signed with the local DSO (distribution system operator, Meram EDAS).

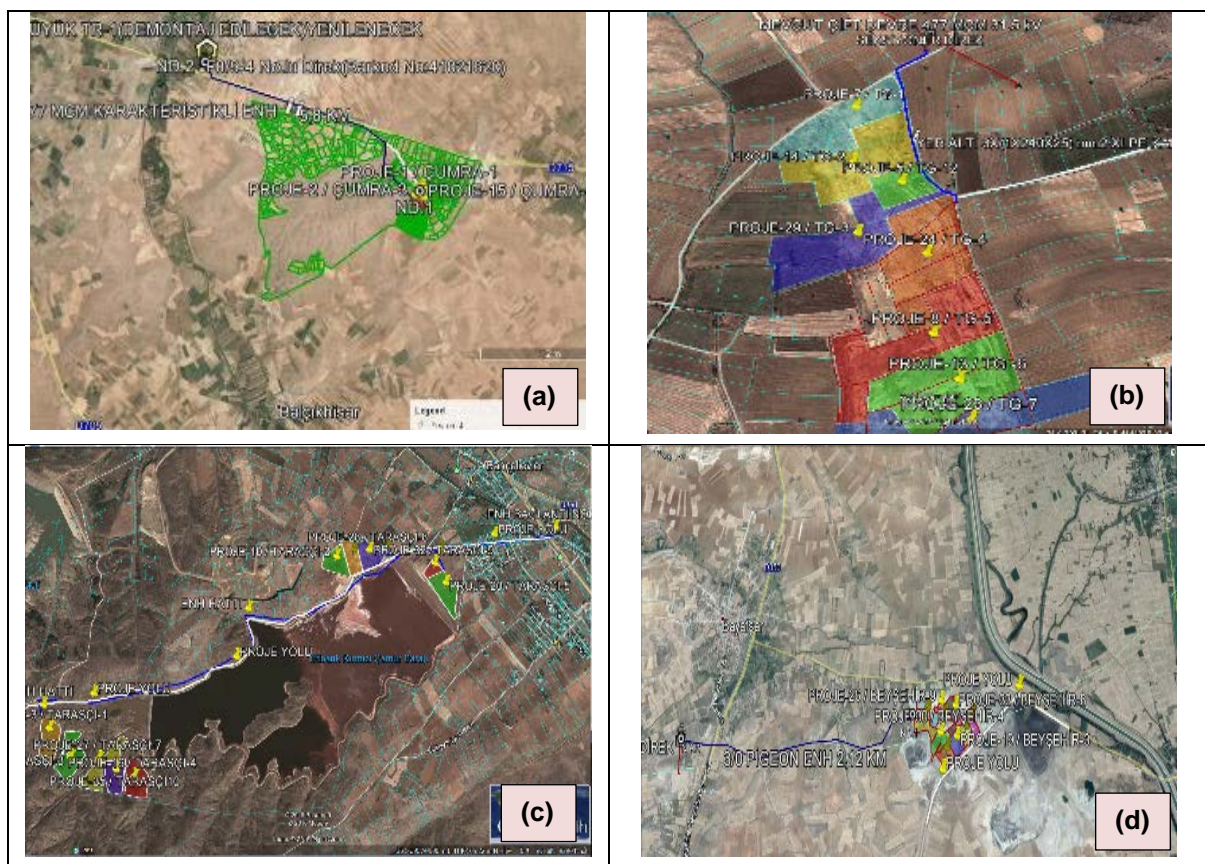


Figure 1.1: The Google Earth view of (a) Çumra, (b)Seydişehir (Gökçehöyük), (c) Seydişehir (Tarascı) and (d) Beyşehir sites, respectively

Table 1-1: Key project summary data

Key Project Summary Data	
Project Borrower	Hipot Enerji Madencilik ve İnşaat A.Ş.
Project Sponsors	Cengiz Holding A.Ş.
Project Description / Business Purpose:	<p>The investment subject to this report consists of 35 solar PV plants at three different locations as it is also summarized below;</p> <ul style="list-style-type: none"> • 3.347 MW 4 un-licensed PV projects in Konya Province, Çumra District • 19.981 MW 22 un-licensed PV projects in Konya Province, Seydişehir District • 6.350 MW 9 un-licensed PV projects in Konya Province, Beyşehir District <p>The project will approximately generate 54.109 GWh/year electricity. Energy transmission lines will be constructed for Çumra (5.7 km), Seydişehir-Gökçeşhüyük (0.35 (ETL-1) and 1.65 (ETL-2) km), Seydişehir-Tarasçı (1.13 (ETL-1) and 3.01 (ETL-2) km) and Beyşehir (2.12 km).</p> <p>The Sponsor has received the call letters and the final grid connection agreements have also been signed with the local DSO (distribution system operator, Meram EDAS) for all sub-projects.</p>
Key Parties Involved:	<p>EBRD</p> <p>Hipot Enerji Madencilik ve İnşaat A.Ş.</p> <p>Cengiz Holding</p> <p>Garanti Bank</p>
Project Name	Hipot Solar Power Plant
Project Type	Solar PV Power Plant
Base Case Scenario:	
Installed Capacity	29.68 MWe
Annual Electricity Production	54,109,000 kWh/year in first full year of production

2. Environmental and Social Baseline

2.1 Environmental description of the project area

Hipot PV solar power plant is located in three different locations of Konya province in Central Anatolian Region (Çumra, Beyşehir and Seydişehir Districts), mostly on agricultural lands. All project locations are specified as “dry marginal agricultural land” by “Konya Provincial Directorate of Food, Agricultural and Livestock” except for parcels numbered 2360 and 2224 which are specified as dam-area by the same Directorate.

The closest protected area is Kocakoru Natural Park which is located approximately 9 km to Seydişehir-Gökçeşh y k Sub-project site. Yakamanastır National park is 13 km far away to the Beyşehir Sub-project site. Kocakoru Natural Park is 5 km far away Seydişehir- Tarasçı Sub-project site. There is no protected area in close proximity to the Çumra Sub-project site. The proposed Sub-projects sites have no interaction with any of these sites.

Table 2-1: Environmental characteristics

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use	The project areas consist of agricultural lands and dam area (two parcels numbered 2360 and 2224 are registered as dam-area)	“Dry marginal agricultural land decision letters have been obtained. Non-Agricultural Utilization Permit is requested from the local directorate of the MoFAL. For parcels no: 2360 and 2224, the land use decision is requested from the State Hydraulic Works. All project areas are rented and/or owned by the sponsor via bilateral agreements.
Water surfaces	Eti Kırmızı Çamur Dam near to Seydişehir Tarasçı site	This area is used as waste storage area by the approval of related authority.
Protected area	There are national parks with different distances (between 5 and 13 km) to the sub-project locations.	The proposed sub-projects sites have no interaction with any protected area.
Flora and Fauna	No study has been prepared regarding flora-fauna for none of the projects sites	A flora fauna study is requested for Seydişehir-Gökçeşh�y�k site since there are agricultural sites next to the project sites.

2.2 Social condition of the project area

According to the year 2015 census the total population of the Konya province is 2.130.544. The populations of Çumra, Seydişehir and Beyşehir are 65,152, 64,028 and 71,370, respectively.

There is no privately owned area or any settlement currently exists on the project area. The closest residential areas to the sub-project areas are summarized below;

- For SEPPs in Çumra; the closest settlement (Balçıkhisar) with a distance of approximately 5.3 km to the project area.
- For SEPP in Seydişehir-Tarasçı, the closest neighborhoods are Gökçeşh y k, Saadetler and Bahçelievler with a distance of approximately 2 km, 1 km and 2.9 km to the project area.
- For SEPPs in Seydişehir- Gökçeşh y k; the closest settlement is Bahçelievler with a distance of approximately 1.5 km. The nearest house to the project site is 700 km far away.
- For SEPPs in Beyşehir, the nearest settlements are Irmaklı (2 km far away) and Bayařsar (3 km far away) villages.

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

3. Social and Environmental Impacts

3.1 Land Use

The sub-projects will be located within marginal agricultural lands except for parcel no 2360 and 2224 which have been specified as dam area. Each sub-project has been requested to receive opinion letter from the local directorate of the MoFAL regarding Non-Agricultural Utilization Permit. For parcels no: 2360 and 2224, the land use decision will be obtained from the State of Hydraulic Works. There is no settlement on the sub-project areas. All project areas are rented and/or owned by the sponsor. There is no settlement on the sub-project areas.

Energy transmission lines will be constructed for Çumra (5.7 km), Seydişehir-Gökçeşhüyük (0.35 (ETL-1) and 1.65 (ETL-2) km), Seydişehir-Tarasçı (1.13 (ETL-1) and 3.01 (ETL-2) km) and Beyşehir (2.12 km).

3.2 Water

Based on the assumption that the daily domestic water requirement is 150 litres per capita, and considering 20 employees during the construction phase and 4 employees during the operation phase, the domestic water requirements were estimated as 3 m³/day and 0.6 m³/day, respectively for all SEPP sub-locations. Domestic wastewater generated by workers is collected in impermeable septic tanks constructed in line with local environmental regulation.

3.3 Waste

It is estimated that domestic solid waste, construction waste and excavated materials will be produced as a result of construction activities.

Domestic solid waste will be produced by workers on-site. Assuming the daily domestic solid waste production rate as 1.08 kg per person, and considering 20 employees during the construction phase and 4 employees during the operation phase, the amount of domestic waste produced were estimated as 21.6 kg/day and 4.32 kg/day respectively for all SEPP sub-locations.

It is expected from the Sponsor that the recyclable waste is placed in separate waste containers, potentially hazardous waste is segregated from non-hazardous construction waste and domestic waste. Separate temporary storage areas that have impermeable bases, should be designated for the storage of waste oils, fuels, hazardous substances, etc.

For the land arrangement, there will be some excavated waste which will be used for land smoothing activities and there will be no remaining amount of excavation waste.

3.4 Emissions: Noise and Particulate

Noise emissions will be generated during construction due to earthmoving works, construction of PV Panels and operation of construction machinery and equipment. Since noise will be generated due to construction machinery and equipment and the residential houses are not close to the projects areas, noise is expected to be below the noise limit values (70 dBA).

During the operation phase, noise emission is not expected to be produced.

Potential impacts of the Hipot SEPPs on air quality would occur basically during the construction phase of the project but since it will just be land arrangement, the impact will be very low. The air emissions are expected to be below the legal limit values and for this reason a modelling study is not necessary.

No air emission is expected during the operations. It can be easily said that no relevant critical aspects (both for construction and operation phase) are expected related to air emissions.

3.5 Landscape

Since the solar energy power plants require large areas for solar radiation collection, landscape is usually a sensitive aspect for this kind of projects. A photomontage study to assess the visual impact of the project on landscape has been suggested for all sub-projects. The study results should also be shared with the public during disclosure meetings with the stakeholders.

Table 3-1: Impact Quantification

COMPONENT	IMPACT	QUANTIFICATION
Land use	<u>Use of the agricultural land and dam area (two parcels numbered 2360 and 2224)</u>	“Dry marginal agricultural land decision letters have been obtained. Non-Agricultural Utilization Permit is requested from the local directorate of the MoFAL. For parcels no: 2360 and 2224, the land use decision is requested from the State of Hydraulic Works. All project areas are rented and/or owned by the sponsor.
Wastewater	<u>Utilization and Discharge</u>	Assuming domestic water requirement as 150 litres per capita daily and considering 20 employees during the construction phase and 4 employees during the operation phase, the domestic water requirements (and, consequently, discharge) are estimated to be 3 m ³ /day during the construction phase and 0.6 m ³ /day during the operation phase. It is accepted that all domestic water consumption is converted to wastewater.
Waste	<u>Production of solid waste</u>	21.6 kg/day in the construction phase and 4.32 kg/day in the operation phase (assuming 20 workers during construction and 4 workers during operation for all sub-projects)
	<u>Excavation waste</u>	The majority of excavation waste will be reused for land smoothing
Fauna and flora	<u>Interference with flora-fauna species</u>	A flora fauna study is requested for Seydişehir-Gökçehöyük site since there are agricultural sites next to the project sites.
Emissions	<u>Noise</u>	Construction phase < local reg. limit of 70 dBA Operational phase < local reg. limit of 65 dBA
	<u>Particulate</u>	Construction phase < local reg. limit = 1 kg/h No particulate emission during operation phase
Landscape	<u>Changing in the aspect of the area</u>	A visual impact assessment and the photo-impact simulations from significant or sensitive viewpoints have been suggested for all sub-project sites.

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