IQTISODIY TARAQQIYOT VA TAHLIL ILMIY ELEKTRON JURNAL

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IQTISODIYOTDA GEOGRAFIK AXBOROT TEXNOLOGIYALARINI YORDAMIDA MEHNAT UNIMORLIGINI TAHLIL QILISH (NAMANGAN VILOYATI MISOLIDA)

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Annotatsiya. *Ushbu maqolada hududlarning ijtimoiy-iqtisodiy rivojlanishini tahlil qilishda raqamli texnologiyalardan foydalanishning nazariy va amaliy jihatlari o'rganiladi. GAT texnologiyalari yordamida Namangan viloyatining ijtimoiy rivojlanish ko'rsatkichlari tendentsiyalari va dinamikasi tahlil qilindi.*

Kalit so'zlar: *GAT, ijtimoiy-iqtisodiy xaritalar, ijtimoiy-iqtisodiy kartografiya, real pul daromadlari, kartogramma, kartodiagramma, GE-UZ, faol bo'lmagan tarmoqlar.*

АНАЛИЗ ПРОИЗВОДИТЕЛЬНОСТИ ТРУДА С ИСПОЛЬЗОВАНИЕМ ГЕОИНФОРМАЦИОННЫХ ТЕХНОЛОГИЙ В ЭКОНОМИКЕ (НА ПРИМЕРЕ НАМАНГАНСКОЙ ОБЛАСТИ)

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Аннотация. *При анализе социально-экономического развития трех статей изучается теоретическое и практическое применение компьютерных технологий. Анализ тенденций и динамики социальных показателей Наманганской области с использованием ГИС-технологий.*

Ключевые слова: *ГИС, социально-экономические карты, социально-экономическая картография, реальные денежные доходы, картограмма, картодиаграмма, ГЭ-УЗ, неактивные сети.*

ANALYSIS OF LABOR EFFICIENCY USING GEOGRAPHIC INFORMATION TECHNOLOGIES IN ECONOMY (EXAMPLE OF NAMANGAN REGION)

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Annotation. *In this article, the theoretical and practical aspects of the use of digital technologies in the analysis of socio-economic development of regions are studied. The trends of social development indicators and dynamics of Namangan region were analyzed using GIS technologies.*

Key words: *GIS, socio-economic maps, socio-economic cartography, real money income, cartogram, cartodiagram, GE-UZ, inactive sectors.*

Introduction.

Ensuring a consistent and balanced development of the economy of Uzbekistan is a guarantee of success with thorough and comprehensively based measures, as well as the development and clear definition of economic development programs at various levels. At the moment, it is also important to draw relevant conclusions, further improving the indicators of socio-economic development based on them, through the critical assessment of the tasks, measures, as well as the achievements and results performed before this year.

The development strategy establishes a new procedure for working with regions within the framework of the established tasks for the complex socio-economic development of Regions, and on the basis of programs for the complex socio-economic development of regions for 2022-2026, development programs will be developed in the cross-regions each year with a deep study of the problems and this program is becoming more relevant, especially at the moment when the world is rapidly changing (Decree, 2022). Continuous implementation of the development of Uzbekistan due to social and economic reforms, the image of the regions has changed radically, a specific territorial environment has been formed in them, corresponding to market relations and the principles of new economic development. At the same time, in the address of the president of the Republic of Uzbekistan to the Supreme Assembly and our people: “it is required to radically improve the activities of government agencies. The responsibility and responsibility of management agencies in solving territorial issues will be strengthened” (Mirziyoyev, 2020). One of these tasks is the implementation of measures by state governing bodies, in particular in the cadastral area, in the field of Agriculture, on the effective use of GIS technologies, their implementation in practice. Currently, as a result of the rapid growth of this branch of the information system, it is used not only in technical areas, but also in various social spheres of our life. Gat has a wide range of application areas, including in the process of making new clinics and hospitals geographically suitable and accessible to the population in health care, drawing up and determining road routes and schedules for businesses engaged in freight transport, choosing the optimal option for highway builders in the design of new tracks and roads, as well as in the correct and rational calculation of, it is very useful for farmers to determine the condition of the land and obtain sufficient information about it in the development of new land.

The Social Development Index is a measure of the work of countries, since it includes economic, social and environmental development.

Basic social indicators of socio-economic indicators:

- the amount of Real Money income of the population;
- nominal average monthly salary amount per worker;
- Consumer Price Index for mass consumer products and services;
-the total number of unemployed at the end of the reporting period, taking into account officially registered unemployed persons;
- share of the population in the total number;
- health sector
- educational level of the population
- standard of living of the population
- the level of commissioning of housing estates

Economic and social indicators of socio-economic indicators can be calculated for different periods (month, half-year or-year), which makes it possible to determine the main directions and directions of major changes in the socio - economic sphere. However, each of the described indicators changes under the influence of different factors. Therefore, the development of an effective system of measures to determine the actual picture of the state and achieve the intended results is possible only after a detailed analysis of such indicators. It is necessary to determine the indicators that determine the level of development of territories, to develop new projects in the radical improvement of regions with low development indicators.

When determining indicators with low development, it is necessary to analyze the economy, social life of Regions, conduct surveys among the population, study statistics reliably and fully, study the mechanics of working departments of the economic ministry in regions, departments working with the population, make the necessary changes, study the natural, productive opportunities of Regions and use them effectively.

And the improvement of the methodological foundations of analysis corresponding to the development of economic relations is the central aspect of the successful implementation of tasks. On the basis of knowledge of the techniques and technology of economic analysis, specialists find the most correct answers and make effective decisions. This is especially important when it comes to quickly adapting to and operating on economic conditions in the present era. In the analysis of socio-economic indicators, the systemality of the process is explained by the effective use of modern methods and tools for these purposes, and above all, GIS-technologies. The computer methodology of designing and creating maps through this technology replicates all the steps inherent in traditional mapping technologies in general.

Nowadays, GIS is widely used in all sectors of the economy. The use of GIS requires the collection of Kata-sized written and graphical, area-specific geographic information. Therefore, it will be necessary to collect geodata. Therefore, a geodatabase is an integral part of any GIS.

Literature review.

A relative assessment of the use of mechanisms for state regulation of the development of regions in Uzbekistan and foreign countries. M.Widely covered in the scientific work of Sadigov (2005). Ibadullayev (2022) believes that "the investment potential of the territory is the sum of the economic, social, political and natural capabilities of the territory, which is aimed at attracting the investment factor at the expense of all its sources, and the window for their application" .

Rakhimova (2021) "the region offers to be seen as a complex of regions with natural-geographical, socio-economic, material-technical, siecian fronts close together and a unified management and logistics system".

In the analysis of indicators of development of territories, humanity has been experiencing an information flood for the last few decades on the development of GIS technologies. It is gaining strength from year to year and is entering many areas of human activity. Today, cartographers have rich experience in the construction of topographic, geographical cards and atlases of various topics, deciphering aero - and space images, processing field measurement results and collecting data in computer systems during the use of information from many sources. The fact that many types of data are often changed over time makes it much more difficult to use a paper card, which is made in a simple way. Today, receiving instant information, showing their relevance can only be guaranteed by an automated system. At this point, modern GIS is considered to be an automated system with a large number of graphs and thematic databases, combined with model and computational functions capable of performing work on a base basis, converting spatial data into a cartographic form, making various conclusions and carrying out monitoring work (Akhmedov, Abdullaev, 2020).

Candidate of Geographical Sciences, Associate Professor A.A. Ibraimova stressed in her scientific research that implementation through GIS technologies in the analysis of socio-economic indicators in the region will help the analysis to be effective and accurate (Ibraimova, 2020). In addition, the study of Numerical Methods in geography has a strong focus in the United States, Canada, England, Sweden.

Socio-economic cartography has harmonious relations with the economic and social spheres. Baransky (1987) outlined the main directions of these contacts and, above all, methodological aspects.

The importance of scientific and geographical analysis is also increasing with the introduction of mathematical methods and automation tools into socio-economic cartography-

for the geographical justification of the issue and control of the results obtained. In economic and social geography, socioeconomic cartography comes out as a method of research and as a means of collecting and presenting information (Tikunov et al. 2005).

Research methodology.

The methodological basis of the study is a systematic approach, which includes general methods of comparative analysis and sampling observation. Applied research is based on the economic-mathematical methods, while the empirical assessments. Functional management analysis and expert assessment methods were used in assessing the structural changes and the quality of Territorial Management carried out in the regional economic system. GIS technology used cartograms, cartodiagrams, quality backgrounds, quantitative background techniques.

Taking into account the above points and considerations, through the use of the comparison method, this study will study the tourist potential of Uzbekistan and analyze (discuss) in comparison with the advanced foreign experience. On the basis of a number of comparisons, discussions and conclusions are drawn and proposals are made for the effective organization of control of reclamation areas. Also, with the help of programs of the geographic information system, comparisons, assessments, mathematical calculations are carried out between regions.

Analysis and results.

When analyzing the income and standard of living of the population of the Namangan region, the data of a sample household survey conducted by the State Statistical Committee of the Republic of Uzbekistan during 2007-2022 was used.

Table 1

Formation of gross income of urban and rural population content[36], %

Types of income	Total	City	Rural
Total income	100.0	100.0	100.0
of these:			
- official	30.4	34.4	26.5
- unofficial	48.3	41.5	55.2
- other revenues	21.3	24.1	18.3

Against the background of low volume of other sources of income (18.3% and 24.1%), the predominance of informal income in rural areas (41.5% versus 55.2%) is characteristic of the region. Among the factors of increasing the well-being of the residents of the region, the wages of workers-servants also occupy a special place.

Analysis shows that Namangan region by nominal average monthly salary (Rs 1,263.3,000) the Republican territories (78.5% compared to the Republican level) are in last place.

Taking into account the fact that the main part of the population of the region (63.1 percent) lives in rural areas, Personal subsidiary farms occupy a special place in obtaining income. The results of a survey conducted by specialists from the Institute of Social Research show that the composition of total income in rural areas differs slightly from cities (Table 2).

For 2018-2022, the average monthly salary in the province increased by 1.79 times, for example, trade (salary increased by 2.48 times) banking (2.18 times). (In the conditions of

[36] Source: Akhmedov T.M., Abdullaev B.S. Socio-demographic features of sustainable development of rural regions of Uzbekistan. Tashkent, Niso polygraph , 2022

districts and cities, the amplitude between the highest (Namangan city – 1715.1 thousand soums) and low (Chust – 1150.2 thousand soums) was the wage.

In terms of labor resources and employment population, Namangan region ranks 6-7 among the Republican regions (Table 3). The region is also characterized by the average level of unemployment and the proportion of people employed in the informal sector of the economy. For the period 2018-2022, the number of working population in the region increased by 103.8 percent, and in 2021 it was 1563.8 thousand people.

Table 2

Average monthly salary in Namangan region[37]

Economy sectors	2018-y	2019-y	2020-y	2021-y	2022-y	growth, times
Total for the region	**858,9**	**1010.9**	**1095,0**	**1257,8**	**1540.1**	**1.79**
Industry	1023.8	1214.3	1281,7	1479.3	1934.4	1.89
Construction	1280.3	1394.1	1281,0	1623.5	2190.5	1.71
Trade	1023.4	1237.4	1284.5	1707.4	2540.6	2.48
Transportation and preparation	1121.4	1136.5	1153.6	1150,9	1337,7	1.19
Accommodation and food services	-	-	837.6	1285.6	1245.6	
Informatization and communication	1108.7	1216.5	1265.3	1528.3	1321.4	1.19
Banking, insurance, leasing, credit and mediation	1074.6	1405.1	1662.9	2001.0	2346.0	2.18
Education	798,8	925.4	1042.7	1170.8	1404.2	1.76
Health and social services	757.4	871.3	947,8	1099.4	1240.8	1.64
Art and Recreation	684,0	857.2	894,7	805.1	1152.6	1.69
Other events	725.3	917.2	993,7	1140.4	1546.3	2.13

At the same time, the city of Namangan, where the share of the working population is 19.3% of the total labor resources of the region, is also the working area of the region. By regional districts, labor resources are characterized by a more or less equal distribution (6-8%).

The positive trends achieved in the field of employment of the population were ensured as a result of the rapid development of the service and service sector and the implementation of a number of State targeted and territorial programs to promote the expansion of cooperation between large industrial enterprises and the production of services. Based on the development of industry, as well as territorial programs promote employment, development of entrepreneurship and competition. The implementation of these measures ensured a 112.6% increase in the employed population of the province.

The official sector of the economy of the region employs more than 524.3 thousand people, or 50.7% of the total number of workers. Of these, about 55.6% of the population employed in this network works in large enterprises and small, microfirms and farms.

At the same time, informal employment remains a negative trend in the field of employment. In the Namangan region, there are various types of informal employment of the population (performing temporary one-time and seasonal work, providing assistance to family members and providing assistance to entrepreneurs who do not register Labor Relations, entrepreneurs who do not register and work without appropriate permits). Thus, for 2018-2022, the number of people employed in the informal sector of the economy grew by 1.5 percent (from 432.3 thousand people to 502.6 thousand people).

[37] Source: areas calculated based on data from Namangan city statistics department

Table 3

The role of the Namangan region in the development of the labor market and its role in the Republic of Uzbekistan[38]

Name of Regions	years	Specification				
		Number of labor resources, thousand people	Number of people employed in the economy, thousand people	Unemployment rate, %	Share of people employed in the informal sector of the economy *, %	Those who went outside the Republic to work, a thousand people
Uzbekistan Republic	2018-y	18104.8	12818.4	5.1	38.1	873,6
	2021-y	18835.0	13273.0	9.3	41,1*	2384.8
	dif. (+/-)	730.2	454.6	4.2	3.0	1511.2
Namangan region	2018-y	1506.8	937.3	5.3	46.1	82.7
	2021-y	1563,8	1055,8	9.5	47.6	200.7
	dif. (+/-)	57,0	118.5	4.2	1.5	118,0
Share of the region Republic, %	2018-y		7.3			9.5
	2021-y		8.0			8.4
Place area among the regions of the Republic	2018-y	7	6	6	13	3
	2021-y		7	6		4

A taxable level of well-being allows households to anic the level of ownership of economic resources, their consumption or savings, as well as the ability to choose one of them. Bulsak, which focuses on numbers, estimates early in 2022 that the share of revenue from production in the 1st year's income structure was 71.5 percent, of which 1 percent was derived from labor activity, and 2.1 percent was income from personal services produced for personal consumption.

In the study of the lifestyle of the Population, Research is carried out as follows:

1. Study of population dynamics, social, economic,family and territorial composition, differences in re-establishment and their causes;
2. Study of labor resources in the territorial structure of the population and geographical differences in the use of these resources. The population is seen as a productive force in this direction and relies on the interaction of geography with the economy and with other economies;
3. Study of territorial distribution and migration of the population. The analysis of population density and differences in it, the study of Population migration, changes in population placement on a country-wide scale, changes in population composition and number in individual regions due to migration, are among them;
4. Study of population settlements and their territorial range. This direction will be devoted to the study of urban and rural settlements, their features of development and settlement. Geographical Study of settlement of settlements;[39]
5. The study of geographical differences in the culture and living conditions of the population and these differences.

[38] Source: * taking into account those who went to work outside the Republic.
Information of the Main Directorate of employment and Labor Relations of Namangan region

[39] M.Borieva, Z.T.Tojieva, S.Zokirov textbook “Fundamentals of population geography and demography”

When solving such masks, the attraction of GIS technologies gives a great effect. In the current era, issues related to data processing are common in the activities of each field. All data is formed on the basis of the geofumadas database. Today, GIS economics is widely used in all sectors of industries. To use gat, it will be necessary to collect large amounts of written and graphic, area-linked geographic information. That is why the geofumadas base is considered an integral part of any GIS. Geofumadas are created using special GIS programs that eat. At the moment, the reform of our country, as well as the GE-UZ project, as the main GIS program, ESRI's ArcGIS program is aimed at creating and managing the Geofrequency database. That being said, with the help of this ArcGIS program, the GIS pro-project is being created in our country, as in many developed countries of the world today, and it is ensured that ulaming operates effectively. In order to create and effectively use Geoaxborot systems projects, it is necessary to divide the knowledge of the geomata database into yega. The purpose of providing comfort to the population is the digitization of settlements is widely used.

Population is the most important object of socio-economic indicators. In the analysis, it is considered as a geographical shell component and the main transforming force, a producer and main consumer of various material and spiritual products. The population is characterized by a sharp stratification in its territorial location; the accumulation in living, working and resting places, above all in large cities, makes the analysis process difficult. In the implementation of analytical analyzes with a demographic and socio-economic description of the population, statistical methods are carried out in GIS programs-with many modified cartograms or cartodiagrams.

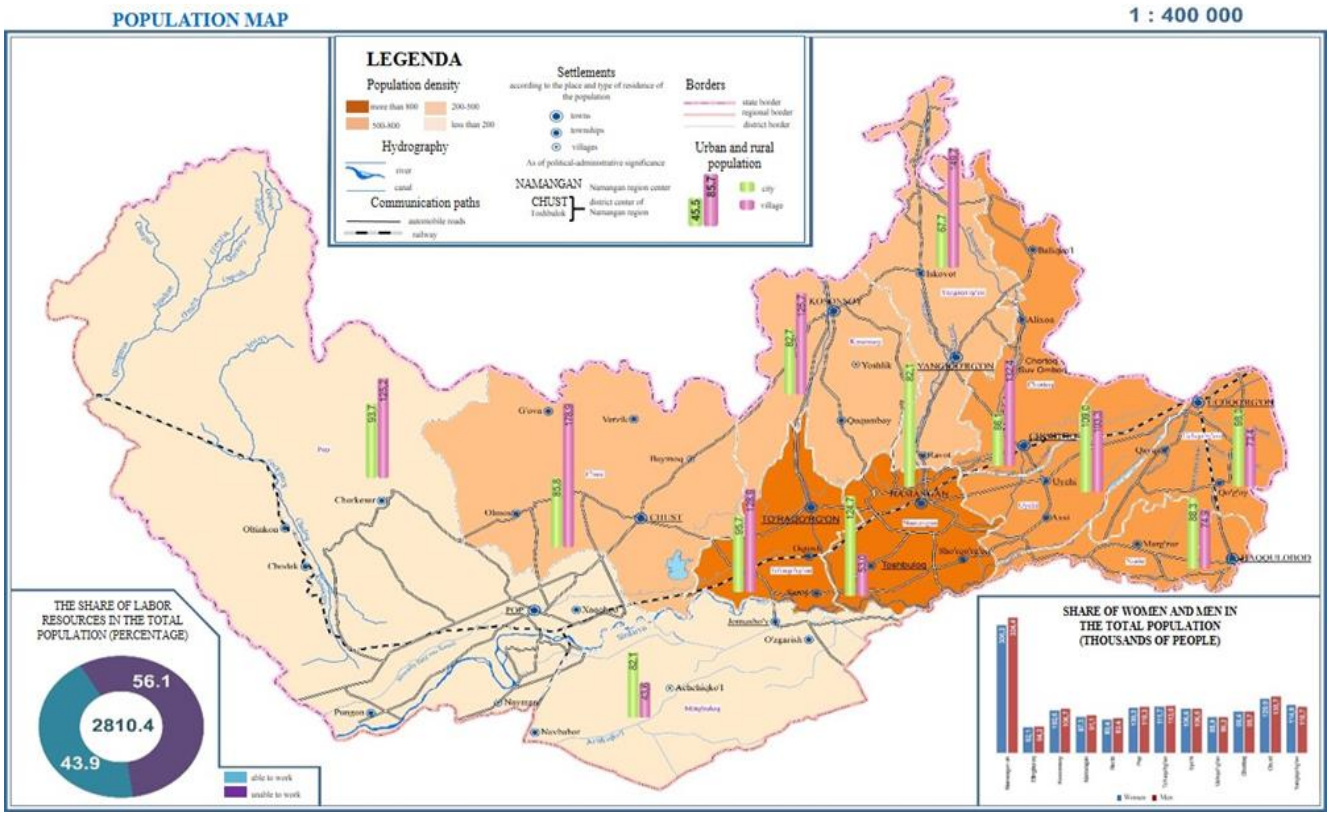

Figure 1. Population map of Namangan region[40]

When analyzing the population, it is necessary to take into account all its indicators. GIS technologies provide an opportunity for this analysis to be large-scale. Since the population is considered an aopolitical indicator both in the social sphere and in the economic sphere, it lies at the heart of all development links. Because all the convenience and innovations that are being created are for the population layer.

[40] Source: created by the author on the basis of statistics

It is possible to develop solutions and proposals for the problems that have arisen through the results of the analysis carried out through GIS technologies.

It is also necessary to take into account the level of development of the territories, the accumulation in places with favorable conditions for the settlement of the population.

Namangan region is located in the Fergana Valley and is one of the best destinations for settlement. For this reason, most of the population is settled in the area. To carry out a wide range of analysis, it is necessary to study both the possibilities and disadvantages of the territory of course. GIS technologies, on the other hand, help to visualize the area extensively. This facilitates the analysis process.

The population is also analyzed by place of residence, by place of work. The process is based on the ability of the population to work, that is, the structure of employment we can use such indicators as the working capacity, the number of employed, the number of unemployed, the layer of the currently active population with work. On the labor resource card of the population, the distribution of labor resources by regions, as well as the composition of Labor resurs were analyzed in the cross section of districts of the Namangan region by the composition of the economically active and inactive population. The result of the analysis shows that the city of Namangan has the highest rate, that is, a population of more than 150 thousand people is considered to be able to work.

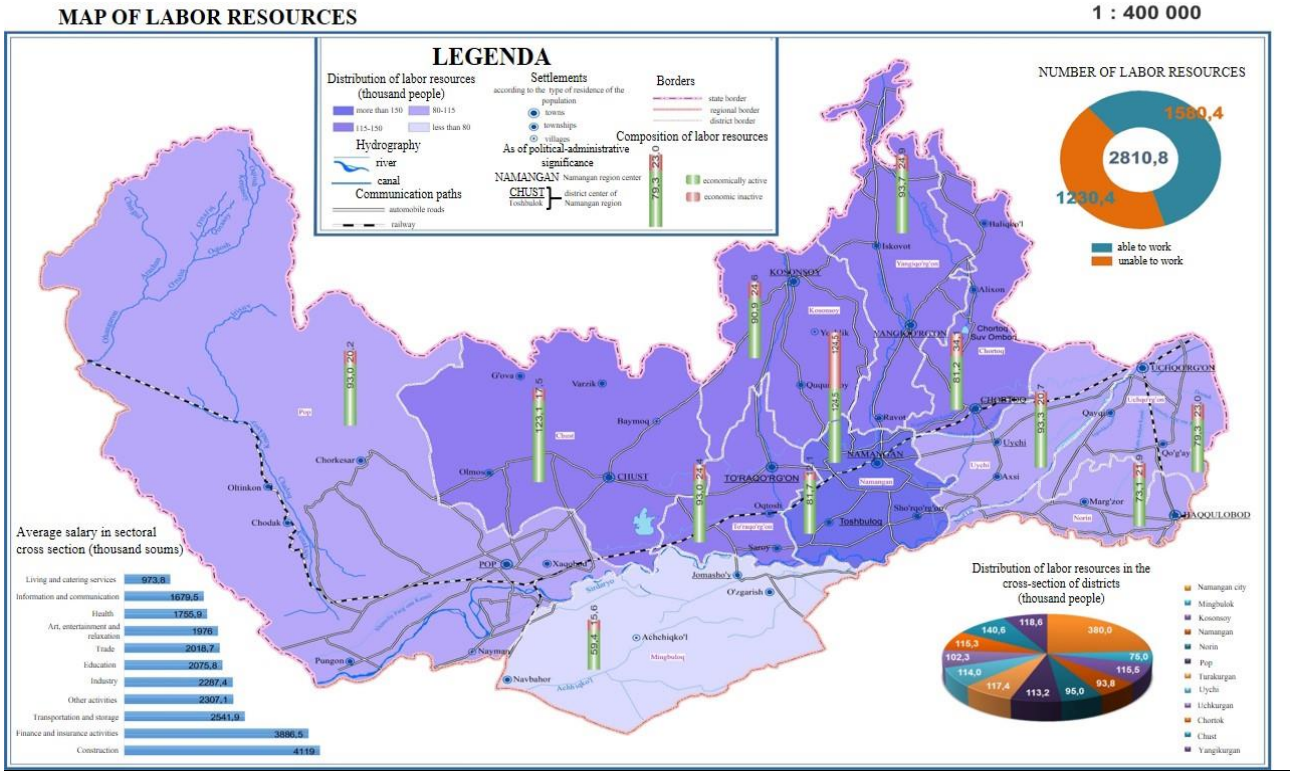

Figure 2. Labor resources map of Namangan region[41]

The districts of Chust, Yangikurgan, Turakurgan, Chortok also have high rates, and the population of more than 100,000 people is able to work. Uychi, Uchkurgan, Pop, Norin districts are on average, while Mingbulok district is on the lowest. It follows from this that there is a layer of incapacitated population, which can be concluded that there is a population in the district that needs social protection. The composition of labor resources is determined by economically active and inactive indicators. Namangan has the highest population, with 124.5 thousand economically active residents and 105.5 thousand unemployed. The lowest is the contribution of Mingbulak district.

[41] Source: created by the author on the basis of statistics

Conclusion and suggestions.

The following conclusions and suggestions can be made on the development of territories:

- development of hudus to develop excellent strategic plans and ensure the intercession of its implementation;
- application of modern methodologies and technologies in analysis and forecasting;
- making the most of the existing scientific and innovative potential in the country;
- Study of the experience of foreign countries in the development of GIS technologies in the Republic;
- to make geoaxborot systems a powerful weapon in the management of territorial development;
- it is necessary to develop a digital economy in the Republic;
- Application of the results of analysis obtained through GIS technologies in practice;
- providing social assistance to regions with low development;
- socio-economic development of Namangan region;
- attracting new projects that provide employment for the population;
- it is necessary to develop economic inactive sectors, introduce new areas of industries in regions with low development rates.

References:

Akhmedov T.M., Abdullaev B.S. (2020) Socio-demographic features of sustainable development of rural regions of Uzbekistan. Tashkent, Niso polygraph.

Decree (2022) Decree of the president of the Republic of Uzbekistan on the development strategy of New Uzbekistan dated 28.01.2022 PF-60 dated 2022-2026

Ibadullaev D.I. (2022) During the meeting, the parties discussed the development of the economy of Tajikistan. Urgench, Economics Fundraise Philosophy Doctor of Philosophy (Doctor of Philosophy) abstract dissertation, p9.

Ibraimova A.A., (2020) social and economic cartography: tutorial-Tashkent: drops of thought,.-306p.

Mirziyoyev Sh.M. (2020) President Of The Republic Of Uzbekistan Sh.M.Mirziyoyev's appeal to the Supreme Assembly and our people on 29.01.2020. Electronic source: https://president.uz/uz/lists/view/4057

Rakhimova M. (2021) region competitiveness ecological and economic mechanism of professional development; economics fundraise philosophy Doctor of Philosophy (Doctor of Philosophy) dissertation abstracts, p11.

Sadykov A.M. (2005) Fundamentals of regional development: theory, methodology, practice. –Tashkent: – 223 p.

Saushkin Yu. G. N. N. Baransky (1987) // Economic and social geography in the USSR. History and modern development. 2nd ed. M.,

Tikunov V.S., Kapralov E.G., Zavarzin A.V. et al. (2005) Collection of tasks and exercises in geoinformatics: Study guide / Edited by V. S. Tikunov. –M.: Academy, — 560 p.