Renovation of city lighting
City of Tartu, Estonia

Summary

Renovation of city lighting in the City of Tartu, Estonia. The projects duration was 01/01/2006 – 31/12/2006. The Project was helping to continue renovation of city lighting that started in 2003, when City of Tartu changed 906 lights. In 2004 City of Tartu changed 824 lights. This project's main source of funding came from the European Union. The support from the European Union and City of Tartu helped change 2772 city lights in total and addition to the lights 2650 new energy saving blocks were taken into usage. The energy saving blocks helped to save 25% energy at night.

The project saved 1.31 GWh energy per year and today the city lights are more dependable. Up to today more then 4 GWh have been saved, which equals 6400 tonnes of CO2 (approximately 2.1 million kg of CO2 per year). Municipal lighting network is the biggest electricity consumer in South-Estonia. Improving that system will give the most impact to the community.

The recovery period for the investment was about ten years. Thanks to the European community this period was shortened to up to 2.5 year. Today the investment money is already even, and the city is benefiting every year more then 100 000 EUR from a more efficient system.

The benefit of the project is shared by 101 000 citizens of Tartu. The level of crime and amount of traffic accidents is decreasing despite the fact that the amount of private cars is increasing every year. The city can offer more safe environment and improved life quality to the quests and inhabitants.

Although the project was a big success to people and the environment, the work with city lighting in Tartu is not done. In fact the next big step – To open the electricity market with the yearly total demand of about 8 GWh – is already waiting ahead!

End-user area	Target Audience	Technical
Transport and mobility	Citizens	Energy Efficiency
Sustainable Communities	Households	Lighting
	Property owners	
	Schools and universities	
	Local and Regional Authorities	

Context

Before the renovation of city lighting, Tartu had many lights that were not amortised and energy efficient. The City of Tartu had 8000 lights from which 2773 were old soviet time mercury (Hg) and incandescent lamps. These lights were almost 40 years old (coverings of those lamps were rusted, security glass was missing etc.). The productiveness of the old city lights was two times lower, and their life span was 20 times shorter compared to new sodium (Na) lights.

Old light bulbs in the city lamps had to be 200 – 300 W but new sodium (Na) light bulbs only need to be 100 W. Also, to get much better energy efficiency, the city lights will use energy saving blocks that can switch light to saving regime and still produce the required amount of light on a street level.

Objectives

In the future, energy taxes will increase and we have to pay more attention to environment. That means we have to start investing more in energy saving technology. City of Tartu has co-operated with partners from Estonia and Europe to find the best way to save energy.

The aim of this project was to renovate the city lights in the City of Tartu.

It was important to get more efficient street lighting systems, to save energy and increase the quality of the light and security of citizens. The goal was to change 2773 old city lights from soviet era to new more energy efficient and to include 2650 new energy saving blocks with those lights.

The renovation project of Tartu is a good example how to save energy and to raise more awareness of the environment.

Process

The renovation of the street lighting system was needed, while the street lighting was from the soviet era when energy efficiency wasn't an important factor. The equipment and solutions of soviet lighting system didn't match the criteria of modern lightning network. The lights were old and rusty, the system unstable and the management was uneven. Different kinds of development of the lighting system was made after the liberation from Soviet and the city wanted to centralise controlling of the network and to renew the old lamps. The project was generated to speed up the process by renewing the lights all together.

The project had two main barriers- the investment cost and the amount of work that was related with the whole process. The plan was generated and presented to national organisation that is responsible for maintaining the structural funds in Estonia. The proposal got first level approval 2004. The work started 2005.

External experts were used for technical planning and developing the proposal in tight cooperation with consultants, technical experts, funder and the city of Tartu. A new energy saving block was proposed.

The project was implemented during 2006. Old lamps where removed and utilized, new ones where mounted – some with the energy saving device. To find the best supplier and the builder an open competition was created.

The lamps where the most problematic part of the system as most of the electrical lines where renovated and centralized control and benchmarking system was already built up. The city lighting in Tartu has stepped into a new era.

Financial resources and partners

The project budget	749 508 euro
Applied finance from European Union	517 161 euro
City of Tartu Government	232 347 euro

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The project was funded by the help of SA Enterprise Estonia.

Results

- 2773 city lights were changed and, in addition to the lights, 2650 new energy saving blocks were taken into usage.
- The project saves 1.31 GWh/per year
- More then 6.4 million tonnes of CO2 was saved since 2006 in the biggest electricity consumer in the region (South-Estonia)
- The city of Tartu is following the Tartu Governments plan of 2004 – 2007 (Tartu LVK m. nr. 42, 18.09.2003)
- The city of Tartu is following the Estonian Government plan to use more energy efficient technology to 2015 (Government conclusion 15.12.2004.)
- Modern city lighting network is a good tendency for opening of the electricity market in 2010/2013.

Additional benefits

- The new lights are more energy efficient and dependable
- Maintenance of the city lights is more easier and modern – also allowing to use additional active energy saving tools
- The streets are safer and citizens feel more secure
- Environmental impact from the City of Tartu is now lower

Lessons learned and repeatability

- In the first planning draft for the project the repayment time was almost 10 years but today it is only 3 years – the building prices where lower and the effect bigger then by the time of the planning of the project.
- The proposal didn't suggest any seminars or study trips for knowledge transfer which could be really effective and helpful next time.

For summary this renovation of city lighting project was a really good experience, how to deal with that kind of large scale projects that consist of many technical, social and economical issues.

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