

Municipality Demir Kapija, Macedonia

Street lighting project

Project background and objectives

Demir Kapija is a pristine municipality located by the Vardar River in the southern part of Macedonia. It is known for its production of red peppers and tobacco and for its vineyards and long tradition of wine making and wine tourism. It consists of a small town and 7 villages.

The public lighting system in the municipality was in crucial need of refurbishment: the installation was beyond its operational life, many light posts were without lamps and several sections of the towns and villages had no street lighting at all. The municipal council of Demir Kapija voted unanimously to make the refurbishment of the street lighting system a priority. The main objective was to improve the condition of the street lighting system and the security and well-being of the citizens. The project also contributes to the municipality's plan to bring a contemporary look to this part of the country.

Project description

The project includes reconstruction and expansion of the existing street lighting system and additional analysis of the rural communities adjacent to Demir Kapija. The decision was taken to replace the inefficient high pressure sodium lamps with LED technology to achieve high electricity savings. The project was financed by a supplier and equipment provider from the private sector. Competitive public tendering was used to select the company. Criteria for the tender included: at least 60 % less electricity consumption, reduction of maintenance costs, and long lifespan of the installation and lamps. A five year contract was signed between the parties. Implementation started in 2016.



Facts

- **Population:** 4,550 inhabitants
- **Type of streets:** Urban and non-urban
- **ESCO:** Eltra
- **Electricity cost savings:** 17,600 €/year
- **Maintenance cost savings:** 5,000 € for the first 5 years (ESCO in charge of maintenance), 2,000 €/ year afterwards
- **Reduction electricity consumption:** 163,500 kWh/year
- **CO₂ reduction:** 75 tons/year
- **Investment costs:** 308,800 €
- **EPC contract:** 5 years (the municipality will reimburse the supplier with monthly payments)

Further information:

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Project data	Before renovation	After renovation
Total installed electric capacity	59 kW	33 kW
Total number of lamps	429	753
Number of lighting points (luminaires)	378	753
Main lamp type	HPS	LED
Annual electricity consumption	294,300 kWh	130,800 kWh
Annual electricity costs	31,600 Euro	14,000 Euro

Results

The municipality was going to implement the project with their own funds and a loan. Finally, the introduction of the Energy Performance Contracting model provided the municipality with a new tool and way of financing the project. The project was only possible after having increased trust between the local provider and the municipality. The competitive tendering process led to a contract that guarantees energy savings for the municipality. Although the lighting system was greatly expanded (number of luminaires was doubled), annual electricity costs were reduced by more than 50 %. The supplier is in charge of the installation and full maintenance for 5 years, during which the municipality will reimburse the supplier through monthly payments. This project, which permits to increase the quality of living of the citizens, improve the image of the area and achieve cost savings for the municipality, could be easily replicated by other urban-rural municipalities throughout Macedonia.

Support by the facilitation service

The facilitation service contributed significant support on technical, financial and contractual aspects such as street lighting system design, cost-benefit analysis, and increasing understanding of the Energy Performance Contracting model. Without the support and contribution from the facilitation service and the experts from the city of Skopje, the project would not have been implemented under this form.



Photos: Centar za Energetska Efikasnost na Makedonija