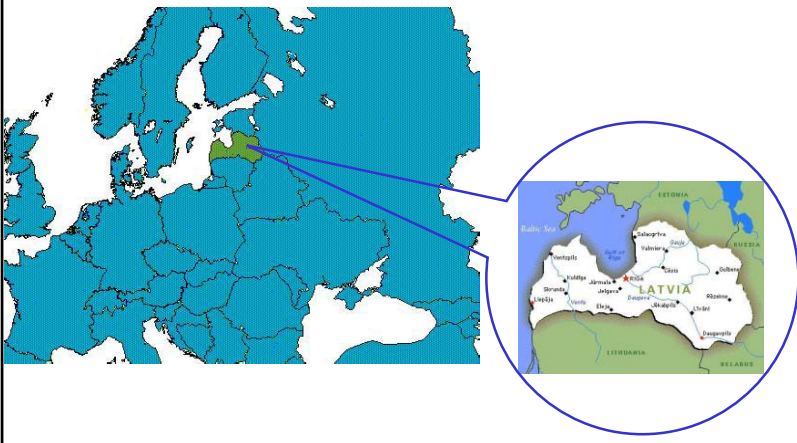


# Effective Lighting in cities a Latvian example

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## Latvia in Europe



## Efficient Lighting Initiative (ELI)



ELI is a programme designed by the International Finance Corporation (IFC) and funded by the Global Environment Facility (GEF)

### Goals

- To decrease effect to climate changes by reduction GHG emissions
- To affect market transformation and to accelerate the growth of markets for all efficient lighting technologies

## ELI in Latvia



- General coordinator: Danish Power Consultant
- Latvian program leader: Ekodoma, Ltd
- Period: March 2000 - October 2003

Ekodoma Team



## ELI Activities



- Facilitating the development of efficient lighting standards and norms
- Conducting a public education program
- Organizing CFL campaigns within the residential sector
- Developing efficient **street lighting** projects in municipalities
- Creating lighting **ESCOs**.

# Street lighting

Efficient lighting in Tukums

## About Tukums



19000 inhabitants



Located in Kurzeme region  
~ 65 km from Riga

## Existing situation

- Use of old shape luminaries with DRL bulbs: 250 - 400W
- Use of street lighting: 1500 - 2900 hours/year (instead of 3766 hours/year)
- Installed capacity 320kW
- Yearly energy consumption ~ 896 000kWh
- Street lighting systems in municipalities were built 20 - 40 years ago

## Existing situation



## Tukums project

- Feasibility study and street lighting energy audit (ELI team + Danish consultant + Tukums municipality)
  - 6 alternatives proposed (max and min as well as mixture)
- Selection of alternative (decision of Tukums Council)
- Business plan (ELI team)
- Call for tender

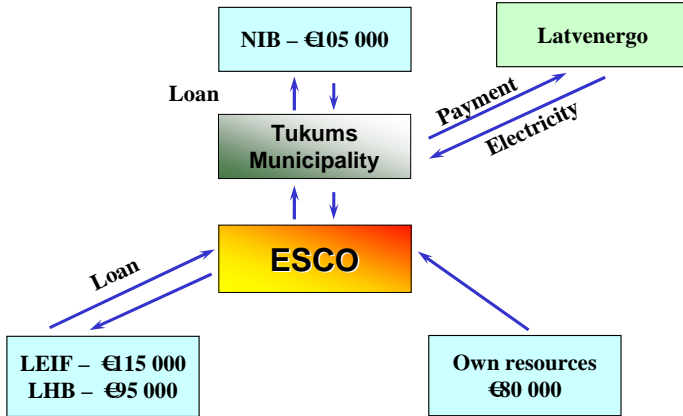
## Tukums project

- Replacement of luminaries (970 light points)
- Reconstruction and new street lighting system (2,8 km)
- Total installed capacity reduced to 89kW
- Total investments 395 000 Euro
- Energy savings ~ 630 000 kWh/year (~37000 €/year)
- CO<sub>2</sub> emission reduction ~ 365 t CO<sub>2</sub>/year

## Investments – €395 000

- Tukums municipality
  - Nordic Investment Bank € 105 000
- ESCO - Wesseman
  - LEIF € 115 000
  - Latvian Hipotek Bank € 95 000
  - Wesseman own budget € 80 000

## ESCO Scheme



## After project implementation



## Project performance

**Baseline:  
2850h**

Month	Energy baseline	2003	2004
January	148 203 kWh		38 479 kWh
February	105 200 kWh		30 514 kWh
March	81 963 kWh		26 881 kWh
April	66 584 kWh		22 811 kWh
May	39 062 kWh		13 999 kWh
June	12 887 kWh		10 632 kWh
July	16 336 kWh		13 112 kWh
August	22 376 kWh	15 072 kWh	16 783 kWh
September	68 736 kWh	21 536 kWh	
October	110 132 kWh	31 015 kWh	
November	115 216 kWh	33 078 kWh	
December	124 409 kWh	37 115 kWh	

## Problems and solutions (1)

- **Problem**  
Selection of the right alternative during the feasibility study: to meet the technical requirements of the project and the financial capabilities of the municipality?
- **Solution**  
Energy auditing of the existing street lighting system was undertaken in order to determine possible energy savings

## Problems and solutions (2)

- Problem  
The financial institution (LEIF) required strong justifications on the environmental benefits of the project
- Solution  
LEIF financed only part of project, which complies with their requirements. Latvian Hipotek Bank disbursed a loan to ESCO for the rest.

## Problems and solutions (3)

- Problem  
The lack of experience and existing legislation for third party financing was a major problem.
- Solution  
The compilation and structuring of the concession agreement between Tukums Council and ESCO required a great deal of investigation and help from outside sources.

## Conclusion

The project is a model for small and medium-sized municipalities in Latvia and the other Baltic states. In Latvia alone, there is potential to repeat the project in more than 500 municipal areas.

*Thank you for the attention*  
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