

PARTICIPATION OF MUNICIPALITIES IN ENERGY EFFICIENT MODERNIZATION OF MULTI-APARTMENT BUILDINGS



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OUTLINE

- Background situation
- Programme models
- Demonstration project - area in Utena municipality
- Results



REFURBISHMENT (MODERNIZATION) OF MULTI-APARTMENT BUILDINGS PROGRAMME

Approved by the Government of the Republic of Lithuania in **2004**
The Programme aims to increase energy efficiency in multi-apartment buildings

Responsible authority: Ministry of environment

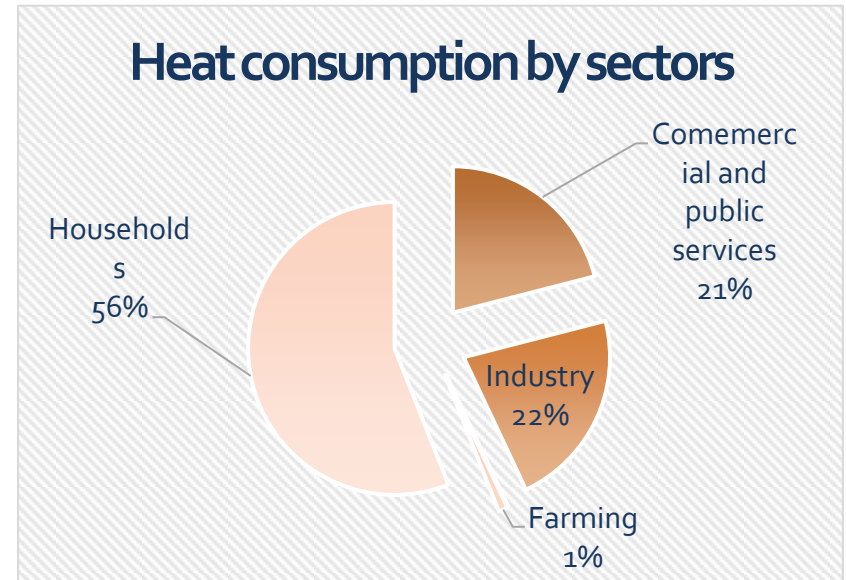
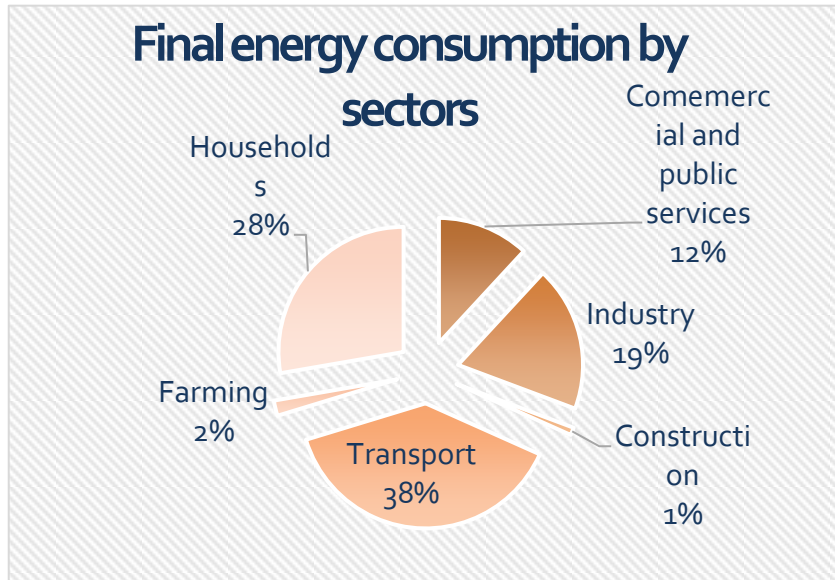
Administering institution: Housing energy efficiency agency

Projects: energy efficiency actions in common parts of multi-apartment buildings

Beneficiaries: associations of apartment owners, owners acting under partnership agreement, administrators of shared parts of apartment buildings



LITHUANIAN ENERGY SECTOR

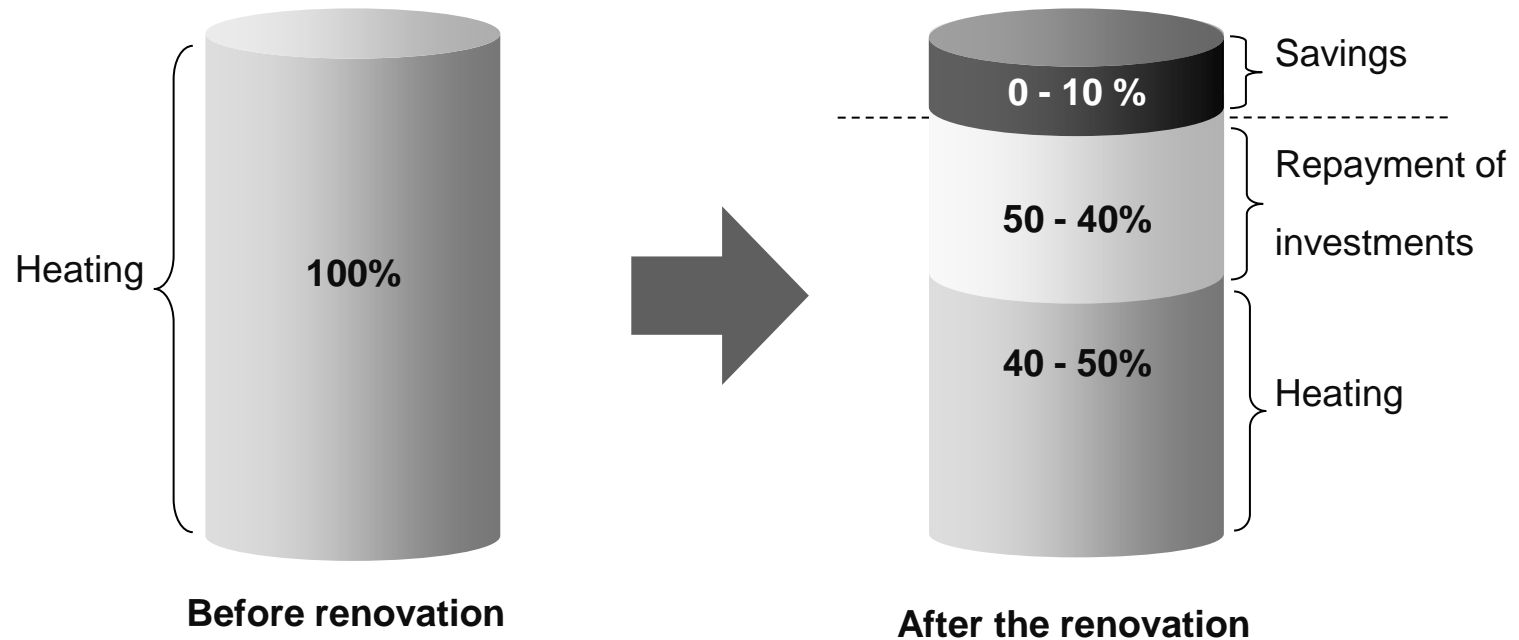


Multi-apartment buildings:

- 100% heat, hot and cold water meters installed
- Consume approx. 9,2 TWh/year
- Since 2004 heat consumption savings - 1,2 TWh/year

INVESTMENT POLICY

1 Fig. Distribution of expenses to apartment-owners before and after renovation



No additional payments - lower risk

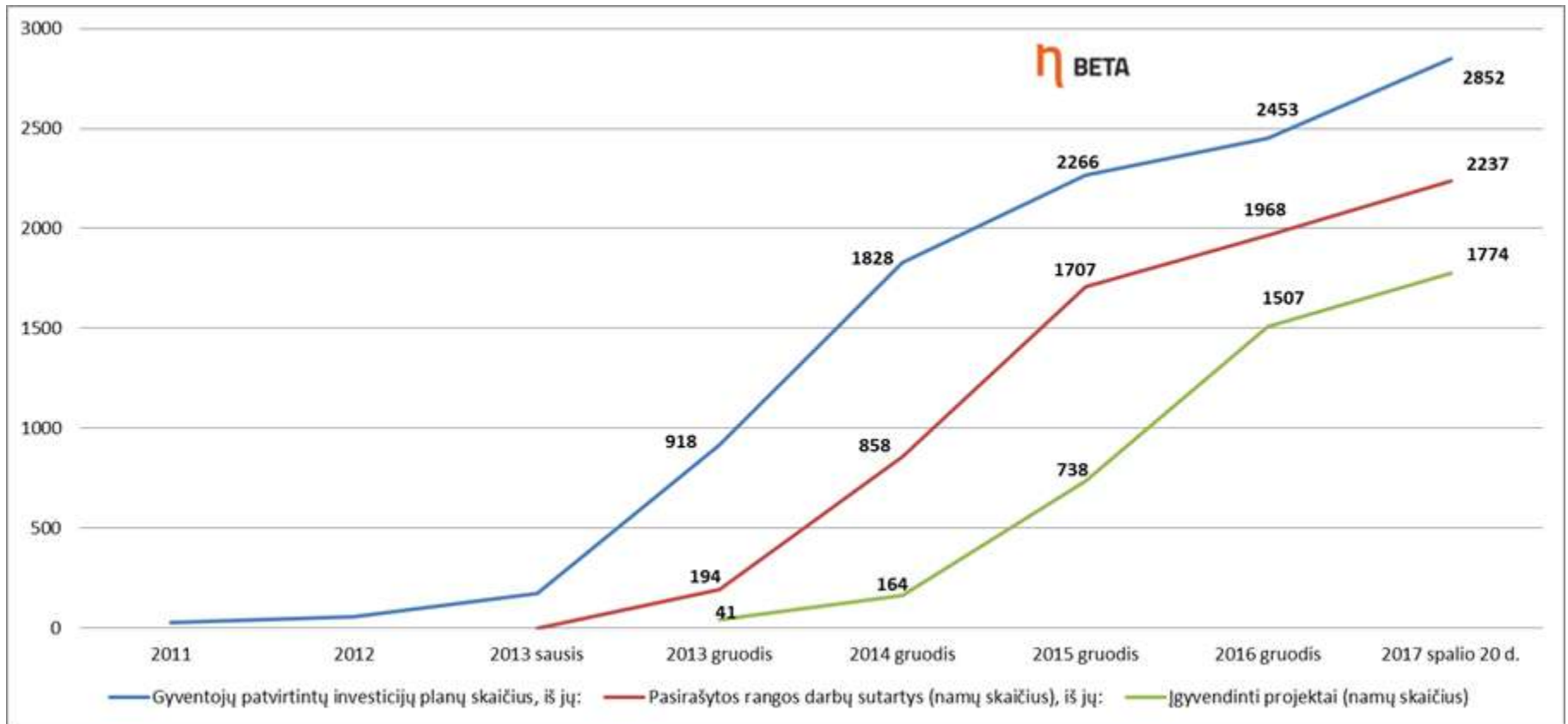
RESULTS THAT COULD BE ACHIEVED



Energy savings after the implementation of standard energy efficiency packages (*insulation of walls, roofs, replacement of windows and modernization of heating system*) more than 50%

Source: Monitoring report by Vilnius Gediminas Technical University

PROGRAMME RESULTS



- Since 2013 - **1774** projects are completed
- Ongoing projects - 463

RESULTS (2)

- 99% of buildings implemented complex energy efficiency measures (insulation of walls, roofs, windows replacement, modernization of heating systems);
- Avg. investment – 267.000 Eur/building (185 Eur/m²)
- Energy savings (actual) 50-70%, in some buildings >70% (max.87%) or avg. 72,2 kWh/m² annually
- More than 50% of homeowners wish to modernize their buildings according to the results of social survey done in 2016



PROGRAMME MODELS IMPLEMENTED NOW (1)

1. Homeowners on their own initiative prepare investment projects, take loans and implement modernization

The main problems of this model:

- lack of homeowners initiative
- fear to take the financial responsibilities - loan
- mistrust on the results after the upgrading



PROGRAMME MODELS IMPLEMENTED NOW (2)

2. Investment projects are implemented based on the Energy efficiency programmes approved by the municipalities:

- investment projects are prepared on the municipality initiative
- 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



ROLE OF THE MUNICIPALITIES

- selecting energy inefficient buildings, organizing preparation of energy audits and investment plans
- preparing energy efficiency Programmes for selected buildings, approving it in the City Council, appointing Programme administrator (mainly legal body, controlled by municipality)
- appointing Programme supervision committee (municipal administration)
- providing supervision during project implementation and etc.



NEXT OBJECTIVES

In order to increase energy efficiency not only in individual buildings but across the cities, municipalities are encouraged to prepare programmes for energy efficient refurbishment of urban areas by combining different measures and instruments:

- renovation of multi-apartment buildings;
- renovation of public buildings ;
- modernization of street lighting and other infrastructure

ENERGY EFFICIENCY PROGRAMMES ARE A BASE OF THE MUNICIPAL
ENERGY SECTOR DEVELOPMENT
THREE DEMONSTRATION PROJECTS IN THREE MUNICIPALITIES
ALREADY STARTED WITH IMPLEMENTATION

DEMONSTRATION PROJECT



3 municipalities - Šiauliai, Birštonas and Utena - were selected

DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (1)



- Territory planned for renovation 8,8 ha
- 41 multi-apartment building (1095 apartments, 2.321 inhabitant)
- Heat consumption kW/year 2015/16
114,40 kW/m²
- CO₂ – 1458,55 t/year
- Year of construction 1984-1988

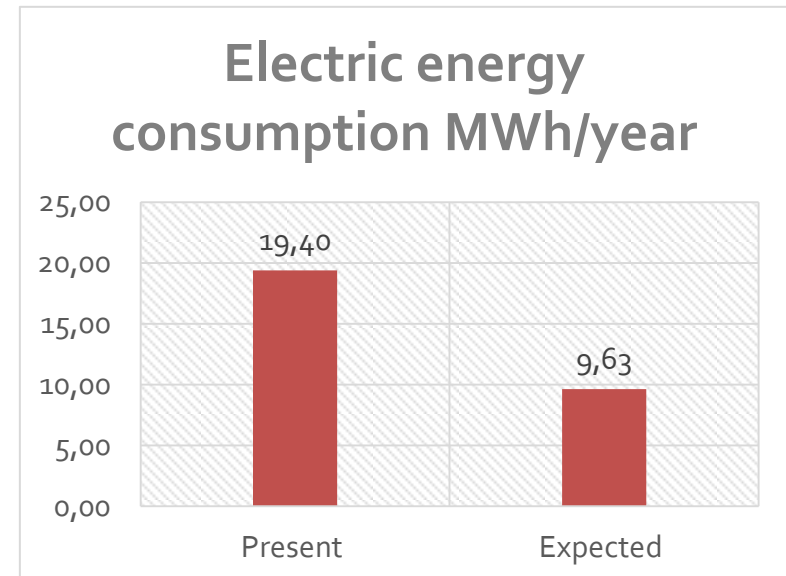
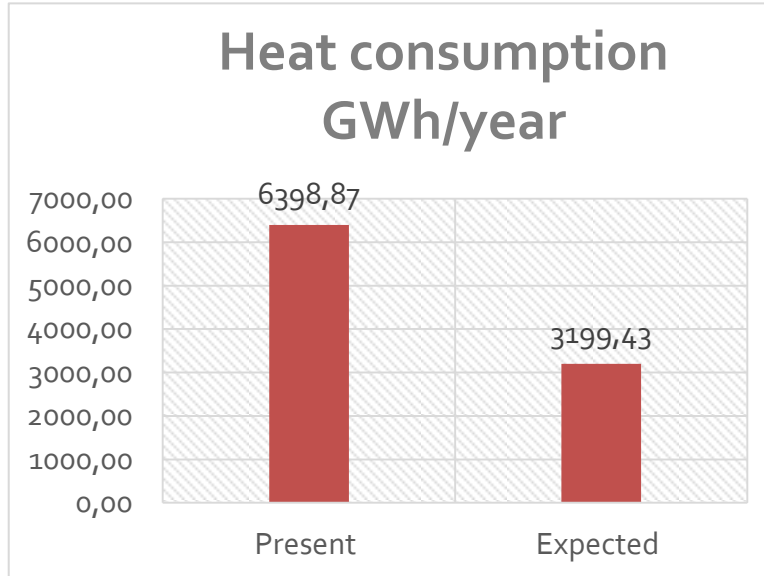
DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (2)

Aims and expected results:

- To modernize **41** multi-apartment building
 - expected energy efficiency >50%
 - investments approx. 141,5 Eur /m²
- To modernize **1** public building (kinder garden):
 - expected energy efficiency >50%
 - investments approx. 150,4 Eur /m²
- To modernize street lightning network:
 - expected to install new LED lamps and automatic regulation
 - expected energy efficiency >30%
- **Heat supply:**
Heat supply network was modernized in 2015
- To upgrade green areas, children's playgrounds, parking lots, access roads, pedestrian pathways and other engineering and social structure



DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (3)



Expected savings are estimated by evaluating the standard measures of modernization:

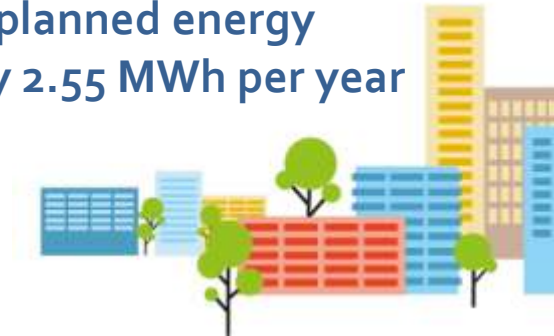
Facade wall insulation, roof insulation, replacement of windows, replacement of outdoor doors, arrangement of ventilation system, balancing of heating systems, glazing of balconies

DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (4)

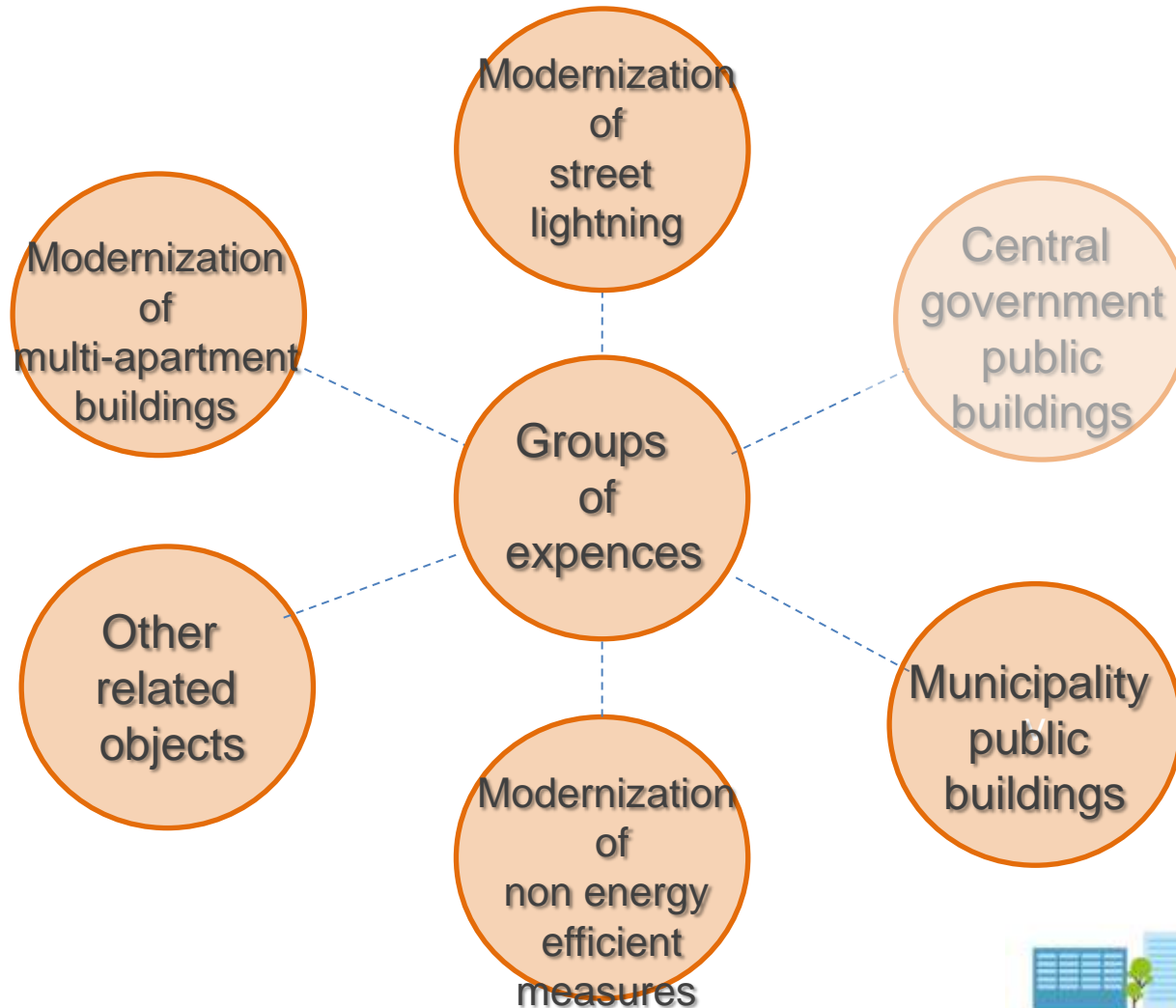
The total value of the Programme – 19,5 mln. Eur.:

- The renovation of 41 multi-apartment buildings (57.814 m²) planned investment of **13,9 mln. Eur**, planned savings: 5.459 MWh per year, or 50%;
- The renovation of 1 public building (1612 m²) of planned investment **0.9717 mln. Eur**, planned savings: 465 MWh per year, or 50%;
- modernization of the street lighting network (3 900 m), planned investment of **3.68 mln. Eur**, planned savings: 34 MWh per year, or 30%;
- Modernize engineering and social infrastructure of 21 000 m², investment **3.13 mln. Eur**;
- to upgrade green areas 45 900 m², investment **1.1 mln. Eur** (10% of the total amount)

After implementation of the measures referred before, the planned energy savings amount to 5.924,25 MWh or 50% per year and by 2.55 MWh per year for each of the urban area inhabitant



DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (5)



DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (6)

Programme implementation started in 2016, completion is expected 2022

Progress:

- Feasibility study and cost benefit analysis;
- Energy efficient refurbishment Programme approved in City Council at the end of 2015;
- For the Programme implementation Program administrators are appointed by Municipality;



DEMONSTRATION PROJECT - AREA IN UTENA MUNICIPALITY (7)

- Program administrators started with implementation of multi-apartment buildings renovation projects:
 - 4 multi-apartment buildings already implemented;
 - 7 multi-apartment buildings signed agreements for contractor works;
 - one multi-apartment building is planned to achieve “nearly zero” standard
- Public building Investment project is under evaluation by BETA;
- Solutions for the technical project for renovation of the engineering and social infrastructure of the Quarter in the stage of preparation, the general examination of the project solutions is carried out;



DEMONSTRATION PROJECT – NEXT STEPS

Capacity building program to other municipalities is under the preparation and will start at the beginning of 2018

Preparation of standard procedures and recommendations to all municipalities – partly prepared

Establishment of competence center – on the way

Establishment of Program financial mechanisms – expected to be in coming year

RENOVATION OF SINGLE BUILDINGS WILL NOT BE A PRIORITY – THE NEAREST PRIORITY WILL BE THE IMPLEMENTATION OF COMPLEX ENERGY EFFICIENCY MEASURES IN SELECTED URBAN AREAS

EXAMPLES WITHIN THE AREA

Taikos str. 17, Utena



Year of construction: **1983**

Number of apartment: **20**

Heated area: **1.052,80 m²**

Implemented: Replacement of heating and hot water systems, ventilation systems redevelopment, replacement of windows, wall and roof insulation, glazing of balconies, replacement of staircase door and tambour doors

Investment: EUR **148.831,57**

EXAMPLES WITHIN THE AREA

Taikos str. 11, Utena



Year of construction: **1983**

Number of apartment: **20**

Heated area: **1.052,80 m²**

Implemented: Replacement of heating and hot water systems, ventilation systems redevelopment, replacement of windows, wall and roof insulation, glazing of balconies, replacement of staircase door and tambour doors

Investment: EUR **149.538,25**

EXAMPLES WITHIN THE AREA

Taikos str. 9, Utena



Year of construction: **1984**

Number of apartment: **20**

Heated area: **1.077,05 m²**

Implemented: Replacement of heating and hot water systems, ventilation systems redevelopment, replacement of windows, wall and roof insulation, glazing of balconies, replacement of staircase door and tambour doors

Investment: EUR **151.174,81**

EXAMPLES WITHIN THE AREA

Taikos str. 7, Utena



Year of construction: **1984**

Number of apartment: **20**

Heated area: **1.092,17 m²**

Implemented: Replacement of heating and hot water systems, ventilation systems redevelopment, replacement of windows, wall and roof insulation, glazing of balconies, replacement of staircase door and tambour doors

Investment: EUR **154.901,50**

Energy savings: **64 %**, **Class C**

LESSONS LEARNED

- By implementing this type of programme it is very important to establish appropriate legal, organizational and financial system and identify right technical solutions
- One of the main conditions for the successful implementation of the programme - building capacities of all participants of the Programme and standardization of the processes and procedures;
- Pilot projects – is a recommended step before the launch of such type of the Programme;
- Municipalities are capable to develop and implement this type of multi apartment renovation programmes, however appropriate measures and instruments should be developed





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