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## МЕХАНИЗМ УПРАВЛЕНИЯ ЭКОНОМИЧЕСКОЙ БЕЗОПАСНОСТЬЮ В РЕГИОНЕ

В статье проанализированы механизмы управления экологической безопасностью в регионе. Рассмотрены информационный, административный и экономический блоки мероприятий, направленных на реализацию концепции экологической безопасности.

**Ключевые слова:** экологическая безопасность, налоговые механизмы, рыночные механизмы, экологическое страхование, платежи.

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### MANAGEMENT MECHANISM OF ECOLOGICAL SECURITY IN THE REGION

*In modern conditions the processes of functioning and developing of economic systems at any level: national, regional or at a level of the main link of the economy depend on various factors such as the environment.*

*The environment quality plays an increasingly important role as a factor for stable development of the society and ensures the competitiveness of Ukraine's economy on the world market. Significant ecological diversification of the Ukraine's territory and peculiarity of the social and economic processes in the regions, which in the historical, natural, social, economic relations are far from dissimilar, actualize the problem of regionally differentiated approaches to the management of ecological safety. In the same time, the low effectiveness of the state management mechanisms of sustainable environmental development of Ukraine causes the objective necessity to ensure the ecological and economic security of the country and its regions. That requires a corresponding theoretical basis, methodological approaches, scientific substantiation of directions and its implementation.*

*It is really important to investigate the environmental management mechanisms in the region on the basis of three main activities directed on implementing the ecological safety concept — informational, administrative and economic.*

*The management mechanisms of ecological security in the region were analyzed in the paper. The information, administrative and economic activities directed on implementing the environmental safety concept were considered.*

*The solution of environmental safety problems of economic systems (national, regional, local levels) requires the introduction of a mechanism for environmental management.*

*The formation of regional and national systems of ecological safety will ensure the correspondence of environmental management mechanisms with liabilities of Ukraine on multilateral environmental agreements. These agreements are an important tool for ensuring sustainable development of the state and support to the European system of ecological safety.*

**Keywords:** ecological safety, taxation mechanisms, market mechanisms, environmental insurance, payments.

**Problem statement.** In modern conditions the processes of functioning and developing of economic systems at any level: national, regional or at a level of the main link of the economy depend on various factors such as the environment.

The environment quality plays an increasingly important role as a factor for stable development of the society and ensures the competitiveness of Ukraine's economy on the world market. Significant ecological diversification of the Ukraine's territory and peculiarity of the social and economic processes in the regions, which in the historical, natural, social, economic relations are far from dissimilar, actualize the problem of regionally differentiated approaches to the management of ecological safety. In the same time, the low effectiveness of the state management mechanisms of sustainable environmental development of Ukraine causes the objective necessity to ensure the ecological and economic security of the country and its regions. That requires a corresponding theoretical basis, methodological approaches, scientific substantiation of directions and its implementation.

**Latest research analysis.** Environmental security and management issues were disclosed in the works of many scientists including the works of I.K. Bystryakov [3], I.M. Synyakevych [7], E.V. Khlobystov [8], V.M. Burkov [2], Z.V. Gerasymchuk [5], S. Doroguntsova [6], O.O. Veklych [4], V. Bogachova [1] and others.

**Mission of the work.** It is really important to investigate the environmental management mechanisms in the region on the basis of three main activities directed on implementing the ecological safety concept — informational, administrative and economic.

**Summary of the basic material.** Currently environmental safety plays important role in the legislative, political, environmental and other activities, which on the one hand is part of the national security and on the other hand steps outside as a global security phenomenon. The security concept and sustainable development are the main things. They built an interdependent system.

There are three main activity blocks including informational, administrative and economic. They are directed on implementing the environmental safety concept. The administrative and economic blocks define the administrative and economic management mechanism taking into consideration the transition to an economic security model. Consider these blocks in detail:

a) Informational block

The ecological security model will reach the consciousness of the society, employees and managers by being informed. So it is necessary to form the basis of an information block in accordance with the concept of ecological safety system. Obviously, this is not an easy task. The great challenges have happened in all spheres of life in the transition period. It is difficult to consider the requirements of equilibrium environmental management, when the society struggle for basic survival. However it must be done. We should identify and inform about the connection of environmental disasters with increasing diseases and possible genetic disorders that are passed from generation to generation. In the result the value of health care has grown.

We should inform about the environmental state and exhausted natural resources, the consequences of the ecological crisis and its impact on human health and welfare. People should take care of economic and environmental values that make up the basis of ecological safety system. It is necessary to have a full understanding of those connections that exist, arise, destroy and form the following schemes — anthropogenic impact — environment — economy — man». We must create the information base about the «threshold» values of anthropogenic pressures on natural systems. It is important to have an understanding of the causes and consequences of dangerous situations, their qualitative and quantitative assessments at the regional, local and object levels [8, p. 252].

Statistical data that reflect the economic development and the environment existed parallel. The cost indicators predominated in economic statistics and in the ecological the indicators were natural and physical. This reflects the traditional view of environmental impact, as something external to the economy and to the environmental indicators as on non-economic and exogenous factors.

## b) administrative block;

Administrative block provides the institutional implementation system and realization means of environmental safety and should include:

1) development of new standards and improved existing standards of products quality in terms of ecological production, storage, transportation, consumption of produced food and waste products utilization, as well as introduction of ecological certification of products.

The products should be mandatory certificated including goods, works, services, which have state standards and requirements for their ecological safety.

2) measures to improve the regulation:

- emission standardization of pollutants into the environment;
- regulation of excluded natural resources for needs of a national economy.

The situation in this sphere is completely unsatisfactory. The so-called balanced method of calculating the «output» is applied due to technological processes when developing standards of maximum permissible emissions and maximum permissible discharge. The computer modeling of diffusion processes is applied for a finding of ingredients concentration and others. This approach can't replace the metering concentrations of pollutants in atmosphere, water bodies and soil by quick and reliable ways. The last requires retooling of analytical laboratories with appropriate equipment. We must also complete the development of scientifically grounded standards of accommodation, storage, sorting of solid waste (currently such standards are not available) to prepare their own waste disposal [7, p. 233].

3) measures mobilization on strengthening of a role of ecological expertise of the new productions projects. There are cases when entrepreneurs receive permission to use the natural resources and without going through environmental expertise begin to function in the corresponding consequences. First of all it belongs to such important natural complexes as oil and gas complexes, electro – and heat power engineering, petrochemistry, metallurgy, etc. The summarized consequences of small enterprises also present huge danger, especially the newly emerged ones;

4) conducting the ecological audit of enterprises, that is the important condition of ecological safety. It is obvious that the interest in financing various projects by foreign investors requires the use of internationally accepted procedures, primarily, environmental audit, which aims to provide objective information about companies and their possible ecological consequences (risks) for functioning on the territory;

5) accounting the environmental risk factors by declaring the safety of industrial objects. Safety declaration considers the identifying of the potential environmental accidents, the effects of the cumulative nature, the probability assessment of their occurrence and measures planning on their prevention and elimination of generally negative consequences. The so-called point level (object) explanation of ecological «danger–security» is a solution of the problem on technical and industrial level. In fact, the safety declaration of a large industrial facility represents a road of scientific and technical work which requires highly qualified specialists that are not currently available to many companies [1, p. 12].

## c) economic block;

Economic block of the ecological security system should include the following elements.

1. We must develop the principles for restructuring the economic analysis methodology based on produced criteria, adequate to the new purposes and take into account factors such as the balance of society and business entities interests, improvement of macro – and microeconomic indicators for implementing socially and environmentally aimed criteria. The main requirement for such indicators is integrating economic and environmental aspects of integrated indicators that would reflect the dialectical unity of ecological and economic system. Earlier the problem of integrating environmental and economic indicators was just declared and solved mainly at the macroeconomic level. Today the most creative approach is based on the concept of «ecological debt» (ED). The essence of this approach is that if we take the state of the environment as a starting point, being able to full self– recovery, so the change of this state caused by technogenic impact is accepted as «ecological debt». If in the result of the implementation of environmental action the state of the environment is improving but not to the standard level, we can talk about the payment of part of the ED. Thus, environmentally adjusted macro indicator of gross domestic product can be represented as the difference between indicator and ecological debt, where ED is a change in the ecological debt during the year. If the value of this indicator increases, then we're dealing with a relatively stable development character.

2. At the microeconomic level, the ecologization of economic indicators is proposed to implement in terms of the accounting reporting with the correction of accounts plan. The main indicator must be «environmentally adjusted profit of the enterprise», which takes into account the enterprise obligations to compensate environmental damages over payments for environmental pollution. This approach is supposed to be temporary and should work until the pollution charge reflects the full extent of the environmental damage (such situation is existing now).

2. We must create ecological–economic mechanism of innovative activity, which must be based on the principle of stimulating measures of ecological security, becomes public demand despite of the lack of appropriate funds.

3. We must develop markets for environmental services, low–waste and energy–saving technologies and environmentally clean products based on a very flexible state regulation [2, p. 187].

The economic methods efficiency for solving ecological problems is proved by the experience of countries with developed market economies. Economic management mechanisms play an important role in transition to the ecological security model. They are divided into the following classes:

- a) payments for environment pollution and used natural resources;
- b) tax mechanisms;
- a) market mechanisms;
- g) environmental insurance;
- e) investing activities [9, p. 26].

The ways that implement economic mechanism can be classified not only by their organizational forms. For example, it is necessary to divide them on implementation of a positive (negative) motivation of the rational nature management. It means that we can counteract violations not only by different kind of economic sanctions, but also by encouraging preferential targeted loans, tax benefits for enterprises that struggle for the rational use of nature.

The acting system of pollution charges is based on the following fundamental principles:

a) enterprises, institutions, organizations and other legal entities are charged regardless of their organizational and legal forms and forms of ownership;

b) the total amount of payment is defined as the sum of payments for pollution:

- within the norms of maximum permissible emissions (MPE) and maximum permissible discharge (MPD) (excluding cumulative, synergetic, transterritorial effects);
- within fixed limits of temporarily agreed emissions and discharges (these indicators and payments very remotely correspond to the consequences they produce);
- above-limit (this regulator rather vaguely correlated with the damage);

b) Payments within the regulations maximum permissible emission (MPE) are due to production costs, and all other types of payments – at the expense of the profit remaining at the disposal of the enterprise [5, p. 97].

As the fact of significant disadvantage of the system of payments, that in their basis is laid reproduction and compensation principles, which can explain by weak economy of enterprises – pollutants and it has such consequence as absence of enabling functions for the implementation of the environmental safety conditions. The current system element of stimulation of rational nature management is the extra–budgetary environmental funds. The main source of these funds is a payment for environmental pollution, among which the funds are received well as the amounts collected on claims for compensation for environmental damage. The input of payment mechanism to extra budgetary environmental funds allowed the implementation of urgent number of environmental measures that wouldn't have been financed from the budget in our country. Due to extra budgetary environmental funds, activity of investment decay of environmental protection

was held at a slower pace than in national economy in general. According to these attempts of the consolidation of the extra budgetary environmental funds in the budgets of different levels are obviously premature, which can lead to the liquidation of «Autonomous financing» that works directly on the environmental biology.

The payment system is the so-called «vicious nature», the essence of which is the clearing of the enterprises of payments to the amount of funds invested by them in the objects of ecological purpose and, of course, this is a positive moment in present conditions.

The payment mechanism includes the possibility of taking into account the weight and toxicity of emissions, discharges and solid waste, features of the regional and local ecological situations. The calculations of the payment rates are based on the evaluation of environmental damage. But rate of payments that are really used in practice is lower for at least 1–2 points.

With the introduction of a system of payments for environmental pollution their ideology supposed the implementation of functions such as economic encouragement for environmental protection enterprises, as well as compensation for damages. Payments don't execute the last function because of the scarcity rates (now payments are only 0,1–0,5% from the profits of enterprises). As for the solution of the problem of incentives for environmental protection, even here the situation is far from welfare. Therefore, for the realization of both the first and second functions it is necessary to grow the rate payments for no less than 1–2 points.

In the mechanism of payments to implement the principle «polluter pays» principle, which should encourage the entrepreneur to integrate environmental technology and carry out environmental protection measures. But this principle does not work yet: the enterprise is eager to pay for pollution, than to build purifying facilities because of a deficit of investment funds.

The main attribute on which the economic mechanism fits market methods is an allocation of quotas for the use of the assimilation capacity of the natural environment (in other words – to human emissions of pollutants) among users on the base of the balance of supply & demand that sets its final price. The attitude of both scientists and experts to market mechanisms in ecology is still very disturbing and often contradictory. That involves lots of fears that a free game of market forces can lead to the degradation of nature. Here the primary role should play the control over distribution rights for emissions (release of some gas into the atmosphere). Therefore, a combination of market methods of government regulation of the most important parameters for environmental safety is a promising direction.

However, even in countries with developed market economies there are not so many examples of the application of purely market mechanisms in ecology.

The main advantage of market mechanisms in front of the payments for pollution is fundamental. Motivation of entrepreneur in a specific case may be either negative (the need to purchase emission rights) or positive form (possibility of selling the «surplus» of their emission rights in the case of environmental protection activities). There is a need of government restrictions, although the difference of the market profitability and payment mechanism is obvious. The inclusion into the system of state regulators will allow optimum finding in a system of information relations.

Nowadays, western scientists have developed a number of regional market systems for environmental management, which have related mainly in the objectives of the protection of the atmosphere of large cities.

There are some examples of market control systems of atmosphere quality which act across the whole country. The first program ERA developed for the United States, aimed at reducing lead in gasoline. Instead of an administrative way, forcing refineries to improve the environmental properties of petrol, the ERA issued a «law» (license) on the possibility of production of gasoline with lead and allowed their trade. Action of the license is limited in time, and their total volume is reduced each time of a new distribution. In the result of using the described economic mechanism the total costs were 20% lower than in the usual command-administrative mechanism.

The second program, also occurred in the United States, directed at reducing emissions of sulfur dioxide gas as results in acid rain. According to amendments to the «clean air act» adopted by the Congress of the USA in 1990, sources of sculpture dioxide (mainly power stations) need to purchase a license for its release. The total number of licenses issued that provides for reducing emissions of that pollutant is 10 million tons compared with the baseline. Policy of each firm depends on the ratio of environmental expenditure and the current market price of the license. It is beneficial to set sulfur removal equipment for some firms but others continue to use low-sulfur coal. For old enterprises it is more profitable to buy licenses at the end of their activity [6, p. 72].

Both of these examples relate to environmental problems that can easily be resolved with the help of market mechanisms. Time and place of emissions in this case are not essential and they have no use for special monitoring of the atmosphere.

Market mechanisms in principle allow you to get closer to the real economic assessment of the capacity of the natural environment in this region to self-purification (assimilation of pollutants). For attractive regions in the way of production (for example, in the context of a developed infrastructure and the economy), this assessment may greatly exceed the losses, inflicted to nature and people. Thus, there is a possibility not only to compensate for the account of the polluting enterprises environmental damage but also to get funding for other costs.

Tax mechanisms in the sphere of ecology are the most ordinary in terms of organization, and what is the most importantly – do not require special environmental monitoring. However, these mechanisms are the most «rough» that take into account the minimal characteristics of ecological situation in the region. In line with the concept of environmental safety approach, the essence of which is that you should not impose taxes results of operations, and any resources that used for the production of products. It is obvious that such tax-system reform will create powerful incentives for entrepreneurs for rational use of natural resources.

Because the tax pressure on domestic producers of large and introduction of new indirect taxes on environmentally harmful products must be accompanied by an adequate extent of preferential taxation of environmentally safe products and services [3, p. 9].

Economic mechanisms that were described above, can't count the risk of environmental accidents. In this case it is impossible to dispense without insurance of ecological risk. Distinctive feature of this economic mechanism lies in the fact that collective responsibility is insured against the consequences of environmental accidents.

In the basis of methods of calculation of insurance payments there is the evaluation of the probability of the risk of accidental pollution of the environment and potential environmental damage from this contamination. Accurate assessment of the risks should be based on the statistics of accidents for the preceding years. As experience shows, it is very difficult to collect such information and sometimes even impossible. Therefore, a more realistic approach was based on probabilistic analysis of specific technological processes from the view point of occurrence possibility of accidents, using expert estimating method.

The uncertainty in the estimate of the probability of occurrence of consequences of environmental accidents caused widespread abroad insurance on the principle of «toll-bar and return» in case of environmental accidents that didn't appear during the life of technological equipment, a considerable part of the paid insurance payments considering income from capitalization is returned to the enterprise [4, c. 132]. Reversion of insurance payments could be caused by the moment of transfer of the enterprise to the new environmentally friendly technologies.

**Conclusion.** The solution of environmental safety problems of economic systems (national, regional, local levels) requires the introduction of a mechanism for environmental management.

The formation of regional and national systems of ecological safety will ensure the correspondence of environmental management mechanisms with liabilities of Ukraine on multilateral environmental agreements. These agreements are an important tool for ensuring sustainable development of the state and support to the European system of ecological safety.

#### References:

1. Aghion P., Bolton P., A Ticle-Down Theory of Growth and Development with Debt Overhand., Review of Economic Studies, 64(2), no. 219:151–172. 1997.
2. Armstrong H and Taylor J Regional economics and policy. Harvester Wheatsheat, New York 1993
3. Bogachev V. Need to improve the economic security /V. Bogachev // Economist. — 2008. — № 9. — P. 12–13.
4. Burkov V.N. Management mechanisms of ecological-economic systems / V.N. Burkov, D.A. Novikov, A.V. Shchepkin / edited by S.N. Vasiliev. — M: Publishing house of physical and mathematical literature, 2008. — 244 p.

5. Bystryakov I.K. Environmental security: the assessment and management of development of commercial space systems / I.K. Bystryakov // Economics of nature management and environmental protection: Proceeding — K.: CSPF of Ukraine of NAS of Ukraine, 2004. — P. 6–16.
6. Economic Security of Japan. Tokyo, 1982
7. Freeman C., ed. Design, Innovation and Long Cycles in Economic Development. L., 1986
8. Hager Wolfgang. Perceptions of economic security // Altling von Geusau, may 7–10, 1980, Eindhoven, The Netherlands.
9. Hoover E.M. Location of Economic Activity. New York, 1948.
10. Veklych O.O. Economic mechanisms of environmental regulation in Ukraine / O. O. Veklich. — K., Ukrainian Research Institute for Environmental and Resources, 2003. — 89 p.
11. Garelli S., Linard de Guertechin M. World competitiveness report de LTMDet. World economic forum // Futuribles.—P., 1995. № 198.— p.57–67. 127. Labbe M. L'arme economique dans les relations internationales.—P:PUF,1994
12. Gerasymchuk Z.V. Ecological security of the region: diagnostics and the ensuring mechanism / Z.V. Gerasymchuk, A.O. Oleksyk. — Lutsk: Nadstyyra, 2007. — 278 p.
13. Doroguntsov S. State regulation of anthropogenic and ecological safety in the regions of Ukraine / S. Doroguntsov, A. Phedorushcheva // the Economy of Ukraine. — 2002. — № 4. — P. 70–76.
14. Mensch G., Conhtinho C., Kaashe K. Changing Capital Values and Prosperity to Innovate // Future. 1981. — № 4. — p.21–30
15. Synyakevych I.M. Principles of environmental policy: through the lens of global environmental threats / I.M.Synyakevych // Productive forces of Ukraine. — 2007. — № 2 (003). — P. 230–235.
16. Khlobystov E.V. Environmental safety of transformational economy / E.V. Khlobystov / NAS of Ukraine, Council for Studies of Productive Forces of Ukraine / ed. amended by S.I. Doroguntsov. — K.: Agency «Chornobylinterinform», 2004. — 334 p.
17. Khlobystov E.V. Approaches to creation of the management system of environmental security in the region / E.V. Khlobystov, Shevchenko I.V. // Economic Sciences. Series: Regional economy. — 2009. — Vol. 6, 2 P. — P. 20–28.
18. The Regions in the 1990s: Fourth Periodic Report on the Social and Economic Situation and Development of the Regions of the Community / ECSC–EEC–EAEC. Brussel; Luxemburg, 1991