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Raising funds for the development of distributed generation in the Far East and the Arctic

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Abstract. The article discusses the issues of state support for the technological re-equipment of local energy facilities in the Far East and the Arctic. A study of the current system of state management of the industry in the macro-region was carried out, significant shortcomings were identified, possible ways to improve the management model were analyzed and proposals were formulated for further implementation.

1. Introduction

The development of remote territories of the Far East and the Arctic and their socio-economic development are impossible without ensuring reliable energy supply to consumers. At the same time, the construction of energy facilities is characterized by high capital intensity and low economic efficiency of investments, which is due to the historically established system of tariff regulation in the industry and its supporting nature in a market economy. The implementation of most projects in the field of construction of new or modernization of existing generating sources is carried out by energy companies on the basis of state support mechanisms established by the industry regulator as part of the implementation of a unified state energy policy defined by strategic planning documents within the framework of goal setting [1-2].

The current Decree of the President of the Russian Federation of 07.05.2018 No 204 "On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024" as one of the tasks in the energy sector was determined by the guaranteed supply of affordable electricity, including through the development of distributed generation, including those based on renewable energy sources, primarily in remote and isolated energy regions. This task was included in the Energy Strategy of Russia for the period up to 2035, as well as the Comprehensive Plan for the modernization and expansion of the trunk infrastructure for the period until 2024.

Thus, at the highest level of government, the task was set to develop distributed generation in remote and isolated areas, which should be implemented through mechanisms of state support for energy companies specializing in this area and acting as the main investors in this industry. At the same time, now, the relevant mechanisms by the relevant department of the Ministry of Energy of Russia have not been developed, which calls into question the implementation of investment projects on time [3-4].



In this regard, the development of mechanisms of state support for the implementation of distributed generation projects is an urgent issue for scientific research in the field of state management of the fuel and energy complex.

2. Materials and methods

In order to determine rational mechanisms of state support for projects for the development of distributed generation in remote and isolated areas, statistical and analytical materials were used to review the current state of local energy facilities in the Far East and the Arctic, existing regulatory legal acts in the field of electricity, heat supply, energy conservation and improvement energy efficiency, macro-regional and regional socio-economic development, previously carried out scientific research on the development of energy in the Far North.

When performing the work, the following research methods were used [5-7]:

- Monitoring the process of development of the country's energy sector over a period of time;
- Comparative analysis of energy development directions in different countries and research of the level of energy infrastructure availability;
- Analysis of strategic planning documents and synthesis of strategies and programs for socio-economic and industry development;
- Abstraction from the solution of a specific industry problem of the development of distributed generation towards the solution of the broad problem of socio-economic development of the macro region;
- Deduction (power system - consumer), induction (consumer - power system).

3. Results

The results of the scientific work performed were the proposal of a list of measures of state support for private investors in the development of distributed generation in remote and isolated regions of the Far East and the Arctic, combining industry and macro-regional support measures.

The key proposal is to develop and approve the state subprogram "Development of distributed generation in remote and isolated areas" to state programs for the socio-economic development of the Far East and the Arctic zone in order to attract private investment in the implementation of projects for the modernization of inefficient diesel (fuel oil, coal) generation. As part of this subprogram, it is proposed to provide:

- Empowerment and responsibility of heads of local self-government bodies for the development of comprehensive schemes and programs for energy supply and increasing the energy efficiency of settlements in the area of decentralized power supply (figure 1) [5-7];
- Development and use of a mechanism for attracting private investments during the modernization of local energy facilities on the basis of a purchase and sale agreement, supply, transfer of energy resources, which includes the terms of an energy service agreement to ensure that a potential investor can choose the most rational solution for energy supply to a settlement for the long term [8];
- Empowering development institutions of the Far East and the Arctic to provide preferential long-term government funding for the implementation of projects to modernize local energy and determine the conditions for the allocation of this funding;
- Financing of the subprogram from the federal budget in the amount of up to 10 billion rubles [5-7];
- Expanding the powers of the Fund for Assistance to Housing and Utilities Reforms or the creation of a special Fund for the Development of Distributed Generation in Remote and Isolated Areas to conduct an examination of projects, determine the possibility of their co-financing from the federal budget, establish appropriate criteria and further support the implementation of projects by private investors [9-13].

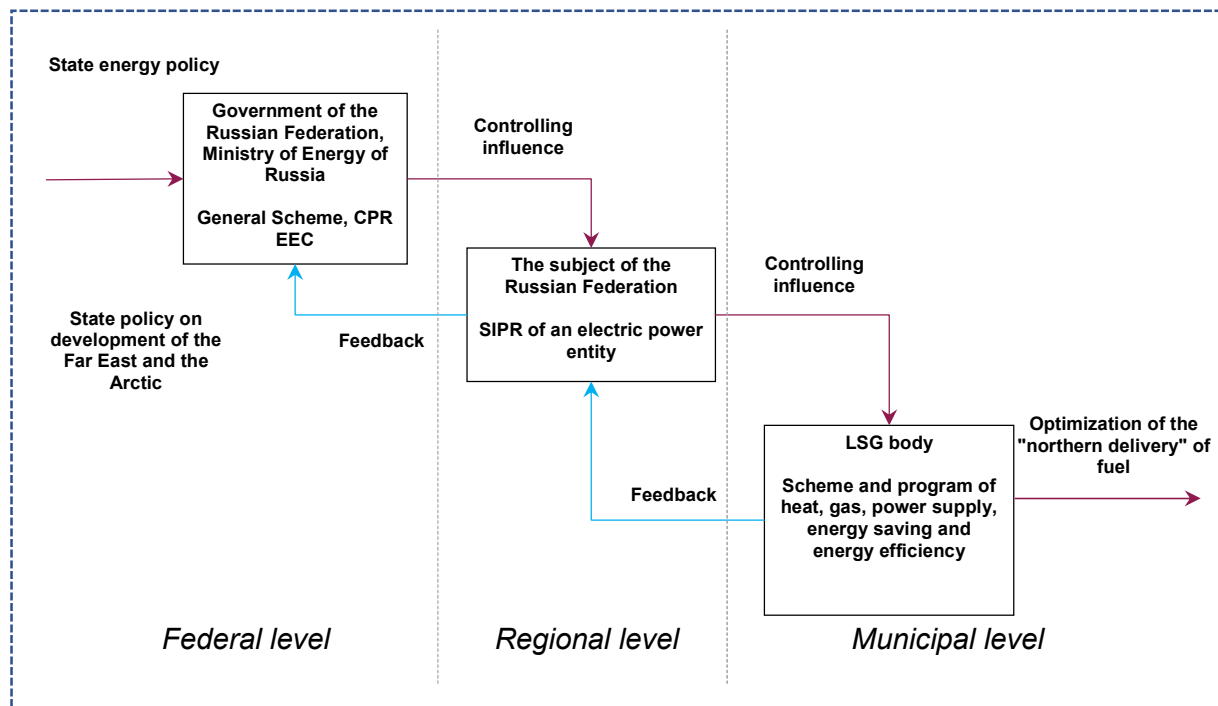


Figure 1. Diagram of a three-level distributed generation development management system.

4. Discussion

The research results were widely discussed at various expert platforms, including the Analytical Center under the Government of the Russian Federation and the Energy Committee of the State Duma of the Federal Assembly of the Russian Federation, and received the support of the professional and scientific community.

5. Conclusion

The result of the work was the preparation of the "Concept for attracting private investment in the development of distributed generation, including on the basis of renewable energy sources, in remote and isolated energy regions of the Far Eastern Federal District and the Arctic zone of the Russian Federation".

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References

- [1] Berdin V Kh, Kokorin A O, Yulkin G M and Yulkin M A 2017 *Renewable energy sources in isolated settlements in the Russian Arctic* (Moscow: World Wildlife Fund) 80
- [2] *Economic problems of the energy complex* Retrieved from: <https://ecfor.ru/wp-content/uploads/seminar/energo/z127.pdf>
- [3] Gibadullin A A, Sorokina V V, Sadriddinov M I, Petrusevich T V, Izzuka T B and Kokurina A D 2020 Assessment of factors ensuring industrial safety of enterprises of the electric power complex. *IOP Conference Series: Materials Science and Engineering* **862** 062029
- [4] Saneev B G, Ivanova I Yu, Tuguzova T F and Izhibuldin A K 2018 Autonomous energy sources in the north of the Far East: characteristics and directions of diversification. *Spatial Economics* **1** 101-16

- [5] *Generation facilities in isolated and hard-to-reach areas in Russia* Retrieved from: <https://ac.gov.ru>
- [6] *Low carbon solutions for isolated regions of Russia with high energy costs* Retrieved from: http://www.cenef.ru/file/Low-Carbon_rus.pdf
- [7] *Ministry of Energy of the Russian Federation* Retrieved from: <https://minenergo.gov.ru/>
- [8] Sharipov F F, Krotenko T Y and Dyakonova M A 2021 Digital Potential of Economic Education: Information Technologies in a Management University. *Lecture Notes in Networks and Systems* **133** 561-72
- [9] Romanova I N, Morkovkin D E, Nezamaikin V N, Gibadullin A A and Ivanova M A 2020 Formation of a policy to ensure environmental safety in modern economic conditions. *IOP Conference Series: Materials Science and Engineering* **734** 012166
- [10] Gubanov M M et al 2020 *IOP Conf. Ser.: Mater. Sci. Eng.* **837** 012011
- [11] Gibadullin A A, Kerimova Ch V, Chorshanbiev S R, Shmanev S V, Romanova Ju A and Sozontov A A 2020 Management of mechanisms ensuring sustainable functioning and economic development of the electric power complex. *IOP Conference Series: Materials Science and Engineering* **734** 012170
- [12] Salygin V I and Mustafinov R K 2019 Geopolitical aspects of electric power development: organizational and strategic approach. *Economic relations* **9** 1 177-94
- [13] Gubanov M M, Shmanev S V and Morkovkin D E 2019 The use of renewable energy sources in the implementation of the state strategy for the development of the macroregion (on the example of the Arctic and the Far East): problems and prospects. *OrelGIET Bulletin* **1(47)** 51-60