

REPUBLIC OF AZERBAIJAN

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ABSTRACT

of the dissertation for the degree of Doctor of Philosophy

**PREPARATION OF A COMPREHENSIVE INDUSTRY
DEVELOPMENT MODEL IN DISTRICT INDUSTRIAL
CITIES IN THE REPUBLIC OF AZERBAIJAN**

Specialty: 5401.01 – Economic geography

Field of Science: Geography

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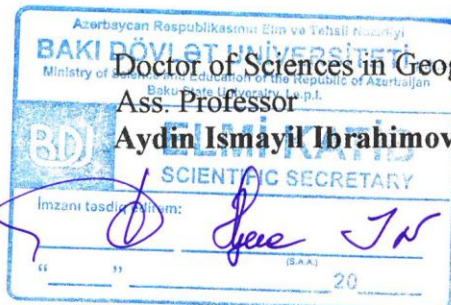
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GENERAL CHARACTERISTICS OF THE WORK

Relevance and degree of development of the topic. Cities play an important role in the development of territories and economic sectors, as well as in the location of the economy. This factor also determines the settlement of the population. Together with rural settlements, they create conditions for the settlement of the population and the satisfaction of their socio-cultural needs. At the same time, cities are of great importance in the settlement of the population in the regions, for the administrative management of territories, determining development prospects, processing agricultural products, and for the socio-economic development of administrative regions. These functions are mainly performed by small and medium-sized cities, which are in large numbers.

Districts are administrative territorial units of the Republic of Azerbaijan, which are formed from historically established territories with stable and sustainable economic, cultural and social relations, and unite several administrative territorial districts, in order to centralize the management of the general territory of the Republic of Azerbaijan, streamline the implementation of state functions, as well as bring state authorities as close as possible to the population. Taking these into account, the dissertation devotes a large amount of space to the study of the cities forming the districts and their socio-economic and demographic development characteristics.

There are great potential opportunities for the development of small and medium-sized cities in the country. In the process of economic reforms being implemented, it is important to ensure the development of regions, take measures to increase their role in the socio-economic and demographic development of the country, and ensure the participation of small and medium-sized cities in fulfilling tasks in this direction. Economic and geographical research plays a significant role in developing their scientific and theoretical foundations.

Since there are small and medium-sized cities in all regions of Azerbaijan, ensuring the development of this group of settlements is one of the strategic tasks of the country as a whole. Restructuring their

economic structure, improving socio-cultural services provided to the population, and studying the paths of demographic development are of great scientific, theoretical and practical importance.

The study of urban settlement and industrial complex in Azerbaijan has been constantly investigated by researchers. Among them, A.A.Nadirov (2000), V.A.Efendiyev (2002), Sh.G.Demirgayayev (1995), E.G.Mehrallyev (1988), Z.N. Eminov (2005), T.G.Hasanov (2012), S.K.Huseynov (1984), Ch. N. Ismayilov (2024) S.G. Naghiyev (2016), N.A.Pashayev (2010), E.S. Badalov (2016) and others have written research works.

The object of the study. The research object of the dissertation is the district-forming cities of Azerbaijan, their modern industrial potential and complex development. When referring to district-forming cities in the dissertation, the word "district" is used as any part of a territory that forms a complete unity in terms of geography, economy, etc. This may include an industrial district, an administrative district.

The subject of the research includes the socio-economic and demographic development of the cities that form the region, the study of the natural-geographical and natural-economic factors that create conditions for this, ways to use them, increasing the role of cities in the development of regions, and ensuring the complex development of industry in cities.

Goals and objectives of the study. The purpose of the study is to investigate the socio-economic and spatial potential of district-forming cities, increase their role in the development of regions, determine development directions, and build a conceptual model of complex industrial development.

To achieve these goals, the following **tasks** have been set:

- Determining ways to evaluate and use natural-geographical and socio-economic factors that play a significant role in the development of cities in new conditions;

- Identifying ways to overcome the difficulties that arose in the development of cities during the years of independence, showing the importance of State Programs in this area, and developing additional measures;

- Identifying ways to increase the role of cities in the development of regions, and developing measures necessary for this purpose;

- Determining the measures required to ensure sustainable demographic development of cities, and developing directions that create conditions for demographic development of cities in the regions;

- Studying ways to improve socio-cultural services provided to the population, increase employment levels, increase incomes and living standards of the population, and determining the role of cities in solving this task;

- Determining the priority directions of industry in cities and preparing a comprehensive model of industrial development suitable for Azerbaijan using world experience.

Research methods. Several methods were used during the completion of the dissertation. These include statistical, comparative analysis, generalization, cartographic method, historical-geographical approach, analysis and synthesis, abstraction (preserving the main and important features), systematic approach, etc.

Protected provisions. The following provisions have been adopted as the main directions for the defense of the dissertation:

- Natural-geographical and socio-economic conditions determining the development of cities, re-evaluation of the role of these factors in the years of independence and ways of using them;

- The importance of cities in the development of regions, the formation of their efficient economic structure, ensuring sustainable demographic development, and the measures necessary for this;

- The main functions of the district-forming cities, their location, classification, industrial potential and the need for their strengthening;

- Conceptual models of complex development of district-forming cities and industries in cities based on priority industrial sectors determined within the framework of State Programs in the modern era.

The scientific innovations of the dissertation are as follows:

- The changes that occurred in the economic structure of cities during the years of independence were identified, and their impact on economic and socio-demographic development was substantiated;

- The importance of strengthening the economic base of cities located in the regions for the demographic development and improving the socio-cultural services provided to the population has been substantiated, and proposals and recommendations have been developed for this purpose;

- The priority directions of industrial development in the region-forming cities were investigated and a conceptual model of complex industrial development was provided;

- An analysis of urban development models was conducted, and the possibilities of their application in Azerbaijan were studied.

Theoretical and practical significance of the study. The results of the research conducted in the dissertation play an important role in the implementation of the tasks of efficient territorial organization of industry in cities, provision of jobs for the population, and development of regions. The information contained here can be important in the reconstruction of the economy in the regions. At the same time, the collected data and the conducted analyses play the role of an important source used in the teaching process in higher and secondary educational institutions.

Approval of research work. The results of the analyses conducted during the preparation of the dissertation were reflected in speeches made at congresses, conferences and seminars held in Azerbaijan and abroad. The following are the international and republican conferences attended by the author:

Conference on “Geography: Theory, Practice and Innovation” (Baku, 2015), Republican Scientific and Practical Conference on “Geographical Problems of the Regions of Azerbaijan” (Baku, 2016), Scientific Conference on “Demographic Development in the Republic of Azerbaijan: Prospects of Population Settlement and Regional Problems” (Baku, 2016), “Service and Tourism – Innovative Development”. International Scientific and Practical Conference

(Saint Petersburg, 2016), “Geography and Geoecology in the Service of Science and Innovative Education”.

International Scientific and Practical Conference (Krasnoyarsk, 2016), Scientific Conference on “Human and Environmental Relations” (Baku, 2017), International Scientific and Practical Conference on “Development of the Social Protection System in Azerbaijan: Yesterday, Today, Tomorrow” (Baku, 2019), International Scientific and Practical Conference “Modern Problems of Geography: Integration of Science and Education” (Baku, 2022), III International Scientific and Practical Conference dedicated to the 29th session of the Conference of the Parties to the UN Framework Convention on Climate Change (COP29) (Baku, 2024).

14 scientific articles and conference materials have been published on the content of the dissertation.

The organization where the dissertation work was performed. The dissertation was completed at the Department of "Geography of Azerbaijan and Geographical Research Technologies" of the Faculty of "History and Geography" of the Azerbaijan State Pedagogical University.

The scope and structure of the dissertation. The dissertation consists of 159 pages and consists of an introduction, 4 chapters, conclusions and suggestions, a list of literature and an appendix. In order to increase the clarity of the analyses conducted, 20 pictures (3 maps) and 12 tables are provided in the dissertation. Introduction - 5 pages, Chapter I - 30 pages, Chapter II - 33 pages, Chapter III - 29 pages, Chapter IV - 34 pages, conclusion - 3 pages, appendices - 10 pages, a list of 166 used literature. The work contains 215684 references, excluding tables, pictures, diagrams, and literature.

MAIN CONTENT OF THE RESEARCH

The introduction reflects the relevance of the topic, the degree of development, the object and subject of the research, the goals and objectives, the main provisions put forward for defense, methods, the theoretical and practical significance of the research, its approval, application, etc.

The first chapter of the dissertation is entitled “**The Importance and Theoretical-Methodological Foundations of the Study of Cities.**” This chapter explains the importance and main directions of the study of cities, the theoretical-methodological foundations of the study of cities, the principles of complex development of industry, and economic-geographical problems.

Here, first, the importance and main directions of studying cities were analyzed. Cities are densely populated settlements with industrial, service and administrative functions, mainly distinguished by good infrastructure and high level of socio-economic development. The role of cities in the settlement system depends on the number of their population, economic structure, administrative and legal functions they perform, the surrounding settlements and the number of people gathered in them, and a developed transport and communication network.

Urban settlements are subject to the law of hierarchy due to their sphere of influence on the settlement system formed in the areas where they are located. The capital city (Baku) refers to a settlement with management, regulation, socio-cultural service and regulatory functions throughout the country.

Regional centers do not have administratively and legally defined functions, the boundaries of the territories in which they are spread are not defined, in most cases they are limited to several administrative districts or economic regions. Therefore, regional center cities have only regulatory and attraction functions in economic, socio-cultural, domestic and demographic terms. This group of cities includes Ganja, Nakhchivan, Sheki, Mingachevir, Shirvan, Lankaran, Yevlakh, Sumgayit, etc. These cities are mainly included in the group of large and metropolitan cities.

Cities with small (up to 20 thousand people) and medium (from 20 thousand to 50 thousand people) population size cover all territories of the republic. This group includes the centers of all administrative regions included in the administrative-territorial division of the republic (except for the cities of Yevlakh, Sheki, Lankaran and Shusha), cities located within several administrative regions but without administrative-administrative functions (Khudat, Govlar, Goytepe, Dalimammadli, Liman, Horadiz and Naftalan) (Figure 1).

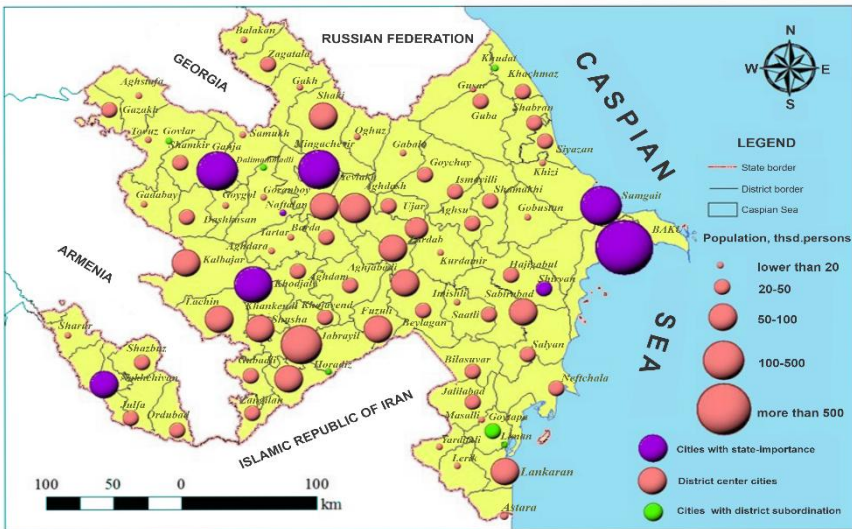


Figure 1. Cities of the Republic of Azerbaijan

Unlike the cities that are the capital and regional centers in the republic, the weak economic base in small and medium-sized cities and the difficulties in providing jobs lead to a slow increase in demographic development. Therefore, the city's influence on the rural settlement system formed in the surrounding areas is also weak. To strengthen the economic base of such cities, it is necessary to create food and light industry facilities. Because cities in Azerbaijan play an important role in the settlement of the population and the territorial organization of economic sectors, their management and regulation.

The study of cities in Azerbaijan and the conduct of economic geographical research in this area began in the second half of the 20th century. In these works, the natural-geographical and socio-economic factors of the formation and development of cities were studied, and their development problems were identified.

The first scientific analyses of cities are found in M. Baharli's book "Azerbaijan". The book devotes special attention to the location of the processing industry, which forms the basis of the economy of cities, and the study of individual sectors. M. Baharli shows that *"in 1916, about 5,000 processing industry enterprises operated in the territory of Azerbaijan, and 59.1 thousand people worked in them. They were mainly located in the Baku, Ganja and Nakhchivan provinces. In Absheron, there are enterprises for oil production, processing of its products, as well as numerous factories serving the activities of the oil industry."*

In the study of cities, the monograph "Population of the Azerbaijan SSR" by A.M. Hajizadeh also occupies an important place. The book extensively analyzes the issues of the population and settlement of the republic, urban and rural settlements, employment of the population, level of education, etc. issues. The monograph also groupings cities. Attention is paid to the study of the economic and geographical characteristics of the city of Baku, demographic and socio-economic relations, as well as other industrial centers of the republic and regional settlement centers.

In the study of industry in Azerbaijan, it is necessary to specially mention the monograph "Industrial complex of Azerbaijan" by A.M. Hajizadeh. The book notes that natural-geographic potential and economic-geographic base are of particular importance in the development of industry, the economic importance of natural components, their role in the development of industrial sectors.

The first independent research work in the field of studying the industrial potential of cities in Azerbaijan was carried out by A.A. Nadirov. In his monograph "Issues of economic development of Azerbaijani cities", he studied the problems of territorial organization

¹ Baharli M. Azerbaijan. Baku, "Azernashr", 1993, 208 p.

of industry in the republic, the ways of their solution, the main stages of its development, and the directions of restructuring its structure.

During the years of independence, more attention was paid to the study of regional problems of cities and the improvement of their socio-economic development.

In the third section of the first chapter, the complex development of industry and economic geographical problems were studied. Here, it was emphasized that industrial sectors arose and developed under the influence of numerous natural-geographical, socio-economic factors, the role of these factors in the formation of industry in individual territories was emphasized, and the diversity in the sectoral structure and territorial location of industry in the regions was also noted.

In general, during the complex development of industry, enterprises are united both by their transport-geographical position and infrastructure network, and by close ties of a production and technological nature. As a result of these relations, primary raw materials and fuel are sequentially processed, industrial waste is processed, finished products are jointly produced on the basis of cooperative relations, enterprises mutually serve each other, and relations and interdependence are created in other directions.

In Azerbaijan, the formation of oil-gas and petrochemical industrial complexes can be noted mainly in Baku city and Absheron-Khizi district. However, not all areas of the complex have been fully created. Work is ongoing to create metallurgical and machine-building industrial complexes in the Ganja-Dashkan economic region. There is a raw material, socio-demographic and economic base for the creation of food and light industry complexes in urban areas of other economic regions of the country.

The second chapter of the dissertation is called **“The role of natural and geographical conditions and social base affecting the development of cities”**. Here, the importance of natural and geographical conditions and natural resources in the formation of cities, the dynamics of the number of urban population, the current state of infrastructure areas and development problems were investigated.

First, the role of the relief factor in the creation and formation of settlements was emphasized. Thus, when we look at the location of cities in the republic by altitude zones, we see that most cities are located in plains and foothills. *“A total of 2143.3 thousand people lived in 73 urban settlements in areas from - 26 meters to ocean level (24.0% of the country's population)”*². Along with this, climate and water resources also play an important role in the formation and location of cities. Climatic conditions are necessarily taken into account in the planning of cities, as well as in the construction of industrial facilities, the operation of buildings, and the implementation of security measures. The climatic factor is also of particular importance for the development of the tourism industry in cities.

In Azerbaijan, the Caspian Sea, the Kura and Araz rivers, as well as many small rivers, act as an important natural and geographical factor in the location of cities and settlements. These water bodies play an important role in the location of cities and settlements, in the formation of the economic structure, and the employment structure of the population.

It should also be noted that the exploitation of minerals in the republic and the activities of processing enterprises based on them are among the main city-forming factors. The most important economic natural resources of the country include oil, natural gas, iron ore, alunite, polymetallic ores, gold, construction materials, mineral waters, etc.

Thus, the use and processing of natural resources is one of the leading factors in the formation and development of urban settlements in Azerbaijan.

Their diversity and unequal use lead to sharp differences in the level of development of cities.

The second section of the chapter examines the change in the number of urban population in the republic over the years and the role of this factor in the development of industry. Population plays an important role in the formation of the socio-economic structure of cities. Thus, the large number of working-age population in cities

² Geography of the Republic of Azerbaijan: Economic, social and political geography [in 3 volumes] / - Baku, "Europe", vol. 2, 2015, 328 p.

plays an important role in the development of industrial enterprises. At the same time, industrial enterprises in cities are created in densely populated areas. In short, the interaction between urbanization and the development of the working-age population and industry in the republic is an important factor accelerating socio-economic development.

Starting from the second half of the 20th century, the development of cities and the formation of the economic structure led to an increase in the share of the urban population in a short time. The years 1959-1970 can be considered the most intensive period of the development of cities and the increase in their number. During that period, 17 new cities were created in the republic and the urbanization level was 55.2%.

The processes taking place in the public and political life of the republic in the first years of independence also had a negative impact on the demographic development of cities. The economic reforms carried out in the 2000s led to an improvement in demographic development and an increase in the number of urban population.

Currently, there are 79 cities in the country. The population of 4 cities in the country exceeds 100 thousand people. These include the cities of Ganja, Sumgayit, Mingachevir and Khirdalan. The increase in the population and the strengthening of industrial potential in cities that are considered regional centers in the republic will prevent the overloading of Baku. In 2024, the urbanization level in the republic was 54.5%.

The last section of this chapter analyzes the current state and development problems of infrastructure in cities. This mainly includes education, healthcare, housing, transport, post, etc. It is known that 1133 preschools, 1267 secondary schools, 92 vocational schools, 51 higher education institutions operate in urban areas. Educational institutions play an important role in the social development of cities and the formation of the economic structure (especially ATM). The majority of ATMs fall on the share of Baku city.

Healthcare is an area that ensures the protection of the health of the population and the extension of the average life expectancy. 338 hospitals operate in cities. There are sharp differences in the current

state of healthcare and the number of personnel providing medical services to the population in individual large cities and regional centers of the republic. This is also reflected in the level and quality of the services provided. The vast majority of hospitals operating in the country and the medical personnel working in them fall on the share of Baku city.

Transport plays an important role in the development of cities. This sector plays a special role in cargo and passenger transportation, tourism, and establishing economic relations. In addition, the provision of services such as housing, postal services, tourism, etc. in cities plays an important role in improving the living conditions of the population and ensuring sustainable social development.

The third chapter of the dissertation is dedicated to **“Modern structure of industry in cities and complex development problems.”** This chapter analyzes the role of the fuel and energy and machine-building industries in the development of cities in the republic, the impact of construction materials production sectors and ASK (agro-industrial complex) sectors on the development of regional cities.

In the first section of this chapter, the fuel, energy and machine-building industries were analyzed separately and their impact on the socio-economic development of the cities in which they are located was examined. The oil and gas industry is one of the leading sectors of the economy in the republic. The creation of industrial, scientific and educational, processing enterprises, technical services and other material and technical base facilities for the development of the oil and gas industry led to the rapid industrialization and socio-economic development of large cities such as Baku, Sumgayit, Khirdalan. 83.0% of industrial production in Baku falls on oil and gas production. Absheron, including the Caspian Sea, is considered the main center of oil production (30.2 million tons). Oil and gas are also produced in the Shirvan, Salyan, Neftchala, Siyazan and Imishli regions, which plays a significant role in the formation of the economic structure in these regional centers, the development of industry and the establishment of a network of socio-cultural facilities.

The Shirvan industrial center was created on the basis of the exploitation of oil and gas fields, and in connection with the increase in production, a powerful infrastructure network was established here for its storage, transportation and exploitation of fields.

73.3% of the republic's gross industrial product falls on the oil and gas industry, which indicates the weak development of the non-oil sector.

The electric power industry also occupies an important place in the economic structure of cities. The most important energy centers of the republic include Mingachevir, Baku, Shirvan, Sumgayit, Shamkir, Nakhchivan, etc. The electric power industry plays a leading role in production centers. Therefore, in order to meet the needs of the economy and the population for electric energy, and to increase the role of the electric power industry in the development of cities and individual regions, modular thermal power plants and non-traditional energy sources are also used. Thus, industrial enterprises formed around the energy sector accelerate the urbanization process and increase migration to cities. At the same time, the high share of the production and distribution of electric power, gas, steam in cities with weak socio-economic potential is an indicator of the weak development of other industrial sectors. The mechanical engineering industry plays a fundamental role in the complex development of industry in cities. Thus, by implementing technical support for various industrial sectors, it plays the role of the main base for the mechanization and automation of production processes. Also, the development of the machine-building industry in cities accelerates the urbanization process due to the demand for qualified personnel. Machine-building has occupied a significant place in the general structure of industry in the republic for many years and has been distinguished by its multidisciplinary composition. In 1988, 29.1% of industrial workers and 17.5% of industrial products fell to machine-building. However, currently, due to the difficulties of the transition period, most of the machine-building enterprises have been closed, cooperation relations have been disrupted, and products cannot be produced due to problems in purchasing parts and spare parts. The main areas of machine-building operating and producing products in

the country include passenger and truck assembly enterprises, oil machinery, household equipment production, electronic and electrical products, and agricultural machinery production. Oil machinery is mainly located in Absheron, transport machinery in Ganja, Shirvan, Shamakhi, Nakhchivan, Neftchala regions.

In Azerbaijan, joint machine-building enterprises operate mainly for the production of electronic and electrical products that meet the population's demand for household appliances. These include enterprises located in the cities of Baku, Mingachevir, Shamakhi, etc. They are small in size, do not occupy a significant place in the employment of the population, and play a weak role in the development of cities due to their lack of continuous operation.

In the third section of the third chapter, the modern state of the metallurgical, chemical, and mineral construction raw materials industries, which are areas of construction materials production, and the cities in which they are located, were studied. Their importance in the economic development of the republic, in the establishment of infrastructure areas, and in the construction of industrial enterprises and settlements was noted. The metallurgical industry operates on the basis of local raw materials, being located in large cities of the republic (Baku, Sumgayit, Ganja, Dashkasan, etc.).

The chemical industry is among the important city-forming factors. The demand for the products of this industry is constantly increasing. New sources are constantly being identified for it as raw materials, and at the same time, waste from other economic sectors is used. The chemical industry is mainly located in the city of Sumgayit. Chemical industry enterprises also operate in cities such as Baku, Neftchala, Salyan, etc.

Mineral construction raw materials extraction and construction materials production enterprises do not play a significant role in the economic structure of cities. They operate mainly to meet local and regional demand. Among the mineral construction raw materials available in the country, limestone, construction sand and sand-gravel, marble reserves stand out for their importance and have large industrial reserves. The construction materials industry operates in

cities such as Absheron region, Baku, Nakhchivan, Gabala, Sumgayit, Shirvan, Mingachevir, etc.

Considering the fact that Azerbaijan has historically been an agrarian country and agriculture is one of the important sectors of the economy, the development of ASK in regional cities is considered important. Thus, the creation and development of ASK in administrative district centers creates conditions for the processing of agricultural products and providing the population with jobs.

Light industry enterprises based on local raw materials operate mainly in cities included in the Central Aran economic region. Here, the primary processing of cotton is mainly carried out, and yarn is produced in the yarn spinning factories located in the cities of Baku, Sumgayit, Ganja, Sheki, and Mingachevir. There are also other branches of light industry, such as silk production, carpet weaving, and leather processing enterprises, which are also distinguished by their slow development rate. Although these sectors were developed in different regions of the republic over time, their share in the industry is currently small, and their impact on the development of the regions is weak.

The food industry has an extensive network of facilities. The multi-sectoral structure of agriculture and the wide demand of the population allow for the creation of production enterprises in this field in all parts of the country. Currently, enterprises in the food industry in Azerbaijan operate in the following areas: canned fruit and vegetable juices, soft drinks, mineral waters, livestock products, vegetable oil production, tea, grape processing products, and fish processing. They are present in all regions of the republic, and there are considerable difficulties in identifying specific specialization centers. Enterprises differ sharply in terms of production capacity, and the supply of labor resources with jobs varies.

The fourth chapter of the dissertation is entitled **“Improvement of the industrial structure of cities and priority directions of complex development.”** This chapter examines the main problems of urban development, complex development models and priority directions of industry in cities, and development models of urbanization areas and cities.

The first section of this chapter discusses the main problems of urban development. The difficulties in the sustainable socio-economic and demographic development of small and medium-sized cities in the republic are highlighted. Thus, the population of cities is growing at a slow pace, obstacles are encountered in improving their economic structure, and even a decline is observed in the development dynamics of some cities. At the same time, the volume of industrial products produced, the value of services provided and the number of population increase at a slow pace for a long time, sometimes tending to decrease. This, in turn, results in the migration of the population to large and large cities (especially Baku).

First, the degree of influence of natural and geographical factors (relief, climate, fresh water supply, etc.) on the development process of cities is examined here and the problems in this area are identified.

At the same time, the closure of many industrial enterprises in cities (metallurgy, mechanical engineering, building materials, ASK, etc.) and the limitation of manufactured products are noted due to the difficulties of the transition period. In the course of economic reforms carried out in subsequent periods, State Programs covering various sectors of the economy were adopted. Several of them directly served the development of cities in the regions and the restructuring of their economic structure. In particular, although the implementation of the State Program for the Development of Industry in 2008-2015 included measures aimed at serving the socio-economic and demographic development of cities, it did not have a significant impact on the development of industry in cities and settlements located in the regions.

One of the factors hindering the development of cities in Azerbaijan is the uneven distribution of the economy across regions, with its main part concentrated in Baku and the Absheron-Khizi economic region. The leading position of the oil and gas industry in the country's economic structure and the weak development of the non-oil sector further accelerate this process.

Thus, the problems arising in the socio-economic and demographic development of cities in Azerbaijan manifest themselves at different levels, depending on the natural and geographical

conditions of the area in which they are located, the ICM, the historical and geographical development characteristics, and their proximity to natural resources.

In the second section of the fourth chapter, complex development models corresponding to the priority areas of industry in cities were studied and their benefits in the socio-economic development of cities were given. First of all, the Complex Industrial Development Models (CIDM) applied in the developing countries were examined. Among them, “Import Substituting Industrialization”, “Export-Based Industrialization”, “Resource-Based Industrialization” and “Green Industrialization”, etc. models were analyzed separately and adapted to the Azerbaijani context. The priority industrial areas, purpose, negative and positive sides, components, sustainability, selection of cluster regions, etc. of each model suitable for the republic were shown separately.

One of the industrial models that has become widespread in recent years is “**Green Industrialization**”. This model promotes the most urgent problems of recent years, namely environmental protection, sustainable and sustainable development against climate change. This model is already being applied in many areas in the republic. One of the main directions in "Azerbaijan 2030: National Priorities for Socio-Economic Development" is called "clean environment and "green growth".

It envisages the application of environmentally friendly technologies, waste recycling, restoration of contaminated areas, etc. measures.

Considering that the construction industry is a polluting sector, we have provided a “Green Industrialization” model (Figure 2). This model can be applied mainly in cities such as Baku, Sumgayit, Ganja, Nakhchivan, Sheki, Mingachevir, Agdam, Shusha, etc.

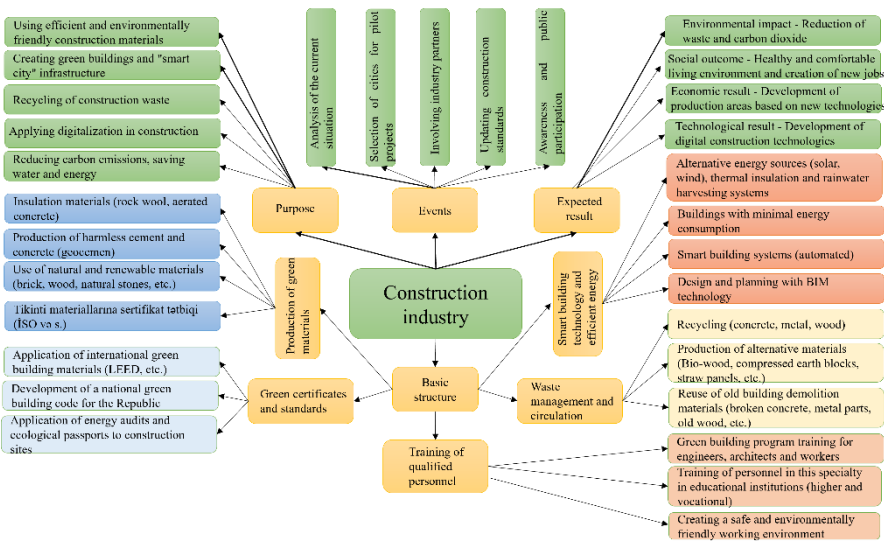


Figure 2. Conceptual model of “Green Industrialization or Sustainable Industrial Development” for the construction industry in Azerbaijan

Considering the current state attention to the development of the non-oil sector in Azerbaijan, especially the agricultural sector, the importance of agrarian industrial models (ASM) has been particularly emphasized. Thus, the application of ASM will not only give impetus to the development of the agrarian industry in regional industrial cities, but will also increase the socio-economic development of the country.

The complex agricultural models used in world practice include “Agro-Processing Industry Clusters”, “Complex Agro-Industrial Parks”, “Agro-Industrial Corridors”, etc.

Currently, the “Complex Agro-Industrial Parks” (KASP) model exists in the republic and is considered a successful model for this region. Therefore, we have developed a specific model of KASP in Gadabay, one of the mountainous and border regions (Figure 3).

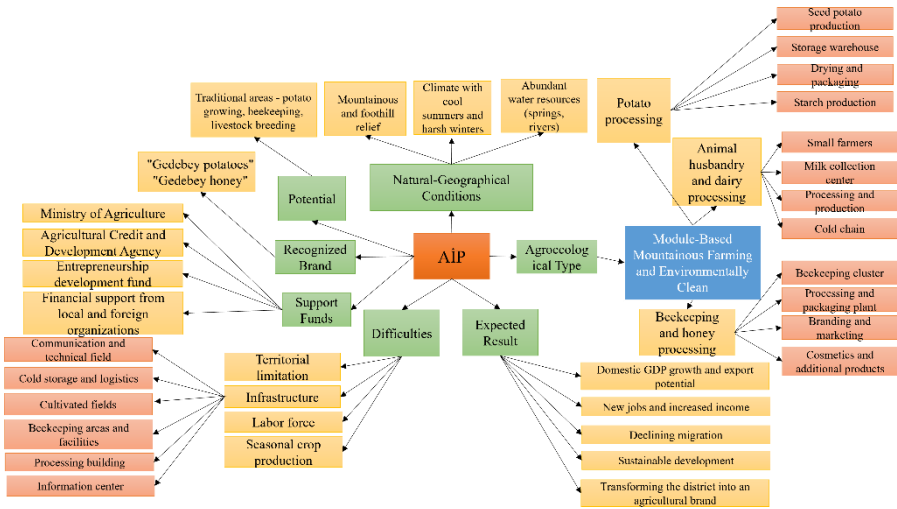


Figure 3. Conceptual model of Gadabay “Agrosenaye Park”

It should also be noted that, taking into account the natural-geographical conditions and traditional agricultural areas, we have not given the classical model of KASP here, but rather a model specific to the region. One of the agro-industrial models suitable for Azerbaijan is the “Agro-Processing Industrial Clusters” (APCIC). Although the creation of this model was envisaged for priority industrial sectors in the “State Program on the Development of Industry in the Republic of Azerbaijan for 2015-2020”, no measures have been taken in this area. Considering that currently the basis of agricultural products exported from the republic consists of raw materials and semi-finished products, the application of this model should be considered important for priority sectors. One of these sectors is cotton production and processing. Below is the APCIC model for the full development of the cotton industry in the Mil-Mugan economic region (Figure 4).

This model can also be applied to the development of the priority light industries of the republic, such as carpet weaving (Ganja), silk weaving (Sheki, Ordubad), wool processing (Yevlax), and leather processing industries

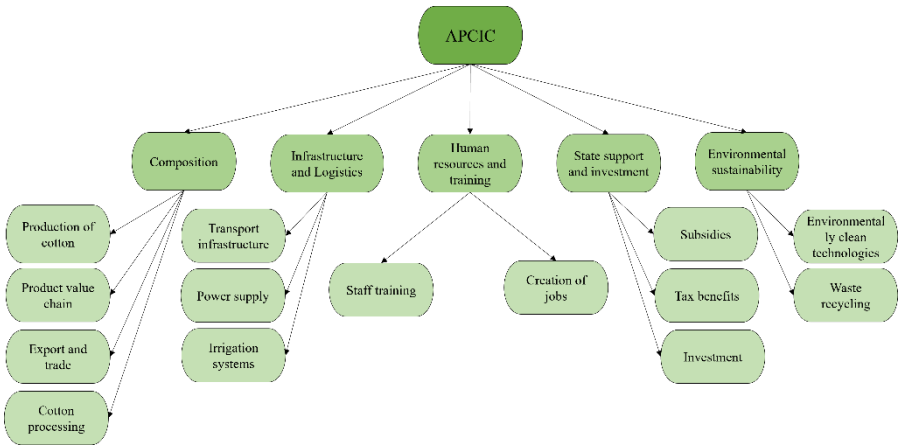


Figure 4. Conceptual model of the cotton industry cluster in the Mil-Mugan economic region

This model can also be applied to the development of the priority light industries of the republic, such as carpet weaving (Ganja), silk weaving (Sheki, Ordubad), wool processing (Yevlax), and leather processing industries.

The last section of the fourth chapter provides a model of urbanization areas and the development of the city. First, the models developed by world scientists for the development of cities (Thunen's "state model in a limited area", Burgess's "concentric model", Khoyt's "sector model", Ullman-Harris's "multi-core model", Forrester's "dynamic development model", etc.) were analyzed and those that are suitable for the cities of Azerbaijan were shown. Thus, it was noted that I.Thunen's "state model in a limited area" factor was taken into account in the creation of economic areas to provide the population with perishable products around the large cities of the republic (Baku, Ganja, Mingachevir, etc.).

Today, development plans are being prepared for most urban areas of Azerbaijan. At the same time, the consideration of E. Burgess's "concentric model" is manifested in the purchase of land and payment of taxes in separate areas of cities, different prices for the sale

and rental of apartments. Also, the division of zones affects the characteristics of the settlement of the population migrating to the city.

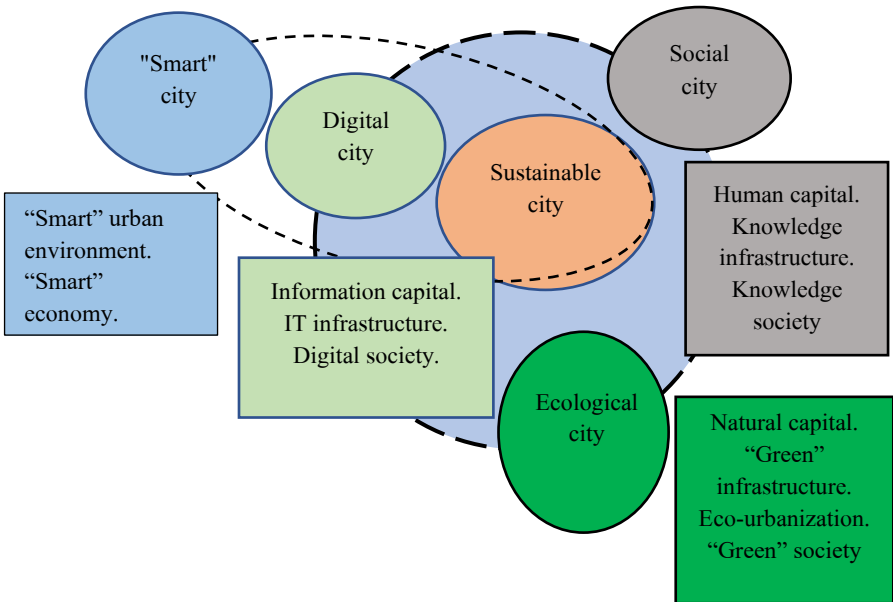


Figure 5. Components of sustainable city development

Using J. Forrester's “dynamic city development model”, a model can be built showing the functions performed by the cities of Shirvan and Salyan, the factors affecting them and their results.

In modern times, the three development models that are important to consider in the development of cities are “sustainably developing cities”, “green” cities and “smart cities” (Figure 5). They are interconnected and in most cases complement each other. However, each direction also has its own characteristics. Taking these into account, each feature and direction of the models was analyzed separately and it was emphasized that they are currently being taken into account in the process of construction and restoration of settlements in the Karabakh and East Zangezur economic regions.

Thus, the development of cities based on perspective plans and models is based on improving the quality of life of the population, the

level of socio-cultural services provided to them, providing them with clean water, protecting the ecological environment and processing waste. The implementation of these principles is considered essential for ensuring their sustainable development.

CONCLUSIONS AND SUGGESTIONS

1. In Azerbaijan, cities play a significant role in the settlement of the population and the territorial organization of economic areas, their management and regulation. The country's administrative district centers are included in the group of small and medium-sized cities. However, the socio-economic base of these settlements is weak, and ensuring their sustainable development is difficult. 54.5% of the total population is concentrated in cities, but due to the weak socio-economic base, the level of urbanization has not increased for many years.

2. The complex development of industry is considered one of the important factors in the transition to sustainable development of the country and its individual regions. A significant part of the industrial complexes formed over many years, mainly light and food industry facilities, have been dismantled. Currently, in Absheron, a certain stage of the industrial complex for oil production and processing, fruit and vegetable processing complexes based on the processing of agricultural products are operating, their number is quite small.

3. Currently, natural growth is not enough to ensure demographic development in cities, the number of children born and natural growth continues to decrease. The main part of the population growth falls on the share of Baku city. Therefore, the differences between the demographic potential of the capital and cities located in the regions are increasing. 42.3% of the country's urban population is concentrated in Baku city. This creates problems for the development of the regions.

4. In the economic structure of cities in the regions, light and food industry sectors that process agricultural products do not occupy a significant place, their number is small, a small part of the cultivated products is processed, meets domestic consumption requirements, and does not occupy a significant place in the employment of the population. Therefore, the demographic development of cities is also proceeding at a slow pace, migrations are increasing.

5. Infrastructure sectors play an important role in the livelihoods of the population and meeting their needs. These sectors are an integral part of socio-economic development, depend on the allocated funds

and incomes of the population. Social service sectors in cities are more developed than in villages, the vast majority of them are concentrated in Baku city. Such a situation leads to migration of the population from the regions, and they are concentrated in the capital and its surroundings. In terms of relative indicators of social services per capita, regions, including cities, lag far behind. Therefore, it is important to establish a network of new facilities to improve services in this area.

6. The fuel and energy complex plays a role in the development of cities and the operation of industrial facilities in Azerbaijan. The oil and gas industry plays a leading role in the development of the cities of Baku and Sumgayit, in the formation of the economic structure, in other oil and gas producing regions these sectors are not of significant importance.

The electric power industry plays a leading role in production centers. At the same time, in cities with weak socio-economic, including industrial potential, the share of the sectors of electricity, gas, steam production and distribution is high, sometimes having a specific weight of 50-60% and higher.

7. The low production potential of enterprises related to the machine-building industry, their inability to operate continuously, leads to a weak impact on the development of cities. In individual cities, the share of machine-building in the production of industrial products is very low. The share of this sector in Baku is 1.8%, in Sumgayit 4.2%, in Mingachevir 2.4%, in Nakhchivan AR 0.3%. Only in Shirvan and Ganja did machine-building provide a significant part of the production of industrial products. In Shirvan, this indicator is 6.2%, and in Ganja it is relatively high and rises to 28.9%.

8. The complex development of industry in cities is of great importance in terms of strengthening the economy and sustainable development of regions. The application of specialized industrial models in accordance with the specific natural and geographical conditions and resource potential of each city ensures the preservation of regional balance. The development of the ASK, light, food, metallurgy, machine-building, chemical and petrochemical, construction industry, logistics and transport industries should be

selected as priority areas. The creation of industrial parks, the application of innovative and digital technologies increase economic efficiency. Investments in human capital and the application of scientific research are among the main factors ensuring the long-term development of the industry.

9. For the development of cities, improvement of living conditions of the population, improvement of quality of services provided, ecologically safe living conditions, development paths are currently being determined based on the models of "smart" city, green city and sustainable city. It is important to apply the basic principles of these models throughout Azerbaijan. Certain work is being carried out in this direction in Karabakh and East Zangezur (in the cities of Agdam, Fuzuli, Shusha and Khankendi).

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