EI-Education
Best practice example No 1 from Latvia

Latvia
Keguma nams

32% energy saving

Total living expenses lower than before renovation

Satisfied tenants

Project data

Location, address:	Kegums
Region:	Central Latvia
Surroundings:	City
Climate:	Continental and cold
Heating degree days:	4060
Year of construction and renovation:	1987 (constructed); 2002 (renovated)
Typology:	Multi-dwelling building
No of dwellings:	48
Total floor area:	2,800 m^2
Owner:	Cooperative building
Renovation design team:	Ecodoma
Costs of energy saving measures:	41 500 LVL (approx. 69000 Euros)
Renovation financed by:	Loan from Latvian Mortgage bank for 12 years

Fig.1 Building after renovation

Objectives and results

In 2001 the cooperative of apartment owners was established and it has decided to install heat meter to pay for the actual heat consumption. At the same time the cooperative 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 41 500 LVL (approx. 69000 EUR) and it was taken in Latvian Mortgage bank for 12 years with the annual interest of 9%. Due to the loan the monthly bills for maintenance were changed and distributed into two parts: the payment of maintenance decreased to 0,13 LVL/m^2month (approx. 0.22 EUR/ m^2month) and additional payment of loan has been added to the monthly bills of inhabitants in amount of 0,18 LVL/m^2month (approx. 0.30 EUR/ m^2month).

Renovation concept

Key renovation features

- Roof has been insulated with polystirol (5 cm), mineral wool (2 cm) and covered by new deck
- End walls of the building have been isolated with polystirol
- One part of the facade walls have been isolated with polystirol
- Outside doors have been changed
- Radiators have been disassembled in staircases
- Heat substation have been installed

State-of-the-art

Before renovation	After renovation
Constructions [U-values: W/m²K] • Non-insulated roof, damaged and leaking • Ground floor – reinforced concrete panels 3,808 • Façade walls - aeroconcrete 0,766 • Double-glazed windows, partly sealed • End walls – bricks and reinforced concrete panels 0,869	*Constructions [U-values: W/m²K]* • Insulation of roof with polystirol (5 cm) and mineral wool (2 cm) • Partly insulated walls with polystirol (5 cm) • New outside doors • Insulation of end walls with polystirol (3 cm)
Installations • Heating supplied by district heating network • Hot water prepared for each flat separately (electrical boilers)	*Installations* • Individual heat substation for space heating and domestic hot water • Radiators have been disassembled in staircases

Energy saving and monitoring

Energy consumption before renovation:
The cost for heating was 0,45 LVL/m^2 month,
This of maintenance amounted to 0,17 LVL/m^2 month,

Energy consumption after renovation:
The cost for heating is 0,33 LVL/m^{2}month,
This of maintenance amounted to 0,13 LVL/m^2 month,

Percentage saving: 32%

Fig.2 Building before renovation

Additional information

- The price for heat before reconstruction was fixed at the rate of 0,45 LVL/m^{2}month (approx. 0.75 EUR/ m^{2}month) and 0,17 LVL/m^{2}month (approx. 0.28 EUR/ m^{2}month) for maintenance. The price for heat was 25,5 LVL/MWh (approx. 43 EUR/ MWh).
- After implementation of energy efficiency measures the average payment for heat has decreased and in season 2002/2003 it was 0,33 LVL/m^{2}month

Lessons learned and conclusions

- It is very important to involve all tenants in the process of refurbishment.
- A good financing scheme would lead in the first years after the refurbishment to a better comfort without increasing the costs for heating or maintenance. After the payment of the loan the costs for heating and maintenance will decrease with about 35%.

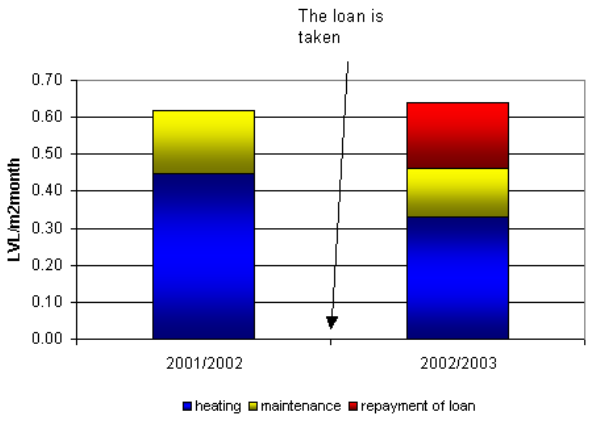

Fig. 3 Payments for heating and maintenance