

# Organizational-economic model for the development of energy enterprise management tools in a competitive environment

*Khukeyan Zaven G.*

*Armenian State University of Economics*

*PHD of Business Management 3-rd course (Yerevan, RA)*

*zaven.khukeyan@gmail.com*

**UDC:** 658.518.3; **EDN:** MBPDXE

**Keywords:** Smart Grid network, management tools, management mechanism, management entity, competitive environment, energy enterprise, management level, management goal

## Էներգետիկ ձեռնարկությունների կառավարման գործիքների մշակման կազմակերպչական և տնտեսական մոդել մրցակցային միջավայրում

*Խուկեյան Չավեն Գ.*

*Հայաստանի պետական տնտեսագիտական համալսարան,*

*գործարար կառավարում մասնագիտությամբ սասյիրանտ, 3-րդ կուրս (Երևան, ՀՀ)*

*zaven.khukeyan@gmail.com*

**Ամփոփագիր.** Էլեկտրաէներգիայի արտադրությունը և բաշխումը մշտապես եղել և դեռ շարունակում է մնալ տնտեսության զարգացման կարևորագույն խթաններից մեկը: Այս առումով կարևոր ենք համարում էլեկտրաէներգետիկական ոլորտի և ոլորտում գործունեություն ծավալող ձեռնարկությունների կառավարման արդյունավետության բարձրացմանը միտված խնդիրների վեր հանումն ու լուծման տարբերակների առաջարկումը: ՀՀ էլեկտրաէներգետիկական ոլորտում կառավարման խնդիրներ առկա են թե պետական-ազգային մակարդակում, թե ձեռնարկություններ - տեղական մակարդակում, ուստի հաշվի առնելով այս անկյունաքարային փաստը անհրաժեշտ է առաջ բերել մի մեխանիզմ, որը հնարավորություն կտա թե պետական մարմիններն թե ձեռնարկություններին բարելավել կառավարման գործընթացները դրանով իսկ բարձրացնելով ձեռնարկությունների ծավալած գործունեության արդյունավետությունը: Այս համատեքստում ողվածում ներկայացրել ենք այն գործիքները որոնք որպես կառավարման հիմնական գործիքներ կիրառվում են այժմ պետական մակարդակում, մատնանշել ենք նաև այն մեխանիզմները, որոնք ձեռնարկություններն իրենց հերթին կիրառում են իրենց ծավալած գործունեության գործընթացը կառավարելու համար: Աշխատանքում վեր ենք հանել առկա խնդիրներն, առանձնացրել ենք զարգացման համար անհրաժեշտ միտումները և կառավարելիության բարձրացման համար փորձել ենք առաջարկել համապարփակ լուծումներ, որոնք կխթանեն ոլորտի ընդհանուր զարգացմանը իրավիճակի շտկմանը և ոլորտում գործունեություն ծավալող ձեռնարկությունների տնտեսական ցուցանիշների բարելավմանը:

**Հանգուցաբառեր՝** Smart Grid ցանց, կառավարման գործիքներ, կառավարման մեխանիզմ, կառավարման սուբյեկտ, մրցակցային միջավայր, էներգետիկ ձեռնարկություն, կառավարման մակարդակ, կառավարման նպատակ

## Организационно-экономическая модель разработки инструментов управления энергетическим предприятием в условиях конкуренции

*Хукеян Зевен Г.*

*Армянский Государственных Университет Экономики,*

*Аспирант 3-его курса управление бизнесом (Ереван, РА)*

*zaven.khukeyan@gmail.com*

**Аннотация.** Производство, распределение электроэнергии всегда было и остается одним из сильнейших двигателей экономического развития. В связи с этим считаем возможным выявить проблемы, направленные на повышение эффективности управления предприятиями электроэнергетики, и предложить пути их решения. В электроэнергетическом секторе Армении существуют проблемы управления как на государственно-национальном уровне, так и на уровне предприятий-мест, поэтому, принимая во внимание этот краеугольный факт, необходимо разработать механизм, который позволит как государственным органам, так и предприятиям улучшить управленческие процессы, тем самым повышая эффективность предприятий. В этом контексте в статье мы представили инструменты, которые в настоящее время используются в качестве основных инструментов управления на государственном уровне, а также указали механизмы, которые компании, в свою очередь, используют для управления процессом своей деятельности. В своей работе мы выявили существующие проблемы, обозначили направления, необходимые для развития, постарались предложить комплексные решения по повышению управляемости, которые будут стимулировать общее развитие отрасли, улучшать экономические показатели предприятий, работающих в отрасли.

**Ключевые слова:** Сеть Smart Grid, средства управления, механизм управления, объект управления, конкурентная среда, энергетическое предприятие, уровень управления, цель управления

The high relevance, vastness and versatility of the problem of development of energy enterprises determines the need to combine scientific approaches and principles in the development of management tools for energy enterprises in a competitive environment: a systematic approach, organizational modeling, program-targeted management.

The formation of an organizational and economic mechanism requires a systematic approach to successfully solve problems, without considering which the implementation of the goals will be incomplete; determine and balance the functions and tasks of management, the rights and responsibilities of management subjects, use in a complex organizational form of management and a system of motivation and incentives for personnel. [1, p. 55]:

In the framework of the study, the organizational and economic mechanism for managing energy enterprises in a competitive environment is understood as a set of specific methods and methods of management and self-government that ensure effective enterprise management and adaptation of individual structural parameters and elements of the enterprise management system to changing conditions of a competitive environment.

Thus, the organizational and economic mechanism of management should be considered as a purposeful process of solving particular problems of the functioning of the management system, taking into account the specifics of energy enterprises and the competitive environment, based on a stable set of methods, norms and rules for the formation and regulation of relations between elements of the organizational structure.

Despite the reform of the electric power industry, the division of the natural monopoly into separate companies, the formation of a competitive electricity market, it is not possible to completely eliminate state management and regulation of energy enterprises. This is due to the high social and economic importance of energy enterprises in the development of society, because electricity accompanies and ensures the life of the population, the development of enterprises, regions and the country (see Pic. 1).

In this regard, in the organizational and economic mechanism of enterprise management in a competitive environment, there are two levels of management: national level (state level), local level (enterprise level).



**Pic. 1.** Organizational and economic mechanism for managing energy enterprises in a competitive environment

It should be noted that at each level of management, the subject of management, management tools, management object, management goals are identified. At the same time, enterprise management tools are divided into organizational and economic ones.

Economic management tools are understood as methods and ways of influencing the object of management with the help of a specific comparison of costs and results (material incentives and sanctions, financing and lending, wages, cost, profit, price). Under the organizational tools of enterprise management are understood methods and methods of direct influence, which are of a directive, mandatory nature, based on discipline, responsibility, power and coercion.

The subjects of governance at the national level are the executive authorities (Government of the Republic of Armenia, Ministry of Territorial Administration and Infrastructure of the Republic of Armenia) and legislative authorities. The object of management at the national level is the energy security of the country, the electricity market, energy enterprises.

The goal of management at the national level is to ensure the country's energy security, develop the electricity market, balanced and coordinated development of energy enterprises, and overcome their main development problems.

Organizational tools for enterprise management include:

- intracorporate mechanisms of company management;
- mechanisms for managing the technological and technical base of the enterprise;
- personnel management mechanisms;
- mechanisms for managing demand for electricity using energy marketing methods;
- development of a pricing strategy to minimize the cost of electricity certification and standardization of electricity, conducting energy audits, compiling an energy passport;
- introduction of the Smart Grid enterprise management concept;
- development of automated metering systems for consumed and transmitted electricity.

The economic tools of enterprise management include:

- information models for the formation of costs and financial results;
- simulation and economic-mathematical models of profit and financial resources management;
- optimization of taxation policy;
- establishment of differentiated tariffs;
- diversification and development of types of business related to the energy sector;

- development of special methods of financing energy efficiency projects, for example, an energy service contract.

When choosing management tools at the national and regional levels, the subjects of management are guided by the state, prospects and trends in the development of energy enterprises. When choosing management tools at the local level, the subjects of management are guided by the actions of subjects at the national level, as well as the actions of competing energy enterprises.

The formed organizational and economic mechanism for managing energy enterprises in a competitive environment ensures the effective interaction of elements of management systems at the national and local levels and the effective use of management tools for energy enterprises in a competitive environment.

Of course, at each level of management, the effectiveness of management tools for energy enterprises in a competitive environment should be high. The low efficiency of management tools for energy enterprises in a competitive environment at one of the levels of management adversely affects the efficiency of management of the electric power industry as a whole, jeopardizes energy security and reliable power supply to consumers.

The organizational and economic mechanism for managing an enterprise in a competitive environment is developed as a project (management technology), its essence and algorithm of work are described in the organizational and methodological documentation and the mandatory use of it is established by regulatory documentation.

Analyzing the organizational and economic mechanism for managing energy enterprises presented in the work in a competitive environment, one can notice that state management methods are used at the national level and market management methods are used at the local level. Undoubtedly, the development of market relations in the Armenian economy and in the electric power industry leads to a decrease in the use of state management methods and an increase in market methods of managing an energy enterprise in a competitive environment.

In the dissertation work, one of the basic provisions of the concept of developing tools for managing energy enterprises in a competitive environment is the implementation of the Smart Grid development concept at each level of energy enterprises management (macro, meso, and micro levels).

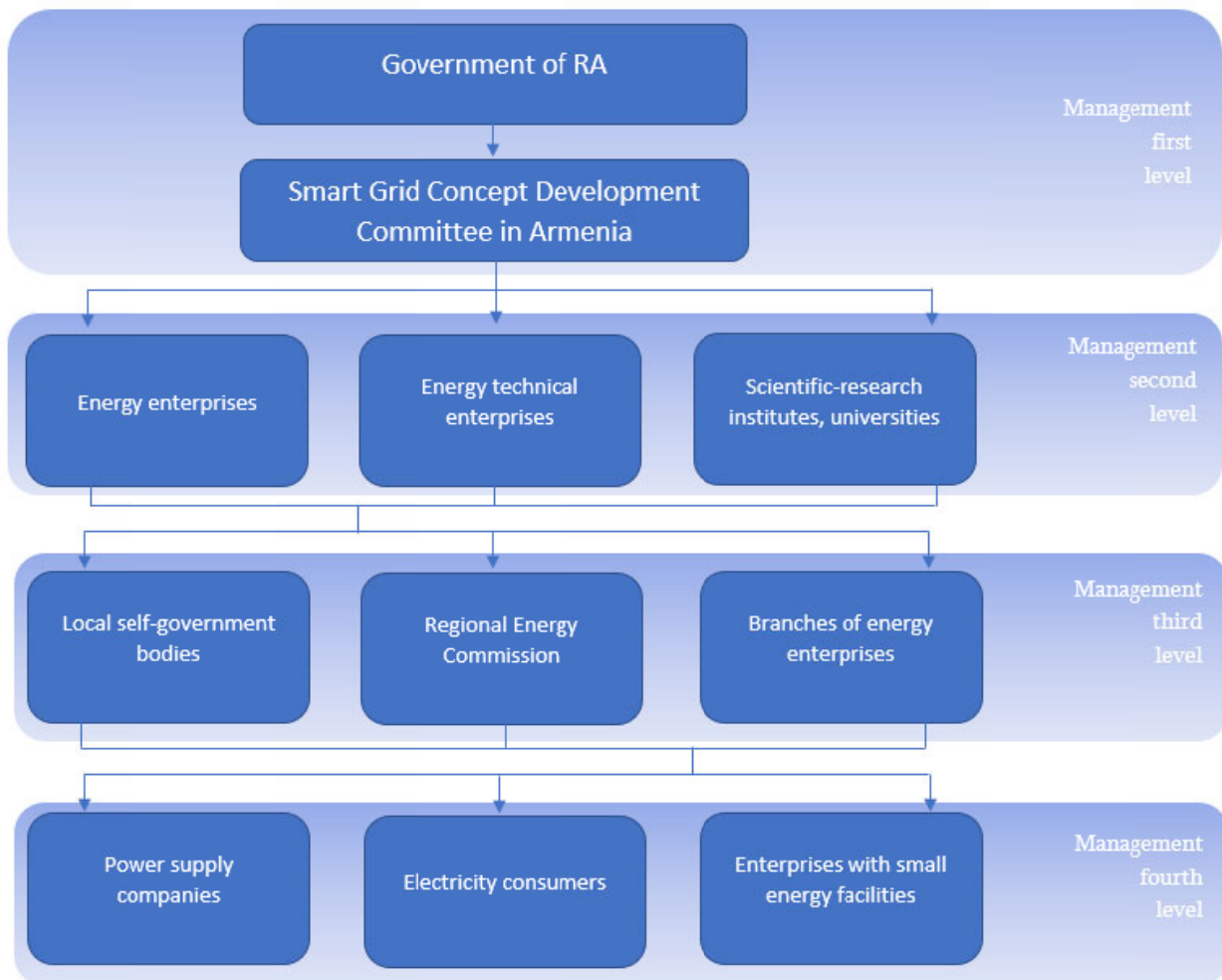
Smart Grid in most countries is considered by state structures as the ideology of national development programs from the electric power industry, companies - manufacturers of equipment

and technology - as the future basis for improving business; energy enterprises - as a basis for the implementation of innovative improvement of activities. The holistic functional and technological characteristics of this concept are most fully described by the following definition formulated at the Institute of Electrical and Electronics Engineers: Smart Grid is a concept of an integral, integrated, self-regulating and self-healing power industry system that has a network structure and contains all consumers of electricity, all producers of electricity, trunk and distribution networks controlled in real time by an automated device [3].

The US Department considers the Smart Grid as an automatic system in which a two-way flow of electricity and information is carried out by energy facilities. Through the use of modern technologies, tools and methods, Smart Grid fills energy

enterprises with knowledge and approaches that dramatically increase the efficiency of the industry [2].

At present, the issue of implementation and implementation of the Smart Grid concept in Armenia is acute, which is due to the large areas of operation of energy enterprises, the need for investment resources against the backdrop of low investment attractiveness of energy enterprises. Many scientists are currently developing mechanisms for the implementation and implementation of the Smart Grid concept in Armenia, however, this issue is so complicated that ways to implement it have not yet been found. The dissertation proposed an organizational chart for the development and implementation of the Smart Grid concept in Armenia, consisting of four levels of management (see Pic. 2).



**Pic. 2.** Organizational chart for the development and implementation of the Smart Grid concept in Armenia

At the first level of management, the Government of the Republic of Armenia and a specially created management body, the Commission for the Development and Implementation of the Smart Grid Concept in Armenia, operate. The commission includes

representatives of energy enterprises, representatives of the Ministry of Territorial Administration and Infrastructure of the Republic of Armenia, scientists and representatives of research institutes. At the second level of management, energy enterprises, power engineering enterprises, research institutes

and universities operate. The first two levels refer to the strategic level of management, they develop and approve the main provisions of the Smart Grid concept in Armenia, the goals and objectives of the implementation of the concept, the main stages of implementation. At the third level of management, local self-government bodies, the regional energy commission, and branches of energy enterprises operate. This level of management receives the main strategic guidelines for the implementation of the Smart Grid concept, determines how they can be implemented at the regional level, determines and coordinates the activities of power supply companies, electricity consumers, and enterprises that own small-scale energy facilities to implement the Smart Grid concept. The third and fourth levels of management relate to the operational management of the development and implementation of the Smart Grid concept in Armenia.

At the strategic level of development and implementation of the Smart Grid concept in Armenia, the following activities are being implemented:

- implementation of actions that contribute to the successful resolution of issues related to smart grids, accelerating the process of planning and implementing initiatives;
- increasing knowledge sharing and accelerating the learning process through knowledge sharing about smart grids;
- providing opportunities for cooperation in the field of R&D to support projects for the introduction of innovations in the electric power industry;
- reorientation of general contractors to domestic engineering products;
- creation of a support and development program for Russian manufacturing plants specializing in power engineering and high-voltage equipment production;
- improvement of the legislative base in the field of protection of domestic producers;
- encouraging Russian developers to create new import-substituting equipment and products;
- stimulating private investment in the construction of small cogeneration power plants using local fuels;
- development of state mechanisms for legal and technological regulation and control over the current production and technological activities of energy enterprises, over the planning of integrated innovative and technological development;
- assessment and consideration of foreign experience in the development and implementation of the Smart Grid concept in Armenia;
- definition of a clear strategic vision of the electric power industry of the future and a

systematic transition to the energy of the future, which are defined and fixed by methodological documents and national programs for the development of the electric power industry;

- improvement of the energy infrastructure of the regions as the basis for their accelerated socio-economic development;
  - stimulation of innovative and investment activities of energy enterprises;
  - attracting investment resources to energy enterprises;
  - increasing the energy and economic efficiency of the industry (increasing the efficiency of thermal power plants, reducing losses in electrical networks, optimizing the load of generating capacities);
  - continuation of work on the creation of a single information space of state authorities and local self-government of the regions to ensure efficient and effective management of energy enterprises and the process of power supply to consumers;
  - formation of a telecommunications, software and hardware and information and analytical environment that provides public authorities at all levels with the information necessary for informed decision-making;
  - development of a unified system for integrating science and business, which makes it possible to form the proper level of demand in the electric power industry for scientific and technical achievements and effective economic incentives for their application, as well as the formation of a domestic market for scientific and technical services with a high level of competition;
  - formation of an innovative infrastructure in the fuel and energy complex (development of technology exchange centers, technology parks, venture funds, business incubators, etc.).
- At the operational level of the development and implementation of the Smart Grid concept in Armenia, the following activities are being implemented:
- providing municipal and executive heads of energy enterprises to organize meetings and carry out organized and coordinated actions to reduce carbon dioxide emissions;
  - promotion of the positive experience gained in the implementation of a pilot innovative project in the electric power industry;
  - construction of small-capacity gas turbines (up to 30 MW) for combined power supply;
  - implementation of pilot innovative projects for the development of the electric power industry;
  - renewal of power equipment of power plants of all types and systems of transport, transmission and distribution of electrical and thermal energy;

- strengthening of technological discipline and the procedure for compliance with regulations, rules for the operation and maintenance of power equipment;

- increasing the level of professional competencies of technical personnel of energy enterprises;

- development of a unified regional data transmission network in the system of state authorities and local self-government of regions;

introduction of new information technologies into the practice of management activities.

A distinctive feature of the proposed organizational chart for the development and implementation of the Smart Grid concept in Armenia is:

- all participants in the process of developing and implementing the Smart Grid concept in Armenia are divided into two levels of management - strategic and operational, each of which is divided into two levels;

- the main directions of activity for the development and implementation of the Smart Grid concept in Armenia at the strategic and operational levels of management were determined.

The proposed organizational chart for the development and implementation of the Smart Grid concept in Armenia allows dividing all participants in the process into different levels of management and determining their main areas of activity, coordinating and streamlining the process of developing and implementing the Smart Grid concept in Armenia.

Thus, when forming an organizational and economic mechanism, three levels of management are distinguished: national (country level), regional (regional level) and local (enterprise level). At each level of management in the organizational and economic mechanism, there are various objects of management, subjects of management, management tools and management goals. The organizational and economic mechanism for managing energy enterprises in a competitive environment ensures the effective interaction of elements of management systems at the national, regional and local levels and

the effective use of tools for managing energy enterprises in a competitive environment.

## References

1. **Кручинина Н. В.** Совершенствование организационно-экономического механизма управления природоохранной деятельностью предприятий АПК. // Вестник Саратовского государственного социально-экономического университета. - 2008. - № 05. - С. 55-59
2. Grits 2030. A National Vision for Electricity's Second 100 years. - Office of Electric Transmission and Distribution of USA Department of Energy, 2003.
3. Smart Power Grit - Taking about a Revolution // IEEE Emerging Technology Portal, 2009.
4. Кузнецов И.А. Механизмы и методы принятия и реализации управленческих решений в современных рыночных условиях. // Социально-экономические явления и процессы. – 2010. - № 6. - С. 103-106
5. **Козловский Д. А.** Управление электроэнергетикой на принципах маркетинга. - Автореф. на соискание уч. степени канд. экон. наук. – Москва. - 2008. - 23 с.
6. **Дедов О. А.** Методология контроллинга и практика управления, крупным промышленным предприятием: учеб. Пособие. – М.: Альпина Бизнес Букс, 2008. - 248 с.
7. **Гительман Л. Д., Ратников Б. Е.** Энергетический бизнес: учебник 3-е изд., перераб. и доп. – М.: Издательство «Дело» АНХ, 2008. - 461 с
8. **Дамбаева Е. Ж.** Электроэнергия как специфический товар. // Известия ИГЭА - 2010. - №2 (70). - С. 78-8
9. ՀՀ Էներգետիկ Անվտանգության Ապահովման հայեցակարգը
10. ՀՀ Հիդրոէներգետիկայի Չարգացման հայեցակարգը
11. ՀՀ Էներգետիկայի բնագավառի զարգացման ռազմավարական ծրագիր (մինչև 2040 թ.)
12. ՀՀ Էներգախնայողության և Վերականգնվող Էներգետիկայի Ազգային Ծրագիր
13. ՀՀ օրենքը Էներգետիկայի մասին

Сдана/Հանձնվել է՝ 16.05.2022

Рецензирована/Գրախոսվել է՝ 27.05.2022

Принята/Ընդունվել է՝ 01.06.2022