



CASE STUDY: ROVINARI LOCAL COUNCIL

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|---------------------------------|--|
| Projects Name | Modernization of the public lighting system in Rovinari city |
| Sector | Municipality |
| Borrower | ROVINARI Local Council, Gorj County |
| Lender | Romanian Energy Efficiency Fund |
| Financing Starting Date | July 2005 |
| Project Size/Loan Amount | USD 125,000 / 100,000 |

Summary

Rovinari city, located in Gorj County, has a population of about 14,000 inhabitants. The Local Council has decided to modernize the public lighting system, including street and ambient lighting. Presently, the street lighting is ensured by 214 devices and the ambient lighting by 733 devices.

The 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 106 kW. It is important to notice that the street lighting is covering approximately 71.5% comparing to the existing palls, and the ambient lighting is covering 100%. 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 Municipality and at the same time to increase the quality of the provided service. The project, which is financed by FREE 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 new lighting devices on every pole in the city. The new lighting devices are high pressure sodium having a high efficiency and great lighting efficiency. The new lighting devices will have a rated power between 36 W and 250 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 61 kW. The new lighting devices with installed capacities over 150 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 40 %.

- **Reducing pollutant emissions.** Reducing the consumption of electricity leads to diminishing of pollutant emissions, especially of CO₂ 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 November 2005. The project implementation period is estimated at about 2-3 months.

The total costs of the project are USD 125.000 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 164 MWh per year, i.e. 15,000 USD/year.
- **Maintenance.** The installation of new lighting devices based on modern technologies will lead to decreasing of the maintenance costs. Considering a guarantee period of 5 years (it is guaranteed by the project implementer) the savings due to decreasing of the maintenance costs can reach 12,000 USD/year in the first 5 years of operation.

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 Rovinari city has decided to invest USD 125,000 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 100,000, Local Council assuring the rest of 20%, i.e. USD 25,000 from the own sources. The FREE credit is for 4 years having a grace period of 12 months. Credit disbursement will be made every 3 months using equal installments, as the company has requested.

Expected Impact

The annual electricity savings are estimated at about 164 MWh (equivalent of 47 toe). The annual CO₂ emissions decrease will be of approximately 182 ton after the project’s implementation.

Table 1

| Item | USD* |
|-----------------------------|----------------|
| Equipment | 103.000 |
| Design and installing costs | 33.000 |
| Total project | 136.000 |

* - Figures include all import, customs and other taxes, but do not include VAT.



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 | -125 | - | - | - | - | - | - | - | - | - | - |
| Cash Flow | -125 | 27.045 | 27.045 | 27.045 | 27.045 | 27.045 | 15.045 | 15.045 | ... | 15.045 | 15.045 |
| Accumulated Cash Flow | -125 | -98 | -71 | -44 | -17 | -10 | 25 | 40 | ... | 220 | 235 |
| 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 | -125 | -101 | -79 | -60 | -43 | -28 | -20 | -13 | ... | 29 | 30 |
| Payback Period | 4.6 | years | | | | | | | | | |
| Discount Payback Period | 7.2 | years | | | | | | | | | |
| Net Present Value | 30 | kUSD | | | | | | | | | |
| Internal Rate of Return | 17 | % | | | | | | | | | |

FREE financing advantages

Main advantages of the FREE financing are:

- FREE is a unique Romanian financier in energy efficiency field;
- FREE is actively supporting the companies during the energy efficiency project analysis;
- FREE offers flexible and attractive ways to guarantee the loans;
- FREE facilitates the access of the companies for financing feasibility studies, energy audits, etc.;
- FREE offers attractive cost financing for companies;
- FREE offers technical assistance.