

Urban Ecosystems of Uzbekistan and Ways of Their Ecologization

E. E. Kobilov^{1,*}, *Kh. F. Batirov*¹, and *E. M. Ozdamirova*²

¹Samarkand State University, University blv. 15, 140104, Samarkand, Uzbekistan

²Kadyrov Chechen State University, Sheripova Street, 32, 364024, Grozny, Russia

Abstract. At the beginning of the 20th century, industry and urbanization were booming mainly in developed countries. As a result, the state of the environment has deteriorated and various environmental problems have begun to arise. This process, which took place in past centuries, i.e., the development of industry and urbanization, today is equally intensive in all countries of the world. Many cities and industrial zones were built, urban ecosystems (urboecosystems) were formed. As you know, the creator of urban ecosystems, or urban ecosystems, is a person. Today in the biosphere, many natural ecosystems, territories, atmosphere, lithosphere, hydrosphere are under the active influence of man, which is the main factor in the destabilization of the ecological situation and the emergence of various environmental problems. Scientists are currently developing methods to assess and understand the impact of urbanization on human health and the environment.

1 Introduction

It is known that cities were formed at a high level in antiquity, which was the early periods of human society and played a large role in the development of society [1]. While the scientific and technological revolution in the second half of the twentieth century led to the growth of productive forces throughout the world and an increase in the concentration of the population in cities, while accelerating the process of urbanization, the level of which depends on the level of economic development of the country.

Today, urbanization in developing countries is gaining momentum, occupying vast territories and the urban population on these lands is also growing rapidly. In the literature, this phenomenon is called an urban explosion, and this process cannot be controlled in any way. Based on available data, if the total area of urbanized land in 1980 was 4.69 million km², then by 2007 it reached 19 million km², while occupying 12.8% of the total area and more than 20% of the area suitable for life on earth.

Researchers, however, put forward a forecast that if such a process continues by 2030, almost the entire population of the world will live in urban-type settlements [2,7, p. 217-222, 148-171]. But we must not forget that the urban environment separates man from nature itself.

*Corresponding author: kobilov.1961@mail.ru

As you know, in science, urban ecology and urbanization processes are studied by “Urboecology” as a branch of ecology. Urban ecology translated from the Latin language Urbanus (urbos; urbs,) - city, Oikos-house, space, logos-science, teaching”. Urbanecology - studies the processes of interaction between urbanization and the natural environment. It also includes measures to protect public health in populated areas, protect the lithosphere, hydrosphere and atmosphere, as well as the development of urban planning proposals.

2 Research Methodology

A city is a natural-technogenic system, which is a residential, functioning territory or a dynamic set mastered by man. At the same time, the city is a natural anthropogenic system. Its main system factors or elements of the system include a person (himself and all activities carried out on the territory of the city) and the natural environment (relief, geology, climate, water, etc.).

The interaction of these two factors creates a kind of natural anthropogenic urban environment or a specific urban ecosystem (urboecosystem). [3,8,10, p.395-397, 148-151, 17-41] The urban ecosystem, that is, the urban ecosystem, is formed in the urban environment. An urban ecosystem (urboecosystem) is an artificially created environment. This includes cities, villages with a population, centers of residential and industrial buildings and structures.

The urban ecosystem (urboecosystem) also contains agricultural activities and natural landscapes. We can divide urban ecosystems (urboecosystems) into the following areas:

- industrial zones in which industrial facilities of various sectors of the economy are concentrated and where the main environmental resources are located;
- residential buildings, administrative buildings, household facilities and other residential premises;
- recreation areas intended for cultural recreation of people (forest parks, recreation centers, etc.);
- transport systems and facilities included in all urban systems (roads and railways, metro, gas stations, garages, airports, etc.).

Consequently, urban ecosystems (urboecosystems) are maintained locally only by man. Therefore, it is very vulnerable to biotic and abiotic environmental factors. It is known that the development of urbanization leads to a change in almost all components of the natural environment - the atmosphere, vegetation, soil, relief, hydrographic network, groundwater, soil, and even climate.

Scientists are currently developing methods to assess and understand the impact of urbanization on human health and the environment. Scientists say that if we look at urban areas as part of a larger ecosystem, we can study the functions of urban landscapes and their impact on other interacting landscapes.

This, in turn, helps to understand the relationship and understand that alternative development options can lead to improved environmental outcomes. Urban ecosystems also have a negative impact on the growth of the urban population and the infrastructure of buildings, on the environment and certain areas adjacent to the modern city. This has a direct impact on nearby cities, agricultural activities and natural landscapes.

According to the Russian scientist N.F. Reimers (1990), urban ecosystems are sustainable natural-anthropogenic systems consisting of architectural and construction objects that drastically disrupt natural ecosystems” [4,12,14, p. 39-42, 270-273]. Urban ecosystems reduce the recreational value of nature, reduce biodiversity in terms of composition and species, reduce the self-purifying properties of natural waters and soils, disrupt the ecological balance in the natural environment, etc.

Changing the quality of housing in urban conditions leads to a decrease in the standard of living of the population. Therefore, when planning settlements, industrial facilities, residential buildings, administrative buildings, recreation areas (forest parks, recreation centers for the population, including tourists), all transport systems and structures included in the urban system, roads and railways, metro, fuel filling stations, garages and airfields should take into account natural landscapes and microclimatic conditions of the area, collection and disposal of surface water, soil, vegetation, air pollution, precipitation, melt water and solid waste [5,15, p.351, 280].

At the same time, special attention should be paid to the design of modern housing, the problems of potential sources of noise that adversely affect people during the construction of cities, their hygienic properties, the electromagnetic background, as well as the location of objects emitting harmful substances into the environment.

In this regard, if we turn to the history of our Republic, we can see that for some time urbanization, in modern terms, the process of creating urban ecosystems was not given due attention.

At that time, Uzbekistan only stood before the world as an independent state, rich historical monuments of our people were restored from the first years of independence, the preservation of cultural heritage was taken under state protection. Also, during the years of independence, the processes of urbanization, urban improvement, architecture, as well as the construction of new cities and the development of residential areas on the basis of complex modern projects began to develop in the country.

We can see this in the data that shows the growth rate of government spending on construction and construction work. This shows that for many years the issue of urbanization, the creation of new urban ecosystems in our country has received special attention.

Especially in recent years, the merits of President Sh.M. Mirziyoyev in carrying out these reforms in our country, stabilizing the process of natural growth of the urban population, ensuring and creating urban transformations and urban ecosystems in the new Uzbekistan are invaluable.

If we turn to past sources, then in 2003 there were 119 cities in Uzbekistan with a population of 8249.3 thousand people. Of these 119 cities, 38 are small cities with a population of 20,000 people, 65 are medium-sized cities with a population of 20,000 to 100,000 people, and 16 large cities with a population of 100,000 to 500,000 people.

The capital of the Republic of Tashkent is the only city with a high level of urbanization, with a population of 2.8 million or more [6]. According to the data, 50.6% of the population of the Republic of Uzbekistan lives in cities. The urban population is 1,469.5 thousand people (50.6%), the rural population is 17,071.4 thousand people (49.4%).

In 2018, Uzbekistan ranks 155th out of 233 countries in the UN international urbanization ranking. In 2012-2018, according to the forecast, the population of the city was at the level of 2.4 million people. per capita, or 9.2 percent (during the same period, the rural population increased by 1.7 million people and 11.9 percent, respectively).

3 Results and Discussions

The main factors of urban population growth were the natural movement of the population (102.0%), migration (13.4%) and administrative-territorial changes (11.4%). Today, the permanent population of the country has reached about 36 million people (as of January 1, 2022). Accordingly, in order to meet the needs of the population, the President of Uzbekistan Sh.M. Mirziyoyev pays special attention to all areas and carries out radical reforms.

In particular, at the initiative of President Sh.M. Mirziyoyev, new reforms and mechanisms are widely applied in Uzbekistan to ensure high rates of economic growth, taking into account world experience as part of the implementation of the Action Strategies in five priority areas for 2017-2021.

As a new factor in ensuring sustainable development, the President of the Republic of Uzbekistan Shavkat Mirziyoyev, in his Address to the Oliy Majlis on December 20, 2022, defined the task of achieving the interests of the people of Uzbekistan as a strategic goal.

To accomplish this task, the Government of the Republic of Uzbekistan adopted the Decree “On measures to radically improve the process of urbanization”, which provides for the main directions and comprehensive measures for the purposeful regulation of urbanization in the country.

In addition, as a result of the reforms being carried out in our country, a comprehensive study of new projects of a modern urban ecosystem that meets the requirements of national standards that ensure the environmental safety of the population has been identified as the most important and topical issues today.

It is generally accepted that the main purpose of this is to ensure the rule of law in our country and to ensure that people live in accordance with the present, and that all decisions and decrees serve the purely interests of the people.

4 Conclusions

1. Urban ecosystems (urboecosystems) are processes resulting from human activities. Today, human impact on the biosphere and nature has increased dramatically around the world in the face of worsening global environmental problems.

2. The formation and impact of the urban ecosystem is one of the most pressing issues today. In particular, overcoming this problem is one of the most important issues in our country.

3. Today, we can not only stop the above processes, but modern cities also need the right choice of a place for the construction of residential buildings, roads and other facilities, the timely completion of construction and design work to prevent possible impacts of green spaces in urban ecosystems.

4. It would be wise to pay special attention to the organization and, most importantly, to reduce damage to nature and rationally use its resources. After all, we must not forget that nature is not an inheritance from our ancestors, but a debt inherited by us from generations.

References

1. D. Marakhimov, Geographic features of the urbanization process, 52 (2012).
2. Bulletin of the Moscow Government University. Scientific and practical journal, 217-222 (2017).
3. V. G. Tyumentseva, M. V. Chubareva, Urban ecology and monitoring, Irkutsk State Agrarian University named after A.A. Yezhevsky, 395-397 (2018).
4. N. Reimers, Ecology, 59-117 (1998).
5. V. V. Denisova, City ecology, 351 (2008).
6. A. S. Soliev, S. K. Tashtaeva, M. M. Egamberdieva, Ecology of cities, 17-110 (2018).
7. Yu.V. Odum, Ecology, 374 (1999).
8. L. V. Peredelsky, V. I. Korobkin, Ecology in question and answer, 148-151(2002).
9. V. N. Sukachev, Basic ecology (2001).

10. E. E. Kobilov, M. K. Tukhtaev, Ecology and human health, 17-41 (2021).
11. E. E. Kobilov, Sh. M. Uralov, G. A. Kholikova, On the impact of physical education classes on the quality of life of students. Washington University in St. Louis Danforth Campus Central Eurasian Studies, 350 (2022).
12. E. E. Kobilov, Sh. Mukhiddinov, Influence of harmful gases of the Samarkand chemical plant on human health, 39-42 (2022).
13. A. M. Shamsiev, A. M. Isokov, E. E. Kobilov, The use of low-intensity laser radiation ozone in the treatment of chronic purulent endobronchitis in children, **3(15)**, 146-147 (2002).
14. E. E. Kobilov, Z. I. Izzatullaev, S. I. Ashurmakhmatov, Protection of natural landscapes, 270-273 (2022).
15. E. E. Kobilov, Kh. F. Batirov, F. Z. Nekbaeva, Winter vegetable crops and their products in the diet of the population, 280 (2022).