

The Single Tariff Belt in International Traffic

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By

Kuanyshbayev Zhaken Myngyrbayevich

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INTRODUCTION

Transport, along with the extractive, manufacturing, and processing industries, is the fourth sphere of material production, which, in turn, provides economic ties between states, and determines the channels for the supply of food, clothing, and the whole bulk of goods. Central and Southern Europe gravitates to Central and Central Asia, then through transport corridors with access to China, and the ports of the East Coast of the People's Republic of China. On this background, the laying and selection of routes for the transport of bulk cargo is an urgent task for the current state of the political and economic situation of the world economy. It is presumably clear that this will be intermodal transport involving mainly railway and water transport. Railway transportation is organized within the railways of the European Union, Ukraine, Russia, Kazakhstan, and China. Sea transportations are organized in the water area of the Black and Caspian Seas. The task of the research at this stage is to select the optimal route for intermodal transportation, based on the safety criterion of the quantity and quality of the cargo being transported, and delivery in the shortest possible time.

The author, (Chairman-professor Zhaken Kuanyshbayev, Doctor of Technical Sciences), who put forward the idea of a global research project, relates the level of development and its implementation to a high complexity category:

- Firstly: the complexity and multidimensionality of the scientific research idea led to the need to unite the efforts of scientists from five different faculties of the L.N. Gumilyov Eurasian National University: organization of transportation, logistics, informatics, economics, ecology, and international relations;
- Secondly: the need to involve scientists in the development and implementation of this project, as partners, from 7-8 universities along the route of the goods of the GSW (China-Kazakhstan-Georgia-Ukraine-Bulgaria-Hungary-Italy-France-Germany), the location and establishment of interrelations as an experimental base of a number of diverse logistical structures, organizations of railway transport and ecology;

- Thirdly: to carry out the development and scientific substantiation of a project which is so complex in nature and so large in scope, in a short timeframe, and in order to realize this goal, we have to mobilize significant resources in Kazakhstan and a number of other participating countries;
- Fourthly: this project is being implemented in the context of the increasingly complicated geopolitical and economic situation in the world, especially in the countries of the European Union, and on selected sections of the ESP route, which further updates our study. Not all the countries mentioned will be involved as direct participants in the consortium, in this project, but as research progresses at different sites and stages of progress towards the goal, some universities and individual specialists will be attracted as partners working in the field of scientific research close to the subject project.

CHAPTER 1

THE FORMATION OF THE TRANS-CASPIAN TRANSPORT CORRIDOR

On 25 May 2016, the Trans-Caspian international transport corridor between China-Turkey-Europe was designed, to provide transport communication between China and Europe through Kazakhstan, Azerbaijan, Georgia, and Turkey.

In October 2013, the Coordinating Committee for the Development of the Trans-Caspian International Transport Route was established. In November 2015, Istanbul hosted a presentation of the opportunities and prospects for the development of the route. Then Ukraine officially joined the project.

On January 14, Azerbaijan, Kazakhstan, Georgia and Ukraine signed a protocol on the establishment of competitive preferential tariffs for cargo transportation along the Trans-Caspian International Transport Route. To effectively use the corridor, customs procedures were simplified, an agreement was reached to reduce customs duties, and transit quotas for Turkish trucks were increased.

The container train along the route Ukraine-Georgia-Azerbaijan-Kazakhstan-China, through the Caspian Sea and the Black Sea, departed on January 15 2016 from the port of Illichivsk, and arrived on January 31 in China. The second test container train, following the Trans-Caspian International Transport Route from Ukraine to Central Asia, was implemented in February.



Figure 1.1. Route map: Astana - the Port of Poti (Republic of Georgia)

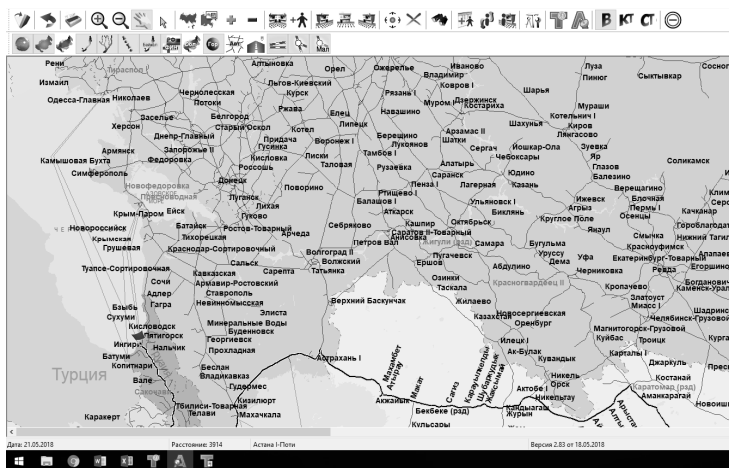


Figure 1.2. Route scheme from the Port of Poti (Republic of Georgia) to the Port of Odessa (Ukraine)

1.1. The relevance of the problem that the Trans-Caspian international transport corridor is filled by cargo



Figure 1.3. *Container terminal*

A unified competitive tariff will be applied to the Trans-Caspian route. In the long term, according to a number of political scientists and economists, the Trans-Caspian International Transport Route should become a priority in the transportation of goods. Answering a question from a correspondent of the Xinhua News Agency, about the prospects of Route, and the role of China in this project, political scientist and Professor of the Western University, Fikret Sadikhov, said: “The project itself is very large, and formed on a multilateral, mutually beneficial, basis”. In this project, who is interested in its further existence and development? Of course, China plays a big role here, because the route through which goods and products go is, in fact, an analog of the Silk Road, which previously operated in this space, and is now of great importance for many countries.

We are talking, first of all, about cargo, and about the supply of goods to various countries and regions which are interested in Chinese products. All this, of course, raises interest in China, a very important country in Asia, with its own sphere of influence, and a major center of world economic policy. The fact that the projects in which China is involved are not political, but of economic importance, provides the basis for an equal partnership. Therefore, the route along which the cargo will go is, of itself, very important for China and Azerbaijan, as well as those countries where this cargo will be delivered. This is the same format that will unite our efforts,

form our multilateral cooperation, improve our multilateral ties, and build mutual relations. This will have a beneficial effect on political, economic, and humanitarian relations between our countries. Referring to competition with other ongoing economic projects in the region, Fikret Sadikhov noted, “On the commercial side of this issue, there may be some competition between the North- South and Trans-Caspian International Transport Route. At the same time, if we assess the reality of these routes, it should be noted that they go in different directions, and cover different countries, and there cannot be a mechanical comparison. These are completely different routes, with different tasks, and delivery of goods to different regions. In any case, in conditions of globalization and the market economy, such competition is inevitable, but I have no doubt that it will not affect the profitability of the main East-West transport project, in which China plays an important, dominant role”.

“The operation of the Trans-Caspian International Transport Route will accelerate the economic growth of Azerbaijan and other countries in the region”, said a member of the Committee on Economic Policy, Industry and Entrepreneurship of the Milli Mejlis (the Azerbaijani parliament), Deputat Milli Majlis Republic of Azerbaijan Aidyn Huseynov, to the correspondent from the Xinhua agency. He also stressed that, from an economic point of view, the Trans-Caspian International Transport Route is the cheapest and most profitable corridor for transit cargo. Although the Route has not yet reached its full capacity, its effective operation will positively affect not only the growth of trade between the project participants and the countries of the region, but also Europe and China. According to the deputy Aidyn Huseynov, the commissioning of the Baku-Tbilisi-Kars (BTC) Railway, implemented by Azerbaijan, Georgia, and Turkey, will accelerate the delivery of cargo along the Trans-Caspian International Transport Route, from Turkey to the markets of Central Asia. The creation of a free economic zone, and the construction of a modern port in the settlement of Alyat in the Garadagh district of Baku, are aimed at the expected increase in cargo traffic through the new port, after the Baku-Tbilisi-Kars railroad has been commissioned, which will enable direct rail transportation from Eastern Europe and Turkey to Azerbaijan. Representative of the Republic of Azerbaijan Aidyn Huseynov noted that, in the future, the port of Alyat should become the regional distribution center, and serve the markets of the South Caucasus, Central Asia, Turkey, Iran and Southern Russia. 400 hectares of land was allocated for the construction of the new port. In September 2014, as the first stage of creating an international logistics hub, the ferry terminal was opened. Alyat, which will be the largest port in the Caspian Sea, will be able to handle 10 million tons of cargo

annually, or 50,000 containers, at the first stage. At the second stage, it is planned to increase the cargo flow to 17 million tons, and by the end of the third stage, the flow of cargo through Alyat, is expected to be 25 million tons. Such a large-scale project, as the Trans-Caspian International Transport Route would be less effective without China's participation. China is one of the leaders of the world economy, and, in some of its industries, is in first place. Azerbaijan-China relations have always been at a high level. Political, parliamentary, and economic, ties between the two countries are developing on an upward trend. Azerbaijan and China support each other in the international arena, coming from a common position on many issues. China supports the territorial integrity of Azerbaijan, and Azerbaijan the policy of 'One China'.

1.2. China, the Trans-Caspian International Transport Route

In Baku, *SalamNews* reported, "Cooperation with China in the field of transit is one of the priority areas".



Figure 1.4. *The Trans-Caspian International Transport Route*

The role of the Trans-Caspian International Transport Corridor in the implementation of the Chinese initiative 'One Belt and One Way' is great. Using the potential of this corridor creates a fertile ground for cooperation

in the economic sphere, especially in the fields of investment, trade, and transit.

The Minister of Economy of Azerbaijan, Shahin Mustafayev, believes that the state visit of the President of Azerbaijan to the People's Republic of China in 2015 began with a visit to the city of Xian, from where the Silk Road starts. The Minister noted that cooperation between the two countries is expanding in all spheres, and also informed the participants at the event about the competitiveness and advantages of the Trans-Caspian International Transport Corridor. In his turn, the Chairman of CJSC Azerbaijan Railways, Javid Gurbanov, told of the significance of the Trans-Caspian International Transport Corridor connecting China and Europe. It was noted that the railway infrastructure was updated in Azerbaijan, and the Baku-Tbilisi-Kars railway was put into operation, which is of particular importance in terms of increasing the competitiveness of the above-mentioned transport corridor. Within the framework of the event, presentation videos about the transport potential of Azerbaijan and the candidacy of Baku to host the Expo-2025 were demonstrated.

Today, the International Association TMTM is an organization which unites and represents the interests of a number of countries and companies located on TMTM, thus reviving the route of the historic Great Silk Road.

The International Association for the Trans-Caspian International Transport Route is intended to coordinate the interaction of all participants in the process of transporting goods along the route from Asia to Europe, and vice versa, providing the necessary information support.

The International Association also facilitates the simplification of administrative procedures, creating a competitive environment and ensuring maximum efficiency for companies from different countries, including those not geographically located directly on the Trans-Caspian International Transport Route.

Founders of the International Association for the TransCaspian International Transport Route



Figure 1.5. *Closed Joint Stock Company Azerbaijani Railways*



Figure 1.6. *The Azerbaijani Caspian Marine Shipping Company*



Figure 1.7. *Closed Joint Stock Company Baku International Maritime Trade Port*



Figure 1.8. *Limited Liability Partnership Batumi Sea Port*



Figure 1.9. *National Company Aktau International Maritime Trade Port*



Figure 1.10. *Joint Stock Company Georgian Railway*



Figure 1.11. *Joint Stock Company National Company Kazakhstan Temir Zholy*

CHAPTER 2

THE FORMATION OF THE PACIFIC TRANSPORT CORRIDOR

The formation of transport corridors plays an important role in international transport. An international transport corridor is a combination of serving infrastructure and communication lines which carry out significant transport of goods between large countries. At the present stage of development, the most strategically important problems of the transport industry are the formation and competitiveness of the main transport corridors, as well as improving the network of communications. The governments of Central Asia, China, and Russia, have taken a number of steps to develop infrastructure and expand the number of services to ensure transit passes. An important place in the international transport and communication system is occupied by Kazakhstan, which is the territory through which the three main transit directions pass: 1) Europe - China (with the participation of Russia); 2) Europe - China (through ECO countries); and 3) Russia - Central Asia. In this regard, the intensification of trade and economic relations between the countries of Southeast Asia and the countries of the CIS and Europe, is becoming an important factor in the development of export-import and transit capabilities of Kazakhstan. Due to its geographical location, and a wide transport and communication network, Kazakhstan has significant potential in the development of a service system involving international transit trade, transit tourists and goods, international transport, transport and telecommunications services, etc.

2.1 Characteristics of the route from Kustanay station to Lianyungang port

The international border crossing between Dostyk and Alashankou was put into operation in 1991, and ensured the transportation of goods by rail via the Europe-Asia route, through the territory of the Republic of Kazakhstan, forming an additional transcontinental route connecting the

countries of the Asia-Pacific region, the Middle East, and Eastern and Western Europe (Figure 2.1).

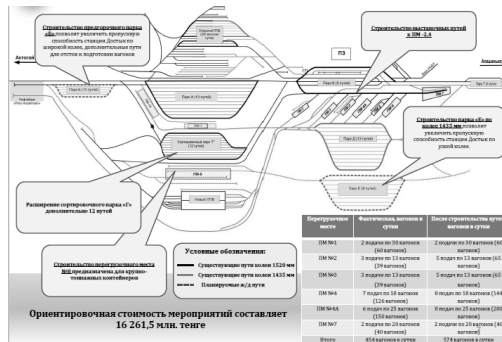


Figure 2.1. *Track development of the border station at Dostyk*

The Kazakhstani logistics terminal, in the port of Lianyungang in the northeastern part of China, on the Yellow Sea coast, has become one of the centers of the reviving economic zone of the Great Silk Road. The choice of this port is of great geostrategic importance. Today, it is one of the 25 largest seaports in the world. Lianyungang occupies an important position between East and West, and represents the Eastern beginning of a new Eurasian transcontinental corridor. In May 2014, the construction of the first joint Kazakh-Chinese terminal, the area of which is 21 hectares, was laid on its territory. The length of the mooring front is 3.5 km, with depths of up to 9 km. There are two coal berths, two berths for handling small cargo, five berths for timber and grain, as well as a container berth for receiving container ships and handling containers (Figure 2.2).



Figure 2.2. Characteristics of the terminal in the port of Lianyungang

The total project cost amounted to 99.4 million dollars. The main goal of the terminal construction was the need to concentrate cargo from the countries of Southeast Asia in the direction of Central Asia, Kazakhstan, Russia, and the European Union. At the same time, over the eight months of this year, the Kazakh-Chinese terminal handled 84 thousand containers of 20-ton equivalent. Moreover, it is expected that by 2020, the terminal will handle more than 550 thousand containers per year.

Cargo storage for the entire period of 2015 at our terminal of the seaport of Lianyungang was also expressed in serious figures: 360 thousand tons.

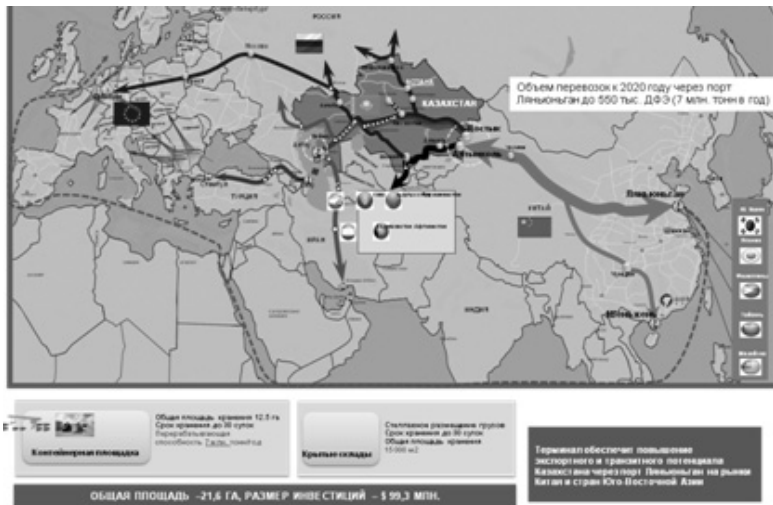


Figure 2.3. *Organization of supply chains through the terminal in the port of Lianyungang*

2.2 Design of the logistic scheme according to the through shoulder along the route of Kustanay station to Lianyungang port

The transported cargo is grain, to be shipped from Kustanay (Republic of Kazakhstan), to the destination station (and the port of the same name), Lianyungang (People's Republic of China). The logistics scheme for this route in the intermodal transport system is shown below: Kustanay - Dostyk - Alashankou - Lianyungang Port (Figure 2.4.).

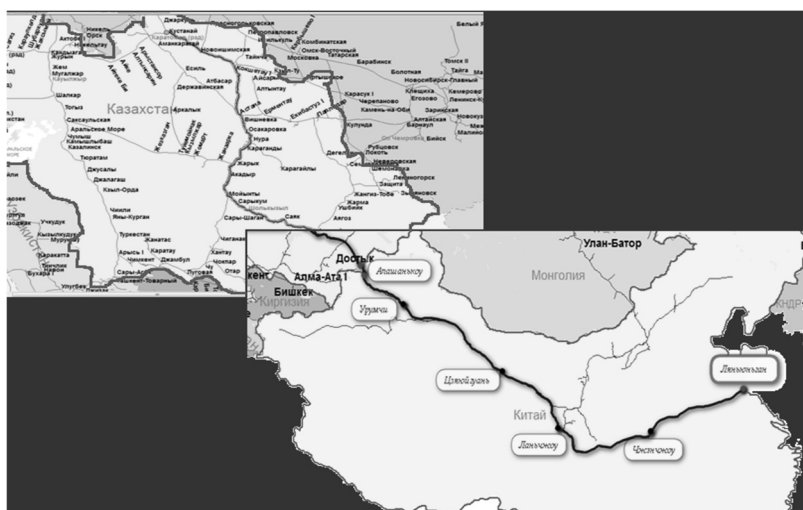


Figure 2.4. Logistic scheme for the transportation of grain, Kustanay station to Lianyungang port

Grain is a complex biological system in which a variety of biochemical and physico-chemical processes constantly occur, leading to (even complete) deterioration of grain, if the necessary measures are not taken in a timely manner. Losses can result from breathing and self-heating of grain, spoilage from mold and the development of other microorganisms, damage by pests (insects, rodents and birds), and mechanical damage during threshing, and during various transportation stages of grain.

Qualitative indicators of grain are its natural mass, moisture, and purity. 'Natural mass' is understood to be the mass of one liter of grain in grams. This depends on the moisture, shape, size, and compactness of the grain. Grain purity characterizes the presence of impurities in it. Humidity is determined by drying the grain in special cabinets. Mixing grain of various types and varieties is not allowed. Transportation and storage are carried out separately. The physiological properties of grain determine the special conditions for its storage. Grain should be protected from atmospheric influences, since it has hygroscopicity. The main indicator of the quality of grain is its moisture content, expressed as a percentage of the amount of hygroscopic moisture contained in it. Cereal grain cargoes are divided according to the degree of humidity: dry (contains moisture up to 14%), medium dry (14 to 15%), wet (15.5 to 17%), and raw (over 17%). The moisture content of grain goods accepted for transportation in railway, and

in direct mixed railway-water, communications should be no more than 16% (millet up to 15%). Grain with high humidity (over 16%) is transported to the nearest dryers inside the region. With increased humidity in the grain mass, a self-heating process is possible, which causes damage to the grain. Large losses of grain are also created when infected with grain pests. In connection with the specified features of grain cargo, special requirements are made to warehouses, as well as storage and transportation. A study of the properties of the grain mass, and the influence of environmental conditions on it, shows that the intensity of all physiological processes occurring depends on the same factors, the most important of which are: the moisture content, the temperature, and air access, to the grain mass. In practice, grain storage uses three modes:

- storage of cereal masses in a dry state, i.e. masses having low humidity;
- storage of grain masses in a refrigerated state, i.e. masses, the temperatures of which are lowered to the limits that have a significant inhibitory effect on all vital functions of the grain mass;
- storage of the grain mass in airtight conditions (without air access).

The dry storage regime for grain masses is based on the reduced physiological activity of many components of the grain mass with a lack of water. The lack of free water does not allow the development of microorganisms. When storing the grain mass in a dry state, the development of mites stops, and the vital activity of some insects is significantly reduced. For example, if the moisture content of the grain mass is 12-14%, and it is not infected by insect pests, then, with proper storage organization, the grain will be in an anabiotic state. Dry storage is a prerequisite for maintaining high seed viability in batches of seed. The dry storage mode is most suitable for long-term storage of grain masses, which allows you to store such grain with minimal losses for 2-3 years in elevators, and 4-5 years in warehouses. Moisture is removed either using heated air as a drying agent - the thermal method - or using dry air of the atmosphere - the solar drying method. It must be remembered that the seeds of grain crops have different thermal stability, therefore, when drying rye grain for food purposes, a heating temperature of 60°C is permissible, and when drying wheat grain, the maximum temperature is 50°C. It should also be borne in mind that when conducting thermal drying of grain in grain dryers, you should not dry it, that is, you should not remove more moisture than is recommended for storage.

2.3 Design of the logistic scheme from Kustanay to Dostyk (exp.)

(In Kazakhstan: Kustanay - Novoishimskaya - Kokshetau - Astana - Vishnevka - Osakarovka - Karaganda - Zharyk - Akadyr - Sarykum - Sayak - Aktogay - Section No. 8 - Beskol - Zhalanashkol – Dostyk) (Figure 2.5).



Figure 2.5. Route of transportation of grain by rail (Republic of Kazakhstan)

2.4 Design of the logistic scheme from Alashankou station to Lianyungang port

(In China: Alashankou - Urumqi - Jiayuguan - Lanzhou - Zhengzhou – Lianyungang)

The formation of transport corridors plays an important role in international transport. The International Transport Corridor is a combination of serving infrastructure and communication lines that carry out significant transport of goods between large countries. Due to its geographical location, and a wide transport and communication network, Kazakhstan has significant potential in the development of a service system: international transit trade, transit tourists and goods, international transport, transport and telecommunications services, etc. Therefore, our country needs such international transport corridors, not only for the development of the transit potential of the Republic of Kazakhstan, but also for international trade, that is, export and import of goods. As a result of this study, an International Pacific Transport Corridor was formed. Grain was transported along a new

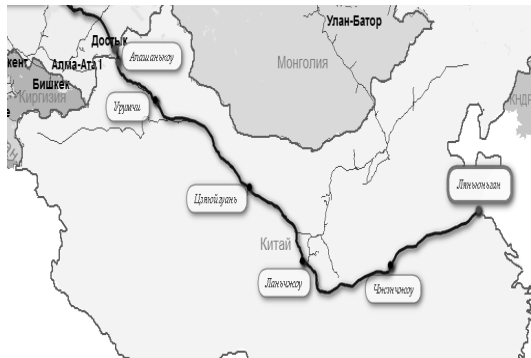


Figure 2.6. Route of transportation of grain by rail (People's Republic of China)

corridor, namely along the route from Kustanay station (in the territory of the Republic of Kazakhstan) to the port of Lianyungang (China). There is a certificate of state registration of rights to the copyright, called “Formation of international transport corridors for the transport of grain, art. Kustanay - the port of Lianyungang”.

2.5. Design of the logistic scheme by the through shoulder on the route from Kustanay to Lianyungan port

One of the systems for organizing and operating rolling stock is an end-to-end system. With an end-to-end system of movement, rolling stock transports goods from the starting point of the route to the final stop, without overloads. The route from Kostanay to Dostyk, according to the through-shoulder scheme, when transporting grain on the railways of the Republic of Kazakhstan, is as follows:

Kustanay - Novoishimskaya - Kokshetau - Astana - Vishnevka - Osakarovka - Karagandy - Zharyk - Akadyr - Sarykum - Sayak - Aktogay - Section No. 8 - Beskol - Zhalanashkol - Dostyk.

The route from Alashankou to the port of Lianyungang, according to the through shoulder scheme for the transportation of grain by rail of the People's Republic of China is as follows: Alashankou - Urumqi - Jiaoyuguan - Lanzhou - Zhengzhou – Lianyungang.

The carriage fee is charged for the carriage of goods, passengers, and baggage, established by agreement of the parties to the contract of carriage

of goods. There are several methods for determining the freight charge. These include:

1. The methodology for determining the freight charge based on the Rail-Atlas and Rail-Tariff software package;
2. The methodology for determining the freight charge based on the Unified Transit Tariff;
3. The methodology for determining the freight charge based on the International Transit Tariff;
4. Determination of the freight charge according to the through shoulder scheme.

2.6. Carrier determination methodology based on the Rail-Atlas and Rail-Tariff software complex

Using the Rail-Atlas software package, we can build a route through the territory of the Republic of Kazakhstan: (Kustanay - Novoishimskaya - Kokshetau - Astana - Vishnevka - Osakarovka - Karaganda - Zharyk - Akadyr - Sarykum - Sayak - Aktogay - Section No. 8 - Beskol - Zhalanashkol - Dostyk).

The distance of the route through the territory of the Republic of Kazakhstan in one direction is 2118 km. Using the Rail-Tariff program, depending on the distance, we determine the freight charge for the transportation of grain using a tariff fracture:

- Determination of the freight charge from Kustanay to Dostyk in the national currency (KZT);
- Determination of the freight charge from Kustanay to Dostyk in Swiss francs;

The freight charge on the territory of Kazakhstan from Kustanay to Dostyk is A_KZT (tenge) or A_CHF (Swiss francs) per ton. The initial data for calculating the freight charge, according to the ETT methodology, are the tariff distance for the transportation of goods, and the weight rate of container dispatch. The distance of the route through the territory of China in one direction is 4065 km. In China, we determine the freight charge for the carriage of goods by carload, and we take the fee for 1 ton of cargo from the Single Transit Tariff table (STT) (see Table 2.1):

Table 2.1: Shipping fee for wagon shipping in China

Distance (km)	Distance (km), fee for 1 ton in Swiss francs		Fee per axis, (Swiss francs)	Distance, (km)
	classes			
	1	2	3	
4050-4149	188,90	94,50	202,40	4050-4149

By railways of the Republic of China:

$$T = N * M = B \text{ (CHF)}$$

The freight charge across China for one wagon is B Swiss francs. Also, using the Rail-Atlas software package, we can build a route through the territory of China. Based on the foregoing, we determine the freight charge from Kustanay to the port of Lianyungang. The fare distance of transportation is selected on the basis of the Rail-Atlas and Rail-Tariff software package (see Table 2.2).

Table 2.2: Carriage calculation results tariff fracture fees

Name of the route	Country	Distance, (km)	Carriage charge (KZT)	Carriage charge (Swiss francs)
1.Kustanay - Dostyk	Kazakhstan	2118	A, KZT	A, CHF
2.Alashankou-Lianyungang	China	4065	-	B, CHF
Total	Kazakhstan-China	618	-	X, CHF

The fare from Kustanay to the port of Lianyungang, according to the tariff fracture scheme, is X Swiss francs.

2.7. Determination by the scheme of the through shoulder

When using the through-shoulder technique, the transportation distance is accepted from the departure station to the destination station, and the freight charge is calculated in Swiss francs. The total distance from

Kustanay station to the port of Lianyungang is 6183,0 km. We use a fee for 1 ton of cargo from the Single Transit Tariff (Table 2.3).

Table 2.3: Shipping fee freight by carload

Distance (km)	Fee for 1 ton (Swiss francs)		Fee per axis (Swiss francs)	Distance (km)
	classes			
	1	2	3	
6050-6200	282,20	141,20	302,34	6050-6200

So, the freight charge according to the through-shoulder scheme is:

$$T = N * M = Y \text{ CHF}$$

Calculations show that when comparing freight cards, the freight charge according to the Rail-Tariff method is approximately half the price (Table 2.4).

Table 2.4: Calculation of the freight charge by the tariff fracture method and through shoulder technique

Route name	Measuring unit	Freight charge	
		According to the tariff fracture scheme	According to the through shoulder
Kustanay - Dostyk	CHF	A	-
Alashankou - Lianyungang (Single Transit Tariff technique),	CHF	B	-