

# Public Policy Improvement in the Field of Environmental Security: Domestic and Foreign Practice

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**Abstract** — The article analyzes the theoretical and practical background of the conception "environmental security", as well as systematizes various approaches to its definition. The authors determine the structural elements and the functional purpose of this phenomenon. The empirical study of policy implementation in this area determined the identification of a number of problems in this field that resulted in the reduction of its effectiveness. The study was based on the analysis of foreign and domestic practice of program implementation aimed at the ecological security growth. The study identified the potential areas of further improvement of government policy in the Russian Federation. The indicated areas can be presented within the economic and institutional elements that provide a comprehensive solution to the mentioned problems and increases the improvement potential of environmental security of the state as a whole.

**Keywords:** *ecological security, public policy, ecological system, efficiency*

## I. INTRODUCTION

The modern development of human economic life presents a lot of environmental problems to the global community, the solution of which is one of the priority measures of public policy. According to the report "Green Growth Indicators" published by the OECD in 2017 [1], the progress in the reduction of environmental burden in the world is very slow, and the atmospheric pollution remains dangerous. It is also worth mentioning that Russia is among the countries where the environmental situation is improving too slowly or it does not improve at all.

In the Russian Federation year 2017 was selected to be as the "year of ecology", which confirms the indispensability of the research of issues in this area and consequently a continuous search for their solution.

The public policy concerning the improvement of the environmental situation which is aimed at security level

growth in this area, should be systemic and take into account not only the specific features of the territory, but also the generalized positive international growth. The study of the elements mentioned above in modern economic science is reflected in the papers of domestic and foreign scientists.

The last decades of research in this area was marked by the publication of the papers of the following foreign scientists: U. Beck (Beck, 2002), L. Zhou, X. Chen, T. Zheng (Zhou, Chen, Zheng, 2010); C. Raleigh (Raleigh, 2011), Yu Dun, C. Wen-Bo (Yu Dun, Wen-Bo, 2011); S. Gabriel, R. Escobar Gimenes (Gabriel, Escobar Gimenes, 2016); C. Davidson, M. Anestis, P. Gutierrez (Davidson, Anestis, Gutierrez, 2016); K. Bennett (Bennett, 2017), M. DadiBelete (DadiBelete, 2018); J. Sobus, J. Wambaugh, K. Isaacs, A. Williams, A. McEachran, M. Strynar (Sobus, Wambaugh, Isaacs, Williams, McEachran, 2018) and others. The papers of the scientists mentioned above are devoted to the study of measures of environmental security growth.

The Russian researchers who devoted their work to the study of general aspects of environmental security are the following ones: A. Tolstykh, P. Fomina (Tolstykh, Fomina, 2010); A. Krivonoshchenko (Krivonoshchenko, 2014); I. Polyanskaya, V. Yurak (Polyanskaya, Yurak, 2016), and some others.

Then the applied aspects of the problem under analysis were studied in the papers of the following scientists: A. Adam, R. Mamin (Adam, Mamin, 2001); V. Burkova, A. Shchepkin (Burkov, Shchepkin, 2003); R. Tsalikhov, V. Akimov, K. Kozlov (Tsalikhov, Akimov, Kozlov, 2009); N. Gatapova, S. Gosteva (N. Gatapova, S. Gosteva, 2010); A. Ostrovskaya (A. Ostrovskaya, 2015) and some others.

The widespread interest of the scientific community shows the acuteness of environmental problems. And their complex solution depends not only on the environmental

regulation, but also on the economic and institutional components.

## II. MATERIALS AND METHODS

In the process of the study, the method of systematic analysis was used to examine in detail the components of environmental security and the factors determining it. In order to study the current domestic situation (from the standpoint of the macroeconomy) for the identification of the current state, as well as for the determination of the potential, conditions, possible problems, the comparative and statistical methods are used. Conversely, the positive and normative approaches became the basis for the development of measures for problem solution and solution of contradictions that reduce the efficiency of the existing methods and tools improving the security level of the country's ecological system.

## III. RESULTS AND DISCUSSION

At the initial stage of the study, it is advisable to present the general state of the ecological system in a number of the countries and we will choose them from the standpoint of leadership positions according to the ecological efficiency index and it is 10 leading countries according to the performance of 2018 (Table 1). Within the comparison the indicators characterizing the dynamics of data for Russia were added to the data in the table.

TABLE I. ECOLOGICAL EFFICIENCY INDEX OF THE COUNTRIES IN 2008-2018

Country <sup>a</sup>	2008	2010	2012	2014	2016	2018
Switzerland	95,50	89,10	76,69	87,76	86,93	87,42
France	87,80	78,20	69,00	71,05	88,20	83,95
Denmark	84,00	69,20	63,61	76,92	89,21	81,60
Malta	-	76,30	48,51	67,42	88,48	80,90
Sweden	93,10	86,00	68,82	78,09	90,43	80,51
Great Britain	86,30	74,20	68,82	77,35	87,38	79,89
Luxemburg	83,10	67,80	69,20	83,29	86,58	79,12
Austria	89,40	78,10	68,92	78,32	86,64	78,97
Ireland	82,70	67,10	58,69	74,67	86,60	78,77
Finland	91,4	74,4	64,44	75,72	90,68	78,64
Russia	83,90	61,20	45,43	53,45	83,52	63,79

<sup>a</sup>. Ranking of the countries of the world 2008, 2010, 2012, 2014, 2016, 2018

The data in the table show that the highest environmental efficiency is achieved in the European countries (the minimum score is 0, the maximum score is 100). In 2018, the Russian Federation had the 52<sup>nd</sup> rank out of 180 having 52 scores which are mentioned above.

The indicated positions of Russia in this ranking show a poor efficiency of public policy in the ecological sphere.

For a comprehensive analysis we study the foreign experience of public policy in the field of improvement of environmental security in various countries. Initially let us analyze the necessary elements of the provision of environmental security:

*A. Strategy for sustainable development of the state for the support of a competitive, community-focused and environmentally friendly economy;*

*B. Efficient public mechanism for the regulation of economic and environmental processes in the framework of sustainable development of the national economy;*

*C. Creation of a regulatory system influencing these processes;*

*D. Formation and introduction of environmental education programs;*

*E. Environmentally focused structural adjustment of the national economy;*

*F. Increase of the incentive effect of tax measures in the framework of secure environmental development of territories;*

*I. Efficiently functioning prevention and response system;*

*K. Development and implementation of financing system of environmental measures with for an uninterrupted implementation of environmental activities [D.A. Masserov].*

Let us analyze the elements of an efficiently functioning system of environmental security mentioned above, using the example of the leading countries in terms of environmental efficiency, comparing them with the data for the Russian Federation. Let us present the obtained results by means of the application of the sequence of elements (A, B, C, D, E, F, I, K) in a table for an accurate presentation of the data (Table 2).

It is worth mentioning that among the leading countries under analysis, 9 out of 10 belong to the European Union, and, consequently, follow the unified rules for the enhancement of environmental security. The exception here is Switzerland, but this state also has the required elements of the environmental security system.

Again, the environmental security system of the Russian Federation, similarly meets the criterion for the presence of the elements mentioned above but, however, the effectiveness of their functioning is doubtful, due to the rating positions of the country presented in Table 1.

Let us study the elements of the national environmental security system in more detail.

*A. Currently, at the development of the national economy, the following documents were developed and adopted:*

- Forecast of the long-term social and economic development of the Russian Federation for the period until 2030 [24];
- Decree of the President of the Russian Federation "On the strategy of economic security for the period until 2030" dated 13.05.2017 No. 208 [25];
- Decree of the President of the Russian Federation "On the Environmental Security Strategy for the Period Until 2025" dated 19.04.2017 No. 176 [26].

TABLE II. AVAILABILITY OF STRUCTURAL ELEMENTS IN THE ECOLOGICAL SECURITY SYSTEM OF THE COUNTRIES

Country <sup>b</sup>	A	B	C	D	E	F	I	K
Switzerland	+	+	+	+	+	+	+	+
France	+	+	+	+	+	+	+	+
Denmark	+	+	+	+	+	+	+	+
Malta	+	+	+	+	+	+	+	+
Sweden	+	+	+	+	+	+	+	+
Great Britain	+	+	+	+	+	+	+	+
Luxemburg	+	+	+	+	+	+	+	+
Austria	+	+	+	+	+	+	+	+
Ireland	+	+	+	+	+	+	+	+
Finland	+	+	+	+	+	+	+	+
Russia	+	+	+	+	+	+	+	+

<sup>b</sup>. Made by the author on the basis of [20, 21, 22, 23]

*B. Mechanisms of the regulation of economic and environmental processes in the framework of sustainable development of the national economy:*

- Government programs and projects in the field of ecology (National Projects "Ecology" and "Pure Water") [28];
- Financial mechanism (programs of project subsidizing from the federal budget as part of the implementation of environmental programs) [28], etc.

*C. The presence of a legal and regulatory system in the field of ecology:*

- Regulatory and legal mechanism (regulation of the environmental quality standards, authorization of the integrated environmental permits, implementation of the environmental assessments, etc.) [27, 28];
- Tax legislation in the field of ecology (environmental tax) [28], etc.

*D. Environmental education programs:*

- The regional executive authorities adopted the Conceptions of environmental education of the population within the framework of which the following programs are being implemented: "Green Spring", "Green Russia", "Paper Boom", "Our rivers and lakes must have clean shores!", etc.

*E. Implementation of environmentally oriented structural changes in the national economy:*

- Inclusion of environmental issues into the strategic development programs of metallurgical, transport, forestry, chemical and petrochemical, pharmaceutical and light industries [29].

*F. Growth of the importance of tax measures in the framework of stimulation of a secure environmental development is achieved due to the following measures:*

- Tax on negative impact on the environment;
- Environmental charge;

- Planned introduction of an additional environmental tax [30].

*I. System of prevention and response to emergencies:*

- The Unified Government System of Prevention and Response to Emergencies [31].

*K. Financing System of Environmental Security:*

- Approval of the plan of measures for the restoration processes in the field of environmental protection [32];
- Implementation of federal targeted programs ("Protection of Lake Baikal and the Social and Economic Development of the Baikal Natural Territory for 2012–2020," "Development of the Water Management Complex for the period 2013–2020," "Reproduction and Use of Natural Resources for the period 2013–2020," "Environmental protection for the period 2012–2020," "Development of forestry for the period 2013–2020", etc.).

The mentioned elements of the environmental security system of the Russian Federation are available. But however when analyzing their qualitative and quantitative characteristics in comparison with similar ones in the leading countries (in terms of environmental efficiency), their insufficiency is obvious (Table 3).

TABLE III. ADDITIONAL ELEMENTS IN THE SYSTEM OF ECOLOGICAL SECURITY OF THE COUNTRIES [33]

Additional elements	Country
Development of the Market of Electric Vehicles	Russia – less than 1 % from the world ratio; Sweden – 4 %; France – 3%; Great Britain – 3 %.
Active production of biological resources, use of biomaterials and biofuels	EC countries
Cities famous for energy efficiency with a neutral emissions' balance	EC countries
Growth of household solid waste per capita	This indicator reduces in EC countries and grows by 50 % in Russia from 2005 to 2014

The growth control of household solid waste per capita and the development of mechanisms for their environmentally friendly disposal; poor development of the electric car market; less active production of bioresources, non-compliance of Russian cities with the criterion of neutrality of the balance of emissions.

The solution to the problems mentioned above will improve the effectiveness of public policy in the field of environmental security. However, these are just a few key measures which are needed to create a sustainable and securely developing ecological system.

Together with the identified problems, it is also worth emphasizing the qualitative characteristics of regulatory support in the field of ecology in Russia and the EU countries. For example, in Germany, the Law on Environmental Expertise has a sectoral emphasis and reflects the particularities in each industry. In Russia, the

environmental impact assessment is carried out according to the general law for all economic sectors, which does not correspond to the proportions of real damage to the environment caused by various enterprises [34].

The solution of the mentioned problem should be legislative in nature and should be reflected not only in the classification of emissions by sectors of the economy, but also should be connected with tax changes (for example, higher tax rates for enterprises with higher atmospheric polluting emissions.)

#### IV. CONCLUSION

Thus, having analyzed and summarized the data on the indicators and qualitative characteristics (according to the ranking positions of states in terms of environmental efficiency) of the environmental security system in the leading countries and in Russia, several important issues can be identified in the domestic mechanism of its provision:

*A. Despite the presence of all fundamental elements in the environmental security system, their qualitative imbalance is observed (for example, the absence of industry-specific legislative acts at the environmental impact assessment).*

The solution of this problem can be seen as the amendment is to amend the legislation in the field of ecology and the correction of the system of the damage assessment arising from the activity of various enterprises, taking into account their industry's specificity.

*B. Poor development of bioresources, the use of biomaterials and biofuels.*

According to one of the strategic objectives, i.e. the reduction of the energy intensity of the domestic economy by 40% by 2020 (according to the Decree of the President of the Russian Federation No. 889 dated June 4, 2008 "On some measures of the growth of energy and environmental efficiency of the Russian economy"), the development of production and application of bioresources is becoming especially relevant. For example, it can be the development of production and consumption of bioethanol as an alternative source of fuel. However, the existence of an excise tax on ethanol hinders the production of this type of resource. In this regard, it is advisable to expand the market for electric vehicles, as one of the possible solutions to environmental pollution from automobile exhausts.

*C. Growth of household solid waste per capita.*

In Russia, this indicator increased (1.5 times for the period 2005-2014) in comparison with the EU countries which showed a decrease of 8% over the same time period. A possible solution of this problem can be the creation of an integrated system of solid waste disposal (according to the Decree of the President dated January 14, 2019), however, its effective functioning can be carried out with a delay on the basis of a temporary lag in the process of its creation and development.

*D. Inconsistency with the criteria for neutral emissions' balance and the creation of energy-efficient cities in Russia.*

According to the conclusions after the international forum (2017) devoted to the clean energy, Russia, as part of the support of clean energy, plans to create 30 energy-efficient Russian cities, including Moscow, Kazan, Yakutsk, Krasnodar, Astrakhan.

The solution of the problems within the framework of the measures mentioned above to improve the environmental friendliness of the national economy can potentially contribute to the strengthening of the level of environmental security of the country, and, consequently, will increase Russia's ranking positions from the standpoint of environmental efficiency.

#### REFERENCES

- [1] "OECD Green Growth Indicators", 2017, URL: <https://www.oecd.org/env/green-growth-indicators-2017-9789264268586-en.htm> (date of access 20.09.2019)
- [2] L. Zhou, X. Chen, and T. Zheng, "Study on the ecological safety of algae: a comprehensive strategy for their screening", in Journal of Applied Phycology, Vol. 22, no. 6, pp. 803–811, 2010.
- [3] C. Raleigh, "The search for safety: The effects of conflict, poverty and ecological influences on migration in the developing world", in Global Environmental Change, Vol. 21, no. 1, pp. 82-93, 2011, URL: <https://www.sciencedirect.com/science/article/pii/S095937801100135X> (date of access 10.03.2019)
- [4] Yu. Dun, and C. Wen-Bo, "Land ecological safety in Poyang Lake Eco-economic Zone: An evaluation based on matter element model", in Yingyong Shengtai Xuebao, Vol. 22, no. 10, pp. 2681-2685, 2011.
- [5] U. Beck, "Ecological Politics in an Age of Risk", Polity press, 2002, p. 215.
- [6] Gimenes F. Escobar, Torrieri M. Godinho Rigobello, Gabriel C. Silvia, Rocha F. Rossi, Silva A. Bauer de Camargo, R. O. Shasanmi, and Cassiani S. De Bortoli, "Applying an ecological restoration approach to study patient safety culture in an intensive care unit", 15 February 2016, URL: <https://doi.org/10.1111/jocn.13147> (date of access 22.09.2019).
- [7] C. Davidson, M. Anestis, and P. Gutierrez, "Ecological Momentary Assessment is a Neglected Methodology in Suicidology", 19 Feb 2016, pp. 1-11.
- [8] K. Bennett, "Ecological interface design and system safety: One facet of Rasmussen's legacy", in Applied Ergonomics, Vol. 59, Part B, pp. 625-636, 2017.
- [9] M. DadiBelete, "Ecology to harmonize industrialization and ecological safety in urban environment: Case of Hawassa Lake, industries and Cheleleka wetland", in Ecology & Hydrobiology, Vol. 18, no. 2, pp. 192-200, 2018.
- [10] J. Sobus, J. Wambaugh, K. Isaacs, A. Williams, A. McEachran, A. Richard, C. Grulke, E. Ulrich, J. Rager, M. Strynar, and S. Newton, "Integrating tools for non-targeted analysis research and chemical safety evaluations at the US EPA", in Journal of Exposure Science & Environmental Epidemiology, vol. 28, pp. 411–426, 2018.
- [11] A.V. Tolstykh, and P.M. Fomin, "Industrial security and environmental monitoring of production facilities as the basis of their integrated security", in KIGIT Bulletin, no. 2 (11), pp. 5-14, 2010.
- [12] I.G. Polyanskaya, and V.V. Yurak, "Account of the institutional provision of environmental security of subsurface use in the theory of public administration", Proceedings of the VII All-Russian Symposium on Economic Theory, p. 41-42, 2016.
- [13] A.S. Krivonoshchenko, "System of subjects of administrative and legal support of environmental security and their competence", in the Bulletin of Polotsk State University, Series D: Economic and legal sciences, no. 5. pp. 128-135, 2014.
- [14] A. V. Ostrovskaya, "Theoretical foundations of environmental security", in 2 parts, part 1, Publishing House of the Ural State University, 2015, pp. 123.

- [15] N.Ts. Gatapova, "Ecological Security of Russia: Sustainable Development", in *Vestnik TSTU*, Vol. 16, no 3, pp. 704—718, 2010.
- [16] A.M. Adam, and R.G. Mamin, "Natural Resources and Ecological Security of Western Siberia", *NIA-Priroda*, 2nd ed., 2001, 172 pp.
- [17] V.N. Burkov, A.V. Schepkin, "Ecological safety", IPU RAS, 2003. 92 p.
- [18] R.Kh. Tsalikov, V.A. Akimov, and K.A. Kozlov, "Assessment of Natural, Technogenic, and Ecological Security of Russia", *Federal State Institution VNII GOCHS (FC) Publ.*, 2009, 464 p.
- [19] D.A. Masserov, A.V. Kiryushin, and M.V. Kustov, "The role of environmental security in the sustainable development of Russia," *Bulletin ZabSU*, no. 7, pp. 124-131, 2016.
- [20] A. Gusev, "Ecological Policy of the European Union in the Context of the Concept of Sustainable Development", in *Observer*, no. 4, pp. 88-100, 2012.
- [21] "Report of the Committee on Environmental Policy on the work of its twenty-second session", URL: <http://www.unece.org/fileadmin/DAM/env/documents/2017/ece/cep/ece.cep.2017.2.r.docx> (date of access 23.09.2019)
- [22] L.S. Samodelko, "The role of environmental taxation in the provision of environmental security and strategic development of the Russian Federation", in *University Bulletin*, no. 4, pp. 111-117, 2019.
- [23] Yu.L. Mazurov, "Switzerland: from a country of parks to a country-park", in *Izvestia JSC RGO*, no. 2 (45), pp. 47-60, 2017.
- [24] "Forecast of the Long-Term Social and Economic Development of the Russian Federation for the Period Until 2030" (2013), URL: <http://static.government.ru/media/files/41d457592e04b76338b7.pdf> (date of access 23.09.2019).
- [25] "Decree of the President of the Russian Federation dated May 13, 2017 No. 208", 2017, URL: <http://kremlin.ru/acts/bank/41921> (date of access 24.09.2019).
- [26] "Decree of the President of the Russian Federation "On the environmental safety strategy for the period until 2025" dated 19.04.2017 no. 176", 2017, URL: <http://kremlin.ru/acts/bank/41879> (date of access 24.09.2019).
- [27] "Scientific and Environmental Portal "Production Ecology", 2019, URL: <http://www.ecoindustry.ru/news/view/55067.html> (date of access 24.09.2019)
- [28] "Legal system "Consultant Plus", 2019, URL: <http://www.consultant.ru/cons/cgi/online.cgi?req=doc&cacheid=00E58C53B2000036BB20FD430EEC9593&SORTTYPE=0&BASENODE=1&ts=16071437480491493258655034&base=LAW&n=310251&dst=100297&rnd=7E30544F87743953F52C4243FEB0485D#1fiwd9xel9q> (date of access 24.09.2019)
- [29] "Structural changes in the Russian economy and structural policy" edited by E.G. Yasin, 2018, URL: <https://www.hse.ru/data/2018/04/13/> (date of access 25.09.2019)
- [30] "Informational and legal support "Guarant"", URL: <http://base.garant.ru/10900200/> (date of access 26.09.2019)
- [31] "Unified state system for the prevention and liquidation of emergency situations", URL: <https://old.mchs.ru/dop/terms/item/87475> (date of access 26.09.2019)
- [32] "The measure plan of the Ministry of Natural Resources and Ecology of the Russian Federation for 2019-2024", 2019, URL: <http://www.ecoindustry.ru/i/news/55096/plan2019-2024.pdf> (date of access 26.09.2019)
- [33] Sukhina T.S. "Ecological problems of our time and the economy: interaction between Russia and the EU in the field of ecology" (2016), URL: [http://www.m-economy.ru/art\\_e.php?nArtId=5882](http://www.m-economy.ru/art_e.php?nArtId=5882) (date of access 26.09.2019)
- [34] I.A. Ardaeva, and Fart E.A. Odabai, "Comparative analysis of ecological expertise procedure in major economically developed countries", in *Gorny Informational Bulletin*, 2013, URL: <https://cyberleninka.ru/article/n/sravnitelnyy-analiz-protsedury-provedeniya-ekologicheskoy-ekspertizy-v-veduschih-ekonomicheskirazvityh-stranah> (date of access 26.09.2019)