Implementation of energy efficiency refurbishment projects: Modernization programs of multifamily buildings

4. Transnational Conference Vilnius
BEEN – Baltic Energy Efficiency Network for the Building Stock
Thermomodernization program in Poland
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Project part-financed by ERDF
Ownership of dwellings in Poland

- 1990 almost all of dwellings belonging to the state have been passed to municipal housing stock (MHS) and it started privatization without any rules
- 1994 the Act on ownership of dwellings is in force
- HOA is created by law, when one of dwellings in municipal building is sold to the tenant
- HOA is to be registered in court and in land registers as common ownership of the building and the plot
- decisions are taken by majority of co-owners or by majority of shares in common ownership
- HOA is not the legal person, but is creditworthy against the bank
- HOA are managed by democratically elected boards, which can pass the duties to the professional housing manager
- the privatization of dwellings in former MHS reached 2005 app. 70%
- a half of dwellings in multifamily buildings belong to cooperatives and a half to HOA’s
Ownership structure of dwellings in Poland

*Total: 12,776,100*


Project part-financed by ERDF
# Existing residential building stock in Poland (2002)

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</thead>
<tbody>
<tr>
<td>total</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>4,772,728</td>
<td>413,255</td>
<td>828,167</td>
<td>1,367,542</td>
<td>676,498</td>
<td>763,461</td>
<td>618,348</td>
</tr>
<tr>
<td>Urban area</td>
<td>1,780,594</td>
<td>176,411</td>
<td>331,041</td>
<td>425,199</td>
<td>236,578</td>
<td>298,650</td>
<td>266,202</td>
</tr>
<tr>
<td>Rural area</td>
<td>2,992,134</td>
<td>236,844</td>
<td>497,126</td>
<td>942,343</td>
<td>439,920</td>
<td>464,811</td>
<td>352,146</td>
</tr>
</tbody>
</table>

85%
Average heat consumption for heating in kWh/m² usable area depending on period of construction of buildings in Poland

- **do 1985**: 240-380
- **1986-1992**: 160-200
- **1993-1997**: 120-160
- **od 1998**: 90-120
- **wg aktualnych wymagań**: 50-100
- **Poland**: 85%

Comparisons:
- **Germany**
- **Sweden**

**Project part-financed by ERDF**
To overcome the deficit, the grant system was 1998 introduced (Thermofund)

- the minimum calculated energy savings after refurbishment should exceed 25%/a (in average in Poland for housing stock it is app. 40%/y)
- the monthly rate of repayment of the loan should not exceed the monthly calculated energy savings over 10 years (calculation period)
- the loan can be obtained up to 80% of total refurbishment cost
- the bonus from the state budget is given to the bank, which finances the refurbishment in given building, in amount 25% of the loan (bonus for reduction of the capital) just after accomplishment of the measures identified in energy audit of the building
- the fundamental document necessary for obtaining the state support is the energy audit, which scope and form are regulated by the Ordinance of Ministry of Infrastructure from 15.01.2002; the energy audit gives the technical assumptions for the refurbishment and estimates the cost of measures and their effectiveness, as well as calculates the monthly rate of repayment of the loan, required own sources and the amount of the loan
- the energy audits are subject of verification their compliance with Law by the national Bank Gospodarstwa Krajowego
State policy towards reduction of energy consumption of buildings

Criteria for beneficiaries

<table>
<thead>
<tr>
<th>Thermomodernisation project</th>
<th>Type of savings</th>
<th>Savings achieved</th>
</tr>
</thead>
<tbody>
<tr>
<td>modernization of heating system in building, exclusively</td>
<td>reduction of annual energy demand</td>
<td>at least 10%</td>
</tr>
<tr>
<td>comprehensive modernization</td>
<td>reduction of annual energy demand</td>
<td>at least 25% or at least 15% when the heating system was modernized during 1985-2001</td>
</tr>
<tr>
<td>modernization of local heat source and district heating networks</td>
<td>reduction of annual energy losses</td>
<td>at least 20%</td>
</tr>
<tr>
<td>connection to district heating network due to liquidation of local sources</td>
<td>reduction of annual heat costs</td>
<td>at least 20%</td>
</tr>
<tr>
<td>conversion of conventional energy sources into renewable (unconventional) ones</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Utilisation of Polish Thermofund - trend

Number of applications for grant – total 8346
Utilisation of the Fund by categories of buildings

- HOA buildings: 3300
- Co-operatives: 40%
- Single-family: 7%
- Others: 13%

Project part-financed by ERDF
Perception of the system

Intermediary results of assessment:

- the Polish scheme was constructed as instrument dedicated especially to residential multifamily buildings. It was assumed that during the 10 years of activity of the system (starting 1999) app. 50,000 buildings with 2,500,000 apartments will be retrofitted with utilization of the scheme. Until now app. 10% of this goals was achieved. The reasons for delay are:
  - in initial period until 2001 the calculation period for repayment of loans from savings (in energy audits) was 7 years; starting 2002, this period equals to 10 years; this modification of law made the meeting of criteria of obtaining the bonus more attractive,
  - the scheme was not assisted until 2002 by active awareness campaign - implementation of “Friendly Home” campaign is one of reasons of the increased the number of applicants
  - low social acceptance for financing own investments by loans due to high interest rates (from 30% in 1999 to 8% in 2006); now over 10,000,000 loans have been given to individual households for consumer goods
Example of performed project
Example of performed project (2003)

Building constructed 1963, construction material - panels, number of apartments 48, 2400 sqm space

List of implemented measures:

• Insulation of walls 13 cm
• Refurbishment of skylights
• Insulation of roof 12 cm
• Modernization of heating installation
Example of performed project

- Cost of measures 95 000 euro

\[ 40 \text{ euro/m}^2 = 1980 \text{ euro/dwelling} \]

- Yearly heat cost savings 9 500 euro
- Yearly heat consumption savings 41.7%
- Own sources collected 20 000 euro
- Loan 75 000 euro
- Bonus from the state 25\%=18 750 euro
- Installment 56 250 euro + interest

Project part-financed by ERDF
Conditions and results

- Renovation charge raised to 1 euro/sqm/month e.g. 2000 euro/month during 1 year before project.
- Monthly rate of installment and interest to be repaid 775 euro/month (during 10 years).
- Tenants have reduced the private income tax through renovation tax regulation.
- The heat comfort is better.
- The market value of the flat raised by 10%.
- The heat cost reduced by 0.45 euro/sqm/month e.g. 25 euro/month/apartment.
Targets

- The state support to thermorenovation measures is limited to approximately 2000 buildings yearly (1%/y)
- There is expectation that the promotion of the support to the thermorenovation of residential buildings will follow through:
  - special loan offers of banks – reduction of loan costs
  - participation of associations of suppliers of goods and services in awareness campaigns
Nationwide educational program "Friendly Home"
Promotion of low energy buildings in Poland
Preparing market for EPBD

Scope of the program

• Designing buildings
• Energy efficient retrofitting
• Maintenance
• Certification

Voluntary industry driven with government patronage
Target groups

- Private investors
- Corporate investors (housing coops., home owners associations, housing managers, etc.)
- Local authorities officers
- Professionals
- Media
Activities

- Publications:
  - Brochures
  - Posters
  - Leaflets
- Seminars
- Taking part in professional fairs
- Communication platform www.domprzyjazny.org
Organization and Partners

- Patronage and supervision – Ministry of Construction
- Professional backup – National Energy Conservation Agency, Building Research Institute, Association of Energy Auditors, Technical Universities
- Organizational matters – NAPE since Oct. 2006
- Financing:
  - Distribution framework agreement with Poczta Polska – National Post Company,
  - Project by project:
    - Banks
    - Associations of construction materials and equipment producers,
Projects completed

• Brochures:
  • Low energy house – 100,000
  • Thermomodernisation of buildings – 400,000
  • One – layer wall houses – 100,000
  • Multi - layer wall houses – 100,000
  • Building superstructures and modernization of multifamily houses – 100,000
  • Building superstructures and modernization of detached houses – 100,000
  • Thermomodernisation and upgrading of public houses – 50,000
  • Modernisation of heat supply systems in buildings – 60,000

Each brochure is accompanied by poster 5 -10 thousand
termomodernizacja
obniżenie kosztów ogrzewania budynku
poprawa jakości życia oraz stanu środowiska naturalnego

Mądry Polak przed budową

INSTALACJA GRZEWCA
- likwidacja siedzi odpowiadające
- uszczelnienie
- izolowanie
- zawory podciśnienowe
- zawory termostacyjne
- układ pompowy
- czyszczenie
- regulacja

STROPI BUDYNKA
- izolacja 12 - 20 cm izolacji

WÓJÓK CIENNY
- wymiana urządzeń
- automatyzacja pogodowa

efekt = oszczędność

Kosz Obniżenia
Kosz Modernizacji
Kosz Obniżenia
Kosz Modernizacji

Baltic Energy Efficiency Network
for the Building Stock

Project part-financed by ERDF
Projects completed (cont.)

- Leaflets:
  - Energy-saving apartment usage – 2.5 million
  - New system of buildings energy certification – 60,000
- Seminars for the representatives of local authorities, building owners and administrators held in 5 cities, each attended by approximately 120 people
- Seminars sponsored over 10*100 people
- Seminars in Warsaw 2*150
- The program’s presence on several fairs.
Termomodernizacja budynku.

Idea:
Dostarcza do zarządców, użytkowników budynków i osób w celu podnoszenia świadomości związanej z termodomodernizacją.

Autorzy:

Jedynym sposobem ograniczenia kosztów ogrzewania ponoszonych dzisiaj i w przyszłości jest zmniejszenie ilości zużywanej energii cieplnej. Można to osiągnąć, wykonując termomodernizację budynku.

Patronat:

Dystrybucja:
Dystrybucja adresowana do administratorów budynków komunalnych i spółdzielczych, właścicieli prywatnych, również poprzez 2885 urzędów na terenie całej Polski.

Nakład:
Broszura - 115 000 egz., plakatów - 10 000 egz.

Forma:
Pakiety składające się z 44-stronicowej broszury A5 z plakatem B1.
Survey of inhabitants awareness concerning energy efficiency in multifamily buildings

- The survey was conducted during the meeting home owners associations organized on 3d March 2007 in co-operation with Warsaw district administration Mokotów

- The set of questions was taken and upgraded from the Latvian surveys, made 2005 among 3007 inhabitants

- Number of participants of the survey in Warsaw was app. 100
### Survey of inhabitants awareness – results

**Energy efficiency issues vs. economy?**

<table>
<thead>
<tr>
<th>Question</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you know, that implementation of all above mentioned measures in building constructed before 1985 can bring 40% reduction of heat bill?</td>
<td>80</td>
</tr>
<tr>
<td>Do you know the heat bill of your dwelling</td>
<td>56</td>
</tr>
<tr>
<td>Do you agree to increase your monthly renovation charge in order to implement the above mentioned measures</td>
<td>80</td>
</tr>
</tbody>
</table>