

DIVERSIFICATION OF SUPPORT MEASURES FOR RENEWABLE ENERGY SOURCES IN DISTRICT HEATING SECTOR

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Overview

District heating infrastructure is suitable for reaching strategic energy goals: security of energy supply by increasing independence from imported energy resources; integration of renewable energy sources (RES) into energy supply infrastructures; reduction of environmental pollution and GHG emissions; diversification of fuel sources; utilization of municipal waste for generation of heat and electricity; integration of industrial excess heat to district heating networks. The wide use of RES has many aspects; one of the most important is not the type of applied support measure, but the theoretical and motivational background for particular support measure. On the other hand, it is evident that not all types of RES and incentives are equivalent. Policies and measures, which has a target to enhance the use of RES, are mainly driven by EU policy. The problem arises from Lithuanian state policy, because support for competition on the production side of district heating is given. The growth of RES share is foreseen mainly based on biomass in district heating sector. Meanwhile, the use of a huge potential of solar energy and other RES is significantly insufficient.

Methods

After review of various support measures in EU for district heating and changes of Lithuanian policy for RES, a case study of integration of solar collectors on the demand and supply sides of district heating was analysed. Moreover, simulation of techno-economic analysis was done using EnergyPro modelling software package. Economic evaluation of the use of RES was done by the levelised cost of energy method and scenarios of different intensity of support measures were calculated.

Results

The inadequate comparison of different options usually is based on the assumption that every type of fuel would be able to provide the entire volume of supply. In this regard, biomass is in a preeminent position, while installation costs is relatively cheaper due to subsidies or grants. Nevertheless, the substantial increase in demand of limited resources raises the price. It is the expression of the law of demand and supply, which cannot be transformed with any strategies or plans. On the other hand, biomass is the product of the economic activity, and its renewal depends on the extent of the activity. The wider use of RES that does not have the price of fuel, such as solar collectors, give new approach to district heating in future energy system.

Conclusions

Integration of energy projects (such as solar collectors) into district heating systems may create external positive effect concerning environmental and other regional development goals. The results have showed that coherent energy policy is a key aspect that influences the preeminent position of different types of fuels, and after evaluation of externalities in fossil fuel costs RES might become the attractive technology for the generation of energy. The risk of biomass and other fuel prices as well as lower demand of heating after renovation are the main issues. Moreover, if ecological, economic and social benefit is comprehensive evaluated in a long term period and on that basis support is given, the demand for advanced RES technologies would increase noticeably. Incorporating externalities into long-term RES energy policy could increase the possibility of developing the economical and sustainable district heating system from a societal perspective.