

District heating in Poland

the general information

**Chamber of Commerce
Polish District Heating**

 **Izba Gospodarcza
Ciepłownictwo Polskie**

Chamber of Commerce Polish District Heating

Over 240 members

Head Office

4 Regional Offices

Training
Centre

Marketing
Centre

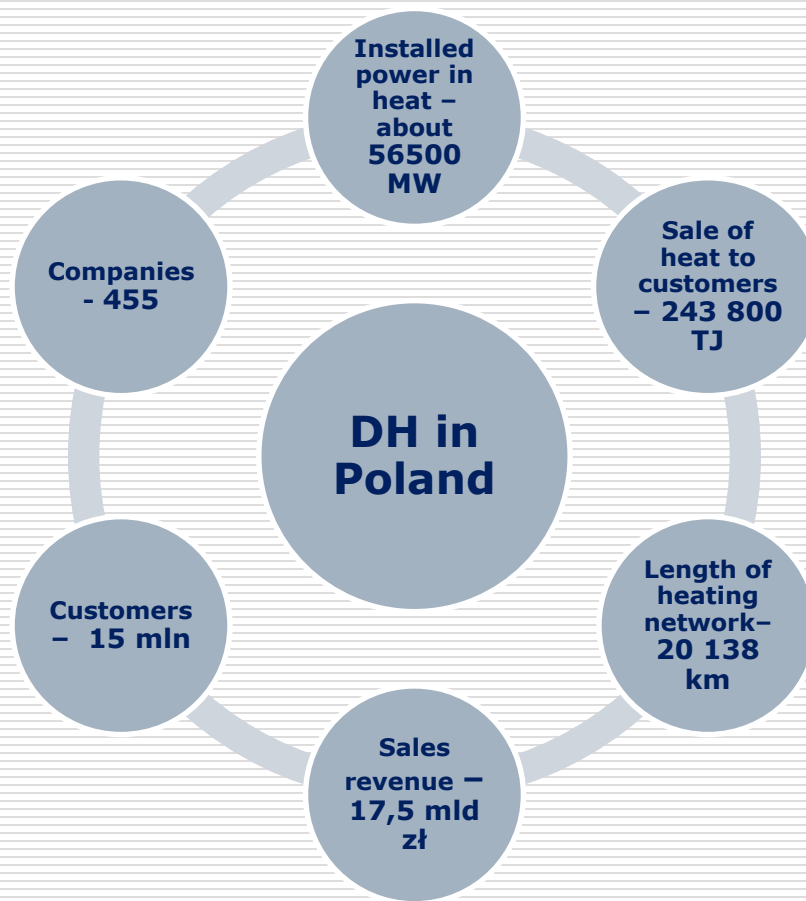
Working
Groups

□ Main activities

- **Integration** of the DH industry;
 - **Representation** of the interests of DH companies in the Government and Parliament;
 - **Support** - legal and economic;
 - **Training** - meetings, conferences, publications.
-

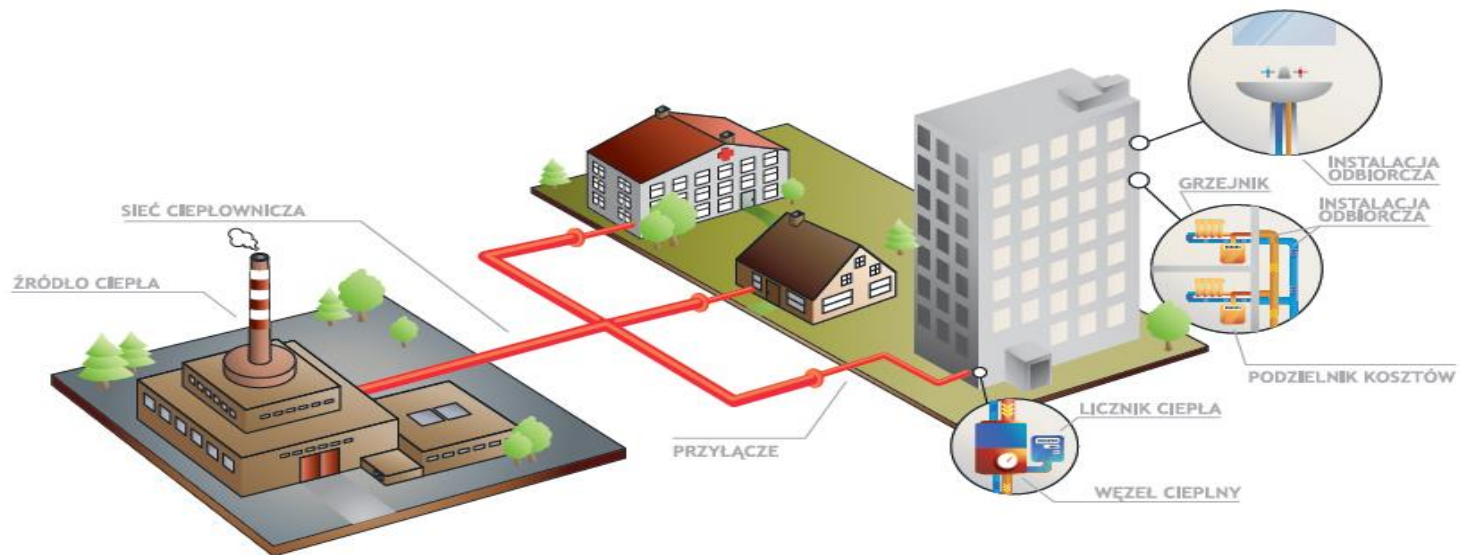
District heating in numbers

Source: Energy Regulatory Office report - 2013



Basic information about district heating

District heating always has local character and concerns local heat markets



In Poland, around 15 mln people use district heating
The participation of district heating in meeting demands for communal heat in cities amounts to around 60%

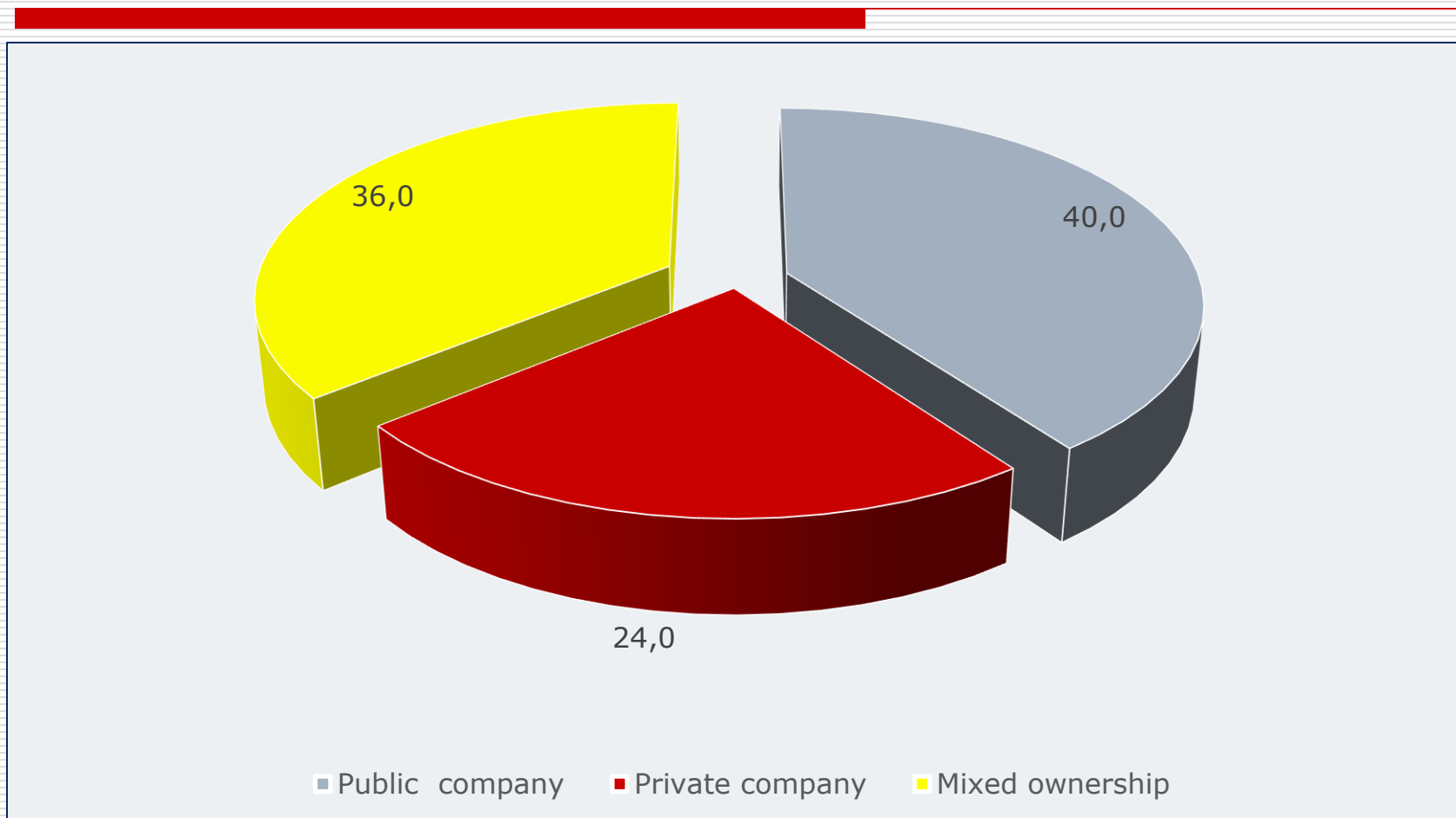
The structure of heat supply for householders

	Poland / % /	Cities in Poland / % /
District heating	42	59
Individual heating	38	26
Furnaces	17	12
Local heat sources	2	2
Other	1	1

Source: - Main Statistics Office – GUS 201 3

(GUS report on Housing 2011)

Structure of heating companies by type of ownership



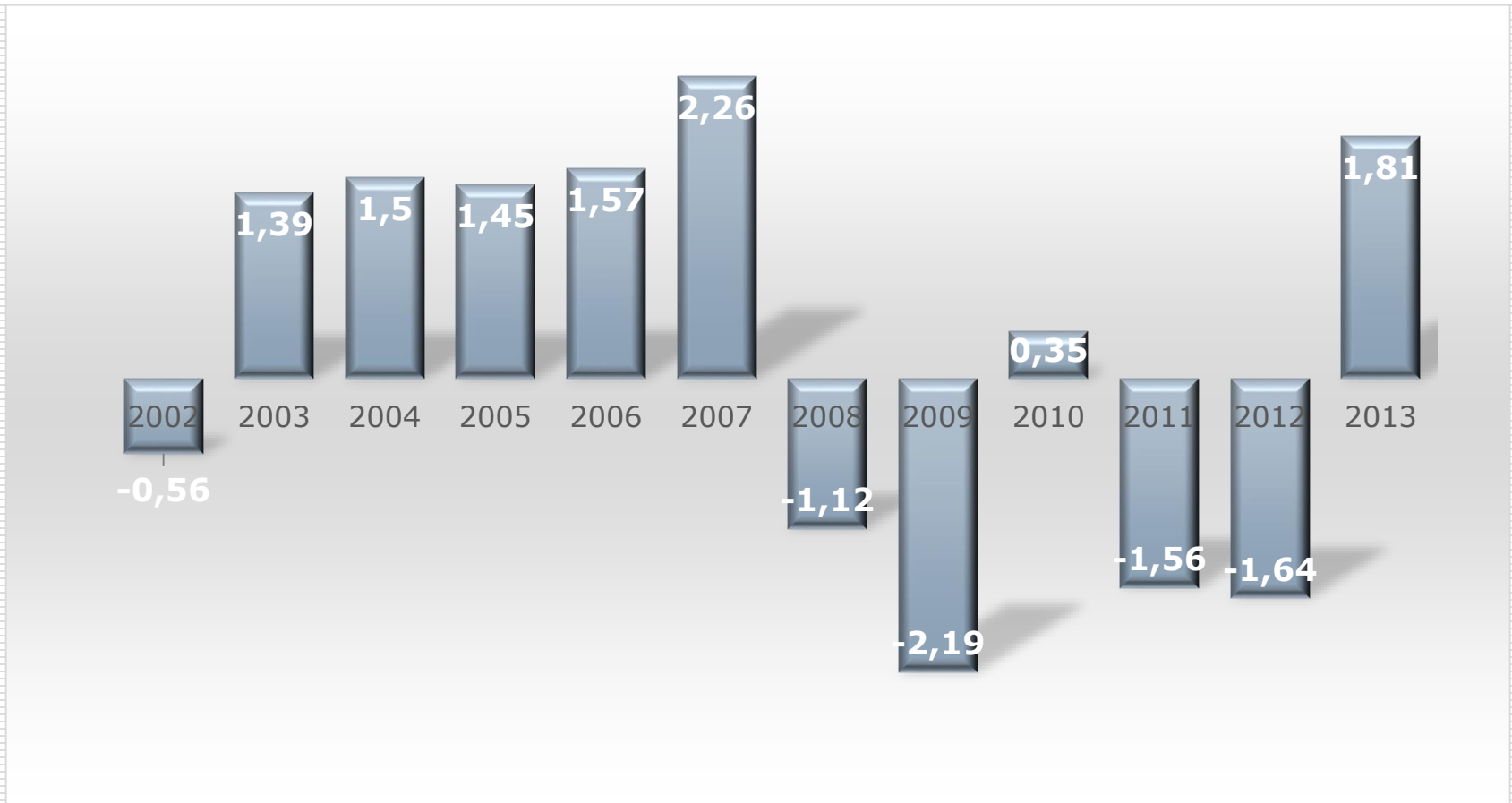
Recipient structure in Poland

Heat recipients structure	%
Housing associations	41,0
Housing communities	19,6
Municipal housing	4,8
Individual recipients	1,9
Buildings of public utility	13,1
Industry	10,5
Others	9,1

Technical and economic data describing district heating in Poland

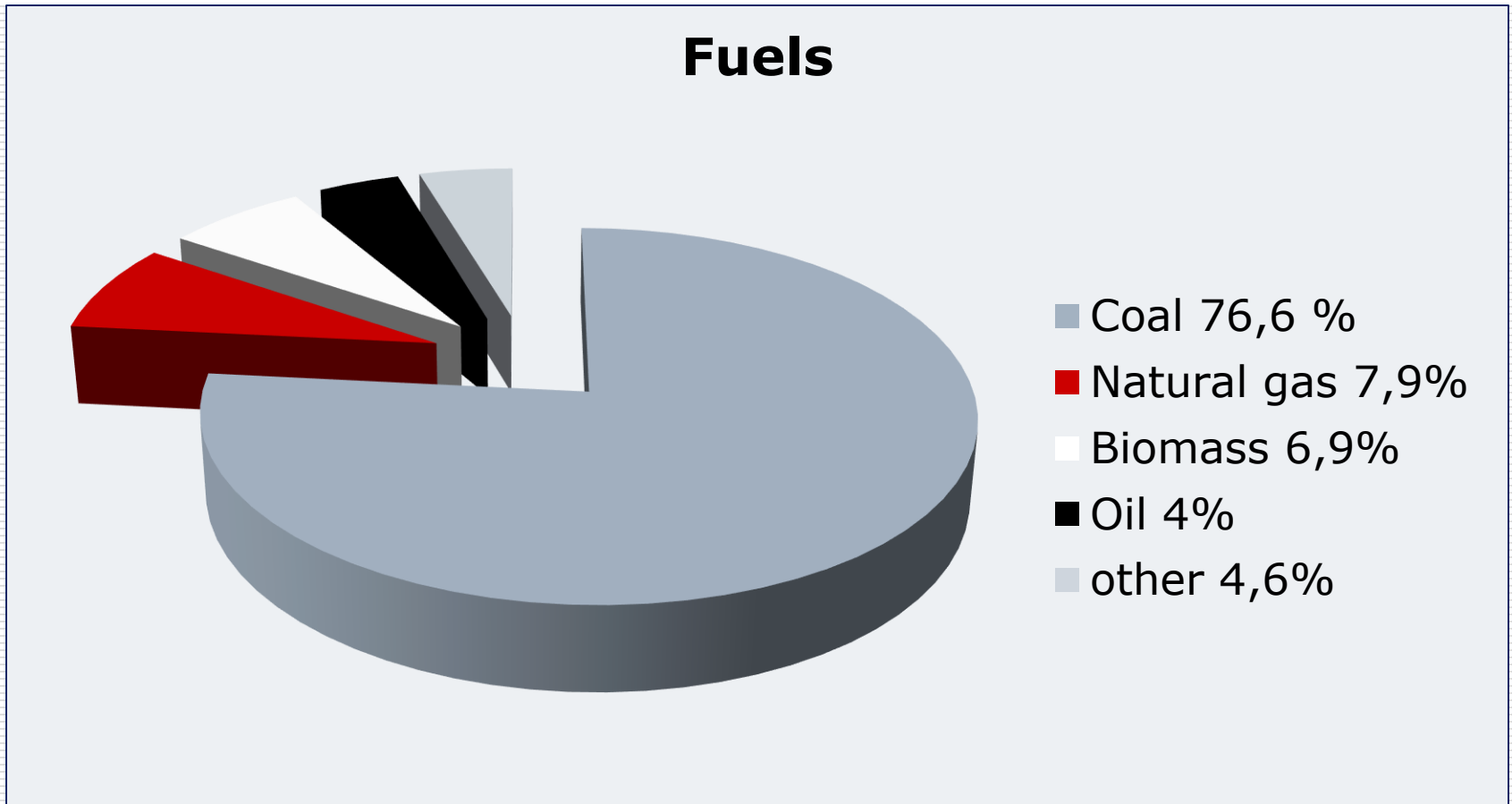
Specification	Measurement unit	Value in:		
		2011	2012	2013
Number of licensed heating companies	-	476	463	455
Installed heating power	MW	58 300	58 140	56 520
Heating power ordered by receivers	MW	34 470	34 400	33 940
Annual heat production	TJ	392 000	399 670	381 910
including CHP	TJ	252 200	249 960	247 700
Annual amount of heat provided to receivers connected to network	TJ	240 400	248 000	243 800
Length of heating networks	km	19 620	19 790	20 138
Annual incomes	PLN (in thousands)	15 430 000	16 780 000	17 500 000
Profitability	%	-1,56	- 1,64	1,81
Decapitalization	%	56	52	51,6

Profitability of activities in DH company (in %) (by URE)



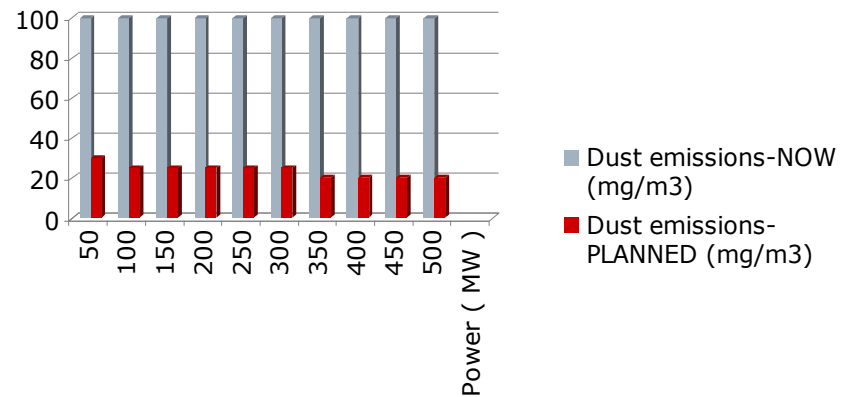
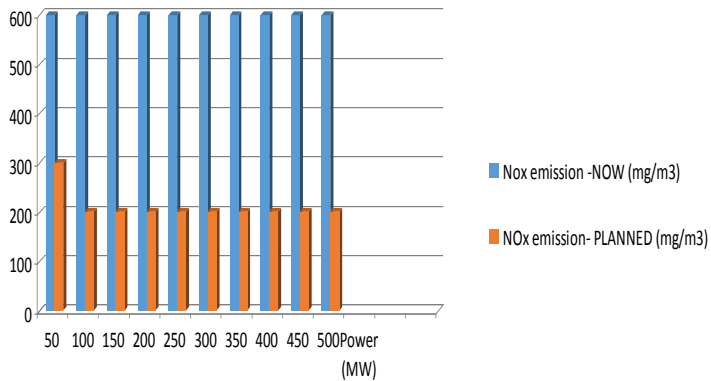
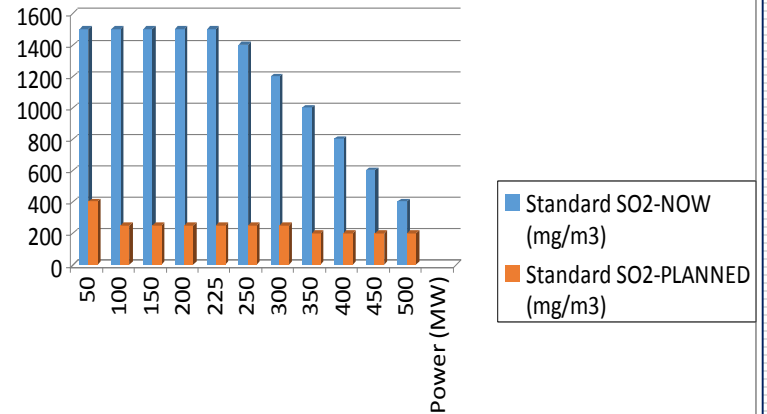
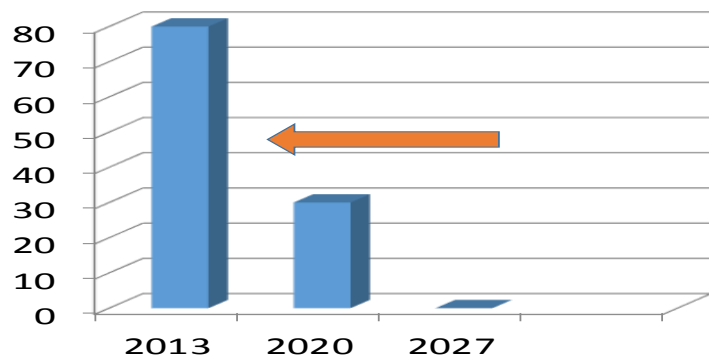
Profitability = (Revenues - costs) / (Revenues).

The structure of fuels used in DH in Poland



Investments required by the EU climate and energy package

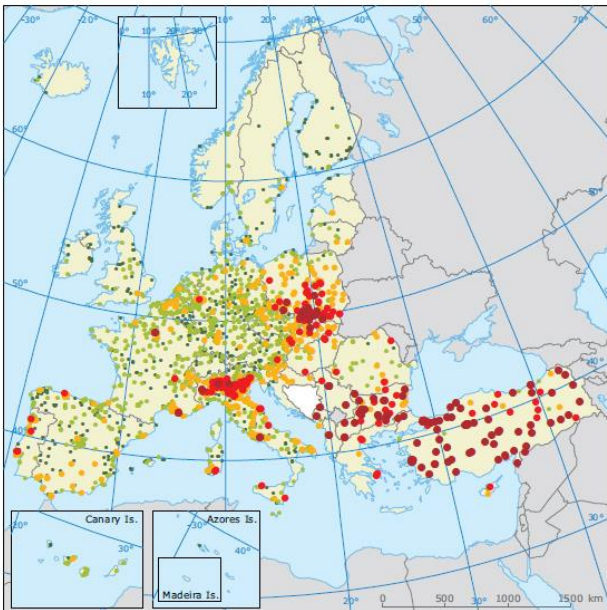
The share of cost-free permits in % for three border dates determined for district heating in the directive



The necessity of liquidation of the low emission

Air quality in Europe – EEA report for 2013

Average annual mean particulate matter (PM₁₀)

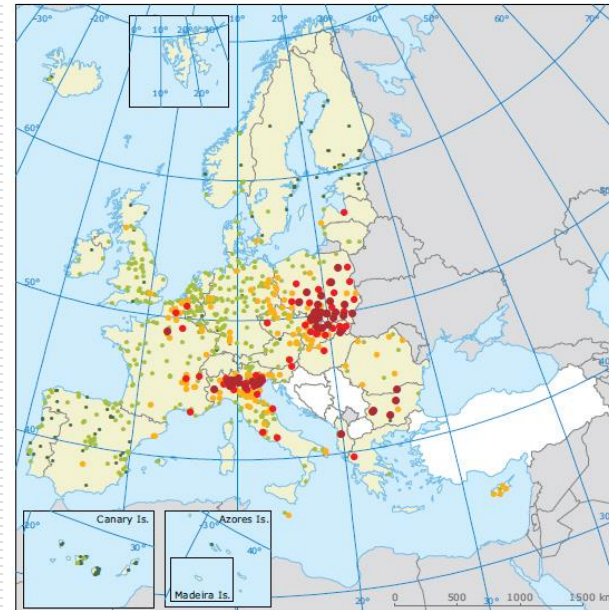


Annual mean particulate matter (PM₁₀) 2011, based on daily average with percentage of valid measurements $\geq 75\%$ in $\mu\text{g}/\text{m}^3$

- ≤ 20
- 20-31
- 31-40
- 40-50
- > 50

□ No data
■ Countries/regions not included in the data exchange process

Average annual mean fine particulate matter (PM_{2.5})



Annual mean fine particulate matter (PM_{2.5}) 2011, based on annual average with percentage of valid measurements $\geq 75\%$ in $\mu\text{g}/\text{m}^3$

- ≤ 10
- 10-20
- 20-25
- 25-30
- > 30

□ No data
■ Countries/regions not included in the data exchange process

Europe's most polluted cities

(source: The New York Times, according to EEA)

Cities in Bulgaria and Poland had the highest levels of air pollution, as measured by concentrations of particulates, in a survey of 386 European Union cities.

Most polluted European cities

Level of pollution in selected cities

Average number of days in 2011 with PM pollution exceeding EU target (max 35 days/year)

Nr	City/country	Days above target	Nr	City	Days above target
1	Pernik / Bulgaria	180,0	43	Venice	85,0
2	Plovdiv / Bulgaria	161,0	57	Bucharest	69,0
3	Cracow / Poland	150,5	87	Budapest	54,4
4	Pleven / Bulgaria	150,0	117	Frankfurt	37,0
5	Dobrich / Bulgaria	145,0	136	Berlin	31,5
6	Nowy Sącz / Poland	126,0	150	Brussels	28,5
7	Gliwice / Poland	125,0	204	Amsterdam	20,8
8	Zabrze / Poland	125,0	225	Birmingham	18,0
9	Sosnowiec / Poland	124,0			
10	Katowice / Poland	123,0			

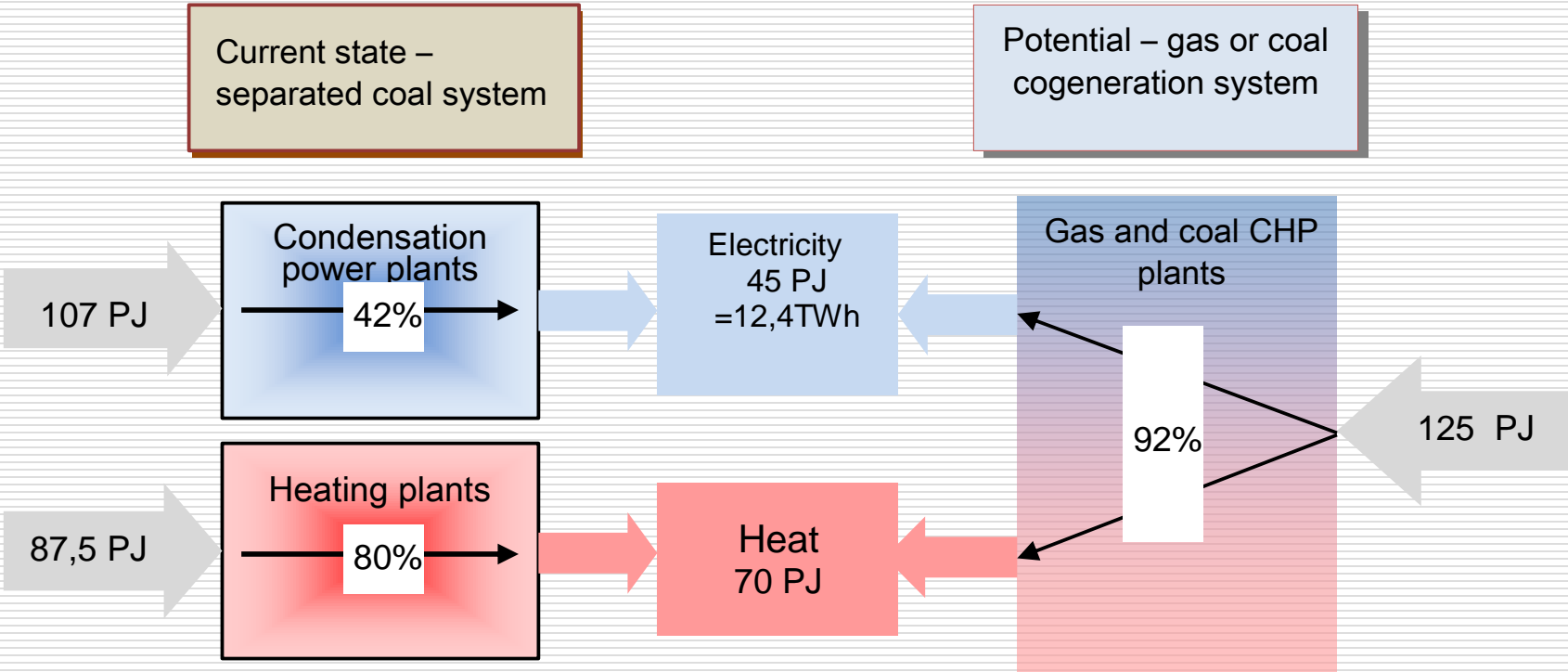
The potential of district heating in the liquidation of low emission

- According to statistics provided by GUS (Main Statistics Office) for 2011, 10 million tons of hard coal is burned annually for individual heating in Poland. Taking into account the fact that the efficiency of these installations is significantly below 65%, it is assumed that around 4 million tons of hard coal is being wasted. These devices produce 178 000 TJ of heat.
- In order to make a comparison, it is worth looking at the process of district heating production. In heating- and CHP plants, coal burning takes place with an average efficiency of 85,3%, while transportation of heat - 87,3%, what, in effect, gives a combined production and transportation efficiency at the level of 74,5%.
- **Comparison of dust emission during the production of 178 000 TJ of heat**

Type of pollution	Individual heating	District heating
dusts	101.000 tons	10.000 tons

Potential of development of high-efficiency cogeneration

Ecological effect of cogeneration systems – 30% lower emission



Requirements related to RES participation

for district heating in Poland will amount to 17% in 2020

Increasing share of RES

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Heat /%/	12	12,3	12,6	12,9	13,2	13,6	14,3	15	15,7	16,2	17,0
Electricity /%/	6,2	7,22	8,22	9,25	10,4	11,52	12,9	14,35	15,68	17,73	19,43
Transport /%/	5,3	5,8	6,6	7,2	7,8	8,3	8,7	9,1	9,6	10	10,2
Total share /%/	9,1	9,6	10,2	10,7	11,2	11,7	12,5	13,2	13,9	14,7	15,5

Source: State Plan for RES

Waste production and utilization quantity and quality, Polish market data

Quantity of municipal waste production	12-13 mln t/year	
Fraction of municipal waste for combustion (after selecting hazardous and recyclable waste)	6-6.5 mln t/year	
Industrial waste for combustion	3.5-4 mln t/year	
Total waste for combustion	ca. 10 mln t/year	
Energy value of waste	8-10 GJ/t	10 mln tones of waste will save ca. 30% of coal
Current status	86% of waste goes to landfill (in the non-processed form)	ca. 9% - segregated waste ca. 4.5% - waste after mechanical-biological process
Combusted waste	ca. 0.5 %	one waste incinerator
Waste incinerator building projects in progress	6	

Development of district cooling

The benefits of the association of processes of electricity, heating and cooling generation:

- more efficient use of primary energy
- reduction of CO2 emission
- elimination of environmentally harmful CFC's used in compressor units
- improvement of economic efficiency of domestic heating systems
- increase of electricity production in in summer peak load of power system

The main benefit of cooling production is the possibility to use heat produced in summer periods in installations provided with cogeneration units

In major Polish agglomerations provided with heat from CHP plants, there are favorable conditions for associating the processes of electricity, heat and cooling production.

According to the President of Energy Regulatory Office:

*The emergence of a new economic activity, which is already functioning in EU Member States' economies, i.e. **the production and sale of heat based on district heating** on domestic market, would be positive.*

The development of the awarenesses (in exactly definite groups of approach)

Project of the Polish Chamber – broader view

Marketing program covering all Poland

Old product – new product brand called 'System Heat' , promotion of DH and cogeneration

CONSUMER

end user of heat network

DESIGNER

specialists designing installations

architect executing the project

HEATING ENTERPRISES

system heat distributors

CLIENT

housing associations and communities

commercial and individual recipients (agreement)

MEDIA

journalists dealing with heat branch (local and covering all Poland media)

CHP PLANTS HEAT PLANTS

system heat producers

INVESTOR

executing investments

AUTHORITIES

local and state

COMPANIES COOPERATING WITH DH SECTOR

Program partners

District heating in Poland - the general information

Thank you for your attention

Jacek Szymczak

Tel. +48 022 6447019

bi.warszawa@igcp.org.pl

Chamber of Commerce
Polish District Heating

