

# Transit potential of Kazakhstan on the Silk Road

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## 1. Introduction

During the first millennium B.C.E. through the middle of the second millennium C.E., a vast network of trade routes known as the "Silk Road" linked the people and traditions of Asia with those of Europe. The best known segment of the Silk Road began in the Chinese capital of Chang'an (Xian), diverged into northern and southern routes that skirted the Central Asian Taklamakan Desert, converged to cross the Iranian plateau, and ended on the eastern shores of the Mediterranean in cities like Antioch and Tyre [1].

By the 4th century B.C.E. when Alexander the Great crossed the Indus River into Central Asia, Chinese silk had already found its way to the Mediterranean.



**Figure 1:** Scheme of ancient Silk Road.

Sea routes, important for trade and for communication, may also be considered part of the Silk Road (Fig. 1). During the Han dynasty, Chinese ships traded with Southeast Asian kingdoms. During the 7th and 8th centuries, Chinese, Korean and Japanese ships crossing the East China Sea and the Sea of Japan brought continental goods to Japan.

Many important scientific and technological innovations migrated along the Silk Road to the West. Transfer of these innovations, including gunpowder, the magnetic compass, the printing press, silk, mathematics, ceramic and lacquer crafts, was gradual, so that the West had no clear idea as to their origins. Musical forms and instruments traveled the Silk Road also.

These historic routes served as a major conduit for the transport of knowledge, information and material goods between East and West and resulted in the first global exchange of scientific and cultural traditions.

Today the potential of economic ties revival in the Silk Road region is a critically important connecting link for the countries of Central Asia. The former republics of the Soviet Union, which are Kazakhstan, Uzbekistan, Tajikistan, Kyrgyzstan and China are the neighbors on the way to the main markets. But political separation and emergence of new transportation means stopped functioning of ancient roads and their detachment from global economic forces. Remote position from the sea, small economic dimensions, distant position from the main markets and disintegration of the Soviet Union exerted great negative influence on the levels of trade and transit of Central Asian countries [2].

The potential of Central Asia, having common market, and population of 56 million, situated between the two greatest powers – Russia and China – to integrate into the system of international economy is more often looked at from the point of view of its ability to expand the scale of interregional or intra-regional economic cooperation.

Broadening and diversification of export is a key priority today for Kazakhstan. Having small domestic market and high dependence on raw materials export, the integration of trade is critically important for Kazakhstan. Besides, Kazakhstan is the main transit country for Uzbekistan, Kyrgyzstan and Tajikistan, connecting these Central Asian countries with their main trade partner, Russia. Moreover, Kazakhstan possesses the greater part of road and railroad infrastructure in Central Asia.

## **2. Basic figures**

The Republic of Kazakhstan is situated in Central Asia, in the central part of Euroasian continent. Kazakhstan by its territory is in the 9th place in the world. Its total land area is 2.7 mln sq km that exceeds summarized land area of 12 European Union Member States. At the same time the population is only 15.5 million people, and the population density is very low – 5.5 per sq. km.

Kazakhstan possesses:

- The richest stocks of natural resources
- The sufficiently huge agricultural potential
- Obtaining and a processing industry

Major economic indicators (2005) [3]:

- GDP: 51 bln. USD
- GDP per capita: 3370 USD
- Real GDP Growth Rate: 9%
- Foreign Direct Investments: 37.2 bln. USD

Major Exports: oil, ferrous and nonferrous metals, machinery, chemicals, grain, wool, meat, coal.

Major Imports: machinery and parts, industrial materials, oil and gas, vehicles.

Over the years of independence, Kazakhstan has implemented a series of broad-based reforms that have transformed it from a planned to a market economy. The result is a liberal economy with advanced market-based infrastructure, a stable national currency, the Tenge, and one of the most progressive financial and economic systems among the post-Soviet countries.

Kazakhstan as the state located inside the continent and not having an access to the sea requires alternative routes for exporting its goods to international markets. Rapid economic growth of the country forces to search for such ways. It applies both to the ground and air transport infrastructure and telecommunication backbones.

### 3. Transport Strategy

Economic and geographic features of Kazakhstan make the transport component of the economy one of the most sizeable in the world and determine high dependence of the economy on the transport networks. Being sandwiched between Europe and Asia, Kazakhstan boasts of a great transit potential, as there is no alternatives for Asian states to link to Russia and Europe [3, 4].

The main advantage that transit corridors have, coming through the territory of Kazakhstan, is in gradual shortening of distances. Providing the communication between Europe and China via Kazakhstan, the distance of hauling will decrease two times compared to sea rout and a thousand kilometers compared to transit across the territory of Russia.

The available transport infrastructure of Kazakhstan does not meet the needs of the growing economy because revenues of Kazakh transport companies from transit of goods amount to approximately 500 million dollars per annum, which makes only one per cent of entire market of transshipment between Europe and Asia.

The Transport Strategy of the Republic of Kazakhstan until 2015 was adopted for further development of the industry. It is planned to construct about 1600 km new and electrify 2700 km existing railway sections by 2015.

Kazakhstan is interested in building transcontinental transport and communications highways, 10 large logistical centers, which will stimulate entire Central Asian region's development into self-sustaining element of trade and economic relationships between main world markets.

The share of transportation costs in the final cost of the goods makes up 8% and 11% for in-land railways and automobile traffic respectively, while in industrialized countries these indicators normally make up 4-4.5%. As a result, the transport burden on the economy exceeds that on the major industrialized nations twice on average. By cargo intensity index Kazakhstan's economy is about five times less efficient, as transport component of every 1 USD of GDP makes no less than 9 ton-km, while in EU cargo intensity is less than 1 ton-km/dollar of GDP.

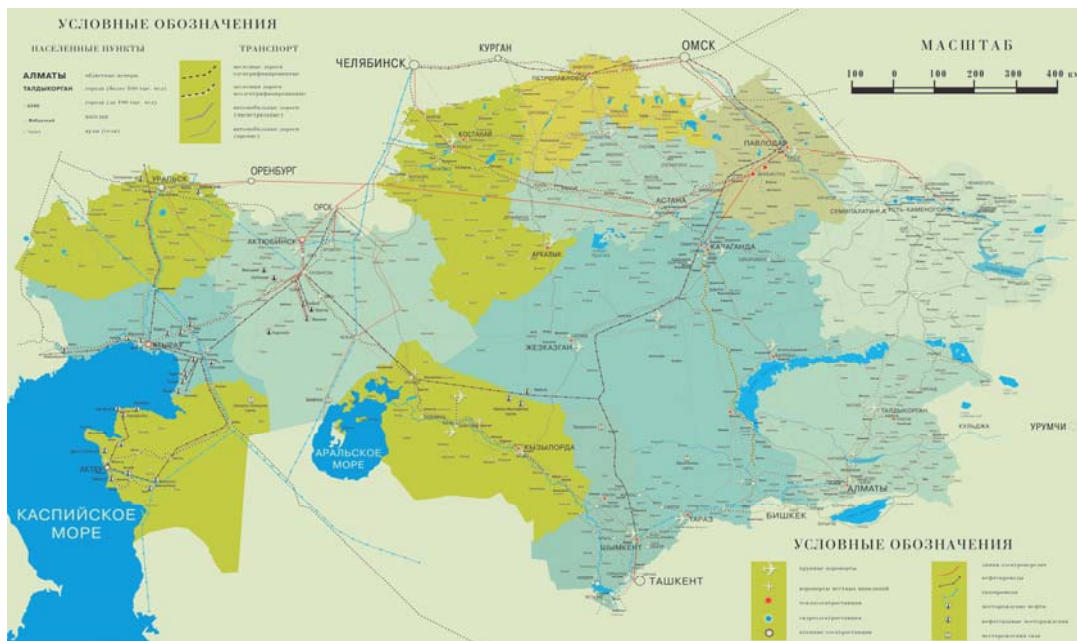


Figure 2: Map of main roads of Kazakhstan

4 international transport corridors cross the territory of Kazakhstan and are formed on the basis of transport infrastructure existing in the country (Fig. 2). They are:

- *Northern Corridor* of Trans-Asian Railway Main (TARM): Western Europe – China, Korean Peninsula and Japan via Russian and Kazakhstan (section Dostyk – Aktogai - Sayak – Mointy – Astana – Petropavlovsk (Presnogorkovskaya))
- *Southern Corridor* of TARM: South-Eastern Europe – China and South-Eastern Asia via Turkey, Iran, Central Asian states and Kazakhstan (section Dostyk – Aktogai – Almaty – Shu – Arys – Saryagash)
- *TRACECA*: Eastern Europe – Central Asia via the Black Sea, Caucasus and the Caspian Sea (section Dostyk – Almaty – Aktau)
- *North-South*: Northern Europe – Gulf States via Russia and Iran, with Kazakhstan's participation in the following sections: sea port Aktau – Ural regions of Russia and Aktau – Atyrau.

Besides routes included in the transcontinental mains, *Central Corridor of TARM* should also be mentioned, as it is of great significance for regional transit in the direction Saryagash – Arys – Kandagach – Ozinki.

Robust growth of China's economy, in particularly of its western regions, boosts the demand for deliveries of a large specter of goods to global markets even today.

#### 4. Oil and Gas transportation system

The growth of oil production observed in Kazakhstan today proves far reaching plans to join 20 countries-primary suppliers of oil and gas to the world markets. The state budget's revenues from oil sector make over a quarter of all budgetary incomes of the Republic of Kazakhstan. In the short-term outlook it is planning to bring production to 150 MT per annum [5].

Kazakhstan's geography is not quite favorable to access open markets. The current options for Kazakhstan's hydrocarbon raw stock transportation meet our needs. However, expected multifold increase of production calls for enlargement of capacities and implementation of new projects regarding Kazakhstan's hydrocarbon raw stock transportation to the world's markets.

The transport corridors are used today (Fig. 3), firstly, *Caspian Pipeline Consortium (CPC)* within Transneft's system. This route is used to export oil to the countries of the Black Sea and Baltic countries and enables to deliver more than 25 MT of oil per annum overseas. This pipeline is mainly transferring oil from Tengiz and Karachaganak.

The pipeline running eastward is a route to China enabling to deliver Turgay's oil to western regions of this country.

Realizing Turkey's concern in the Bosphorus Strait's overloading, Kazakhstan stated its desire to take part in delivery of hydrocarbons to Europe's market via Odessa-Brody and Burgas-Alexandroupolis oil pipelines. The government is ready to examine all available options and share the concern in environmental threat to the Black Sea and Mediterranean straits.

A priority for the country is the so-called *Kazakhstan-Caspian Transportation System (KCTS)*. This system is mainly intended to transport westward the oil produced on Kazakh shelf of the Caspian Sea. It comprises the oil pipeline in Kazakhstan on the Caspian Sea shore and the offshore segment to connect terminals in Kazakhstan and Azerbaijan. This project shall be executed by the date of first oil production commencement at Kashagan field. The Law "Ratification of Agreement between the Republic of Kazakhstan and the Republic of Azerbaijan About Support and Assistance to Oil Transportation from the Republic of Kazakhstan Across the Caspian Sea and the Territory of Azerbaijan to International Markets Using Baku-Tbilisi-Geyhan system" was adopted in the Senate of Kazakhstan in April 2008 [6].

This agreement stipulates establishing the KCTS to run oil across the Caspian Sea and fill it to *Baku-Tbilisi-Geyhan system*.



**Figure 3:** Map of existing and planning pipelines.

Kazakhstan is also interested in the project covering installation of gas pipeline along the Caspian Sea bed, a Trans-Caspian route. Kazakhstan is interested in a stable European market.

Being western oriented, Kazakhstan does not forget the growing market of China. Commercial oil deliveries via *Atasu-Alashankou pipeline* commenced last year. This pipeline also transfers Russian oil from Western Siberia. Developing this project, country is going to launch the second phase, Kenkiyak-Kumkol.

Kazakhstan possesses sufficient gas resources but does not have an access to export routes as all them are fully controlled by Russia. Most gas treatment facilities are also located in Russia. The access to Chinese market calls for huge investments to create relevant infrastructure. The agreement on design and construction of gas pipeline to China was achieved in August 2005. This project firstly accounts for gas deliveries from Kashagan, Karachaganak, and Tengiz.

Kazakhstan is also considering the option of *Kazakhstan-Turkmenistan-Iran* oil pipeline to be prolonged to the Persian Gulf. This project has certain advantages in respect to Caspian oil delivery to markets of Europe, Eastern Asia and South Pacific. However, it will be possible to schedule the completion of this project only upon the launch of production at Kashagan field when the need for additional diversification of export routes arises.

Kazakhstan, adhering to the principle of multiple directions of hydrocarbons export delivery, will henceforth be extending its operations on maximum diversification of oil and gas transportation routes.

## 5. Informational flow

The major development of telecommunications in Kazakhstan took place in the last 15 years, the paces of development for the last five years exceeding the paces of development of country's GDP and are equal at the average from 25 till 30% yearly.

The following figures will be reached by the end of 2008:

- the density of fixed telephone lines will be 23 for 100 inhabitants
- the density of cellular telecommunications subscriber's will be 50 for 100 inhabitants
- the density of Internet users will be 10 for 100 inhabitants
- the digitization of local telecommunication networks will be 80%
- volume of telecommunication operators income will be 4-5% of GDP
- the income of telecommunication services for one inhabitant is 150-200 US dollars
- the investments in telecommunications sector for one inhabitant 70-100 US dollars.

As a result of set in step-by-step liberalization at the market of telecommunication services at the end of 2004, prerequisites were created for development of a real competition environment. The economic incentives of competition development in each market segment of telecommunication services including rural areas.

The following main segments of the telecommunication services market have been formed at present in the country: cellular communication service, local telephone communication service, long-distance and international communication service, Data networks (including Internet).

The development of information flows transit through the country is of no small significance in a generic concept of turning Kazakhstan into transit center of Eurasian continent. The National Information Super Highway (NISH), built by the biggest communication service operator "Kazakhtelecom" company, is just the basis for attracting the transit flows from Europe and Asia. Besides, the completion of the National Information Super Highway (NISH) construction will provide the population of Kazakhstan in all regions with high velocity and quality access to the worldwide information space.

Total length of the NISH is about 11.5 thousand km. The independence of land telecommunication infrastructure of the country was provided by carrying out the project, and at present the National Information Super Highway entirely meets the needs of safety and vitality of the network.



**Figure 4:** Scheme of fiber-optic backbone of Kazakhstan

Fiber-optical communication lines of the National Information Super Highway cover practically the entire area of the Republic in the following directions (Fig. 4):

- *Western Fiber-Optical link (FOL)* passes through regional centers Shymkent-Kyzylorda-Aktobe-Atyrau. A total of 24 inhabited localities are provided with digital communication services;
- *Eastern FOL* covers Taldykurgan-Kokshetau-Petropavlovsk. It provides 29 inhabited localities with services of digital communication;
- *The Northern FOL* runs through Petropavlovsk-Kostanay-Aktobe towns;
- *Caspian FOL* (Makat-Tengiz-Aktau) has made it possible to connect by means of digital channels facilities of Western FOL with Aktau regional center.

Thus, all major cities of Kazakhstan are connected with each other by means of digital channels.

### 5.1 Trans-Asia-Europe Project

Agreed in 1993, the world's longest overland fiber-optic system, the Trans-Asia-Europe (TAE) line crosses 27.000 kilometers and provides digital circuits for transmitting voice, data, fax and video information from Shanghai to Frankfurt and hundreds of other cities on the way. Most of the route follows the ancient Silk Road trading route linking China to Europe. Built by a consortium of national telecom companies, including Deutsche Telekom and China Telecom, the cable is able to carry voice telephony and data traffic with a 155Mbps capacity, equivalent to between 13.000 and 15.000 simultaneous telephone calls. The total investment on the TAE runs up to about US \$560 million [7].

Participants in the project include China, Kazakhstan, Kyrgyzstan, Uzbekistan, Tajikistan, Turkmenistan, Iran, Turkey, Ukraine, Belarus, Poland, Romania, Hungary, Austria, Germany, Georgia, Azerbaijan, Armenia, Pakistan and Afghanistan (Fig. 5).

The cable begins in Shanghai and passes through southern Kazakhstan. The Kazakh stretch of the cable is 1.750 kilometers. A trunk line passes from the Chinese frontier through Almaty and Dzhambul and southern Kazakhstan to Uzbekistan. The Kazakh Optical communication system provides speeds of up to 622 megabits per second and traffic of up to 7.560 telephone calls at a time.

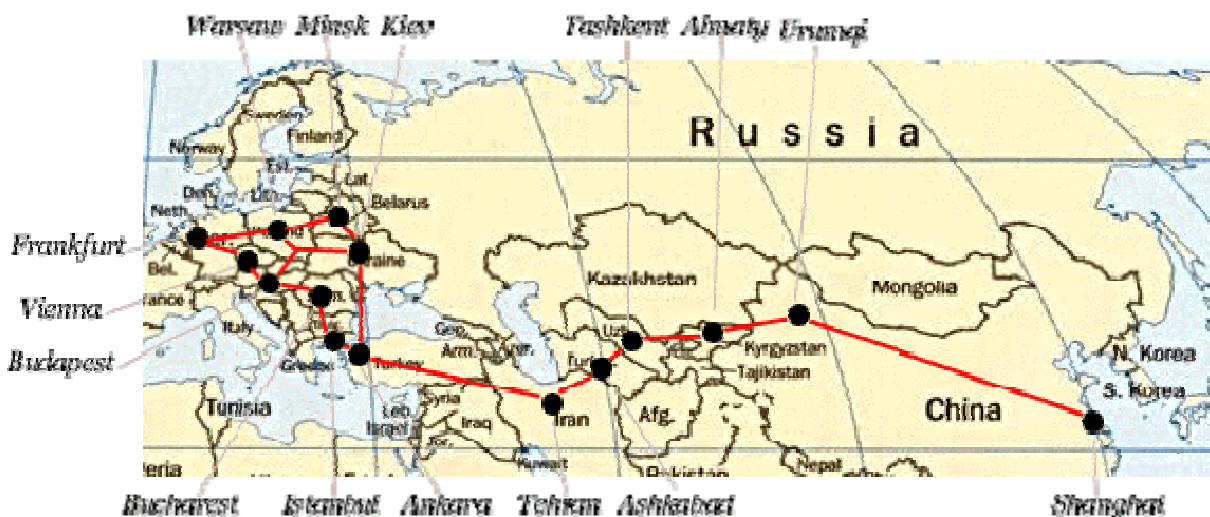


Figure 5: The Trans-Asia-Europe map.

The line then goes through Uzbekistan, Turkmenistan, Iran and Turkey. The Turkmenistan connection was fully implemented by the Telecommunication Company of Iran in one year and involved the installation of 721 kilometers of optic fiber in the stretching from Iran's Bajgiran border crossing to Ashkhabad, Tajan, Merv and Charju and from there to the fiber optic network of Uzbekistan. Six kilometers of the network is linked with aerial grid, but the rest of the 715-km network is connected with underground cable. Forty kilometers of the grid on the mountainous area is steel-coated cable laid on the surface. From Turkey the TAE cable forks, continuing to Germany via Ukraine, Belarus, Poland, Romania, Hungary and Austria. The end point is Frankfurt. TAE has been put into operation in October of 1998.

## **Conclusion**

Today Kazakhstan has got all prerequisites to become an important interregional transit center. Situated in the center of the Eurasian continent, on the border between large economic regions, different civilizations and cultures, Kazakhstan must work on joining the modern system of global political and economic ties. Only developing modern communications and transport infrastructure, Kazakhstan will be able to become a connection bridge between the East and the West.

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