

District Heating in the EU's Comprehensive Assessment Under Energy Efficiency Directive

Maciej M. Sokółowski *

Around 68% of the European Union's population lives in cities, and the majority of the EU's buildings are in high heat density areas, which is reason enough to use and develop district heating in Europe. In comparison to other European regions, the Baltic Sea Region has a well-developed district heating, and district heating is expected to continue to play a prominent role in the Region's heating sector, with the potential to expand district heating networks in certain areas. Nonetheless, European district heating occupies a different position in the energy sectors of the EU's member states. To develop it, various European programmes (for example, the South Baltic Programme) are available, as well as legislation, such as Directive 2012/27/EU on energy efficiency (Energy Efficiency Directive, EED) is offered.

Around 68% of the European Union's population lives in an urban area.¹ Furthermore, a majority of the EU's buildings are in high heat density areas, what in itself is a reason for using and developing district heating in Europe.² Although, there are also others arguments. For instance, according to a report of the European Commission's Joint Research Centre "[d]istrict heating can meet much of the EU 27 fabric heat loads, ventilation loads and domestic hot water load in a low carbon and energy-secure and cost effective (indigenous) fashion with the existing building stock."³

Nevertheless, the European district heating has a different position in the energy sectors of the EU's Member States. Compared to other regions of Europe, the Baltic Sea Region has a well-developed district heating system.⁴ The gross demand for district heating in region is

* Maciej M. Sokółowski is the Swedish Institute alumni, a researcher at the University of Basel, Institute for European Global Studies.

¹ Eurostat, "Eurostat Regional Yearbook 2011" (Luxembourg: Publications Office of the European Union, 2011), 15.

² David Connolly et al., "The Role of District Heating in Decarbonising the EU Energy System and a Comparison with Existing Strategies," 1, accessed May 9, 2014, http://vbn.aau.dk/files/81360221/SDEWES8_Paper_David_Connolly_et_al.pdf.

³ David Andrews et al., "Background Report on EU-27 District Heating and Cooling Potentials, Barriers, Best Practice and Measures of Promotion" (Luxembourg: Publications Office of the European Union, 2012), 10.

⁴ Baltic Development Forum, "Energy Perspectives of the Baltic Sea Region: Study on Enhanced Regional Energy Cooperation in the Baltic Sea Region" (February 2009), 9, accessed May 9, 2014, http://www.bdforum.org/cmsystem/wp-content/uploads/files/projects_energy_study_march_version.pdf.

2050 PJ (570 TWh) that corresponds to some 43% of the demand for electricity.⁵ Moreover, in the scenarios for the Region's energy sector district heating is assumed to play an ongoing prominent role in the heating sector, with a potential to expand district heating grids in parts of the Region.⁶

District heating, offering huge benefits as combined heat and power generation increases the fuel efficiency of power plants from around 40% (electricity only) to approx. 90% (electricity and heat),⁷ is correlated with the European Union's policy on energy sector. E.g. as stated in one of the strategic EU's documents on this issue, i.e. "A Policy Framework for Climate and Energy in the Period from 2020 to 2030" "[i]mproved energy efficiency makes an essential contribution to all of the major objectives of EU climate and energy policies: improved competitiveness; security of supply; sustainability; and the transition to a low carbon economy. There is broad political consensus about its importance."⁸ As highlighted in the Action Plan on the European Union Strategy for the Baltic Sea Region supporting energy efficiency in one of the "the cornerstones of long term-energy policy planning in the Baltic Sea."⁹

The EU's objectives of a strategic character must find their practical execution. One way of implementing them may be regional cooperation aimed at promoting energy efficiency. The project "Innovation in District Heating (Inno-Heat)," aimed at increasing "the commitment among decision makers, energy companies, local and regional authorities for energy saving investments connected with the district heating" is an example of such an

⁵ Ea Energy Analyses, "Energy Policy Strategies of the Baltic Sea Region for the Post-Kyoto Period – Focusing on Electricity and District Heating Generation (Copenhagen: Ea Energy Analyses, 2012), 20, accessed May 9, 2014, http://www.ea-energianalyse.dk/reports/1112_energy_policy_strategies_for_the_bsr.pdf.

⁶ Ibid, 13, 20.

⁷ Ibid, 20.

⁸ Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A Policy Framework for Climate and Energy in the Period from 2020 to 2030, Brussels, 22.1.2014, COM (2014) 15 final.

⁹ Commission Staff Working Document Accompanying the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Concerning the European Union Strategy for the Baltic Sea Region: Action Plan, Brussels, SEC (2009) 712/2, February 2013 version, 83.

approach. Mentioned in its title “district heating” it the project’s point of reference, determining its scope and actions within it. The “Inno-Heat” project enhances the cooperation of the EU’s Southern Baltic countries (i.e. Germany, Lithuania, Poland, and Sweden) in the field of district heating enabling a cross-border exchange of knowledge, as well as providing an analysis on district heating systems of its participants.

Financed from the European funds projects on district heating like “InnoHeat” show clearly that the European Union wants to develop this sector. Apart from the European programmes such as the South Baltic Programme district heating is supported in a much more binding way, with a use of law, both at the national and the European level. In terms of the latter, Directive 2012/27/EU on energy efficiency (Energy Efficiency Directive, EED)¹⁰ is of a crucial importance. The EU links district heating with energy savings and provisions of EED prove it. As stated in Recital 35 of Directive’s preamble “district heating ... has significant potential for saving primary energy, which is largely untapped in the Union.” In the context of promoting energy efficiency, EED introduces definition of “efficient district heating.”¹¹ This means a system consisted of renewable energy, waste heat, cogenerated heat, or a combination of such energy and heat. Besides cogenerated heat which must reach a level of 75%, other ways of generating heat have to include in their mix at least 50% of renewables, wastes or the combination of such energy and heat.

Furthermore, Article 14 of EED brings important provisions on promotion of efficiency in heating, including district heating. On this basis, by the end of 2015, the EU’s Member States shall carry out and notify to the European Commission a comprehensive assessment covering, *inter alia*, the potential for the application of efficient district heating. The scope of this examination should contain a broad range of information. Among points to present, the

¹⁰ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315, 14.11.2012.

¹¹ As a rule, under EED’s provisions district heating is combined with cooling. E.g. Article 7 (2) (c), Article 9 (1) or Article 14.

analysis should cover is a description of heating demand, with a forecast of how this demand will change in the next ten years, taking into account in particular the evolution of demand in buildings and the different sectors of industry, an identification of the heating demand that could be satisfied by high-efficiency cogeneration, including residential micro-cogeneration and by district heating. Furthermore, Member States should provide assessment of energy efficiency potentials of district heating and its infrastructure.

What should be noted, the analysis conducted under Article 14 includes establishing a map of the national territory, identifying heating demand points. Directive EED determines that it has to contain description of municipalities and conurbations with a plot ratio of at least 0,3, and industrial zones with a total annual heating and cooling consumption of more than 20 GWh. The map must also include existing and planned district heating infrastructure with potential heating supply points. This should cover district heating installations.

Besides these points, Member States should also inform the Commission about strategies, policies and measures that may be adopted up to 2020 and up to 2030 to realise the potential for additional high-efficiency cogeneration, including from the refurbishment of existing and the construction of new generation and industrial installations or other facilities generating waste heat. Member States, where appropriate, should offer their proposals referring to increase the share of cogeneration in heating and in electricity production, to encourage new thermal electricity generation installations and industrial plants producing waste heat to be located in sites where a maximum amount of the available waste heat will be recovered to meet existing or forecasted demand (similarly to encourage new residential zones or new industrial plants which consume heat in their production processes to be located where available waste heat).¹² In terms of district heating Directive these proposals should include options to develop efficient district heating infrastructure aimed at accommodating “the

¹² As proposed in EED “[t]his could include proposals that support the clustering of a number of individual installations in the same location with a view to ensuring an optimal matching between demand and supply for heat and cooling.” See Annex VIII 1 (g) (iv).

development of high-efficiency cogeneration and the use of heating ... from waste heat and renewable energy sources.” Member States should also propose solutions to encourage energy installations (i.e. thermal electricity generating installations, industrial plants producing waste heat, waste incineration plants and other waste-to-energy plants) as well as residential zones and industrial plants which consume heat in their production processes to be connected to the local district heating grid.

Mentioned proposals are correlated with Article 14 (2) of EED. Under its provisions “Member States shall adopt policies which encourage the due taking into account at local and regional levels of the potential of using efficient heating ... in particular those using high-efficiency cogeneration.” This links with the presented scope of the comprehensive assessment, specified in Annex VIII of EED. Where appropriate it is possible to use, by assembling them together, regional or local plans and strategies to conduct, to made up this assessment.

By December 30, 2015, all Member States of the European Union have to elaborate the complex assessment on energy efficiency, including district heating with ways of using its potential and promoting this sector. It has to cover many areas. Thus, comprehensive nature makes it necessary to establish the solid analytical basis for its needs. Seen in this light, as Member States shall adopt policies at local and regional levels aimed at promoting efficient heating which may be based on local plans or strategies the project “Inno-Heat” may bring an essential added value to this process. Thereby, bearing in mind these conditions as well as the obligation to elaborate the comprehensive assessment in accordance with EED, it is worth considering how the “Inno-Heat” project, covering the local aspects and assessment of the use of district heating in Germany, Lithuania, Poland, and Sweden, may support policy makers at local and regional level in fulfilling the requirements of European law.