

## Classification of settlements on the basis of the ecological situation in the Navoi region and the factors affecting the health of the population

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### ABSTRACT

**Formulation of the problem.** In today's age of globalization, the urgent task of socio-economic development is to mobilize the potential of regions to ensure sustainable economic growth within an innovative, socially-oriented development model. Territories are one of the main principles of state development. Decree of the President of the Republic of Uzbekistan No. 60 of January 28, 2022 "On the Development Strategy of the New Uzbekistan for 2022-2026" is particularly important with a focus on optimizing the current environmental situation and public health.

**Analysis of recent research and publications.** In developing countries, the share of industrial production is higher than that of agriculture. Uzbekistan belongs to the classification of developing countries, with a relatively high share of industrial clusters and technology parks in the administrative unit. If we pay attention to the analytical data, the gross domestic product of the Republic in 2017 amounted to 317 476.4 billion soums, in 2019 - 529 391.4 billion soums, and in 2020 - This figure amounted to 605,551.3 billion soums. The share of industry in GDP is 23.5%, 31.4% and 36%, respectively.

**The aim of the work.** Although the Navoi region is considered the smallest administrative unit of our republic, it stands out among the regions in terms of industry and production with huge natural resources. This in itself is the basis for the formation of a negative ecological environment and the emergence of problems related to the health of the population, and from this point of view, the Navoi region and its administrative units were chosen as the object of research. The presence of administrative units with a high share of industry in the country, such as Tashkent, Fergana, Andijan, Samarkand, Navoi, Kashkadarya, has a serious impact not only on the region but also throughout the country. Clearly, local, regional and international cooperation is key to preventing environmental crises, as is the case around the world. If we take the Navoi region alone, it will provide 18% of the republic's industrial output in 2020 alone, which is the third-largest among the administrative units. But there is another side to the issue, and today the ecological environment in urbanized and highly industrialized cities is deteriorating significantly. As one problem raises another, environmental crisis has a serious impact on the health of the people living in the area, which in turn has an impact on living standards and life expectancy.

**Research methods.** This article uses methods such as comparative analysis and comparison, and direct observation based on the statistical data of the Republic of Uzbekistan.

**Problems of further research.** As a result of the harmonious growth of industry and production, problems related to the environmental condition of cities and the health of the population are becoming widespread. Preventing these problems, and forecasting the future by analyzing the current environmental situation is the main problem.

**Presentation of the main research material.** Studies show that atmospheric air pollution is the most important factor in determining the state of the living environment. The total amount of gases emitted into the atmosphere in the country is 924.4 thousand tons, and the Navoi region accounts for 48.8 thousand tons of these gases or 52.7% of the total. The proximity of large industrial enterprises in the region to residential areas leads to the direct impact of toxic gases on the population, such as external respiration and cardiovascular disorders. The number of patients with respiratory problems in the province increased from 246 in 2019 to 277 in 2021, and the number of patients with the vascular disease increased from 17,400 to 18,300, respectively, indicating a serious concern about atmospheric air problems in the province.

**Practical value.** The practical significance of the work is that it consists of the stabilization of the ecological situation in the region, paying attention to the health of the population and especially children, and presenting proposals and recommendations to the relevant organizations to reduce the number of harmful gases released into the atmosphere.

**Research results.** It should be noted that the development of recommendations to reduce the negative impact of industrial and manufacturing enterprises, transport and other factors on human health and the natural environment is very relevant today.

**Keywords:** *Urban ecology, death rate, nosogeographic scale, tananatogeographic situation, industrialized cities, environmental crisis.*

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**Introduction.** Increased anthropogenic impact on the environment leads to negative changes in the structure, fertility and activity of ecosystems and the

biosphere in general. Of particular importance are information on the levels of pollution, the nature and intensity of the reaction of biological objects to the

effects of toxic substances. Therefore, it is expedient to develop criteria for assessing, forecasting and searching for indicators of deviations in ecosystems.

This impact is important for the development of cities and their sustainability. As M. Lappo said, "this area is not considered to be studied unless the state of the environment is taken into account in the study or planning of cities and their environs." The variety of methods proposed by different authors for use in monitoring urban pollution is very wide, and they have been developed for different natural zones and cities. These methods can vary in their scope, quality and quantity, and in their ability to provide accurate results and conclusions. It should be noted that such monitoring can be carried out first in small areas and then by expanding the area.

**Literature review.** On the organization of urban areas, Professor Soliev A.S. paid special attention to the huge economic potential of the Navoi region. He thought that in the future Zarafshan will be an important part of the economic geographical region.

Khalmirzaev A.A. As a result of the rapid development of the urban system in the region, there are negative consequences. He noted that the rapid growth of cities has negative environmental consequences and that industrial cities can become a nosogeographic hotbed if the health of the population is not regularly monitored.

Professor Komilova N.K. focused on the ecological factor in the nosogeographic situation of the Zarafshan economic geographical region. Given the growing threat to public health as the industry developed, he recommended that medical and environmental monitoring be carried out in a coordinated manner.

Tanatogeographic analysis of Navoi region and problems in public health, classification of regions by mortality can be seen in the work of Muhammedova N.M. In the classification of this division, it was suggested that the reproductive health of the population should be assessed as a leading factor in the health of children.

According to H. Tukhtaeva, the Navoi region is one of the largest industrial enterprises in the country, rich in natural resources. More than 200 mineral deposits have been identified in the region, including 16 uranium deposits, 37 rare metal deposits and 12 mineralized deposits. the availability of a source of water, and the extraction of mineral resources in 78 of these identified deposits.

**Research methodology.** It was established on April 20, 1982, to explore the Kyzylkum Desert, but was built between two ancient and young Bukhara and Samarkand regions. In 1992, the status of the Navoi region was restored and is recognized as one of the youngest administrative units of the republic. The territory of the region is 111.1 thousand km<sup>2</sup>,

which is 24.7% of the total area of the Republic, the population is 1,033,869 people and the population density is 9.3 people per km<sup>2</sup>, and 2.9% of the population of the Republic. , polarity ", i.e. second from the top in terms of region, second from the end in terms of population. Administratively, it is divided into 8 districts, 7 cities and 46 towns, 579 rural settlements. The area decreases from southeast (up to 2000 m above sea level) to northwest (90-100 m).

The region is also rich in mineral resources, which serve for the development of the mining industry. The Uchkuduk uranium deposit, the Muruntau gold deposit and others are clear examples of this. These large deposits have an impact on employment and living standards and as a source of income. The opening of the mines directly led to the emergence of cities. Along with water, climatic resources, transport and geographical factors, the formation of cities is greatly influenced by mineral resources. In particular, the cities of Zafarabad and Zarafshan were formed on the basis of the mining industry. These areas do not have fertile soil for agriculture and favourable climatic conditions. Nevertheless, the formation of these cities is based on the availability of deposits and the well-established mining industry. For example, the soil in and around Zafarabad is reddish-yellow, suitable for agriculture, but there are no water resources to establish irrigated agriculture, and access to it is limited. The marble deposit in Ghazgan is one of the largest deposits in the republic. The industrial mining and processing of marble in Gazgan were founded in the 1930s. Today, 31.0 million cubic meters of unused marble and 104.1 million cubic meters of granite deposits have reserves of at least 150 years. This situation plays an important role in employment.

The influence of the mining industry, which is expanding year by year, is significant, along with other anthropogenic factors, in accelerating the process of desertification in the current arid landscape complexes of the region. The escalation of desertification in the Central Kyzylkum is leading to a decline in landscape bioresources and their economic potential, deterioration of the quality of the environment, living conditions and health of the population.

As a result of open-pit mining, the area of influence of the mining industry is also expanding, leading to the deterioration of the geocological conditions of the surrounding arid landscapes. This has a major impact on the degradation of pastures around the mine and the health of the people living in those areas. It should be noted that the volume of processed rock is several times higher than the volume of minerals extracted in the mining industry. Therefore, the waste and rocks accumulated around the mines in the mining areas of the region have created artificial hills.

**Analysis and results.** The presence of many heavy industrial enterprises in the region and their

proximity to settlements have a serious impact on the health of the population. While the total death rate in 2018 was 4,161 people in the province, the figure was 4,378 in 2019, 5,038 in 2020 and 4,988 in 2021.

According to these indicators, it is expedient to divide the regional differences into three groups:

- Areas with low overall mortality: Konimex, Tomdi, Uchkuduk, districts;
  - Areas with average overall mortality: Nurata, Navbahor districts and the city of Navoi;
  - Areas with high overall mortality: Karmana, Kyzyltepa, Khatirchi district;
- Tomdi, Uchkuduk, and Konimex districts have low overall mortality rates, with morbidity and

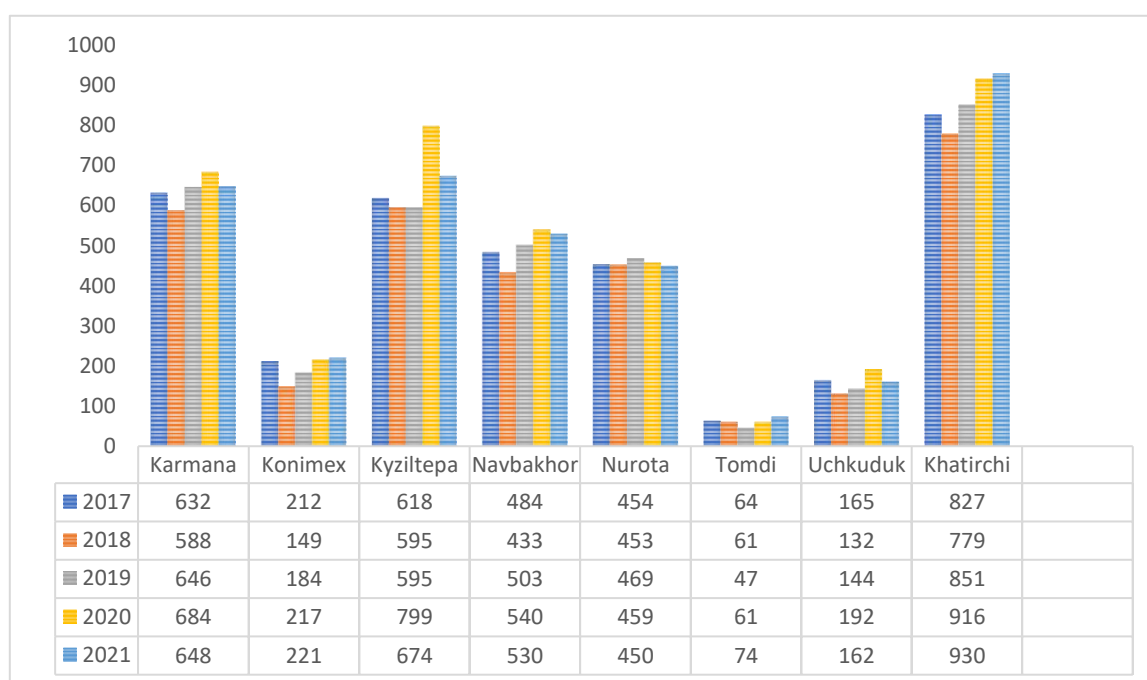
mortality declining over the past 10 years. This condition also had a significant effect on life expectancy.

With the exception of Nurata district, where the average mortality rate is close to industrial complexes in Nurata, Navbahor districts and Navoi city, the high mortality rate due to diseases of the circulatory system indicates a partial increase in mortality in these areas. This requires timely seasonal and continuous preventive measures in the above areas.

The overall mortality rate of the population of Karmana, Kyzyltepa, Khatirchi districts is high, which can be seen as an increase compared to previous years. This leads to an increase in diseases such as gastrointestinal diseases, chronic anaemia and pul-

Table 1

Population mortality by regional administrative units (2017-2021)



monary tuberculosis in these areas. In order to prevent these cases, the district should be provided with specialists in narrow specialities. In 2021, 19.1 thousand doctors were involved in the health of the population in the region, which is 1,800 more than in the previous year. But even so, the majority of the population is dying of health problems. The following factors affect the health of the population of the region:

1. Atmospheric air condition
2. The composition of drinking water
3. Soil layer quality
4. Noise level

Studies show that atmospheric air pollution is the most important factor in determining the state of the living environment. The total amount of gases emitted into the atmosphere in the country is 924.4 thousand tons, and the Navoi region accounts for 48.8 thousand tons of these gases or 52.7% of the total.

The proximity of large industrial enterprises in the region to residential areas leads to the direct impact of toxic gases on the population, such as external respiration and cardiovascular disorders. The number of patients with respiratory problems in the province increased from 246 in 2019 to 277 in 2021, and the number of patients with the vascular disease increased from 17,400 to 18,300, respectively, indicating a serious concern about atmospheric air problems in the province. Non-ferrous metallurgy, chemical and construction industries are particularly developed in the region, which is reflected in the health of the population in the cities and suburbs of the region. For example, in cities with a developed metallurgical industry, children are physically and neuropsychologically retarded compared to other regions.

In addition to atmospheric pollution, the ecological condition of the region is also affected by factors

such as the quality of drinking water and the condition of the soil cover. The quality of drinking water is especially important because it is widely believed that the substances in water that adversely affect human health can cause gastrointestinal and urological diseases. The total number of people with digestive problems in the province reached 74,700 in 2019, and by 2020, the figure had risen to 87,600. If the process continues with this trend, the region is likely to become a major contender for the status of a nosogeographic hotbed of the republic.

The pollution of the soil layer is also an important factor in the ecological situation because the products of widespread consumption are grown precisely through the soil. Deterioration of the geochemical condition of the soil is associated with liver, kidney and nerve diseases. In the industrialized region, this is also a matter of concern, as dust in the city moves not only in the city but also around the city, causing significant damage to the surface layer of the soil in the Karmana and Navbahor areas adjacent to the city. Given that the above-named administrative units are the number one regions supplying the city with agricultural products, chemically contaminated agricultural products return again for urban consumption as a circulating chain, and this serves as the basis for functional changes in the urban population.

Although noise is an invisible factor at first glance, the fact that industrial enterprises are located close to residential areas and the movement of the transport network, in our opinion, is sufficient to analyze this factor separately. Analyzes show that high noise levels in large cities affect the nervous system

of people and are the main reason for the decline in the ability of employees to work, to be in a tired mood throughout the day.

**Conclusion.** It should be noted that in order to reduce the negative impact of industrial and manufacturing enterprises, transport and other factors on human health, the natural environment, the following should be done:

1. For a healthy environment, great care should be taken not to exceed the permissible levels of pollutants in the air;
2. Use of landscaping trees, bushes and lawns in the formation of sanitary zones (1000, 500, 300 meters) around industrial enterprises;
3. planting of high dust-resistant trees on the parts of existing Terrassa, highway or other roads where traffic lights are located;
4. Establishment of trees, green walls, suitable for this condition, based on the natural and ecological conditions of each area;
5. Transition to safe modes of transport;
6. Wastewater treatment in various ways and added to water basins;
7. Application of modern technologies in maintaining the purity of the environment;
8. Training of highly moral and ecologically cultured personnel - improving the ecological condition of the environment while protecting nature;
9. In the protection of nature, it is necessary to pay attention to its aspects (health, economic, cultural, educational, aesthetic) among the general public, to carry out advocacy work.

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## Класифікація населених пунктів регіону Навой на основі екологічної ситуації та факторів впливу на здоров'я населення

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У сучасний вік глобалізації актуальним завданням соціально-економічного розвитку є мобілізація потенціалу регіонів для забезпечення сталого економічного зростання в рамках інноваційної, соціально орієнтованої моделі розвитку. Території є одним із основних принципів державного розвитку. Постанова Президента Республіки Узбекистан № 60 від 28 січня 2022 року «Про Стратегію розвитку Нового Узбекистану на 2022-2026 роки» має особливе значення з акцентом на оптимізацію екологічної ситуації та здоров'я населення, що склалася. У країнах частка промислового виробництва вища за частку сільського господарства. Узбекистан належить до класу країн з відносно високою часткою промислових кластерів і технопарків в адміністративній одиниці. Якщо звернути увагу на аналітичні дані, то валовий внутрішній продукт республіки в 2017 році склав 317 476,4 млрд сум, у 2019 році – 529 391,4 млрд сум, а в 2020 році – цей показник склав 605 551,3 млрд сум. Частка промисловості у ВВП становить 23,5%, 31,4% та 36% відповідно. Наявність у країні адміністративних одиниць з високою часткою промисловості, таких як Ташкент, Фергана, Андіжан, Самарканд, Навой, Кашкадар'я, надає серйозний вплив не тільки на регіон, але і на всю країну. Зрозуміло, що місцева, регіональна та міжнародна співпраця є ключем до запобігання екологічним кризам, як це має місце у всьому світі. Якщо взяти лише Навойську область, то лише у 2020 році вона забезпечить 18% промислової продукції республіки, яка є третьою за величиною серед адміністративних одиниць. Але є й інший бік питання, і сьогодні екологічне середовище в урбанізованих та високо-індустріальних містах значно погіршується. Оскільки одна проблема породжує іншу, екологічна криза серйозно впливає на здоров'я людей, які проживають у цьому районі, що, у свою чергу, впливає на рівень життя та тривалість життя.

**Ключові слова:** екологія міст, смертність, нозогеографічний масштаб, танатозгеографічна ситуація, індустріальні міста, екологічна криза.

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