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## ECOLOGICAL-AND-ECONOMIC AND ORGANIZATIONAL ASPECTS OF NATURE MANAGEMENT SUBJECTS INTERACTION

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The results of developing methodical approach to justification of strategies of mining enterprise are presented taking into account interactions with other subjects interested in economic and environmental-oriented results of its activities. Classification characteristics and the nature of regulatory influence on users of natural resources are determined. The necessity of routine analysis and forecasting regulatory influence as the factor of economic management results is grounded.

**Keywords:** mining enterprise, strategies, economics, rational environmental management, regulatory influence, project, stakeholders.

**Problem statement.** The possibility of introducing changes to environmental legislation requirements to the results of mining enterprise economic activities is determined by the presence and build-up of issues concerning intensification of production induced influence on the environment, recognition of metallurgical regions as areas of ecocatastrophe and irrevocable environment changes. Thus, there arise discrepancies between economic and environmental criteria of feasibility of fossil fuel deposit development, which increases the risks of changing regulatory influence conditioned by negative external effects of environmental management and complicates the planning and implementation process of economic strategies of mining enterprises.

**Analysis of recent papers.** A.G. Shapar point out that the issues of sustainable development is of vital importance in Ukraine, however their solutions are hindered by the priority of technology-oriented approach, ever-growing needs in natural resources, and low income of population [4, p. 6]. Understanding the impossibility of refusing from natural resources extraction A.G. Shapar draws conclusion about the importance of deterrent measures for production induced influence. Concerning the perspectives of mining activities A.V. Bardas states that the occurrence of fossil fuels that are unfeasible to extract and use in economic activities for economic and environmental considerations stimulates the search of new technological solutions and development of man-made

deposits [3, p. 260-262]. According to O.I. Amosha and al. [1, p. 6], the main reasons for increased production induced influence on the territory of Ukraine are as follows: inefficient and excessive resource- and energy-consumption of production; moral and physical depreciation of basic production assets, environmental-oriented in particular; inefficiency of legislation and absence of efficient mechanism of practical implementation of basic environmental-oriented principles. O.I. Amosha and I.V. Petenko point out a range of economic and administrative leverages on environment pollutants [2, p. 12-13]. Such leverages are covered in legislative documents determining legal liability of users of natural resources. However, a lot of purposeful governmental measures on the use of natural resources, in fact, contradict the interests of sustainable development of the society: the state spends considerable costs on support of environmentally harmful economic projects [2]. This shows the irrationality of not only economic subjects but also government institutions aimed at protection of social interests.

Consequently, the essence of economic growth provision in the model of sustainable development of society is determined as the distribution of environmentally-balanced ideology at the macro- and micro-subject levels. However, little consideration is given to conflicts between regulatory bodies and mining enterprises resulting in deterioration of economic and environmental outcomes.

**Aim of the article.** The purpose of this article lies in theoretical justification of methodological provisions and approaches to development of strategies of mining enterprises on the grounds of rational environmental management. **Materials and Methods.** The research was conducted on the basis of the following sources of information: materials of State Statistics Committee and environmental organizations; environmental legislation of Ukraine and international legislative acts; technical-and-economic index of mining enterprises on open access. The research was done in the following stages: estimation of the regulatory influence on the users of nature resources; determination of conditions of joint environmental activities efficiency; dependence of economic indexes of mining enterprises on the internalization level of external effects cost. To obtain reliable results the following scientific methods were used: analysis and scientific generalization; analytical method; structuring; modeling; dynamic programming.

Regulatory acts form the requirements as to safety and rational economic activities of a mining enterprise to meet regardless of its state of business conditioned by demand and competitiveness on the corresponding market or efficiency of internal environment. At the feasibility stage of mining enterprise economic activities, external needs of social interest groups are to be taken into account, which requires additional investments. Appearance of unexpected changes of regulatory leverages of economic and administrative nature increases the risk of mining enterprise receiving less profit. The following classification features are offered to determine the characteristics of external influence on an enterprise: the essence of decisions; form; direction of authority delegation; shared responsibility principle; subordination; management structure; evaluation criteria system dynamics; new requirements to users of nature resources; obligatory requirements. Method underlying the study of regulatory influence is the morphologic analysis allowing estimation by means of combining possible variants. The nature of regulatory influence is suggested to refer to as weak (agreement between a mining enterprise and other interested subjects in the sphere of mining relations), me-

dium (differentiated economic incentives, tariffing) or strong (administrative restrain, prohibition, procedures, requirements). Thus, is important to know the factors triggering the change of regulatory influence and to take into account transition from weak to strong influence in planning entrepreneurial activities.

Significant environmental results on territory level depend on the results of activities of all users of nature resources, thus, when one subject fails to fulfill his functions, the effect of another subject's activities is canceled. Responsibility for environmental consequences of production activities is to be shared on the basis of the principle of prohibition for inefficient subjects of institutional level to reverse their responsibilities. To rectify the situation, process approach to determination and realization of environmental activities is to be complemented with project-oriented measures to maintain consistency and stipulation of stakeholders' responsibility.

Final strategic reaction of a mining enterprise concerning rational environmental management will depend on the comparison results between necessary expenditures and expected economic results. This result will make the ground for feasibility of enterprise aims and objectives adjustment, and sustainability of its economic system. Priority of economic criterion lies in the logics of private investment in mining. Decreased economic results are possible on the condition of involvement of state (social) resources making up for limited entrepreneurial interest. Thus, commercial development of fossil fuels is to be considered as a complex of projects to ensure rational environmental management at every stage, or at several stages in case of joint projects. Project structure of a mining enterprise with premium status of department of environmental resources is regarded as the most suitable solution. Officers of this department are responsible for coordination of other departments' activities on the basis of the situation and trends at the market of fossil fuels directly or indirectly involved in economic processes. Thus, the level of rational environmental management directly depends on the quality of management process regarded as a complex of projects. The following groups of interested subjects are suggested to share joint

responsibility for the results of subsurface resources management: immediate subsurface users (mining enterprises), mediate subsurface users (government bodies and local government, formal and informal social groups). Efficiency of economic strategies of a mining enterprise will be connected not only with estimation of probability of increased cost of fossil fuels, but also with coordination of goals of interested groups in the sphere of subsurface resource management and obligatory stipulation of their responsibilities concerning fulfillment of measures attaining environmental goals (primarily, increased organizational liabilities of government institutions).

The nature of correlation between interested parties can be determined by two criteria: *efforts integration* – motivation and ability of subjects to cooperate; *response to initiatives* – perception of external suggestions by interested groups; readiness to increase the efficiency of activities to meet the group's needs. Comparison of these indexes brings about judgmental estimate of the correlation between subjects: refusal – opposite position concerning the object of joint management; uncertainty – absence of stable reaction to subjects' initiatives; comprehension – consistency of provisions and legality, under certain conditions, of the interested parties' requirements; consent – presence of intentions and purpose-oriented programmes to support the activities of an initiative subject; cooperation – determined action plan to attain individual and joint aims; liability – documented liabilities of interested groups; guaranty of efficient activities; insurance of business responsibility. Therefore, initiative subject representatives have coordinate enforcement of liabilities and partners' control.

Coordination of project partners' economic interests in extraction and processing of fossil fuels of state matter should be fulfilled on the basis of redistribution of environmental liabilities among them, which will determine the level of internalization and externalization of costs. Cost load on every participant of the public-private partnership project in mineral deposit development will depend on their number determined at the planning stage, as well as on their comprehension of the partner status. For instance, reluctance or formal participation

of a subject in the discussion of the essence of activities and distribution of the project activities increases the possibility of inefficient and untimely fulfillment, which will affect the activities other project participants. Preventive part of external costs characterizes the active position of the interested parties concerning prevention of external effects and reflects the level of the party's responsibility in money terms. Expenses of interested subjects conditioned by negative external effects of mining enterprise activities testify passive position of the interested party as to its own interests. The presence of external costs of the interest party and their increase is to be regarded as the grounds for reconsideration of external influence on a mining enterprise as an immediate user of nature resources and environmental pollutant. Increase in internalized costs is to be coordinated with public partners and compensatory payments are to be guaranteed to ensure target economic figures of mining enterprise activities.

Product potential and amount of financing are play the principle role in investment in business-portfolio projects of an enterprise. Dynamic programming methods are used to solve limited investments allocation task. In case of decision-making on environmental business projects financing at a mining enterprise, there arise additional requirement to the content of project portfolio and their implementation even in the period of deterioration of economic indicators. Business portfolio shift to less appealing environmentally-oriented assets brought about a dilemma: either to consent to decreased profit and operate in more predictable regulatory environment or have increased risk of raised regulatory influence with attempts at maximizing short-term profit. Regulation of enterprises profit by reconsideration of statutory requirements, payment rates or irregular compensatory payments will create the range of possible financial outcomes. Expectable transfers between them reflect bifurcation of strategic scenarios of external environment requirements to users of natural resources and expected investment appeal of underground mining.

**Conclusions.** Justification of enterprise economic strategy should include analysis of

current and perspective regulatory influence connected with reflection of social attitude to external effects of environmental management. Management structure of strategic changes should be formed on the basis of project structure of mining enterprise management and stakeholders' associations, stakeholders themselves being users of natural resources and holding responsibility for realization of their own part of work within the project of development of a site on the fossil fuel deposit. Environmentally efficient and economically compromising business projects will be specified within informational environment of stakeholders' groups.

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Представлені результати розвитку методичних підходів до обґрунтування стратегії гірничодобувного підприємства з урахуванням аспектів взаємодії з іншими суб'єктами, зацікавленими в економічних та природоохоронних результатах його діяльності. Визначені класифікаційні ознаки та характер регуляторного впливу на природокористувачів. Обґрунтована необхідність поточного аналізу та прогнозування регуляторного впливу як чинника економічних результатів господарювання.

**Ключові слова:** гірничодобувне підприємство, стратегії, економіка, раціональне природокористування, регуляторний вплив, проект, стейкхолдери.

Представлены результаты развития методических подходов к обоснованию стратегии горнодобывающего предприятия с учетом аспектов взаимодействия с другими субъектами, заинтересованными в экономических и природоохранных результатах его деятельности. Определены классификационные признаки и характер регуляторного влияния на природопользователей. Обоснована необходимость текущего анализа и прогнозирования регуляторного влияния как фактора экономических результатов хозяйствования.

**Ключевые слова:** горнодобывающее предприятие, стратегии, экономика, рациональное природопользование, регуляторное влияние, проект, стейкхолдеры.

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