



Mid Size Sustainable Energy Financing Facility (MidSEFF) Energy Efficiency Project at Zorlu Center: Non Technical Summary (NTS)

August 2013

Final Report

European Bank for Reconstruction and Development

**Energy efficiency project at Zorlu Center:
Non Technical Summary (NTS)**

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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 975 million in loans through 7 Turkish banks for on-lending to private sector borrowers.

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1. General Plants Description

The project consists in the upgrading of a conventional lighting system to a comprehensive LED lighting source. The conventional lighting system that would have been installed in the absence of the energy efficiency project would have included mainly fluorescent and halogen lamps. This energy efficiency project foresees an upgraded design of the lighting system which includes the use of LED lighting sources, use of daylight and the installation of advanced lighting control systems.

The Zorlu Center is located in the Marmara Region in European side of Istanbul (see wide scale location in the maps below). The Center is located in an area of 102,000 m² in the Zincirlikuyu district.



Figure 1-1: Location and Site Plan

In the table 1- 1 is summarised the key aspects of the project.

Table 1-1: Key project summary data

Project Name	Energy Efficiency Project at Zorlu Center
Project Borrower	Zorlu Yapi Yatirim A.Ş.
Project Sponsors	Zorlu Holding- Zorlu Group
EBRD Transaction	Total project cost is USD 18,418,343 ¹ , including capitalized financing costs. The proposed financial scheme includes 99% debt financing in the amount of USD 18,172,061 that is the fixed investment cost. The investment period interest expenses will be financed by shareholder's equity.
Project Description / Business Purpose:	<p>Zorlu Yapi Yatirim A.Ş. intends to carry out energy saving project within the Zorlu Center. The Energy efficiency project consists in the upgrading of a traditional lighting system to a comprehensive LED lighting system. The location of the proposed energy efficiency project is in the Marmara Region, of İstanbul.</p> <p>This assignment consists of a Technical, Financial, Health and Safety and Carbon review of the above mentioned project.</p> <p>Zorlu Center EE project will generate an energy saving of 10,330,490 kWh/year, which is equivalent to a USD 959,732 decrease in total electricity expenses and a USD 718,536 decrease in operational and maintenance expenses totalling USD 1,678,268 savings in the operational expenses of the company.</p>
Annual Electricity Saving	10.33 GWh/year
CO₂ emission reductions	5,640 tCO ₂ /year

¹1 EUR/USD= 1.2282; 1 TRY/EUR= 2.2064 as of 15.08.2012, LoE signing date

2. Environmental and Social Baseline

2.1 Environmental Description of the Project Area

The Zorlu Center is currently under construction and is planned to be opened in 2013. The Center represents a “Micro-City” project: it includes 75,220 m² of greenspace and 120,000 m² of recreational areas and gardens as well as four towers which simultaneously incorporates five different functions: a 50,000 m² / 3,140-person capacity performance arts center; a hotel; a shopping mall; residences towers and offices.

Table 2-1: Environmental characteristic

ENVIRONMENTAL ASPECTS	PRESENCE/DISTRIBUTION	COMMENTS
Land use	Privately Owned Area: 245,220 m ²	-
Water Surface	N.A.	-
Designated Area	N.A.	-

2.2 Social Condition of the Project Area

Since the new project will be made within an existing plan, it won't interfere with social environment. No residential areas within the project area nor in the proximities will be affected from the project in terms of social condition. The location of the Center is in the heart of the central business district of Istanbul, quite at the same distance from the two airports and well served by the public transport system.

3. HSE Relevant Impacts

3.1 General Lighting Strategies

The strategy indicated in the documentation, allowing the reduction of artificial lighting during daylight hours, through the use of control systems for the integration with the natural lighting, is deemed effective also as regards the well-being of people.

3.2 Lighting Source

All materials must be CE-marked and provided with a certificate of conformity in accordance with Council Decision 93/465/EEC of 22 July 1993. All materials shall comply with Directive 2006/95/EC "Low Voltage Directive".

All LED lamps must comply with the safety standards of the TS EN 62031:2008 LED modules for general lighting - Safety specifications.

The fixtures must conform to the type of work environment in accordance with TS EN 12464-1:2011 Light and lighting - Lighting of work places - Part 1.

The protection degree (IP) of each single lighting should be compliant to the type of the installation and should meet the standards of the TS 3033 EN 60529: 1997 - Degrees of protection by enclosures provided (IP Code).

3.3 Lighting Controls & Zones

Information on the emergency lighting are not listed (emergency lighting and backup lighting); it is recommended to give more information on these plants as required by TS EN 1838 Lighting-Emergency lighting applications.

3.4 Standards – Lighting Level

The software indicated for the lighting calculations at the design stage of lighting systems is deemed adequate to European standards.

3.5 Installation Phase

The project construction site is considered as temporary, therefore regulated by the Council Directive 92/57/EEC of 24 June 1992.

Since the installation is performed on existing systems, it is recommended to follow the indications of the EN 50110-1 ed. 2 - "Operation of electrical installations".

It is recommended that all technicians and workers are equipped with personal protective equipment with appropriate CE marking in accordance with Council Decision 93/465/EEC of 22 July 1993

It is recommended that all collective protective devices are adequate and provided with CE marking in accordance with Council Decision 93/465/EEC of 22 July 1993

It is recommended that all the materials used for fixing and installation of lighting fixtures are equipped with CE marking according to Council Decision 93/465/EEC of 22 July 1993 and related conformity declaration.

It is recommended that all equipment, including those used for the installation and calibration of the system, are provided with CE marking in accordance with Council Decision 93/465/EEC of 22 July 1993 and related conformity declaration.

For the correct installation of new systems, it is recommended to follow the above-mentioned standards CENELEC HD 60364 and CENELEC EN 61439.

COMPONENT	IMPACT	COMMENT
General Lighting Strategies	<u>Well-being of people</u>	Reduction of artificial lighting during daylight hours
Lighting Source	<u>Electricity leakage</u>	Low Voltage Directive compliance
	<u>LED modules for general lighting</u>	Safety Specifications compliance
	<u>Worker's conformity</u>	Lighting of work places
Lighting Controls & Zones	<u>Occurrence of an Emergency Situation</u>	Emergency lighting and backup lighting
Lighting level Standards	<u>Work place health</u>	Lighting level calculation by a software deemed EU standards
Installation	<u>Labour Health Particulate</u>	Personal protective gear CE marked tools

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