



El-Education  
Best practice example No 3 from Latvia

## Latvia Limbazi

**34% energy saving**

**Total living expenses lower than before renovation**

**Satisfied tenants**

### **Project data**

Location, address:	Limbazi
Region:	Northern Latvia
Surroundings:	City
Climate:	Continental and cold
Heating degree days:	4060
Year of construction and renovation:	1972 (constructed); 2002 (renovated)
Typology:	Multi-dwelling building
No of dwellings:	18
Total floor area:	1 000 m <sup>2</sup>
Owner:	Cooperative building
Costs of energy saving measures:	14 000 LVL (approx. 23 000 Euros)
Renovation financed by:	Loan from Latvian Mortgage bank for 12 years



Fig.1 Front side of the building

### **Objectives and results**

In 2002 the group of the apartment owners has decided to install heat meter to pay for the actual heat consumption. At the same time the group took a decision to do refurbishment of building because of the bad condition of roof and end walls and combine it with EE measures hence to decrease energy consumption. The total amount of loan was 14 000 LVL (approx. 23000 EUR) and it was taken in Latvian Mortgage bank for 12 years with the annual interest of 8,5% . Due to the loan the payment of maintenance increased to 0,24 LVL/m<sup>2</sup> month (0.40 EUR/m<sup>2</sup> month). The total investment for reconstruction was 14 LVL/m<sup>2</sup> (approx. 23 EUR/m<sup>2</sup>).

### **Renovation concept**

#### **Key renovation features**

- The roof was insulated with polystirol (10cm)
- Side walls were insulated with mineral wool (5cm)
- Heating substation was installed

## State-of-the-art

### Before renovation

#### Constructions [U-values: $W/m^2K$ ]

- Non-insulated roof
- Ground floor – reinforced concrete panels 3,808
- Façade walls - aeroconcrete 0,766
- Double-glazed windows with wooden frames, partly sealed
- End walls – bricks and reinforced concrete panels 0,869

#### Installations

- Heating supplied by district heating network
- Hot water prepared for each flat separately (electrical boilers)

### After renovation

#### Constructions [U-values: $W/m^2K$ ]

- Insulation of roof with polystyrol (10 cm)
- Insulation of external side walls with mineral wool (5cm)

#### Installations

- Installation of heating substation and heat meter

## Energy saving and monitoring

#### Energy consumption before renovation:

The cost for heating was 0,55 LVL/ $m^2$  month,  
This of maintenance amounted to 0,143 LVL/ $m^2$  month,

#### Energy consumption after renovation:

The cost for heating is 0,37 LVL/ $m^2$  month,  
This of maintenance amounted to 0,24 LVL/ $m^2$  month,

Percentage saving: 34%



Fig.2 Heating substation

## Additional information

- In the building are 18 flats, total living area is 1000  $m^2$ . Length of the building is 32 m, width – 12 m, height – 9 m. The building has three floors.
- After the implementation of energy efficiency measures the average payment for heat decreased to 0,37 LVL/ $m^2$  month (approx. 0.62 EUR/  $m^2$  month) (see Fig.1). Average room temperature after reconstruction is +19°C and inhabitants of the building are satisfied and feel comfortable. The price for heat remained the same as in previous seasons (19,56 LVL/MWh (approx. 32,6 EUR/MWh)).

## Lessons learned and conclusions

- The implementation of usual energy efficiency measures as: insulation of the external envelope of the building and improvement of windows, lead to an increase of the comfort and decrease of costs for heating and maintenance.
- It is essential to have a good financing scheme.

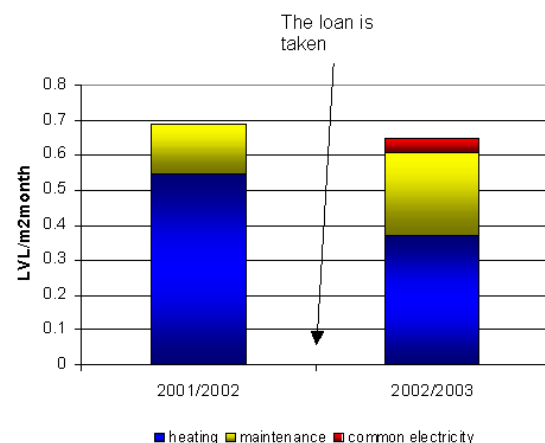


Fig. 3 payment of heating and maintenance