

MANAGEMENT OF ENERGY INDUSTRY ENTERPRISES BASED ON THE SUSTAINABLE DEVELOPMENT CONCEPT

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Methods. Sustainable development of energy company is affected significantly by principals of external economic environment that is local, national and global economies. The problem of choosing a model of sustainable development of a mining enterprise is determined, which makes it possible to predict the trajectory of its development in the short and long term, the choice of optimal solutions. It was emphasized that the cluster mechanism is an effective and efficient tool for stimulating the development of the regional economy. The theoretical foundations of the essence of clusters, their effective formation and functioning have been analyzed. The understanding of the essence of the regional cluster in modern business conditions and the need to improve the conceptual foundations of its definition are studied.

Results. It is proposed to manage the mining enterprise on the basis of sustainability based on the principle of sustainable development based on the value of the object. The main purpose of this method is to monitor production costs in order to reduce them and redistribute overhead costs.

Novelty. The concept of «autonomous specialized poly-structural cluster» of the mining region is proposed, which, unlike the existing ones, provides for the combination of business entities not on the basis of belonging to one industry through the manufacture of relevant products and providing services, but on the basis of belonging to a single resource center of the cluster, which provides an opportunity to use a complex of resources of natural and man-made origin for production and provision of services in various industries.

Practical value. The integration of these provisions in order to adapt to the harmonious development of the energy enterprise can help resolve the conflict between the principles of sustainable development and the rules of the market economy.

Keywords: management, enterprise, sustainable development, autonomous specialized poly-structural cluster.

Statement of problem. Exploring the core essence of sustainable development namely its principals and concepts, analyzing relationship of sustainable development and other economic theories and studying current ideas of how to make energy companies to growth sustainably provide some insights into contradictory connection of sustainable

development itself and energy company activities within the market economy. As we see it, these contradictory challenges remaining untaken up prevent energy companies from adhering to balanced economic, environmental and social interests in practice and disallow to put economic, social and ecologic sectors of internal and external environment together

around the energy company providing its integration into local and national economies.

It is important to choose integration models of doing business aimed at increasing their competitiveness in the context of globalization processes. It covers not only the economy of states but also the economy of regions. One of these types of modern innovation structures are cluster models of organization of economic activity as a type of network structures that have proven their high efficiency in different countries.

International experience proves the expediency of using cluster structures in increasing the sustainability of the economy and especially in increasing the sustainable development of regions. Clusters should be an effective tool in overcoming the negative factors that hinder the development of the regions of Ukraine and the country as a whole.

Analyses of recent papers. The analysis of sustainable development models presented in the scientific literature allows us to conclude that representatives of European scientific schools pay more attention to building graphical models, while scientists from other countries focus on mathematical modeling of socio-ecological and economic processes.

The actualization of the cluster approach for Ukraine, its corresponding scientific justification carried out in the works of many scientists. In most of the publications on this issue, theoretical principles regarding the essence of clusters are developed, and the prerequisites for their effective formation and functioning are investigated.

Aim of the paper. The purpose of the article is to determine the possibility of managing energy enterprises in order to ensure their sustainable development based on the principles of sustainable development through the development of the conceptual foundations of the formation of a cluster for the optimization of the economy.

Materials and methods. The first challenge could be described as fundamental contradiction between postulates of the market economy according to which energy companies perform and managers' estimation of a level of importance and significance that social and environmental projects are of. As a consequence it mirrors their attitude to such projects which in

such case do not occupy priority positions among company goals. Saying reverse sustainable development process is considered by managers and owners of assets to be of high cost and low benefit.

At the same time an company is committed to the market economy rules and recognizes benefit as the only one driver for its activities. Unfortunately usual results and outcomes of ecologic and social projects benefit society as they are services provided in education, health, culture and rest sectors without direct financial profit for a company.

Not having a clear measurable indicator to evaluate positive effect of their impact on the company image or market value makes sustainable development projects to be evaluated abstractly and subjectively. Rising in market value of sustainably developed company and its climbing up to the top of ranking among different companies are worth moving towards sustainability if the company is actually a corporation, being sold and meets eligible financial criteria to be finally ranked. Otherwise social and environmental projects require to be financed at the expense of the company with reducing the profit gained. By extension, alternative cost of such projects accounted as virtual effect that would be achieved due to financing other economic business may exceed ecologic and social effect as assessed by experts and seen after sustainable development measures. All this pushes risks that the company will refuse to take social and ecologic projects up especially under conditions of new top management board or new owners being introduced or particularly without any government subsidies being provided.

Thence the conceptual platform for sustainable development of energy company is required to integrate the process of sustainable development itself into market economy model to ensure that the company benefits from being committed to sustainability principals and that such benefit is clearly measured in money equivalent. Globally there is a good example of it concerning artificially made world market for quotas on CO₂ emissions according to Kyoto Protocol where a company is able to sell unused quotas to other demanders secured after implementing innovative green technologies. In

such the case green technologies become an investment project with certain level of profit.

It was found that an energy company by its nature violates the principles of sustainable development not only during active operation stage of its life cycle, but also after its liquidation as an economic entity.

Then a dilemma arises. It is proposed to think it of as a dilemma of transitioned stability roll in the development of the energy company (Sustainability Roll in Transitive Energy) (Fig. 1).

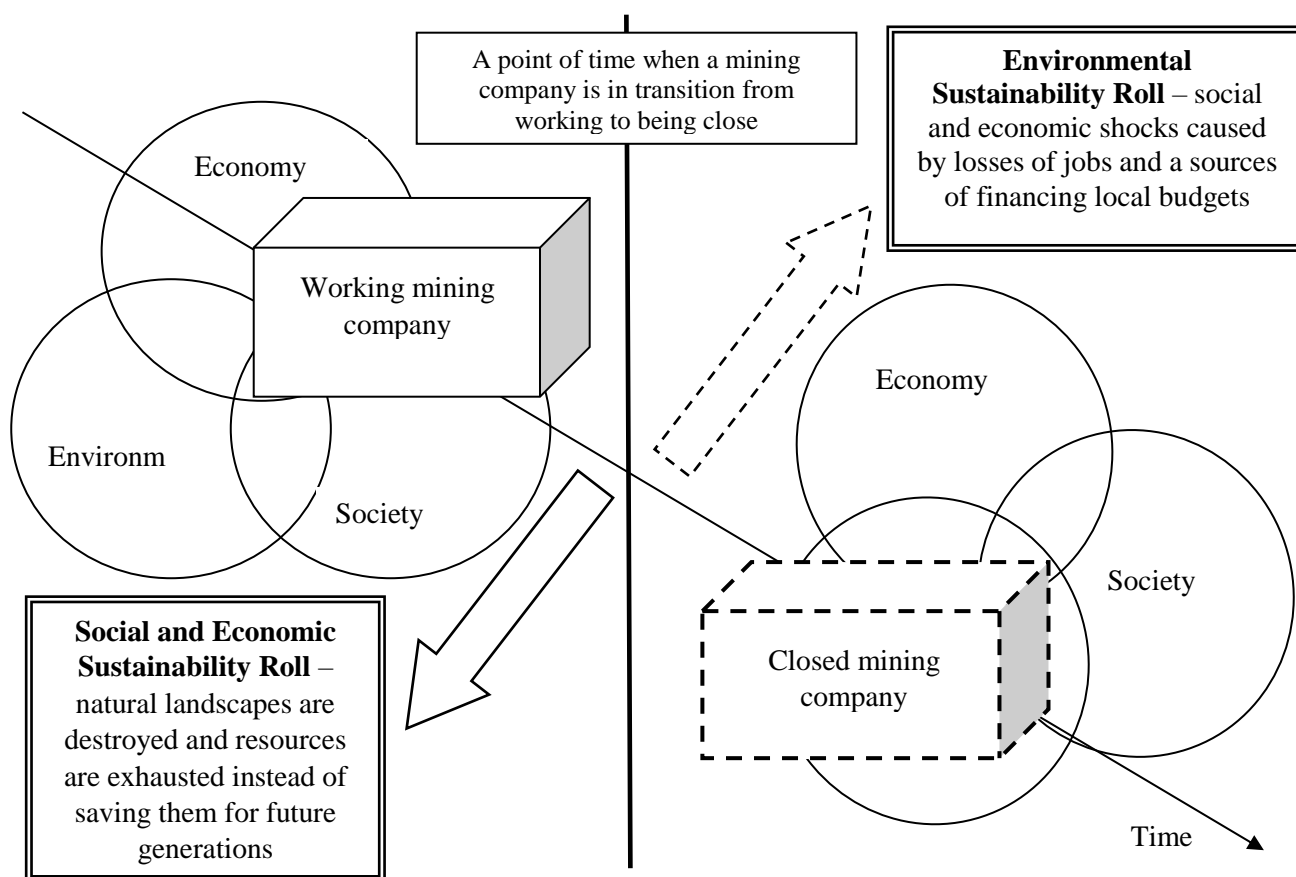


Fig. 1. Sustainability Roll in Energy Transition

The economic essence of sustainability roll observed during the development of the energy enterprise can be determined as a concentration of resources to perform more tasks in one or two areas – that is, economic, social and environmental. It accordingly allows satisfying the interests of certain groups of stakeholders to a greater extent than others. If an energy company is active in the economic area, then its standing could not be called absolutely sustainable due to the significant ecosystem disruption (social and economic sustainability roll). In turn, the termination of the process of destroying the ecosystem causes social and economic shocks in the territorial development (environmental sustainability roll). Therefore, in this regard, it can be concluded that both the actual energy activities and its termination shall not contribute to the achievement of sustainable

development of internal and external environments of the company. This precedes the question of the possibility to ensure sustainable development of an energy company even after its liquidation, as an economic entity.

Sustainability roll is a dynamic characteristic of the energy enterprise development, which is explained by its shift and especially clearly observed in the transition from active energy enterprise economic activity to its termination. This suggests that the roll of the enterprise agile in time. At different points of time, at different stages of development of the enterprise we can see deterioration in the economic, social or environmental internal and external subsystems of the company due to a specific variant of the reallocation of resources.

Taking into consideration all said above, we can formulate the following provision to

complement existing theoretical foundations for sustainable development of the energy enterprises. Sustainability in the development of the energy company does not disappear or appear as a permanent feature because the company always has internal economic, social and environmental impact and is always integrated into external upper system. However, the efficiency and effectiveness of sustainable development of the energy enterprise depends on the harmonious interaction of these areas. It is reflected in the roll of sustainability of energy enterprise that is changing in the transitional stages of its operations. Energy company after termination of economic activity also has a roll of its sustainable development at a post-termination stage.

The second and the third contradictions are relevant to life cycle and basic activities of an energy company. In fact energy company according to the core essence of its activities breaks principals of sustainable development not only during the energy process itself but also after being abandoned and closed. Herewith closure of the energy company means as finished energy process so terminated legal entity status. Then the dilemma could be found in energy company sustainable development and overall performance. It is offered to consider that dilemma under the name of Sustainability Roll in Transitive Energy. Further description of it may be encapsulated in the following statements.

At the moment of terminating the process of digging resources which is the point of actual transition of the energy company from being a mine to uncertain phase of its life cycle a special phenomenon of changing sustainability roll or such roll's occurring could be observed in interaction of economic, social and ecological internal and external systems of the company. The economic nature of the sustainability roll allows defining that the energy company is rolled when resources are concentrated to achieve goals of one or two of three balanced sectors of the company. If it is so, economic interests of certain stakeholders are satisfied more or in a better way. During intensive energy development of the energy company cannot be identified as sustainable absolutely because of dramatic impact on environment. It is therefore social and economic sustainability roll.

Destroying environment comes to a stop when energy is recessed. But then social and economic shocks of spatial development occur. It is ecological sustainability roll. Thus as energy company activities so its closure does not contribute to absolute sustainability of interaction of internal and external systems. Consequently a principal question arises whether it is possible to achieve sustainable development of a region or territory where energy company is situated even after its status of legal entity being terminated.

Sustainability roll is a dynamic feature of energy company development that is shown due to its changes occurring at the moment of cutting extraction of minerals off. Hence sustainability may be supposed to roll over time that is different phases of the energy company life cycle can suffer economic, social and environmental slowing down caused by certain model of production factors' distribution.

In addition to current theory of providing development of the energy company according to sustainability principals the following items can be delivered. The energy company sustainability does not appear and vanish but is a permanent for it as the company always has internal economic, social and ecologic environment as well as always is integrated into local (regional) equal systems. But the extent to which sustainable development of the energy company is beneficial economically and efficient socially depends on the level of harmony met by economic, social and ecologic systems in their interacting. Particularly this harmonic interaction can be described by means of sustainability roll that changes during phases of transition. As mentioned above, the energy company also has sustainability roll even after terminating the process of digging minerals and such roll is stuck to post closure phase.

Let's consider in details contradictory challenges arising from mismatch of sustainable development principals and energy company market activities over phases of energy and its stop as well as negative impact of these contradictions on the company itself and local economy.

Primary activities of the energy company for extracting not renewable natural resources come into conflict with the sustainability principal to save nature for future generations.

But keeping existing reserves of not renewable natural resources unused that requires a rapid closure of energy company along with complete their exhausting lead to a necessary closure of energy company identically. As a consequence, energy company closure directly affects spatial depression while sustainable development supposes economic systems to be developed in a long period to provide high life standards on those territories.

The energy company liquidation requires new investment projects to be found by the owner. For employees it means losses of their jobs. By extension, environment destroyed through energy need to be recovered or otherwise it is the company that has sole responsibility for it and nothing excludes liability for its fraud.

Contradictions pointed out above make risks of shaping or exacerbation of economic, social and ecologic spatial depression with deprivation of source of financing state and local budgets, pushing up unemployment, resettlement and reeducation of miners including members of their families, worsening ecology and having risks of territorial flooding and underground gas methane explosion.

Thus, the concept of energy company sustainable development must suggest its life cycle extension through diversifying its activities in a way that ensures absence of sustainability roll particularly during the process of transition from digging minerals to its termination.

The fourth conflict item is that socially and ecologically important objects of external environment are not integrated into the model of the energy company particularly into the legal one. But at the same time sustainable development suggests that economic, social and ecologic systems to be closely related. As rule social and ecologic objects are local or the state property so they are not included into the model of the energy company and don't meet distributed company's resources. However, the company is relatively responsible for such objects development to achieve its own sustainable development. In this connection a strong factor of interpersonal agreement between owners of the company and social and ecologic objects is to be found that in different

cases drives or slows down redistribution of resources for these objects.

Consequently, uncertainty of organizational hierarchy and lack of rights and liabilities of the company to run social and ecologic objects located on the nearby territory reserved by law make such objects to be considered by the company only as ones for sponsorship in case of appropriate profit and owner's wish.

For regional economy this contradiction means loss of stable finance source for maintaining social infrastructure and objects of ecologic safety, their destroying and high dependence on decision of company's owner. Thus, the concept of the energy company sustainable development must suggest that social and ecologic objects should be integrated into the company model in a certain way.

There are a significant number of definitions of the term "cluster" in both foreign and domestic publications, which in some way reflect the theory and practice of clustering processes. The first theoretical views on clusters were based on industry combinations, and today clusters are considered as innovation-territorial associations that are better coordinated with the sources of competitive advantage, cover foreign economic relations, relations between industries, technology, information, marketing etc.

The research allows to formulate the following author's interpretation of this definition: Cluster — a territorial-industrial form of optimization of the region's economy, which is based on a poly-structural model of integration of economic entities in order to synergistically use the potential of a single resource, material and technical base to increase production and expand economic activities to ensure sustainable regional development.

Thus, the usage of a cluster approach of forming an effective strategy for sustainable development of the regions aims to solve an increasingly wide range of tasks, in particular:

- analysis of the region's competitiveness;
- development of regional development programs;
- stimulation of innovative activity in the region;
- ensuring the interaction of large and small businesses, etc.

Cluster structures represent a territorial and spatial form of production organization and

optimization of the region's economy, focused on innovative development in both scientific and industrial activities.

The authors proposed the concept of "autonomous specialized poly-structural cluster", which, in contrast to the existing ones, involves a combination of economic entities not on the basis of belonging to one industry through the manufacture of relevant products and services, but also on the basis of belonging to a single resource center cluster, which provides an opportunity to use a set of resources of natural and man-made origin for the manufacture of products and services of various industries.

The autonomy of such a cluster is self-sufficiency of the most important resources (energy, water and land), their location directly on the cluster and the possibility of their integrated use in case of any need for maximum efficiency. The specialization of the above cluster is the availability of resource potential of the region belonging to a particular industry. The poly-structure of such a cluster is the use of specialized energy resource potential for production and provision of services of various industries.

A graphical interpretation of the above concept on the example of an energy region is given in Figure 2.

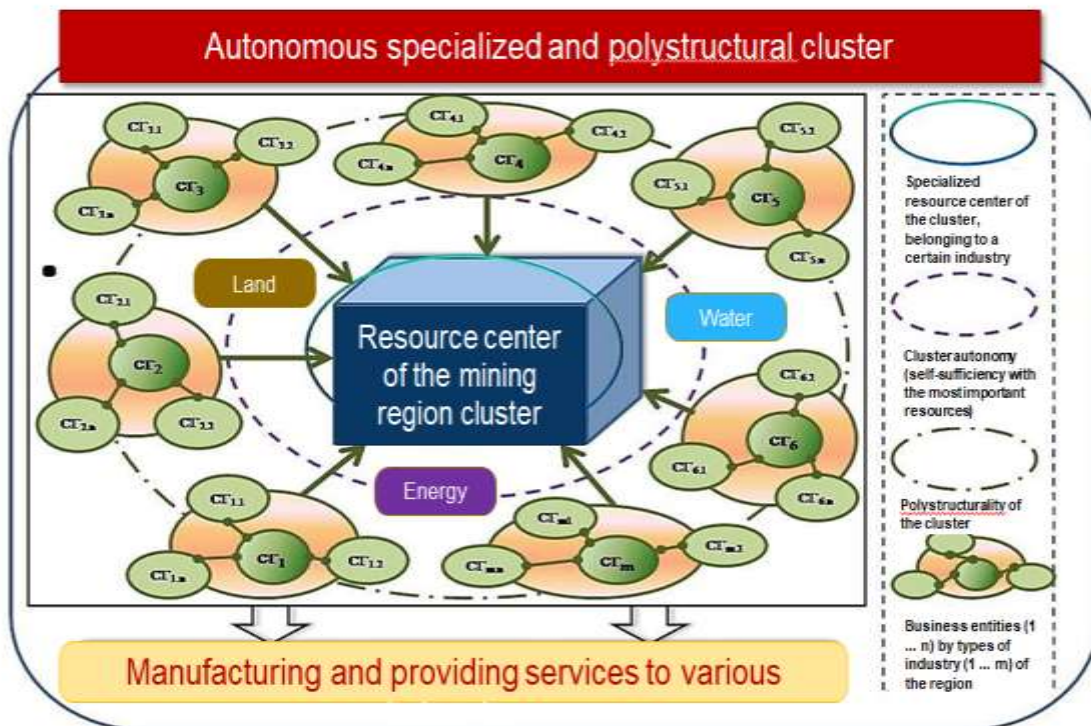


Fig. 2. Graphic interpretation of an autonomous specialized poly-structural cluster on the example of an energy region (Compiled by the authors)

Conclusions. The above analysis of the existing contradictions between the principles of sustainable development and the principles of the energy enterprise allows to propose to manage the energy enterprise in order to ensure its sustainable development based on the principle of sustainable development based on the value of the object. It should be noted that in the context of the article, the approach of sustainable development based on object value does not apply to the widely used in practice costing based on activities, process accounting,

accounting center responsible, which demonstrate methods of cost accounting in general.

The main purpose of these methods is to monitor production costs in order to reduce them and redistribute overhead costs. In this case, the object of cost accounting (function, process, cost generation center) differs from the object of costing, which represents products and services.

In contrast to these approaches, the proposed approach to sustainable development aims to analyze the economic activity of the

energy company to ensure its sustainable development in order to find and use reserves to enhance the harmony of economic, social and environmental systems by eliminating the above principle of sustainability.

The integration of these provisions in order to adapt to the harmonious development of the energy enterprise can help resolve the conflict between the principles of sustainable development and the rules of a market economy.

Today, the issues of studying the nature of the association of the subjects of the regional cluster, the principles of formation, interaction and its basis are very important. Usually a regional territorial production cluster is formed as a mono-structural model, which is based on a single production area, a single production chain, process, a single innovative technology and so on.

According to the authors, according to the above definition of «cluster», the most effective should be a parallel, ie, poly-structural approach to grouping enterprises. In such a cluster, enterprises are united not on the principle of belonging to one production chain, but on the principle of belonging to a single material and technical base, on which the production of several types of products or services can be carried out at once.

This will allow a more rational and full use of the «basis» of the cluster, to form a several times expanded range of business projects and effectively implement them, which will stimulate the regional economy and ensure sustainable development of regions.

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УПРАВЛІННЯ ПІДПРИЄМСТВАМИ ЕНЕРГЕТИЧНОЇ ПРОМИСЛОВОСТІ НА ОСНОВІ КОНЦЕПЦІЇ СТАЛОГО РОЗВИТКУ

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Методологія дослідження. Дослідження базувалося на застосуванні таких наукових методів, як абстракція – при визначенні сутності категорії «регіональний кластер» і формуванні концептуальних засад «автономного спеціалізованого поліструктурного кластера»; загального й особливого – при порівнянні дієвості інструментів стимулювання розвитку регіональної економіки на принципах сталості.

Результати. Актуалізовано проблему вибору моделі сталого розвитку гірничодобувного підприємства, що дає можливість прогнозувати траєкторію його розвитку на найближчу та віддалену перспективу. Визначено сутність поняття «регіональний кластер». Продемонстровано, що кластерний механізм є дієвим та ефективним інструментом стимулювання розвитку регіональної економіки. Запропоновано напрями удосконалення процесу управління гірничодобувним підприємством на засадах стійкості через імплементацію в управлінський процес принципів сталого розвитку.

Новизна. Створено концепцію «автономного спеціалізованого поліструктурного кластера» гірничодобувного регіону, яка, на відміну від існуючих, передбачає об'єднання суб'єктів господарювання не за ознакою належності до однієї галузі з огляду на кінцевий продукт виробництва чи вид наданої послуги, а на основі належності до єдиного ресурсного центру кластера. Реалізація такого підходу надає можливість використовувати комплекс ресурсів природного та техногенного походження для виробництва продукції та надання послуг у різних галузях національної економіки.

Практична значущість. Інтеграція цих положень з метою адаптації до гармонійного розвитку енергетичного підприємства може допомогти вирішити конфлікт між принципами сталого розвитку та правилами ринкової економіки.

Ключові слова: менеджмент, підприємство, сталий розвиток, автономний спеціалізований поліструктурний кластер.

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