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 Research Article

FACTORS AFFECTING THE POPULATION DENSITY AND DISTRIBUTION OF THE KASHKADARYA REGION

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ABSTRACT

This article analyzes the population density - territorial distribution of the Kashkadarya region and their causes. Along with the population density of the region, the influence of natural and economic factors affecting the location of the population, as well as the landscape features of the region, is described. Also, the problems that have arisen due to the differences in the number of population and the territorial location of the population between the region and its administrative units, as well as proposals and recommendations for their elimination are presented.

KEYWORDS

Population location, population density, density, demographic situation, natural increase, natural conditions, relief, landscape.

INTRODUCTION

One of the most important indicators of population is its location. The simplest criterion

for expressing population location is population density. Population density, along with socio-

economic factors, is also significantly influenced by natural and geographical conditions (climate, relief) [2].

Kashkadarya region is a region within the Republic of Uzbekistan. The region is mainly located in the Kashkadarya basin, near the southern part of the republic. Its area is 28.5 thousand km². Kashkadarya region occupies a unique place in the country due to its location, population density, and similar demographic situation [7].

Like other regions of Uzbekistan, Kashkadarya region is a multinational region. The main part of the population is made up of Uzbeks. The region is also inhabited by Russians, Tajiks, Ukrainians, Azerbaijanis, Tatars, Turkmens, Koreans, Belarusians, Kazakhs, Kyrgyz, Roma, and representatives of other nationalities. According to the 1989 census, more than 70 nationalities, national groups and ethnic groups live in the region. Uzbeks make up 92.3% of the region's population. Russians, Ukrainians, Belarusians, Azerbaijanis, Armenians, Greeks and representatives of other nationalities live mainly in cities and towns. The region is fundamentally different from other regions of the Republic in terms of population density and location.

METHODS

Statistical, zoning, comparative geographical, mathematical, comparative, natural geographical, descriptive and complex, comparative methods were used.

RESULTS

Kashkadarya region accounts for 9.7% of the total population of the republic (3rd place). Also, as of October 1, 2024, the population of the republic was 37,355.4 thousand people and the population of Kashkadarya was 3,618.3 thousand people, while on January 1, 2024, this indicator was 36,799.8 thousand people in the republic, and 3,560.6 thousand people in Kashkadarya. Thus, during this period, the population of the country increased by 555,600 people, and the population of Kashkadarya region by 57,700 people. The region was in 5th place in the republic in terms of population after Andijan region in 2000, and in 4th place after Tashkent region in 2005. In 2010, it rose to 3rd place after Fergana region. Although it has been in 3rd place in the population ranking since 2010, the fastest population growth periods (2010-2015) also coincide with these periods. And, even now, the region is one of the leaders in

the republic in terms of natural population growth (23.3 per thousand) (i.e., in 2nd place after Surkhandarya), and if this situation continues, it is likely to take the leading positions in the country in terms of population in the coming years. Thus, as a result of the increasing population, we can see differences in the number, density and territorial distribution of the population in all regions, especially in Kashkadarya region. This is manifested in some regions in a positive way, but in most regions it causes negative situations and problems, especially due to population density.

Population density is an economic geographical criterion that expresses the number of people living in a certain area, which is considered a source of resources, and it expresses the harmonious relationship between the life and production of people in the area. "Population density" is a certain indicator that characterizes the capacity of the area - it is expressed in the ratio of the number of people to the area it occupies [4].

As of October 1, 2024, the population density in the Republic of Uzbekistan was 83.2 people per sq. km. on average. As of January 1, 2024, it was 82.0 people per sq. km. on average. Over the past

period, that is, from January to September 2024 (within 9 months), the population density increased by 1.2 people. Also, the Kashkadarya region has long been distinguished by its unique characteristics in terms of population density in the republic. The population density in the Kashkadarya region was 75.8 people per 1 sq. km in 2000, 81.7 people in 2005, 91.6 people in 2010, 103.6 people in 2015, and 114.8 people in 2020. As of October 1, 2024, the population density of the region was 126.6 people per 1 sq. km. This indicator was 124.6 people on January 1, 2024. These are the average indicators of population density in the region. In the districts and other administrative units of the region, these indicators have different sizes. The population density in the region increased by 2 people in 9 months (January-September). This indicates that the population growth in the region continues.

In order to study the population location and the factors affecting it, and to study the situation of territorial distribution, attention is paid to solving the following tasks:

- study of aspects related to population location;
- analysis of factors affecting population location;

- study of the interrelation of landscape influence on the population location of the Kashkadarya region;

- it is important to study the results of uneven distribution of the population of the region and draw conclusions.

The following subclasses of population location are distinguished in the landscapes of the mountainous part of the Kashkadarya basin:

- 1) population location in the landscapes of foothills and low mountains;
- 2) population distribution in medium-altitude mountain landscapes;
- 3) population distribution in high-altitude mountain landscapes.

Also, in the subclass of foothills and low mountain landscapes, a zonal type of mountain steppe landscapes on moderately dry typical gray soils is distinguished [1].

Mountain steppe landscapes are characteristic of the Koratepa, Miraki, Yakkabog and Guzar hills of the Kashkadarya basin and the adjacent low mountains with an absolute height of 500 m to 1000-1200 m. The relief of population

settlements in the Koratepa low mountains and hills, which pass through the territory of Chiraqchi and Kitab districts, is quite uneven, but the population is densely populated. This is due to the well-developed agriculture, gardening and animal husbandry on the banks of rivers and streams. The population density in Chiraqchi district is 237.7 people per km², in Kitab district - 161.6 people. Also, the population is densely located in the Miraqi region and adjacent areas, and they are mainly engaged in agriculture, gardening and viticulture. The population is evenly distributed in the Yakkabog and Guzar hills. The population is engaged in gardening, viticulture, vegetable growing, cocoon farming, and meat and dairy farming.

The hill region includes the foothill plains and hills of the Guzar, Dehqanabad, Kamashi, Yakkabog, Kitab, Shahrisabz and Chiraqchi districts of the region.

The population in medium-altitude mountain landscapes is large, but unevenly distributed. Most of the population lives in river valleys in conditions that are convenient for them. Medium-altitude mountain landscapes also have sufficient natural potential for the development of

industries such as shifting cultivation, forestry, and animal husbandry.

The population distribution in different areas of high-altitude mountain landscapes is different. As the altitude of the regions increases, the population distribution becomes sparser and the economic sectors decrease. In the foothills of the high mountains, in the upper part of Shahrisabz, on the banks of the upper part of the Yakkabogdarya, in the beginning of the Tankhozdarya and the headwaters of the Aksuv River, in the foothills of the Koratepa Mountains of the Kitab district, the population is very unevenly distributed, and they are mainly engaged in agriculture and animal husbandry. The short summer and relatively long winter in these areas hinder the population's activities in the production sectors.

A large part of the Kashkadarya basin is occupied by plain landscapes. Most of the plains coincide with the sloping plains of the Karshi Desert, and the population is somewhat sparsely distributed in these areas.

The study of the demographic situation of the Kashkadarya region, that is, population growth, density, population settlements, labor resources and changes in their use, allows for a more in-depth analysis of the current state of the demographic situation in the region and the features of its future development, and to determine appropriate measures. Historically, the population has been concentrated in the irrigated agricultural areas of the region, and the settlement of the population in the lower regions is associated with the Karshi Desert and its development.

Table 1

Main demographic indicators of Kashkadarya region

Year	Population (thousands)	Natural increase (people)	Population density (people per sq. km.)
2010	2 616,1	53 590	91,6
2015	2 958,9	66 589	103,6
2020	3 285,1	76 419	114,8
2024	3 618,3	85 428	124,6

Source: Prepared by the author based on data from the Statistics Agency

As a result of the increase in natural population growth and the corresponding increase in the population size in the region from year to year, the population density is increasing. If you pay attention, natural growth is increasing by about 10-15 thousand people every 5 years. Population density is also increasing by 10-15 people every 5 years. Such indicators are constantly increasing. The most interesting thing is that the area of the region does not change, but the population continues to grow and differences in population density arise on a regional scale. It is natural that these differences create various problems. Below

is a detailed analysis of such differences in the districts and cities of the region and the solutions to existing problems.

Population density is in gross and net (clean) form. The first is calculated relative to the total area of the country or region and shows how many people are per 1 sq. km. For example, while the average population density in Uzbekistan is 82.0 people per 1 sq. km, in the Kashkadarya region this figure is 124.6 people, ranking 9th in the republic in terms of this indicator (01.10.2024) [5].

Picture 2

Population density of administrative units of Kashkadarya region (people)

№	Regions	2010	2015	2020	2024
1	Qarshi city	2977,5	3222,5	3640,6	3914,7
2	Shahrisabz city	0	0	2857,7	3024,1
3	Kokdala district	0	0	0	110,4
4	Guzor district	60,8	69,7	76,6	83,7
5	Dehqonabad district	29,4	32,9	36,8	39,9
6	Qamashi district	79,7 8	91,4	101,8	110,1
7	Qarshi district	212,5	242,5	272,1	299,2
8	Kosan district	120,1	135,9	151,2	165,9
9	Kitob district	123,0	137,6	151,2	161,6
10	Mirishkor district	29,3	33,8	37,1	40,4
11	Muborak district	22,6	25,7	28,2	30,4

12	Nishon district	52,5	63,5	72,2	79,0
13	Kasbi district	233,5	272,6	301,9	328,3
14	Chiroqchi district	111,1	126,7	144,7	237,7
15	Shahrisabz district	181,0	199,2	137,4	145,5
16	Yakkabog district	192,1	214,9	238,9	256,4

Source: Compiled based on data from the Statistics Agency

The table above shows the population density of the regions and cities in the last 14 years in numbers. At the same time, the cities of Karshi (3,914.7 people) and Shahrisabz (3,024.1 people), which are currently the largest administrative centers and cities of the region, have the highest population density. In terms of population in the region, the districts of Guzar (222.2 thousand people), Kasbi (213.0 thousand people), Karshi (272.1 thousand people) have an average indicator, while the districts of Karshi (0.9 thousand sq. km.) and Kasbi (0.7 thousand sq. km.) have a higher population density than other districts at the regional level due to their small land area (i.e., 299.2 and 328.3 people per 1 sq. km., respectively). The population density is also quite high in Yakkabog (256.4 people), Chiraqchi (237.7), Koson (165.9), Kitab (161.6) and Shahrisabz (145.5) districts. In general, the Shahrisabz, Yakkabog and Kitab districts, located in the upper region, are in many ways similar to the densely populated oases and valleys of our

Republic. This is due to the fact that these regions have been inhabited for a long time due to the favorable conditions for human habitation. However, it is worth noting that the density is also quite high in some districts of the lower region of the region, namely Kasbi and Karshi districts, and fluctuates around 300-330 people per 1 sq. km. In all of the above-mentioned districts, the density level is higher than the average population density of the region. The largest districts in the region by area - Dehqonabad (4.0 thousand sq. km.), Mirishkor (3.21 thousand sq. km.) and Nishon (2.11 thousand sq. km.) - have a relatively low population density. Dehqonabad district has 159.5 thousand people, Mirishkor district has 129.6 thousand people and Nishon district has 166.6 thousand people. Therefore, the areas with the lowest population density are Mubarak (30.4 people per 1 sq. km.), Dehqonabad (39.9 people per 1 sq. km.), Mirishkor (40.4 people per 1 sq. km.) and Nishon (79.0 people per 1 sq. km.) districts (Table 1). We saw this above by

comparing Kasbi and Dehqonabad districts. Some districts in the mountainous and desert regions of the region are the least populated.

Secondly, if this indicator is calculated only for populated areas, in particular irrigated lands, it will have a pure or net form. Density in terms of cultivated areas is usually significant for the rural population. There is a certain relationship between demographic density and the location, specialization and territorial integration of production, economic density. These two indicators develop in inverse proportion to each other. That is, the less irrigated land per capita, the more the number of people per 1 ha (hectare) of land increases. The total land area of Kashkadarya region is 2856.8 thousand ha (hectares). This is 6.4% of the total area of the republic (44,892.4 thousand hectares), with the largest land area in Dehqonabad district (395.7 thousand hectares), almost as large as the areas of Syrdarya (427.6 thousand hectares) and Andijan (430.3 thousand hectares) regions. Mirishkor (312.5 thousand hectares), Mubarak (307.0 thousand hectares), Chiraqchi (283.7 thousand hectares) districts also have large land

areas, and this group of districts accounts for 45.5% of the total area of the region. The existing irrigated land in Kashkadarya region is 514.1 thousand hectares, which is 11.9% of the irrigated land of the republic (4,312.9 thousand hectares). It can be seen that the region occupies 6.4% of the total area of the republic, but owns 12% of the irrigated land. Dehqonabad district, which occupies the first place in the region in terms of area, took the last place in terms of irrigated land.

64.0 percent of the irrigated land of the region is in the plains, that is, in the districts formed in the Karshi steppe and in the previously developed territories (Koson, Mirishkor, Kasbi, Karshi, Mubarak). As of January 1, 2024, 3,560.6 thousand people live in Kashkadarya region. This is 9.7% of the population of the republic. When analyzing the administrative districts of the region by population density, the highest indicator corresponds to Kasbi (328.3), Karshi (299.2), Yakkabog (256.4) districts, while the lowest indicator belongs to Mubarak (30.4), Dehqonabad (39.9), Mirishkor (40.4) districts (Table 2).

Picture 3

Density differences in irrigated area of administrative districts of Kashkadarya region
(per 1 ha (hectare) of irrigated land)

№	Districts	Population density (people)	№	Districts	Population density (people)
1	Dehqanabad	52,3	8	Kosan	4
2	Shahrisabz	8,8	9	Kasbi	4
3	Kamashi	8	10	Kitob	3,3
4	Yakkabog'	7,8	11	Nishon	2,7
5	Guzor	6	12	Muborak	2,5
6	Chiroqchi	4,2	13	Mirishkor	1,9
7	Kokdala	4,2	14	Qarshi	1,9

Source: Compiled based on data from the Statistics Agency

This table presents the population per 1 ha (hectare) of irrigated area of the regional districts. When analyzing the density differences of the administrative districts of Kashkadarya region by total and irrigated area, specific differences can be seen. This is directly explained by the presence of 4 altitudinal regions (desert, hill, mountain, pasture) in the region, the presence of favorable natural and economic geographical areas, the presence of river valleys and irrigated lands. In particular, Kasbi district, which ranks 1st in terms of population density (328.3 people per 1 sq. km), ranked 9th in terms of population per 1 ha (hectare) of irrigated land (i.e. 4.0 people per 1 ha (hectare)). Dehqanabad

district, which is one of the last in terms of population density, is in 1st place in terms of the number of people per 1 ha (hectare) of irrigated land (52.3 people). Also, the number of people per 1 ha (hectare) of irrigated land in the region is on average 8.2 people. In this regard, Shahrisabz (8.8 people), Kamashi (8 people), Yakkabog (7.8 people), Guzar (6 people) districts also have high indicators. Karshi (1.9 people), Mirishkor (1.9 people) districts are at the bottom.

DISCUSSION

Analyses show that the highest density indicators are observed in areas with developed processing industries, in the suburbs of cities, in oases and

valleys where irrigated agriculture has long been widespread, and in agro-industrial regions (Kasbi, Karshi, Yakkabog districts). Naturally, such regions are characterized by an intensive direction of production development. At the same time, in areas with extensive farming systems, especially pasture livestock farming, and mining and mining industries, the population density is much lower (Mubarak, Dehqanabad, Mirishkor districts). In general, the highest density levels in both types of density correspond to districts such as Shahrisabz, Yakkabog, Kitab, Karshi. Natural conditions, relief features, and altitudinal regions also have a significant impact.

The fact that population density varies by district requires individual approaches for each administrative-territorial unit. In this case, along with the natural conditions of the administrative-territorial units, their economic status also plays an important role. An increase in density based on the location of natural resources and industrial enterprises can be used for the benefit of the country.

From the analysis of all the above data, it can be understood that an increase in the population and an increase in the level of density create a number of problems. And at the same time, it does not

always lead to a negative situation, that is, a sufficient number of people eliminates the shortage of labor in some regions. But the labor force in the region is much more than the available jobs. As a result, the density of the population leads to an increase in crime in large settlements and cities, a decrease in jobs, and the effectiveness of existing jobs is also decreasing. Because of this, internal migration of the population, mainly between regions, is actively taking place.

Another urgent problem in the increase in population density is the disruption of the balance of the ecological factor. This is especially likely to be observed in densely populated regions. Also, in densely populated areas, the prices of consumer goods and services are high, and the prices of land plots are constantly increasing. The sanitary and hygienic situation is deteriorating. All such problems arise due to the incorrect territorial distribution of the population. As the population increases, various buildings serving the population, kindergartens, schools, lyceums, polyclinics, pharmacies, shops, training centers, fairs, etc., are required. Because of them, the territory is under pressure.

To prevent such problems, taking into account natural conditions, it is necessary to place the population as far away from urban centers as possible, and of course, as much attention as possible should be paid to ensuring that all their economic and social needs are adequately met. Then the ecological balance will not be disturbed, and traffic congestion will not arise. It is advisable to place the population on a larger scale in the inner, underdeveloped regions of the region. Because the differences in population distribution are very different.

At the same time, in order to preserve the status of the region's notable settlements, areas with historical and cultural sites and large cities, it is advisable to settle the population not in the territory of these settlements, but rather away from them or in a ring around them. If this system is implemented, first of all, the ecological situation will change for the better, problems in the transport system will decrease, and the territory will not be subjected to tension. For example, it will contribute to the relatively better preservation of the condition of Shahrissabz, Karshi and other tourist centers, which are considered to be popular cities of the region.

CONCLUSION

As a result of the accelerated demographic processes in the Kashkadarya region, the population is constantly increasing, which leads to an increase in the population density of the region. In general, the increase in population density is interpreted differently depending on the economic and social development of countries. An increase in population density can play a positive role in the organization of industrial and service sectors. It can reduce some transport costs. At the same time, it has a negative impact on the ecological situation. Of course, in such regions, the extremely dense population density, insufficient provision of land, water and jobs exacerbates social problems, leads to various negative consequences, and tension in the region. The dense population density leads to aggravation of the ecological situation of the region due to the anthropogenic factor. Also, in such conditions, the sanitary and hygienic situation is not satisfactory. The possibility of the spread of infectious diseases is wider. The location of the population or its territorial structure is also characterized by its distribution in urban and rural areas. Currently, 57.2% of the population in the Kashkadarya region lives in

villages. This makes the development of rural infrastructure and culture, industry and transport an urgent problem. In this regard, the socio-economic development of rural areas is a priority area of state regional policy. With the development of productive forces in the region, the increasing effectiveness of the impact of science and technology on nature and the economy, the demographic potential is expanding, and as a result of the rapid construction of agro-irrigation facilities, production and industrial enterprises in the region, the need for resources is also increasing. Therefore, humanity is becoming more dependent on nature in a certain sense.

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