



**The Concept of Ecosystem Services in Ensuring Environmental Management:  
Economic and Legal Aspects**

**Elena Viktorovna Luneva<sup>1\*</sup>**

**<sup>1</sup>Kazan Federal University, Kremliovskaya str, 18, 420008, Kazan, Russian  
Federation**

**\*E-mail: vilisa\_vilisa@mail. Ru**

**Tel. 8 (843) 2 -33-72-13**

**ABSTRACT**

The paper examines the economic and legal aspects of the concept of ecosystem services in ensuring rational nature management in the Russian Federation based on the analysis of the works of Russian and foreign economists, legal scientists, and biologists. There have been identified the main economic problems of the ecosystem services concept, which do not allow the development of proper legal support in the area under investigation. Such problems include: underestimation of the economic value of ecosystem services, lack of price for most ecosystem services, lack of a market for ecosystem services.

A weak regulatory and legal study of the ecosystem services concept in Russian national legislation, including economic and legal mechanisms for compensating ecosystem services, is shown. The term "ecosystem services" is used only in certain Russian political and legal documents of an environmental orientation. Its content is not disclosed, it is only stated the need to preserve ecosystem services and create their market. It was proposed to consolidate the main directions of Russian state policy in the sphere of ecosystem services at the level of political and legal documents.

The ecosystem services concept in ensuring rational nature management contributes to the isolation of social relations for the most effective use of the natural environment. Various characteristics of ecosystem services for renewable and non-renewable natural resources that affect the rationality of nature use are shown.

**Keywords:** ecosystem, ecosystem services, assimilation potential of the environment, rational nature management, legal regulation, political and legal documents.



## **1. INTRODUCTION**

At present, there is a steady increase in the volume of production and consumption of various natural resources with increasing anthropogenic load. According to the Strategy on Ecological Safety in the Russian Federation for the period up to 2025 (approved by the Decree of the President of the Russian Federation No. 176 dated April 19, 2017), the state of the environment in the territory of the Russian Federation, where the major part of the country's population is concentrated, the production capacities and the most productive agricultural lands, is estimated as unfavorable for ecological parameters. The written situation is complicated by the fact that economical activity does not take into account the real value of the natural environment. In the legal regulation, the sphere of public relations is not separately distinguished for the most effective use of the natural environment from the whole volume of relations in the use of natural resources. In conditions of a decrease in biodiversity, and an increase in the level of pollution (these two parameters characterize the state of the natural environment (Pears D., Moran D. 1994)), degradation of ecological systems, the study of the economic and legal aspects of the ecosystem services concept from the perspective of rational nature management is relevant, timely and in demand. The importance of the problematic is determined by the fact that the quality of the natural environment affects not only the economy, but also the health of the nation. The legal provision of the economic assessment of ecosystem services, as well as their accounting in the planning of economic activities, seems to be a promising direction. ***The purpose of this work:*** to reveal the degree of elaboration and the importance of the ecosystem services concept for ensuring rational nature management in Russia from the position of economic and legal aspects.

## **2. MATERIALS AND METHODS**

The study of the economic and legal aspects of the ecosystem services concept to ensure rational nature management in the Russian Federation was carried out on the basis of an analysis of works of foreign (***J. Bishop, R. Costanza, R. de Groot R., A. Hermann, S. Pagiola, K. Von Ritter, S. Schleifer, T. Wrbka***, etc.) and Russian (***R.M. Valeev, O.A. Voropaev, S.A. Zenchenko, M.S. Lar'kov, A.V. Neverov*** and others) economic and legal scientists. In addition, the study is based on the works of biologists (***E.I. Kovaleva, A.S. Yakovlev***, etc.).



The methodological basis of the study was the dialectical method which made it possible to recognize the essence of ecosystem services in the context of rational nature management in an inseparable unity and in the overall coherence. The logical methods in the form of analysis and synthesis, induction and deduction, comparison and generalization, analogy and typology also contributed to the study of problems posed in the introduction. Formally legal method helped to clarify the essence and significance of political and legal norms aimed at the most effective use of natural ecological systems in terms of the optimal balance of private and public interests in environmental law.

### **3. RESULTS**

The term "ecosystem services" is actively used in such a scientific direction as the economics of nature management. Abroad, they mean such benefits that a person derives from specific ecosystems or the entire biosphere as a whole (provision of natural resources, regulating biospheric processes, and the intangible benefits of ecosystems) (The Economics of Ecosystems and Biodiversity (TEEB). 2008, Ecosystems and human well-being: a framework for assessment / 2005). Sometimes ecosystem services represent an intermediate link between processes and phenomena in the environment and human well-being (Hermann A., Schleifer S., Wrbka, T. 2011). It turns out that in any case, ecosystem services cover all sorts of natural goods: natural resources, recreational potential of the natural environment, its assimilative capacity, aesthetic properties of landscapes, conservation of biodiversity, etc.

From the point of view of the Russian language, the ecosystem service is considered as a special form (direction) of use (conservation, reproduction) of the natural environment (ecological resources) components to meet diverse social and environmental needs (Neverov A.V., Voropaev O.A.2013.). Indeed, the ecosystem service as such can not arise by itself, but only in the process of nature management.

The legal definition of ecosystem services is contained in several international documents. For example, the Regulation No. 1143/2014 of the European Parliament and the Council of the European Union "On the prevention of the introduction and spread of invasive alien species and the management of these processes" (accepted in Strasbourg 22.10.2014, Russia does not participate in it) means ecosystem services by the direct and indirect contributions of ecosystems to the welfare of people. In the Model Law "On Conservation, Sustainable Use and Restoration of Biological Diversity" (accepted



in Saint Petersburg in 05/20/2016 by the Resolution 44-9 at the 44th plenary meeting of the Interparliamentary Assembly of the CIS Member States), ecosystem services cover all the tangible and intangible benefits that people derive from nature, including benefits arising from the use of ecosystems. It is noteworthy that the last international document defines the duty of a state not only to develop normative documents establishing the principles and methods used in the evaluation of ecosystem services; but also the obligation to gradually include the cost of such services in the system of national accounts.

#### **4. DISCUSSION**

Over the past 60 years, approximately 60% of global ecosystem services were undermined by human impact (Millennium Ecosystem Assessment. UNEP, 2005). The Russian Federation is not an exception. It is obvious that preservation of the volume, quality and stability of the receipt of ecosystem services is possible only with the protection and improvement of the state of their primary sources - ecosystems (Kh. A. Odinaev.2017.).

Justifying the economic value of ecosystem conservation, *S. Pagiola, K. von Ritter*, and *J. Bishop* suggest that ecosystems should be considered as a form of capital (Pagiola S., Ritter K. von, Bishop J. 2004). The first estimates of ecosystem services yielded a total annual estimate of all functions of the planet's natural ecosystems at \$ 33 billion, that almost doubled the GNP created by mankind - 18 trillion US dollars per year (Costanza R. d'Arge, R. de Groot R. et al. 1997). There is no coincidence that in Decision No. 1386/2013 / EC of the European Parliament and the Council of the European Union "On the Common Program of the European Union in the field of the environment until 2020" Improving the quality of life based on the available resources of our planet "(adopted in Strasbourg, November 20, 2013; Russia does not participate in it) recognizes the importance of proper assessment and recording of the cost of natural capital and ecosystem services, as well as the costs of deteriorating their condition. It also points to the need to further develop and promote the application of the principles of "payment for ecosystem services", as well as the introduction of initiatives and methodologies that encourage companies to assess the environmental costs of their activities and profits derived from the use of ecosystem services. The above arguments make it possible to assert that ecosystem services form a part of natural capital. The



latter condition imposes on a state the provision of both legal means for the protection of ecosystem services (limitations, etc.) and the legal means of the optimal distribution of benefits from them (from the perspective of the correlation of public and private interests in environmental law).

It is worthwhile to distinguish the value of ecological systems from their use and the value from their non-use in the form of biodiversity conservation. For the first option, economic and legal mechanisms should be created to compensate for the use of ecosystem services. For the second one, the value equivalent of the intact nature should be provided.

At the same time, the existence of a number of economic problems does not yet allow them to develop the necessary legal support in the area under investigation. The main problem of the ecosystem services concept is the underestimation of their economic value, "caused by methodological impotence before the valuation of the colossal complexity of nature, its functions and interrelations" (Neverov A.V., Voropaev O.A.2013). It is no accident that the scientific literature recognizes the importance of developing methods for monitoring and evaluating ecosystem services, the feasibility and conditions for introducing payments for ecosystem services, legal and contractual terms for harmonizing the interests of producers and consumers of ecosystem services, and managing financial resources from ecosystem services and other sources (Kh. A. Odinayev.2017). In addition, the vast majority of ecosystem services have no price, there is no market for them. Therefore, it is difficult to involve them in real production and trade activities and economic turnover.

In Russia, a part of ecosystem services are taken into account when calculating the cost of restoring environmental objects (Omelyanyuk G.G., Mikhaleva N.V., Golubeva S.G.2015). Sometimes, when determining the environmental damage, the value of losses of ecosystem services is summed up (for example, with respect to hunting resources (Iutin I.G., Kichigin N.V., Pakhareva G.V., Ponomarev M.V., Shirobokov A.S. 2009)). Obviously, there is an urgent need to take into account ecosystem services in other cases (when providing natural benefits for use, in assessing the assimilation ability, etc.).

What is the relationship between ecosystem services and the provision of rational nature management? Rational nature management as the most effective variant of interaction



between a society and the nature includes qualitative improvement of ecosystem services. At the same time, legal scientists have proved that from the point of view of nature protection, the qualitative improvement of some ecosystem services (for example, increasing yields by introducing excessive amounts of fertilizers) should not lead to deterioration of other services (water quality reduction, biodiversity reduction, etc.)( International environmental law: a textbook ,2012). Otherwise, there will be no rational use of nature.

*E. I. Kovaleva, A. S. Yakovlev, and M.A. Naryshkina* recognize the importance of assessing ecosystem functions and services for environmental management (Kovaleva E.I., Yakovlev A.S., Naryshkina M.A.2015). They conclude that the results of the assessment of ecosystem functions and services can be used to develop an algorithm for the rational use of natural resources, with integrated ecosystem assessments and practical implementation of their results (Kovaleva E.I., Yakovlev A.S., Naryshkina M.A.2015). Often, a matrix of ecosystem services and natural-territorial complexes for a particular territory (for example, a natural reserve (Lar'kova M.. 2014)) is compiled. The specified matrix allows making an optimum choice of a natural object for its subsequent target use.

It is necessary to understand that for the use of renewable and non-renewable natural resources, the characteristics of "rationality", and, consequently, ecosystem services will not be the same. This is indicated in foreign literature. So, *R. Costanza, and H.E. Daly* in the content of "natural capital" separately include "renewable or active natural capital" and separately "non-renewable or inactive natural capital" (Costanza R., Daly H.E.1992. ). The relationship between non-renewable resources and the ecosystem is manifested in the fact that resources are parts of ecosystems and their extraction in many cases leads to ecosystem disruption (Zenchenko S. A. 2016). In relation to renewable resources, there is a limiting resource capacity of the natural environment (Murray J.D. 2008), exceeding which makes it impossible to restore its normal ecological state. In other words, when extracting non-renewable natural resources, there should be no degradation of ecosystems, and the use of renewable resources must be carried out within the limits of the resource capacity of the natural environment.



Let's turn to the Russian legislation. How does regulation of social relations related to ecosystem services occur? Is this term used in regulatory-legal, regulatory or technical documents?

The phrase "ecosystem services" is used only in political and legal documents of ecological orientation. In the state program of the Russian Federation "Environmental Protection" for 2012-2020 (approved by the Decree of the Government of the Russian Federation dated April 15, 2014 No. 326 (as amended on 06. 07. 2017)) conservation and sustainable use of ecosystem services is declared as the main priorities of state policy in the field of conservation of biological diversity. The same document recognizes the importance of ecosystem services for macroeconomic indicators of the country's development. Ecosystem services form a natural capital, what predetermines the need to create economic incentives for nature users, including a public-private partnership.

The fundamentals of state policy in the sphere of use, replacement, conservation and protection of forests in the Russian Federation for the period until 2030 (approved by the Order of the Government of the Russian Federation No. 1724-r dated September 26, 2013) are oriented towards the formation of market of ecosystem services in the forest area. There the formation of the ecosystem services market is declared as one of the tasks of the state policy in the sphere of forest use, replacement, conservation and protection of forests. The need for its stimulation is recognized. We believe that this national norm has been emerged as a result of the adoption of the Decision made by the CIS Economic Council "On the Draft Basic Directions for Cooperation of the CIS Member States in the Field of Forestry and the Timber Industry for the Period Until 2025" (in the city of Moscow, dated 13. 03. 2015), which focuses on the formation of the market for ecosystem services for forests, and draws attention to the implementation of the ecosystem assessment of forest services, including the adaptation of forests to climate change.

The Strategy for the Development of the hunting sector in the Russian Federation until 2030 (approved by the Decree of the Government of the Russian Federation dated July 3, 2014 No. 1216-r), the term under study is one time mentioned. It says that hunting animals provide the formation of ecosystem services of consumer and environment-



forming nature. We think it would be worthwhile to describe in more detail the value of hunting resources as ecosystem services.

Thus, in the Russian Federation, the importance of ecosystem services is realized at the political level. The term "ecosystem services" is not contained in Russian regulatory legal acts, but is used only in certain Russian political and legal documents of an environmental orientation. Its content is not disclosed, the need to preserve ecosystem services and create their market is only stated.

## **5. SUMMARY**

As a result of the research conducted, it should be noted that there are economic problems that do not allow proper legal support in the field of ecosystem services to develop. Such problems include: underestimation of the economic value of ecosystem services, lack of price for most ecosystem services, and lack of their market.

The term "ecosystem services" is used only in certain Russian political and legal documents of an environmental orientation. Its content is not disclosed, the need to preserve ecosystem services and create their market is only stated. It is advisable to consolidate the main directions of state policy in the sphere of ecosystem services at the level of political and legal documents.

## **6. CONCLUSION**

With the right balance of measures to ensure the protection of rare ecological systems and measures to stimulate economic activity, ecosystem services can become an essential factor in the economic development of environmental management. Only an equitable balance of legal opportunities and legal restrictions will make it possible to use ecosystem services as effectively as possible within the assimilation capacity of the natural environment.

## **7. ACKNOWLEDGEMENTS**

The work is performed according to the Russian Government Program of Competitive Growth of Kazan Federal University

## **8. REFERENCES**

- Pears D., Moran D. 1994. The economic value of biodiversity. London: Earthscan Publications, 172 p.
- Costanza R. d'Arge, R. de Groot R. et al. 1997. The value of the world's ecosystem services and natural capital // Nature. № 386. P. 253-260.





- Costanza R., Daly H.E.1992. Natural capital and sustainable development // Conservation Biology. V. 6. № 1. P. 37-46.
- Ecosystems and human well-being: a framework for assessment / 2005. Millennium Ecosystem Assessment. Washington, Covelo, London: Island Press, 268 p.
- Hermann A., Schleifer S., Wrbka, T. 2011. The Concept of Ecosystem Services Regarding Landscape Research: A Review // Living Reviews in Landscape Researches.. № 5. 37 p.
- Iutin I.G., Kichigin N.V., Pakhareva G.V., Ponomarev M.V., Shirobokov A.S. 2009. Commentary to the Federal Law dated July 24, No. 209-FZ "On Hunting and on the Preservation of Hunting Resources and on Amending Certain Legislative Acts of the Russian Federation" (itemized) // Justitsinform. 2011.
- International environmental law: a textbook ,2012. / T. G. Avdeeva, A. I. Aliev, R. R. Amirova et al.; Publishing editor R. M. Valeev. M.: Statute, 639 p.
- Kovaleva E.I., Yakovlev A.S., Naryshkina M.A.2015. Analysis of ecosystem functions of soils and ecosystem services on the territory of the waste disposal site // Ecology and industry of Russia. V. 19. № 6. P. 24.
- Lar'kova M.. 2014. Assessment of ecosystem services of specially protected natural areas // Modern productive forces. 2014. No. 3. Pp. 43-48.
- Millennium Ecosystem Assessment. UNEP, 2005.
- Murray J.D. 2008. Mathematical biology II: Spatial models and biomedical applications. 3rd edition. Springer, 736 p.
- Neverov A.V., Voropaev O.A.2013. Valuation of Ecosystem Services and Biological Diversity // Proceedings of BSTU. №7. Economics and management. № 7. 95.
- Odinayev Kh. A..2017. Ecosystem services and compensation mechanisms in the context of transboundary water use // Dialogue: politics, law, economics. No. 1 (4). P. 103-111.



- Omelyanyuk G.G., Mikhaleva N.V., Golubeva S.G.2015. Forensic examination of environmental objects to determine the amount of damage from an environmental offense // Judge. . № 9. Pp. 34-37.
- Pagiola S., Ritter K. von, Bishop J. 2004. Assessing the Economic Value of Ecosystem Conservation. World Bank.
- The Economics of Ecosystems and Biodiversity (TEEB). 2008. An Interium Report. European Communities.
- Zenchenko S. A. 2016. Natural capital and ecosystem services: an international approach to accounting // Modern innovative technologies and problems of sustainable development of society. Materials of the IX International Scientific and Practical Conference. Compilers: V. N. Krivtsov, N. N. Gorbachev. Pp. 240-244.