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GEOECOLOGICAL PROBLEMS OF THE FERGANA VALLEY

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ABSTRACT

This article describes in detail the dynamics of the formation of geoecological problems and concepts related to their solution, identified as a result of research in the Fergana Valley

Keywords: Geoecological problem, landscape, system, natural resources, natural-anthropogenic, environment, accumulation of substances, ecological situation, atmospheric air, water resources, radioactive substances, altitude zoning.

The Fergana Valley has a complex landscape structure, which is a huge and unique depression among the mountains. It consists of various natural and natural-anthropogenic landscapes in the highlands, such as deserts, hills, mountains and pastures. The ancient use of available natural resources, the extreme density of the population (160 per km2, sometimes 500 people), the large number of manufacturing enterprises have led to extremely drastic changes in the natural environment. Production has affected not only the change of the environment, but also pollution, impoverishment of resources. As a result, the local ecological balance has become relatively unstable, becoming thinner and more unstable. As a result, as a result of the deterioration of the ecological situation, adverse events and processes have occurred, the environment has been damaged and various diseases have spread among the population.

Changes in the natural environment and aggravation of the ecological situation in the Fergana Valley are characterized by its geographical location, specific natural conditions and factors, existing regional and local laws and regulations, stability and variability of natural complexes, the nature of economic activity, production characteristics. depending on.

The fact that the Fergana Valley is surrounded by high mountain ranges and is connected to the Tashkent-Mirzachul

foothills by a narrow corridor (Khojand Gate) only in the west, and only the Syrdarya flows from it, defines its many individual and local features. In this regard, the outflow of many streams, especially from mountain slopes, leads to the accumulation of natural and man-made substances in their conical distributions.

Groundwater flow is saturated with salts, heavy metal ions, petroleum products, pesticides, mineral fertilizers, detergents, industrial wastes, etc., dissolving various substances due to the flow of sediments from the layers close to the surface. Consequently, the cone depressions are a place of accumulation of not only salts, but also man-made wastes, some of which are transferred to the alluvial-proluvial plain - Central Fergana with groundwater flow.

The water permeability of the deposits that make up the second and third terraces of the Syrdarya is mainly very weak, so the vertical movement of moisture in this area is predominant, which means that the accumulation of salt in the soil is active. This phenomenon requires the density of collector-drainage networks. That is why 20-30 tons of salt per hectare is poured into the Syrdarya every year through drainage systems. That is why Syrdarya water is absolutely unfit for drinking from Uchkurgan.

The presence of mountain winds is typical for the Fergana Valley. Winds are northerly in the north, southerly in the south, and westerly in the west. Kokand and Bekabad winds are seasonal, sometimes 15-20 m / s.

The abundance of mineral resources in the region serves as a basis for the development of industrial production, but man-made wastes, due to the specific characteristics of the subsurface, lead to the accumulation of the bulk of them here. The development of various industries and the development of transport lead to the saturation of the environment with man-made waste.

Existing industrial enterprises in Khojand, Kokand, Margilan, Fergana, Altiyarik, Kuva, Haydarkan, Sulukta, Kyzylkiya, Kadamjay, Chauvay, Osh, Jalal-Abad, Asaka, Andijan, Namangan and other places surround the valley and pollute it with various wastes. Due to the complexity of their disposal, waste accumulates in the area, exacerbating the environmental situation [1]

Atmospheric air pollution is caused only by natural factors, such as dust, in this regard, it is worth noting that the weight of anthropogenic impact is extremely large.

Due to the peculiar meteorological conditions in the Fergana Valley, ie the stagnation of the weather, especially in summer, the distribution of waste in it slows down, which can be felt in the settlements. Bitter smoke (smog) in the Kirguli industrial zone of Fergana

occurs in autumn and winter, which indicates that the atmospheric air is sometimes stagnant, confirming its pollution. Air pollution has been found to increase from west to east and from north to south.

According to the State Committee for Nature Protection (1990, 1994, 1995, 1998, 2000), the analysis of the dynamics of air pollution in the cities of the Fergana Valley allowed to determine the following results.

First of all, we can see that by 2019, the amount of emissions into the atmosphere will be reduced by almost 2 times compared to 1990. However, high levels of air pollution remain in Fergana, Kokand, Andijan and neighboring cities.

It can be seen that in 1990 only in the cities of the Uzbek part of the country the amount of waste was 151.3 thousand tons. The total amount of waste in the same cities in 2019 amounted to 64.0 thousand tons. This is a satisfactory level in any case.

According to the study of water resources, the Syrdarya and groundwater in the valley currently averages 25.7 km^3 of life per year (1.1 km^3 of groundwater and the rest of surface water). Experts estimate that more than 18 km3 of that water is used in agriculture and more than 1.5 km^2 in industry and utilities. Of this, the amount of water that does not return to consumption is more than 8 km^3 per year.

In the 50s and 60s of the last century, in order to develop the protected lands of Central Fergana, to improve the reclamation of existing irrigated lands in Fergana and Andijan regions, began construction of several main collectors and dense ditches. Currently, the irrigated area of the valley is occupied by very dense collector-drainage networks, as a result of which the previous positive salt balance was replaced by negative expenditure in the second half of the 80s, ie the amount of salt leaving the drainage network is quantitatively higher than income.

According to EI Chembarisov (2001), in the second half of the 1990s, the average salinity in Andijan region was 3.6 km^3, 1.3 g / l, in Namangan region it was 1.2 km^3 and 1.6 g / l, respectively. , 2.7 km^3 and 2.6 g / l of collector water were generated in Fergana region, the total water volume was 7.5 km^3. All collector-drainage water is discharged into the Syrdarya. As a result, the river water became polluted and its salinity increased several times. According to experts, the salinity of the Syrdarya water increases from an average of 0.60-0.63 g per liter in Namangan to 1.6-1.8 g at the confluence of the Keles River [2].

It was found that up to 13% of mineral fertilizers are washed away during irrigation, with an average of 30% of nitrogen and potassium in the drainage water, and about 1 kg of phosphorus per hectare.

In addition, pesticides, heavy metals, petroleum products, and other substances that fall into the soil are found to be released when dissolved in ditch water. Consequently, the Syrdarya water is not only becoming more mineralized, but also becoming more polluted. Due to this phenomenon, the accumulation of salt in the soil during the irrigation of crops in Mirzachul and Lower Syrdarya is developing.

The New Kokand Chemical Plant was launched on the Sokh River cone, which has now ceased operations to produce sulfuric acid and ammophos. Due to the fact that the cone distribution is composed of coarse rocks, the water permeability is extremely fast, and there is a clean and fresh artesian basin with large reserves in the area. After the launch of the plant, the water basin began to become polluted, and the flow of polluted water reached the Syrdarya. Due to this, the enterprise was suspended and adapted for the production of other products. It is unfortunate that when designing a chemical plant, its environmental impact is not summarized.

Chemical pollution is predominant in groundwater pollution. The main reason for this is due to several factors such as mining, chemical, oil refining industries, application of mineral fertilizers and pesticides to the soil. According to experts, the presence of hydrogen sulfide in the well water around the Fergana furan compounds in the amount of 0.58-2.40 mg / l. The small amount of hydrogen sulfide added to the water also prohibits the use of such water for any purpose

The Novkat-Kadamjay-Haydarkon region of non-ferrous metals and radioactive substances on the southern slopes remains an active factor in the pollution of mountain groundwater. Heavy metals are found in the groundwater in the Quvasoy-Fergana-Margilan-Kokand region. This phenomenon is also explained by the presence of an ore zone on the slopes of the Alay Mountains and the migration from it to the foothills, where it is dissolved in the flow of groundwater. The fact that the weight of heavy metals is several times higher than REM makes it possible for groundwater to develop various serious diseases when consumed by living organisms. For example, wastes from antimony and mercury deposits in South Fergana pass through soil-water-vegetation to humans and livestock, causing various endemic diseases in their organs. The impact zone of the mines is facilitating the proliferation of endemic goiter in humans and livestock. Livestock affected by this disease produce 30-40% less product [3].

In a densely populated and irrigated valley, where water is scarce, the most urgent and priority task should be to use water efficiently and prevent its pollution.

According to the data, the flat part of the Fergana Valley is 3.8 mln. hectares of land that can be used for agriculture. Of this, 1.3 million hectares are arable land. ha, natural pastures 2.9 mln. hectares, arable land - 1278 thousand hectares, vineyards and orchards - 137.6 thousand hectares, the rest is state-owned land. The current use of this land fund is a serious problem and requires many factors to be taken into account.

The most pressing issue is the efficient use of available irrigated land at a time when the population is growing every year, the continuous increase of soil fertility, the introduction of irrigated land into scientific management, etc. The development of irrigated agriculture in the region, where land and water resources are extremely limited, requires a highly rational use of land. But analysis of available data often shows the opposite.

Due to the natural geographical features and reclamation status of the Fergana Valley, the plains and the foothills of the cone depressions are prone to soil salinization. In the 60s and 70s, soil salinity was strongly developed in these areas. This phenomenon was studied in detail by specialists of M.A. Pankov and Fedchenko soil-reclamation station. The main reason for salinization was due to the extremely low water permeability of lyosimon deposits, the abundance of residual salt reserves in them, the unevenness of soils, and so on.

Construction of main collectors (Northern Sokh-Isfara, Achchikkol, Pishkaron, Karakalpak, Fayzabad, Sari Joga, etc.), dense (25-30 m per hectare and more) ditches in the 70-80s, and most importantly, the widening of vertical ditches scale construction has led to curbing the process of soil salinization in the Fergana Valley, as a result of which the regional negative salt balance has become predominant. Even now, salt accumulation is taking place in some places, but they can be managed.

The Fergana Valley is a typical area where deflation and erosion processes occur on a large scale. Low mountains and hills are dominated by floods, hail and torrential rains. Experts' opinions on this have been published (Mirzajonov et al., 1973). Erosion is particularly developed in Namangan, Osh and Fergana regions. Only 60-65% of the hilly lands of Namangan region are eroded (Kazakov, 2003). In the process of washing the fertile humus layers of soils, their content is reduced to 30-45%, the mechanical composition is roughened. Consequently, washing of the humus layer has a negative effect on the normal vegetation of the plant.

In the western part of Fergana, winds blowing from the Khokand corridor to the valley at high speeds (15-20 m per second) each year are active up to the Altiyarik meridian

(Mirzajonov, 1973). In the process, the entire Kokand oasis, especially Dangara and Besharik districts, will suffer serious losses. In some years, due to severe damage to cotton, the seeds are replanted 2-3 times. Soil (100 t per hectare area), humus, sand blown away by wind, destruction of crops and orchards, damage to farms are common occurrences in the area. Hence, its ecological and socio-economic consequences should be characterized by a comprehensive, comprehensive and wide-ranging counter measures [4].

The flora of the Fergana Valley is diverse, a feature that is especially well observed in the zoning of landscapes along its height. In the plains, the area of natural flora has significantly decreased due to the long-term development of irrigated agriculture and animal husbandry on the hills, the growth of dry farming on the lower slopes, as well as the provision of the population with housing and land.

Sparse tugai forests are rare on small plots along the Syrdarya. In the Kokand forestry, about 10,000 hectares of natural tugai ecosystems have been preserved. In order to protect crops from the wind, on the banks of canals and ditches, along roadsides, on the borders of farms, several rows of fruitless and fruit trees began to be built in the 50s. At first, the reserves were under the control of state authorities and no one dared to cut them. Consequently, as a result of deforestation, soils, crops, orchards, farms are severely damaged, irrigation networks are filled with mud and sand, and water consumption for evaporation is accelerating [5].

In mountainous, hilly and low mountainous areas, due to the almost complete absence of vegetation, especially trees and shrubs, they are generally considered to be a place of bare, erosion, flood and torrential rains. That is why sliding, erosion, jar erosion are widely developed. Indeed, there are changes in the direction of increasing the depth of the soil fund, pastures, soil cover, roughness of the mechanical composition. At their footsteps, everything from mudslides to rockslides is accumulating.

REFERENCES

1. Hamidov. A.A. et al. Issues of using natural geographical and geoecological ideas and views in improving the ecological situation in the Fergana Valley. Sb.nauch.tr. KUU.-Osh, 2003.-S.219-

2. Chembarisov E.I. and others. Hydroecological karat of the Republic of Uzbekistan is an integral part of the geoecological information system of the region. // Geoecology and geoecology. samples mountainous and intermountain systems. Mat. international conf. March 26-28, 2001. -Tashkent: -S.135-137.

3. Abduganiyev I. Landscape indicators of oil and gas bearing structures in the southern part of the Ferghana Valley. //Author. diss. cand. geogr. Sciences. -M.: -1976. -21.s.
4. Mirzazhonov K.M. Wind erosion of irrigated soils in Uzbekistan. // Publishing house "FAN". -Tashkent: -1973. -S.32-40, 94-213.
5. Sultanov Yu. Ecological problems of the Ferghana Valley. Izvestiya Uzbek. geogr. General T.15. -Tashkent: -1989. -p.24-28.
6. Hamidov A., Khalilov K. LAND LEGISLATION AND SOIL PROTECTION IN THE FERGHANA VALLEY: https://doi. org/10.47100/conferences. v1i1. 1320 //RESEARCH SUPPORT CENTER CONFERENCES. – 2021. – №. 18.06.
7. Hamidov A., Khalilov K. LAND LEGISLATION AND SOIL PROTECTION IN THE FERGHANA VALLEY //Конференции. – 2021.
8. Hamidov A. A., Khalilov K. B. Biogeographic Studies Conducted In The Fergana Valley //The American Journal of Social Science and Education Innovations. – 2021. – Т. 3. – №. 06. – С. 210-214.
9. Hamidov A. A. Dynamics Of Soil-Geographical Research In The Fergana Valley (1918-1945) //The American Journal of Applied sciences. – 2021. – Т. 3. – №. 06. – С. 44-50.
10. Ilhomjon Ihtiyorjon O‘G‘Li Muhitdinov, Jahongirmirzo Jamoliddin O’G’Li Mamatisakov FARG‘ONA VODIYSINING JANUBIY QISMI GIDROGRAFIYASI // Scientific progress. 2021. №3. URL: https://cyberleninka.ru/article/n/farg-ona-vodiysining-janubiy-qismi-gidrografiyasi (дата обращения: 16.05.2022).