



Energy efficient rehabilitation – improvement of buildings and energy supply infrastructure

The current status

Janusz Bielicki

City of Piaseczno

Andrzej Rajkiewicz

National Energy Conservation Agency

11 June 2010, Piaseczno, WP4 workshop

WP4 activities, (A1MWU Piaseczno)

Activities	Status (not started yet, just started, working on, almost finished, finished)	Description
<i>Activity 1</i>	<i>finished</i>	<i>Elaboration of the energy audits of 26 residential buildings</i>
<i>Activity 2</i>	<i>finished</i>	<i>Elaboration of the concept of energy efficient rehabilitation of buildings in A1MWU</i>
<i>Activity 3</i>	<i>working on</i>	<i>Amendments to the Urb Energy WP4 report</i>
<i>Activity 4</i>	<i>not started yet</i>	<i>Selection of buildings for technical preparation of refurbishment</i>

Residential buildings, (A1MWU Piaseczno)

Number of multi-apartment buildings	26
Number of apartments	1051
Total living and heating space, m ²	39 721 45 630
The average living and heating space per apartment, m ²	37,8 43,4

Share of owners / tenants	<p><i>8 buildings with 362 apartments belong to the housing cooperative Jednosc</i></p> <p><i>18 buildings with 689 apartments belong to home owner associations, with majority of private co-owners</i></p>
---------------------------	--

Residential buildings, (*A1MWU Piaseczno*)

- Typical building types – constructions, materials, number of floors and apartments:
 - *24 constructed 1961-1966*
 - *2 constructed 1974*
 - *3-5 floors*
 - *18-114 apartments*
 - *1,6-2,8 inhabitant/flat*
 - *all “large block technology”*

Residential buildings, (*A1MWU Piaseczno*)

	<i>3 floors</i>	<i>4 floors</i>	<i>5 floors</i>	Total
Number of buildings	6	9	11	26

Residential buildings, (A1MWU Piaseczno)

- The average annual energy consumption of multi-apartment buildings (kWh/m²)

Total heat consumption	229,7
Space heating	147,4
Hot water preparation	82,4
Electricity	<i>Not assessed</i>

- Tariffs and costs:

	Tariff	Average annual costs per m²
Heat	<i>32 000 euro/MW 14,43 euro/GJ</i>	<i>Not assessed yet</i>
Electricity	<i>0,063 euro/kWh</i>	<i>Not assessed yet</i>

Residential buildings, (*A1MWU Piaseczno*)

- The energy saving potential (kWh/m²/a, %):
 - 80,6 kWh/m²/a e.g. by 35%
 - 769 Mg/y of CO₂

Public buildings, (*A1MWU Piaseczno*)

- **Concepts and experience of public building refurbishment:**
 - *So far, no concept for public building refurbishment in TA, there is one administrative building belonging to the City of Piaseczno*

Energy supply, (A1MWU Piaseczno)

- **The heat producers and suppliers:**
 - *The district heating company PCU belonging to 50% to the City of Piaseczno and to 50% to the housing co-operative Jednosc*
- **The energy supply infrastructure:**
 - *Share of district heating in your TA: **100% for heating purposes***
 - *Share of individual heating in your TA: **100% for domestic hot water preparation***
 - *District heating network / pipeline system in your TA: **network belong to the city, is operated by PCU***
 - *Status of modernization of energy supply system, energy losses before and after modernization, saving potentials in your TA: **network is after modernisation***
- **Heat loads:**
 - *To be provided*

Energy supply, (A1MWU Piaseczno)

- **Energy sources:**
 - *Energy sources used for heat supply in your Target Area: low parameter natural gas fired boilers with 40% of capacity reserve*
- **Cogeneration:**
 - *Cogeneration share now and as planned in future in your Target Area: no cogeneration, the concept is under elaboration by PCU*
- **Renewable Energy Sources**
 - *RES share now and as planned in future in your Target Area: now no, some solar installations are proposed for domestic hot water preparation*

Stakeholders, (*A1MWU Piaseczno*)

- **The stakeholders involved in Urb.Energy project:**
 - *Energy suppliers in your TA: involved*
 - *Flat owners, tenants in your TA: involved during elaboration of the energy audits for buildings and during social survey*
 - *Experience with involvement of other stakeholders in your TA: board of housing co-operative, facility managers involved*
- **The special demand:**
 - *Not indicated*

Lp.	Address	Scope and cost of thermal refurbishment measures									Sum
		Thermal insulation of walls	Thermal insulation of roofs	Replacement of windows in staircases	Replacement of windows in cellars	Replacement of entrance doors	Replacement of internal heating installation	Regulation of internal heating installation	Equipment with central domestic hot water	Thermal insulation design	
1.	Piaseczno ul. Fabryczna 2	157 585	-	-	2 025	-	180 000	-	110 000	6 000	455 610
2.	Piaseczno ul. Fabryczna 5	189 255	120 120	-	7 125	-	220 000	-	110 000	6 000	652 500
3.	Piaseczno ul. Fabryczna 7	189 255	117 390	-	7 125	-	220 000	-	110 000	6 000	649 770
4.	Piaseczno ul. Fabryczna 9	189 255	-	-	7 125	-	220 000	-	110 000	6 000	532 380
5.	Piaseczno ul. Kusocińskiego 3a	-	-	-	-	-	-	-	180 000	-	180 000
6.	Piaseczno ul. Puławska 19	247 065	115 940	-	9 525	11 340	265 000	-	140 000	6 000	794 870
7.	Piaseczno ul. Puławska 21	254 805	-	-	9 525	-	265 000	-	165 000	6 000	700 330
8.	Piaseczno ul. Puławska 21A	149 730	49 940	-	3 750	-	130 000	-	90 000	6 000	429 420
9.	Piaseczno ul. Puławska 23	247 065	-	-	9 525	-	265 000	-	140 000	6 000	667 590
10.	Piaseczno ul. Szkolna 3	144 530	80 960	-	5 025	7 560	145 000	-	85 000	6 000	474 075
11.	Piaseczno ul. Szkolna 4	136 700	-	-	3 750	5 270	130 000	-	90 000	6 000	371 720
12.	Piaseczno ul. Szkolna 5	144 530	80 960	-	5 025	-	145 000	-	85 000	6 000	466 515
13.	Piaseczno ul. Szkolna 6	351 630	103 680	-	11 475	-	380 000	-	240 000	7 000	1 093 785
14.	Piaseczno ul. Szkolna 7	144 530	80 960	-	5 025	7 560	145 000	-	85 000	6 000	474 075
15.	Piaseczno ul. Szkolna 10A	149 730	49 940	-	3 750	-	130 000	-	90 000	6 000	429 420
16.	Piaseczno ul. Szkolna 8	-	-	-	-	-	-	-	180 000	-	180 000
17.	Piaseczno ul. Szkolna 10	-	-	-	-	-	-	-	485 000	-	485 000
18.	Piaseczno ul. Wojska Polskiego 7	-	-	-	-	-	-	-	380 000	-	380 000
19.	Piaseczno ul. Szkolna 12	190 470	50 600	17 370	3 225	-	-	14 000	90 000	6 000	371 665
20.	Piaseczno ul. Wojska Polskiego 5	-	200 200	72 000	5 850	-	-	35 000	370 000	-	683 050
21.	Piaseczno ul. Puławska 25	-	121 880	-	9 525	-	-	20 000	140 000	-	291 405
22.	Piaseczno ul. Kusocińskiego 5	137 550	49 940	-	3 750	5 270	-	14 000	90 000	6 000	306 510
23.	Piaseczno ul. Kusocińskiego 3	190 470	50 600	17 370	3 225	5 270	-	14 000	90 000	6 000	376 935
24.	Piaseczno ul. Szkolna 8a	-	160 160	-	9 300	-	-	25 000	180 000	-	374 460
25.	Piaseczno ul. Szkolna 1	30 870	49 860	-	-	18 020	-	30 000	260 000	-	388 750
26.	Piaseczno ul. Kusocińskiego 5a	-	121 880	-	9 525	-	-	20 000	140 000	-	291 405
	SUMA	3 245 025	1 605 010	106 740	134 175	60 290	2 840 000	172 000	4 235 000	103 000	12 501 240
	%	26	13	1	1	0	23	1	34	1	100

Current results, (A1MWU Piaseczno)

- **The first results:**
 - The refurbishment needs of buildings are assessed, the preliminary financing scheme is identified, based on existing support scheme to thermal refurbishment measures
- **Urgent Problems:**
 - *Low creditworthiness of housing co-operative Jednosc and a half of home owner's associations*
- **Other important issues:**
 - *Lack of investment money for introduction of combined heat and power plant*
 - *Necessity to approve the IUD concept by city council in order to plan the refurbishment measures parallel to improvement of surroundings*

THANK YOU FOR YOUR ATTENTION!