

## **Analysis of problems in the field of energy systems management and the tasks of their intellectualization in the Republic of Uzbekistan**

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**Abstract:** The article presents various aspects and data on the digital transformation of the electric power industry of Uzbekistan. The basis of digitalization is a scientific approach that justifies the effectiveness and determines the directions of transformation. The system analysis made it possible to determine the components necessary for the development of digital transformation of electric power systems (EPS). It is proposed to use mathematical multi-criteria methods for formalizing processes and solving problems of digitalization and intellectualization. The transition from traditional to digital electric power industry should be carried out in stages, by forming appropriate clusters at different functional, temporal and hierarchical levels of the EPS, as well as coordination with the digitalization process of other industries.

**Keywords:** Quizlet, Collaborative Learning, Adoptive Technology, Duolingo

### **INTRODUCTION**

Studies have shown that in the digital economy, an important strategic direction for increasing the level of sustainability of enterprises is the automation and digitalization of production processes. The result of this is the national project "Implementation of an automated electricity metering and control system (AEMCS)", which has accelerated in recent years. The author has improved a systematic approach to ensuring sustainable development, which involves considering the fuel and energy complex as an open system of an economic model (Figure 1). We believe that the state of the fuel and energy complex depends on the stability of each element of the system. The essence of the functioning of the fuel and energy complex is reduced to the movement of information, energy, materials associated with the processing of input values

(information, financial resources, material resources, ICT) and obtaining the desired results (energy resources, services, profit, information). To analyze the functioning of the fuel and energy complex, the author singled out in its composition subsystems responsible for a certain type of activity (energy consumption, production of electricity and heat energy, energy supply). If the system is in a stable state, then its reaction to destabilizing influences can be as follows: adaptation; anticipation of possible changes; repayment of negative impacts. If the system is unstable, then the result of destabilizing influences can be stagnation, degradation, regression - downward development, the collapse of the system.

## **DISCUSSION**

Discussion: It was revealed that the fuel and energy complex have orbital stability that is the ability of uninterrupted and reliable functioning with any changes in the internal and external environment, maintaining, and improving its characteristics during the transition to a new level of development, provided that the state parameters do not go beyond the permissible limits. Orbital stability is characterized by the fact that it is selected - a neighborhood beyond which the parameters of the system cannot go if for any undesirable deviation of the state parameters it is possible to return the process to the boundaries of stable operation with the help of a control action. If the values of the indicators characterizing the criteria go beyond the boundary of sustainability, then the economic system is threatened with destruction. Orbital stability allows the fuel and energy complex to maintain a balance of state parameters when moving to a new level of development. The author defines the main conceptual elements of the orbital sustainable development of the fuel and energy complex (Figure 2). The institutional component, which is the technological basis for making managerial decisions in the framework of sustainable development of the fuel and energy complex creates economic, organizational, and legal conditions for development ensuring the formation of a favorable economic environment which in turn provides

an inflow of investments necessary for modernization and transition to the path of innovative development. Clarifying the trilemma of improving energy security based on sustainable development of the fuel and energy complex we believe that firstly the fuel and energy complex is characterized by orbital stability - the ability of the system to function ensuring uninterrupted and reliable production, and supply of fuel and energy resources to consumers, and development under changing internal and external conditions while maintaining and improving their characteristics during the transition to a new level of development, provided that the state parameters do not go beyond the permissible limits. Development is the process of improving technology, accounting, control, business processes, movement of material flows. Secondly, energy security is the ability to provide uninterrupted and reliable supply of fuel and energy resources to consumers while leveling the emerging external and internal threats that destabilize the functioning of the fuel and energy complex. Thirdly, the ecological component is the development of green energy based on rational use of natural resources, preserving the natural environment, and the production of energy from renewable sources. Summarizing these three concepts, we can say that sustainable development is the process of ensuring energy, economic and environmental security, subject to effective environmental management.

## **RESULTS AND CONCLUSION**

Integration and interdependence of elements and the ability to regulate are important for the integrity of the system. To assess the level of sustainable development of an enterprise, the following groups of indicators are taken in accordance with their role in the production process: market, production, social, financial and economic (Table 3). The information base is the financial statements of the organization, forms of state statistical reporting, data of enterprises that are not included in it. The process of creating an information and analytical base for the analysis and construction of derived indicators for assessing the sustainable development of an enterprise is as follows: a) input of initial

information on the enterprise; b) calculation of financial and economic indicators characterizing the position of the enterprise; c) analytical comparison of indicators; d) construction of a weighted index of the integral assessment of the sustainable development of the enterprise. Ensuring sustainable economic development of the enterprise is one of the main tasks facing managers at all levels of management. The implementation of the principle of financial stabilization in the long term involves the development, selection and assessment of a financial strategy based on ensuring the financial stability and financial balance of the enterprise. In recent years a traditional method has been developed in assessing financial stability which is based on calculations of indicators calculated from the balance sheet data. However, the use of this technique which is quite simple to use is possible only for preliminary acquaintance with the financial condition of the enterprise. Conclusions: The analysis made it possible to develop the following scientifically grounded proposals for a strategy for sustainable effective development and reform of the fuel and energy complex of the republic: 1. Intensification and intellectualization of energy efficiency and energy saving (reserve - 30-40% of energy savings). This will require accelerated modernization of fixed assets, diversification of energy sources, pursuing a tough energy-saving policy, assessing the real costs of supplying the country, etc. It is necessary to introduce energy-efficient innovative technologies in the sector of residential, commercial and administrative buildings ("smart home", "smart city") , as well as network technologies (active-adaptive networks, energy Internet, information and analytical systems, etc.), that is. 2. Development of the national nuclear infrastructure, including the formation of a regulatory and legal framework, participation of the Republic of Uzbekistan in the global nuclear safety regime, ensuring the activities of the operating organization of a nuclear power plant, creating a regulatory framework for nuclear energy, ensuring transparency and openness to the public of the nuclear energy program, providing qualified personnel ... 3. Development of energy resources of wind and sun. In most countries of the world, extensive work is underway to diversify the energy mix, including

by expanding the use of non-carbon renewable energy sources. According to the estimates of domestic and foreign experts, the real technical potential of solar and wind energy in Uzbekistan is at least 10 million kW of power in each direction.

## REFERENCES

1 S. Bruno, S. Lamonaca, M. La Scala, G. Rotondo, and U. Stecchi, “Load control through smart-metering on distribution networks,” in Proceedings of the 2009 IEEE Bucharest PowerTech, IEEE, Bucharest, Romania, 2009.

2 J. A. Momoh, “Smart grid design for efficient and flexible power networks operation and control,” in Proceedings of the 2009 IEEE/PES Power Systems Conference and Exposition, IEEE, Seattle, WA, USA, 2009.

3 E. Santacana, G. Rackliffe, L. Tang, and X. Feng, “Getting smart,” IEEE Power and Energy Magazine, vol. 8, no. 2, pp. 41–48, 2010.

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