The formation of factors affecting the sustainable development of the generating complex of the electric power industry

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Abstract. The article is devoted to the conditions and principles of the functioning of the generating complex in a changing external and internal environment. The study determined that the stability of the system is the most important state within which it is possible to streamline the production process. At the same time, in order to ensure stability, it is necessary to determine and manage the factors affecting the state of the system. In the generating complex of the electric power industry, these factors should be divided into the mega-, macro-, meso- and microenvironment, the characteristics of which are presented in the study. The paper presents a scheme that includes the main factors affecting the sustainable development of the generating complex of the electric power industry. The study defines the conditions for regulation and management of factors that ensure the stability of the generating complex. In conclusion, the study presents the main findings and results of the work.

1. Introduction

Structural transformations in the electric power industry negatively affected the generating complex, primarily due to the lack of programs to modernize and upgrade production capacities and reduce investment and innovation activity in the industry, which leads to an increase in the level of depreciation of the active part of fixed assets. The measures taken by the state to stabilize and ensure the sustainable development of the industry do not give positive results, and in some cases have a negative effect. The development indicators of the production complex have parameters an order of magnitude lower than the pre-reform period [1-3].

To ensure development, it is necessary to achieve an optimal ratio of costs and power generation, to seek new forms of capital utilization, to update and modernize fixed assets, and to apply fundamentally new management methods. All this can be achieved only in conditions of sustainable development; therefore, it is worth identifying the factors affecting the sustainable development of the production complex [4].

2. Materials and methods
The aim of the article is to analyze factors affecting the stability of the economic system and the formation of factors that ensure the sustainable development of the generating complex of the electric power industry. To achieve this goal, the following tasks:

- determine the economic category of sustainability and the factors affecting its achievement;
- to form factors wagging on the sustainable development of the generating complex of the electric power industry.

The study used historical, comparative and logical methods, factor and system analysis.

3. Results
Sustainable development of the generating complex is determined by the complex influence of factors of the external and internal environment, that is, the conditions, causes, parameters and indicators that affect economic and production processes [5].

To determine the path to sustainable development, it is necessary to identify factors affecting the possibility of competition, the analysis of which allows you to identify strengths and weaknesses, develop measures and means with which you can increase the level of development of production complexes of the electric power industry.

E.V. Maksimova and O.V. Kravchenko is classified by factors affecting sustainable development depending on the level of competition, highlighting macro-level, mesoscale and micro-level factors. Macro-level factors include political and economic stability, security and well-being in the social sphere, regional harmonization in the political and economic environment. Mesoscale factors should include both factors of the regional economy and industry specifics, which include the level of development of the regional economy, the investment climate of the region, industry specifics and capital intensity of the industry, competitiveness of the industry at the national and global levels. Micro-level factors include factors that determine and reflect the conditions of the financial and economic activities of the organization [6-7].

When studying the sustainable development of the electric power industry, it is necessary to consider in more detail the classification of influencing factors on the generating complex [8]. This will reveal the influence of each factor on the production complex and will make it possible to highlight the most significant factors ensuring the sustainable development of the electric power complex.

In addition to classification by level factors, they can be divided into external and internal factors. External factors are factors that are independent of the production complex and the production complex cannot affect them. Their nature depends on the state, economic and climatic situation. Environmental factors include two types of impact: direct and indirect. Direct impact factors are factors of various groups whose interests affect the industry, for example, the consumer and investor, federal and local authorities [9-11].

Environmental factors of the generating complex of the electric power industry can be divided into two groups:

- Climate emergencies: increase and decrease in temperature, increase in average annual precipitation and others;
- Significant changes in the economic and socio-political situation: the deterioration of the state of the national economy, the change in the investment climate due to the deterioration of the political situation, the absence of a legislative framework (the introduction of new legislation) and others [12-14].

Environmental factors mainly affect the financial and economic activities of the organization and may violate the established principles of the functioning and development of the enterprise. At the same time, the internal environment of the generating complex can affect both the immediate
environment and the economy as a whole. The most important internal factors of the structure that influence sustainable development are management, mission, goals and objectives of the organization, its organizational structure, qualifications and composition of personnel, management methods, material and technological state of the industry and technology for electricity production [15].

4. Discussion
One of the main factors ensuring the stability of the economic system is the ability to perceive individual events. The generating complex of the electric power industry is considered as a self-regulating economic system, which is influenced by internal and external factors in a random period of time (figure 1).

Figure 1. The main factors affecting the sustainable development of the generating complex of the electric power industry.

To increase the stability of the generating complex of the electric power industry, it is necessary to conduct an analysis of threats, both real and potential. Analysis of the economic sustainability of the production complex of the electric power industry is a comprehensive study of its work, which allows assessing, identifying development trends, identifying production goals and reserves, work shortcomings, and developing ways to improve all performance indicators [16; 17].

The main tasks of the analysis of the economic sustainability of the generating complex are:

- identification of factors threatening sustainability, assessment of resources to counter negative factors.
- assessment of compliance with the objectives of the strategic development of the generating complex and current trends in the development of the electric power industry;
- assessment of financial equilibrium and equilibrium in the property structure;
- assessment of the progressive use of technology;
- assessment of the safety of production;
- assessment of the reliability of power supply to consumers.
Thus, we can conclude that the stability of the generating complex of the electric power industry is influenced by many different factors that act both positively and negatively.

5. Conclusion

Thus, the presented study allowed the authors to form factors that affect the stability of the economic system. As a result of the analysis, it was determined that factors affecting the stability of the generating complex act both from the external environment and from the internal environment, while the stability of the internal environment of the company of the generating complex can lead to negative consequences for the regional and national economies, as the production complex supplies electrical energy in almost all modern areas of activity. At the same time, the paper presents the tasks that should be solved when regulating and controlling the stability of the generating complex of the electric power industry.

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