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SOME ASPECTS OF ECOLOGICAL ZONING OF UZBEKISTAN

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Article history:		Abstract:
Received:	March 21st 2023	The article analyzes the history of zoning of the territory of Uzbekistan for various purposes. Including ecological zoning, ecological zoning, and its theoretical analysis are cited. To date, scientific research has been carried out by research scientists who have conducted research on the issues of environmental zoning in the world.
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In paragraph 5.1.5 of Decree PF-4947 of the president of the Republic of Uzbekistan dated February 7, 2017 "on the strategy of action for the further development of the Republic of Uzbekistan"to prevent environmental problems that harm the Environment, Public Health and the gene pool...."issues defined, as well as the development of the methodology of ecological zoning of regions in Chapter V of the decree of the Republic of Uzbekistan No. 5863 "on approval of the concept of Environmental Protection of the Republic of Uzbekistan for the period until 2030"of October 30, 2019..."the definition of the issue indicates the relevance of this problem.

One of the main tasks set before society in achieving ecological stability is to find harmony in the relationship with nature, that is, to optimize the attitude towards nature. However, the reforms and norms of law of our state on the protection of nature and the rational use of natural resources do not always take into account the specific laws of nature, the possibility of stability of geologists, the ability to self-clean and regenerate, their degrees of change and environmental situations. For compensation for damage to nature or failure to comply with the norms of the law, violators are assigned the same responsibility on the territory of the Republic of Uzbekistan. But, the potential for stability, regeneration, the amount of compensation for the damage caused to it by geoecological characteristics of each of them are manifested differently. Taking into account this, an urgent issue is the assessment of the state's laws on the regulation of environmental relations, protection of nature and rational use of natural resources from a geoecological point of view, as well as their zoning, implementation of appropriate differentiated measures.

Scientific research on the assessment of environmental pollution, environmental situation optimization is carried out in major scientific and higher educational institutions around the world, including in the USA (George Washington University, Carolina, North Carolina, UNC), Canada (University of Alberta), Switzerland (Lund University), the United Kingdom (Covernty University, University of Portsmouth, Oxford University), Australia (Monash University, University of Technology Sydney), Germany (Westfalischen Wilhelms-Universitat Munster), China (Beijing Normal University, It is carried out in Russia (Moscow State University) and other places.

Many well-known foreign scientists, including d, have studied the environmental problems caused by human impact on the environment, their escalation with population growth.Harvey, E.Neef, K.Troll, G.Bobek, Y.Schmitthausen, R.Chorley, B.Kennedy, G.Haaze, Ya.Demek, T.Nakano, G.White, Yu.Scientists from Odum and the CIS V.B.Sochava, V.S.Preobrazhensky, A.G.Isachenko N.A.Solntsev, N.A.Gvozdesky, B.V.Vinogradov, F.N.Milkov, I.I.Mamai, W.A.Nikolaev, K.N.Dyakonov, V.S.Kasimov, G.N.Golubev, and others conducted research.

Geoecological situation in Oasis Geosystems in the Republic of Uzbekistan A.A.Abulkosimov, L.A.Alibekov, N.I.Sabitova, A.A.Rafikov, P.Baratov, A.S.Soliev, A.N.Nigmatov, A.Urazboev, N.Q.Komilova, I.K.Nazarov, S.I.Given in the work of Abdullaev et al .

Determining the standard of anthropogenic load on Geosystems is a complex issue and has not yet found a solution. Unconditionally, under any circumstances, a certain norm must be observed in the influence of a person on nature, and it must be scientifically substantiated. Otherwise, the balance formed in nature for thousands of years will be disturbed and impoverishment will begin.

There are a lot of theoretical opinions about the norm of anthropogenic load on Geosystems, but there is very little work done in practice. Well-known geographer, environmentalist yu.A.Izrael (1984) gave the following views on the anthropogenic burden on nature. The anthropogenic load may not change the quality of the environment surrounding organisms or change only at the level of the permissible norm (REM). These changes should not disturb the existing equilibrium state in the ecosystem and cause unfavorable consequences in the populations. If the anthropogenic load exceeds the norm, " notes yu.A.In the Izrael ecosystem, the balance is disturbed, and it is heavily damaged.

Yu.V.Novikov and V.M.Podolsky (1994) believes that in determining the anthropogenic load norm on nature, the lack of decreased productivity in ecosystems, diversity and sustainability should be made the main criteria. Noted geographer A.G.Isachenko (1980) approaches this problem on the basis of a complex geographical criterion, explaining his opinion as follows. Each geosystem has a certain stability state with respect to external influences. In any geosystem, the optimal environment is maintained only when the anthropogenic load does not exceed the norm. The anthropogenic load, which exceeds the norm, disrupts the balance of the geosystem.

I.I.Mamay (1997) writes that there is no clear criterion that determines the level of anthropogenic load, and cites some quantitative indicators as a "norm" for Geosystems that are different from others. The concept of Norm I.I.In the case of Mamai, such an endpoint, or quantifier, is that an increase from it induces changes in the balance of the structure of Geosystems. It recommends an average level of anthropogenic load as an indicator close to the norm. The quantitative indicator is considered strong if it is three times more than the average, weak if it is three times less.

I.I.Mamai's recommendations on the environmental norm are among the first works. Such scientific developments should be carried out in many areas with different natural conditions. Only then can the collected data be analyzed and, based on experiments, develop strict criteria for anthropogenic load standards.

Ts.E.Mirshulova (2001) understands the anthropogenic load as the sum of all influences on landscapes. That the amount of this load should be the permissible norm (REM) level, interpreting it using mathematical models based on the "theory of trust". Writes that various negative natural geographical processes are causing the consequence of non-compliance with the permissible norm, including soil erosion, surilmas, desertification, landscape roughening, etc.

V.G.Zaikanov et al. (2000) viewed ecological strain as the function of two variable pointers, the degree of impact of anthropogenic load, and the resilience of Geosystems to that effect. If the first of the pointers exceeds the norm limit, this increases the environmental strain by distorting the balance on the second pointer. Based on this criterion, the environmental situation in the states of Russia and Poland was assessed.

B.I.Kochurov (1999) shows in his research that the ecological assessment of Geosystems should be based on the analysis of two information outcomes in relation to one another. These are: the natural potential capacity (sustainability, ecological and resource potential) of Geosystems; and anthropogenic load pressure on Geosystems. The anthropogenic load is made up of land use, population density and settlement blocks. The ecological potential of a geosystem is understood as the air, light, heat, drinking water, food sources, working conditions necessary for a person to live. B.I.Kochurov's ecologically integrated assessment of Geosystems used criteria in our research (Rachmatullaev, 2007, 2009).

The famous environmentalist yu.Odum (1986) recommends dividing the anthropogenic load on ecosystems into two conditional groups, calling it anthropogenic stress: 1) Strong stress - which occurs sharply and rapidly in a short time; chronic stress - slow-acting, but long-lasting disorders. Natural ecosystems return to their original state after intense stress. For example, the felled forest is restored, after precipitation, the grass cover returns to its original state, etc. But, it is difficult to assess the consequences of chronic stress, since it is a long-lasting process. The results of too many investigations have been found to have a link between current rak cases and environmental pollution (Epstein, 1974, Reif, 1981).

Most geographers and environmentalists believe that any geosystem has a level of potential tolerance for anthropogenic impact. If the forces of influence exceed this level in Geosystems, the balance between the components in the circular motion of matter and energy is disturbed, as a result of which qualitative changes occur in the abiotic components first after the biotic, as a result of which general degradation begins in Geosystems.

The assessment of the geoecological situation is a complex issue, about which there is no single opinion so far. The number of steps in the assessment on the severity of the environmental situation and the criteria for their separation are different in different authors. Even the level of tension, which is called by the same name (for example, "sharp", "tang", etc.).) also differ in content. Below we will consider several cases related to geoecological assessment.

A.A.The "ecological card of the Republic of Uzbekistan", published under the scientific guidance of Rafikov (1997), gives the following environmental situation levels: 1) satisfactory; 2) moderately satisfactory; 3) Moderate; 4) acute; 5) tang. Each of them is based on the following qualitative and quantitative criteria: areas with varying degrees of pollution of atmospheric air, qualitative changes in surface and groundwater, pesticide contamination of soils, salinity of soils, erosion of soils, deflation process, plant cover productivity, tree and shrub pruning, vertebrate status, population health, etc. Landscapes were taken as the basis of the ecological card.

The geoecological card of the Republic of Uzbekistan published in 1999 by the State Committee on geology and ore resources gives a component assessment of geoecological situations. The card shows four different levels of soil contamination by Color: 1) no contamination; 2) weakly contaminated; 3) moderately contaminated; 4) heavily contaminated. These levels were obtained on the basis of a gross indicator of contaminants.

In the" Atlas of land resources of the Republic of Uzbekistan "(2001), the" ecological regionalization " card is attached. As regions-districts and regions are taken. All administrative regions of the Republic are divided into the following regions: 0 – satisfactory (permissible); I acute; II Emergency; III fatal. As the main criteria for assessing the ecological condition, the following are obtained: surface water pollution index (SII), atmospheric pollution index (AII), pesticide contamination of soils (in the amount of pesticides per 1 hectare of land), compliance with the state standard of drinking water, salinity of soils, general morbidity of the population, etc.

Of course, it is easy to collect various statistics related to the environmental situation by administrative divisions. But, in places, ecological situations are associated with natural Geosystems (landscapes). Therefore, it would be much more accurate if the geoecological situation was assessed by natural regions.

"Ecological Atlas of Russia" (2002) 128 pp. 6 is a chapter. The Atlas begins with a landscape card and ecological possibilities cards of landscapes and brief comments on them. The natural environment, medical environmental, ecologo-geographical situations were analyzed and the ecological cases were evaluated. In the last chapter 6 of the Atlas, the ecological state is given by a Demoecological State card, and depending on the population density, the regions are divided into four: 1) Good, 2) satisfactory; 3) unsatisfactory; 4) Heavy. Landscapes are classified into three groups according to their ecologo-geographical position: 1) satisfactory; 2) tang; 3) very tang. Quality indicators, not quantitative indicators, were used in the division of these.

B. in assessing the geoecological situation.V.Vinogradov (1998) is based on how much percent of the ecosystem area is disturbed in anthropogenic exposure and uses a four – step assessment: 1) in moderation-if up to 5% of the ecosystem area is disturbed; 2) risk-taking 5-19%; 3) strong-dangerous 20-50%; 4) fatal - more than 50%.

Table 1.1.
Transformation classification of landscapes
(For Nadim–pur in the Taz River Range, a.P.Kamyshev, 2000)

№	Rate of change of landscapes	Landscape degradation rate
1	Full	≥ 80%
2	Strong	80-50%
3	Considerably	50-30%
4	Powerless	30-10%
5	Diarist unchanged	< 10%

A.P.Kamyshev (2000) proposes to calculate the extent to which landscapes in western Siberia have changed under the influence of human activity with a coefficient of change of landscapes. This is determined by the ratio of the changed area (F1), to the total area (F2), i.e. $K\frac{F_1}{F_2}$. The results obtained are calculated on the basis of the criteria in Table 1.1, the categories of change of landscapes.

From the table it is said that if the initial natural state of the landscape changes by more than 80% has changed completely, 80% to 50% has changed strongly, and finally changes are less than 10% - the value has not changed.

A.P.Kamyshev's (2000) account and conclusion on geoecological pollution of landscapes is also of some interest. Chemical pollution of landscapes is calculated by the following formula.

$$X = \frac{\sum_{i=1}^{n} mZi}{S} \qquad (1.1).$$

M is the area of type i area in Area; Z is the pollution of type i landscape; s is the total area of contaminated Area; X is the mean quantitative indicator of pollution.

According to the results obtained, the level of chemical contamination of landscapes was determined in the following indicators (Table 1.2).

Based on qualitative and quantitative indicators, REM, percentage, scoring methods are used when assessing geoecological cases.

Table 1.2.
Chemical pollution of landscapes
(For Nadim-pur in the Taz River Range, a.P.Kamyshev, 2000)

№	Pollution levels of landscapes	Mean quantity indicator of pollution, (permissible norm) PN
1	Very strong	x ≥ 2 PN

2	Strong	2 PN > x ≥ 1,5 PN
3	Medial	1,5 PN > x ≥ 1,2 PN
4	Powerless	1,2 PN > x ≥ 1,0 PN
5	Unpolluted	x < PN

An analysis of the work on the assessment of the geoecological situation has shown that most experts have similarities in their opinion on the final, that is, "fatal", "dangerous" levels of the assessment step. Opinions differ on the rest of the stages.

We recommend a seven-step assessment in Table 1.3, analyzing the work on assessing the geoecological situation.

As the main assessment criterion, not the deterioration of the area in the geosystem at a certain percentage, but the violation of a certain amount of the environmental situation was taken as a basis, and it was given in percentage view. For example, as surface and groundwater in a" surprisingly " geosystem, changes in soil impoverishment should not exceed 5%. At the "dangerous" level, the same pointers are 45-55%. We did not take into account the reduction of plants and animals in determining the ecological situation in Oasis Geosystems. If we take into account that they start the calculation point from the level of the natural landscape, then all OASIS Geosystems should go to the "dangerous", "destructive" steps. Likewise, we cannot include atmospheric air pollution as a criterion when geoecological assessments are made on Oasis landscapes, the reason is that air pollution was taken into account only when evaluating cities on environmental indicators. In addition to drinking water and soil salinity, population density was also taken into account when assessing the geoecological situation. Because, an increase in the number of inhabitants per unit area also increases the pollution of nature in the area. We have compiled a geoecological card of the middle and lower Zarafshan basin based on the seven-step assessments recommended in the table (figure 1.1).

In the basin, Oasis landscapes, Mountain, Mountain and desert landscapes, variations in environmental conditions differ in their variety and originality. When we use a seven-step system in assessing the degree of change in all types of landscapes, but, when coloring them, we have shown the Oasis and pastures separately. If not done, the card does not read well Mountain, Valley, desert landscapes. In assessing the geoecological situation of Zarafshan Oasis landscapes, with various construction objects of irrigated fertile land, we determined the level of height.

Table 1.3

According to the regions of the Republic of Uzbekistan, the ecological situation and data indicating public health

Regions and the Republic of Karakalpakstan	Salinity of soils, relative to the area of irrigated land, %	Pesticide contamination of soils, REM	Surface and grunt water pollution, %	Population density, relative to one hectare of irrigated land, per person / hectare	General incidence of the population, compared to 1000 people	Total deaths, compared to 1,000 people	Infant mortality under 1 year of age, compared to 1,000 children born
The Republic of Karakalpakstan.	89,00	1,20	90,00	1,50	564,50	28,60	23,90
Andijan	34,00	3,10	50,00	5,60	460,80	22,00	18,30
Bukhara	86,00	1,00	86,00	3,60	501,80	24,00	19,30
Dzhizak	78,00	0,90	79,00	2,20	407,50	21,60	19,00
Kashkadarya	69,00	1,40	70,00	3,20	394,80	21,80	20,80
Navoi region	72,00	1,50	78,00	3,70	520,80	26,00	20,70
Namangan	35,00	2,50	50,00	4,30	482,20	22,00	19,40
Samarkand	40,00	1,30	48,00	5,20	347,50	22,00	17,30
Syr Darya	75,00	1,60	82,00	1,40	455,50	25,00	20,20
Surkhandare	64,00	1,50	75,00	4,20	322,40	21,00	20,00
Tashkent	25,00	1,70	52,00	3,60	417,30	20,00	20,50
Ferghana	74,00	3,60	75,00	5,30	483,40	22,00	22,30
Khorezm	83,00	2,60	87,00	3,60	500,20	26,00	22,40

Data on these factors are given in Table 1.3.

1.3-the data in the table are given in accordance with the sections "Hydrometeorology of the Republic of Uzbekistan", "Hydrometeorology of the Republic of Uzbekistan" and "Republican statistics".(Data for 1999-2008).

Correlation analysis was performed by B. A. Dospekhov (1979) in Excel, the results are presented in tables and tables (1.5-1.16).

We first looked at the relationship between population density and The Associated General morbidity of the population, the number of deaths among the population, infant mortality under 1 year of age (table 1.4). The dependence is well regarded in the theoretical pointer and in the current account (Appendix 1: I.1.1, I.1.2, I.1.3-photos).

In either case, there is a significant sometimes strong correlation link between soil salinity and general morbidity of the population with water quality, total mortality among the population, as well as infant mortality under one year of age.

In the composition of various salts drinking waters exceeding the norm disrupts the balance of mineral salts in the body, as a result of which various gastrointestinal, kidney, blood vessels, heart, low blood count, allergic and other diseases occur. Correlation correlations between various diseases with salts, water hardness, pesticides, other contaminants in drinking water A.B Qurbanov (2002), G'.A. Covered in the work of Mambetkarimov (2004) and others. A.B. Correlational correlations between water salinity and certain diseases in the Republic of Karakalpakstan according to qurbanov data are: congenital deficiency-R=0.023 nephritis and nephrosis –R=0.321; acute arthrosis –R=0.371; gastric and duodenal ulcer –R=0.151; heart disease –r=41. Correlation bond between water hardness and diseases: congenital deficiency –R=0.151; nephritis and nephrosis –R=0.132; stomach and duodenal ulcer-R=0.155; hypertonic diseases r=0.375, etc.

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