

# Ustka – PL



→ Good practice example

## Pilot action community: Ustka – Pomerania – Poland

### Type of energy consumption:

heat energy  hot domestic water  electricity  water

### Use of renewable energy resources (potential or actual):

biomass  wind energy  geothermal energy  solar energy  hydroelectric power station

### Rational use of energy:

sustainable building systems, low energy housing  building thermal modernisation  modernisation and upgrading of the heating systems  modernisation of lighting  balanced/sustainable transport

As a seaside health resort Ustka realizes its spatial policy in accordance with the principle of sustainable development. The major objectives of this policy are the following: – minimization of space and natural resources use  
– economical, rational and effective management of energy.

## → Community

### Short description containing:

Geographical position	54°35' N, 16°51' E
Main profile of activity in the region	health resort, tourist industry, sea harbour
Number of inhabitants	16 955 (2006)
Important institutions	District Heating Company EMPEC Ustka Ltd., Ustka City Hall, Municipal Hospital

### Energy data:

Energy supply (number of households or customers)	6 437
Energy consumption [GJ]	192 549 (households only)
Total heated flat area [m <sup>2</sup> ]	401 144 (flats) + 18 291 (summer houses)
Type of fuel (for heat energy)	DH (55,3%), coal (12,3%), wood (4,9%), oil (12,3%), natural gas (10,7%), electricity (4,5%)

### Climatic data:

Average yearly temperature	7,38 °C
Average of heating days per year	238
Hours of sunshine per year	1 639
Degree-days	3 958
Mean wind speed	5,5 m/s

## → Context

At present the main energy carrier for Ustka is coal, with the 38% share in the energy consumption. The other energy carriers are: gas, oil, wood and electricity. The intention of the City is to decrease the share of coal. The district heating system and gas system are planned to be developed and it is planned that the basic energy carriers will be gas and district heating, with the target of energy production based on gas and wood and that the share of oil and electricity will go down. At the first stage the production of district heat will be based on coal combustion and it is only planned to replace one coal fed boiler with a boiler fired with wood chips for the production of h.t.w. The remaining boilers will be replaced with by gas systems in the future.



## → Experience of the city

**Partnership process:** The district heating company EMPEC Ustka Ltd. is owned by the Municipality (major shareowner) and the company E.ON Sverige. Therefore it cooperates both with the representatives of the municipality and the Swedish partner. It also has good relations with the energy end-users and its activity is aimed at the acquisition of new heat end-users. The municipality carries out its primary duties within the scope of heat supply and municipal housing.

### Technical data:

#### – Modernization of the district heating system

Stage I – installation of the boiler fired with wood chips of 2 MW of capacity for the production of hot tap water for the district heating system. Stage II – installation of combined district heating units of total capacity 4 MW<sub>e</sub> and 5,6 MW<sub>th</sub>, which altogether with the installation of the biomass fed boiler and the peak-load boilers of total capacity 11,4 MW, fired with natural gas or biogas, depending on the current prices of these energy carries, will cover about 75% of heat demand.

#### – Thermal retrofitting and revitalization of buildings

Most of the multi-family buildings have been already thermomodernized. The completion of thermal retrofitting of multi-family residential buildings and the revitalization of old fisherman's houses are ongoing.



District Heating Plant of EMPEC Ustka Ltd.



The revitalized old fisherman's house at Kosynierów street in Ustka before and after modernization (Source: Ustka Public Building Society –UTBS)



## → Cost and benefits

**Economical:** The cost of reducing CO<sub>2</sub> emission generated by district heating system, obtained as a result of both stages of the modernization will amount to 12 €/1 t CO<sub>2</sub>.

**Environmental:** The considerable reduction of emission generated by the heating systems is significant due to the spa character of Ustka.

	Present situation	2015	2025	Emission [t/year]	Change [%]	Emission [t/year]	Change [%]
	a	b	b1	c = a-b	d = c/a * 100	c1 = a-b1	d = c1/a * 100
SO <sub>2</sub>	141,56	116,5	13,1	25,03	17,7	128,51	90,8
NO <sub>2</sub>	29,38	27,1	23,9	2,33	7,9	5,50	18,7
CO	459,49	395,5	41,4	64,04	13,9	418,11	91,0
Dust	275,24	231,9	17,4	43,38	15,8	257,85	93,7
CO <sub>2</sub>	30 854,45	25 947,8	18 652,7	4 906,64	15,9	12 201,71	39,5

## → Evaluation and Outlook

The project is at the phase of planning with regard to the modernization of the district heating system. The other activities such as the thermal retrofitting of the multi-family buildings are nearing completion – about 30 buildings in total are undergoing this process. The concept of revitalization is also under realization. Old fisherman's houses are being reconstructed and the Chopin street, Zaruski street and Beniowski street in the revitalized part of the town are being modernized (not only the surface layer but the underground installations, such as the sewage system, water conduit and electric mains, as well the lighting). The municipality obtained the funds for the modernization of the infrastructure. The buildings revitalized by Ustka Public Building Society are being sold on the free market and the revenues obtained in this way are used to finance housing for citizens with lower income. This solution has proved to be successful. The town enhances its image and the quality of the air in the town will improve.

## Further information

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Ustka

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