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BASICS OF MECHANISM OF ENERGY SAVING OF AIC AND ITS MULTIFACETED NATURE

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Nature and components of the economic mechanism of energy saving of AIC are considered. The necessity to introduce energy management at agricultural enterprises to improve technological and manufacturing processes from the standpoint of energy savings is proved.

The question of energy saving now arises as a worldwide issue. That is why many countries, including Ukraine, are developing systems to encourage energy savings at the state level, as this is a national problem because of the threat to the energy security of the country.

Every year more and more urgent become the development of RES (renewable energy sources) and a variety of programs improving energy efficiency, both at macro and micro levels. In other words, the question of energy saving leads many scientists to think over the problem of creating a proper mechanism of energy saving which would allow not only to solve problems for individual companies, but would make an appropriate contribution to strengthening energy security of the state. Therefore, in this article the author aims primarily to explore the essence of the term mechanism of energy saving and its nature, and to analyze a set of measures for the implementation of the mechanism of energy saving in AIC.

The essence of the economic mechanism is reflected in the views of different scholars A.M. Bukreev [2], I.V. Diyak [3] and M. Kovalko, O. Kovalko [5], detailed analysis of components of the mechanism of energy saving is reflected in the works of T.M. Afochenkova [1] and I.V. Syzonova [6].

Problems to reduce energy consumption and energy intensity of the economy and agriculture, as prerequisites of enhancements Ukraine's energy independence of measures in the agricultural sector were considered in the Strategy of energy saving in Ukraine. [8].

Legal methods of promoting energy efficiency in Ukraine are flawed and require further studying. Scientific research is constantly improving individual elements of energy saving in agriculture, but the question calculating comprehensive measure of the effectiveness of the energy efficiency of a particular agricultural enterprise remains unresolved. There is much scientific and methodological material, but economic approaches to the formation of the mechanism of energy saving at the meso level, which would provide a stable economic development of the company in a short period, remain uncertain.

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The aim of the research is substantiation of theoretical positions, practical principles and conceptual approaches to the principles of building energy-saving mechanism of AIC and its participation in energy conservation. It is improving elements of calculating the effectiveness of the mechanism of energy saving at a particular agricultural enterprise.

Research Methodology. Theoretical and methodological basis of the research is dialectical laws of knowledge of economic processes, theoretical principles of modern economic theory and scientific researches of native and foreign scientists in studied problem.

Information base of researches were legislative acts of Ukraine, Decrees of the President of Ukraine, Resolutions and Programs of the Cabinet of Ministers of Ukraine and other normative documents of ministries and departments of Ukraine on energy development and energy saving in modern conditions.

Research results. The economic mechanism is also realized as an integrated, multi-level system of forms and methods of management. The economic mechanism is also a system of economic methods aimed at providing of functioning to improve the efficiency of production system; additionally it is a complex of interrelated and strictly ordered steps that are implemented through various methods of management and provide efficient flow of certain economic processes; additionally it is a subsystem of further evaluation and analysis of any type of activity, planning subsystem, control subsystem, the subsystem of motivation and incentives.

Organizational-economic mechanism by N.M. Pidoprihin [7] – is a special kind of economic mechanism and it is a combination of organizational, economic instruments and methods of influence on the process.

Organizational-economic mechanism by A.M. Bukreev [2] and D.N. Dudarev [4] – is a set of organizational and economic forms and methods combined in a single order of any activity.

Among the variety of organizational and economic mechanisms there is an organizational-economic mechanism of energy saving.

Economic mechanism of energy saving – is a set of measures to ensure the most efficient use of the energy potential at the minimum specific consumption of energy per unit of production.

This mechanism includes:

- providing funds of energy saving for financial support of energy efficiency projects at the national and regional levels;
- stimulating production of energy-saving equipment by providing loans, grants, preferential taxation for an initial period of production to ensure a rapid increase of its rate of production;
- audits of energy-intensive industries, introduction of standardization and system rationing using energy resources;
- attracting foreign investments in energy efficiency.

The purpose of the implementation of the economic mechanism of energy saving in business practice is to intensify and enhance the process of energy saving in the context of establishment and development of the market economy.

Forming effective economic mechanism of energy saving in AIC involves the complex of certain activities (Fig. 1.).



Figure 1. Economic mechanism of energy saving in AIC [1]

Economic mechanism of energy saving, which unlike simple interest of producers to reduce energy consumption in agricultural production due to lower production costs, should have pronounced stimulating nature, using to finance energy efficiency measures to save money, which is achieved by increasing the energy

efficiency of production of agricultural products. This will increase efficiency in agricultural production rapidly.

Economic mechanism of energy saving should have pronounced stimulating nature using to save money which is achieved by increasing the energy efficiency production of agricultural products.

Turning to the assessment of the efficiency of the mechanism of energy saving of a company we suggest using a composite index of integrated efficiency. In a broad sense, efficiency means the ratio of results and costs.

There are different types of efficiency according to the objects of management, it applies equally to energy saving and efficiency at the micro level. The effect itself does not characterize the impact of human activities from a social view. For more of its characteristics it is important to know at what cost the effect is obtained, that is what the result not only for a separate entity, but also for society as a whole, costs. However, costs can give a different effect and, conversely, the same effect can be achieved by various expenses.

The goal of social production – is receiving greater effect with minimal labor, material and money. It is therefore necessary to compare the result with the cost, through which it is obtained, that means to include the effect (result) to the cost, to compare one absolute value – effect (result) with another absolute value – cost. This comparison gives a relative value - efficiency.

The effectiveness of the mechanism of energy saving in the most general form can be represented by means of a complex integrated indicator, which is defined as the ratio of the results (effects) derived from realization of energy-saving measures, the costs incurred in their implementation, and it is reported by formula 1:

$$E_{me} = \sum R_{en} / \sum C_{en},$$

where E_{me} – effectiveness of functioning the mechanism of energy saving at enterprise;

$\sum R_{en}$ – sum of the results obtained from the implementation of energy saving measures;

$\sum C_{en}$ – amount of costs incurred for the implementation of energy saving measures.

Results from the implementation of energy saving measures will be expressed by various effects, including economic, social and ecological:

- economic impact results from the obtained economy of energy resources, reducing the cost of agricultural products;

- social effect appears in improving the labor conditions of workers. However, as a result of the introduction of energy-saving techniques and technologies negative social impact may be by reducing (releasing) employees.

- ecological effect is obtained by reduction of contaminated soil and other harmful emissions into the environment. This effect can be estimated by determining the amount by which the damages are prevented through the implementation of energy saving measures.

Costs for realization of energy saving measures consist of current production costs and the costs of managing energy efficiency.

According to it, current production costs include: the cost of energy and other resources, operating costs, including the cost of repairs, wages of workers and deductions from it, other expenses, provided by regulations on calculating the cost, depreciation.

Classification of expenditures on energy saving control can be carried out according to the following criteria:

- on wages: salaries of managers and specialists, wages of technical and service staff; premiums and additional payments from the fund of financial incentives for the implementation of assigned tasks of the rational use of energy resources and the achievement of the target level of their economy;

- on management techniques: media or objects of managerial work, methods of conversion, data processing and equipment of process control, working conditions, etc.;

- for the organization and provision of management: scientific research works and scientific organization of management, training and skills development management, management improvement measures;

- other costs: travel and business trips, post and telegraph, telephone and office expenses, maintenance of passenger cars and others.

More significantly integrated index of efficiency of functioning the mechanism of energy savings of the agricultural enterprise by the author is calculated by formula 2:

$$E_{eme} = (E_{ec} + E_{eco} + E_s) / (C_m + C_{cp}),$$

where E_{ec} , E_{eco} , E_s – accordingly economic, ecological and social outcomes of implementing energy-saving measures;

C_m – costs of managing energy efficiency;

C_{cp} – current production costs of implementing energy saving measures.

The ultimate effectiveness of functioning the mechanism of energy saving depends largely on the management of energy saving in general in the enterprise. Thus, building a perfect system planning of energy saving measures, the organization in space and time of implementation, the motivation of employees to the rational use of fuel and energy resources can be a significant factor in increasing the efficiency of energy saving at the company.

It should be noted that the policy of reducing the energy intensity of its products a large number of the enterprises are ready to take, but for this it should be set up certain state conditions.

The conceptual model of organizational-economic mechanism of energy efficiency of agricultural enterprises is shown in Fig. 2.

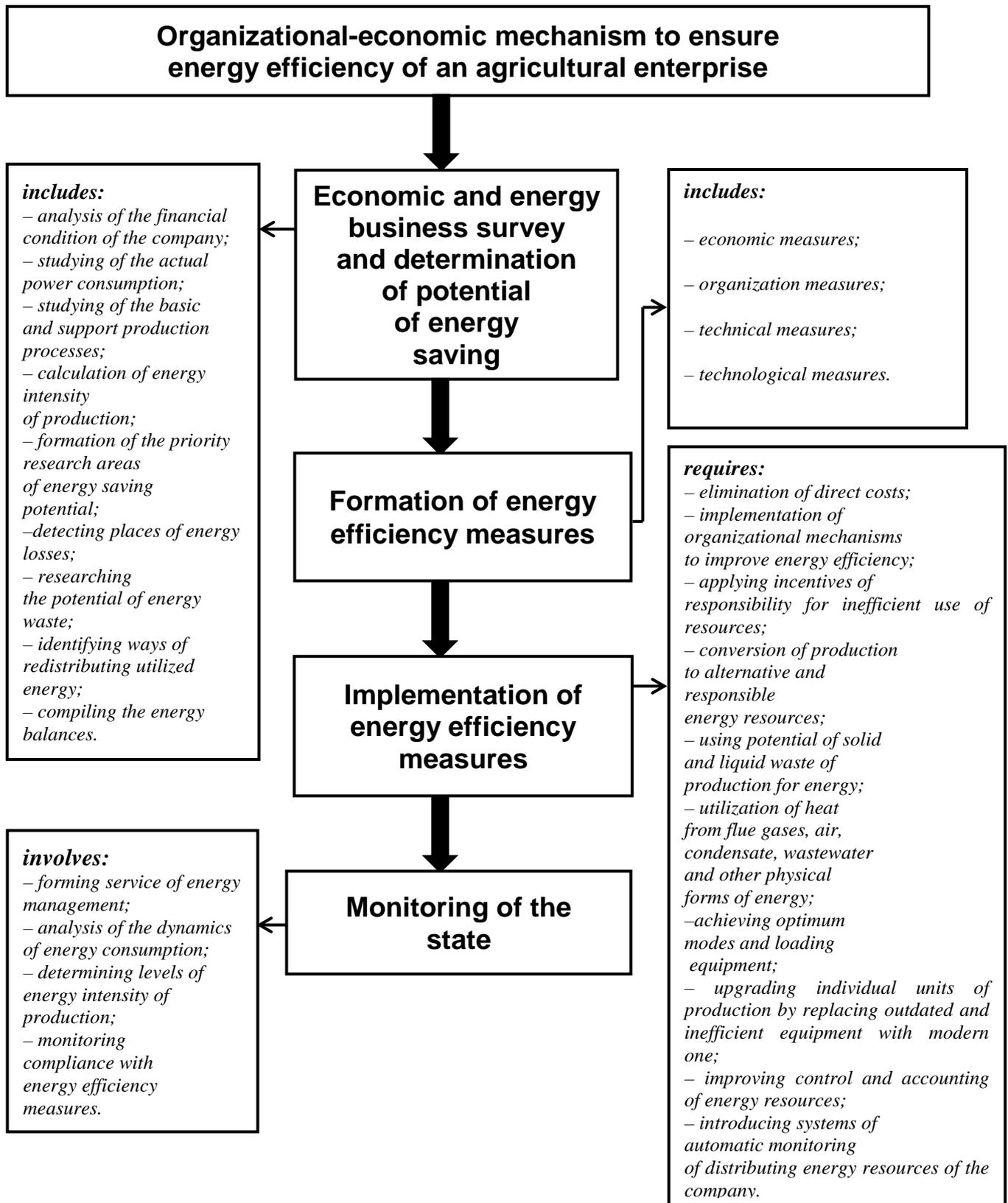


Figure 2. Conceptual model of organizational-economic mechanism of energy efficiency of an agricultural enterprise

Optimal from the standpoint of energy saving and energy, and thus economic efficiency for the company will be output at which marginal costs of energy resources for its production of energy are equal to the marginal value of output. This means that

the increase of energy costs in the production process is justified as long as they do not exceed the size of energy value of products derived from their use, ensuring the competitiveness of the enterprise. To control the energy potential of agricultural enterprises it is necessary to use energy management, by which it is meant a set of voluntary, proactive and effective actions of economic entities aimed at the realization of the maximum possible effectiveness of their own programs, projects and goals in using and energy saving in the production process.

Large energy costs and its low returns in agricultural production are due to a number of reasons: imperfection of technology solutions, poor technical support and low quality of technical means, lack of necessary material and technical base, insufficient and untimely execution of manufacturing operations, imperfection of monetary system, taxation, pricing mechanism, features and characteristics of human, material and financial resources, organizational and economic parameters and system management.

Conclusions. 1. On the basis of theoretical and methodological analysis the essence of the mechanism of energy saving is shown, its complexity and diversity are found, characterized by a set of forms, methods, components, interactions and leverages of stimulating aimed at improving energy efficiency. The mechanism of energy saving consists of a set of measures to ensure the most efficient use of the energy potential at the lowest unit cost of energy per unit of production. Its formation in AIC provides a comprehensive approach from state regulation of agricultural energy consumption to improving organizational and economic mechanisms of management. 2. The proposed method of evaluating the efficiency of the mechanism of energy saving at enterprises allows objectively and comprehensively analyzing the efficiency of energy saving including specifics of activities of agricultural enterprises and identifying reserves of its improvement. 3. Organizational-economic mechanism of activities of agricultural enterprises on energy saving represents a set of elements which interaction can reduce energy consumption per unit of production and improve the efficiency of agricultural enterprise.

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The essence of the economic mechanism and components of energy saving of AIC are considered. The process of evaluating the effectiveness of energy saving mechanism of the enterprise with integrated indicators of integrated efficiency is described and a classification of costs for managing energy saving is proposed. Legislative methods of stimulating energy saving in Ukraine, as well as scientific researches of energy saving in agriculture are analyzed. A model of organizational-economic mechanism for energy efficiency of the agricultural enterprise and group of indicators to assess the level of using energy-saving potential of the agricultural enterprise is shown. A mechanism for a comprehensive integral index for calculating energy efficiency of the agricultural enterprise that will allow greater understanding of the nature of energy saving and taking into account when assessing the economic, social and environmental factors is proposed. The necessity of introducing at agricultural enterprises energy management to improve the technological and production processes from the point of energy saving is substantiated.

Key words: energy saving, energy efficiency, mechanism of energy saving, AIC, energy costs, energy management.

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