ENERGY-EFFICIENT BUILDINGS: BARRIERS AND OPPORTUNITIES

LITHUANIAN PRACTICAL EXAMPLE

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Smart sustainable cities
Three main topics

Urban Energy Production and Use
Urban Transport and Mobility
Urban Information and Communication Technology
“Gross National Happiness is more important than Gross National Product“

By: HM. Jigme Singye Wangchuk
Welfare (happiness) indicators

**Personal sphere**
- Material wealth
- GDP
- Lifetime
- Employment – relaxation balance
- **Good health**
- United family
- Relatives prosperity

**Environmental sphere**
- Friendly environment
- climate change
- pollution
- **Security**
- safe living environment
- dense social security network
- **Mobility**

**Social sphere**
- Income inequality
- income distribution
- demonstrative consumption
- **Inequity**
- marginal corruption
- tax avoiding
- honest work paying off
- **Social capital**
- trust in government
- active participation in social activities
Lithuanian key statistics

- Situated in Northern Europe
- Average temperature are -5°C in winter and 17°C in summer
- Population - 3 mill.

- Inflation in 2015 – “-0.6%”; in 2016 – “+1.4%” (expected)
- GDP growth in 2016 (expected) 2.9%

- 66% of population lives in multi apartment buildings built before 1993 (> 38,000 multi family buildings and > 800,000 apartments)
- 97% privately owned, only 3% municipal rental stock
- 65% of buildings supplied by district heating
Success story since 2013 in Lithuania

- Since 2013 approved more than **3,650** multi-apartment buildings
- Since 2013 completed **923** projects

More than 70% renovation projects are implemented by the Municipal programs (Municipal entities acting as a borrowers)
Three main questions

1. Why energy efficient buildings are so important in smart and sustainable cities?

2. Why is so not easy to do?

3. What is the formula for success?
75% of EU’s housing stock is currently not energy efficient.

Vice-President of Energy Union
Maroš Šefčovič

Energy efficiency of buildings is a triple win!
1. Good for sustainable cities: lower carbon emissions, resource conservation

- By implementing the Programme also are solved environmental protection issues (reduction CO₂ emission, urban environment, cities regeneration plans, etc.)

The analysis of implemented projects shows that after the building renovation savings are more than 100 MWh/year and reduction CO₂ - 23.4 t
2. Good for sustainable cities economic growth

- The energy efficiency Programme investment value more than **500 million Euros** *(JESSICA Holding Fund with private investment of commercial banks, State budget)*;
- Currently renovation projects are implemented by **300** small or medium construction companies (creates new jobs);
- Investments in the renovation process is about **10%** of the total investment in the construction sector in the country.
3. Good for sustainable cities home-owners: greater comfort, lower bills, added value

Experience from energy efficiency upgrading projects in multifamily buildings shows that reduce energy consumption by around 50-80%.
2. Why is so not easy to do?

The main problems are:

- lack of homeowners initiative;
- fear to take a loan;
- mistrust on the results after the upgrading. Unknown energy savings possibilities.
3. Lithuanian success formula-more than 1000 renovated, 2000 in process
What is the main reason for success?
Lithuanian success formula

**Changes**

- **Created New Model**
  - projects are implemented by the **Programme administrator** appointed by the Municipality;
  - **loan** is taken by the Programme administrator;
  - programme **administrator organizing procurement**, taking all the responsibilities on the implementation and financial management;

- **Financial model**
  - **Lithuania** - one of the first countries in the European Union which uses the initiative of JESSICA for the improvement of **energy efficiency in multifamily buildings**.
  - **100%** of all costs for low income households
Some examples Ozo str. 22, Vilnius

Year of construction: 1982
Number of apartment: 36
Heated area: 2305 m²
Implemented: insulation of walls and roof, glazing of balconies, windows replacement, modernized heating system (one pipe system into two pipes system, balancing)
Investment: EUR 326.000
Energy savings: 71%, Class C
Some examples Vilties str. 18, Vilnius

Building built in 1964
Number of apartments: 101
Heated area: 5,671 m²
Investment: EUR 0,608 mill.
Implemented: insulation of walls, roof, windows replacement, glazing of balconies, modernization of heating system

Results:
- **energy savings 70,14%**
- before – class D
- after – class B,
- energy consumption – 60 kWh/m²
Some examples  Marijonu str. 31, Panevezys

*Solar energy is the most abundant energy source of earth*

Year of construction: 1958
Number of apartment: 35
Heated area: 2525 m²
Implemented: central gas boiler, insulation of walls and roof, installed heat cost allocators, **solar collector**
Investment: EUR 384,000
**Energy savings: 65%, Class B**
Overall approach - quarter renovation
Smart and happy 😊
Cooperation is the main condition for sustainable and smart cities!

Thank you for your attention

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