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*ENVIRONMENTAL SCIENCE AND EDUCATION IN LATVIA AND
EUROPE:
Resources and Biodiversity*

ENVIRONMENTAL ASPECTS OF DISTRICT HEATING SYSTEMS

SILTUMAPGĀDES SISTĒMAS ENERGOEFEKTIVITĀTES VIDES ASPEKTI

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In the climatic conditions of Latvia, households consume more heat than electricity, therefore, heating expenses have the largest share of their utility bill.

The majority of households, mainly in urban apartment buildings, receives heat from the district heating systems. Others, mostly individual houses in rural areas, use local heating systems, most frequently simple furnaces and stoves.

The advantage of a district heating system is the fact that heat is generated in one or several major heat sources (boilers), where it is possible to achieve higher efficiency, higher fuel utilization ratio and lower emission parameters. Despite the advantages, district heating has one major drawback - the heat transmission costs, which consist of heat losses and circulation pump electricity consumption.

Scientists of the European Union believe that the adopted climate targets “20-20-20” (a 20% reduction in EU greenhouse gas emissions from 1990 levels; raising the share of EU energy consumption produced from renewable resources to 20%; a 20% improvement in the EU's energy efficiency) will not be achieved without wider district heating and implementation of combined heat and power technologies, because emissions from large heating sources is relatively lower than from the individual energy sources.

Approximately one-third of heat energy from Latvian boiler houses is obtained from local wood chips, but two-thirds come from the imported natural gas.

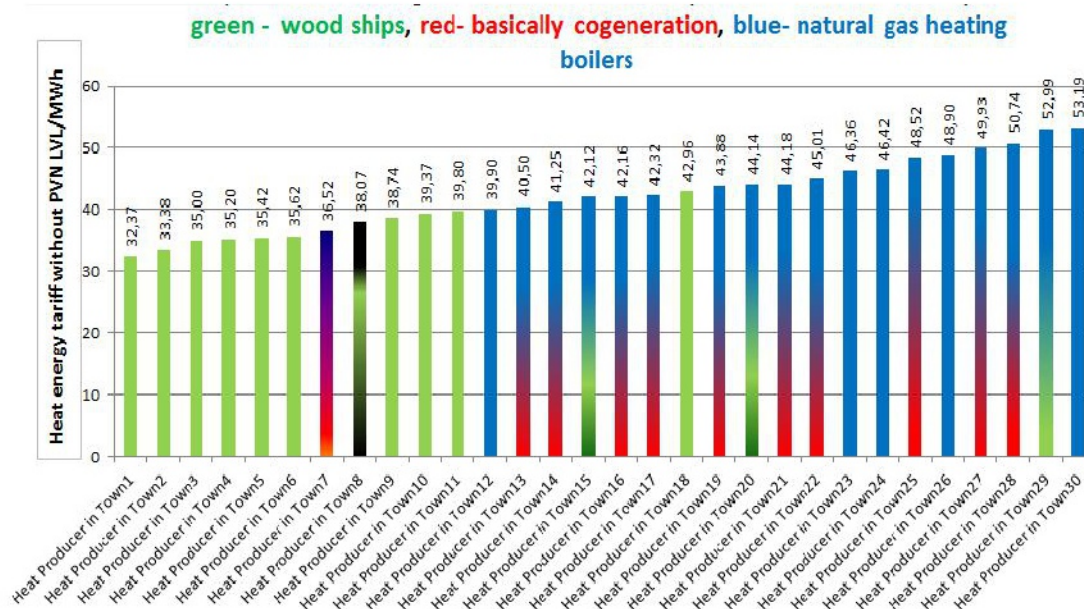


Figure 1. Heat energy tariffs in Latvia in January 2012

The heat energy tariff analysis in various Latvia's cities shows that the heat obtained from local wood chips is less expensive than the one obtained from natural gas. This means that fuel diversification projects for replacement of expensive fossil natural gas with local biomass should be promoted.

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In the climatic conditions of Latvia there is big consumption of heat energy, which mostly is covered by DHS. They have more advantages than disadvantages. The main advantages are efficiency and comfort; the disadvantage is high heat energy transmission costs. In order to attain the EU targets it is necessary to turn more attention to DHS optimization and replacement of fossil fuel for renewable energy sources. In Latvia the cheapest DHS heat energy is from wood chips and the most expensive one is from natural gas. On the other hand, only one third of Latvia is heated using the green renewable energy sources.