DISTRICT HEATING MARKET IN POLAND

Polish heating industry is undergoing a transformation with regard to implementing European climate and energy policy in areas of emission reduction, use of renewable energy and cogeneration. Simultaneously, the sector is supported by the EU allocation of funds (2014-2020) and governmental policies.

The Polish heating sector urgently needs modernization

According to census from 2016, 59% of heat is produced within district heating system by companies (60% in urban and 4% in rural areas), 26% stands for individual boilers, 12% for furnace heating mostly harmful for the environment and 2% from local sources. Poland ranks third in Europe with regard to demand for systemic heat.

In 2017, 412 district heating companies which are operating on the basis of concessions issued by the Energy Regulatory Office (URE) maintained an installed thermal power of 54,911.8 MW. The length of operated heating networks amounted to approx. 21,084 km. The share of heat generated in co-generation with electricity production accounted for 61% in 2017 and remained on the same level for the past several years.

The structure of energy carriers is vastly different than in Denmark. The heating industry is still heavily relying on fossil fuels with 75 % heat generated from coal (2016). Renewable energy (particularly biomass) stand for 10.4 % and 3.9% gas.

The prices and energy carriers structure in Poland will be relying on EU climate policy till 2030. The EU support for investments in heating and energy sector in Poland for 2014-2020 amounts to 27.4 billion EUR within the Operational Program Infrastructure and Environment and additional 2.85 billion EUR within Cohesion Fund and European Regional Development Fund. The support for individual project can reach up to 70% of eligible costs depending on program, location and company size.

The funds are intended for lowering the emission by i.a. construction of RES installations by companies, reconstruction of heating and cooling network to minimize the losses on transit, change of energy carriers, prioritizing the investments in areas with high pollution level PM10. The support for cogeneration entities with capacity over 20 MW is excluded.
Ministry of Energy presented in 2016 the analysis of cogeneration potential in Poland, based on EU requirements. According to the prognosis the demand for heating and cooling in Poland in 2025 will grow from 304 TWh in 2015 to 324 TWh, mostly due to 15% increase in the industry, construction and agriculture sector. Currently, over 60% of systemic heat is used by residential buildings. The demand for district cooling will grow by 300% till 2025. The overall capacity of cogeneration sources might reach 11 thousand MW (75% growth). The MoE analysis assumes full conversion from existing coal source for gas and biomass.

**Plans for modernisation**

District heating sector in Poland requires fast modernisation. In the perspective of the next 10 years functioning of district heating systems will be threaten by lack of activities limiting environmental impact. Poland has one of most developed district heating network in the EU. It creates favourable conditions from the perspective of environmental impact and effective usage of primary energy. In the years 2002 -2017 there has been recorded constant grow of investments in district heating sector in Poland. The main challenge of today are not effective district heating system, according to the EU regulations, growing prices of CO2 emission and growing coal prices. Modernisation trend is going to be continued driven by the EU regulations and market demands.

The Polish government is developing the strategies for modernisation of energy sector in Poland including district heating followed by financing schemes.

The development of effective district heating systems requires new technologies and change of financing models in the investments. The district heating sector is aware of the fact that heat production technologies should be changed into RES, WTE or cogeneration, which would follow recommendation of Directive 2012/27/UE. The co-financing of efficient district heating plants with the public support (EU and national) is only possible in cases of projects based on cogeneration, waste or RES.

Transformation of currently functioning energy systems into effective systems will, in many cases, involve installation of biomass boilers. That will require providing regular availability of sustainable and biomass in a sustainable price.

As an example of new biomass investment, it has been announced in January 2019 that in Kalisz-Piwonice CHP Plant, a cogeneration biomass block will be built. The investment, supported by European funds by the National Fund for Environmental Protection and Water Management with the amount of PLN 57 mln, will make it possible to shut down obsolete coal-fired generation equipment from service.

There are number companies in Poland that are already modernizing, eg district heating plant in Radom and Olsztyn are considering building a huge waste incinerator that would produce electricity and hot water. Incineration plants can be an optimal solution because the EU requires the reduction of waste on landfills.

Modernisation of district heating sector will also include extension of district heating network. The need of new district heating network is driven by the smog problems in Poland, especially in the areas where heating in individual houses is based on home stoves based on coal and waste. The district heating network will help to connect individual houses and limit the emissions.

The heat prices has been growing in Poland in the small cities where there are small district heating operators working on old systems. In the cities over 500 thousand heat costs account for 4.33% of the average disposable income of households, and in cities under 20 thousand
the heat cost account for 5.76%. Small heating companies face greater difficulties than the big ones, in accessing capital for investment, and without modernization there is a prospect of lack of access to public aid.

In addition, the promotion of thermomodernisation in buildings - good for reducing costs and reducing emissions. The situation from 2018 shows that along with termmodernization of houses, the district heating companies extended number of households connected to the district heating grid. One of the examples is PGE Torun, a part of PGE Energia Ciepla, which connected over 80 new facilities form the primary and secondary market of the total capacity 11.28 MWt to the heating network last year.

On the 7th January 2019 the new legislation on promotion of electricity produced form cogeneration came into force. It will help to ensure the security of heat and electricity supplies in Poland. The Act introduces a support system in line with EU regulations, which will replace the system based on certificates of origin expiring at the end of 2018 and will consist in payment of appropriate bonuses for producing electricity. Sources with an emission below 450 kg of CO2 per MWh of generated energy (electricity and heat) will be allowed for it. The Act introduces a support system in line with EU regulations, which will replace the system based on certificates of origin expiring at the end of 2018 and will consist in payment of appropriate bonuses for producing electricity. Sources with an emission below 450 kg of CO2 per MWh of generated energy (electricity and heat) will be allowed for it.

Poland has optimal conditions for developing effective heating systems due to prevalence of existing networks (large and medium sized cities), stable and predictable demand (basic indicator for cogeneration installations), and possibility of waste usage for energy generation (including industrial waste) and because of the scale effect the possibility of effective RES usage (local biomass, solar and geothermal energy). Danish companies are vastly recognized and appreciated in the green technology area in Poland.