

Gnatenko M.k.

REGIONAL ASPECTS OF ENVIRONMENTAL & ECONOMIC EVALUATION OF INNOVATIVE-INVESTMENT PROJECTS IMPACT

Annotation. Ground of methodical approach to the implementation of environmental & economic evaluation of the regional impact of innovative-investment projects based on the use of ecological-production cycle concept. Preconditions of improving of methodological support to substantiation of expedience, choice of a form and amount of nature protection activities state support are determined. The conditions of the expedience of innovative-investment environmental projects implementation are provided. Recommendations regarding the choice of forms of the innovative-investment environmental projects state regulation are developed. Peculiarities of using of eco-production cycle concept in determining the volume of synergistic environmental & economic effects of innovations implementation are established.

Keywords: region, innovation, development, sustainability, efficiency, environmental & economic evaluation, innovative-investment project, ecological-production cycle.

I. Introduction

Activation of innovative-investment activity is one of leading and most effective directions of decision of modern industrial production environmental problems. Innovative activity becomes the main source of quantitative, structural and quality transformations which in an aggregate determine the process of socio-economic development.

One of major priorities of innovative development is providing of environmental society necessities. However practical realization of critically important technological priorities of steady innovative development requires the comprehensive ground of innovative-investment projects (IIP) that will be realized on principles of accumulation of the state and enterprise sector financial resources for providing maximal economic, environmental and social efficiency of society resources using. Thus, the decision of accumulated in society environmental problems considerably depends on scientific validity and care of the IIP study.

The theoretical and methodical aspects of environmental & economic ground of IIP in the context of providing of public development stability and safety were examined in works of many domestic and foreign scientists, such as Bagrov N. [1], Balatskiy O. [2], Galpin A. [8], Doroguntsov S. [3], Katrich V. [6], Kurkin N. [5], Pirs D. [9], Sadekov A. [6], Terner R. [9], Fedorisheva A. [3] etc. At the same time the sepa-

rate questions related to realization of complex evaluation of the environmental & economic IIP efficiency taking into account regional development priorities need the additional ground and assessment.

II. Task raising

The ground of methodical approach to realization of environmental & economic assessment of innovative-investment projects regional effectiveness is the research object of the article. The following methods of scientific research were used in the article to achieve the object: theoretical generalization – for the ground of expedience of the use of approach to environmental & economic evaluation based on the use of ecological-production cycle conception positions, expert assessments – for the development of recommendations on the choice of forms of government control of the environmental IIP realization.

III. Research results

Innovations planning is the system of calculations, directed on the choice and ground of innovative development targets and preparation of decisions necessary for unconditional achievement of that targets. From the point of Fathudinova view [7, p.24-30], realization of innovative activity is directed on achievement of certain economic results, decision of tasks of economic and financial development providing. Thus achievement of innovative process economic results must be coordinated with providing of comfort social and psychological conditions in a collective for effective creative activity (that is the necessary condition of innovative activity activation), and also general public priorities (first of all – environmental). Therefore innovations planning must be necessarily directed on providing of unity and harmony in scientific-technical, production, economic and social development. Complex determination of economic, environmental and social efficiency of innovative-investment projects is the important component of such providing above all things.

From the point of Goyko A. view [4, p. 318-319], methodical principles of the IIP economic efficiency (EE) assessment consist of the following basic elements: the IIP EE assessment on the base of determination of commercial, budgetary, direct financial & economic efficiency through comparison of expenses and income discounted by influence of time factor (calculation at the enterprise or regional level of indexes of the pure discounted income, erected profit, pure payments stream, internal norm of profitability, term of recoupment, investments profitability etc.); the IIP EE assessment on the base of determination of investment projects efficiency at the level of self-supporting productions (calculation of indexes of commercial and direct financial & economic efficiency with establishment of influence volumes of autonomous unit IIP realization on the consolidated results of enterprise activities); comparison and choice of optimum variant of the IIP realization with different terms of action; assessment of the IIP realization risk and so on.

However, it should be noted that the methods of the IIP economic efficiency evaluation in an insignificant measure take into account influence of possible environmental consequences of certain innovative decisions realization on regional ecological conditions. Usually evaluation of potential influence of these factors is based on monetary assessment of negative consequences of natural environment breach, increase of natural resources consumption, growth of the dangerous emissions and wastes, or proper (reverse) positive environmental effect. From this point of view expedience of innovative environmental decisions implementation is determined by the following inequality:

$$(AE + W - BE) > 0 \quad (1)$$

where AE – the combined expenses related to implementation and productive exploitation of a new technological process (or its element) for achievement of the useful effect E;

W – volumes of harm to (improvements of condition of) environment from implementation of a new technological decision of innovative character (in monetary measuring, on the degree of accordance to the existent ecological limits).

BE – expenses which are needed for providing of the proper volume of the productive useful effect E by using existing technological decisions;

However, it should be noted once again that existing environmental harm normative indexes were set years ago at the times of administratively regulated economy. They are not actual and relevant to the real volumes of produced environmental damage. From the author's point of view, the necessary condition of objective assessment of any innovative environmental decisions is the revision of these indexes, in particular with strengthening of territorial differentiation of emissions maximum acceptability indexes.

Direct consideration of economic effect from introduction of the environmental IIP implementation is carried out on the basis of the following general methodical approach:

$$E_i = P_i + PDI_i + S_i \quad (2)$$

where E_i – environmental & economic effect from implementation of the environmental innovative measures (I) directed on transformation (decrease or increase) of influence on nature;

P_i – rate of payments for emissions of certain volume and level of danger, which arise (or can be economized) during the IIP realization (I);

PDI_i – pure discounted income from realization of nature protection innovative measure (I);

S_i – monetary measurement of financial streams which arise from environmental activity state support, granted to the enterprise that initiates the IPP realization (I).

It is clear, that the use of state economic regulators for environmental protection activity activation is the important factor of environmental innovative decision realization (providing of the IIP economic efficiency). However, from author's point of view, nowadays the methodical providing of expedience ground and choice of forms and volumes of environmental activities state support requires improvement, that is caused by following factors :

1) the choice and grant of concrete forms of state support in modern conditions often has casual and subjective character, that is not based on the undoubted environmental & economic requirements and necessities;

2) the present organizational-methodical base of ground of expedience of forms of innovative environmental activity state support does not allow to conduct complete comparative assessment of different IIPs, that will be realized on different stages of environmental & economic activity («supply – production – consumption»);

3) environmental & economic effect assessment is usually concentrated around the ecological consequences of certain accounting entity actions (in the best case – within the limits of certain territory), however this effect is mainly formed in complicated chain of environmental & economic activity (EEA) which requires consolidation of environmental results of the IIP implementation throughout the whole cycle («supply – production – consumption»). In other case, reduction of environmental harm effect within the limits of one link can entail the increase of natural resources consumption and lead to environmentally harmful consequences on other link (for example when natural gas is replaced with coal as a fuel);

4) choice of forms, conditions and terms of state support to the processes of the environmental IIP realization because of above mentioned factors often does not meet the demands of expedience while using regulating instruments for environmental & economic activity (content of the regulative influencing, subject orientation of action, intensity, economy etc.).

Thus, the basic problem of choice of optimum (from point of efficiency) forms of the environmental IIP state support is the necessity of the consolidated assessment of synergic environmental & economic effect which arises up on all links of cycle «supply – production – consumption», related to production of certain types of products (commodities, services) for satisfaction of actual public and individual necessities on the basis of the use of certain natural resources (NR). It is suggested to carry out determination of size of synergic environmental & economic effect for the chain «supply – production – consumption» using such formula:

$$CEE = Eic + Ein + Eini \quad (3)$$

where CEE – synergic environmental & economic effect from implementation of the environmental innovative measures (I) directed on reducing of negative influence on nature, consolidated at all stages of environmental & economic cycle of «supply – production – consumption»;

Eic – economic effect from introduction of the environmental innovative measures (I) directed on reducing of negative influence on nature at the «supply» stage of

environmental & economic cycle (at enterprises, that extract natural resources as direct base for their production);

Ein – economic effect from introduction of the environmental innovative measures (I) directed on reducing of negative influence on nature at the «production» stage of environmental & economic cycle (at enterprises, that process natural resources which are base for their production);

Eini – economic effect from introduction of the environmental innovative measures (I) directed on reducing of negative influence on nature at the «consumption» stage of environmental & economic cycle (at the users of products produced from the certain type of natural resources).

For establishment of volumes of synergic environmental & economic effect of the IIP realization in the chain «supply – production – consumption» it is offered to use the methodical approach, based on conception of energy-production cycle, that is widely used in the strategic planning of territories development and placing of productive forces.

The energy-production cycle (EPC) is the association of interdependent production processes of different regional industries based on the deep consecutive processing of raw material to gain final products and on utilization of all industrial wastes. The main production process (cycle kernel) is usually selected in EPCs and the set of assisting and supplementary enterprises is formed around this kernel.

For assessment of synergic environmental & economic effect the use of the modified approach based on the selection of environmental & production cycle (EnPC) is offered, that is territorial association of interdependent production processes of the successive deep processing of certain type of natural resources (steady for the method of the NR use) from their extraction through the stages of processing-production to the final products obtaining and utilization of all industrial wastes.

The features of the EPC method use for determining of the CEE volumes consist in following:

- 1) EnPC is a regional formation which can develop in different taxonomic units, both in large and in little districts;
- 2) association of all EnPC participants takes place round the stable production-technological links, conditioned by the unity of natural resources which are base for certain products making to satisfy real public and individual necessities;
- 3) an enterprise can be the participant of several EnPCs, as well as there can be formed several homogeneous EnPCs on territory of certain region;
- 4) the leading role in EnPCs forming belongs to the industrial enterprises – producers of the final products, which come forward as a kernel of cycle;
- 5) separate enterprises – the participants of EnPCs execute in his composition different production-consumer functions conditioned by the place of these enterprises in «supply – production – consumption» chainlet;
- 6) different EnPCs can have a different degree of plenitude on certain territory, that is be full (with all stages of cycle) or incomplete (with the separate stages of cycle);

7) the EnPCs amount in a region depends on the level of complexity and depth of raw material processing.

Selection of EnPC composition and structure, location of enterprise position, which introduces environmental IIP, determination of character of the IIP influence on regional environmental safety allows to give more complete (in comparison with traditional approach) ground and assessment of environmental & economic efficiency of innovative-investment activities of regional enterprises.

Determination of influence level of the IIP realization on object environmental safety must be carried out on a retrospective basis, that is the character of environmental situation changes around a certain object will be compared with an initial general situation of territory.

In future in accordance with description of priority area of innovative project realization the choice of form of the IIP state support (refusals or even creation of obstacles) on the basis of the developed table of recommendations is offered (table 1). It is suggested to carry out the final decision about adjusting of IIP introduction process, as well as establishment of quantitative descriptions of such support on the basis of accurate quantitative assessment of volumes (in natural and money measuring) of environmental effect that can be obtained during the IIP realization.

Table 1 Table of recommendations concerning the choice of forms of government control of the environmental IIP realization

Description of influence	Forms of government control
Danger	Direct environmental control
	Quota of the emissions (without possibility of quota transmission)
	Licensing of resources consumption
	Licensing (certification) of technique and technology
	Fines and financial sanctions
Neutrality	Adjusting of prices
	Standardization of technique and technology
	Fines and financial sanctions
	Direct moral stimulation
Positiveness	Environmental certification of products (optional)
	State order of environmentally clean products
	Quota of the emissions (with possibility of transmission of quotas)
	Guaranteeing (privileged insurance)
Priority	Tax deductions
	Subsidies
	Compensative payments
	Subsidies
	Tax deductions (or sanctions)
	Privileged crediting
	Environmental certification of products (optional)
Guaranteeing (privileged insurance)	
State financing of environmental activities	

VI. Conclusions

The existent methods of assessment of the IIP economic efficiency in insignificant measure take into account influence of possible environmental consequences of certain innovative decisions realization on the environmental state of region. Usually assessment of potential action of these factors is based on money assessment of negative consequences of violation of natural environment, increase of natural resources consumption, growth of the dangerous emissions and wastes, or proper (reverse) positive environmental effect.

For establishment of volumes of synergic environmental & economic effect of the IIP realization in limits of chainlet «supply – production – consumption» it is offered to use the methodical approach based on positions of EPC conception.

In future in accordance with description of priority area of innovative project realization the choice of form of the IIP state support (refusals or even creation of obstacles) on the basis of the developed table of recommendations is offered.

Directions of further researches within the framework of offered approach are related to forming of method of assessment of IIP realization influence on object environmental safety.

LIST OF LITERATURE

1. Bagrov N.V. Stable noosphere development of region. Problems. Decisions / N.V. It is purple. – Simferopol, 2010. – p.207.
2. Balatskiy O.F. Anthology of economy of clean environment / O.F. Balatskiy. – Bagn: University book, p. 2007. – p.272.
3. Doroguntsov S. Governmental adjusting of tehnogenic and ekological safety in the regions of Ukraine / S. Doroguntsov, A. Fedorisheva. // Economy Of Ukraine. – 2002. – №4. – p.70-76.
4. Goyko A.F. Methods of investment effectiveness asesment and priority directions of it implementation. / A.F. Goyko. – K.: VIRA-R, 1999. – p.320.
5. Kurkin N.V. Management of economic safety of enterprise development: monograph / N.V. Kurkin. – D.: APT-PRESS, 2004. – p.452.
6. Sadekov A.A. Steady development control by standardization methods. / A.A. Sadekov, V.N. Katrich. – Donetsk: Tugan-Baranovskiy State university, 2003. – p.182.
7. Fathutdinov R.A. Innovative management. / R.A. Fathutdinov. – M.: JSC «Business school «Intel-synthesis», 1998. – p.615.
8. Gilpin A. Environmental impact assessment (EIA) : cutting edge for the twenty-first century / A. Gilpin. – Cambridge ; New York : Cambridge University Press, 1995. – xv, 182 p.
9. Pearce D.W. Economics of Natural Resources and the Environment / D.W. Pearce, R. Turner. – New York: Johns Hopkins University Press, 2006 – 392 p.