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Demand Side Management At Regional Level

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ABSTRACT

Demand side management (DSM) commonly is used to manage energy consumption for optimization of available or planned energy generation resources. Since regional level is found as the most appropriate energy planning level for promotion of renewable energy sources and for reduction of environmental impacts, the aim of research was to develop a system for implementation of DSM at regional level and elaborate the screening methodology for selection of most appropriate options for improvements. Regional DSM system is used to maximize the exploitation of renewable energy sources, to reduce CO₂ emissions and to find the optimal economical solution for renewable energy technologies in particular region. Two user groups - users of energy resources and energy end users are located in the centre of regional DMS system. Both those user groups are affected by different impacts like availability of renewable energy sources, availability and cost of technologies, presence of human factors, energy efficiency measures, etc.

Regional DSM system was developed and tested based on energy structure of Limbaži region. Limbaži region is a typical middle-sized rural region in Latvia. Its administrative structure consists of territories of five towns and 11 parishes. Region does not have connection to natural gas grid and for this reason it is possible to highlight the need for extended use of locally available fuel and renewable energy sources.

The next step of research was to develop a screening methodology for elaboration of proposals concerning successful implementation of regional DSM system. The screening methodology is based on theoretical and practical basics on decision-making, using a step-by-step approach: listing the possible options for improvements in different parts of regional DSM systems, selection and listing of criteria (performance indicators and reasons) for the analysis of improvement options, determination of weights and scoring system and calculation of total score for each option. Finally each option for improvements was ranked according to awarded points.