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### **«FINTECH» SOLUTIONS AND DIGITAL FINANCING MECHANISMS IN THE DEVELOPMENT OF GREEN ENERGY IN ELECTRICITY SUPPLY**

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#### **Annotation**

This thesis analyzes the economic, environmental, and strategic significance of using green energy sources in the electric power supply system. The prospects for increasing the share of renewable energy sources—such as solar, wind, and hydropower — in the electric power sector are examined. In addition, investment mechanisms for the implementation of green energy, existing challenges, and ways to overcome them are substantiated.

**Keywords:** green energy, renewable energy sources, electric power, solar energy, wind energy, sustainable development.

#### **Introduction**

Today, the global demand for energy resources is steadily increasing, along with the growth of population and industrial production, requiring new approaches to the development of the electric power sector. The limited availability of traditional fuel sources, their price volatility, and their negative impact on the environment make the introduction of alternative and sustainable solutions in the supply of electric power an urgent issue. Especially in the context of global climate change, increasing carbon emissions, and aggravating environmental



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problems, the development of green energy is one of the priorities for the world community.

The use of renewable energy sources, in particular solar, wind and hydropower resources, not only provides environmentally friendly energy production, but also serves to strengthen energy security, reduce dependence on external fuel resources, and achieve economic stability. Therefore, in many developed and developing countries, the introduction of green energy has been raised to the level of public policy.

The Republic of Uzbekistan is also implementing large-scale reforms to modernize the electricity supply system and expand the use of renewable energy sources. The country's high solar radiation, as well as the large potential for wind energy in some regions, create favorable natural conditions for the development of green energy. Strategic programs and investment projects adopted by the state are aimed at the rapid development of this sector.

At the same time, the process of introducing green energy in the electricity supply is also associated with a number of problems. In particular, the lack of a unified methodology for selecting and evaluating investment projects, the lack of comprehensive risk assessment, frequent changes in tariff policies, and insufficient development of institutional mechanisms negatively affect the effectiveness of projects. This indicates the need to analyze the sector based on scientifically based approaches and develop practical proposals.

From this point of view, this thesis comprehensively analyzes the economic, ecological and strategic importance of using green energy sources in the electric power supply system, the prospects for the development of the sector and ways to overcome existing problems are justified.



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### **Theoretical foundations and practical significance**

Green energy means the use of renewable, environmentally friendly and long-term energy sources. They include:

- solar energy;
- wind energy;
- hydropower;
- biomass and geothermal energy.

International experience shows that an increase in the share of green energy in the production of electricity serves to ensure energy security, reduce dependence on imported fuel, and reduce carbon emissions.

Uzbekistan has high solar radiation and wind potential, which creates favorable conditions for the rapid development of green energy.

### **Methodology**

Since the introduction of market mechanisms in electricity supply is a complex and multifaceted process, which is associated with social, economic and institutional factors, a mixed methods approach was chosen in this study. Therefore, the political and legal framework and institutional environment were studied through qualitative analysis, and the dynamics of electricity production, consumption, tariff dynamics and investment flows were statistically analyzed using quantitative analysis.

### **Data collection process**

In this study, methods such as scientific knowledge, economic-statistical analysis, comparison, inductive and deductive approaches, as well as analysis and synthesis were used, which served to reveal the content of the work.

The study used primary and secondary sources. These are statistical reports of the Ministry of Energy of the Republic of Uzbekistan, “Uzenergoinspeksia”,



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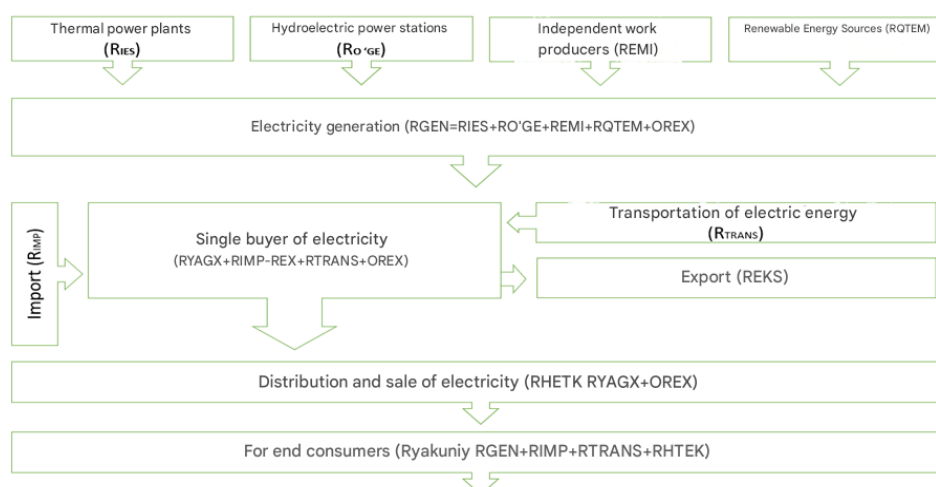
“National Electric Grids “ JSC and other relevant ministries and organizations, current regulatory legal acts, as well as analytical reports of international financial institutions related to the energy sector, and open data on the experience of Central Asian countries.

The library created for students at the Banking and Finance Academy of the Republic of Uzbekistan has provided all the necessary conditions for conducting research, including access to published local and foreign scientific journals.

### Methods used for analysis

A number of formulas and indicators are used to determine the price of 1 kWh of electricity.

Electricity tariffs in our country are determined by the state. Figure 1 shows the procedure for forming electricity rates, which is based on the principles of supporting rational use of energy sources, ensuring that tariffs are economically based, and guaranteeing families in need of social protection.



**Figure 1. Procedure for forming electricity rates**

Source : prepared by the author based on the information of [www.lex.uz](http://www.lex.uz)



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### **Summary**

The results of the research show that the use of green energy sources in the electricity supply system is of strategic importance in ensuring the sustainable economic development, energy security and environmental stability of the country. By increasing the share of renewable energy sources, it will be possible to reduce dependence on traditional fuels, reduce the amount of harmful gases released into the atmosphere, and ensure long-term stability of energy production. The study found that Uzbekistan has a large natural potential for the development of solar and wind energy, and full use of these opportunities would significantly increase the efficiency of the electricity sector. At the same time, the introduction of green energy will have a positive impact on other sectors of the economy by attracting investment, introducing modern technologies, and creating new jobs. Also, the results of the research showed that the absence of a single methodological approach in the field of green energy, the instability of the tariff policy, and the insufficient development of risk assessment mechanisms are obstacles to the effective development of the field. In order to eliminate these problems, it is necessary to conduct a complex state policy, improve the regulatory legal framework, and strengthen effective cooperation between the state and the private sector.

In conclusion, by implementing a clearly targeted strategy for the development of green energy, improving the investment climate, and introducing innovative solutions, it is possible to bring the electricity supply system in the Republic of Uzbekistan to a qualitatively new level. This will serve to ensure the country's long-term economic growth and environmentally sustainable development.



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