MIDSEFF

European Bank
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Final Report

Mid Size Sustainable Energy Financing Facility (MidSEFF)

Energy Efficiency Projects at Konya Seker: Non Technical Summary (NTS)

May 2012

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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 EBRD with support from the European Investment Bank (EIB) and European Commission (source of the Technical Cooperation funds) will provide a total of EUR 1,050 million in loans through 5 Turkish banks for on-lending to private sector borrowers.

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Project Name: Konya Şeker EE Projects - Non Technical Summary (NTS)				Controlled Copy	
Rev. N.	**Date**	**Description Amendment**	**Edited by**	**Revised by**	**Approved by**
00	9th May 2012	Final Report	M. Solari	M. Compagnino	M. Mancini

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1. General Plants Description

Konya Şeker intends to carry out energy saving projects within the Cumra sugar plant and the Seydibey Integrated Agricultural Products Processing Plant. In particular, four projects have been identified, two in each plant: two biogas projects, one in Cumra Plant and one in Seydibey Plant; a natural potatoes cave storage in the Seydibey Plant and a new evaporation line and a carbon dioxide capture plant for the bio-ethanol production plant in the Cumra farm. Following the four projects are described more in details:

1. The **"Biogas tri-generation project at Çumra factory" (PROJECT 01)** consists of installing a tri-generation plant which will be fed with both Biogas generated by the sugar process waste-water (six months per year) and with Natural Gas when biogas is not available. The tri-generation plant will allow to partially satisfy the electricity, heat and cooling demand of the facility throughout the year. The next table summarises the General Project Summary Data

Key Project Summary Data		
Project Name	Biogas tri-generation investment for Çumra plant	
Project Type	Energy Efficiency	
Project Location	Çumra-Konya	
Total investment	Maturity	7 years
	Interest rate	5.55%
	Principal Payments	2 years of grace period, start 24 months after first disbursement in equal 11 semi-annual instalments.
	Interest payment	Semi-annual following the first disbursement.
	Debt-Equity	100:00
	Investment and Financing	• Total investment: USD 2,661,240 (EUR 1,987,015) • Equity: USD 71,855 (EUR 53,651) • MidSEFF: USD 2,589,385 (EUR 1,962,398)

2. **The "Biogas thermal generation plant at Seydibey factory" (PROJECT 02)** consists of installing a biogas production plant to partially satisfy the thermal demand of the factory throughout the year. Since the biogas production will not be sufficient to cover all the thermal demand required by the plant, the boiler will be fed with the available biogas and Natural Gas will cover the thermal peak demand of the factory. The next table summarises the General Project Summary Data.

Key Project Summary Data		
Project Name	Biogas thermal generation investment for Seydibey plant	
Project Type	Energy Efficiency	
Project Location	Seydibey-Konya	
Total investment	Maturity	7 years
	Interest rate	5.55%
	Principal Payments	2 years of grace period, start 24 months after first disbursement in equal 11 semi-annual instalments.
	Interest payment	Semi-annual following the first disbursement.
	Debt-Equity	100:00
	Investment and Financing	• Total investment: USD 2,443,255 (EUR 1,824,256) • Equity: USD 65,970 (EUR 49,256) • MidSEFF: USD 2,377,285 (EUR 1,775,000)

3. **The Potato Cave Storage**, located at Seydibey factory (PROJECT 03), consists of installing an underground potatoes cave storage in lieu of a conventional above-ground potatoes storage. The next table summarises the General Project Summary Data.

Key Project Summary Data						
Project Name	Potato Cave Storage					
Project Type	Energy Efficiency					
Project Location	Seydibey-Konya					
Total investment	Maturity	7 years				
	Interest rate	5.55%				
	Principal Payments	2 years of grace period, start 24 months after first disbursement in equal 11 semi-annual instalments.				
	Interest payment	Semi-annual following the first disbursement.				
	Debt-Equity	100:00				
	Investment and Financing	• Total investment: • Equity: • MidSEFF:	USD USD USD	1,626,120 43,906 1,582,214	(EUR (EUR (EUR	1,214,143) 32,783) 1,181,360)

4. **The "New evaporation line and liquid carbon dioxide production plant at Çumra factory" (PROJECT 04)** consists of installing both an additional evaporation line for the bio-ethanol production and a brand new liquid carbon dioxide production plant. The new evaporation line will increase the capacity of the bio-ethanol production plant by two times. The new liquid carbon dioxide production plant will allow capturing and liquefying the CO2 generated by the bio-ethanolo fermentation process which would be otherwise wasted into the atmosphere. The next table summarises the General Project Summary Data.

Key Project Summary Data						
Project Name	New evaporation line and liquid carbon dioxide production plant					
Project Type	Energy Efficiency					
Project Location	Çumra-Konya					
Total investment	Maturity	7 years				
	Interest rate	5.55%				
	Principal Payments	2 years of grace period, start 24 months after first disbursement in equal 11 semi-annual instalments.				
	Interest payment	Semi-annual following the first disbursement.				
	Debt-Equity	100:00				
	Investment and Financing	• Total investment: • Equity: • MidSEFF:	USD USD USD	14,267,375 385,230 13,882,145	(EUR (EUR (EUR	10,652,735) 287,632) 10,365,104)

2. Project Area

The Çumra sugar plant and the Seydibey Integrated Agricultural Products Processing Plant are located in District of Konya Provice: Cumra plant in the Çumra District; Seydibey plant in the Seydişehir District, near the border with Beyşehir District, in the south part of Turkey.

Figure 2-1: Location of the plants – Konya Province

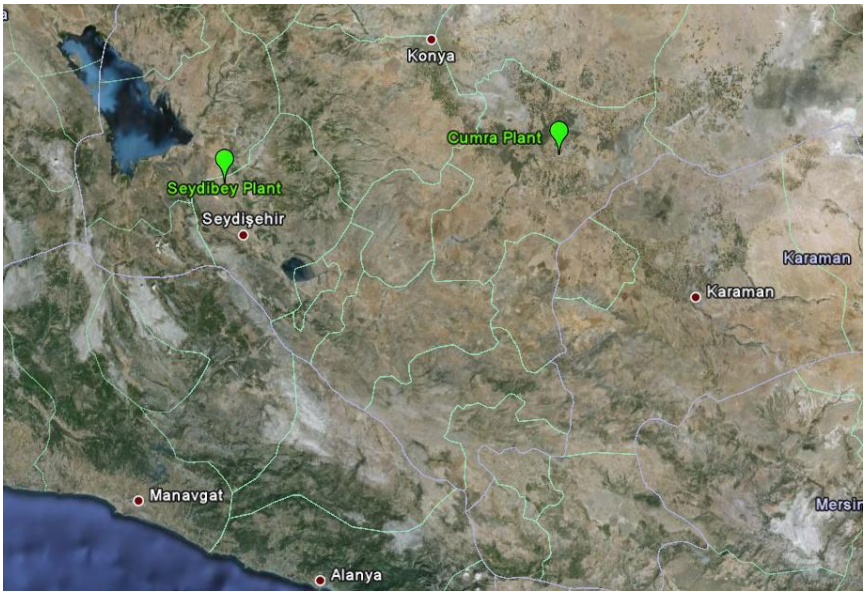

Figure 2-2: Exactly location of the two plants within the Konya Province

All the projects that will be implemented in the two plants will not require new lands to be purchased but they will use the existing industrial areas, which are both located at a relevant distance from all the surrounding nearest settlements/villages.

The surrounding areas of the plant are mainly used for agricultural/farming purposes. In Figure 2-3 an aerial view of both the project areas are shown.

Figure 2-3: Çumra Sugar Integrated Plant and Seydibey Integrated Agricultural Products Processing Plant

3. Social and Environmental Impact

3.1 Permitting

The sponsor has to submit to the consultant the appropriate permitting documentation as required by the Turkey legislation before the starting of construction phase for each of four projects.

3.2 Water

Project 01 and Project 02

It's assumed that the cooling system will be based on a wet-dry cooling tower system, provided with a closed circuit, so that water discharge during operation will be due to the presence of personnel. Industrial water consumption during operation (due to cooling tower water cycle refill) will be reasonably supported by the existing industrial water grid, while water for civil use will be reasonably provided by the existing potable water grid. The project sponsor should provide a water balance to demonstrate the absence of relevant water discharges (and their final destination) and the consistency between water needs and water availability.

Project 03

During the construction phase there should be household water waste while no water consumption and discharge are expected during the operation phase. The project sponsor should be provide information about number of employment present both during the construction and operation phases to evaluate the daily water needs.

Project 04

The project sponsor should provide a water balance to demonstrate the absence of relevant discharge and the consistency between water needs and water availability.

3.3 Waste

Project 01, Project 02 and Project 03

The hazardous wastes are expected in negligible level both during construction and operation. It's also reasonable to assume that they will be handled according to the related regulation, but no formal documents or commitments are available. Household wastes will be originated by the presence of the employees especially during construction.

Some information on the expected wastes' quantity (both liquid and solid, hazardous and non hazardous) and about their management (also based on matured experience for the existing integrated plant) should be provided by the project sponsor.

Information and excavated earth management and final uses shall be provided (Project 03).

Project 04

Household wastes will be originated by the presence of the employees especially during construction. Some information on the expected wastes' quantity (both liquid and solid, hazardous and non hazardous) should be provided by the project sponsor. With particular reference to the fermentation phase during the bio-ethanol production, the sponsor should be supply information about the quantity and management of the fermentation wastes.

3.4 Emissions: Noise and Particulate

Project 01, Project 02 and Project 04

Considering project characteristics and location, noise generated during construction/installation is reasonably a minor issue. The project sponsor hasn't provided information on the matter. Some general data should be provided.

During operation the major noise source will be the engine: the project sponsor should provide noise emission levels form main sources needed to at least roughly estimate the noise at nearest receptors. Based on what above, the need for abatement/mitigation measures will be assessed.

Dust is generated from earth-moving and material storage, and air emission from the operation of construction machinery and equipment. The aspect will not be critical considering the location of the project and the already existing facilities. Some basic information especially on site preparation associated activities should be provided by the sponsor.

During operation, emissions will be generated by the biogas engines: project sponsor should provide emission data (at least in terms of flow rate and pollutant concentrations) and comparison with regulatory limits. Estimation of fall-out is also recommended

Project 03

The project sponsor hasn't provided information on the matter. Some general data should be provided for construction phase.

Dust is generated from earth-moving and material storage, and air emission from the operation of construction machinery and equipment. The aspect could be relevant for the storage cave construction, especially depending on the amount of excavated material, on the excavation technique and on the earth moving in the site. More detailed information shall be provided.

No emissions are expected by the storage cave during operation.

MidSEFF Office
Asmadalı Sokak, No. 27
Kosuyolu
34718 Kadikoy, Istanbul
TURKEY
www.midseff.com