



**CASE STUDY: MIHAI EMINESCU LOCAL COUNCIL**

<b>Projects Name</b>	Modernization of the public lighting system in Mihai Eminescu locality
<b>Sector</b>	Municipality
<b>Borrower</b>	MIHAI EMINESCU Local Council, Botoșani County
<b>Lender</b>	Romanian Energy Efficiency Fund
<b>Financing Starting Date</b>	-
<b>Project Size/Loan Amount</b>	USD 168,335 / 134,668

**Summary**

Mihai Eminescu locality, located in Botoșani County, has a population of about 6,524 inhabitants. The Local Council has decided to modernize the public lighting system. Presently, the lighting is ensured by 426 devices.

From the total, 376 lighting devices used today are obsolete (being based on old technology) having a short life span, high energy consumption and not meeting all standards and norms for public lighting.

The actual lighting system has an installed capacity of 82.94 kW. It is important to notice that the street lighting is covering approximately 65% comparing to the existing palls. The maintenance costs of the public lighting system are high, especially due to short life span of the lighting devices.

By implementing the project, the Local Council intends to reduce the electricity bill of the locality and at the same time to increase the quality of the provided service. The project, which is co-financed by the Romanian Energy Efficiency Fund with 80%, generates great electricity savings. It also has a positive impact on the environment by reducing the Greenhouse Gasses emissions at the energy generating facility site.

**Project description**

The project consists in installing 606 new lighting devices, increasing the covering ratio up to 100%. The new lighting devices are high pressure sodium and fluorescent having a high efficiency and great lighting efficiency. The new lighting devices will have a rated power greater than 70 W and will be chosen according to all the norms and standards for public lighting.

The life span of the new lighting devices is considerably longer compared to the old ones, being between 12,000 and 24,000 hours of operation. The new lighting devices are keeping their characteristics during a longer period of time, thus leading to reducing of maintenance costs and increasing the quality of lighting in the city.

The installed capacity of the modernized system is about 40.9 kW. The new lighting devices with installed capacities over 70 W are equipped with „dimmer” type relays, which can generate savings of up to 35%.

**Aim of the project**

The new public lighting system uses devices with high energy efficiency and also respects all the existing standards and norms regarding public lighting. The main advantages of the project are the following:

- **Reducing electricity consumption.** The implementation of the new public lighting system will generate electricity savings of about 51 %.
- **Reducing pollutant emissions.** Reducing the consumption of electricity leads to diminishing of pollutant emissions, especially of CO<sub>2</sub> emissions.
- **Positive social impact.** Increasing the quality of the public lighting service has a positive social impact.

**Economic evaluation of the project**

Modernization of the public lighting system will commence in the month of June 2006. The project implementation period is estimated at about 2-3 months.

The total costs of the project are USD 168,335 and are detailed in table 1.

**Savings**

The estimated savings after the project implementation are presented below:

- **Electricity.** Modernization of the public lighting system will lead to electricity savings of about 154 MWh per year, i.e. 17,517 USD/year.
- **Maintenance & Personnel.** The installation of new lighting devices based on modern technologies will lead to decreasing of the maintenance and personnel costs. Maintenance and personnel savings are of about USD 23,398 per year.

**Financial evaluation**

The feasibility evaluation of the projects has been performed using the following criteria: the simple payback period, internal rate of return and net present value calculated for an actualization rate of 12% and a study period of 20 years. Table 2 presents a synthesis of the financial analysis.

The Local Council of Mihai Eminescu has decided to invest USD 168,335 for implementation of the energy efficiency project. The Romanian Fund for Energy Efficiency finances 80 % of the entire investment, i.e. with a credit of USD 134,668, Local Council assuring the rest of 20%, i.e. USD 33,667 from the own sources. The Romanian Energy Efficiency Fund credit is for 4 years having no grace period. Credit disbursement will be made every 3 months using equal installments, as the Local Council has requested.

**Expected Impact**

The annual electricity savings are estimated at about 154 MWh (i.e. the equivalent of 44 toe). The CO<sub>2</sub> emissions will annually decrease with 171 tones after the project's implementation.

**Table 1**

Item	USD*
Equipment	140,000
Design and installing costs	28,335
<b>Total project</b>	<b>168,335</b>

\* - Figures include VAT, all import, customs and other taxes.



Table 2

	Year										
	0	1	2	3	4	5	6	7	...	19	20
	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD	kUSD
Initial investment	-168	-	-	-	-	-	-	-	-	-	-
Cash Flow	-168	41	41	39	39	36	36	36	...	36	36
Accumulated Cash Flow	-168	-127	-87	-47	-7	29	65	101	...	532	568
Discount Factor	1.00	0.89	0.80	0.71	0.64	0.57	0.51	0.45	...	0.12	0.10
Present Value of the Cash Flow	-168	-132	-99	-71	-46	-25	-7	9	...	110	114
Payback Period	4.1	years									
Discount Payback Period	6.0	years									
Net Present Value	114	kUSD									
Internal Rate of Return	22	%									

**The Romanian Energy Efficiency Fund financing advantages**

Main advantages of the Romanian Energy Efficiency Fund financing are:

- FREE is a unique Romanian financier in energy efficiency field;
- FREE offers low cost financing for companies;
- FREE offers flexible and attractive ways to guarantee the loans;
- FREE is actively supporting the companies during the energy efficiency project analysis;
- FREE offers technical assistance.