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### **POSSIBILITIES OF POST-INDUSTRIAL SUSTAINABLE DEVELOPMENT OF MONO-CITIES FORMED DURING THE ERA OF INDUSTRIALIZATION (ZHANATAS CITY AS AN EXAMPLE)**

#### *Abstract*

This article focuses on the opportunities for the development of single-industry towns, formed during the period of industrialization, which have their own significance in the history of the country. Moreover, we looked at the example of Zhanatas, the centre of Sarysu district, located in Zhambyl region. The study discussed the history of single-industry towns that emerged during the period of industrialization, the socio-economic problems in these towns, the requirements of a post-industrial society and opportunities for sustainable development of single-industry towns. The natural and geographical potential of Zhanatas town was analyzed, and geospatial advantages and disadvantages were identified. The physical-geographical position and geo-environmental potential of the city were analyzed, the current state of infrastructure and socio-economic problems of the city were determined. A set of measures aimed at improving the complex socio-economic, urban planning, environmental problems common to many small towns and single-industry towns in Kazakhstan have been developed. A group of factors directly affecting the development of the city has been identified and a multifactor scenario for the sustainable development of Zhanatas has been proposed. These conclusions in the direction of modernization of the social sphere, diversification of the economy, environmental management and management of natural hazards underlie the opportunities for sustainable development of the city.

**Key words:** industrialization, single-industry towns, Social modernization, economic diversification, sustainable development.

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### **ИНДУСТРИЯЛАНДЫРУ ДӘУІРІНДЕ ҚАЛЫПТАСҚАН МОНОҚАЛАЛАРДЫҢ ПОСТИНДУСТРИЯЛЫҚ ТҰРАҚТЫ ДАМУ МҮМКІНДІКТЕРІ (ЖАНАТАС ҚАЛАСЫ МЫСАЛЫНДА)**

*Аңдатпа*

Бұл мақала еліміздің тарихындағы өзіндік мәні бар индустрияландыру кезеңінде қалыптасқан моноқалалардың даму мүмкіндіктеріне арналды. Мұны біз Жамбыл облысында орналасқан, Сарысу ауданының орталығы Жаңатас қаласы мысалында қарастырдық. Зерттеу барысында индустрияландыру кезеңінде қалыптасқан моноқалалардың тарихы, ол қалалардағы әлеуметтік-экономикалық мәселелер, постиндустриялық қоғамның талаптары мен моноқалалардың тұрақты даму мүмкіндіктері талқыланды. Жаңатас қаласының мысалында табиғи-географиялық әлеуетіне талдау жасалып, геокеңістіктік артықшылықтары мен кемшіліктері анықталды. Физикалық-географиялық жағдайы мен геозкологиялық әлеуеті талданып, қаланың қазіргі инфрақұрылым жағдайы және әлеуметтік-экономикалық проблемалары белгілі болды. Қазақстанның көптеген шағын қалалары мен моноқалаларына ортақ күрделі әлеуметтік-экономикалық, қалалық жоспарлау, экологиялық бағыттағы проблемаларды жақсартуға бағытталған іс-шаралар кешені әзірленді. Қала дамуына тікелей әсер ететін факторлар тобы анықталып, Жаңатас қаласының тұрақты дамуының көп факторлы даму сценарийі ұсынылды. Әлеуметтік саланы модернизациялау, экономиканы әртараптандыру (диверсификациялау), қоршаған ортаны тиімді пайдалану және табиғи қауіп-қатерлерді басқару бағытындағы бұл тұжырымдар, қаланың тұрақты даму мүмкіндіктеріне негіз болады.

**Кілт сөздер:** индустрияландыру, моноқалалар, әлеуметтік модернизация, экономиканы әртараптандыру, тұрақты даму.

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## **ВОЗМОЖНОСТИ ПОСТИНДУСТРИАЛЬНОГО УСТОЙЧИВОГО РАЗВИТИЯ МОНОГОРОДОВ, ФОРМИРОВАННЫХ В ЭПОХУ ИНДУСТРИАЛИЗАЦИИ (НА ПРИМЕРЕ ГОРОДА ДЖАНАТАС)**

### *Аннотация*

Данная статья была посвящена возможностям развития моногородов, сформировавшихся в период индустриализации, имеющих свое значение в истории страны. Это мы рассмотрели на примере города Жанатас, центра Сарысуского района, расположенного в Жамбылской области. В ходе исследования обсуждалась история моногородов, сложившихся в период индустриализации, социально-экономические проблемы в этих городах, требования постиндустриального общества и возможности устойчивого развития моногородов. Проведен анализ природно-географического потенциала города Жанатас, выявлены геопропространственные преимущества и недостатки. Проанализировано физико-географическое положение и геозкологический потенциал города, стало известно современное состояние инфраструктуры и социально-экономические проблемы города. Разработан комплекс мероприятий, направленных на улучшение сложных социально-экономических, градостроительных, экологических проблем, общих для многих малых городов и моногородов Казахстана. Выявлена группа факторов, непосредственно влияющих на развитие города, предложен многофакторный сценарий устойчивого развития города Жанатас. Эти выводы в направлении модернизации социальной сферы, диверсификации (диверсификации) экономики, рационального использования окружающей среды и управления природными угрозами лежат в основе возможностей устойчивого развития города.

**Ключевые слова:** индустриализация, моногорода, Социальная модернизация, диверсификация экономики, устойчивое развитие.

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**Introduction.** Currently, the problem of sustainable development of cities with a homogeneous (mono-profile) economy is one of the problems of a global scale. There are no cities in the world that are protected from changes in the foreign and domestic markets. If the changes are unfavorable, some cities will face particularly serious social and economic problems. Such changes are especially severe for cities with a homogeneous economy than for cities with a diversified economy. Because it is known from history that cities with a homogeneous economy are distinguished by the "accumulation" of problems rather than their sustainable development achievements. Examples include the Gold Belt in the US, "new" or "resource" cities in Canada, "company cities" in Western European countries, and monocities in the CIS region [1].

In general, in the world experience, the unresolved problems of small cities are more important than the successful development achievements. The homogeneity of the economy of small cities, dependence on the activities of one or more city-forming enterprises, is the basis for calling these cities as "mono-city". The difference of monocities compared to other cities with a multifunctional economy is due to changes in the external environment, changes in government goals, the state of economic sectors, fluctuations in the foreign market, demand for goods, monitoring of payment terms, etc. [2].

The main issue of monocities, which is considered as one of the global problems, begins with the transition to the market economy in the Republic of Kazakhstan, which began in the mid-1990s. The financial and economic crisis that began in 2008 increased the urgency of this issue on the agenda. In order to solve this problem, the "Program for the Development of Monocities" for 2012-2020 was adopted. The program covered 27 cities of the country [3], including Zhanatas.

The city of Zhanatas is a city with a homogeneous economy located in the western part of Zhambyl region. The changes in the external and internal markets of Zhanatas, which specializes in the production and processing of phosphorus raw materials at the end of the 20th century, became the basis for this city to become a depressed region. Furthermore, some media even called Zhanatas as "abandoned" or "ghost" city. Due to socio-economic difficulties, the population of the city has decreased by 3 times in the last 30 years (currently the number of inhabitants exceeds 22 thousand) [4]. This indicator really emphasizes the "abandoned" appearance of the city.

From the experience of Western countries, it is known that modernization of homogeneous cities does not consist only of structuring the economy. Here, natural resource potential, spatial advantages, and environmental quality are taken into account as the basis for sustainable development [5]. Therefore, it is impossible not to take into account the natural and territorial complexes in the planning of the sustainable development of Zhanatas city and its suburbs. Because the main goal of territorial planning is to create a suitable and comfortable environment for the population. It is based on natural and geographical conditions. At the same time, the importance of studying the harmonious development of the environment and society is very high and is an issue on the agenda of our research work. Therefore, the purpose of this study was to study the possibilities of post-industrial sustainable development of monocities formed in the era of industrialization (in the example of Zhanatas city).

#### **Materials and methods.**

A monocity is a city with one or few (not a lot) city-building enterprises, with a single image and a raw material orientation. That is, a city where the main part (more than 20%) of the working population and industrial production is concentrated in enterprises that determine the economic and social situation [6].

Small towns that depend on the activities of city-building enterprises are called "monocities" or "monotowns" in our country and the vast majority of CIS countries, while the concepts of "one industry town" or "single-industry town" are widespread in world practice [7]. In addition, the USA, Canada, Australia, Germany, etc. Are giving names like names "boomtowns", "resource towns", "company towns" to small towns with accumulated problems. That is, although the names are different, the formation of these cities corresponds to the industrial period, and the city's activity (specialization) was closely connected with resource development. The differences of these cities (monocities) compared to other cities with a multifunctional economy are due to changes in the external environment, changes in government goals, the state of economic sectors, fluctuations in foreign market conditions, demand for goods, monitoring of payment terms, etc. For example, a prolonged period of economic decline has led to the transformation of some monospecialized towns into "abandoned" or "ghost" towns. Such small settlements can be found in

all countries of the world. In international practice, these cities are known as "ghost towns". In addition to economic decline, natural and man-made disasters, genocide, and political factors also have an impact on the cities becoming in such a state.

Today, the problems of development of monocities occupy an important place in the researches of foreign and domestic scientists. The nature of the development of monocities is not at all similar to multifunctional cities. The famous American scientist E. Glaeser, in his research, described the laws of urban geography and explained them in a special way. In his monograph, which quickly spread to many countries of the world, the scientist described cities as an environment that makes humanity happy [8]. Regarding monocities, Edward Glaeser discovered the phenomenon of "resource curse". According to the scientist, the one-sided development of only one particular industry hinders the diversification of the whole industry, which can be called the "curse of resources". Such "cursed" cities include Detroit, which was once called the "car capital of the United States" and the coal city of Pittsburgh [9].

In the US, the problem of company towns has existed for 130 years. The problem of monocities became acute in the 70s of the previous century. Areas that experienced a sudden decline in industrial production were named the "Rust Belt" in the United States. During the reconstruction of monocities in this country, measures were taken from economic restructuring to reduction of cities [10].

This phenomenon is known in Canada as "resource cities" or "new cities". These settlements differ from other cities in that they are small and isolated. For example, Fort McMurray, Ave. Alberta (petroleum), Grand Falls-Windsor, Ave. Newfoundland (pulp and paper), Glas Bay, Ave. Nova Scotia (coal), Harbor Black, pr. New Brunswick (fishing), Murdochville, Ave. Quebec (copper), Elliot Lake, Ave. Ontario (uranium), Snow Lake, Ave. Manitoba (copper, zinc) and Kitimat, pr. British Columbia (aluminum) cities can be cited as an example [11].

Resource development has long been recognized as an important factor in shaping the Canadian development model. Resource-dependent cities are important participants in this process and have been instrumental in implementation. Dependence on a single branch of industry often leads to instability in the development of the city's economy. As an example, we can mention the damage suffered by monospecialized cities in Canada during the Great Depression. Canada suffered for 10 years from the Great Depression, which began in the United States in 1929. This economic "chronic disease" that lasted until 1939 caused a 40% decline in GDP [12].

The experience of Germany, which carried out systematic work in solving the problem of monocities, can be highlighted. Particularly, large consulting companies are engaged in creating a comprehensive program of modernization of single cities and conducting applied research. In these works, the processes of development of resource-industrial cities in the Ruhr basin, a famous coal region of Germany, are analyzed and a system of recommendations is made [13]. AS&P (Albert Speer and Partners) can be mentioned among the structures dealing with the problems of rehabilitation of monocities lasting several decades. This organization mentions the following as the main stages of redevelopment of mono-industrial cities:

- study of the real situation (a set of real issues in the mono-industrial city);
- comprehensive analysis and assessment of all factors;
- study of similar world practices of modernization and development of mono-industrial cities;
- creation of city development strategy;
- determination of a set of activities based on the short, medium and long term for the modernization of the mono-industrial city;
- determining the target directions and amount of subsidies and grants;
- creation of a state-private partnership system in the modernization of a mono-industrial city [14].

After the comprehensive program of reform of mono-industrial cities is established, it will be sent to the governing body. Moreover, extensive analyzes and discussions are conducted. AS&P will assume responsibility for the phased implementation of the program after appropriate additions and changes are made.

Similar to the US experience, in Germany, the problem of cities specializing in one industry was known as "company towns". The connection of the city's economy with the income of one company, the low index of socio-economic diversification was a common problem typical of monocities such as Dessau, Magdeburg, Cottbus, Loina. In particular, the crisis of the 1990s led to the closing of thousands of jobs, the migration of young people and labor to large settlements, and the transformation of company towns into depressed regions.

As a comprehensive solution to the problem of monocities in Great Britain a variety of actions are taken, including: provision of new housing (including housing of social importance); formation and

revitalization of transport infrastructure connecting with workplaces in cities and adjacent areas in order to increase the mobility of people to work; gradual long-term modernization of mines and steel plants; creation of new types of economic services in order to encourage employees [15].

Redevelopment of the economy of monocities is closely related to the result of socio-economic decisions of the program ("Thatcherism policy") successfully implemented in Great Britain in the 1980s and 1990s, which included:

- diversification based on new services and alternative sectors of the economy. For example, development of the construction industry and service provision;
- redevelopment of territories that have undergone major changes during the development of the mining industry. For example, within the framework of the above-mentioned program, almost half of the 107 plots of land near monocities were redeveloped, increasing the area of suitable land for farming. Even after the redevelopment, new residential buildings and offices were built on the territory of 44 plots of land;
- implementation of "Coalfields" national program, which created conditions for lease of land, production and entrepreneurship in mono-production cities and suburbs under simplified conditions;
- tax concessions were made in mono-industrial cities; large-scale reconstructions were carried out to improve the computer literacy of the population, helping them to master new specialties.

In general, the form of close relationship between the state and private property partnership in the field of modernization of single cities is typical for Great Britain. This was the basis for the formation of the concept of "corporations in urban development".

The experience of Cardiff Bay, a mono-industrial city in Wales, can be cited as a basis for such practice. The gradual degradation of coal production after the Second World War added to the number of depressed regions. In 1987, the Cardiff Bay Development Corporation was established with the aim of attracting private investment in the development of a mono-industrial city. A favorable investment climate has resulted in the development of the city. Since 1997, Cardiff Bay has been developing as one of the main centers in the field of tourism and services [15, 96].

The problem of company-cities is written in "golden letters" in the past history of France, a major European powerhouse. However, in the rehabilitation of cities based on one industry, the activities of this country were distinguished by their unique culture.

In France, the state itself played a leading role in the restructuring of mono-industrial cities. Saint-Etienne monocity can be named as one of the best examples of French experience. In the mid-1980s, the following effective decisions were made in the modernization of this city in the province of Lyon:

1. The French authorities established two institutions for the restructuring of mono-industrial cities:
  - The land agency purchased land plots of non-operating mines, cleared them of various industrial wastes, and assumed all costs.
  - The development institution responded to the issue of development of new technologies in the region; training and retraining of workers and technical personnel; and urban development in the region.
2. Large business owners were obliged to co-finance new technologies. And large corporations did not have the right to fire workers without reason.
3. Medium business owners were obliged to help develop entrepreneurship based on new technologies [16].

In our opinion, it can be said that the experience of France in the restructuring of monospecialized cities is a rather advanced example. This is because the active participation of large and medium-sized enterprises in the reconstruction of the city, participation in the creation of a market economy has a certain effect on the stability of society. The leading role of the state in the development of mono cities in France, in terms of efficiency based on high achievements, F. Ledenwick emphasizes the need to take into account the following principles:

- a) only the state can organize the transformation of industrial monocities according to complex and expensive processes;
- b) only the state is responsible for the development of each mono-industrial city, including the creation of a comprehensive socio-economic plan;
- c) local administration is obliged to successfully modernize monocities and to support and protect local entrepreneurship;
- d) the state must take responsibility for protection from threats caused by external and internal factors, and for the achievements of the local population.

When it comes to "small" cities in Kazakhstan, researchers usually do not set a certain upper dimension, but they consider the functional dimension (agricultural activity, communal services and infrastructure, etc.) and the social character of the city [17]. After all, the total number of small cities in

Kazakhstan is about 60, the total number of people living in them is 1.5 million. In small cities, it is 7.5% in the manufacturing sector, 7.5% in agricultural production, 5.6% in the mining sector, 0.8% in the military production sector, and 1.9% in the transport system. The economic structure of small cities in the industrial and innovative development of the Republic of Kazakhstan can be divided into the following types:

1) Small industrial cities - Abai, Aksu, Ridder, Zyryanovsk, Zhana Ozen, Kentau, Zhanatas, Karatau, Arkalik, Lenger, Zhetykara, Lisakovsk, Satpaev, Ekibastuz, Shakhtinsk, Karazhal, Khromtau, Aksai, Balkhash, Shar, Akkol, Kulsary .

2) Transport oriented small industrial cities - Shu, Arys, Ayakoz, Ereymentau, Aral, Kazaly, Shalkar, Zhem, Kandyagash, Ertysti, Atbasar, Makinsk.

3) Small agro-industrial cities - Esil, Zhetysai, Kaskeleng, Talgar, Yesik, Sarkant, Shardara, Zaisan, Zharkent, Shemun, Bulaev, Tayinsha, Stepnyak.

4) Cities considered administrative and economic centers - Sergeevka, Ushtobe, Temir, Alga, Mamlyutka, Fort Shevchenko, Aral.

In this regard, the city of Zhanatas, which was the object of the study, belongs to the group of small industrial cities. Therefore, the study of social sustainable development possibilities of Zhanatas city was based on physical, contextual and functional aspects. Also, in the course of the research, methods of analysis, systematization, evaluation and modeling were used, a complex of activities aimed at diversifying the economy of monocities and a multifactorial model of sustainable development of Zhanatas were presented.

**Discussion.** 1) *Physical-geographical situation and geoecological potential of Zhanatas city.* Zhanatas city is the center of Sarysu district of Zhambyl region. The small city is located 170 kilometers from the city of Taraz, on the northern slope of the Karatau mountain range. The foundation of the city was laid in 1964 in connection with the development of phosphorite ore, and in 1969 it became a "town" and in 1971 it became a "city". Large phosphorite production cooperatives and joint-stock companies work in a small town [18]. The territory of the city is divided into a mountainous area in the south, mountain slopes, the lower part is an undulating plain, and it is connected to the large sandy Moyinkum massif in the north. The climate of the area where the city of Zhanatas is located is continental, dry and hot in summer, and dry and frosty in winter. The duration of the warm period prevails, the daily amplitude of the daytime air temperature is 28-31.9°C. The average monthly temperature of the coldest month of the year - -10.40C in January, and the warmest - +31.90C in July. Temperature inversion for adverse weather conditions; dust storms; silent days; fog etc. Are all present here. The coefficient due to atmospheric stratification is 200. The main soil types of this region are light chestnut soil and dark or gray soil. The distribution area of open chestnut soils is considered to be desert and desert-steppe regions. The following horizons can be observed in the profile: humus (thickness up to 18 cm); transitional (from 10 to 20 cm thick); carbonate (from 45 cm to 85 cm thick). The upper layers of open chestnut soils contain 2.5% humus [19].

Water resources near the city of Zhanatas belong to the Shu-Talas hydrographic basin. The Shu-Talas basin includes Shu, Talas and Asy rivers, its total area is 64.3 thousand km<sup>2</sup>. The main part of the basin is located in the desert and semi-desert area. The part of the Tien-Shan mountain systems and mountain slopes is 14%, 13% of the territory of Zhambyl region, there are 204 small rivers along with large rivers in the Shu Talas basin (140 rivers in the Shu river basin, 20 in the Talas river and 64 in the Asy river basin), as well as 35 lakes, 3 large water bodies, the Shu, Talas rivers and the main flow of the Asy river are formed in the territory of the Kyrgyz Republic [20].

*Geoecological condition.* The most important thing for all living organisms is the relatively constant composition of atmospheric air. Air contains nitrogen (N<sub>2</sub>) - 78.3%, oxygen (O<sub>2</sub>) - 20.95%, carbon dioxide (CO<sub>2</sub>) -0.03%, argon - 0.93% of dry air volume. Water vapor makes up 3-4% of the total volume of air and other inert gases. The vital activity of living organisms is maintained in the current state in the atmosphere of oxygen and carbon dioxide. Protection of atmospheric air is the main issue in improving the natural environment. Air pollution negatively affects the health of people and animals, the state of plants and ecosystems, and any change in its composition and properties is considered dangerous for city residents. The main pollutants of atmospheric air are sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO) and particulate matter, which are produced during the production process and other human activities. They make up about 98% of the total emissions of harmful substances [21]. In addition to the main pollutants, more than 70 harmful substances are observed in the atmosphere of urban and suburban deposits, including hydrogen fluoride, lead compounds, ammonia, benzene, carbon disulfide, and others. The most dangerous pollution of the atmosphere is radioactive one. Analyzing the release of pollutants into the air, we can draw the following conclusions: there is a tendency to increase emissions from permanent sources; Pollutant emissions from mobile sources are relatively constant. The analysis of atmospheric air pollution shows that

significant pollution has occurred in settlements. It is necessary to stabilize the condition of the air basin of the territory by strengthening environmental control, at the expense of measures to ensure air safety.

## 2) *Urban infrastructure and socio-economic problems*

In modern urban studies, many urban issues are investigated as interdisciplinary scientific knowledge. One of these relevant areas is the analysis of geographical and geoecological processes of the evolution of the network of urban settlements. As a research task, the evolution of the above-mentioned urban system can be comprehensively considered in terms of external and internal development factors on the example of the city of Zhanatas.

Socio-economic and environmental tensions are considered as blocking factors in the economic development of regions of independent Kazakhstan. That's why Zhanatas was included in the far-reaching comprehensive state program for the development of monocities until 2030. In the program, the following definition is given for them: a city with one or more city-building enterprises, with one image and a raw material orientation. That is, a city where the main part of the working population and industrial production is concentrated in enterprises that determine the economic and social situation.

The city of Zhanatas is among the groups of small towns whose industrial production has been slowed down or completely stopped. The population of Zhanatas has decreased by 18.2% over the ten-year period, and the deterioration of water supply, sewage, heating and electrical systems has reached 95%.

The level of protection of the safe quality of life and economic potential in small towns is affected by man-made factors and anomalous natural phenomena, high anthropogenic pressure on the environment, and the construction of the infrastructure to resist the medical and sanitary consequences of emergency situations such as seasonal floods, landslides, fires, and earthquakes, that are having a negative effect on the region.

The main problems of the social infrastructure of the city are: lack of preschool institutions for children, low supply of medical personnel to the population and other issues. Preschool education coverage rate is 35.4%.

Environmental consequences of industrial development in Zhanatas include air pollution, chemical pollution of soil, fresh water and fish in reservoirs, increase of sick people among the population.

Sources of environmental inconvenience in Zhanatas:

- accumulation of ash heaps, lack of city-wide cleaning enterprises;
- poor condition of sewage systems and field filters located near the city;
- the size of heaps and waste storage facilities of mining enterprises;
- the emission of pollutants from many small boilers working with solid fuel.

In the first twenty years of the 21st century, the most obvious problems that were the basis for the change of the urban landscape in Zhanatas can be summarized as follows: desolation of residential buildings and small areas as a whole; neglect of yard areas, burning of trees and shrubs for heat and cooking; general pollution of the city with solid household waste and industrial emissions; disposal of household waste in unauthorized places and unsanitary conditions in the courtyards of residential buildings, etc.

The most obvious problems of urban infrastructure in the city of Zhanatas include: deterioration of heating networks and generator power, necessity of modernization of CHP, large boilers and main pipelines.

**Results and conclusion.** The basis of improving the quality of urban space is based on the idea of improving the quality of life of the population, increasing competitiveness and investment attractiveness. Therefore, in order to solve the complex socio-economic, urban planning and environmental problems encountered in many monocities on the territory of Kazakhstan, a set of activities aimed at attracting investments and intensively carrying out modernization works was developed (Figure 1).

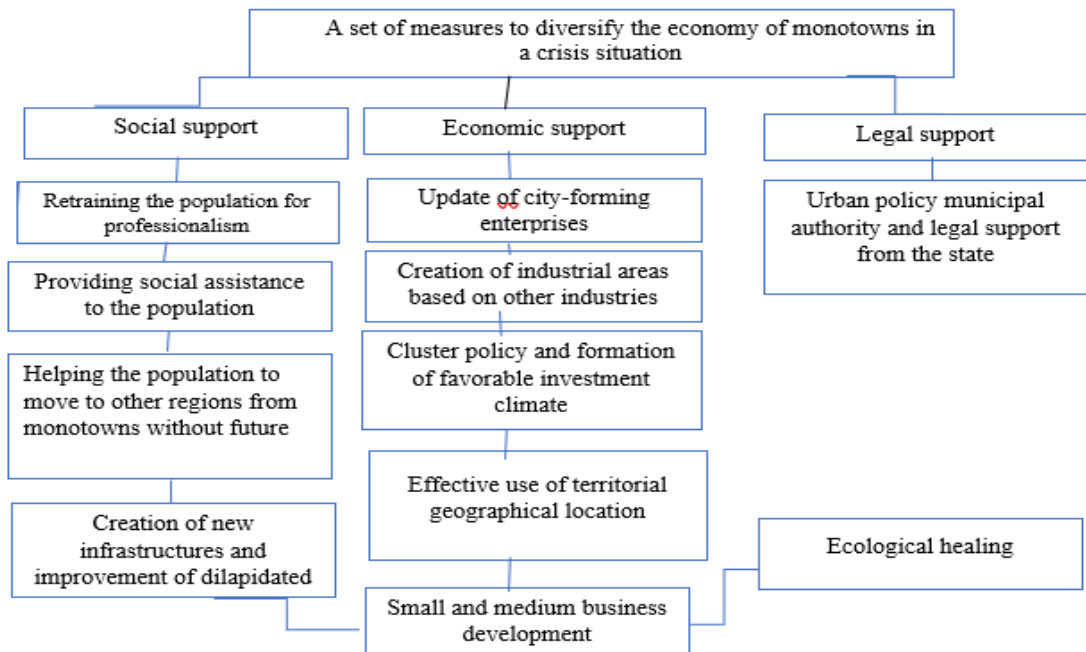


Figure 1 - A set of measures for diversification of the economy of monocities in a crisis situation (compiled by the authors).

In this regard, the implementation of joint activities with the Russian company in the city of Zhanatas can be mentioned. For EuroChem, one of the world's largest producers of mineral fertilizers, the development of mining and industrial infrastructure in the city of Zhanatas is a promising project aimed at the development of nearby phosphate deposits [22]. This significantly expands the resource base with the possibility of selling products in Kazakhstan. The company plans to spend about 40 million dollars in urban space in the coming years. The company invested 18 million dollars to modernize the social and communal infrastructures of the cities of Zhanatas and Karatau. More than 29 kilometers of water pipelines, 22 kilometers of high-voltage power lines, 24 kilometers of railway lines, and 18 kilometers of roads are planned to be built in the cities. Currently, these activities are being implemented gradually.

Urban planning and environmental protection measures in the city envisage the development of Soviet-era micro-districts and "new territories" of the city, consolidation of existing residential buildings, improvement of the urban planning model. In particular, in recent years, it is planned to build a new large residential area in the micro-districts of the urban landscape that have been completely destroyed, that is, in the southeastern part of the city, in the seventh, eighth and ninth micro-districts. Reconstruction of abandoned or dilapidated houses is planned in the first, fourth, fifth and sixth micro-districts. It is also planned to create convenient walking routes between urban areas, create well-equipped public spaces, equip the yard with playgrounds.

The master plan for the development of the city has established the placement of a number of urban facilities that will make it convenient and comfortable for the residents of the city, it is planned to improve the quality of the external environment, to reconstruct and build the urban infrastructure. In particular, the restoration of the central Silk Road street, the construction of a public and business center with boulevards, sidewalks and shopping galleries, a hotel, social, cultural and public institutions, educational and healthcare institutions. It is planned to build a new eastern bazaar in the city in order to revive traditional forms of trade [23].

In addition, the main factors of the sustainable development of the city are economy, social spheres and indicators of ecology. The harmony of these three factors is to create conditions necessary for the improvement of social parameters, growth of economic indicators and living in the environment. Therefore, we present a multifactorial model of sustainable development of the city of Zhanatas (Figure 2). The following factors were taken into account in the model: 1) main factors and development; 2) inhibiting (blocking) factors that negatively affect the development of the city; 3) additional factors indirectly affecting the development of the city. Systematization and indicative analysis of these factors allowed us to create a multifactorial model of Zhanatas city development.



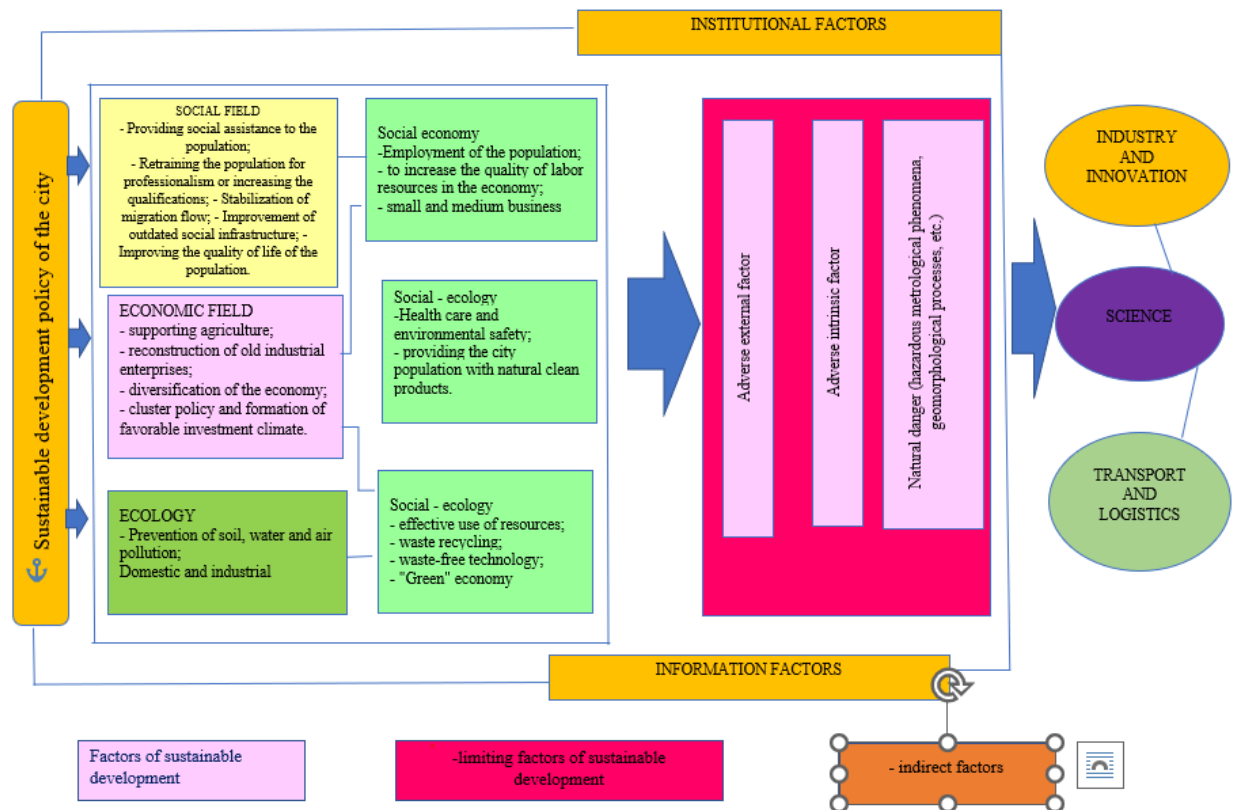


Figure 2 - Multifactor model of sustainable development of Zhanatas city

In the model proposed by us, the following measures must be included in the optimization of the social sphere of the city of Zhanatas:

- increasing social support for the population (increasing the wages of workers working in heavy industrial enterprises, considering providing them with simplified mortgage loans, organizing social events for temporary employment of the unemployed population);
- implementation of retraining of the population and improving their skills on various seminars courses, diversification of educational services, intensive training of the local population with modern specialties;
- stabilization of migration flow for the city of Zhanatas;
- modernization of outdated social infrastructure: old houses and buildings of cultural and social importance that need to be demolished and overhauled in the city;
- improving the quality of life: providing city residents with clean water, access to education and quality medical services.

We consider the following measures as important in order to optimize the development of the economic sector:

- support for agriculture: the land resources of Zhanatas city (38.3% of the city area is suitable for agriculture) allow to provide the city residents with quality food products. For this purpose, we propose to form a food belt in the northern suburbs;
- restructuring of old industrial sites: the industrial potential of the city is very high, therefore, it is necessary to develop industries that produce competitive goods through ways of technological modernization of the base of outdated enterprises;
- economic diversification: as a central city for the city of Zhanatas and its suburbs, it should be a center of innovative industries based on technologies that require service and science.

The model of single-city development that we propose considers the following development prospects in the city of Zhanatas:

- center of industry and innovation: creation of new industries on the basis of the infrastructure base and using the intellectual potential of highly qualified personnel with an engineering and technical background. Restructuring of the economy through diversification, production of new types of goods based on technological achievements in the development of natural resources;

- center of education and science: creation of a science cluster on the basis of mining production of EuroChem. It can be an experimental site for introducing innovations in the enterprises of color phosphorus and uranium production and training personnel for science-intensive sectors of the economy;

- transport-logistics center: as an alternative way of development proposed by us, the city of Zhanatas should be restructured into a large transport-logistics center. Its prerequisites are: the geographic location of Zhambyl region and Turkestan region at the junction of routes from north to southwest, from west to east, the absence of major transportation centers in this part of the country, and the presence of railways. Effective use of the natural resource potential of the suburbs is also very important for the innovative and sustainable development of the city of Zhanatas.

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