ANALYSIS OF POPULATION LOCATION AND FACTORS AFFECTING IT (IN THE CASE OF KHOREZM REGION)

Avezov Sattarbergan Atabayevich

. docent of the Department of "Geodesy, Cartography and Cadastre", Urganch State University

Gulimmatov Ikrom Bakhtiyarovich

(PhD) teacher of the Department"Geodesy, Cartography and Cadastre" , Urganch State University

Urgench city, Uzbekistan

Abstract: This research analyzes the distribution of the population and the factors influencing it. Based on the study of the features and patterns of population distribution, indexation of influencing factors and an assessment of the level of significance of the population were carried out. The settlements of the Khorezm region were taken as the object of the study. In the scientific work, methods of cartography, GIS analysis, interpolation, correlation, and an integrated approach were used.

Key words: Settlements, village, city, neighborhood, factors affecting population location, land use, correlation

1. **Introduction:** About 4,000 years ago, ancient Egypt, the Middle East, India, and South and Central America saw the emergence of the first human civilizations and communities. In the fifth and sixth centuries BC, the earliest types of statehood started to emerge. Water features (such as river deltas) have undoubtedly been significant in the settlement of the population. The earliest agriculturally based villages appeared in the lower reaches of the rivers some 10,000 years ago [11].The local environment is one of the most crucial elements influencing where the people is located. Because of this, the population first concentrates predominantly in the most advantageous places. The division of labor on a social and territorial level that results from population growth will also cause people to move to different areas.

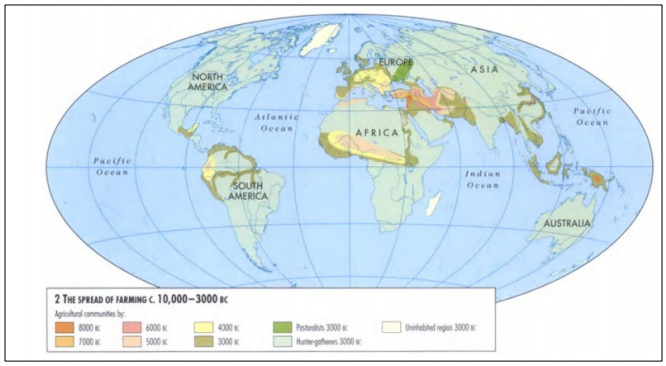


Figure 1. The spread of agricultural centers on Earth (10,000-3,000 years ago) Soursec: Atlas of world

Unique environmental conditions and a number of other reasons have influenced the settlement of the population in Uzbekistan, which is almost in the

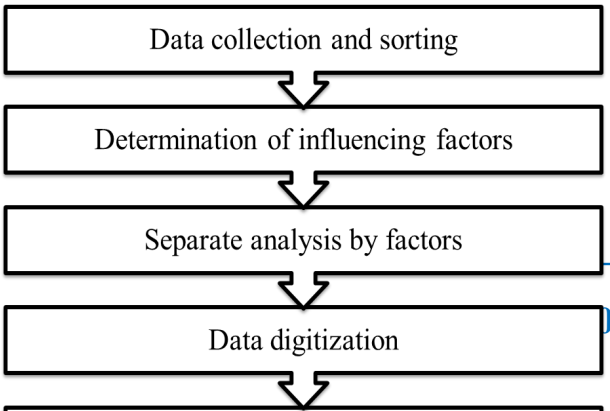
middle of the Eurasian continent. We can observe that the republic's natural environment has a continental feel, which has increased the significance of water resources in terms of people settlement. The majority of the population resides in the catchments of significant rivers including the Amudarya, Syrdarya, and Zarafshan. The settlement of the population and its differentiation have been impacted by the river water regime, socioeconomic division of labor, and political and ethnic dynamics.

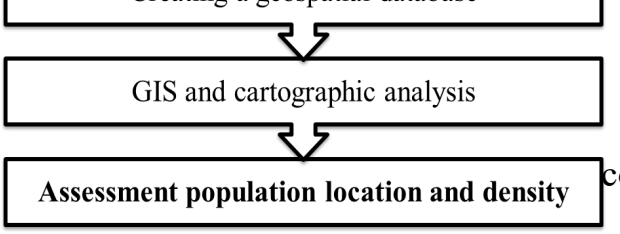
2. **Material and methods:** The population and its specific aspects can be analyzed in different directions. In particular, Damir Magaj, Sumita Gosh, Holly R. from foreign scientists on the composition and location of the population. Barcus, Keith Halfacree, Endalev Terefe Alain, J. Graunt, W. Petty. B.Ts. Urlanis, V.V. Pokshishevskyi, V.A. Borisov, S.I. Brook, V.M. Medkov, V.R. Bashirov conducted researches from CIS scientists. In the study of population and demographic processes in Uzbekistan, M.K. Karakhanov, I.R. Mullajonov, E.A. Akhmedov, R.A. Ubaydullaeva, O.B. Ata-Mirzaev, A.S. Soliev, A.A. Qayumov, Z.N. Tojieva, Yu. Akhmadaliev, A. Sadullaev, I. Atadjonov, H. Abduvaliev and others conducted scientific research.

In carrying out the research, on population mapping and its territorial organization, settlement development Damir Magaj, Sumita Gosh, Endalev Terefe Alen, N.N. Baransky, V.P. Maksakovskiy, Yu.G. Saushkin, S.I. Brook local the researches of scientists such as T. Mirzaliev, A.Egamberdiev, L. Kh. Gulyamova, E.Safarov, S.A.Avezov, D.N.Rakhmonov were familiarized with.

Object and subject of the work**:** population of Khorezm region and its location are taken as the object of the work. The subject of the work is the analysis of the factors affecting the location of the population**.**

Scientific research work began with the collection of information on the subject and their analysis. Historical geographic analysis, mathematical-statistical analysis,





comparison, and correlation methods were

Results and Discussion

ial form of population settlement is formed as settlements. Settlements are complex territorial structures, and their formation and development are influenced by natural conditions and resources, as well as several economic and social factors. The formation and development of settlements in most developing countries are influenced by natural conditions, economic and social factors, and demographic processes.

The population of the republic has increased from 24 million people to more than 34 million people in the last 10 years, and the average population growth is 1.7-1.8% [15]. It should be noted that there are huge differences in the geographical location of the population.

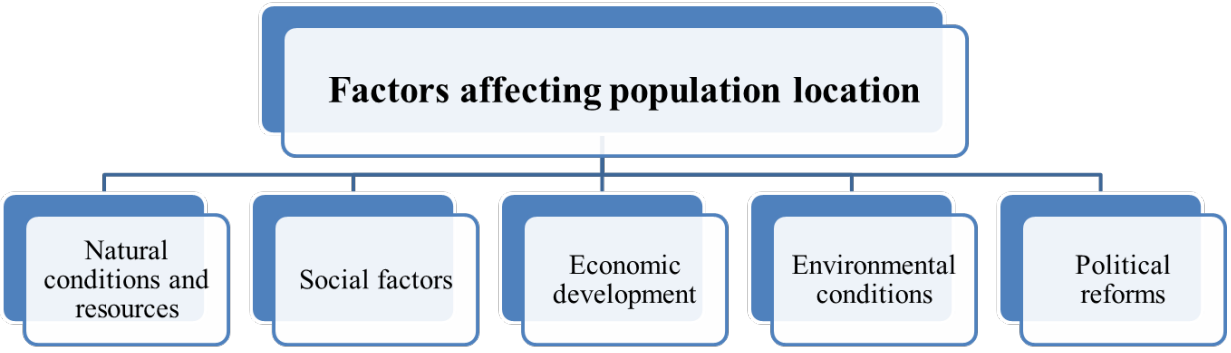


Figure 3. Factors affecting population location.

The main part of the population (90%) lives in the areas of the Syrdarya, Amudarya and Zarafshan rivers suitable for irrigated agriculture. Analyzing the distribution of the population by river basins, we can see that 50% are located in the Syrdarya basin, 25% in the Amudarya, 22% in Zarafshan, and 3% in other small water sources. In calculating these results, settlements in the areas located in the basin of the river and its irrigation networks were taken as a basis. Another important geographical aspect of the population location is that 45% of the total population lives in the northeastern and eastern regions (Tashkent and Fergana

economic regions), which occupy 7.5% of the territory of the republic. If we look at the vertical location of the population, it was found that most of the settlements correspond to the highlands and depressions at an altitude of 300-500 meters. In this direction, the researches of H. Abduvaliev on the example of the Fergana Valley can be an example. Settlements are located in the river valleys in the form of narrow corridors or strips.

In plain areas, it forms ring areas of different sizes and in some cases scattered points [2]. Of course, this location of the population is directly related to the convenience of natural conditions and the level of economic and social development.

The average population density in these regions is several times higher than the national average. If we add permanent and seasonal migration (to the Tashkent economic region) to these indicators, the numbers can be even larger. Of course, more than 40% of the country's GDP is accounted for by these regions.

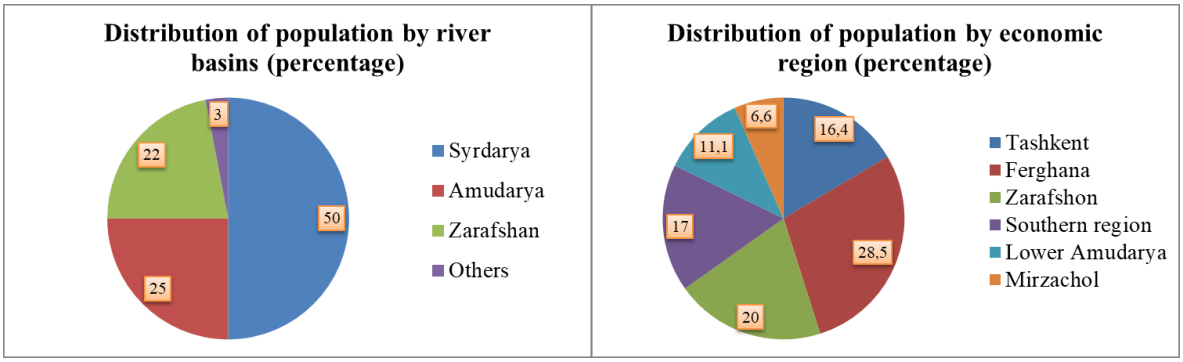


Figure 4. Analysis of population distribution by river basins and economic regions.

Economic and social factors also have a specific effect on the next stages of population settlement. In the conditions of Uzbekistan, we can see that specialization, jobs, infrastructure and demographic factors, as well as the reforms implemented by the state, are of high practical importance.

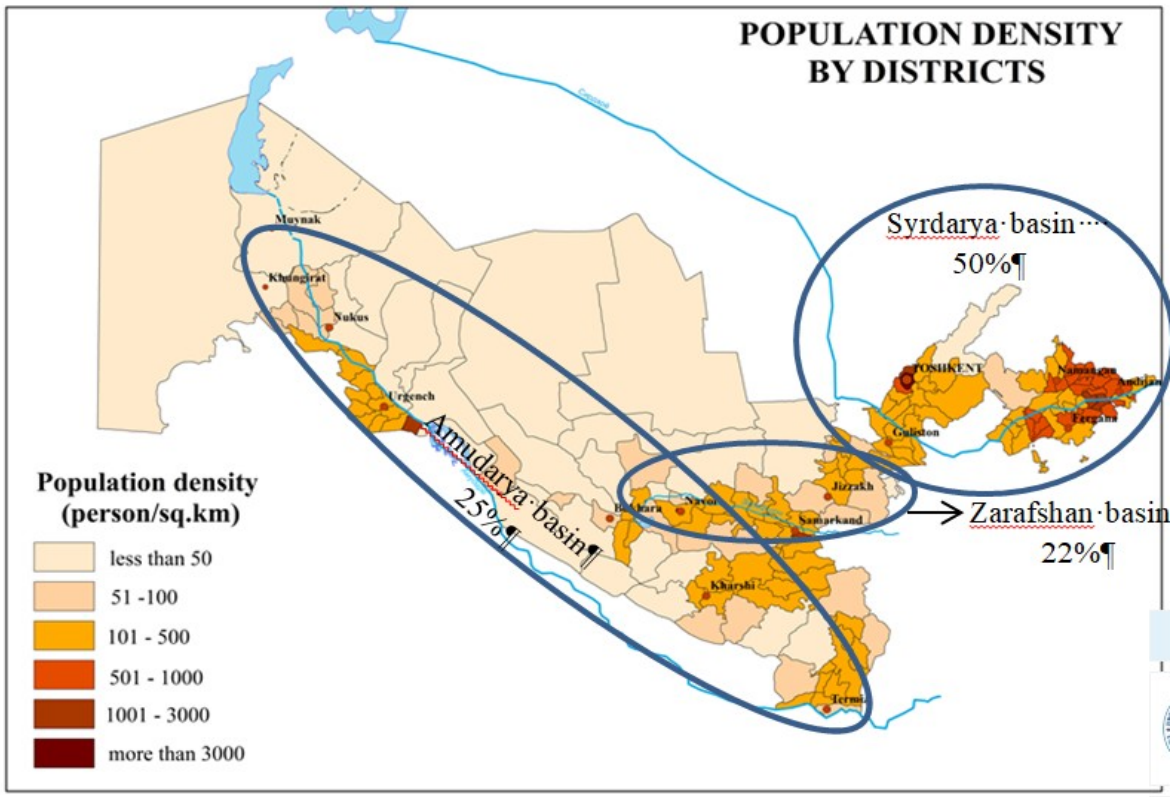


Figure 5. Population density map scheme of Uzbekistan

In the analysis of population location, indicators such as average and absolute population density are used. The average population density at the national level is 78 people, while the average population density in Fergana, Zarafshan, Chirchik Ohangaron river valleys and on the left and right banks of the Lower Amudarya is around 500-1000 people. The highest indicator of population density is Andijan 756 people, the lowest indicator is 9 people in Navoi region, and this indicator is 318 people in Khorezm region. On the scale of districts, the average population density varies from 1 to 3 people in Tomdi, Uchkuduq, Kunghirot, and Moynok, and 5,000 to 7,500 people in cities such as Tashkent, Andijan, Namangan, Samarkand, and Bukhara. (Figure 5)

Another peculiar aspect of the population location is that the absolute population density in the agricultural centers is several times higher than the average. Because the absolute population density is determined on the scale of the area where the population is located.

Irrigation networks, transport routes and land resources have become important in the settlement of population in Khorezm region. After Tuproqkala district was established within the province, Hazorasp district became the most densely populated area (1491 people). In the cities of Urgench and Khiva, this figure varies from 2,500 to 5,000 people, respectively [14].

Based on the main purpose of the work, the data of more than 100 population groups and 550 neighborhoods (MFY-mahalla citizens' meeting) were used in the research of population location of Khorezm region (Figure 6).

The analysis of the location of the population in the section of MFYs was carried out in the following methodological steps.

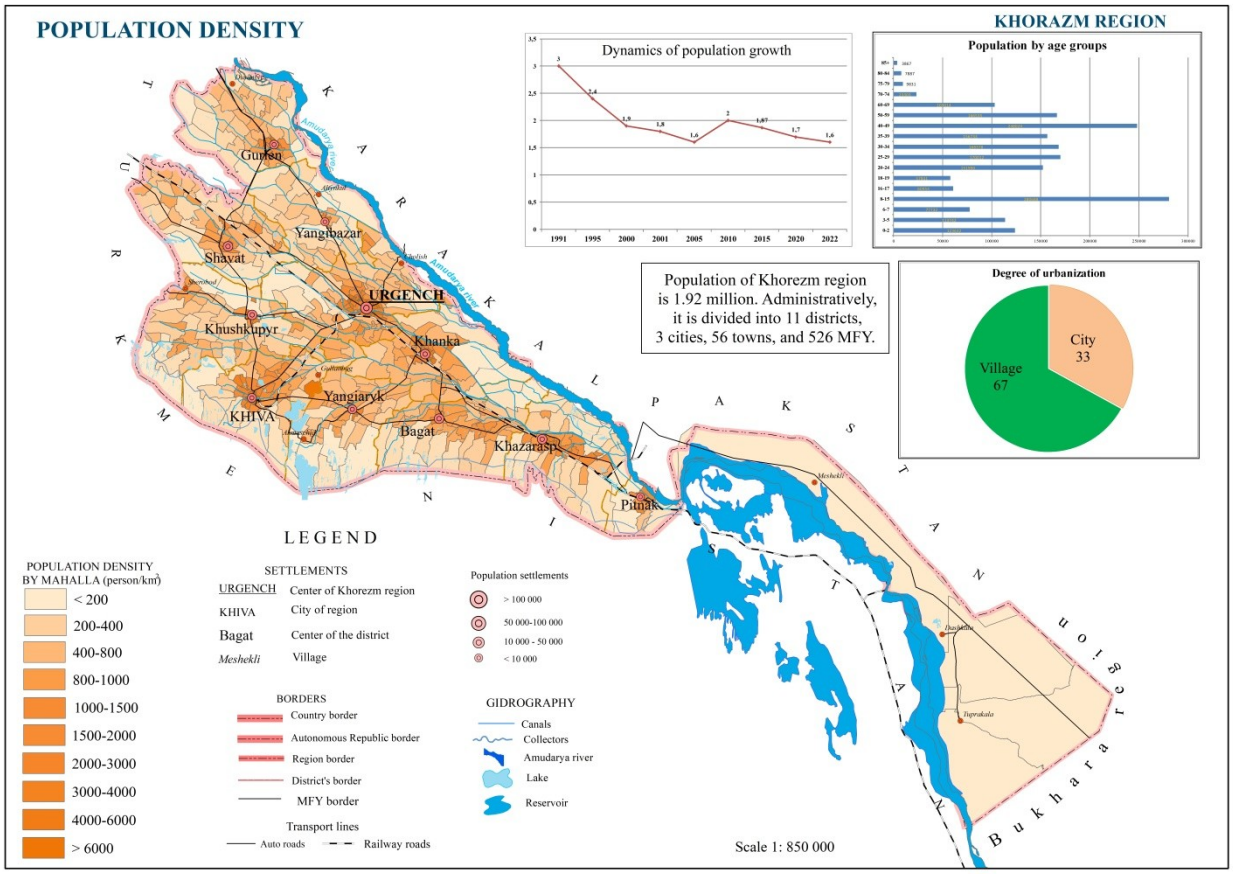


Figure 6. Map scheme of population density of Khorezm region (in MFY section)

- ❖ The data of Khorezm Region Neighborhood and Family Support Department was analyzed
- ❖ Based on the information of the Cadastre Agency of Khorezm region, geodata of neighborhoods were digitized and verified.
- ❖ Attribute tables were created and population density was calculated on Field calculator

As a result of the research, the following assessment was developed in terms of factors affecting population density.

Based on the obtained results, the following table of factors affecting population density was compiled (Table 1).

Here, R2 is the regression equation and the degree of dependence of the factors A The analysis of the degree of dependence of population density on the factors showed that the settlement was strongly influenced by canals, transport routes and soil quality. According to our results, groundwater is considered a dependent and variable factor, and the influence on population location was 0.2.

Table 1.

Factors influencing population settlement in Khorezm region and their dependence.

Population density is people/km.sq.	Proximity to canals R^2=0,9			Soil quality R^2=0,6			Groundwater R^2=0,2			Proximity to transport routes. R^2=0,7			Administrative centers		
	1 km	3 km	5 км	40 ball	40-60 ball	+80 ball	1 metr	1-3 metr	3 metr	+1 km	500 m	100 m	Village	District	City
Less than 50			+			+	+			+					
100		+			+			+			+				
500		+			+			+			+		+		
1000	+				+				+		+		+		
3000	+					+			+			+		+	
5000	+					+			+			+			+

Like many developing countries, it is observed that the importance of demographic factors in the settlement of population and territorial expansion of

settlements is high in Uzbekistan. Because, in the regional organization of most settlements, housing shortage is caused not by production or service, but by excess population.

The population of the republic is growing by an average of 1.7-1.8% or 630 thousand people through natural growth. This process has different indicators in different regions of the republic. The natural growth indicators are the highest in the republic in Jizzakh and Surkhandarya regions, while the lowest indicators are recorded in the Republic of Karakalpakstan, Khorezm region and Tashkent city(Figure 7).

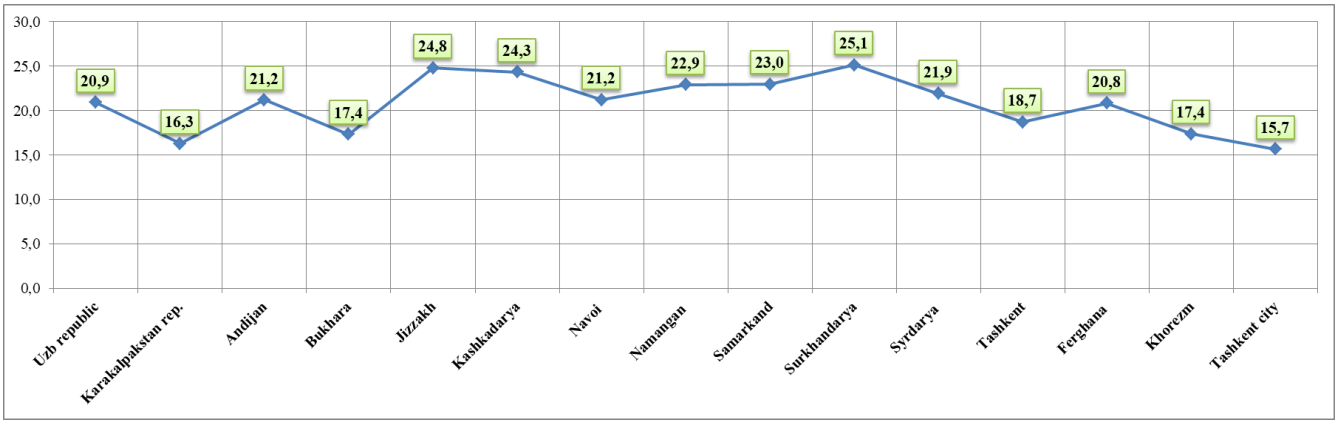


Figure 7 Dynamics of natural population growth in 2021
Source: prepared based on www.stat.uz data.

The population of Khorezm region increased by 177.8 percent during the years of independence (1991-2022). During this period, the average annual growth rate of the population decreased from 3% to 1.6%, while the total population was 30.6 thousand people in the 1990s, and 30.9 thousand people by 2022. Figure 8.

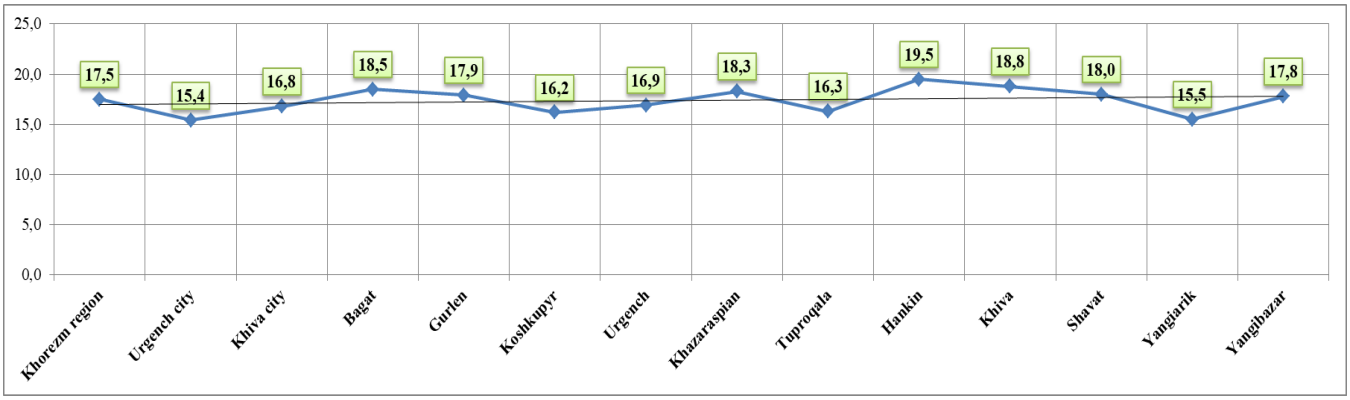


Figure 8. Dynamics of natural population growth.
Source: Khorezm regional statistical office data 2021.

Therefore, the absolute population growth has repeated the indicator of 30 years ago due to the reduction of the dynamics of general population growth.

According to the data for 2021, the natural growth rate of the population in the region was 17.5‰. We can see that these indicators are the highest in Khanka, Bogot, and Khiva districts, while they are relatively low in Urgench city, Koshkopir, Tuproqkala, and Yangariq districts.

Its migration also has a specific effect on the location of the population. In particular, in 2021, there is a negative migration balance in most territorial units of the republic, and in the Republic of Karakalpakstan, which has unfavourable natural conditions, this indicator is -3.6‰, in Kashkadarya region -2.86‰, and in Khorezm region -1.2‰. At the same time, it should be noted that only in the city of Tashkent this indicator is positive 15‰, the reason for this is the capital factor and favourable economic and social conditions.

At the scale of districts of Khorezm region, the highest negative migration was observed in Hazorasp district equal to -9‰ (mainly due to the establishment of Tuproqkala district). In the city of Urgench, this indicator was -3.2‰, one of the highest among the cities of the republic.

In regions with severe natural conditions, the density is further decreasing due to population emigration. In urban areas where infrastructure and industry are developing, density is increasing. The high density of population in certain areas causes socio-economic problems and increases ecological pressure in these areas. In our republic, in the republic of Karakalpakstan, population migration is -34 per 10,000 inhabitants; -26 in Kashkadarya region; -21 in Surkhandarya region; and in Khorezm region -12; was found to be equal to[15].

Political reforms also affect population location and the territorial dynamics of settlements. Political reforms carried out by the state are of great importance in terms of population growth, urbanization processes, the employment of labor resources, the satisfaction of large-scale needs of the population, and the provision

of infrastructure. As the population grows, the demand for land plots and residential facilities is increasing. However, the stock of available land resources is limited, for this reason, it is appropriate to take into account long-term strategic goals when making land resources available for housing construction [12]. The reforms implemented in the regulation of land use also affected the reduction of the area of land allocated for housing construction. For example, before 1998, 1300 m2 of land for housing construction, 600 m2 after 1998, and now 400 m2 through electronic auction, affect the intensity of territorial expansion of housing areas.

In addition, the Address of the President of the Republic of Uzbekistan to the Oliy Majlis dated January 24, 2020 and the implementation of the State Program for the implementation of the five priority areas of development of the Republic of Uzbekistan in 2017-2021 in the "Year of Science, Enlightenment and Digital Economy Development", as well as In order to strengthen the guarantees of ensuring the rights and freedoms of the citizens of the Republic of Uzbekistan to move from one place to another within the territory of the country:

1. Abolition of the system of asking for a tip in the process of hiring specialists

2. It was decided to cancel the procedure for applying special rates of state duty in cases where citizens of the Republic of Uzbekistan registered as permanent residence in other regions of the Republic bought newly built houses in Tashkent city and Tashkent region and sold them within three years[19].

The creation of these opportunities depends on the location of the population, the activity of labor resources and, of course, the standard of living of the population

4. Conclusion: Population location shows a unique dynamic process that changes in certain factors can lead to changes in its intensity and direction. For this reason, we can say that forecasting the prospects of population settlement and the development of population centers requires complex scientific and practical research. As a result of the geographical analysis of the population location, the following conclusions were reached.

1. The population is mainly located in river valleys, in irrigated farming centers, in mountainous areas at an altitude of 300-500 meters.

2. 45% of the total population lives in 7.5% of the territory of the republic. This indicator corresponds to the Tashkent and Fergana EGRs in terms of economic geographic regions (EGRs).

3. The population of the region is mainly located on the left bank of Amudarya in a unique claw-like shape.

4. The settlement of the population was strongly influenced by the shifting of the riverbed, the ancient riverbeds of Daryoliq, Davdon, Ozerniy collectors and canals.

5. The population is densely located near transport roads, canals, in areas with relatively higher relief, high-quality soil (land resources), district centers and cities (the population density in the MFY segment is 44,000 people/km.)

6. The population is very sparsely located in the Tuproqkala massif, in the regions adjacent to Unguzorti Karakumi, and in the lower part of Amudarya (1-5 km).

In the next stages, it would be appropriate to take into account the employment of the population and the provision of various services, connected to transport and production, while preventing the reduction of agricultural land.

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