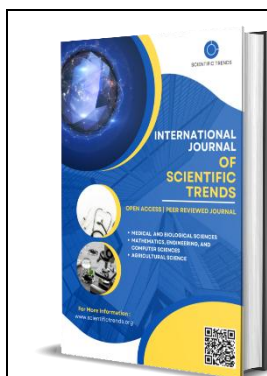


Scientific and Theoretical Content of The Principles of Legal Ensuring of Rational Use of Natural Resources

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Abstract

This article examines the scientific and theoretical foundations of the principles of legal ensuring of the rational use of natural resources. The study analyzes the essence, classification, and role of these principles within environmental law, emphasizing their importance in achieving sustainable development and ecological balance. Special attention is given to the interaction between legal norms and ecological requirements in regulating natural resource use.

Keywords: Natural resources, rational use, environmental law, legal principles, sustainability, ecological balance.

Introduction

The contemporary stage of global development is characterized by an unprecedented intensification of anthropogenic impact on the natural environment, which has fundamentally transformed the paradigm of interaction between society and nature and актуализировал the necessity of a scientifically grounded and legally structured approach to the rational use of natural resources. Within this context, the scientific and theoretical content of the principles of legal ensuring of rational use emerges not merely as a doctrinal construct of environmental law, but as a complex epistemological and normative system reflecting the dialectical unity of ecological necessity, economic expediency, and legal regulation. The introduction to this problem field, therefore, presupposes a holistic analytical comprehension of the evolution, essence, and functional significance of these principles, which operate as foundational determinants of both environmental legislation and law enforcement practice.

In the system of environmental legal thought, the concept of rational use of natural resources is interpreted as an integrative category, combining ecological sustainability with socio-economic development imperatives. As noted by Sh. Kh. Fayziev, “rational use of natural resources represents a scientifically substantiated system of measures aimed at satisfying the socio-economic needs of society while ensuring the protection, restoration, and preservation of natural resources” [1, p. 87] (article). This definition is of particular theoretical significance, as it emphasizes not only the utilitarian aspect of resource exploitation but also its ecological

conditionality, thereby laying the groundwork for understanding legal principles as instruments of balancing competing interests. The strength of Fayziev's approach lies in its systemic nature; however, its limitation may be observed in the insufficient elaboration of institutional enforcement mechanisms, which necessitates further doctrinal refinement.

From a broader ecological-legal perspective, N. F. Reimers conceptualizes rational nature management as “a system of economic activity ensuring efficient use of natural resources while maintaining the conditions for their natural regeneration and preventing irreversible environmental changes” [2, pp. 405–406] (scientific reference dictionary). This position introduces a crucial theoretical dimension—namely, the category of ecological limits—which, in turn, becomes a central element in the formation of legal principles such as sustainability and precaution. The originality of Reimers' conception lies in its prognostic orientation, focusing on long-term ecological stability; nevertheless, it requires integration with normative legal frameworks to achieve practical applicability.

In contrast, the legalistic interpretation proposed by V. V. Petrov asserts that “rational use of natural resources must simultaneously ensure economic efficiency and the protection of the environment, as these objectives are inseparable within the framework of environmental law” [3, pp. 47–48] (textbook). Petrov's thesis is particularly valuable for its explicit articulation of the inseparability of ecological and economic functions within legal regulation, thereby reinforcing the idea that legal principles are not abstract декларации but operative norms guiding legislative and administrative action. At the same time, this approach underscores the necessity of codification and систематизация of environmental legislation, without which the practical implementation of such principles remains fragmented.

Further development of the theoretical foundations can be observed in the works of S. A. Bogolyubov, who argues that “the rational use of natural resources presupposes the consideration of natural laws, the limits of ecological systems, and the inadmissibility of exceeding anthropogenic нагрузка beyond permissible thresholds” [4, pp. 60–61] (textbook). This interpretation introduces the concept of ecological threshold as a legal category, thereby transforming scientific ecological knowledge into a normative guideline. The methodological strength of this approach lies in its interdisciplinary character; however, it also raises the question of how such scientifically determined limits can be effectively translated into enforceable legal standards.

The theoretical discourse is further enriched by M. M. Brinchuk, who emphasizes that “the development of environmental law is impossible without the formation of a unified system of principles that ensure the integration of environmental protection and natural resource use within a single legal framework” [5, p. 12] (scientific monograph). Brinchuk's contribution is particularly significant in highlighting the integrative nature of environmental law, where principles serve as a connecting link between disparate legal institutions. His argument implicitly supports the necessity of a codified environmental code, capable of consolidating these principles into a coherent normative system.

It is important to note that the analyzed dissertation research substantiates the idea that the principles of legal ensuring of rational use should be understood as legally закрепленные requirements reflecting scientifically justified limits of resource use and environmental impact. This position represents a synthesis of the above-mentioned theoretical approaches, as it combines

ecological, economic, and legal dimensions into a unified conceptual framework. The novelty of this approach lies in its emphasis on the normative закрепление of ecological criteria, which transforms theoretical constructs into practical legal instruments.

Thus, the scientific and theoretical content of the principles of legal ensuring of rational use of natural resources can be interpreted as a dynamic system of fundamental ideas, reflecting the закономерности of interaction between society and nature and serving as a methodological basis for the formation and development of environmental legislation. Their significance lies not only in their regulatory function but also in their capacity to guide the evolution of legal thought toward a more holistic and sustainable model of природопользование. Consequently, the introduction to this research problem must be understood as a complex analytical synthesis of doctrinal positions, revealing the multidimensional nature of these principles and their decisive role in ensuring ecological security and sustainable development in the modern world.

2. RESEARCH METHODOLOGY

The research methodology of the present study is constructed on the basis of a complex, interdisciplinary, and conceptually integrated approach aimed at revealing the scientific and theoretical content of the principles of legal ensuring of rational use of natural resources as a multidimensional legal phenomenon. The methodological framework is grounded in the unity of general scientific cognition and special legal research methods, which collectively ensure the depth, consistency, and objectivity of the analysis.

At the core of the research lies the systemic-structural method, which allows the principles of rational natural resource use to be examined as an internally interconnected and hierarchically organized system of legal ideas reflecting ecological закономерности and normative imperatives. This method makes it possible to reveal the internal structure of these principles, their functional interdependence, and their role within the broader system of environmental law. In this regard, the principles are not treated as isolated doctrinal constructs, but as elements of a unified legal mechanism aimed at achieving ecological balance and sustainable development.

The comparative legal method occupies a significant place in the research, as it enables the identification and critical analysis of international and foreign legal approaches to the regulation of rational natural resource use. Through comparative analysis, the study examines how universal environmental principles—such as sustainability, precaution, and intergenerational equity—are interpreted and implemented in different legal systems. This approach contributes to the formulation of scientifically grounded proposals for improving national environmental legislation and aligning it with global standards.

The application of the logical and analytical method ensures the conceptual clarification and critical interpretation of key categories, including “rational use,” “legal principles,” and “environmental limits.” This method facilitates the identification of internal contradictions, theoretical gaps, and methodological inconsistencies within existing scientific approaches. In particular, it allows for a deeper understanding of how ecological concepts are transformed into legal norms and principles. As emphasized in environmental legal doctrine, “the rational use of natural resources must be based on scientifically justified limits and ecological requirements”, which underscores the necessity of integrating scientific knowledge into legal reasoning.

The historical method is employed to trace the evolution of the concept of rational natural resource use and the development of its legal principles. This method reveals the transformation of environmental law from a predominantly resource-oriented regulatory system to a holistic and sustainability-oriented legal framework. The historical analysis demonstrates that the modern understanding of rational use is the result of a gradual synthesis of ecological, economic, and legal ideas.

In addition, the method of analysis of normative-legal documents plays a crucial role in the research. This method involves the *دراسة* of national legislation, international legal instruments, and policy documents regulating natural resource use and environmental protection. Through this analysis, the study identifies the legal *закрепление* of the principles under consideration and evaluates their effectiveness in practice. It also allows for the assessment of the degree of consistency and coherence within the existing legal framework.

Furthermore, elements of the interdisciplinary method are actively utilized, integrating insights from environmental science, economics, and legal theory. This approach reflects the complex nature of rational natural resource use, which cannot be adequately understood within the boundaries of a single discipline. The interdisciplinary perspective enhances the explanatory power of the research and ensures a comprehensive understanding of the subject matter.

Thus, the chosen methodological framework ensures a holistic and in-depth analysis of the scientific and theoretical content of the principles of legal ensuring of rational use of natural resources. It allows not only to systematize existing theoretical approaches but also to develop new conceptual conclusions aimed at improving environmental legislation and strengthening the legal mechanisms of sustainable development.

3. ANALYSIS OF LITERATURE ON THE SUBJECT

The scholarly discussion on the scientific and theoretical content of the principles of legal ensuring of rational use of natural resources has developed at the intersection of environmental law, natural resource law, ecological economics, and the doctrine of sustainable development; therefore, the literature on this subject should be read not as a mechanically accumulated set of definitions, but as an evolving conceptual field in which the legal idea of rationality gradually acquires normative force, ecological depth, and methodological precision. In this discourse, one of the earliest and most influential lines of argument is associated with the attempt to explain rational use not merely as economic thrift, but as a juridically mediated model of interaction between society and nature. Thus, Sh. Kh. Fayziev, in his textbook *Environmental Law*, defines rational use through the prism of social need and legal order, arguing that it is the use of nature's useful components for satisfying the needs of members of society [1, p. 39]. The real theoretical value of this position lies in the fact that Fayziev moves the discussion beyond abstract ecological idealism and places rational use within the sphere of regulated social relations; however, his later article develops the idea much more profoundly, where he writes that rational use is a "scientifically substantiated system" of socio-economic, ecological, and health-related measures directed toward satisfying public needs while preserving and restoring natural resources [2, pp. 87–90]. This formulation deserves special attention because it transforms the category of rational use from a descriptive notion into a systemic legal construct: the emphasis is no longer on extraction alone, but on a balanced regime of use, protection, and reproduction. From a professor-level analytical standpoint, the strength of

Fayziev's approach is its synthetic character; he does not isolate legal regulation from economic or ecological realities, but conceptualizes law as the form through which ecological rationality becomes socially operative. At the same time, his conception implicitly raises a deeper jurisprudential question: if rationality is "scientifically substantiated," then the principles of legal ensuring cannot be reduced to legislative declarations alone; they must embody objective ecological limits in normative language.

A conceptually adjacent, yet methodologically distinct, position is advanced by J. T. Kholmuminov, who treats rational use as a crucial rule for preserving proportionality among human beings, nature, and society [3, p. 12]. Although this formulation appears concise, its scholarly significance is substantial. Kholmuminov's contribution is that he shifts the focus from resource exploitation to civilizational equilibrium; in other words, he interprets rational use as a legal expression of ecological proportionality. This is especially important for the analysis of legal principles, because principles are valuable precisely when they preserve the measure of lawful intervention into nature. His perspective enables one to see that the scientific-theoretical content of legal principles in this sphere is not exhausted by efficiency, economy, or administrative expediency; rather, it consists in constructing a normative balance that restrains both environmental degradation and legal arbitrariness. Such an approach deepens the doctrinal meaning of the principle of sustainability and anticipates later developments in environmental constitutionalism.

An even more ecologically loaded interpretation is offered by N. F. Reimers in his scientific reference work *Nature Management: Dictionary-Reference*, where rational nature management is described as a form of activity ensuring economically efficient resource use together with the preservation of human health and the effective renewal of natural resources [4, pp. 405–406]. Reimers further insists that rational use must not lead to sharp depletion of reserves or deep environmental transformations for which society is not prepared [4, pp. 405–406]. The merit of this position is that it introduces into legal theory the category of ecological limit. Reimers' thought is especially productive for the present topic because the principles of legal ensuring of rational use become theoretically meaningful only when they are linked with thresholds, boundaries, permissible impacts, and regenerative capacity. In other words, Reimers helps us understand that legal principles in this field are not merely moral postulates; they are juridical reflections of scientifically recognized ecological constraints. His work thereby supports the doctrinal legitimacy of such principles as precaution, sustainability, restoration, and limitation of anthropogenic burden.

The collective Soviet work *Pravo prirodopol'zovaniya v SSSR (The Law of Nature Use in the USSR)* enriches the discussion by emphasizing that rational use is a process in which the achievement of necessary economic effect must be combined with the protection of the used natural resource and the environment as a whole [5, pp. 14, 22]. This formulation is particularly important because it discloses a dialectical structure that remains central even in contemporary scholarship: the legal principle of rational use does not eliminate the economic function of natural resources, but subordinates it to a broader ecological-legal framework. The enduring scholarly significance of this work lies in its insistence on simultaneity—economic utility and environmental integrity must coexist, not replace one another. From this standpoint, one may conclude that the scientific-theoretical content of legal principles in this area is dual in nature: on

the one hand, it disciplines economic activity; on the other, it constitutionalizes environmental restraint. This insight remains highly relevant for present-day legal systems facing the challenge of reconciling development policy with environmental security.

A. I. Bobylev and S. A. Balashenko, in their monographic study *Questions of the General Theory of Environmental Law*, formulate the matter in a more concentrated way, arguing that rational use means “scientifically grounded and effective use” of nature objects and resources [6, p. 5]. At first glance, this may seem too general; yet precisely this generality gives their thesis theoretical elasticity. Their contribution lies in foregrounding the epistemic condition of legality: use is not rational because it is economically profitable, but because it is scientifically grounded. This is a decisive point for the doctrine of legal principles. A principle of legal ensuring, if it is to possess genuine theoretical status, must be rooted in knowledge rather than in administrative voluntarism. Bobylev and Balashenko thereby help establish a foundational proposition: environmental legal principles derive their legitimacy from the convergence of law and science. Such a proposition is of exceptional methodological importance, because it means that environmental legislation which ignores scientific data about ecosystems, regeneration rates, or cumulative harm cannot genuinely claim to implement the principle of rational use.

V. V. Petrov, in his textbook *Environmental Law of Russia*, advances one of the most influential doctrinal formulations, insisting that rational use must ensure not only economic and health-related benefit, but also the protection of the environment itself [7, pp. 47–48]. The force of Petrov’s position lies in his rejection of narrow utilitarianism. He effectively demonstrates that rationality in environmental law is not reducible to profit maximization under administrative supervision; it is a normative model in which the environment is recognized as an autonomous legal value. This has direct implications for the scientific-theoretical content of legal principles. If environmental protection is embedded within the very meaning of rational use, then principles such as ecological priority, prevention of harm, and integrated protection of natural complexes become not optional supplements, but internal elements of the concept itself. Petrov’s doctrine is therefore particularly valuable because it shows that legal ensuring in this field must be axiological as well as regulatory: it must protect nature not only because society needs resources, but because environmental integrity constitutes an independent public good.

B. V. Erofeev further sharpens the legal dimension of the problem by arguing, in his textbook *Environmental Law of Russia*, that legislation must incorporate the economic aspect of nature use in such a way that low cost and high benefit do not produce ecological or economic damage [8, pp. 81, 114]. Erofeev’s formulation is noteworthy because it directly addresses the normative mechanics of legal ensuring. He does not treat principles as abstract legal ornaments; rather, he views them as instruments through which the law structures the permissible conditions of хозяйственная деятельность. His position deserves particular scholarly recognition for revealing that the principle of rational use has an operational character: it is implemented through legal regimes, licenses, duties, restrictions, standards, and liability mechanisms. At a deeper level, Erofeev’s theory invites a broader jurisprudential conclusion: the scientific-theoretical content of legal principles in the sphere of natural resources is inseparable from their regulatory technology. A principle becomes scientifically meaningful only when it can guide norm-making and law enforcement in a concrete way.

S. A. Bogolyubov, in his university textbook *Environmental Law*, formulates perhaps one of the most cited propositions in this field, observing that rational use requires taking account of “natural laws,” the reserves and capabilities of the environment, and the inadmissibility of irreversible negative consequences [9, pp. 60–61]. This approach is particularly significant because it gives the principle of rational use a distinctly ecological-juridical architecture. Bogolyubov does not merely demand lawful conduct; he demands lawful conduct aligned with the objective regularities of nature. The originality of this position lies in the integration of legal normativity with ecological ontology. From a doctrinal standpoint, that is precisely what gives the principles of legal ensuring their scientific-theoretical content: they are legal in form, but ecological in substance. Bogolyubov’s thesis also supports a critically important conclusion for this topic: environmental law cannot construct its principles exclusively from state will; it must derive them from the interaction between positive law and the scientifically knowable structure of ecological systems.

M. M. Brinchuk’s contribution is especially valuable for understanding the systemic place of these principles within environmental law as a whole. In his scholarly work on the improvement of environmental legislation, he stresses that the development of this branch of law requires coherent, integrated, and systematized legal foundations [10, p. 12]. Although Brinchuk is often read primarily as a theorist of environmental legislation, his relevance to the present subject is much wider. He shows that principles are not isolated doctrinal aphorisms, but system-forming legal beginnings that hold together the institutions of environmental protection and natural resource use. This insight is crucial. The scientific-theoretical content of the principles of legal ensuring of rational use of natural resources is disclosed most fully only when they are interpreted not separately, but as part of an internally coordinated legal order. Brinchuk’s position therefore leads to a higher-order conclusion: the principle of rational use can realize its normative potential only within a unified environmental legal system capable of integrating differentiation by resource type with an overarching ecological logic.

A separate and highly specialized contribution belongs to M. V. Makhrova, whose dissertation abstract *Rational Nature Management as a Principle of Environmental Law* is particularly important because it examines rational use not merely as a policy goal or legislative slogan, but specifically as a principle of environmental law [11, p. 27]. The scholarly significance of Makhrova’s work lies in its principled shift of analytical focus: instead of describing rational use as one of many tasks of environmental management, she conceptualizes it as a foundational legal beginning with doctrinal, interpretative, and law-making significance. This is exceptionally important for the present article, since the topic concerns not rational use in general, but the scientific and theoretical content of its legal principles. Makhrova’s contribution allows one to argue more confidently that the principle of rational use occupies a constitutive place in environmental legal doctrine: it organizes the aims of legislation, the logic of interpretation, and the criteria of lawful behavior.

CONCLUSIONS AND SUGGESTIONS

In conclusion, the study demonstrates that the principles of legal ensuring of the rational use of natural resources constitute a fundamental theoretical and normative basis of environmental law, integrating ecological requirements with legal regulation and economic interests. These principles reflect the necessity of maintaining a balance between human activity and environmental

sustainability, ensuring not only efficient resource use but also their protection and restoration. As evidenced in the dissertation research, rational use is directly linked to sustainable development goals and the preservation of ecological stability .

From our perspective, the effectiveness of these principles depends on their clear legal закрепление, systematic implementation, and alignment with scientifically grounded ecological limits. At the same time, the analysis shows that existing legal mechanisms require further совершенствование in order to respond to modern environmental challenges.

Accordingly, it is recommended to strengthen environmental legislation, enhance state and public control mechanisms, introduce effective economic incentives for sustainable resource use, and expand the application of innovative and environmentally friendly technologies. Furthermore, increasing ecological awareness and integrating international best practices into national legal systems will significantly contribute to improving the legal ensuring of rational natural resource use.

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