

## Market overview and main development barriers

Subject:	Solar District Heating (SDH) in Poland – the market overview and main development barriers
Description:	This study shows the overall situation in Poland and the main problems of joining the implementation of investments in large-scale solar collectors systems.
Date:	15.01.2018
Authors:	Aneta Więcka, Justyna Zarzeczna - Institute for Renewable Energy
Document download:	<a href="http://www.solar-district-heating.eu/">www.solar-district-heating.eu/</a>

### Summary description of the instrument

Region: Poland, provinces: Warmia-Masuria and Greater Poland

Partners involved:

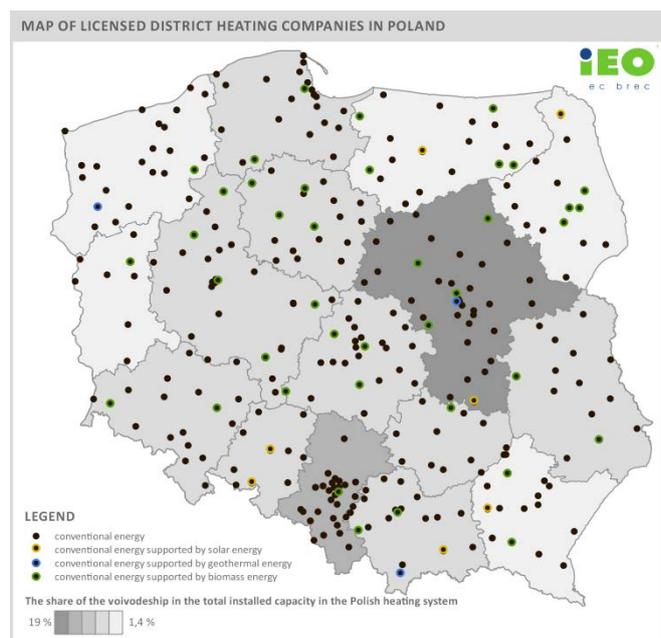
- Institute for Renewable Energy
- District Heating Company in Olsztyn
- District Heating Company in Ostrów Wielkopolski

Short description of the measure.

This study shows the overall situation in Poland and the main problems of joining the implementation of investments in large-scale solar collectors systems.

### Initial situation

Poland is one of the leading European country in district heating systems. In year 2015 district heating system (over 5 MW) is installed capacity of 56 GW, network length of over 20 thousand kilometers and a production of approximately 345,6 PJ of heat. Currently, there are 377 licensed companies in Poland. Only 8,3% of these companies does not have a district heating network. Only 15% of DH systems can be regarded as efficient according to the requirements of the EC Directive on energy efficiency and only



in 7 companies (on 377) solar collectors were installed. But, there are very small installations (so they



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691624*

## Market overview and main development barriers

cannot be called solar district heating systems) and the energy produced from them is only a fraction of the needs of the DHC.

In Poland, there is lack of information about non-licensed district heating companies (capacity less than 5 MW). In national emissions database, there are more than 3100 combustion plants with capacities of more than 1 MW and over 39,000 combustion sources with power of less than 1 MW. The fuel used in the majority of them is hard coal, and, especially in small DHC's, it is a low quality coal.

### Objectives

The objective of is to indicate the overall situation in Poland on the renewable energy district heating market and show the main problem of the implementation of investments in large-scale solar collectors systems in district heating companies. In the analysis, indicated the main barriers of development of solar district heating on the two examples district heating companies.

The goal is also further raise awareness of solar district heating systems.

The analysis will also result in the presentation of a simple calculation formula to interested parties on selected examples, allowing to determine the size of solar collector installations and the required area.

### Measures and actions

The first step was to analyze the overall situation of heating companies and to identify the main reasons that the SDH systems doesn't develop in Poland.

One of the main reasons was the lack of the space for this type of investment. So, on selected companies we checked the legitimacy of this problem through making sample analyzes regarding the space.

An additional activity undertaken on the occasion of various meetings and trainings is the dissemination of knowledge about solar thermal systems together with the presentation of the results of the analyzes carried out.

Another taken action is support for interested entities through making feasibility studies.

### Barriers and opportunities

The main barriers that stopped the development of solar district heating in Poland are outlined below.

The main barrier in the case of joining the implementation of investments in large-scale solar collectors systems is the lack of financing for this type of investments.

The next important barrier is the lack of the space for investment like solar district heating. District heating companies very often have free space only on the roof, and besides that this space is usually very small, the possibility of it use is also limited due to building barriers and other restrictions.



## Market overview and main development barriers

Sometimes companies have free space or they can rent it for example from the farmers, but there is another legal barrier - no possibility to use agricultural areas with high bonitation classes for this type of investment.

Another important barrier is the lack of knowledge about the potential of solar district heating and possibilities to use this solution in another way than domestic hot water production. It should be noted, however, that in this respect there has been a very big change due to the implementation of the project.

In Poland we haven't got information about unlicensed heating companies (the power under 5 MW). The fuel using in majority of this companies is coal (wherein, especially in small companies, the coal is low quality).

But the opportunity is the fact that the Poland is one of the leading countries in terms of district heating system. Along with the increasing knowledge about solar district heating, there are chances, despite the existing barriers, for the implementation of solar district heating systems.

## Results

Below presented summarized results of the analysis regarding the area available to the two selected district heating companies. The analysis also included determining the area required to obtain 50% of solar energy in order to create an efficient heating system. The results confirm the identified problem which is the lack of sufficient space.

Table 1 Summary of the analysis of the surface of Ostrowski Zakład Ciepłowniczy, source: IEO

The area that the company has	The surface of solar collectors	Energy generation			Total installed capacity of solar collectors	Share of solar collectors in the total installed capacity of the company	Share of solar collectors in heat production by the company	The capacity of energy storage needed
		MJ	GJ	MWh				
26 210 m <sup>2</sup>	8 737 m <sup>2</sup>	14 153 400	14 153	3 932	8,7 MW	7,2%	1,9%	10 484 m <sup>3</sup>

Table 2 Summary of the analysis of the surface of MPEC in Olsztyn, source: IEO

Roof area [m <sup>2</sup> ]	The surface of solar collectors [m <sup>2</sup> ]	Energy generation		Total installed capacity of solar collectors	Share of solar collectors in the total installed capacity of the company	Share of solar collectors in heat production by the company
		MJ	MWh			
8 964 m <sup>2</sup>	2 988 m <sup>2</sup>	4 840 560 MJ	1 344,6 MWh	2,988 MW	2,0%	0,48%



Market overview and main development barriers



Figure 1 The area available on the OZC headquarters, source: IEO



Figure 2 The area available on the heat and power plant, source: IEO



Figure 3 The are available on the MPEC in Olsztyn, source: IEO

The analysis was more detailed, but only selected maps were presented here.

Lessons learned



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691624

## Market overview and main development barriers

The main problem with solar district heating is available area and legal barriers to its use. One of the ways to solve this problem is the installation of systems on the roofs or on the area of rehabilitated landfills. For example, there are examples of photovoltaic farms on the area of rehabilitated landfills in Poland. So, it could be possible to use successfully to install new solar collectors systems.

In Poland, there is no any information about unlicensed heating companies (the power under 5 MW) which constitute a significant part of this market and constitute a great place to implement large-scale solar collectors systems.

District heating companies need support program to finance the SDH systems because to total up front cost of the investment is too big and it is the main barrier in the case of joining the implementation of investments in large-scale solar collectors systems. But this problem in near future can be solved, because Institute for Renewable Energy is working on the new national program which will be support this kind of investment.

┌ *The sole responsibility for the contents of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the European Commission nor the authors are responsible for any use that may be made of the information contained therein.* ┐



*This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 691624*