



SCENARIOS OF DEVELOPMENT OF THE BELARUSIAN ELECTRICITY GENERATION SYSTEM IN CONTEXT OF FUEL BALANCE DIVERSIFICATION AND GREENHOUSE GASES EMISSION REDUCTION

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ABSTRACT

Heat and electricity production is substantially based on consumption of fossil fuels. However, its combustion leads to significant emissions of greenhouse gases. At present, the international community is concerned about the problem of reducing greenhouse gas emissions. Electric power industry, as one of the major emitters of greenhouse gases, could make a significant contribution to solving the problem. Therefore, it is necessary to taking in account measures for greenhouse gases emission reduction in case of power system expansion modeling.

For Belarus, which is largely dependent on one fuel imported from one country, an important issue is also the diversification of energy resources and their suppliers. For example, in the structure of fuel consumption for electricity and heat production the share of natural gas is exceeds 90%, and all of it is imported from Russia.

This paper considers various long term scenarios of development of the Belarusian electricity generation system in a context of the fuel mix for electricity and heat production diversification, and minimizing greenhouse gas emissions. MESSAGE model was used for modeling scenarios.

The following scenarios were considered, taking into account the diversification of fuel mix: 1) the decrease in the share of natural gas for heat and electricity producing to 50% by 2025; 2) reducing the share of one supplier of energy to 50% by 2035, and 3) combination of the foregoing restrictions. These scenarios were modeled with the introduction of a carbon tax on greenhouse gas emissions.

Keywords: energy security, carbon tax, scenario modeling, power system, greenhouse gases