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SUPPORTING FRAMEWORK OF SETTLEMENT IN KAZAKHSTAN

Annotation. *The article examines the main stages of formation and the current state of the supporting framework of settlement in Kazakhstan, which has developed as a result of two conjugate trends - centripetal expressed in the development of large cities and urban agglomerations and linear-directional manifested through the development of highways and polyhighways. The main milestones of the development of the railway network of Kazakhstan as the main mode of transport and which became the basis of the supporting framework of settlement are considered. The authors have identified linear and nodal elements and components of the polyhighways of the settlement support frame and note that the most generalized nodal image of the region is represented in the form of a rhombus, the vertices of which are urban agglomerations. The formation of the basic framework of settlement in Kazakhstan and its development is currently a reflection of the spatial organization of the population and economy.*

Keywords: *settlement reference frame; linear elements reference frames; nodal elements of the reference frame; generalized nodal image of the region.*

Introduction

A characteristic feature of the spatial development of urbanization in Kazakhstan is the peculiarity territorial-urban structure, where as a result of urban planning activities, support centers began to form and or be established on the periphery. N. N. Baransky said about Kazakhstan that its center is on the periphery, and the periphery is in the center[3].

The supporting frame is a linear-nodal combination of the main focuses of economic, political and cultural life and the main lines connecting them.

Due to two related trends - centripetal (development of large cities and urban agglomerations) and linear (development of highways and polyhighways) - the basic framework of settlement has been formed. Economic axes have always been of great importance in the territorial structure of Kazakhstan, which is confirmed by the examples of Orenburg-Tashkent, Turksib, Central Kazakhstan, South Siberian lines, the cities located on them developed very quickly, and on the contrary, some cities, being far from the railways, slowed down their development, such as Karkaralinsk or completely lost their urban status - for example, the villages of Turgay and Irgiz that lost their urban status.

The developmentbasic framework of settlementin Kazakhstan was determined by the historically established regional features of the territory. Its formation was influenced by the passage of a number of major highways through this territory, which basically determined"frame" pattern(shape configuration) of the territory.

Main results.

Linking the established settlement to natural and climatic conditions makes it possible to distinguish the southern "sun belt" and the northern "green belt" on the territory of Kazakhstan with a relatively dense network of settlements, water and energy resources, developed engineering and transport infrastructure,and the space between them from the coast of the Caspian Sea in the west to the foothills of the Altai in the east is occupied by semi-desert territories of Kazakhstan [4].

Chronological period the southern settlement belt first began to form in which urban settlements appeared in places where foothill river valleys and agricultural oases intersected the routes of the Great Silk Road, and here the contact zone of nomadic and agricultural types of management was formed. These conditions became the economic basis for the emergence of cities in the south of Kazakhstan and in Semerechye. Later, roads and railways were built along the old trade routes.

The cities of the northern settlement belt emerged from fortresses and fortifications built along the defensive lines by the tsarist government. Initially, they performed military and administrative functions, which were later replaced by administrative and commercial functions.

The emergence of cities in the south-west and central regions of the country was associated with the development of mineral deposits and their processing.

The cities formed at the main points of these settlement belts and the transport highways connecting them formed the basis of the ROC of Kazakhstan.

In Kazakhstan, the main mode of transport is railways become the basis of the basic framework of settlement. For the first time the railway passed through the territory of Kazakhstan in 1893-1894. This was the first narrow-line railway line Pokrovskaya Sloboda-Uralsk, with a length of 113 km (Kazakhstan section) [5].

The main construction of railways began in XX century with the construction of the Orenburg-Tashkent railway with a length of 1,668 km. This highway was put into operation in 1905-1906, connecting the European part of Russia with Central Asia [6].

In 1936-1939, the Iletsk section with access to Saratov was built, through which Kazakhstan was connected to Central Russia. During the Great Patriotic War, the construction of strategically important railway lines continued. Thus, in 1936-1944, the Guryev–Kandahach–Orsk highway was built, connecting the Emba oil fields with the Urals. In the post-war period, the construction of railway tracks in Western Kazakhstan continued only in the 1960s. During this period, the Makat–Mangyshlak and Mangyshlak–Uzen sections were laid with a total length of 990 km [6, 7].

The construction of the Turkestan-Siberian railway in 1927-1930 allowed connecting Central Asia, the South and South-East of the country with the East of Kazakhstan and Siberia. Construction of the Trans-Kazakhstan railway along the Petropavlovsk-Kokshetau-Astana-Karaganda-Mointy-Shu lines connecting the North, Center and South of the country began in the 1920s and ended with the launch of the Mointy-Shu section in 1953.

3 major railways pass through the northern regions of Kazakhstan. In 1894, 190 km. Siberian Railway passed through the territory of Kazakhstan near the city of Petropavlovsk. The construction of the segment of the South Siberian Railway along the lines Magnitogorsk-Kartaly-Astana-Pavlodar-Barnaul was carried out throughout the first half of the twentieth century, and the construction of Trans-Siberian Railway: (Troitsk-Kostanay-Kokshetau-Barnaul) was completed in the early 1960s.

In the second half of the twentieth century, the railway network of Kazakhstan developed in the direction of expanding inter-main links, since 1950. The trans-Kazakhstan highway was connected to Turksib on the Mointy – Shu section, and in 1985 the city of Turksib was closed on the Balkhash-Aktogay section.

After the collapse of the Soviet Union, communication between certain regions of Kazakhstan was difficult due to the need to cross borders with Russia. To solve the problem, three sections of tracks were built in Kazakhstan, running entirely through the territory of the republic. In 2001, the Aksu-Degelen line was built between Semipalatinsk and Pavlodar, which improved communications between Pavlodar and East Kazakhstan regions by connecting Turksib with the Southern Transsib. The line reduced the distance of transportation between the northern and eastern industrial regions of the country by 600 km, which reduced the transport costs of shippers by 3 times, and the travel time of passenger trains in this direction by 9 hours[2].

The Khromtau-Altynsarino section, which was commissioned in 2004, connects Aktobe and Kostanay regions with the western parts of the country. This road reduced the connection of the north and east with western regions of the country by 1.5 thousand kilometers or 15 hours of travel [2].

In 2008, the construction of the Shar - Ust-Kamenogorsk section allowed connecting the cities of East Kazakhstan with the rest of the country, bypassing the territory of Russia.

In, the construction of inter - state highways Arkalyk - Shubarkol (214 km) connecting the Central and Northern regions of the country and Zhezkazgan - Saksaul (517 km) - Shalkar-Beineu (496 km) opened the shortest route between the east and west of Kazakhstan. Also, the implementation projects significantly shortened the route from Astana to Aktau. projectis part of the global project of the Trans-Caspian International Transport Route through the seaport of Aktau, then Baku, Tbilisi, Kars. In order to increase the country's transit potential and develop sparsely populated border areas, the Uzen – State border with Turkmenistan and Korgas – Zhetygen railway lines were launched in 2012 and 2014, respectively, which allowed the formation of new routes in the East – West and North – South directions. The first line provided direct access from Kazakhstan to Turkmenistan, Iran and the Persian Gulf countries, reducing the route by more than 600 km. Korgas-Zhetygen secured the opening of the second international border railway crossing between the two countries and increased the volume of transit cargo traffic from China to Europe and Asia, reducing the distance by 500 km. In total, about 2.7 thousand kilometers of new railways were built in Kazakhstan during the years of independence [2].

The railway lines discussed above are supplemented by highways, navigable river sections, and pipelines in some important areas, thus forming 2-3 component polyhighways. Linear and nodal elements of OCD are presented in Table 1 and Figure 1.

Taking into account the convenient geographical location, as well as the urgency of reviving the historical Great Silk Road in a new format, a transcontinental transport connection between Europe and Asia is being created. To date, international transport corridors, including five rail and eight road.[1]

Table 1 - Structure of the settlement support frame. Compiled by the author

№	Name of linear elements of the ROC/mountain population at the beginning of 2022	Polyhighway Components	Key elements of a polyhighway
1	West-South-national level polyhighway / 2.89 million people	Railway lines Saratov-Uralsk-Aktobe-Shymkent-Tashkent and ADM Samara-Uralsk-Aktobe-Kyzylorda-Shymkent	Uralsk, Aktobe, Kandyagash, Shalkar, Aralsk, Kyzylorda, Arys, Shymkent
2	South-East-national level polyhighway / 4.84 million people	Zhetysai-Shymkent-Taraz-Almaty-Zharkent railway, Turksib (Arys-Shymkent-Almaty-Semey), Shar-Ust-Kamenogorsk-Ridder railway and Almaty-Ust-Kamenogorsk ADR, border of the Republic of Uzbekistan (to Tashkent)-Shymkent-Taraz-Almaty-Khorgos	Zhetysay, Saryagash, Shymkent, Shu, Almaty, Zharkent, Konayev, Usharal, Shar, Ust-Kamenogorsk, Ridder
3	North-South-national level polyhighway / 2.63 million people	Transkazakhstan Railway line, ADM Almaty-Karaganda-Astana-Petropavlovsk	Almaty, Shu, Balkhash, Karaganda, Astana, Kokshetau, Petropavlovsk
4	Severny-polimagistral of the	Railway line Southern branch of the Trans-Siberian Railway, ADM Astana-	Pavlodar, Astana, Yesil, Kostanay,

	national level / 2.29 million people	Kostanay-Chelyabinsk	Lisakovsk, Zhitikara
5	West-North-interregional polyhighway / 0.59 million people	Railway Atyrau-Makat-Kandyagash-Lisakovsk-Kostanay, Atyrau-Aktobe and Karabutak - Komsomolskoye-Denisovka-Rudny - Kostanay.	Atyrau, Makat, Kandyagash, Lisakovsk, Kostanay
6	East-North polyhighway of interregional level / 0.75 million people	Russian border (to Omsk) - Pavlodar-Semey-Maikapshagai-Chinese border and Shar-Semey-Pavlodar railway	Zaisan, Shar, Semey, Pavlodar
7	Ural-Caspian-regional polyhighway / 0.98 million people	Uralsk-Atyrau highway, Astrakhan-Atyrau-Aktau highway - border of Turkmenistan, Astrakhan-Atyrau-Aktau railway-border of Turkmenistan	Uralsk, Atyrau, Beineu, Aktau, Zhanaozen

Note: ZHDM – railway line, ADM – highway.

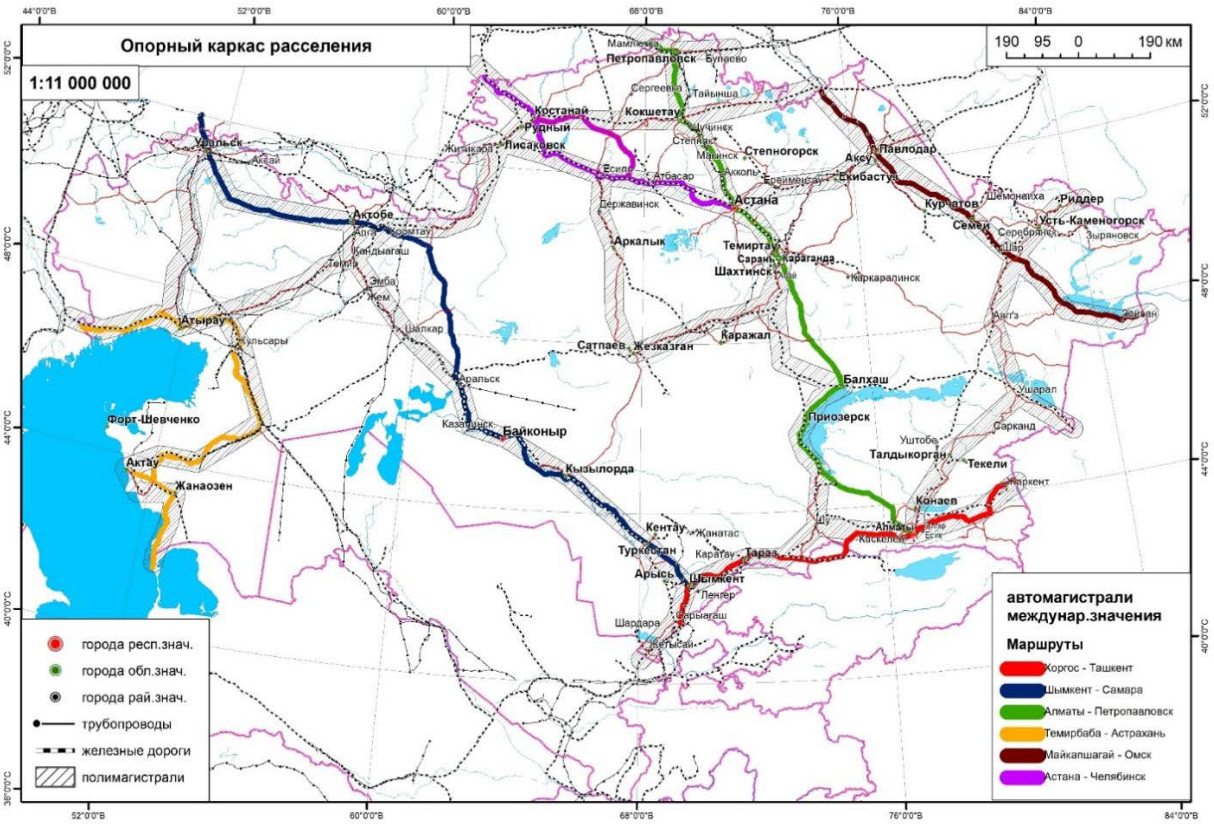

Figure 1 - Supporting framework of settlement in Kazakhstan.

As already noted linear elements of the support frame are transport highways the main one of which is railways supplemented by roads and in rare cases navigable sections of rivers.

The generalized drawing of linear elements of the ROC is a grid structure consisting of both latitudinal railway lines in the north and polyhighway along the lines of Shymkent-Taraz-Almaty-Zharkent in the south, and meridianally directed polyhighway Uralsk-Atyrau-Beineu-Aktau and Petropavlovsk-Astana-Almaty; as well as sub - meridian polyhighways-Uralsk-Aktobe-Almaty.Kyzylorda-Shymkent-Saryagash-Zhetysai; Almaty-Usharal-Ust-Kamenogorsk-Ridder;

Omsk-Pavlodar-Semey-Zaisan. These linear elements form national-wide ROCS, which are supplemented by interregional and regional linear elements.

The key elements of the reference framework at the national level are urban agglomerations of the first and second levels and regional centers, at the interregional and regional level cities and district significance. The semultifunctional and monofunctional cities with a predominant industrial development (table). There are 36 key elements in the country, including 3 urban agglomerations of the first level (Almaty, Astana, Shymkent), 2 rural agglomerations of the second level (Aktobe and Karaganda), 10 regional centers and 21 cities of regional and district significance. It should be noted that the South-East polyhighway contains the largest number of nodal elements – 11.All urban settlements along this polyhighway are home to 4.8 million urban residents (42.4%urban population).

The second position is occupied by the West-South polyhighway consisting of 8 nodal elements and concentrating 2.9 million people of the urban population. The smallest in terms of population and nodal elements are the East-North interregional polyhighway (Zaisan,Shar, Semey, Pavlodar) and the Ural-Caspian regional polyhighway (Uralsk, Atyrau, Beineu, Aktau, Zhanaozen).

Conclusions. Thus, the most generalized nodal image of a region is represented as a rhombus whose vertices are urban agglomerations. Currently, the formation of the basic framework of settlement in Kazakhstan continues and its development reflects the spatial organization of the population and economy. The transformation of its nodal and linear elements contributes to the progressive development of all levels of settlement systems, from local to national. At the same time, at this stage of development, the leading process of transformation of the basic framework of settlement is the construction of new highways and the formation of an agglomeration[8].

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ҚАЗАҚСТАН ҚОНЫСТАНУЫНЫҢ ТІРЕК ҚАҢҚАСЫ

Аңдатпа. *Мақалада Қазақстанның қоныстануының тірек қаңқасының қалыптасуының негізгі кезеңдері мен қазіргі жай — күйі қарастырылады, ол екі конъюгациялық тенденцияның нәтижесі ретінде қалыптасты-үлкен қалалар мен қалалық агломерациялардың дамуында көрінетін центрге тартқыш және магистральдар мен полимагистральдардың дамуы арқылы көрінетін сызықтық жылдамдық. Қазақстанның темір жолдары желісін дамытудың негізгі кезеңдері көліктің негізгі түрі ретінде қарастырылды және қоныстанудың тірек қаңқасының негізіне айналды. Авторлар қоныстанудың тірек қаңқасының полимагистральдарының сызықтық және түйіндік элементтері мен компоненттерін анықтады және аймақтың ең жалпыланған түйіндік бейнесі шыңдары қалалық агломерациялар болып табылатын ромб түрінде ұсынылғанын атап өтті. Қазақстанда қоныстанудың тірек қаңқасын қалыптастыру және оның дамуы қазіргі уақытта халық пен шаруашылықтың кеңістіктік ұйымдастырылуының көрінісі болып табылады.*

Кілт сөздер: *қоныстанудың тірек қаңқасы; тірек қаңқасының сызықтық элементтері; тірек қаңқасының түйіндік элементтері; аймақтың жалпыланған түйіндік бейнесі.*

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SUPPORT OF THE SETTLEMENT FRAMEWORK OF KAZAKHSTAN

Annotation: *The article discusses the main stages of formation and the current state of the supporting frame of the settlement of Kazakhstan, which has developed as a result of two conjugated trends - centripetal, expressed in the development of large cities and urban agglomerations, and linear, manifested through the development of highways and polyhighways. The main milestones in the development of the railway network of Kazakhstan as the main mode of transport and which became the basis of the supporting frame of settlement are considered. The authors have identified linear and nodal elements and components of polyhighways of the supporting frame of settlement and note that the most generalized nodal image of the region is presented in the form of a rhombus whose vertices are urban agglomerations. The formation of the supporting frame of settlement in Kazakhstan and its development is currently a reflection of the spatial organization of the population and economy.*

Keywords: *supporting frame of settlement; linear elements of the supporting frame; nodal elements of the supporting frame; generalized nodal image of the region.*