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MULTIMODAL OPERATIONS ALONG
THE WESTERN EUROPE-WESTERN CHINA TRANSPORT CORRIDOR

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Brief Summary

This study aims to analyze the potential of multimodal operations along the Western Europe-Western China corridor and to suggest solutions to improve interaction between the railway and road transport to ensure the maximum possible capacity and efficiency of the corridor.

The assessment of the existing logistics infrastructure of potential multimodal key hubs along the Western Europe-Western China corridor and their suitability for multimodal operations are based on the analysis of the capacity of existing transport and logistics centers and those that are being built and planned in order to satisfy specific demand arising for multimodal shipments of large-tonnage containers.

The study showed that the Kazakh authorities and transport and logistics companies are properly responding to the growing demand for transport and logistics services, and transport and logistics operators have started building new terminals, improving the necessary infrastructure and adopting new information technologies which, in turn, help increase the capacity of transport and logistics centers, thus making it possible to increase the cargo flow globally. At the same time, the use of combined modes of transport in delivering containers, i.e. multimodal shipment, will also increase.

Based on available data on the total cargo flows through the Dostyk and Korgas, border crossings on the Kazakh-Chinese border, forecasts were made on the total and containerized cargo flows (including exports, imports and transit) to/from China through Dostyk and Korgas between 2011 and 2020. According to these forecasts, the flow of large-tonnage containers through the two main Kazakh-Chinese border crossings is expected to grow from 186,300 TEU in 2010 to 316,600 TEU in 2014 and 793,600 TEU in 2020. The share of multimodal containerized cargo flows was estimated at 5-7% of the total of containerized cargo flow in 2009-2010, whereas multimodal transport may have been carried between 9,300 and 13,000 TEU in 2010. In the following years, both road and logistics infrastructure will improve considerably along the entire transport corridor, but we have to bear in mind that the capacity of the railway transport will also increase. As a result, although the volume of large-tonnage containers along the Western Europe-Western China corridor will significantly increase compared with the previous years, the share of multimodal cargo flows is still estimated to account for 5-7% of the total containerized cargo flow between 2011 and 2020. At the same time, in absolute terms the figures look very impressive – the cargo flow is expected to total 15,800-22,200 TEU in 2014 and about 39,700-55,600 TEU in 2020.

The study also considered operating models such as the so-called business models at the sectoral level and operating models at the route level (“distance-time-cost” models). As for business models, the “3PL-logistics container freight services” scenario that has been tested worldwide, namely the acquisition of controlling stakes by the Kazakhstan Temir Zholy (KTZ) national railway company of established logistics market players with physical assets and future development plans approved by the market. The next stage is the acquisition of a leading road carrier with a sustainable business model and real assets that are already being used in multimodal shipments or may be transformed into this without particular expenses. As a result, the availability of strong assets owned by

Kazakhstan Temir Zholy: Kaztransservice JSC (a leading operator of the transportation of containers by rail), a network of transport and logistics centers and a road carrier with an extended network will make it possible to achieve synergy within a short period of time and to offer services of a logistics provider with guarantees of “door-to-door” delivery on any scale – from isolated private orders to the servicing of large-scale industrial projects.

The analysis of various “distance-time-cost” operating models made it possible to define prospects and limitations for multimodal shipments along the Western Europe-Western China corridor with transshipments in Almaty, Shymkent and Aktobe.

In addition to the analysis of transport and logistics aspects of multimodal operations along the Western Europe-Western China transport corridor, specific legal and information aspects of the implementation of these operations were studied.

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Introduction

Over 95% of freight between China and Western Europe is transported by sea. The growing congestions and shipment delays are forcing participants in foreign trade and the global logistics sector to look for new routes for supplying goods. The land bridge cutting through Kazakhstan (the Dostyk railway station) has been growing steadily in the past decade. Up to three container trains a day carry freight between various destinations along the corridor from China to Europe via Kazakhstan now. This corridor has potential to grow further because China's western regions are booming under the Xibu Dakaifa (Go West) government program and will play a great part to increase the volumes of trade and shipment.

In 2009, Kazakhstan launched the construction of the 2,787-km-long Western European-Western China road that will cut through Korgas, Almaty, Taraz, Shymkent, Kyzylorda and Aktobe. The total cost of the project is estimated at 800 billion tenge and is expected to be completed in 2013¹. The chief objective of the project is to build major transit corridor through Kazakhstan.

Figure 1. The Western Europe-Western China Multimodal Corridor



The route of the railway line largely coincides with the road, but these two corridors have little functional ties. It is expected that increasing the intermodality of the railway and road corridors will expand the capacity of and boost the efficiency of the Kazakh part of the Western Europe-Western China corridor.

¹ The Ministry of Transport and Kazakhstan's materials on the presentation of a project to reconstruct the Western Europe-Western China international transit corridor. April 2008.

The study aims to analyze the potential of multimodal operations along the Western Europe-Western China corridor and to suggest solutions to improve interaction between the railway and road transport to ensure the maximum possible capacity and efficiency of the corridor.

The study looked into the following issues:

- Potential multimodal key hubs along the Western Europe-Western China corridor were determined;
- The existing logistics infrastructure of potential hubs and their suitability for multimodal operations were studied;
- Key infrastructure and operating limitations were assessed with account of the current volumes of freight carried along the corridor and future prospects;
- Potential operating models for multimodal carriages, client groups and serviced points of destination, as well as forecast volumes of freight, were defined;
- Operations of the corridor were considered for: 1. Transit operations; 2. Domestic logistics operations; 3. Imports of goods to Kazakhstan; 4. Exports of goods from Kazakhstan;
- During the study potential users of the multimodal corridor were identified and they were interviewed to establish their logistics needs. Based on the answers received, specific case studies on how various companies operate and what advantages the new corridor would offer to them were conducted;
- The estimates of the total cost and the duration of operating models proposed were made;
- Various potential risks for multimodal operations, including the impact of non-physical barriers to trade and transportation were assessed, and based on this assessment recommendations on reducing consequences of risks were made;
- The potential of piggyback shipment was studied;
- Requirements set for paperwork and the flow of documents were studied. The possibility of applying a single transport document for the railway and road components of multimodal transport operations was studied;
- Issues of using information systems and technologies to ensure synchronized operations of the railway and road transport were studied;
- A draft list of measures and projects to be carried out along the corridor to eliminate infrastructure and operating bottlenecks, and ensure transport interaction was compiled and necessary institutional changes for ensuring this interaction were identified.

The authors' basic macroeconomic approach to this study included:

The regional economy of Central Asian countries depends on the development of logistics and potential freight flows along the newly built and reconstructed highways in southern and western Kazakhstan in association with the existing railway lines and infrastructure facilities gravitating towards the route of the Western Europe-Western China corridor.

The authors' understanding of the objectives of the study is expressed in the following:

- ***Kazakhstan's domestic objectives***, namely the development of regions through "merging space" between southern and western Kazakhstan similar to central and southern Kazakhstan when the capital was moved from Almaty to Astana and the corresponding infrastructure projection (the reconstruction of the Almaty-Astana highway, the intensification of freight and passenger transportation in the longitudinal direction and increasing its share in GDP). This offers an opportunity to develop the economy of towns and villages along the Western Europe-Western China corridor through the involvement of local businesses both at the stage of construction/reconstruction and in the future through involving freight to/from the corresponding areas along the corridor in domestic economic exchange. In short, the Western Europe-Western China corridor is the essence of the reconstruction and qualitative transformation of the domestic Shymkent-Kyzylorda-Aktobe road but at a different level and with wider objectives and tasks;
- ***Bilateral trade, namely export-import operations of economic entities of Kazakhstan***. The acceleration of the development and qualitatively different growth of adjacent territories will definitely require a systematic approach to the logistics of import-export operations, especially when a larger part of the corridor passes along Kazakhstan's major oil and gas fields, whose large-scale development, especially by foreign companies, requires world-class logistics. Export-import operations occupy an important place in the assumed picture of the study of this corridor, because they are closely tied to known plans of major mining companies, and this remarkably eases the analysis and assessment of potential freight flows in terms of multimodal operations.
- ***Inclusion in the existing international transport corridors***. In this case, the point is about the most obvious aspect of the study, namely the transit component of the Western Europe-Western China corridor with services offered by actors of Kazakhstan's transport and logistics infrastructure, including on multimodal operations. In particular, the point is about, for example, possible supplies of containerized freight from China or Europe by rail with the further transportation by road to consumers in certain areas of Uzbekistan or Russia that are gravitated towards the corridor's route. There is also interest in the aspect of consolidation and consecutive containerization of freight to Kazakhstan from neighboring countries with further supplies to third countries by both road and rail. There are prospects also for piggyback shipment, especially during the construction/reconstruction of the shaping-up road component of the Western Europe-Western China corridor.

- ***The development of the regional economy of Central Asia through the saturation of the market of multimodal services.*** The collapse of traditional economic relations between republics that were part of the USSR was particularly evident in the region which was previously known as “Kazakhstan and Middle Asia”. It is possible now to generally talk about the notion of the “Great Central Eurasia” that includes not only Kazakhstan, Uzbekistan, Turkmenistan, Kyrgyzstan and Tajikistan, but also a number of regions of Russia, western China, Iran and Afghanistan. Therefore, the analysis of multimodal operations as part of the Western Europe-Western China corridor, the authors believe, will have a trend to service precisely regional freight flows in Great Central Eurasia. A knock-on effect of multimodal transport services on the regional economy of Great Central Eurasia is much more significant than individual bilateral trade operations between regional countries. It is necessary and sufficient to talk about synergy despite remarkable differences between the economies and policies of countries that are part of the region in question.

In accordance with the strategy for the territorial development of Kazakhstan, development will take place along strategic development axes.

It is planned that the strategic axes of territorial development – northern, southern and central – will link both existing and developing regional and sub-regional territorial-economic systems, as well as isolated economic hubs and territories between them that, along with the formation of local inter-axial networks, will ensure the consolidation of the country’s domestic economic space. Besides, they should develop as part of trans-Eurasian trade and economic and transport and communications corridors, which will provide for additional benefits from the country’s geo-economic position in the context of the formation of a common Eurasian economic space.

The southern development axis will be formed along route of the border with China (Dostyk and Korgas)-Taldykorgan-Almaty-Taraz-Shymkent-Kyzylorda-Atyrau-Aktau with access to border regions of Central Asian states along its perimeter. The axis will link territories of continuous utilization in the country’s south that are favorable for living and economic activity with developed trade and economic and transport and communications hubs in Central Asian countries, as well as isolated economic hubs in Kyzylorda, Aktobe (southern part), Atyrau and Mangistau Regions with major accesses to the European, Middle Eastern, East Asian and South Asian economic spaces, and will form a South Kazakhstan Trans-Eurasian Trade and Economic Corridor (a revived Great Silk Road).

The Western Europe-Western China road will practically be included in the southern development axis. The Western Europe-Western China international corridor will become a major route for freight transportation in the Central Asian region. The corridor will ensure a high level of services by combining the excellent technical accessibility of the corridor with a modern intellectual system and services of logistics centers. A network of toll roads that is planned at certain sectors of the corridor will ensure quality and timeliness of services provided. The project will service the three main routes for freight transportation: China-Central Asia, China-Kazakhstan and China-Russia-western Europe. It will also exploit additional routes – China-Uzbekistan and Uzbekistan-Russia, as well as the Russia-the Baykonur cosmodrome route.

Main Factors of Growth in Container Shipments along the Western Europe-Western China Road

Basic Theory of the Study

The main beneficiaries of the results of the study in terms of multimodal shipments along the Western Europe-Western China corridor are the Kazakhstan Temir Zholy national railway joint-stock company and its subsidiaries, the Almaty (the Almaty hub) and other transport and logistics centers along the route and operators of regular container trains from Europe, Belarus and Russia in the direction of Aktobe (Ozinki)-Shymkent (Arys)-Almaty.

Let us also discuss working theories of the study, realizing that the final results of the study will either confirm or reject to some extent assumptions and possible scenarios.

"Ensuring the development of Xinjiang as part of the Xibu Dakaifa strategy"

Investment worth 2 trillion yuan is expected to be placed in many projects in Xinjiang in the next five years. Decisions to allocate funds for large-scale projects in Xinjiang and political measures concerning various spheres were adopted. A regional program to develop Xinjiang includes a package of political courses in the spheres of finance, taxation and industry that will provide all-round support to boost Xinjiang's economy².

The regional authorities are also ready to implement a number of infrastructure projects in Xinjiang to build railways, roads and airports that will encourage investment in the respective industries. The authorities also plan to speed up projects to reconstruct airports in Urumqi, Hotan and Korla and reconstruct and build several other airports.

All this will remarkably boost flows along the Western Europe-Western China road and the role of western China's economy, with a simultaneous increase in the flow of goods from China to the Customs Union's member states and to Central Asia.

"Diversification of flows from China to Europe"

Multinationals³ are interested in the diversification and modern logistics of their flows of goods. The creation of the Customs Union offers an opportunity to diversify part of the cargo flow that is now being redistributed through transport and logistics centers (TLC) in Europe directly from China which is a producer of brand products, above all, the FMCG segment⁴, diverting it to local TLCs and distribution centers in Russia, Kazakhstan and Belarus. Difference in the cost of customs clearance operations combined with modern logistics of delivering goods directly to a customer, presumably, will prompt the organization of schemes when goods from China will be cleared or repackaged on the Chinese-Kazakh border and/or major TLCs along the corridors. This will also be significant for flows of goods from Europe and/or transit through Europe to Kazakhstan and Central Asian countries (for example, products of European, South American or African enterprises of multinationals). In this case multimodal operations will have significance for vendors and their logistics schemes, and opportunities offered

² Reports by the Chinese People's Daily newspaper and Xinhua news agency

³ Multinational corporations

⁴ Fast moving consumer goods

by the Western Europe-Western China corridor will influence possible changes in development strategies of multinationals.

"Reloading containers on the border of Russia"

Failures to continue the continuation of the Western Europe -Western China (WE-WC) corridor in Russia and Belarus regarding increased loads on axles of a truck (this is expected to be increased by 30-50% to 13 metric tons per axle) and strong resistance from Russian and Belarusian motor carriers to the appearance of Chinese carriers in their markets condition the need of reloading when the corridor with increased load per axle is "broken".

This makes it possible to consider either the organization of piggyback shipment (semitrailer/road train will be loaded onto a railway platform and will continue movement to its destination) or the organization of reloading large-tonnage containers at the point of "load breakage" of the corridor onto fitting platforms⁵. In future, if the road is extended with increased load on axles, the scheme of this reloading may change. This theory studies the creation of a major TLC on the border of Aktobe Region with Russia. However, it is necessary to break the logic of participants in the transportation process who may prefer transshipment/reloading in a place that is close to the borders of the Customs Union as much as possible and that is fit for this as much as possible (for example, the Almaty hub) rather than investing in infrastructure on the border of Russia and Kazakhstan. The appalling experience of companies that have invested in large TLCs on the borders between new EU member states and "old" ones (these facilities have now been closed or have partially been redesigned for local logistics operations) points to the necessity of more thorough calculations of the pros and cons of the Single Economic Space that is being created by Russia, Belarus and Kazakhstan.

"Development of natural resources along the WE-WC road"

Deposits of raw materials along the WE-WC road in Kazakhstan will receive additional possibility to improve logistics of both delivering semi-finished products, equipment, spare parts or raw materials and exporting finished products/raw materials extracted. Modern solutions in the sphere of multimodal shipments (tank-container, flexi-tank⁶, container packages for loose goods and big bags) are expected to be used. In particular, the possibility of applying the "sulphuric acid-underground leaching of uranium ores-finished uranium dioxide" scheme will enable Kazatomprom's enterprises to significantly reduce transport costs and increase the use of the potential of road and railway infrastructure of the corridor as much as possible.

The use of drill fluid, adulterants and chemicals in oil fields also requires new logistics solutions. Salt extraction on the Aral Sea will also receive a number of solutions with the use of multimodal shipments. Partial transportation along the reconstructed and newly built road naturally supplement railway shipments that are more based on large cargoes.

⁵ A fitting platform is designed to transport large-tonnage containers and equipment.

⁶ <http://evropac.ru/>

"Shipments from Central Asia"

Goods from Central Asian countries that gravitate to the corridor (Uzbekistan, Kyrgyzstan, Tajikistan and to a lesser extent Turkmenistan) can be divided into three groups: re-exports from China to Russia (Kyrgyzstan), foodstuffs, namely vegetables and fruit (Uzbekistan, Tajikistan and Kyrgyzstan) and imports of consumer goods and foodstuffs to these countries from Europe or China that transit via Kazakhstan. Special stress is being placed on refrigerated containers or refrigerated semitrailers with independent systems of supporting a temperature regime. In this case, we can speak about a possibility of combining different modes of transport for speeding up the delivery of perishable products drastically. Concerning re-exports of consumer goods from China we may expect potential reloading of goods at the "breakage" of the corridor on the border between Kazakhstan and Russia onto containers in a TLC with customs clearance and delivery of foods to different regions of Russia and Belarus. Possible scenarios for conducting multimodal shipments within this theory concern the consolidation and partial processing of small consignments of vegetables and fruit in Shymkent at a special TLC and transporting them further in refrigerated containers by rail or road and the delivery of frozen meat and poultry from European ports to Kazakh regions and cities in Central Asia and the containerization of consumer goods that are re-exported by Kyrgyzstan in a TLC in Aktobe.

"Supplying the Baykonur cosmodrome"

The location of the Baykonur cosmodrome along the corridor is another potential hub of multimodal operations. The construction of the Bayterek facility, the possible reorientation of the cosmodrome's activities after the completion of an alternative cosmodrome in Russia and the attraction of foreign space operators - all these will somehow require the use of the corridor in combination with the Tyuratam railway station which is now satisfying the needs of the cosmodrome and entire infrastructure.

The possible arrival of foreign operators that are more exposed to modern logistics technologies will make it possible to prepare a number of solutions to transport freight to this region. Unfortunately, the strategic importance and practically complete secrecy of these shipments in the direction of the Tyuratam station (the town of Leninsk) prevent us from considering this theory realistically as part of this study on a large scale.

"Ensuring accelerated industrial and innovative development of Kazakhstan"

A program for the accelerated industrial and innovative development of Kazakhstan and plans to develop regions along the corridor also represent a basis for analyzing multimodal shipments. Supplies of construction materials, equipment, spare parts and raw materials, as the construction of Astana has shown, serve as a strong impetus to the development and use of modern logistics solutions. In our case the program for the accelerated industrial and innovative development of Kazakhstan bears a nature of the natural development of the national economy following the global crisis, therefore, the deepening of certain shipment technologies, including multimodal ones, is possible in the specific consideration of logistics, for example, in the construction of a plant or the development of new deposits which is the prerogative of owners/operators of these

projects. It should be noted that the majority of accelerated industrial and innovative development projects are declarative or conditional in nature and this directly impacts the secondary status of this working theory as part of this study.

"Development of the Aral Sea region"

The environmental disaster zone is under particular control by the Kazakh government and international organizations. The development of industry and fishery will ensure the survival of the region's population, while environmental problems require constant measures to support the region's infrastructure. The region's gravitation to the route of the corridor and comprehensive development plans also make it possible to draft proposals on the use of multimodal shipments to supply goods to the region and export finished products to other regions and foreign countries. This theory bears narrow regional nature which conditions its secondary status in this study and delegates this issue to regional carriers or branches of those companies who will benefit from this study in general.

"Strengthening relations between southern and western regions of Kazakhstan"

"Merging space between southern and western regions" is Kazakhstan's internal regional project. The relocation of the country's capital from Almaty to Astana has shown that "merging space" is one of the most important issues in Kazakhstan, which is interested in integration and interaction between the country's different regions with account of long distances and socioeconomic disunity. Drafting transport and logistics solutions that solve this problem is also covered in this study. The importance of Kazakhstan's western region in the regional distribution of production forces, especially in the oil and gas sphere, conditions the need to analyze the gravitation to the route of the corridor not only of Kyzylorda and Aktobe Regions, but also West Kazakhstan, Atyrau and Mangistau Regions and discuss transport and logistics solutions proposed for them. Taking into account that these regions house almost all important oil, gas and uranium deposits of the country, a factor of "merging space" in the transport sphere through the development of Western Europe-Western China corridor is of strategic importance. Possible solutions - supplying consumer goods and food products to cities in western Kazakhstan from Almaty and Shymkent and increasing internal freight turnover between Kazakh regions based on the example of the Almaty-Astana axis in 2000-2008. This working theory also depends on the solution of a key task of identifying a general scheme for multimodal operators to work both in Kazakhstan and along the WE-WC route.

"Supplies for NATO troops in Afghanistan"

The Western Europe-Western China transport corridor logically supplements supply routes of NATO troops in Afghanistan (the so-called Northern Distribution Network, NDN). Permissions obtained to transit freight to Afghanistan via Russia and Kazakhstan and, possibly, via China will offer some flow of cargoes which is studied in this research, since containers will travel along that direction⁷ and transit via Russia and Kazakhstan⁸

⁷ http://www.kavkaz-news.info/portal/cnid_45118/alias_Caucasus-Info/lang_en/tabid_2434/default.aspx

and China⁹. Freight will mostly be shipped by rail, but roads can also be used. In particular, the use of the Baltic-Transit container train¹⁰ to supply goods along the NDN means that empty containers should be loaded on way back in order to improve the financial performance of the container train and may help the development of multimodal shipments around stations of loading/transit along this route. This working theory coincides with the development of transport and logistics centers in Kazakhstan and, therefore, may very clearly answer a number of important issues of this study.

"Linking existing and future regular container trains from the European part of the Eurasian continent"

At present, about 35 regular container trains that are formed in EU member states (mostly in Lithuania and Latvia), Russia and Belarus and are headed to Central Asian countries and China transit via Kazakhstan (Table 1). We can assume that there are niches for multimodal shipments in this direction that will link flows of goods from China with empty regular railway containers from Europe. A paradox on the Central Asian transport market is that for the majority of sea and trans-Atlantic lines the region is a dead-end, with the high likelihood of non-returns or violations of demurrage conditions, as well as sea operators' unwillingness to take containers away from perfectly operating regular sea lines. This theory may be prioritized because, we believe, precisely existing flows of containers may attract new ones, thoroughly develop all corresponding infrastructure for multimodal shipments and identify a development strategy and possible scenarios for changes in the transport market in general.

⁸ <http://www.eurasianet.org/departments/insightb/articles/eav072309a.shtml>

⁹ <http://www.eurasianet.org/departments/insightb/articles/eav020210.shtml>

¹⁰ <http://www.fesco.ru/clients/container/trains/btct/>

Description of the Western Europe-Western China Transport Corridor and the Project to Reconstruct It

The Western Europe-Western China transport corridor lies along the St Petersburg-Moscow-Nizhniy Novgorod-Kazan-Orenburg-Aktobe-Kyzylorda-Shymkent-Taraz-Korday-Almaty-Korgas-Urumqi-Lanzhou-Zhengzhou-Lianyungang route. It covers five regions in Kazakhstan - Aktobe, Kyzylorda, South Kazakhstan, Zhambyl and Almaty Regions, with a combined population of 7.9 million people, i.e. a half of Kazakhstan's population. A total of 2,452 km of roads will be reconstructed: 358 km in Aktobe Region, 817 km in Kyzylorda Region, 458 in South Kazakhstan Region, 480 km in Zhambyl Region and 339 km in Almaty Region¹¹.

Figure 2. The Western Europe-Western China Transport Corridor¹²



The chief advantages of this project when compared with the existing alternative corridors - the Trans-Siberian railway line and the sea route via the Suez Canal - are its length and time spent to cover it. The Kazakh authorities hope to take advantage of China's growing power as an export giant. Research, conducted during the drafting of the feasibility study of the project, shows that the volume of freight will increase by 150% from 13 million metric tons to 33 million metric tons by 2020¹³.

The project will ensure freight transportation along three main directions: China-Kazakhstan; China-Central Asia; and China-Kazakhstan-Russia-western Europe. The construction of the corridor in Kazakhstan is expected to be completed in December 2012, but the landscaping and reclamation of lands will continue into mid-2013.

¹¹ <http://ru.government.kz/documents/publications/316>

¹² http://www.mtk.gov.kz/documents/slaid_zezk1.ppt

¹³ Ibid.

The sea routes takes 45 days and the Trans-Siberian takes 15 days, while the Western Europe-Western China corridor will take about 10 days to cover the distance between the port of Lianyungang to borders with European countries¹⁴.

The speed of movement on the improved road corridor will average 80 km/h, whereas the average speed of alternative routes is 30 km/h. A part of the road will be built anew, while other parts will be reconstructed.

The annual average combined cost advantages for Kazakhstan from the implementation of the project are estimated to stand at, at current prices: 33.9 billion tenge (\$282.8m¹⁵) from cutting time spent on covering the distance; 49.9 million tenge (\$0.42m) from a reduction in the number of traffic accidents; 19.3 billion tenge (\$161m) from a reduction in the number of deaths in traffic accidents; 9.5 billion tenge (\$79.3m) from a reduction in costs to service vehicles; and 82.9 billion tenge (\$691.6m) from a growth in gross regional product.

In total, the cost of the project is estimated at 825.1 billion tenge (\$6.9bn), with the state budget proving a small portion. This is possible because economic and political stability in Kazakhstan has made it possible to borrow funds in such small amount of time despite the consequences of the global financial crisis¹⁶.

Over \$3.4bn was expected to be borrowed from international financial institutions between 2007 and 2011¹⁷, including:

- \$180m from the European Bank for Reconstruction and Development (EBRD);
- \$2,125m from the International Bank for Reconstruction and Development (IBRD, a member of the World Bank Group);
- \$700m from the Asian Development Bank (ADB); and,
- \$398m from the Islamic Development Bank (IDB).

The EBRD provided a \$180m loan for a sector stretching for 102 km from the border of Russia (Martuk) to Aktobe.

The IBRD issued a \$2,125m loan for one project for the first time in its history. These funds will be spent on reconstructing 1,062 km of roads in Kyzylorda and South Kazakhstan Regions (Figure 4).

The ADB allocated a \$700m loan in three tranches for a 303-km-long sector in Zhambyl Region, while the IDB provided \$398m in two tranches for a 172-km-long sector in Zhambyl Region. Kazakhstan's central budget is expected to allocate 136.1 billion tenge (\$1.14bn¹⁸ at the exchange rate of 119.87 tenge to the dollar on 15 October 2010) as co-financing and the construction of certain sectors of the corridor with a total length of 304 km.

¹⁴ <http://ru.government.kz/documents/publications/316>

¹⁵ The exchange rate used for figures on this page is 119.87 Kazakh Tenge to the US Dollar (15 October 2008). See: ADB Report and Recommendation of the President to the Board of Directors "Proposed Multitranchise Financing Facility and Administration of Loan Republic of Kazakhstan: CAREC Transport Corridor I (Zhambyl Oblast Section) [Western Europe–Western People's Republic of China International Transit Corridor] Investment Program", Project Number: 41121, October 2008, <http://www.adb.org>

¹⁶ <http://ru.government.kz/documents/publications/316>

¹⁷ http://www.mtk.gov.kz/documents/slaid_zezk1.ppt

¹⁸ ADB Report and Recommendation of the President to the Board of Directors "Proposed Multitranchise Financing Facility and Administration of Loan Republic of Kazakhstan: CAREC Transport Corridor I (Zhambyl Oblast Section) [Western Europe–Western People's Republic of China International Transit Corridor] Investment Program", Project Number: 41121, October 2008, <http://www.adb.org>

Taking into account the current state of the road, the project envisions constructing a four-lane road of Technical Category 1 with cement pavement in a 283-km-long sector.

A total of 197 km of roads will be reconstructed as Technical Category 2 road with two lanes, of which 60 km is a ring road around Taraz, 45 km is a sector between Kaynar and Korday, 76 km is a ring road around Korday and 16 km is a road leading to the border with Kyrgyzstan. In addition, the road is expected to have a lane-separator with bumper barriers and lighting along sectors that will cut through settlements and interchanges, with the landscaping of the Kuyuk, Mashat and Korday passes. The project also includes work to landscape roads to bypass Kyrgyzstan's territory in the villages of Kamyshanovka and Stepnoye where the road crosses the state border in a number of places¹⁹.

The cost of the reconstruction of the Almaty-Korgas sector of the border with Uzbekistan-Shymkent-Taraz-Almaty-Korgas road through Kokpek, Koktal and Blagoveshchenka with access lanes to the border with Kyrgyzstan, according to the feasibility study, is 169 billion tenge (some \$1.41bn). The length of the road of Technical Category 1 with four lanes is 301 km²⁰.

¹⁹ <http://ru.government.kz/documents/publications/316>

²⁰ <http://ru.government.kz/documents/publications/316>

Assessment of Existing Logistics Infrastructure of Potential Multimodal Hubs along the Western Europe-Western China Corridor and Their Suitability for Multimodal Operations

The main cargo flows along the road are:

Southeastern direction: - a cargo flow from Urumqi (China), the new Korgas railway station that is under construction and the Korgas road border crossing to Almaty, which is the largest distribution and logistics center in the region and Kazakhstan. Almaty has the DAMU industrial and logistics center, the Astana Contract TLC, the Tau Terminal and the Kedentransservice joint-stock company's facilities.

Southern direction: - Almaty-Shymkent with an additional cargo flow through the Arys and Saryagash railway stations from/to Uzbekistan, Turkmenistan and Tajikistan.

Southwestern direction: services a cargo flow in the western direction through Kyzylorda, Aktobe and back.

Figure 3. The Main Directions of Cargo flows along the WE-WC Corridor²¹



Figures 4 and 5 show each regional center that is cut by the transport corridor and services industrial and trade needs of their respective regions and administrative centers.

²¹ http://www.unece.org/trans/main/speca/docs/13th_presentation04_r.pdf,
http://www.unece.org/trans/main/speca/speca_13.html

Figure 4. The Main Transport and Logistics Centers in Kazakhstan²²

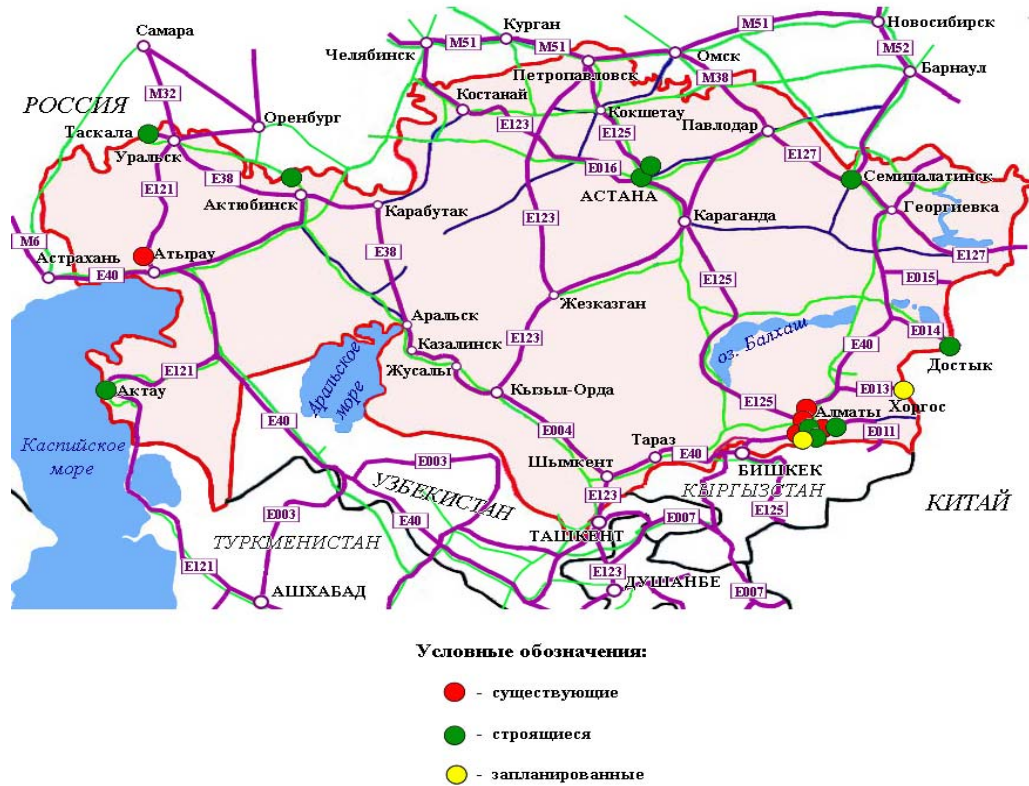
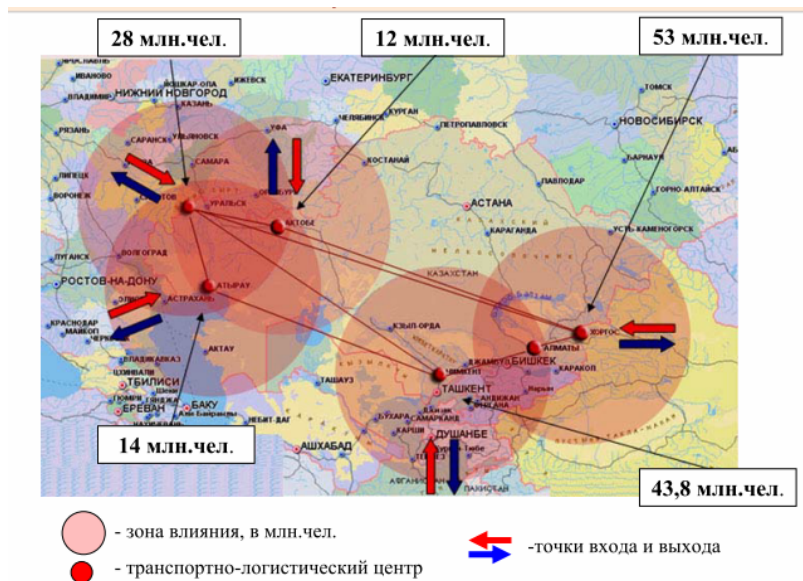


Figure 5. Zones of Influence of Transport and Logistics Centers along the WE-WC Road²³



²² http://www.unece.org/trans/main/speca/docs/13th_presentation04_r.pdf,
http://www.unece.org/trans/main/speca/speca_13.html

²³ Ibid.

The assessment of the existing logistics infrastructure of potential multimodal key hubs along the Western Europe-Western China corridor and their suitability for multimodal operations are based on the analysis of the capacity of existing transport and logistics centers and those that are being built and planned in order to satisfy specific needs arising in multimodal shipments of large-tonnage containers:

- Container terminals²⁴ of these TLC for multimodal operations should have capacities to services train cars and trucks;
- unloading train cars should make it possible to work with container trains;
- sizes of container sites should meet the current and future flows of containerized freight;
- for ensuring a full set of loading and unloading operations container terminals should have gantry cranes in sufficient numbers and with necessary capacities, reach stackers and other equipment and vehicles for loading and unloading large-tonnage containers;
- it will be desirable to have sufficient parking lots for large-tonnage vehicles and zones for maneuver.

Transport and Logistics Centers in Almaty

This study on multimodal operations along the Western Europe-Western China transport corridor included field studies to identify the capacities and limitations of the Almaty hub and Chinese-Kazakh border crossings.

The field studies looked into the following movement of freight: the delivery of freight from China in large-tonnage containers to the Korgas crossing point (road) and to the Dostyk crossing point (railway), the processing of them in TLCs in Almaty and the distribution of them further to other cities and/or states.

The field studies were divided into two parts:

1. Studying the potential of TLCs in Almaty, their characteristics and capacities of their container terminals and a range of services provided by these TLCs.
2. Studying the specifics of transportation along the Korgas-Almaty and Dostyk-Almaty routes and assessing time and costs of transportation, capacities and limitations, factors helping or hindering multimodal operations. (The results of the second part the research are provided in "Results of Field studies" chapter).

Major TLCs such as Damu Almaty, Tau Terminal and others were selected for this study. Selection criteria included the availability of container terminals, railway lines leading to stations and so on.

In considering the capacities for ensuring multimodal operations it was also necessary to bear in mind the capacities of Kedentransservice branches. This subsidiary of the KTZ operates cargo stations whose infrastructure enables it to process large-tonnage containers.

The first field studies included meetings with TLCs in Almaty and discussions of topics such as the current state of the centers' infrastructure, their measures to increase the capacities of terminals, tariffs for services they offer (storage at temporary storehouses, customs clearance of goods and so on).

²⁴ Container terminal is a special facility to perform logistics operations to receive, reload, store, consolidate containers and provide information support to clients.

Meetings with representatives of TLCs in Almaty showed that all TLCs could be divided into three categories:

1. TLCs that distribute cargo;
2. TLCs that are involved in transit shipments;
3. TLCs that do both (distribution and transit shipments).

The field studies produced information on the Almaty hub's TLCs, mostly about container terminals and services to process containers (unloading, loading and distributing cargo, processing containers and so on). The field studies's results are shown in Table 1.

Processing a TEU takes one to four hours, with account of clearing cargo and redistribution of it.

The study of container terminals and storehouses of TLCs showed that all of them intended to expand by building new storehouses, buying new equipment to process containers, improving the process of processing containers and so on. This means the owners and managers of TLCs expect a growth in container shipments and, therefore, shortages of capacities to process containerized freight in the near future.

Table 1. The Results of the Field studies of the Almaty Hub's TLCs

		<i>Damu</i>	<i>Astana Contract</i>	<i>PEAK Akzhal</i>	<i>Tau Terminal</i>	<i>Kedentrans-service, Almaty branch</i>
Area (ha)		210	11	61.7	9.2	20
Buildings and premises (square meters)	Total	150,000	111,000	78,560	21,000	56,000
	Storehouses	50,000	50,000	37,000	14,400	-
Container terminals (TEU)		4,000	8,000	1,000	2,000	1,400
Capacity (TEU per year)		20,000	30,000	20,000	15,000	15,000
Number of railway lines and access drives		3 lines, 9 km	9 lines, 6 km	3 lines, 4 km	2 lines, 4 km	6 lines, 5 km
Number of parking lots		2,500	400	500	60	300
Information system		Infostar	Infostar, WMS	Infostar	WMS EXCEED	Infostar
Offices		4,000	4,000	1,000	1,100	1,200
Infrastructure of the center		Locomotives (3), gantry cranes (2), stackers (2), train car washing facility (1), a maneuver fleet (for owners, for general use), elevated approaches, a facility to weigh train cars and trucks	Locomotive (1 TGM-3B), gantry cranes (2), mobile crane (1), container carriers for internal technological operations (3), reach stacker (1) a fleet of trucks and electric loaders, an vehicle scaffold platform	Locomotive (1), gantry cranes (3), vehicles (6), a train car washing facility (1), a maneuver fleet (for owners, for general use), elevated approaches, a facility to weigh train cars and trucks	Locomotive (1), gantry cranes (3), stacker (1), train car washing facility (1), a maneuver fleet (for owners, for general use), elevated approaches, a facility to weigh train cars and trucks, a refrigerator storehouse with a capacity of 600 pallet racks	Locomotives (2), gantry cranes (4), stackers (2), train car washing facility (1), a maneuver fleet (for owners, for general use), elevated approaches, a facility to weigh train cars and trucks

	<i>Damu</i>	<i>Astana Contract</i>	<i>PEAK Akzhal</i>	<i>Tau Terminal</i>	<i>Kedentransservice, Almaty branch</i>
Nearest railway station (km)	Zhetisu (1 km)	Almaty-1 (1.8 km)	Burunday (5 km)	Zhetisu (1.5 km)	Almaty-1 (3 km)
Customs	Available	Available	Available	Available	Available
Brokerage services	Available	Available	Available	Available	Unavailable

*Data for 2010. Costs of services differ from center to center

Table 2. Multimodal Capacities of the Almaty Hub's TLCs

TLC	Container terminals (TEU)	Capacity (TEU per year)	Number of railway lines and access drives	Number of parking lots	Infrastructure of the center
Damu	4,000	20,000	3 lines, 9 km	2,500	2 gantry cranes
Astana Contract	8,000	30,000	9 lines, 6 km	400	2 gantry cranes 1 mobile crane 3 container carriers for internal technological operations 1 reach stacker
PEAK Akzhal	1,000	20,000	3 lines, 4 km	500	3 gantry cranes
Tau Terminal	2,000	15,000	2 lines, 4 km	60	3 gantry cranes
Kedentransservice, Almaty branch	1,400	15,000	6 lines, 5 km	300	4 gantry cranes
Total on all 5 TLCs	16,400	100,000		3,760	14 gantry cranes 1 mobile crane 1 reach stacker

At the same time, the combined capacity of the five TLCs studied is about 100,000 TEU per year (Table 3), and these are major TLCs in Almaty (accounting for 70-80% of storage capacity of all Almaty TLCs with access to railway lines). As a result, total supply of TLCs services exceeded slightly demand in 2008-2010, but the capacity of Almaty hub's TLCs will not be sufficient to meet the growing demand for TLC services in the near future.

The field studies showed that the Kazakh authorities and transport and logistics companies were properly responding to the growing demand for TLC services and that TLC operators had started building the necessary infrastructure and adopting new information technologies that would allow them to increase the capacities of TLCs and boost the cargo flow in general. The use of different modes of transport in delivering containers, i.e. multimodal shipments, is also on the rise.

Directions of Cargo flows along the Western Europe-Western China Road

The Western Europe-Western China project will significantly expand possibilities for transport cargoes in the following key directions:

1. Foreign trade shipments of Kazakhstan;
2. Internal shipments in Kazakhstan;
3. Cargo transit via Kazakhstan.

These key directions may be divided into a number of sub-directions:

I. Internal shipments in Kazakhstan

This study considered interregional cargo transportation to and from Almaty and Almaty Region from and to the other four regions involved in the transport corridor, as well as Zhambyl, South Kazakhstan, Kyzylorda and Aktobe Regions.

II. Foreign trade shipments of Kazakhstan - exports/imports to and from the following countries:

- 1) China and Asia-Pacific countries (South Korea, Japan, North Korea, Southeast Asian countries), as well as the USA (via Chinese ports);
- 2) Customs Union member states (Russia and Belarus);
- 3) Central Asian countries;
- 4) Turkey and Iran;
- 5) Western Europe;
- 6) other countries.

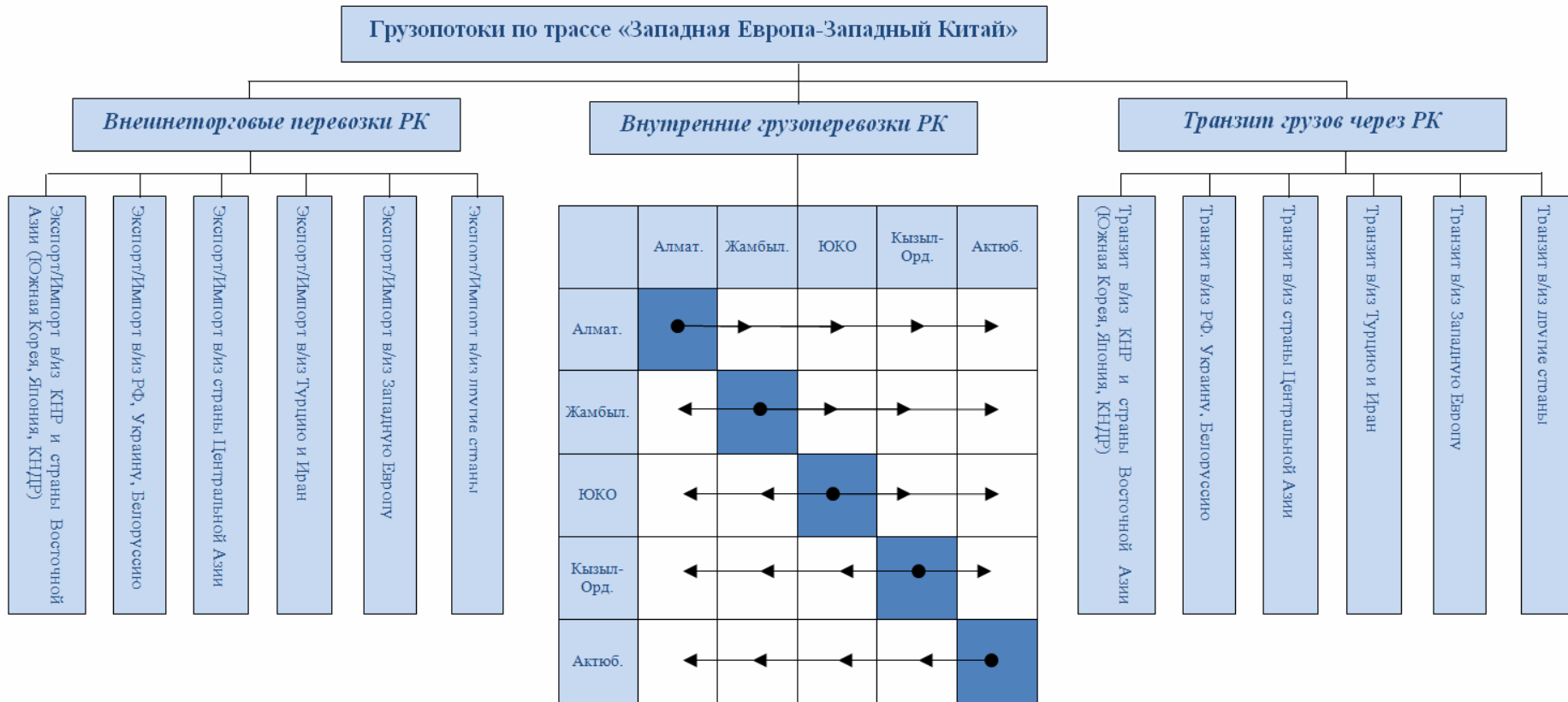
III. Cargo transit via Kazakhstan to/from the following countries:

- 1) China and Asia-Pacific countries (South Korea, Japan, North Korea, Southeast Asian countries), as well as the USA (via Chinese ports);
- 2) Customs Union member states (Russia and Belarus);
- 3) Central Asian countries;
- 4) Turkey and Iran;
- 5) Western Europe;
- 6) other countries.

External directions of shipments along the road may also be combined by groups of border crossings with the following countries:

1. China;
2. Russia;
3. Uzbekistan;
4. Kyrgyzstan.

Figure 6. Cargo flows along the Western Europe-Western China Road



Exports and imports by regions involved in the road. The main exporting regions are regions with developed mining sectors, as well as Almaty because it is the country's economic center. The main export items are oil, chromium ore, uranium, petroleum products and copper ore.

The bulk of imports to Kazakhstan is channeled through Almaty where goods undergo customs clearance and further distribution within the country. The second important region is Aktobe Region that borders Russia, the third is Almaty Region that borders China and the fourth is South Kazakhstan Region that borders Uzbekistan. Zhambyl Region receives customs cleared goods from Almaty and South Kazakhstan Region, while Kyzylorda Region receives them from South Kazakhstan Region.

Kazakhstan has 14 railway border crossings with other countries, of which:

- in southern Kazakhstan there are three crossings with Uzbekistan (Saryagash, Maktaaral and Oasis) and one with Kyrgyzstan (Lugovaya);
- in northern Kazakhstan there are 11 crossings with Russia (Aksarayskaya, Ozinki, Ilets-1, Nikeltau, Tobol, Zolotaya Sopka, Presnogorskoyaya, Petropavlovsk, Kyzyltu, Kulunda and Lokot) and one crossing - Dostyk-Alashankou - with China.
- Out of many land border crossings only a small number are located on important international roads.

Table 3. Road Border Crossings

Border with	Border crossings	
	multilateral	bilateral
1	2	3
Russia	1-Kotyayevka, 2-Taskala, 3-Pogodyayev, 4-Aksay, 5-Zhaysan, 6-Alimbetovka, 7-Kayrak, 8-Akbalshyk, 9-Zhanazhol, 10-Karakoga, 11-Urlitobe, 12-Suluagash, 13-Kosak, 14-Sharbakty, 15-Bostal, 16-Ayyyl, 17-Zhezkent, 18-Ube	1-Zhylandy, 2-Balkuduk, 3-Orda, 4-Saykhin, 5-Zhanybek, 6-Kaysatskoye, 7-Borsy, 8-Kaztalovka, 9-Uralsk, 10-Zhirenkopa, 11-Taldysay, 12-Ayteke Bi, 13-Karabutak, 14-Akkarga, 15-Kondybay, 16-Zhelkuar, 17-Ayat, 18-Ornek, 19-Keneral, 20-Zhylandy, 21-Ubagan, 22-Aymzhan, 23-Kyzyl Zhar, 24-Ulken Karaoy, 25-Bidaik, 26-Amankeldi, 27-Yertis, 28-Mikhaylovka, 29-Nayza, 30-Chalday, 31-Koyanbay, 32-Baytanat, 33-Kordon
China	19-Maykapshagay, 20-Bakhty, 21-Dostyk, 22-Korgas, 23-Kulzhat	61-Narynkol, 62-Alekseyevka
Kyrgyzstan	24-Kegen, 25-Korday, 26-Novovoskresenovka, 27-Aysha Bibi	34-Sartobe, 35-Aukhatty, 36-Karasu, 37-Zhayyl, 38-Kamyshanovka, 39-Besagash, 40-Alatau
Uzbekistan	28-Zhibek Zholy, 29-Kaplanbek, 30-Gani Muratbayev, 31-Shardara, 32-Bozoy, 33-Tazhen	41-Mayskiy, 42-Kesken, 43-Darkhan, 44-Yzgyryk, 45-Tonkeris, 46-Beybitshilik, 47-Yntymak, 48-Lesbek Batyr, 49-Keles, 50-Atameken, 51-Nurlybayev, 52-Konysbayev, 53-Dalakuduk, 54-Kondozy, 55-Myntay, 56-Karbay, 57-Molbay, 58-Kozhantay
Turkmenistan	34-Temirbaba	59-Ayaksaray, 60-Otyndy

Cargo flows through the Border with China

Kazakhstan's trade with China is second only to Russia's trade with China among CIS countries. Bilateral trade between Kazakhstan and China increased by more than 2,400% since 1992, reaching a record of \$17.5bn in 2008. Trade stood at \$14,087m in 2010 (exports at \$10,122m and imports at \$3,965m). Kazakhstan hopes that bilateral trade in 2011 will exceed the pre-crisis record and will total at least \$17.5bn²⁵.

The Kazakh part of the Western Europe-Western China road links to the Chinese extension of the road at the Korgas border post. In the future the significance of Korgas as a transport and logistics center on the road will definitely grow, but most cargo is now moved in both directions through the Dostyk border crossing, mainly through the Dostyk-Alashankou railway station.

Cargo flows through Dostyk²⁶

According to customs statistics, a combined cargo flow through Dostyk stood at 9.2 million metric tons in the first eight months of 2010 (against 8.9 million metric tons in the same period of 2009). Chinese imports to Kazakhstan, CIS and non-CIS countries totaled 2.3 million metric tons (2.3 million metric tons in the first eight month of 2009). Exports from Kazakhstan, CIS and non-CIS countries were 6.9 million metric tons (6.6 million metric tons in the same period of 2009). This means that 539 trains with a total weight of 29,000 metric tons on average crossed the border every day.

A total of 129,379 trains exported goods to China in the first eight months of 2010 (117,857 trains in 2009), which is 11,522 trains or 10% more than in 2009.

The majority of exports came from Kazakhstan - 6,202,000 metric tons or 90% of total cargo exported.

A fuller picture of the structure of cargo shipments through the Dostyk station is available for 2009.

According to customs statistics, a total cargo flow through Dostyk was 14.8 million metric tons in 2009 (11.4 million metric tons in 2008). Chinese imports to Kazakhstan, CIS and non-CIS countries were 3.5 million metric tons (5.1 million metric tons in 2008), while exports from Kazakhstan, CIS and non-CIS countries stood at 11.2 million metric tons (6.3 million metric tons in 2008).

An increase in cargo shipments to Turkmenistan and Uzbekistan is explained by an increase in supplies of pipes from China.

Goods and vehicles cross the Dostyk customs zone into China which undergo customs clearance in other Kazakh, CIS or non-CIS customs services.

In 2009, 187,841 trains exported goods to China (98,111 in 2008), up by 89,730 or 92%. The total weight of goods exported was 11,228,000 metric tons (6,330,000 metric tons in 2008). About 515 trains with a total weight of 31,000 metric tons crossed the border every day.

²⁵ <http://www.centrasia.ru/newsA.php?st=1266996120>

²⁶ Data from Kazakhstan Temir Zholy

Goods exported from Kazakhstan included iron nuggets (2601) by the Sokolov-Sarbay ore-enrichment combine; crude oil (2709) by the Kvat Amlon Munay joint venture, PetroKazakhstan Oil; scrap metal (7204) by Vtorchermet, Vtorprom and Centprom companies; steel (7209) by ArcelorMittal Temirtau; and zinc (7901) by Kazzinc.

Goods exported from Russia included timber materials (4407) and fertilizers (3104).

Goods exported from Central Asian countries included cotton lint, cotton fiber, aluminum bars, heating oil and fuel oil.

The Dostyk-Alashankou international crossing occupies a special role in tapping Kazakhstan's transit potential. In the context of this study, it is worth noting that the volume of container shipments increases by 40% on average through the Dostyk-Alashankou crossing every year.

Lets consider trends in the shipment of cargo in large-tonnage containers by rail through the Dostyk-Alashankou crossing in different types of goods (transit, imports and exports).

The transit of container shipments by rail²⁷. In 2010, the transit of large-tonnage containers totaled 1.6 million metric tons, up by 38% on 2009, and it mainly grew at the expense of FEU (an increase by 37%).

With account of empty containers, Kazakhstan shipped 144,500 large-tonnage containers internationally in 2010 (without distinguishing between TEU and FEU), of which 49.8% was shipped through the Dostyk station.

The main part of containers shipped from China and Asia-Pacific to Central Asia is conducted via Dostyk (50,100 containers in 2010, 5% up from 2009). Shipments from South Korea (spare parts for General Motors' Uzbek car producer transported from the Busan port (South Korea) via the Vostochnyy port (the Nakhodka-Ex station), Lokot and Saryagash to Abylk) also play a significant role, and the volume of shipments along this route increased by 8% to 5,000 containers in 2010. This accounted for 49% of the total transit of containerized goods.

It should be noted that the Dostyk station is part of the second route to supply spare parts for General Motors' Uzbek car producer (29% of total shipments from China and Asia-Pacific to Central Asia in 2010).

The growing trend is observed in shipments of the following types of cargoes in large-tonnage containers:

- machinery and equipment - by 4%,
- chemicals and sodium - by 16%.

It is worth noting that a significant growth in shipments of freight in containers from Uzbekistan to China through the Dostyk-Alashankou crossing in 2010 was contributed by **mineral fertilizers**, standing at 5,662 containers (only 82 containers in 2009). This is explained by the fact that the Uzbek producer of mineral fertilizers - Uzkimyosanot -

²⁷ Data from Kazakhstan Temir Zholy

started using containers arriving with spare parts for cars and other equipment and with cargoes for NATO troops in Afghanistan for its shipments.

Uzbekistan was the largest recipient of containerized cargo transited through Kazakhstan in 2010, accounting for 40% of this market.

Shipments to Kyrgyzstan account for 10% of the total, mainly cars and equipments. The most transited item is cars from China.

Tajikistan's share is 5.5%, with Chinese-made cars and minibuses accounting for the bulk of cargo.

Railway container shipments of imports²⁸. In 2010 the KTZ shipped 67,000 of large-tonnage containers from foreign countries, an 11.9% growth on the previous year.

The growth was possible thanks to the following factors:

- an increase in shipments of large-tonnage containers of other cargoes (by 3,660 containers or 21%);
- an increase in shipments of large-tonnage containers of spare parts for trailers and semitrailers (by 362 containers or 55%);
- a significant increase in shipments of consumer goods from China through the Dostyk station to the Almaty-1 station (by 2,611 containers or 27%) and to Astana (by 526 containers or 26%).

The average distance of shipments of containers with imported goods was 1,391 km in 2010 and increased by 32 km thanks to an increase in shipments of machinery and equipment and iron products from China to Kazakhstan's western regions (siding No 6 and the Ozen and Beyneu stations).

China and Russia accounted for 50% and 18% of shipments of containers with imports from Kazakhstan in 2009 and 2010 respectively.

Railway container shipments of exports²⁹. In 2010, the KZT shipped 49,500 of large-tonnage containers to foreign countries, a 43.4% growth on the previous year.

The growth in shipments of cargo in TEU was thanks to an increase in shipments of ferrous alloys to China by 9,563 containers or 62% and chromium trioxide (the Zhinishke station) by 195 containers or 68%. It should be noted that television sets and spare parts for them were shipped in 282 FEU, an increase of 83 containers or 42%.

Shipments of ferrous alloys increased by 62% to 9,549 containers in 2010 and they remain the most important item that is exported in containers. Liquefied hydrocarbons gases has also started to be shipped in containers (139 containers) from the Zhem station to China via the Dostyk crossing.

China's share in Kazakh exports shipped in containers was largest both in 2009 and 2010 at 24.4% of all exports, mostly thanks to the return of empty containers from the Almaty-1 and Almaty-2 stations and supplies of ferrous alloys to South Korea via China. Ferroalloys are the main export item shipped in containers from Kazakhstan to Germany, South Korea and Japan.

²⁸ Data from Kazakhstan Temir Zholy

²⁹ Data from Kazakhstan Temir Zholy

The share of export shipments in containers is only 19% of total container shipments due to, first of all, the lack of markets for containerized cargo and goods with high added value because of the Kazakh economy's heavy reliance on raw materials.

Cargo flows through Korgas

The Korgas border crossing is a major transport hub that has a great transit potential. It is located at a distance of 670 km from Urumqi, the administrative capital of China's western Xinjiang-Uighur Autonomous Region, and 378 km from Almaty, Central Asia's economic center. This crossing is the most convenient and largest road crossing in the region and the nearest Chinese border crossing to Central and West Asia and Europe³⁰.

Shipments between other Central Asian countries and Russia mostly transit along Kazakh corridors. There are also established transit flows of Chinese goods to Kyrgyzstan, Uzbekistan, Russia, Ukraine, Azerbaijan, Turkmenistan, Tajikistan, Georgia and other countries through Kazakhstan.

Forecasts for Cargo flows through the Border with China for 2011-2020

Cargo flows along the transport routes in question service foreign trade operations between Kazakhstan and China and transit operations through Kazakhstan, which is why the most topical issue is to study operational dependence of cargo flows through the Dostyk and Korgas border crossings on foreign trade of Kazakhstan and other countries with China.

On the other hand, Chinese imports to Kazakhstan and transits (mostly imports) through Kazakhstan to some CIS countries (mostly other Central Asian countries and Russia) are consumed domestically. In turn, changes in domestic consumption are linked to changes in GDP in the countries in question.

Lets extrapolate the existing data on cargo flows through the Dostyk and Korgas crossing points in 2000-2010 on the following decade.

Based on the existing data on cargo flows through Dostyk and Korgas and forecasts made by the IMF for six countries (without Belarus because its share in transit through Kazakh-Chinese border posts is negligible), we created a multiple linear regression model and made forecasts for total cargo flows (including exports, imports and transit) to and from China through Dostyk and Korgas for 2011-2015.

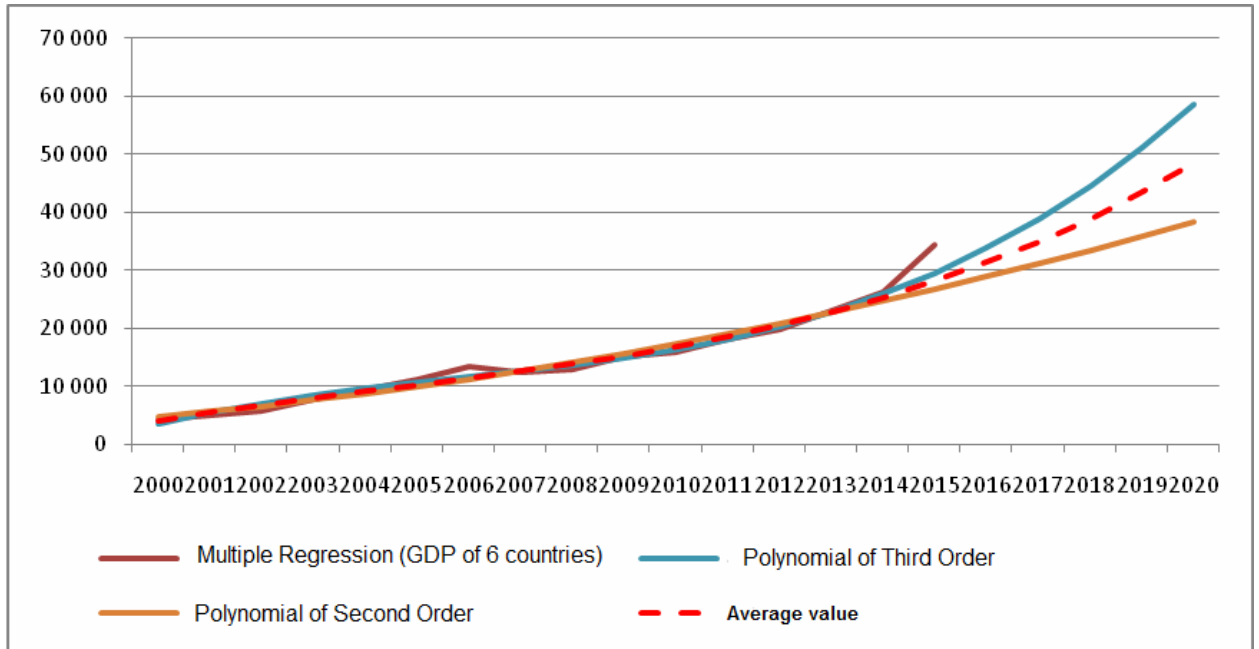
Considering cargo flows within a formal approach, we extrapolated from data for 2000-2004 using polynomials of second and third order (logarithmic, exponential and power curves approximate data with the coefficient of correlation that is smaller for polynomials).

The acceptability of this approach may be assessed by approximation of existing data for 2000-2010, and assessments for 2011-2014 are quite close. For the further analysis of cargo flows we can adopt extrapolation by the polynomial of third order as a best-

³⁰ <http://www.traceca-org.org/fileadmin/fm-dam/TAREP/64II/64II3.pdf>

case scenario and extrapolation by the polynomial of second order as a worst-case scenario, and their average as a basic scenario.

Figure 7. Extrapolation of Various Curves of Total Cargo flows through Dostyk and Korgas in 2000-2020 (thousand metric tons)



The basic scenario forecasts cargo flows at 28.2 million metric tons in 2015 and 48.5 million metric tons in 2020. Assessments of this study and previous studies are very close that makes it possible to assess prospects for the subject of this study - multimodal container shipments along the Western Europe-Western China road - with more confidence.

Figure 8. Containerized Cargo flows in 2005-2010 (thousand TEU)

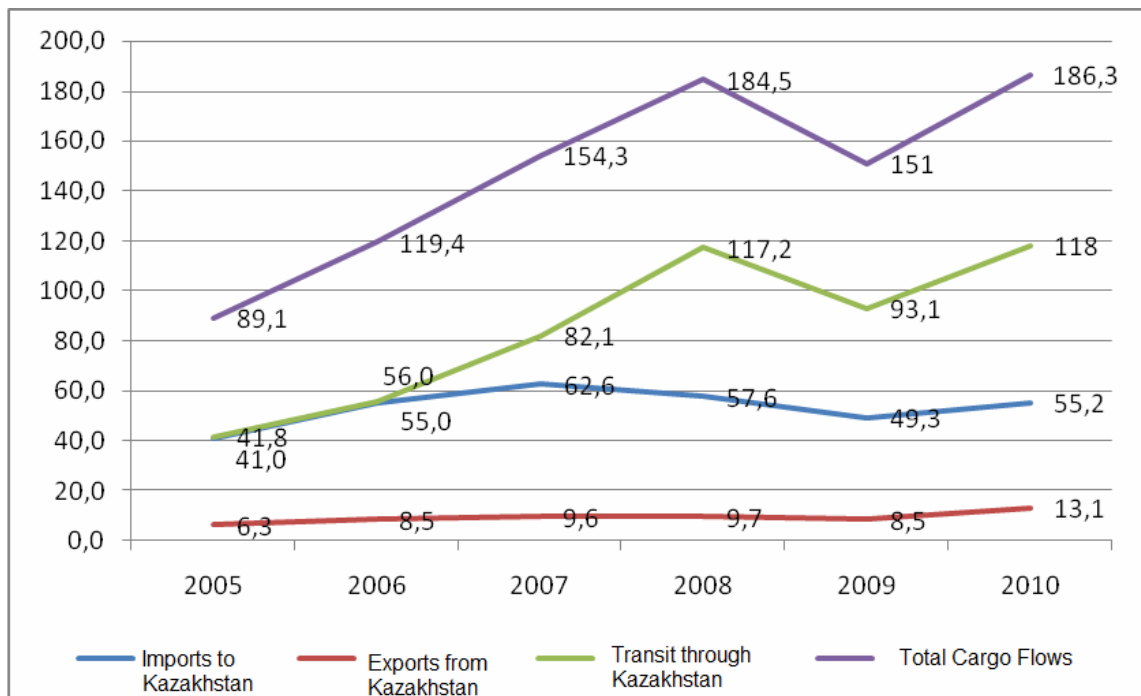


Figure 9. Extrapolation by Various Curves of Containerized Cargo flows in 2005-2020 (thousand TEU)



As a result, flows of large-tonnage containers through the main two Kazakh-Chinese border crossings is expected to grow from 186,300 TEU in 2010 to 316,600 TEU in 2014 and 793,600 TEU in 2020. At the same time, the majority of containerized cargo will be shipped in Kazakhstan by rail. The potential of multimodal cargo flows along the Western Europe-Western China transport corridor may be assessed from the aforementioned figures.

As a result, even though shipments of large-tonnage containers along the WE-WC corridor will grow significantly compared with previous years, the share of multimodal cargo flows is estimated to stand at the current 5-7% of the total flow of containerized cargo in 2011-2020. However, in absolute terms figures are impressive - 15,800-22,200 TEU in 2014 and 39,700-55,600 TEU in 2020.

Cargo flows through the Border with Russia

Russia is Kazakhstan's largest trade partner. Bilateral trade accounts for over 17% of Kazakhstan's foreign trade.

Trade between Kazakhstan and Russia stood at \$15,826.6m in 2010 (exports totaled \$4,820.4m and imports \$11,006.2m)³¹.

The first results of the work of the Customs Union show that Kazakh exports to Russia increased by 35.9% and to Belarus by 60% in 2010. Imports from Russia grew by

³¹ <http://www.stat.gov.kz/publishing/20111/PredvDan2010.pdf>

23.7% and from Belarus by 24.5%. Kazakhstan's total trade with the Customs Union member states increased by 28.1% to \$16.5bn, accounting for 18.5% of its total foreign trade³².

Major railway crossings on the border between Kazakhstan and Russia are the Iletsk-1 (Aktobe Region), Semiglavyy Mar (Taskala in West Kazakhstan Region), Ozinki (in Russia's Saratov Region) and Tobol (in Kostanay Region).

The transit of container shipments by rail³³. In 2010 Kazakhstan transited 53,000 average and large-tonnage containers through the Ozinki and Iletsk-1 stations (the KTZ shipped a total of 161,000 containers). About 82% of containers transited through Ozinki and only 18% through Iletsk-1.

In 2010, the number of containers carrying non-military cargo to Afghanistan for NATO troops transited through the ports of Riga, Aktau, Draugyste and Muuga increased significantly by 17,988 (a 260% growth on 2009). This accounted for 22% of the total number of containers transited. A regular container train from Klaipeda to Galaba/Hairatan was launched in 2011.

This increase resulted in a growth of 50% in shipments of metal products and a 170% in shipments of timber products.

Metal and timber products (tents, timber frames, furniture, plywood, paper and so on) were mostly shipped to NATO troops in Afghanistan, while shipments in other directions did not change in volume.

EU-CIS and Baltic Countries - Central Asia

Shipments in this direction accounted for 11% of total transit of containerized cargo in 2010. The number of containers transited was 12,790, down by 2,061 or 14% on the previous year. Consumer goods (household chemicals, furniture, equipment and spare parts for it) were the main items transited.

The decrease in shipments of goods from EU, CIS and Baltic countries to Central Asia is explained by the fact that these goods are being increasingly more shipped from China and Asia-Pacific.

Railway container shipments of imports³⁴. In 2010 the Kazakhstan Temir Zholy national railway company shipped about 76,000 containers with imported goods, of which about 40% were large-tonnage containers from Europe and the USA (they mostly crossed through Iletsk-1 and Ozinki).

In 2010, like in previous years, the main countries that sent containerized cargo to Kazakhstan were Russia and China, with their shares standing at 50% and 18% of total shipments of imports respectively.

³² <http://www.newskaz.ru/economy/20110222/1175685.html>

³³ Data from Kazakhstan Temir Zholy

³⁴ Data from Kazakhstan Temir Zholy

Apart from Ilets-1 and Ozinki, cargo was also imported through the Aksaray, Nikeltau, Tobol, Zolotaya Sopka, Presnegorskoyaya, Petropavlovsk, Kyzyltau, Kulunda and Lokot stations.

Railway container shipments of exports³⁵. In 2010, Kazakhstan Temir Zholy shipped about 54,600 containers with exported goods, a 39% increase on the previous year. Exports to Russia and European countries accounted for 51.5% of shipments.

Branches and Exit Points from Kazakhstan

The main topic of the study was flows of containerized cargo from China to Europe and back. However, statistics of shipments of containers show that most large-tonnage containers travel along routes that may be regarded as branches of the Western Europe-Western China transport corridor that lead to Uzbekistan via Saryagash and Oazis and Kyrgyzstan via Lugovaya.

Cargo flows through the Border with Uzbekistan

Bilateral trade between Kazakhstan and Uzbekistan stood at \$1,574.5m in 2010 (exports to Uzbekistan were \$1,101.2m and imports to Kazakhstan \$473.3m).

Uzbekistan has 173 enterprises with the involvement of Kazakh investment, including 48 joint ventures, operating in the trade, construction, food, machinery, light and metal sectors.

Kazakhstan exports grains, flour and cereals, food products, energy sources, iron and non-ferrous metals and chemical products to Uzbekistan and imports natural gas, cotton fiber and vegetables and fruit from Uzbekistan.

Kazakhstan has three links to Uzbekistan's railways (the Saryagash, Oazis and Maktaaral stations).

Large-tonnage containers through the Uzbek border are shipped mostly through the Saryagash³⁶ and Oazis stations. In 2003 when Saryagash was designated as a border crossing, its capacity was 15 pairs of trains per day and it served only six or seven pairs of trains then. From mid-2007, the number of trains heading for Russia, Baltic countries and Ukraine alone became seven to eight container trains per day.

1. China and Asia Pacific Countries to Uzbekistan and Tajikistan (through the Dostyk Border Crossing)

The main types of cargo shipped from China and Asia-Pacific are consumer goods, spare parts for cars, machinery and equipment, construction materials and iron products, while Uzbekistan mostly supplies raw materials (cotton, yarn, mineral fertilizers and so on).

2. EU and USA to Afghanistan (through Ports of Aktau, Riga, Muuga and Klaipeda to Russia, Kazakhstan and Uzbekistan to Galaba/Hairatan in Afghanistan)

³⁵ Data from Kazakhstan Temir Zholy

³⁶ Sarygash is sometimes spelt as Sary-Agach

In 2010, the number of containers carrying non-military cargo to Afghanistan for NATO troops transited through the ports of Riga, Aktau, Draugyste and Muuga increased significantly by 17,988 (a 260% growth on 2009). This accounted for 22% of the total number of containers transited.

3. EU, CIS and Baltic Countries to Uzbekistan and Tajikistan

It should be noted that a decrease in shipments from Russia to Central Asian countries by 18% is linked to an increase in the cost of shipping cargo in containers in this direction.

This increase was a result of Russia's Transcontainer company increasing tariffs for shipping container platforms and containers because of higher costs of shipment.

Cargo flows through the Border with Kyrgyzstan

Kazakhstan is one of Kyrgyzstan's leading foreign trade partners. Bilateral trade stood at \$507m in 2009 (exports - \$390.5m and imports - \$116.5m), a 16.7% down on 2008 because of the global financial crisis.

In 2010, trade totaled \$589.9m (exports worth \$424.2m and imports - \$165.7m). In the first quarter of 2011, this figure amounted to \$120.9m (exports - \$93.4m and imports - \$27.5m).

Containers flow to Kyrgyzstan mostly via the Lugovaya station.

Year 2010 saw an increase (13%) along the **Dostyk-Lugovaya** section due to the increased supplies of Chinese-made cars and minibuses to Kyrgyzstan, as well as consumer goods, construction materials and food products.

Shipments to Kyrgyzstan account for 10% of the total volume of transit shipments. The main cargo shipped is machinery and equipment, mostly Chinese-made cars.

Bilateral trade between Kazakhstan and Kyrgyzstan based on large-tonnage containers is insignificant. Moreover, prospects for container shipments in Kyrgyzstan and transit through Kyrgyzstan are strategically linked to the Kyrgyz-Chinese border crossings at Torugart and Irkeshtam that are discussed in detail in the study "Multimodal Corridor through Kyrgyzstan. Preliminary Feasibility Study".

This study³⁷ discussed various aspects of transporting large-tonnage containers along the trans-Kyrgyz multimodal corridor.

Prospects for Domestic Inter-Regional Multimodal Shipments of Cargo

In 2010 the volume of large-tonnage containers transported within Kazakhstan totaled 31,400 metric tons, 22% down on 2009.

It is worth noting that Kazakhstan hardly uses large-tonnage containers to ship cargo by rail within the country, and this indicator is falling every year. In 2007, 51,200 metric tons of large-tonnage containers were transported within the country, whereas this figure stood at only 31,400 metric tons in 2010, with their respective shares standing at 2.6% and 1.1% of total shipments.

³⁷ USAID Regional Trade Liberalization and Customs Project (RTL): O. Samukhin, K. Rakhimov, B. Rakhimov, B. Aituganov, R. Kongurbayev «Creation of a Multimodal Corridor Through Kyrgyzstan – Pre-Feasibility Study Final Research Report», Bishkek, 2010 <http://www.rtlc.net/ru/analysis/89/>

For example, transporting one TEU from Almaty to Aktobe by rail alone costs \$1,279 and by road alone \$1,371.55 (a quote from one carrier) or \$1,508.71 (another carrier's quote).

Let us discuss possibilities for multimodal shipments.

If this container is shipped from Almaty to Shymkent by rail (\$614) and is loaded on a truck (this operation costs about \$100) and then is transported to Aktobe (some \$1,070), it will cost \$1,684.

If a TEU is transported from Almaty to Shymkent by road (\$754) and loaded on a train (the operation costs about \$100) and is transported to Aktobe (\$972), it will cost \$1,826.

We can see that domestic inter-regional multimodal shipments of large-tonnage containers will cost more than unimodal shipments do.

In conclusion, at the current tariffs multimodal container shipments within the country will not be able to compete against unimodal shipments by rail or road.

Entry Points to the Western Europe-Western China Transport Corridor

The main exit points to the Western Europe-Western China transport corridor from China are the Dostyk-Alashankou railway and road border crossing and the Korgas road crossing, which will soon have a railway border crossing too.

Dostyk Transport and Logistics Center

The Dostyk-Alashankou railway and road border crossing is the foundation of a transport and logistics center at Dostyk. The main cargo flows come through the Dostyk-Alashankou station. The analysis of information on Dostyk-Alashankou is important for our study because the main containerized flows to/from China go through it.

The Dostyk station is a non-category station of linear type with continuing tracks. It is located at 303-310 km of the Aktogay-State Border railway sector. It is a cargo station fulfilling cargo and cargo consolidating functions³⁸.

The Dostyk station performs a full set of operations to receive and deliver trains through the state border, to unload cargo from train cars because of different gauge track gauges, to change bogies of cargo and passenger train cars and to form trains that are entering or existing the Kazakh network of railways.

The station's capacity has neared its limit and in order to increase it additional transshipment points, specialized tracks, dead-end and consolidating tracks have to be built³⁹.

The construction of the Korgas-Zhetigen railway line started in 2009 and it is designed to divert part of flows from the Dostyk station.

Korgas Transport and Logistics Center

The Korgas (sometimes called Khorgos) transport and logistics center is developing based on the Korgas road border crossing and it will soon acquire a railway station. Cargo flows are now mainly ensured by the road border crossing.

The Korgas crossing is a major transport hub with a great transit potential. It is located at a distance of 670 km from Urumqi, the administrative capital of Xinjiang-Uighur Autonomous Region, and 378 km from Almaty, Central Asia's economic center. This crossing is the most convenient and largest road crossing in the region and the nearest Chinese border crossing to Central and West Asia and Europe.

At least 400,000 metric tons of cargo crosses the Korgas crossing every year, but it is much smaller than the volumes crossing Dostyk. However, with the implementation of economic strategies and programs drafted in Kazakhstan, the Korgas transport and logistics center's role will grow in the near future.

³⁸ Data from Kazakhstan Temir Zholy

³⁹ Data from Kazakhstan Temir Zholy

The new Korgas-Zhetigen railway line is being regarded as the second most important project after the Western Europe-Western China road project. In terms of **multimodal container shipments**, both projects will significantly help develop the trans-Eurasian multimodal corridor from Chinese and Korean ports to Western European ones.

The implementation of this project will offer the following opportunities:⁴⁰

- opening a new international Chinese-Kazakh transport corridor, linking China and Asia-Pacific with Central Asian countries and Russia;
- cutting the distance from the Chinese border to Almaty and further to the west by rail by 520 km compared with the Alashankou-Dostyk-Aktogay railway line;
- increasing Kazakhstan's transit potential, especially in terms of container shipments, and the rapidly growing ties between East and West.

Figure 10. Map of the Korgas-Zhetigen railway line



The Zhetigen-Korgas will ease the workload of the Dostyk-Aktogay and will increase the capacity of the border with China to 35-40 million metric tons of cargo per year. The new line's annual capacity is expected to stand at 5.5 million metric tons in 2012, 10.5 million metric tons in 2015 and 25 million metric tons in 2020.

China has already completed the 286-km-long \$1bn Jinghe-Yining(Ghulja)-Khorgos railway line that ends at the border with Kazakhstan.

In parallel with the construction of the Korgas-Zhetigen railway line, the Korgas International Center of Border Cooperation is being built by China and Kazakhstan. The new railway line will play a significant role in developing the center and turning it into an integrated hub of export-import operations, processing, storage, transport and logistics.

The Korgas customs post processes between 50 and 100 trucks per day, and with the completion of the International Center of Border Cooperation this figure will be trebled. It will be able to transit up to 500 trucks per day⁴¹.

⁴⁰ Data from Kazakhstan Temir Zholy

⁴¹ Data from Korgas International Center of Border Cooperation www.mcps-khorgos.kz

The Damu-Korgas industrial and logistics center. An agreement to draft a logistics center was signed on 27 August 2008 with the Korgas International Center of Border Cooperation joint-stock company. The Korgas international center is a joint venture which was set up by the Kazakh and Chinese governments in May 2008 to build an industrial zone on 200 ha of Kazakhstan's land and 343 ha of China's land (the Kazakh zone is divided into a logistics zone on 51 ha, an industrial zone on 120 ha, a technical zone on 25 ha and an administrative zone on 4 ha).⁴²

Taskala-Ozinki Transport and Logistics Center

The Ozinki station in Russia's Saratov Region is the only border crossing for container cargo transported by rail between Moscow and Almaty. The Iletsk-1 station does not service container trains between Almaty and Moscow.

The Taskala crossing is at a distance of 2 km from the Russian-Kazakh border, 105 km from Uralsk and 20 km from the village of Taskala.

⁴² www.htl.kz

Results of Field Studies

The technical design specifications of this study provided for field studies, a poll among transport and freight forwarding companies, carriers and TLC operators and the collection of data using the Mystery Shopping approach. The poll involved 21 companies and, separately, five operators of transport and logistics centers of the Almaty transport hub.

Results of Field Studies on Almaty TLCs

This study on multimodal operations along the Western Europe-Western China transport corridor included field studies to identify possibilities and limitations of TLCs in Almaty.

The research on these TLCs included a study of the potential of TLCs in Almaty, their specifications, capacities of container terminals and a range of services provided by TLCs.

The field studies resulted in obtaining the basic data about TLCs in the Almaty hub, their container terminals and services to process containers (unloading, loading, consolidating cargoes and so on). These results were used to assess the existing logistics infrastructure of potential multimodal hubs along the Western Europe-Western China corridor and their suitability for multimodal operations (see the corresponding chapter).

Results of Field Studies on the Almaty-Korgas Route

This field studies aimed to assess possibilities for supplying goods from China by rail in containers with the transshipment of them by road through the Dostyk railway station and/or the Korgas road crossing and the distribution of cargo from transport and logistics centers in Almaty to other cities such as Bishkek, Astana, Shymkent, Aktobe, Nizhniy Novgorod, Moscow and so on.

The field studies in Almaty included meetings with suppliers of Chinese-made goods to Russia, representatives of the Korgas International Center of Border Cooperation and TLCs in Almaty. At the time of the field studies there was almost no transportation of containers along the Korgas-Almaty route. Interviews with respondents aimed to identify the needs of carriers and their forecasts regarding cargo volumes along the corridor regarding alternative shipments.

Interviews also aimed to establish actual tariffs for and terms of delivering cargo along the corridor by different ways (Mystery Shopping). In connection with this, inquiries were sent to several freight forwarding companies and telephone conversations were held with them regarding their tariffs and delivery terms.

Based on the results of the poll and field studies, we devised operating models describing alternative ways of delivering cargo using the Korgas-Almaty and Dostyk-Almaty routes (see "Cost-and-Time Models of Container Shipment along the Western Europe-Western China Corridor" chapter).

The field studies showed that participants in the shipment process pin great hopes on the Korgas-Zhetigen railway line and its connections with the Korgas International Center of Border Cooperation.

The Korgas crossing's capacity is 50 to 70 vehicles per day. It works from 8 am until 6 pm. A queue of 200-250 vehicles stretching for 2 to 3 km forms at the crossing point every day. This means vehicles that arrive at the post may need up to three days to cross the border which increases carriers' costs on drivers' pay, delays and other costs associated with this. There is no TLC around the border post now and, therefore, it is impossible to consolidate cargo, undergo customs clearance and other procedures relating to cargo flows. However, the distance from Korgas to Almaty is shorter than the distance from Dostyk by 500 km and this may cut the time, when cargo is transited through Korgas.

Future potential. A trip to the Korgas post showed that the road crossing is about 7 km away from the nearest Altynkol railway station. They are separated by the International Center of Border Cooperation that is still under construction and has no relation to either the road crossing or to the railway line under construction. As a result, it is hard to assess the potential of the Korgas International Center of Border Cooperation (www.mcps-khorgos.kz) and its relation to the Korgas-Almaty route.

Results of Mystery Shopping

While conducting the Mystery Shopping it was necessary to establish and compare the costs and time of transportation by three different methods - by rail, by road and using multimodal shipment (combining rail and road) - of loaded and empty containers from certain points of origins of cargo to delivery points. Intermodality was ensured by possibilities offered to users to choose the best option of delivering cargo, combining several methods and taking into account overload, time, costs and other factors depending on their needs.

For the Mystery Shopping and establishing tariffs, timeframes and terms of delivery, the following measures were taken:

Points of origin and of delivery were identified:

Western Europe-Western China: Dostyk, Korgas, Almaty, Shymkent, Kyzylorda, Aktobe and the Zhaysan station, Astana, Nizhniy Novgorod, Bishkek and so on.

Transport mode: for the research it was desirable to establish costs and time spent on delivery of cargo by three different modes - rail alone, road alone and multimodal shipment.

Questions were sent out to representatives of freight forwarding and transport companies regarding times and tariffs to transport cargo from Almaty to key Kazakh towns, along the Baltic-Transit and to Nizhniy Novgorod, Moscow, Minsk and so on.

Five answers were received about times and costs of transporting cargo from Lianyungang to Almaty, Shymkent, Astana, the Alamedin station (Kyrgyzstan) and Nizhniy Novgorod. The majority of respondents had difficulties with providing costs to

delivery a container to Nizhniy Novgorod, which is why the only estimate of \$4,600 will be considered as insufficient.

Mystery Shopping also enabled us to obtain data on transportation along the Dostyk-Lugovaya-Alamedin, Dostyk-Nizhniy Novgorod, Almaty-Nizhniy Novgorod, Almaty-Moscow and Almaty-Minsk routes.

Conclusions

According to data obtained from the field studies and Mystery Shopping, it is possible to conclude that a scheme to deliver cargo from China through Korgas is possible at present only if cargo is picked in China and transported to Almaty on trucks, with the consequent consolidation and distribution within the region from TLCs or storehouses in Almaty. An alternative is to carry cargo on trucks or in containers by rail through the Dostyk-Alashankou crossing and further to Almaty.

In case of a route transiting the Dostyk station, there is no time saved because the distance and the corresponding time to reach Almaty is longer by 500 km. In addition, congestion at Dostyk-Alashankou increases delays at the border. However, since carriers are more familiar with conditions of transiting through Dostyk, they had difficulties with estimating time they might spend on delivering cargo through Korgas.

In choosing mode, carriers consider only two alternative routes and one destination point, because the main aspects of intermodality in the Kazakh part of the corridor are observed precisely on this sector.

The most suitable for the requirements of this study is the following route to transport cargo from China - Urumqi-Korgas-Almaty by road, then unloading, customs clearance and consolidating cargo for specific clients, loading it in containers and shipping to major transport hubs in the Customs Union (above all, Moscow).

In this case, the main advantages are time and costs: quite quick delivery of cargo from Urumqi to Almaty by road, quick and inexpensive customs clearance in a TLC in the Almaty hub, consolidation of cargo for specific clients (received X number of trucks with shoes, Y number of trucks with clothes and Z number of trucks with household chemicals and cosmetics, sent N number of containers to Moscow, retaining goods for domestic consumption) and inexpensive and relatively quick delivery of cargo to destination points by regular container trains.

Potential Operating Models of Multimodal Shipments along the Western Europe-Western China Corridor

This study considered both operating models at sectoral level (business models) and operating models at route level ("distance-time-costs" model).

Operating models in the transport and logistics sector considered interaction between actors (clients and contractors) of the shipment process.

Kazakh Operating Model

The development of the Kazakh operating model is largely similar to changes in operating models in other CIS and eastern European countries. Liberalization conducted in the railway shipment sector defined the current operating model. What was a single market of railway shipments is now coordinated by market players and government regulations. Infrastructure was somewhat separated from shipment operations which were divided into several independent segments, and this allows all players in the shipment market to access railway infrastructure without discrimination.

Key actors of multimodal shipments in Kazakhstan in the role of suppliers are Kazakhstan Temir Zholy's subsidiaries - Kaztemirtrans, Kaztransservice, Locomotive, Transport Services Center and Kedentransservice.

In the role of clients, as of 1 July 2010, there were 539 freight forwarding organizations who had signed contracts to transport cargo internationally (excluding transit), nationally, regionally and locally⁴³. It is worth noting here that this list includes not only shipping and transport companies but also vehicle companies and a number of industrial enterprises who ship their using their own infrastructure.

Potential operating models of multimodal shipments along the Western Europe-Western China corridor should take into account capacities and interests of established actors of multimodal shipment, as well as global (largely, European) trends in the development of multimodal shipment, and, of course, advantages of using the corridor over sea routes.

⁴³ <http://www.railways.kz>

Assessment of Possibilities of Piggyback Shipment along the WE-WC Corridor



For piggyback shipments⁴⁴ Kaztemirtrans purchased 50 units of the 13-4095 specialized platform that is designed for loading trucks without uncoupling semitrailers from tractors in 2005-2006.

On 12 June 2006 Kazakhstan for the first time conducted piggyback shipment on five platforms loaded with vegetables and fruit from Uzbekistan from the Saryagash station to Astana⁴⁵.

According to information available, the KTZ has since not conducted piggyback shipments for several objective and subjective reasons.

In late 1990s-early 2000s piggyback shipment was regarded as a promising mode of combined shipment in the CIS. European transport associations made a significant contribution to the promotion of this mode of shipment in CIS countries. For western Europe with congested roads and high requirements for environmental protection, piggyback shipment is indeed topical. Declared advantages of switching to piggyback shipments are:

- reducing delays of road trains in queues at road border crossings (from days to hours);
- reducing fuel consumption;
- reducing environmental pollution;
- ensuring the upkeep of roads;
- reducing the likelihood of traffic accidents with the involvement of trucks.

Cost-and-Time Models of Container Shipment along the Western Europe-Western China Corridor

For the analysis of the efficiency of the transport corridor, we used the ESCAP "Costs-Time-Distance" methodology for transit transport routes (See Appendix 6). Cost-and-time models were devised for transporting large-tonnage containers along multimodal routes of the Western Europe-Western China transport corridor.

For this purpose the following promising routes were chosen:

- the border with China-Almaty-Shymkent-Kyzylorda-Aktobe-border with Russia (the Martuk and Zhaysan stations);
- the border with China-Almaty-Shymkent-Saryagash-Chukursay (Tashkent).

At the same time, the border with China may be crossed at the following border posts:

1. the Dostyk-Export railway station and the Dostyk road border crossing;
2. the Korgas station which is under construction and the Korgas road crossing.

With VAT, services to process a FEU will cost about \$100.

⁴⁴ In rail transport, the practice of carrying trailers, semi-trailers or containers in a train atop a flatcar (intermodal freight transport) is referred to as "piggybacking". http://en.wikipedia.org/wiki/Piggyback_%28transportation%29

⁴⁵ http://kazcargo.kz/perevozki/gruzovye_perevozki/

In operating models, we considered only one part of the China-Europe route (for example, from Lianyungang to Moscow or Amsterdam) on which the Dostyk railway station on the border between China and Kazakhstan and the Zhaysan station on the border between Kazakhstan and Russia are interim stations (moreover, Zhaysan does not necessarily need to have infrastructure to reload and store large-tonnage containers).

Nevertheless, as a result of the low capacity of the Saryagash station compared to the current and future cargo flows, Shymkent may serve as an multimodal center for marshalling and consolidating containers to deliver them to Uzbekistan and back when tariffs are corrected.

Possibility of Using Single Transport Document

At present, standard documents that are adopted for bilateral trade are used for cargo carried from China to Kazakhstan and back. Apart from certificates required by the relevant bodies of an importer-country, cargo is accompanied with waybills, invoices and freight customs declarations.

Freight Forwarding Documents of the International Federation of Freight Forwarders Associations (FIATA)⁴⁶

The most promising documents that could be used on the Western Europe-Western China multimodal corridor are FBL (negotiable FIATA Multimodal Transport Bill of Lading) and FWB (non-negotiable FIATA Multimodal Transport Waybill).

Conclusions:

The analysis of documents adopted in international railway freight shipment law and freight forwarding documents adopted by the International Federation of Freight Forwarders Associations (FIATA) to establish whether they could be used as a single transport document for railway and road segments of multimodal operations showed that, first of all, it is topical for Kazakhstan, as an important link in transit shipments between China and Europe, to adopt the uniform CIM/SMGS consignment note. Undoubtedly, this is important not only for purely railway freight shipment (of both exports and imports and transit), but it will also help increase multimodal operations along the Western Europe-Western China transport corridor. At the same time, the FBL FIATA is convenient for financial settlements and undertaking of freight delivery.

At this stage it is inevitable and necessary to use these two documents.

⁴⁶ <http://www.fiata.com/>

Conclusions and Recommendations

Basic Theory for the Project and Study Results

The main beneficiaries of the results of the study in terms of multimodal shipments along the Western Europe-Western China corridor are the Kazakhstan Temir Zholy national railway company and its subsidiaries, the Almaty (the Almaty hub) and other transport and logistics centers along the route and operators of regular container trains from Europe, Belarus and Russia in the direction of Aktobe (Ozinki)-Shymkent (Arys)-Almaty.

In the first case, the point is about a long-term synergetic effect, and to some extent a knock-on effect too, because it is expected to facilitate the process of reducing total costs and potential clients are expected to receive a choice of various scenarios, proceeding from the “distance-time-money” multifactor model.

However, the current shortages of quality and proper services by transport and logistics centers both in Kazakhstan and the major Almaty hub mean that this target group requires a day-to-day and stable publicity campaign about the real state of affairs in the sphere of shipments by both road and rail.

Apart from a permanent publicity campaign to inform transport and logistics centers (at present, in competition against one another, their information channels are either subjective because they use their own marketing divisions or are using a straight way of obtaining information from open sources, above all, the media) it is necessary to attract transport and logistics centers to a “live” operating model of the corridor, i.e. enabling them to supply information on rates and tariffs in real time mode.

This can be done as a specialized online portal that will purposefully aim at the Western Europe-Western China route with clear positioning on multimodal shipments. It is also necessary to encourage transport and logistics centers to expand multimodal operations and increase the capacity of container terminals. This can be done by offering incentives for leasing specialized vehicles and equipment and software or purchasing them on a loan, as well as training and retraining the personnel of transport and logistics centers.

In the second case, the study on this project detected a clear niche for multimodal shipments in this direction in the near future – this is the connection of cargo flows from China with empty regular railway container trains from Europe.

A paradox on the Central Asian transport market is that for the majority of sea and trans-Atlantic lines the region is a dead-end, with the high likelihood of non-returns or violations of demurrage conditions, as well as sea operators’ unwillingness to take containers away from perfectly operating regular sea lines.

On this wave, the rail authorities in Germany, Poland, Belarus, Lithuania, Latvia, Ukraine and Kazakhstan devised several dozens of regular container trains along the Europe-Central Asia-and/orChina route in 2000-2010. Some of these trains did not become regular, while most of them faced insurmountable obstacles or directly

competed against one another. The majority of these trains have the following features at the moment:

- Regular container trains were timely, with isolated cases of delays;
- As a rule, they use a fleet of containers owned by railway authorities (TransContainer, Ldz Cargo, Lietuvos Gelezinkeliai Ekspedicija, Kaztransservice, Belintertrans, and so on) and private carriers. The use of a fleet of sea container lines is either limited or a scheme of reloading from “sea” containers to “railway” ones at sea ports/seaside stations and delivering them further along the route is used;
- Transportation tariffs are through tariffs agreed by the heads of railway authorities of countries through which regular container trains pass. The most flexible in this regard are Belarusian Railways (www.rw.by) and Kazakhstan Temir Zholy (www.railways.kz). Russian Railways often manipulate tariffs for regular container trains bound for the border with China, because they believe this route is a direct competitor against the Trans-Siberian line and regular container trains bound for Russia’s Far Eastern sea ports and border crossings with Mongolia and China in the Asian part of the country;
- Existing rivalry between Belarus and Baltic countries for the so-called “western” transit (from Europe to Asia) favorably influences tariffs, objectively reducing them and making total costs of consignors realistic;
- The detailed analysis of European cargo bound for Central Asia and China showed that these routes were chronically under-loaded in the opposite direction with greater cargo flows from China and Asia-Pacific to Russia and Europe. The paradox of dichotomous divergence in this case offers a practically ideal opportunity to use multimodal shipments. The lack of a well-established practice and the existing discrepancy in tariffs can be solved and overcome;
- Most regular container trains traveling along a railway route coinciding and gravitating towards the Western Europe-Western China road that is under construction are bound for stations in southern Kazakhstan and mainly end in Almaty. For example, Belarus’s Kazakhstan Vector regular container train’s official destination is the Arys station (operated by Kazakhstan Temir Zholy), but in practice it aims to carry cargo to and from the Almaty-1 and Zhetisu stations. This makes it possible to link to the existing routes of cargo flows from China and partly from Uzbekistan/Tajikistan (this is the reason for using the Arys station in the route of this regular container train) and Kyrgyz cargo flows through the Lugovaya or Shu stations.

As a result, the most significant practical application of the study results is *synergy between the directions of the linkage of existing and established (therefore, profitable or commercially feasible) regular container trains and a developing network of transport and logistics centers in the Almaty hub.*

The construction of the Korgas-Zhetigen railway line will change only the appearance of this scheme, because part of containers will then be shipped directly to Almaty by rail as it is the case with the Alashankou-Dostyk border crossing.

The following is the main scheme that takes into account the present state of affairs at the Dostyk station:

Cargo from China is shipped to Almaty to transport and logistics centers through Urumqi-Ghulja (Yining)-Korgas (or the Kolzhat crossing point) by road trains because of the speed and low costs of delivery and, largely, the tested scheme.

Then, customs clearance takes place according to requirements and rules adopted by the Customs Union member states – Russia, Belarus and Kazakhstan, with cargo reloaded in empty containers that arrived in Almaty earlier with regular container trains, and according to an endorsed schedule, regular container trains deliver cargo to destinations along their routes.

Another version of this scheme is to cross-dock at railways stations where regular container trains are formed, but the existing scheme of interaction between railway stations with customs bodies regarding the customs clearance of goods arrived by road prevents this version from becoming basic.

Moreover, a set of services offered by TLCs makes it possible to use synergy and offer clients polyvariants, especially if a distribution scheme requires the fragmentation and consolidation of consignments of goods with a due level of qualification that can be offered only by integrators of logistics solutions, in this case TLCs.

Fully-fledged operations of the Korgas-Zhetigen-Almaty railway line and the organization of container shipments along this route will impact the aforementioned model, but in general we can talk only about the useful component of the Urumqi-Korgas-Almaty multimodal corridor. Firstly, it will be possible to partly divert a share of the cargo flow from the Urumqi-Dostyk-Aktogay route, and, secondly, to liven up and boost this mode of shipment by “wedging it in” the existing routes of container trains. Attempts to link the existing regular container trains to Dostyk to ensure loading with Chinese goods on the way back, as a rule, faced a quite significant leg of the empty delivery of containers against high loading levels of the Aktogay-Dostyk route.

The successful commercial launch of the Korgas-Zhetigen-Almaty railway line will “softly” rearrange directions of containerized cargo, because there are direct counterfactors. Firstly, a quite sizeable number of containers head towards Russia through Dostyk-Aktogay and further through Karaganda, Astana and Russian railways. Secondly, a great number of clients are conservative and they prefer guarantees of delivery rather than possible uncertainties and interruptions at the beginning of the use of the new line. Therefore, the Urumqi-Korgas-Almaty-Aktobe multimodal corridor with access to Russia may exist for a long time, especially in case of reducing costs along the route.

A case study on this theory was developed as part of a field study and Mystery Shopping in March 2011 with a Kazakh-Chinese firm based in Almaty, which we styled as ECGCU (Exports of Chinese Goods to the Customs Union), the Tau-Terminal transport and logistics center (located at 57A Zhansugurov St, Otegen Batyr village, Almaty Region, on the Almaty-Zhetigen road) and Belarus’s Kazakhstan Vector regular container train (operated by Belarus Railways and Belintertrans subsidiary).

Figure 11. The Scheme of the Organization of the Baltic-Transit Container Train



At the time of submission of the report, we received all rates from companies, schedules of regular container trains and expected numbers of empty containers proposed by the Belarusian side for loading. ECGCU, in turn, made its calculations on volumes of cargo and costs of delivering cargo from Urumqi to the terminal via Korgas, customs clearances and fragmentation/consolidation of cargo (a road car with a volume of 120 cubic meters is comparable with two FEU). The destination of ECGCU's cargo is in Moscow Region, which determines the need to either unload containers at the nearest cargo station along the route of the regular container train (since all regular container trains are fast trains, the number of stations where they can unload containers is limited) or deliver containers to their destination with all requirements of timely return of containers to their owner (in this case it is Belarusian Railways).

Recommendations

1. The experiences of various countries that have rigorously developed all segments of the transport market shows that earlier or later there arises an issue of the dominance of some segments over others against abstract equilibrium and ideal competition between various modes of transport. In our case the Kazakhstan market of multimodal shipments is now in the state of unsustainable equilibrium. Therefore, there are several scenarios for the development of the situation. In the first case, the state, represented by the Kazakhstan Ministry of Transport and Communications, and self-regulating organizations that unite transport market players (ANFFK, KazATO and so on) have taken positions of outside observers hoping for *laissez faire* when the market regulates itself without state intervention. In the second case, Kazakhstan's attempts to join the WTO may lead to the dominance of foreign carriers among both road carriers and railway operators. When this report was prepared, Russia's TransContainer, the main operator of container shipments in Russia and is a subsidiary of Russian Railways, obtained a controlling stake in the Kedentransservice joint-

stock company, a firm that was set up from cargo terminals when the three railway directorates in Kazakhstan were united into the single Kazakhstan Temir Zholy. Plans of the train car operators PGK and VGK (subsidiaries of Russian Railways) are also obvious – they also want to expand to the Kazakh and Central Asian market. Road carriers from Russia and Belarus are also eager to take advantage of the Customs Union and the Single Economic Space that is being created by Russia, Belarus and Kazakhstan and claim their, often sizeable, share of the transportation market in the Asian part of the Single Economic Space. In the third case, proposals were considered to carry out a deliberate and consistent program to create one or two powerful market players-integrators of solutions on the market of shipments under the auspices of Kazakhstan Temir Zholy.

2. Suggestions were considered to adopt the “3PL-logistics container cargo services” scenario that has been tested worldwide, particularly in China (Sinotrans⁴⁷, for instance), namely to acquire controlling stakes by Kazakhstan Temir Zholy in established players on the market of logistics services with physical assets and future development plans approved by the market. The purchase of existing assets, in contrast to the need to create new ones, will lead to long-term advantages, despite short-term losses (these assets will be sold with a premium on the market value). The next stage is the acquisition of a leading road carrier with a sustainable business model and real assets that are already used in multimodal shipments or may be transformed into this without particular expenses. As a result, the availability of strong assets owned by Kazakhstan Temir Zholy: Kaztransservice JSC (a leading operator of the transportation of containers by rail, www.kts.kz), a network of transport and logistics centers and a road carrier with an extended network will make it possible to achieve synergy within a short period of time and to offer services of a logistics provider with guarantees of “door-to-door” delivery on any scale – from isolated private orders to the servicing of large-scale industrial projects. Basic cooperation with or a minority share in a joint venture with TransContainer will not yield tangible results, which is why it is necessary to conduct a deliberate corporate policy to amass quality assets in this sphere. For this purpose we also recommend to elevate the status of supervisor for Kazakhstan Temir Zholy to the level of the first vice-president and to adopt a separate program to develop multimodal shipments in 2012-2020.
3. Conclusions, drawn as a result of this study, prompt the establishment of a specialized unit at the Kazakhstan Ministry of Transport and Communications’ Department for Strategic Planning for managing the development of multimodal shipments and regional logistics in order to draft long-term and medium-term government policies on the development of this sphere.
4. Proposals were considered to include the construction of a plant to produce large-tonnage containers from local rolled iron at existing metal enterprises in the Kazakh Ministry of Industry and New Technologies’ list of priority projects. Kazakhstan’s own producer of a sufficient range of containers, in the context of supporting domestic producers and an import substitution program, will give an impetus to the development of the market of container shipments, as well as a strong knock-on effect on the entire as a whole.

⁴⁷ www.sinotrans.com