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Environmental Problems In The Fergana Valley And Ways To Overcome Them

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Abstract: The article considers current environmental problems in the Fergana Valley and ways to solve them, based on the level of a comprehensive assessment of the environmental situation, divided by the author into several zones, proposals and recommendations for solving environmental problems are described in the final part of the article.

Keywords: Fergana Valley, environmental problems, nature conservation, environmental protection, environmental safety, ecological balance, integrated assessment, radiation safety, neighboring countries, Namangan, Andijan, Fergana regions, division into zones, development of proposals and recommendations.

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Introduction

One of the most pressing issues today is the careful attitude to nature and the rich natural resources of Uzbekistan, their reasonable use for the benefit of present and future generations, as well as ensuring environmental safety. The state of ecological balance is the main criterion of the natural environment. In other words, qualitative and quantitative indicators of the ecological balance are of practical importance for determining and evaluating the current state of nature, the situation, and the productivity of resources (other than mineral resources), the variability, direction and other characteristics of natural processes.

The Main Findings And Results

According to the results of monitoring the state of equilibrium in nature for several years, its stability depends on the structure of ecosystems and geosystems, the direction of development, the nature of economic use, and human environmental management [1.2010]. Efficient use of nature strengthens the ecological balance, and mismanagement accelerates degradation. In this regard, attention is drawn to the development and dynamic variability of each component, as well as the fact that in their totality, these characteristics make up one integral natural complex. This is due to the fact that the slowdown or failure of one component of the complex in the overall development leads to an imbalance or weakening of the balance. After all, since the use of nature depends on the ecological balance of the territory, it is necessary to take into account its fragility, as well as the main factors that ensure stability in this process. By the way, since the cycle of natural resources depends on the ecological balance, nature users should officially recognize it. The state of the environmental situation and the direction of its change are one of the most important criteria in the process of using resources. When introducing any wealth into circulation, it is necessary to pay attention to the environmental situation of the territory and its direction.There are sharp differences between use in the most favorable situation and use in catastrophic, crisis situations. The environmental situation, the development of agriculture in regions with a serious problem, to some extent restricts the use of nature or requires the use of precautionary measures. In such a situation, it is possible to first introduce some resources into circulation (in the absence or insufficient degree of influence on them of the situation) with the use of a set of measures to prevent the occurrence of adverse processes. In situations of crisis and disaster, it is advisable to respond appropriately and not involve resources for use for a certain period. The most important thing is to optimize the natural environment. It is necessary to correctly assess the ecological balance and the situation and, first, stabilize it, and then soften and create a favorable, sustainable situation. It will also be necessary to know at what stage the environmental situation is, the direction of its formation, what factors influence the

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situation, as well as the extent of the influence of environmental factors on its occurrence. If the environmental situation on the territory is satisfactory, it is also important to maintain this state of Affairs.We will consider this situation on the example of the Fergana valley.

Andijan, Namangan, and Ferghana regions of Uzbekistan, Jalal-Abad and Batken regions of Kyrgyzstan, and Sughd region of Tajikistan are located in the Ferghana valley. The Ferghana valley is characterized by highly developed agricultural and industrial centers. In addition, the valley is home to 30% of the population of the Republic of Uzbekistan. This population density will further increase the demand for land and water resources, and the wealth of labor resources will lead to the development of transport networks and the modernization of industrial enterprises. In the Fergana valley, the ecological balance and situation are not stable everywhere, there are many unstable and becoming unstable places-geosystems, that is, changes in the nature-economy-population system lead to a violation of environmental stability [4: -c 209.]. In particular, environmental problems such as salinization of land as a result of irrational use of land and water resources, regional increase in the level of ground water (on the plains), land subject to deflation and water erosion, expansion of sandy deserts, thinning vegetation on hills and foothills, landslides, erosion of ravines. erosion of mountain and foothill soils,

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floods and landslides, air pollution, waste problems tend to increase. If we evaluate the environmental situation in the Fergana Valley based on 18 environmental indicators adopted in the Republic of Uzbekistan, we can see the following situation.

Table 1

Comprehensive assessment of the environmental situation in the regions of the Fergana valley (part of Uzbekistan)

Ecological zones	**Territory thousand ha**	**Including irrigated land**	**Population, thousand people**	**Number of administrative districts. united (cities of Republican and regional subordination)**
Namangan region				
0 zone- favorable environmental situation	566,6	200,9	1064,3	13
1 zone- the critical environmental situation	128,2	76,8	722,1	4
2 zone – environmental emergency	-	-	-	-
3 зона – ecological disaster	-	-	-	-
For Namangan region	**694,8**	**277,7**	**1786,4**	**17**
Andijan region				
0 zone- favorable environmental situation	180,3	116,3	1108,1	10
1 zone- the critical environmental situation	244,7	164,8	932,2	9
2 zone – environmental emergency	-	-	-	-
3 zone – ecological disaster	-	-	-	-
For Andijan region	**425,0**	**281,1**	**2040,1**	**19**
Fergana region				
0 zone- favorable environmental	126,1	66,0	323,4	3

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situation				
1 zone- the critical environmental situation	510,0	245,3	1703,6	14
2 zone – environmental emergency	101,6	46,7	472,5	3
3 zone – ecological disaster	-	-	-	-
For Fergana region	737,7	358,0	2499,5	20
For the regions of Fergana Valley	1857,5	916,8	6326	56

Source: compiled by the author based on data from the state Committee of the Republic of Uzbekistan on Ecology and environmental protection.

According to the environmental criteria adopted in the Republic of Uzbekistan and based on the level of the current environmental situation in the Fergana valley, the following zones were divided:

- ✓ 0 zone- favorable environmental situation;
- ✓ 1 zone- the critical environmental situation;
- ✓ 2 zone – environmental emergency;
- ✓ 3 zone – ecological disaster zone.

At the same time, the territory of the administrative region, where environmental standards are sharply increased, but violations of the structure of natural ecological systems are not of paramount importance, a decrease in their ecological volume, and environmental pollution is included in the critical ecological zone. The territory of the administrative region, where the quality of the environment has irreversibly changed and ecosystem degradation is observed, has been recognized as an ecological disaster zone. The favorable ecological zone includes the territory of the administrative region, which is not included in ecological zones 1, 2, and 3.

Based on the table above, when analyzing the environmental situation by region, you can see the following result. In particular, Mingbulak, Namangan, Turakurgan districts and Namangan city are located in the critical ecological zone of Namangan region, where 40% of the region's population lives, the remaining 13 administrative districts are located in a favorable ecological zone and 60% of the region's population lives there. Climatic potential of air pollution Namangan region is IIS 2.9-3.7, a high proportion of pesticides used in cultivated areas in Mingbulak, Pap, Namangan, Turakurgan districts (15-19 kg / ha), in Namangan, Uychi, Uchkurgan districts, in the cities of Namangan and Uchkurgan by 30-40%, and in Namangan district the quality of drinking water by 98% does not comply with regulatory requirements.

In Andijan region, the districts of Altynkul, Bulakbashi, Kurgantepa, Marhamat, Pakhtaabad, Ulugnor and town of Karasuv are located in a critical ecological zone, where 46% of the population lives, and the remaining 9 administrative regions are located in a favorable ecological zone, where 54% of the population lives. For the region, atmospheric

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pollution is characterized by a high level of climatic potential (IIS) and the level of flooding of areas, high levels of soil pollution with pesticides, the quality of drinking water in Andijan, Bulakboshi, Kurganepa, Markhamat districts does not meet the requirements of standards by 30-40 %.

The main part of the population of Ferghana region (68%) lives in a critical ecological zone, 19% in an emergency ecological zone and only 13% in a favorable ecological zone. The emergency ecological zone includes Rishtan, Tashlak and Fergana districts, and the favorable ecological zone includes the Dangara, Uchkuprik and Yazyavan districts. For Fergana region (especially for the emergency ecological zone), there is a high climatic potential for air pollution. High levels of floods and high levels of air pollution are observed in towns of Akhunboboev, Tashlak, Fergana, Margilan, soil pollution with pesticides is present in Buvaida, Besharik, Uchkuprik, Yazyavan districts [2: p. 102].

In addition, there are cross-border environmental problems in the Fergana valley that are also prone to development. In particular, in the southern districts of the valley (the territory of Fergana region), one of the urgent environmental problems related to environmental safety in the Fergana valley is water resources management. Since all the rivers that flow into the valley are cross-border, their sources are located on the territory of Kyrgyzstan. They are rated as moderately polluted when assessed on the basis of environmental indicators, or new hydraulic structures built in the Naryn river basin (Kambarota 1, Kambarota 2) cause changes in the water regime of the Syr Darya. Land degradation is also increasing in the valley: today 45% of the irrigated land in the valley is located in the Syr Darya river basin [3: -c144.]. Obsolescence of the irrigation system and untimely repair of collector drains lead to changes in the composition of the soil and the expansion of flood areas. For example, over the past 10 years, the area of saline and flooded land has increased by about 25-50% relative to irrigated land. Currently, 31 percent of irrigated land has a groundwater level of 2 meters, and 28 percent of irrigated land has low or high salinity, which leads to a decrease in productivity by 20-30 percent. At the same time, the collection, processing and disposal of industrial and household waste in the valley remain relevant. Most importantly, the problem of radiation safety requires an urgent solution.

Certain territories in Uzbekistan, including the Fergana Valley, have been the site of uranium mining and the storage of radioactive waste over the past 40 years. One of these radioactive waste repositories is located in a tributary of the Syr Darya River in the Mailuu-Suu River Basin, 30 km from the border with Uzbekistan, where there are 23 repositories of waste and off-balance ore deposits. In the event of an emergency situation in the form of mudflow landslides, washing the waste storage and off-balance ore deposits in the Mailuu-Suu river basin will increase the likelihood of radionuclide discharges into the Mailuu-Suu river, which will worsen the environmental situation in Andijan region of Uzbekistan and an area of 300 km2 will be contaminated with radioactive substances [5: 192-p.]. Likewise, storage facilities for radioactive waste are located in the industrial centers of the Republic of Kyrgyzstan, Kadamjo, Khaidarkon, bordering the southern regions of the valley, and they pollute the surrounding territories with heavy metals and toxic substances. Waste storage facilities do not provide an opportunity to protect the environment. Under the influence of strong winds, industrial dust spreads from Kadamjo to the territory of Uzbekistan. Toxic substances, such as arsenic, mercury, sulfur,

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antimony in water-soluble waste together with rain, enter the Shohimardon River through the territory of Uzbekistan and have a negative impact on the environment. Mercury waste from production in the joint-stock company Haidarkon Mercury is the main source of air pollution in this territory. Studies show that mercury is found in all environmental objects (soil, water, air) and has a negative impact on the environment and public health. Despite the production of mercury at 2 percent per year, it is considered very harmful. Mercury poisoning 139.2 mg / day in the Southwestern zone, 115.20 mg / day in the East, 67.2 mg / day in the Southeast, 65.25 mg / day in the North and 39.84 mg / day in the Northwestern zone. In particular, poisoning of the children's bodies was observed more than 1.9 times more often. For 1 day, mercury in atmospheric air is indicated in an amount of 11.23 mg / m. From this, it follows that 1-day poisoning by the rural population is 260.5 mg / day, for an adult - 181.15 mg / day, for a children's bodies - 341.39 mg / day. According to the analysis, most of the mercury dust is concentrated in recreation areas, then in the villages and water reservoirs themselves. According to the results of the analysis, the concentration of mercury in the Haidarkon zone is 1.8 times higher than normal. In these cases, even if mercury is not much higher than the norm, it is still a toxic substance that can poison the air.

Conclusions

In general, we consider it necessary to solve 3 interconnected environmental problems in the Fergana Valley.

1. Associated with the use of land and water resources.
2. Waste from local industrial enterprises.
3. Transboundary environmental issues.

The most important of them are transboundary environmental problems, the solution of which requires the cooperation of Uzbekistan with Kyrgyzstan and Tajikistan.

One of the most reliable ways to solve these problems is to create a geographic information system in interstate cooperation that reflects the geo-economic and geodemographic situation in the Fergana Valley and conduct research on this basis.

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