HUMAN IMPACT ON GEOSYSTEMS AND ITS GEOECOLOGICAL ASPECTS

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ABSTRACT

Following article deals with the impact of man on the natural environment, especially on geosystems, and the problems of various scales and appearances that occur as a result of them, as well as their geoecological features. The agricultural sectors - agriculture, animal husbandry, hunting, fishing - rely directly on local sources of natural resources. Incorporating the resource potential of landscapes into economic circulation requires large areas.

KEYWORDS: *Population, Geosystem, Landscape Geoecology, Geoecological Problem, Anthropogenic Impact, Anthropogenic Load, Industry, Agriculture, Transport.*

INTRODUCTION

As the world's population grows, naturally the impact on nature increases. In addition, the natural balance in geosystems that has been stable for thousands of years is disturbed, the relationship between man and nature is complicated, and ecological crisis zones are formed. In the context of increasing complexity of geo-ecological situations, the study of these relationships, monitoring, evaluating and developing appropriate measures to change it in space and time is a very important issue.

The complexity of natural balance in geosystems can occur at different levels and speeds depending on their nature. Therefore, the study of natural processes in geosystems is effective in all respects. Because geosystems have natural boundaries, uniform geographical conditions ensure that events and processes occur in a certain direction, at the same speed.

The relationship between nature and society must be understood not only in terms of the interaction, connection and movement between man and the natural environment, but also between all living organisms and inanimate nature. This is because there is an interaction between animate and inanimate components, just as there is between living organisms. However,

these complex environmental processes become more serious as a result of human labor. As a result, various types of geo-ecological problems arise. [**1]**

The literature on man-made landscapes (geosystems) also contains different views on the importance of this or that component in landscape change. V.I. Prokaev writes that if some components of the landscape have been changed by man, but the geological-geomorphological soil has not changed, such a landscape will return to its previous natural state if human influence ceases.

F.N. Milkov (1978) believes that in order to turn a natural landscape into an anthropogenic landscape, it is enough to change any of its components. **[2]**

Given that geosystems have resource, environmental, and sustainability capabilities, anthropogenic impact on them can have different purposes: the purposeful impact often leads to the occurrence of an unintentional breakdown of other components (construction of reservoirs - flooding of the surrounding lands, groundwater abstraction - subsidence of the surface, and others). This means that natural geosystems change to varying degrees.

In fact, almost all types of economic activities (production, recreation, conservation, research) in practice affect geosystems permanently or intermittently. Any economic activity is accompanied by the impact on the smooth development of geosystems. Anthropogenic impact is growing rapidly in line with population growth and demand, as well as the development of technology. Based on the scale, speed and other indicators of this impact, the natural environment changes to a certain extent.

Impacts on geosystems cause various changes in its components or the whole state and structure. Changes in geosystems, in turn, have positive or negative consequences for public health and economic activity.

It can be seen that the classification of anthropogenic impact on geosystems is approached differently in the literature, the authors are based on different aspects of it. A.Rafiqov and Sh.Sharipov grouped anthropogenic impact as follows:

1. By areas of economic activity - agriculture, industry, energy, transport, construction, and recreation;

2. By forms of influence - square, linear, dotted;

3. In terms of duration and order of exposure - permanent, intermittent,

seasonal;

4. According to the consequences of the impact - positive, negative;

5. According to the program of secrecy - purposeful, without purpose;

6. According to the process of exposure - direct, indirect;

7. According to the exchange of matter and energy - subtraction, addition, and others.

The extent to which geosystems and their components change is determined by the scale and type of anthropogenic impact. The spheres of economic activity, depending on their characteristics, give rise to the types of use of natural resources, various geo-ecological problems

and geo-ecological situations corresponding to them, and have indicators that represent them. Often, farming activities are associated with a specific natural component. “Lalmi” is associated with soil in agriculture, plant (grass and tree) in animal husbandry and forestry, and rock (mineral) in the mining industry. Consequently, these natural components are subject to some variation in those regions. Sometimes these changes lead to changes in other components to one degree or another. In some industries, man interacts with two or more natural components in the course of his labor. In irrigated agriculture, soil and water are treated, and in industrial production, soil, water, air, and plants are treated. Agriculture is a historically long-established agricultural sector based on the use of the bioresources of landscapes. The agricultural sectors - agriculture, animal husbandry, hunting, fishing - rely directly on local sources of natural resources. Incorporating the resource potential of landscapes into economic circulation requires large areas. That is why today's more intensive farming is large-scale. Agriculture is first and foremost directly dependent on climate and relief factors, and then to some extent on biota and soil, as well as other components of the landscape.

Today’s intensive farming is mostly in land use covers the entire area of the landscape. In arid climates (Jumadan, Uzbekistan), historical hotbeds of land development have emerged in river valleys and foothills. From here it expanded rapidly upwards to the slopes and hills, and downwards to the intermountain depressions and plains. The development of the area in agriculture was mainly due to the destruction of vegetation in river valleys and oases. The first direct consequence of the proliferation of agriculture is the loss of natural biota over large areas. There are almost no natural plants left on the river banks and oases.

In the process of mastering landscapes in agriculture, the soil is constantly and directly affected. The pressure of agricultural machinery and the constant extraction of mineral elements by crops leads to the deterioration of the soil structure, its physicochemical properties and loss of fertility. In recent years, the conditions for accelerating this process have been increasing. Anti-erosion hydraulic structures are almost not built, the planting of protected forests has sharply decreased, the number of violations of agro-technical rules is increasing. Reclamation measures aimed at increasing the agro-resource potential of lands are aimed at influencing landscapes, the expected positive effect of which is often negated as a result of their negative consequences. Irrigation methods, which have been used for a long time, cause many unpleasant processes: erosion, deterioration of soil structure, loss of humus, rising groundwater levels, secondary salinization, swamping, etc. The process of using plants also causes great damage to landscapes. The vegetation of the area serves as a direct source of renewal of raw materials and energy resources. This may include the use of forests for recreational purposes, construction and felling for firewood. It is therefore possible to observe that anthropogenic influences of various forms are complex in forest landscapes and that landscapes have changed accordingly. Plowing causes much stronger and more negative changes in forests than in other sectors of the economy. Because it completely destroys the natural plant cover. The strongest anthropogenic factors in forests are plowing, felling of trees and shrubs, and overgrazing.

Pasture livestock is a traditional extensive form of farming, specific to arid and subarid regions, and its impact is broad. The anthropogenic load on pastures, the number of livestock, is several times higher than normal. Irrational use of them for a long time leads to the degradation of the vegetation cover: nutritious plants are replaced by semi-shrubs, the thickness and density of the

vegetation cover is reduced. The mechanical impact of animal husbandry on the soil contributes to the development of deflation, the expansion of the area of unstrengthened and weakened soils.

Such adverse effects on landscapes are considered to be indirect effects of human activities that destroy and degrade the habitat of animals, leading to their extinction. The use of plant resources, such as harvesting plants (medicinal and ornamental), preparing hay, and cutting for firewood, has also caused great damage to landscapes.

Industry is an agricultural sector that emerged much later than agriculture and may not be dependent on local energy and raw material resources of the landscape. The distribution of these facilities is point-based and cannot be compared to agricultural land in terms of area. However, the intensity of anthropogenic loads on landscapes and their impact on the geo-ecological situation far outweighs agriculture, and this has been particularly evident since the twentieth century. Industrial enterprises have the property of point impact. However, the effect of the source naturally extends far beyond its limits and decreases with increasing distance. Not only biota and soil are destroyed in areas directly occupied by these objects, but microclimate and water regime, partial relief changes, as well as landscape loses its resilience and is very difficult to restore. In many cases in practice in the near future it will not be possible. The negative environmental consequences of such anthropogenic impact are reflected in the pollution of the natural environment with industrial and domestic wastes.

Construction is one of the oldest branches of the economy, but the acceleration of the construction of many engineering structures began in the second half of the twentieth century. As a result, anthropogenic elements that are not naturally present in the landscape - settlements with various buildings, paved roads and railways, irrigation and land reclamation networks occupy a wider area. These objects occupy several percent of the landscape area as a source of point and line effects and have a significant impact on the specific activities of the landscapes.

The serious effects of naturally occurring matter and energy metabolism in landscapes are well known, but this issue requires separate research. The negative environmental consequences of this type of anthropogenic impact are reflected in the pollution of landscapes with construction and domestic wastes, industrial and transport wastes.

Hydraulic structures - canals and ditches have long been built for irrigation, water supply, flood protection, groundwater level reduction. Reservoirs were built in the second half of the twentieth century for irrigation and energy. At the same time, water supply in recreation, partly in industry and households, has improved. But there are pros and cons to building these facilities. Rising groundwater levels, swamps, and agricultural lands are observed in the rivers adjacent to the reservoir. Below it, declining water levels and floods lead to the degradation of the landscape. **[1]**

Population is currently one of the most important anthropogenic factors in the development of the geographical crust, especially in the formation and development of geoecological problems, along with scientific and technological progress and production.

Population determines the total need of a society for food, clothing, housing and other resources. At the same time, the population directly creates a significant anthropogenic burden on both natural and social production systems, resulting in geoecological problems. If the population of a country grows to such an extent that its needs exceed the natural capacity of some natural resources to regenerate and cleanse the natural environment, then the population itself is a

natural resource. becomes a force that destroys the base. This situation is called a demographic trap. Some demographers believe the potential of the geographical crust capacity 2 billion as a person. This would have provided a relatively prosperous and stable life for the people of the earth. Environmentalists estimate that there may be as many as 10 billion people on earth, but food, energy and natural resources are in short supply. Under such conditions, environmental crises and disasters can occur, and the population will be a key factor in regulating natural and socio-economic disasters.

The average population density on the planet is 53 people/km^2 (as of October 2021), usually the population density is calculated in administrative units. However, the fact that the population is not evenly distributed across administrative units does not require proof. Humans have lived in extremely dense and ancient habitats in geosystems with high ecological and resource potential (e.g., river terraces, deltas, and distribution cones).

There is a lot of discussion about the existing and emerging geo-ecological problems. Pollution, combating erosion, floods and landslides in the foothills and slopes ”and many other studies have been conducted so far. But so far no one was able to send in the perfect solution, which is not strange. Because they are multifaceted and complex, when the principle of a systematic approach is applied, it becomes clear that each of them consists of several large independent parts. **[3]**

In essence, the above-mentioned problems can be solved as follows:

- To establish interdisciplinary cooperation in research, especially in Ecology;

-Development of geo-ecological bases for the study and solution of relevant environmental problems in areas of different scales and content;

-Creation of cartographic images of the content and solutions of geo-ecological problems; **[4]**

- Based on a geosystem approach to the search for solutions to geo-ecological problems;

- Elimination of disparities in the placement of agricultural crops;

- Elimination of fragmented use of pastures, strengthening control over pasture users;

-Increasing the ecological culture of the population, especially the responsible leader and nature users.

In conclusion, the 21st century is bound to be the age of Ecology. Everyone needs to take care of the environment in which they live to ensure their safety.

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