The main directions for ensuring the environmental component of the region's economic security

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Abstract. In modern conditions the issue of ensuring the economic security of the region and the country as a whole is relevant, as the political, economic and socio-cultural development of the Russian Federation, its stability, independence and ability to constantly renew itself depend on it. The well-being and prosperity of the country and its subjects depend on the applied management tools and methods. In order to ensure the economic security of the Russian Federation, it is necessary to provide its constituent entities with the opportunity to manage labour, financial, natural, material and other resources at the regional level. The timely management of these resources will make it possible to form a set of economic, technical, legal and environmental measures that contribute to the development of the region. The article considers the last element, connected with providing the ecological component of the region's economic security. Environmental security is one of the main components of economic security as it reflects the state of the environment and expenditures related to it, namely expenditures of air protection, wastewater collection and purification, land protection and reclamation, etc. One of the main priority directions of the sustainable development strategy of the country is rational use of natural resources and environmental protection, creation of a healthy environment for people, conditions for their cultural, moral and spiritual improvement. Ecologization of the economy should include the system of measures aimed to coordinate the actions of industrial and economic activity in the existing natural-resource conditions which will provide the economic security of the region. The article proposes the directions for providing the ecological component of the region's economic security.

1. Relevance
In economic literature economic security is defined as “sufficiency in ensuring of needed level of national security by means of necessary resources, formation of favourable conditions for development of competitive economy, protected state of personal, social and state economic interests from internal and external threats” [1]. Economic security can be understood, on the one hand, as complex system consisting of different sub-systems (scientific-technological, energy, financial securities etc.) [2]. On the other hand - as special steady state of national economy which is characterized by constantly improved set of its parameters and abilities allowing to function efficiently in constantly changing medium [3].

In our view, the economic security of the region should be understood as such a state of the regional economy, in which there is a gradual cyclical development of society, its financial, technical, technological, political, social and other relations, as well as ensuring the interests of the subjects of these relations, and protection from the impact of negative external and internal factors. The quality of
regional governance (including in the context of ensuring its economic security) should be understood as the ability of leadership to effectively use the available social and technological potential to ensure economic growth, its diversification, as well as to ensure dynamic stability in times of crisis or stagnation in the global or national economy [4].

Environmental security in modern conditions is one of the most important components of the complex concept of regional security. The state of the environment is greatly influenced by human industrial and economic activities and this influence is getting stronger every year, which generates the need to develop prompt and effective ways of its restoration and protection, as well as a system of measures for the prevention of harmful effects.

2. Results

Environmental security is understood as the state of the environment, which leads to the reproduction of natural resource potential, prevention of anthropogenic pressure on the environment with the help of technical, organizational and economic measures [5]. The ecological safety of the region is such state of the environment at which the effective state management and functioning of the society occurs, regardless of the influence of the factors of emergency, natural and technogenic character. Ensuring ecological security of the region is aimed at solving important ecological-economic problems, namely land, forest and water use, atmospheric pollution, biodiversity conservation, placement and utilization of toxic industrial waste, processing and destruction of chemical weapons.

Let us consider the current (operating) costs of environmental protection in the Russian Federation and Penza region (Table 1).

Current environmental protection expenditures are those related to environmental protection and rational use of natural resources, which are incurred at the expense of the enterprise's own or borrowed funds or the state budget. Current environmental protection expenditures include the cost of maintenance and operation of fixed assets for environmental protection, the expenditures on collection, storage, processing, utilization and disposal of production and consumption waste using own resources, the expenditures on monitoring and scientific and technical research and other current activities aimed at reducing the environmental impact.

Thus, the largest expenditures in 2020 in the Russian Federation are related to collection and treatment of waste water - 181,471 million rubles, which is 60,139 million rubles more than in 2012, and to waste management - 113,524 million rubles, which is 67,726 million rubles more than in 2012. The least expenditures are incurred on research and development activities to reduce adverse anthropogenic impacts on the environment - 263 million rubles, which is 759 million rubles less than in 2013. Total operating expenditures on environmental protection increased by 1.6 times or by 154,521 million rubles over the period of 2012-2020.

The following trend is emerging in Penza region. The largest expenditures in 2020 are also related to waste water collection and treatment, 666,490 thousand rubles, or 204,375 thousand rubles more than in 2012, and to waste management - 390,855 thousand rubles, or 251,570 thousand rubles more than in 2012. The least expenditures are incurred to protect the environment from noise, vibration and other physical impacts - 471 thousand rubles, which is 214 thousand rubles less than in 2013. There are no expenditures on research and development activities to reduce negative anthropogenic impacts on the environment, as well as on biodiversity conservation and protection of natural areas. Total operating costs for environmental protection increased by 1.7 times, or by 501,566 thousand rubles, over the period of 2012-2020.

Recently, the state and society pay special attention to the problem of the impact of the environmental component on territorial development. However, the unresolved environmental problems in the regions lead to negative consequences in the context of reducing the level of all national security. The indicators of ecological-economic development are reflected in the results of ecological ratings by Russian regions. Such ratings are based on the assessment of three spheres: ecosphere (protection and preservation of the environment), sociosphere (quality of life of the
population, impact of the environment on human health) and technosphere (assessment of the region's industry on the basis of environmental safety requirements).

Thus Penza region ranks the 28th place in the environmental rating of the subjects of the Russian Federation for the period from 01.09.2020 to 30.11.2021. The first place is taken by Tambov Region, the fifth by Kursk Region, and the tenth place is taken by Kaluga Region. The worst regions in the environmental rating were Moscow Region (77th place), Zabaykalsky Krai (80th place) and Irkutsk Region (85th place).

Table 1. Operating expenditures on environmental protection in the Russian Federation and Penza region.

| Year | Total | to protect the atmospheric air and prevent climate change | on wastewater collection and treatment | on the treatment of waste and hazardous solid waste | on environmental protection from noise, vibration and other physical influences | on the conservation of biodiversity and the protection of natural territories | to ensure the radiation safety of the environment | on research and development activities to reduce the negative anthropogenic impact on the environment | on other environmental protection activities |
|------|-------|----------------------------------------------------------|---------------------------------------|-----------------------------------------------|------------------------------------------------|------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------|---------------------------------------------|
|      |       | Russian Federation, mln. rub.                           |                                       |                                               |                                                 |                                                                 |                                                              |                                                                |                                                  |
| 2012 | 239,170 | 47,062                                                   | 121,332                               | 45,798                                        | 13,701                                        | 534                                                              | 4,795                                                         | 460                                                            | 5,225                                        |
| 2013 | 254,377 | 44,800                                                   | 132,818                               | 50,402                                        | 15,337                                        | 273                                                             | 314                                                          | 5,342                                                         | 1,022                                       |
| 2014 | 269,838 | 50,920                                                   | 136,468                               | 55,702                                        | 15,266                                        | 308                                                             | 350                                                          | 6,088                                                         | 937                                         |
| 2015 | 292,074 | 58,250                                                   | 145,147                               | 60,256                                        | 16,660                                        | 289                                                             | 336                                                          | 5,459                                                         | 582                                         |
| 2016 | 306,534 | 56,851                                                   | 154,313                               | 63,580                                        | 19,526                                        | 357                                                             | 396                                                          | 5,843                                                         | 647                                         |
| 2017 | 320,947 | 56,906                                                   | 163,261                               | 70,041                                        | 15,452                                        | 289                                                             | 422                                                          | 6,328                                                         | 464                                         |
| 2018 | 345,464 | 61,075                                                   | 173,688                               | 79,885                                        | 15,347                                        | 381                                                             | 514                                                          | 7,728                                                         | 205                                         |
| 2019 | 374,411 | 63,760                                                   | 174,921                               | 102,396                                       | 16,348                                        | 354                                                             | 639                                                          | 8,266                                                         | 219                                         |
| 2020 | 393,691 | 63,971                                                   | 181,471                               | 113,524                                       | 16,354                                        | 386                                                             | 737                                                          | 8,893                                                         | 265                                         |
|      |         | Penza region, thous. rub.                                |                                       |                                               |                                               |                                                                 |                                                              |                                                                |                                                  |
| 2012 | 720,439 | 55,690                                                   | 462,115                               | 139,285                                       | 53,263                                        | 580                                                             | 256                                                          | 5,536                                                         | -                                           |
| 2013 | 707,568 | 76,717                                                   | 390,340                               | 192,427                                       | 35,077                                        | 685                                                             | 5,841                                                        | 3,468                                                         | -                                           |
| 2014 | 955,460 | 183,860                                                  | 468,960                               | 228,974                                       | 55,739                                        | 579                                                             | 6,404                                                        | 7,432                                                         | -                                           |
| 2015 | 757,330 | 93,419                                                   | 447,292                               | 184,600                                       | 22,021                                        | 521                                                             | 7,132                                                        | -                                                             | 2,345                                        |
| 2016 | 776,226 | 68,623                                                   | 534,915                               | 152,967                                       | 16,452                                        | 491                                                             | 613                                                          | -                                                             | 2,165                                        |
| 2017 | 808,386 | 75,139                                                   | 554,581                               | 162,249                                       | 11,071                                        | 469                                                             | 586                                                          | -                                                             | 4,291                                        |
| 2018 | 933,518 | 83,431                                                   | 629,112                               | 202,523                                       | 10,528                                        | 331                                                             | 2,664                                                        | -                                                             | 4,929                                        |
| 2019 | 1,193,153 | 116,155                                             | 633,965                               | 417,263                                       | 9,604                                         | 393                                                             | 1,279                                                        | -                                                             | 14,494                                       |
| 2020 | 1,222,005 | 122,495                                             | 666,490                               | 390,855                                       | 11,795                                        | 471                                                             | 1,549                                                        | -                                                             | 28,350                                       |

Source: compiled by the authors using data from the Penza Region Territorial Office of the Federal State Statistics Service and the Russian Federal State Statistics Service

Ecological problems in the subjects of the Russian Federation are the result of insufficient scientific research in the field of environmental protection, non-compliance with the approaches and requirements for organising nature management in production and economic activities, the absence of an environmental management system at enterprises, the lack of information on the state of the
environment and possible consequences of negative environmental impacts, which leads to a decline in the quality of life of the population, an increase in the number of deaths and illnesses.

Table 2. National environmental rating for the period from 01.09.2020 to 30.11.2021 (100-point system, +1 positive rating / -1 negative rating).

| № in the rating | Subject of the RF         | Environmental index | Industrial and environmental index | Socio-environmental index | Consolidated environmental index |
|-----------------|---------------------------|---------------------|----------------------------------|--------------------------|---------------------------------|
| 1               | Tambov region             | 75/25               | 66/34                            | 83/17                    | 76/24                           |
| 5               | Kursk region              | 64/36               | 53/47                            | 80/20                    | 69/31                           |
| 10              | Kaluga region             | 59/41               | 56/44                            | 77/23                    | 66/34                           |
| 17              | Ulyanovsk region          | 54/46               | 59/41                            | 75/25                    | 64/36                           |
| 28              | Penza region              | 59/41               | 42/58                            | 78/22                    | 63/37                           |
| 38              | The Republic of Tatarstan | 47/53               | 46/54                            | 79/21                    | 60/40                           |
| 59              | Saratov region            | 48/52               | 48/52                            | 67/33                    | 56/44                           |
| 72              | Orenburg region           | 31/69               | 41/59                            | 70/30                    | 50/50                           |
| 85              | Irkutsk region            | 27/73               | 46/54                            | 55/45                    | 43/57                           |

Source: https://greenpatrol.ru/ru

Also, a serious region-wide environmental challenge in Russia remains weak state environmental policy. One of its major shortcomings is the lack of a systematic focus on the creation of a mechanism to stimulate the ecologisation of production, taking into account innovative development principles. In addition, urgent problems include eliminating existing gaps, inconsistencies and ambiguities in environmental legislation, and strengthening the environmental framework and accountability for its strict observance. The existing system of financing of nature protection measures, which remains at an unacceptably low level and does not meet the needs [6].

Environmental problems affect the economic security of the region, namely lead to depletion of natural resources, reduction of biodiversity, environmental pollution, emergencies of natural and man-made nature, which in turn leads to a reduction in the production of quality and safe products, taxes and fees, paying capacity of population, number of jobs and increasing unemployment, inflation, etc.

At present, the problem of environmental security in Penza region is mainly solved by the national project "Ecology", which aims to utilize and recycle waste, preserve water bodies and improve the quality of drinking water, reduce air pollution, protect nature and animals, introduce the best environmental technologies [7]. This provides a certain reduction of anthropogenic pressure, but in general does not solve the problem of achieving environmental security in the region [8].

On the basis of the above, it seems possible to formulate the main directions of the ecological component of the region's economic security:
- improving the assessment of the ecological and economic condition of the region and the quality of life of the population. To assess the level of ecological security of the territory the following main ecologically significant parameters of the territory's environment are identified: quantitative characteristics of oxygen in the atmospheric air, availability of natural water and plant resources [9]. As well as indicators of population migration, birth rate, morbidity, mortality, etc;
  - improvement of normative-legal acts at the regional and federal levels, regulating the issues of environmental protection and nature management;
  - modernisation of engineering and communication systems, waste water drainage systems, hydraulic engineering structures, etc;
  - economic incentives for organisations involved in environmental protection activities;
  - implementation of environmental management systems at enterprises;
  - implementation of a regional economic policy that takes into account the environmental factor in the allocation of productive forces in the region;
- expanding the scope of environmental insurance against environmental accidents or other emergencies of natural or man-made origin, as well as the introduction of a mechanism for mandatory environmental certification, environmental assessment and environmental auditing, which will not only combat the current threats, but also prevent their occurrence in future agricultural activities [10];
- carrying out ecological propaganda among the population of the region, master classes on ecological education, contests, competitions focused on the formation of professional skills and practical experience, improving the quality of training of specialists in the field of environmental protection, etc.

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