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ScienceDirect

Energy Procedia 95 (2016) 344 – 350

Energy Procedia

International Scientific Conference "Environmental and Climate Technologies", CONECT 2015, 14-16 October 2015, Riga, Latvia

Legislative framework for sustainable development of the 4th generation district heating system

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Abstract

The concept of the 4th generation district heating system (4GDH) has triggered a magnified interest among scientists and industry representatives worldwide. Therefore, sustainable development of 4GDH requires deliberative energy planning at the national and local level, and appropriate legislative framework. The currently effective legislation of Latvia does not provide for a sufficient basis to introduce or safeguard 4GDH or other district heating (DH) systems. Methodology is developed for the evaluation of the case study and existing legislative framework. As a result, several suggestions for the improvement of the legislative framework were identified. For instance, it was suggested to raise competitiveness of the DH system, as compared to alternative heating solutions, so that DH system become more attractive to consumers, and they would prefer it based on competitiveness arguments, not statutorily imposed mandatory obligations. Also, in case the state performed a comprehensive DH potential evaluation, this could be used as a benchmark for refusal of new heat production projects based on purely economic and consumer protection arguments.

Peer-review under responsibility of Riga Technical University, Institute of Energy Systems and Environment.

Keywords: district heating; energy efficiency; energy plan; legislative framework

1. Introduction

The concept of the 4th generation district heating system (4GDH) has triggered a magnified interest among scientists and industry representatives worldwide. Technical, environmental and economic aspects of this energy-

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Peer-review under responsibility of Riga Technical University, Institute of Energy Systems and Environment.
doi:10.1016/j.egypro.2016.09.020

efficient low temperature district heating are analysed in several articles. Practical implementation of this innovative system requires input from all stakeholders – heat producers [1, 2], consumers [3], investors [4] and governments [5, 6]. Therefore, among other things, sustainable development of 4GDH requires deliberative energy planning at the national and local level, and appropriate legislative framework [7].

Fig. 1 demonstrates one of the possible solutions for sustainable coverage of district heating heat load by using different types of alternative energy sources (Q_1 and Q_2), and cogeneration technology (Q_{CHP}). The forecast is that the increased energy efficiency of buildings will decrease the overall heat load (Q_{SD}). This needs to be considered at the level of national and local energy planning. Similar situation is described by Späth&Rohracher [8], while analysing potential problems, in case energy planning contains contradictory strategies, for instance, simultaneous reduction in the heat demand and construction of a new efficient heat production plant.

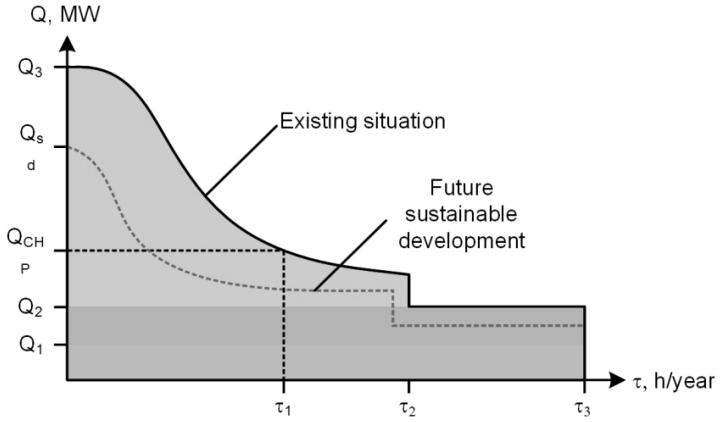

Fig. 1. Development of the 4GDH system. Scenario 1: three energy sources & accumulation.

The main aim of the article is to analyze the current legislative framework of Latvia for the implementation of 4GDH by basing the analysis on the current case study of Riga, the capital city of Latvia.

2. Existing regulation

The core principle of the European Union (EU) law is an effectively functioning common internal market without frontiers, a mandatory precondition of which is as high the level of free market competition as possible [9]. Since Latvia is a member state of the EU, its national legislation is subject to the said overarching core principle of EU law. Under this legal structure, market regulation is permitted only as an exception, and to the minimum extent required [9, 10].

Article 105 of the Satversme, the Constitution of the Republic of Latvia, grants all individuals with the right to own property [11]. However, this individual right is not absolute, and is subject to the following limitations: (a) property shall not be used contrary to the interests of the public (limitation A), and (b) property rights may be restricted only in accordance with law (limitation B) [12]. From the aforementioned, the Energy Law derives further that any individual owning a building has the right to choose the most beneficial type of heating for their buildings [13]. As a rule, price is considered one of the main criteria when giving preference to one or another heating solution. The said stipulation of the Energy Law simultaneously falls under the above stated EU law principle, as choice of the consumer is one of the core-driving tools of the free market, when functioning properly at full competition.

In Latvia, district heating is subject to market regulation implemented by the Public Utility Commission (PUC). While exercising its functions and approving resolutions, PUC is independent, and therefore is not subject to any control from other government institutions. Resolutions and activities of the PUC shall abide international and national laws binding for Latvia, and are subject only to court control. In general, market regulation includes regulation and monitoring of market functioning, approval of tariffs and enhancement of competition to favour, where possible, the consumer right of choice and to protect other consumer rights vis-à-vis the regulated market companies [14–16].

Because of the said underlying principles, Latvia has selected the following district heating market regulation