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ОСОБЛИВОСТІ СТРАТЕГІЧНОГО ПЛАНУВАННЯ ЗБАЛАСОВАНОГО РОЗВИТКУ РЕГІОНАЛЬНОЇ ЕНЕРГЕТИКИ

Запропоновано класифікацію стратегій розвитку регіональної енергетики відповідно до характеристик та просторового виміру, стадії та завдання процесу планування її збалансованого розвитку. Визначено завдання збалансованого розвитку регіональної енергетики, вимоги до місцевої інституційної системи та можливі помилки під час вибору стратегії розвитку регіональної енергетики. Встановлено показники для визначення відносного рівня зростання регіональної енергетики, а саме енергетичного зростання, відносного темпу зростання та диференційної зміни.

Ключові слова: регіональна енергетика, збалансований розвиток, стратегія розвитку, процес планування збалансованого розвитку регіональної енергетики.

THE PECULIARITIES OF THE STRATEGIC PLANNING OF THE REGIONAL POWER INDUSTRY SUSTAINABLE DEVELOPMENT

The article presents the classification of the regional power industry development strategies according to the characteristics and space dimensions, as well as the stages and objectives of its sustainable development planning. It defines the objectives of sustainable regional economic development, requirements to the local institutional system and possible mistakes in choosing strategy for the regional power industry development. The article establishes indices to determine the relative growth rate of the regional power industry, namely the power industry growth, in relation to the pace of growth and graduated change.

Key words: regional power industry, sustainable development, development strategy, process of sustainable regional economic development planning.

Problem formulation. The country's power sector is an important factor of its sustainable economic development. It becomes a necessary condition for satisfying the needs of population in acceptable standards of living and economic entities in essential component of its operation. Under the present conditions the coordination of annually increasing demand for energy resources and power suppliers with the lack of own traditional energy resources, generating capacities, permanently growing amount of depreciation of the main power equipment, which is morally and physically obsolete and influences the environment negatively, is one of the most important problems of the power industry of Ukraine.

The main power problem of Ukraine, as the country experiencing power shortages with the population comprising 1 % of the world's population, is significant power consumption, namely more than 2 % of the world consumption. More than 50 % of fuel needs are covered by the import: the oil import reaches 90 %, the natural gas – 70 %. The great increase of energy resources prices in the world in recent years makes the countries experiencing power shortages to seek for alternative energy sources, such as the

sun, ground, thermal water, biomass etc., and to invest into the innovation. However, in 2012 the equity contribution in the fixed assets of the companies, which produce and distribute electricity, water and gas, comprised 9.6 % of the total investment in the country's economy, but that is by 4.5 % more if comparing with 2010. Only 25 of the corresponding enterprises implemented innovative processes in 2008; in 2009 their number grew to 35, and in 2012 – to 65 respectively.

Under energy resources and power suppliers' shortage, ineffective power generation, transmission, supply and demand, general economic recession, the regional power industries are of strategic importance in the power sector development. Taking into account the regional approach to the power industry development, it is important to activate research on the planning of its sustainable development.

Analysis of current research outputs and publications. In the legal literature [1, 2, 3] the power industry of Ukraine is viewed as the energy industry of national level. According to the view power efficient strategies and programs, state administration, regulatory support, pricing policy concerning energy resources and suppliers, methodology of the calculation are developed. The Ukrainian scientists are thoroughly investigating certain types of power industry. For instance V. V. Derhachova and B. S. Serebrennikov [4, 5] are studying electric power industry, its competitiveness and export potential; A. Dolinskyi [6] – heat power industry and co-generation; A. Amosha, B. Z. Piriashvili, B. M. Chyrkin, I. K. Chukaeva [7, 8] – power saving. Thus little attention is paid to practicability of planning, development and further effective functioning of the regional power industry.

The aspects of the energy industry development of Ukraine and the European Union have been studied and investigated by native and foreign scientists. Particularly [1, 2, 3, 4] introduce the processes of forming the priorities for the power strategies of the EU and Ukraine. The peculiarities of the gas markets development are studied in [5]. The usage of underground gas storage facilities and starting conditions of the Ukrainian gas hub establishment are thoroughly analyzed in [6].

It should be mentioned that the very level of liberalization of the power markets reflects the real concept of the country's economy development and its energy security. Thus the need to use innovative technologies potential in traditional monopolized spheres increases.

Article objectives. The objectives of the article are as follows:

- to analyze the approaches to the process of choosing the regional power industry development strategy;
- to study the peculiarities of the sustainable regional economic development planning.

Presentation of main materials. The regional power industry is to be understood as the power industry of the regional level and development, which is connected with the studying of the energy resources, their consumption in the power production (generation), transformation, accumulation and consumption of its different types, mostly of heat and / or electrical. At the same time the power industry sustainable development and its further functioning will be possible only when power supply of separate households and businesses is optimized. That means that sustainable regional power industry development will be understood as a type of activity, held by local or national governments, power industry subjects in order to stimulate or support the optimized usage of available traditional, alternative energy resources and power suppliers, to achieve the interaction between economic, social and ecological parts.

In our opinion, the state sustainable power industry development strategy is the most essential step to increase the public control over the use of resources and environmental pollution; while the local groups are to be more important in ensuring energy supply, economic and ecological sustainability; and power enterprises are aimed to form business activity and competitiveness, while energy resources customers and supplies are to be sure they will be able to satisfy their needs and requirements of both the products themselves and appropriate standards of living.

The national sustainable power industry strategy will be more effective if connected with the efficient regional strategies, which are aimed to promote the programs of power industry development, as well as with the some kind of the state assistance to the regions, so then the latter can form such level of power supply, which allows them to use their relative advantages to the utter most. All the power industry

development strategies can be classified according to the scale and the sphere of their use: region, field of the economy or the enterprise (table 1).

Table 1

The classification of the regional power industry development strategies

The characteristics of the national power industry strategy	The space dimension of the strategy		
	Absence	Implicit	Explicit
The absence of the strategy	The general development strategy	Development strategies, that are influential on the regional scale	The regional development strategies
The field support	The structure strategy	The regional structure strategies	The local sustainable power industry
The separate energetic companies support	Absent	Local energetic support	The structure strategies oriented on the certain enterprises

Source: Personal adaptation

Within the national point of view, the strategies of the regional power industry development are necessary primarily to ensure more even power industry development of all regions of the country and to use the huge potential characteristic to different places in order to enhance and support the sustainable development process. The objectives of the regional power industry development will be as follows:

1. To enhance the energy supply and regional competitiveness with the help of the development of the resources capacity, which have not been used.
2. To provide the energy efficiency in the extraction of the energy resources, generation, transmission, supply and consumption of power suppliers.
3. To increase the population's level of the energy supply.
4. To improve the environmental state and to make the living standards of the local population better.

The strategy of the sustainable regional power industry development in any area will greatly depend on the area's peculiarities. Thus three main types of settlements or areas can be distinguished according to the respond to changes in the energy supply (table 2).

Table 2

The objectives concerning
the regional power industry development according a certain type of the settlement or area

Type of settlement or area	Objectives
Settlements or areas with the growth	To manage the sustainable power industry development, to plan economic, social and ecological alternatives
Settlements or areas with the economy restructurization	To diverse the energy base; to reach the energy efficiency
Settlements or areas with the regress	To save the remained power systems, to search for alternative types of energy supply, which will correspond to what the local council can afford

Source: Personal adaptation

To summarize it should be noted that some aspects of the regional power industry development are useful to any town, city or region. Those are the local council and nongovernmental organizations represented by their experts are to decide the role of local community in determining the regional power industry perspectives.

The modern theories of development are insufficient basis for activities aimed to promote the regional power industry. Thus we offer to turn the approach into the synthesis, the basis for finding decisions and implementing appropriate events in the context of the regional power industry development

(table 3). So the sustainable regional power industry development is a process with the main aim to use regional resources optimally to implement the necessary energy supply, rational correspondence between traditional and alternative energy resources, to minimize the negative effects on the environment, to promote profitability of the power industry enterprises (table 3).

Table 3

The peculiarities of the theories of the regional power industry development

Component	The old theory	The new theory
Energy resources	Traditional energy resources	Reasonable combination of traditional and alternative energy resources
The basis for development	Energy sector development	New institutions development
Advantages of the area	Comparative advantages based on natural characteristics of the area	Comparative advantages based on the qualitative level of the environment
Information resources	Labor	Knowledge as the power industry engine
Technological resources	Traditional energy supply systems	Innovative energy supply systems

Source: Personal adaptation

Two main conditions are to be provided to develop the regional power industry development. Initially, it is advisable to involve one or several organizations to perform the duties of conducting or coordinating certain economic, social and ecological changes in order to develop an appropriate strategy. The idea is based on the fact that the public authorities, citizens or nongovernmental organizations are involved into the process of the regional power industry development, while businesses, employees, society and government remain inactive. As a result, the initiative is generally positively treated, though it can be not a successful one.

Secondly, it is necessary to clearly define the area or territory of implementation of the regional power industry development program. The area is to be territorial unit, within the borders of which there exist strong contacts between the institutions and the enterprises. It is of high importance to analyze carefully and thoroughly the actual place and role of the area in the country's economy, as no system, in this case the energy system, is limited by the borders of the region, city or town.

In our opinion, six generally recognized stages of the process of the regional power industry development can be distinguished. The sequence of the stages is shown in the fig. 1. But it is not obligatory to follow the order or to lose the opportunity when the program of the regional power industry development is not developed completely. At the same time there exists a big probability, that disjointed and uncoordinated events aimed to promote the power industry development will be unsuccessful and inefficient. Each of the six stages is connected with a set of objectives.

The indices showing the relative level of the regional power industry development help to determine the connection of the regional power industry and its direct surroundings. The most effective analytical methods make it possible to obtain comparative figures or information about the regional economy state in different periods of time.

The analysis of the relative changes is the effective and convenient method to analyze the changes, which take place in the regional power industry structure if comparing to the country's power industry. The region, which is studied, can be either small or big; the main idea is that it is to be the part of the basic power industry with which it is compared. The basic or comparative power industry can be either the power industry of one region or the country's power industry. It is clear that this approach is ineffective for analysis of the energy system of the city district level.

The objective of the relative change analysis is to define the effectiveness of the regional power industry versus the wider basis, for instance the country power industry. The relative change analysis allows us to get the data about the regional economy state in three interrelated aspects:

1. The index of the power industry growth reflects the growth of the power industry via the comparison between the total amount of supply, consumption of the energy resources and power suppliers in two different time periods.

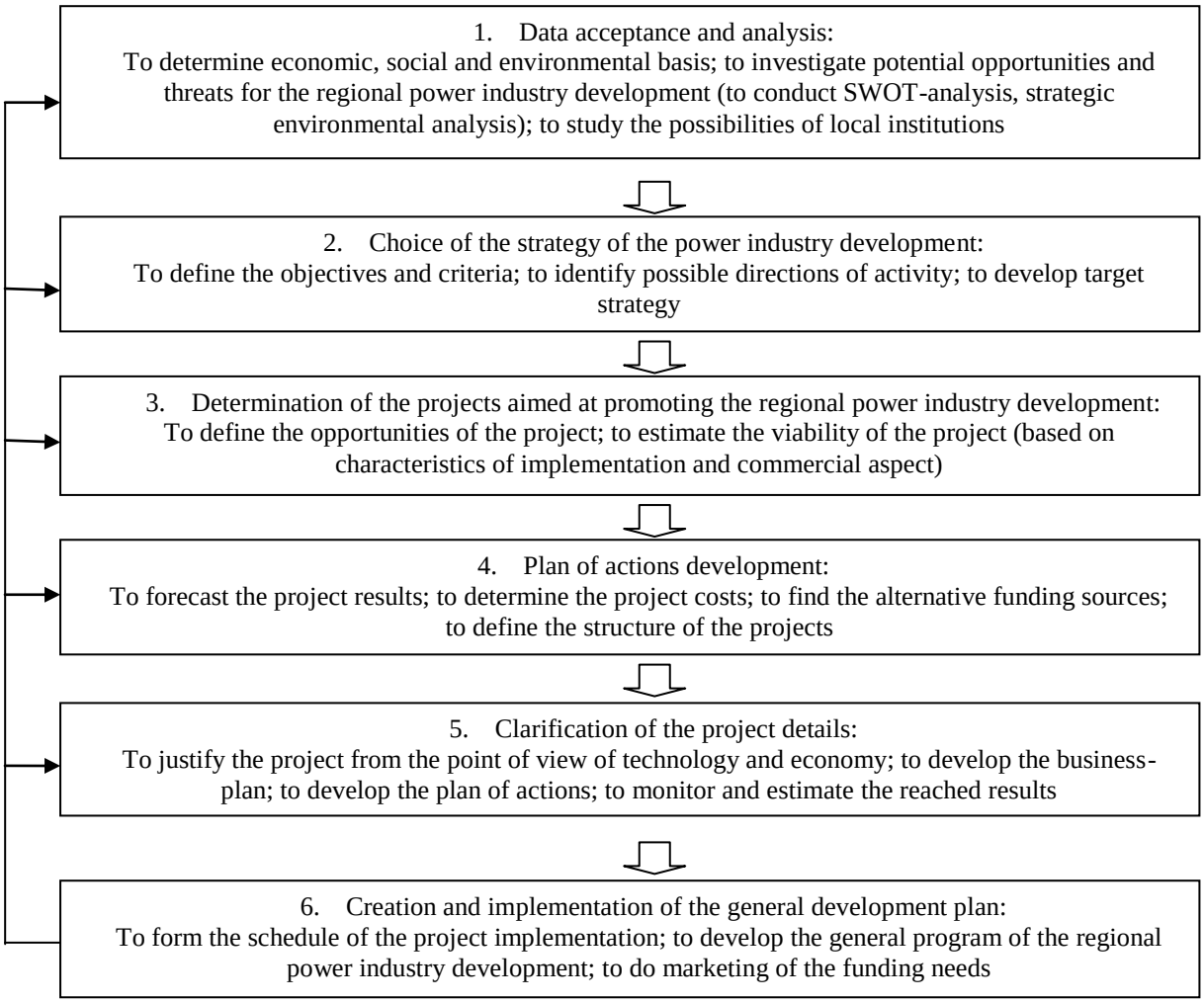

Fig. 1. Stages and objectives of the planning process of the sustainable regional power industry development

Source: Personal adaptation

2. The index of the relative growth reflects the growth rate of certain sub-sectors of the power industry (for instance, electrical power industry, heat power industry etc.) versus the total growth rate of the basic power industry. The index allows us to determine whether the changes in the basic power industry have taken the place or no.

3. The index of the differential change helps to define the level of the competitiveness of the certain regional power industry versus the country's power industry. It reflects the growth rate of the regional power industry in comparison with the country's one. And thus the positive differential change of the regional power industry means the faster development than the same sector within the basic economy.

The effective measures aimed at promotion of the sustainable regional development are to stimulate the development by providing the appropriate institutional systems instead of to establish or buy only the better economic conditions with the help of various maneuvers. However, the scientists, experts and consultants have paid too little attention to the factor of planning the regional power industry development and have not treated it as a level of the local community readiness and awareness.

To estimate properly the regional power industry ability to hold the long-term comprehensive strategy of the environmental, economic and social development, one should be aware of the regional institutional system, and especially about such its components as:

- local public institutions, i.e. contributions of the associations, trade unions and environmental organizations to the programs of the regional power industry development;
- economic institutions, i.e. certain subjects of the energy supply, which need the evaluation of the possibilities of their sustainable development and the confidence degree of the population;

– political institutions, especially the local councils, which are to participate actively in the process via representations in committees, agencies and boards;
– financial institutions, either national or foreign ones, which are to be mobilized in order to support the regional power industry development;
– educational institutions and vocational training centers are to provide the programs of the regional power industry development with the experts and professionals with the appropriate level of knowledge and skills, as well as with the high quality researches required for the development planning.

When starting to promote the sustainable regional power industry development, one should be able to conduct five main functions, connected with the development. They are as follows:

1) to combine environmental, economic and social planning;
2) to develop social and public awareness;
3) to use efficiently the energy resources and to minimize the negative impact on the environment;
4) to do target marketing of the power industry in order to attract the businesses and enterprises;
5) to provide local funding.

The first and the last functions are the important initial conditions, which act outside the planning of the power industry development. Many regions with the strong management appear to be unable in providence the sufficient amount of resources for the development of the local financial basis in order to support future projects. At the same time some regions seek for the experts' opinions concerning the state of the regional power industry, while the local population has no interest towards them. The remained three above mentioned functions are technical aspects of the regional power industry development.

It is hard to overestimate the importance to be legible and knowledgeable in the selection of information for planning the regional power industry development. No matter what an extensive planning experience the one or other community has, the way of selecting information and data are to be well considered in advanced. The information is to be divided into important, useful and desired, just useful, but maybe insufficient or even less worthwhile. Among the other requirements the information and data necessary for the regional power industry development planning are to correspond to, are the following aspects:

1. The selected information and data are to be comparable. The data itself is unworthy, if the users cannot compare it with the other data.

2. The information is to be conformal, so the data can be traced to the common denominator.

3. The fast and quick access to the data is to be provided. The information saved in the outdated database can be carefully selected, sufficient for comparison and relevant, but it will have no value if it cannot be used when needed.

It is important to admit that to research the environmental, economic and social development of the regional power industry, its needs and readiness for development means more than just to gather the information. It is about the evaluation of the local community ability to take measures for their own resources development. It occurs that the deadline for the request for funding leaves no time to conduct a social survey or poll; besides, it is not the cheapest way to investigate and gather information and data. But still the idea of attracting a wide range of people to the evaluation of the region's needs has several significant advantages.

In our opinion, the strategy if the sustainable regional power industry development is a full complex of principals, which form the concepts to determine the directions, either general, or certain (i.e. from aims to the strategies and projects). The worth of the strategy is in its capacity to provide clarity of thought and to help different subjects of the process of the regional power industry development to reach a consensus. It is important to consider several alternative strategies along with a number of certain projects or offers, which are the main structural elements of any program of environmental, economic and social development of the regional power industry.

When choosing the strategy of the sustainable regional power industry development, the local managers can fall into one or several traps which are as follows:

1. Overdependence on government programs. The experts in the regional power industry development often accept without hesitation government grants, loans or other programs and incentives.

The local officials usually try to accommodate the local needs with the government programs rather than to deal with the projects focusing on the local needs.

2. The strategy-facilities/means exchange. Sometimes the local managers confuse some specific tools of development with the complex strategy program.

3. Starting with the wrong side of the problem. Usually the planning experts try to keep the operating of active companies – energy supplier by all means. However, they do not take in account potential possibilities to use alternative energy sources and to improve the energy efficiency of existing power systems.

4. Subservience to fashion. The communities usually choose fashionable tendencies and strategies without sufficient data on their environmental, economic and social feasibility and possibility to provide the appropriate infrastructure for such enterprises.

5. Ignoring the level of readiness of the community to the development. It often happens that local or regional councils took the development strategies and implemented them without proper evaluation of the general readiness of the regional power industry to the development. The strategies and projects are to correspond not only to the energy resources of the certain region but to the competence level of the local population as well. The success of the local strategy of the regional power industry depends on the mutual readiness of the local officials, entrepreneurs and population to the long-term and persistent implementation of an accepted program and relevant projects.

Conclusions and further research prospects. The methods and techniques of analysis themselves will not help the local communities to detect the problems, which suppress the sustainable regional power industry development, to find the solutions of them. Each problem has unique peculiarities that require individual approach and implementation of new methods of analysis. Mentioned approaches are standard tools, which can appear to be useful for determining either the place or direction of the interference into the local power industry. These methods are not to direct the development process, but to help experts working on the local sustainable development of the regional power industry to develop certain criteria, which can be used to define their state at a certain time period, the further direction of their development and the possible consequences of the usage of alternative solutions. The further research will be devoted to the development of the indices system, which can be used to evaluate the active state and further sustainable development of the regional power industry.

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