
Ways to strengthen the energy security of isolated regions of the Far East and the Arctic using the tools of «green» modernization of industrial energy supply facilities

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Abstract

Subject/topic. The article is devoted to the search for ways to strengthen the energy security of isolated regions of the Far East and the Arctic using the tools of «green» modernization of industrial energy supply facilities. The subject of the research is ensuring the energy security of isolated energy regions. **Goals/objectives.** Based on an assessment of the state and problems of energy security in isolated regions of the Far East and the Arctic of Russia, practice-oriented recommendations for the comprehensive promotion of «green» modernization of industrial energy supply facilities have been identified and substantiated. **Methodology.** The basis of the work methodology are general scientific methods: synthesis and deduction. When analysing the technical condition and energy efficiency of energy supply facilities, the method of a sample survey of 24 enterprises located in the Republic of Sakha (Yakutia), the Kamchatka Territory and the Magadan Region was applied. The potential of modernization projects is illustrated by the case materials of the hybrid modernization project (Tabalah). **Results.** The article clarifies the problems of ensuring the energy security of isolated areas and systematizes advanced foreign experience. It has been determined that sanctions are one of the major challenges in the subject area. Proposed measures and tools to promote the «green» modernization of industrial power supply facilities, including a set of long-term guidelines for the modernization of energy systems, tools for digitalization of modernization projects, the development of a system of energy service contracts and «green» financing, as well as loop mechanisms for adaptation to sanctions risks. **Conclusions/relevance.** Modernization of energy facilities based on internal development and innovation can significantly improve the energy efficiency, sustainability, and environmental safety of isolated energy systems. **Application.** The results of the study can serve as the basis for the development of new approaches to ensuring energy security in Russia and the world.

Keywords: *energy security, isolated territories of Russia, isolated energy systems, energy efficiency, modernization of energy systems, loop mechanisms.*

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