CHAPTER 4 INTERNATIONAL LOGISTICS CONDITIONS IN EURASIA AND ANALYSIS OF COMPETING ROUTES

4.1 International Logistics Conditions

4.1.1 Investment Environment for Transport Sector in Central Asia

(1) Comparison of Neighboring Countries

Although the countries adjacent to Kazakhstan are Russia, Azerbaijan, Iran, Turkmenistan, Uzbekistan, Kyrgyz and China (Xinjiang-Uygur Autonomous Region), there are also Georgia, Afghanistan and Tajikistan which are closely related to Kazakhstan historically and logistically.

Among the countries above, Russia, Azerbaijan, Georgia, Kazakhstan, Kyrgyz, Tajikistan, Turkmenistan and Uzbekistan are CIS countries and are covered by the EBRD. Kazakhstan, Kyrgyz, Tajikistan, Turkmenistan and Uzbekistan are Central Asian countries and China in addition to these are covered by the ADB. Afghanistan and Iran belong to the Middle East.

In this chapter, these countries above are analyzed.

Key transport sector indicators in these countries are shown in Table 4.1.1-1.

Table 4.1.1-1 Key Transport Sector Indicators in the Neighboring Countries

Country		Afghanista	Azerbaijan	Georgia	Iran	Kazakhstan	Kyrgyz	Russia	Tajikistan	Turkmenistan	Uzbekistan	XUAR
	year	2004	2003	2004	2002	2003	2003	2000&2001	2003	1996&2002	2003	China(2002)
Length of Road Networks	(km)	34,782	25,021	20,229	178,152	89,000	34,000	948,000	26,000	24,000	181,712	59,910
Of which, Category I Highways	(km)	8,000	134	0	751	n.a.	n.a.		n.a.		n.a.	n.a.
Road Network Density	(km/100km^2)	3.0	27.9	29.0	10.8	3.3	17.0	5.6	18.2	4.8	40.6	3.6
Length of Railway Networks	(km)	25	2,944	1,835	7,265	14,510	425	123,318	950	2,555	3,993	2,775
Of which, Electrified Lines	(km)	0	1,270	1,835	148	5,800	0	95,070	0	0	618	0
Railway Network Density	(km/100km^2)	0.0	3.4	2.6	0.4	0.5	0.2	0.7	0.7	0.5	0.9	0.2
Freight Traffic	(Mil. ton-km)	16	22,165			259,090	1,479	1,607,487	1,664	n.a.	28,595	83,704
Of which Roads	(Mil. ton-km)	16	6,241	543		40,158	875	137,847	571	n.a.	9,600	32,500
Railways	(Mil. ton-km)	0	7,719	5,075	14,613	147,672	561	1,466,980	1,086	n.a.	18,900	47,500
Civil Aviation	(Mil. ton-km)	0	204			94	43	2,660	8	n.a.	95	64
Registered Vehicles	('000 units)	304	487	300	4,589	1,460	264		468	n.a.	240	468
Public Investment in Transport	(M. in local currency	1,566	1,693,468	3,249	4,140,900	52,900	522	250,861	n.a.	n.a.	163,700	n.a.
Share of Investment in Transport	(%)	1.4	9.0	5.4	3.8	1.2	0.6	0.2	n.a.	n.a.	1.7	n.a.
Funding for Road Maintenance	(M. in local currency	500	70,000	n.a.	n.a.	2,200	298	n.a.	n.a.	n.a.	n.a.	n.a.
Share of Funding for Road Main	(%)	0.5	0.2	n.a.	n.a.	0.1	0.4	n.a.	n.a.	n.a.	n.a.	n.a.
Aircraft Departure	(Thousand)	3	9	n.a.	n.a.	20	5	n.a.	n.a.	n.a.	22	n.a.

Sources: ADB CAREC data, EC Transport Statistics, UIC International Railway Statistics 2002, etc.

Road network density ranges from 3.0 in Afghanistan to 40.6 in Uzbekistan. Railway network density ranges from 0 in Afghanistan to 3.4 in Azerbaijan. Afghanistan is being reconstructed after conflict and is an exception. CIS countries with a small area, such as Azerbaijan and Georgia, seem to have relatively higher densities of road and railway.

Russia is the largest in freight traffic (ton-km) and Kazakhstan is second, although data for some of those countries are not available. However, it seems that large areas require extensive freight traffic.

Share of investment in transport ranges from 0.2 in Russia to 9.0 in Azerbaijan. Azerbaijan and Georgia have high shares. The share for Kazakhstan is in the middle.

The EBRD publishes a “Transition Report” annually and the newest is from 2006. This report shows

annual change of transitional indicators. The indicators include transport area. Table 4.1.1-2 shows "Railway labor productivity (1989 or the available oldest year =100)". Productivity in Russia is the highest in 2005 and that in Kazakhstan is the second highest. However, the starting point is 100 and relative comparison of countries is impossible. It only shows how each country has improved or worsened.

Table 4.1.1-2 Railway Labor Productivity (1989 or the available oldest year =100)

Country	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Azerbaijan	100.0	91.4	76.1	37.1	28.3	19.2	8.5	9.2	11.7	16.4	17.5	23.7	25.4	29.4	31.9	37.4	44.2
Georgia	100.0	95.4	72.1	37.4	22.0	22.6	18.9	18.1	28.4	38.9	48.0	59.5	65.2	71.9	72.6	68.6	93.4
Kazakhstan	100.0	94.7	85.7	69.1	51.4	37.6	32.6	30.4	30.0	31.2	27.6	42.5	46.3	51.0	58.5	62.6	102.8
Kyrgyz	na	100.0	84.4	64.8	41.9	26.4	16.9	18.8	18.4	17.4	15.4	14.5	14.3	16.2	22.0	27.4	24.0
Russia	100.0	99.5	105.6	89.8	75.5	57.7	56.8	54.6	58.6	60.9	72.1	78.8	85.0	90.1	101.6	108.1	115.7
Tajikistan	na	na	na	na	na	100.0	121.7	87.3	70.8	75.5	62.9	62.9	57.2	50.3	47.3	38.0	38.4

Source: EBRD, "Transition Report 2006."

The "Transition Report" also shows EBRD indexes of infrastructure reform for railway and road in Tables 4.1.1-3 and 4.1.1-4, respectively. Georgia and Kazakhstan are the highest for railways. However, Azerbaijan and Russia are the highest for roads.

Table 4.1.1-3 EBRD Index of Infrastructure Reform (Railway)

Country	1998	1999	2000	2001	2002	2003	2004	2005	2006
Azerbaijan	2.0	2.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Georgia	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Kazakhstan	2.0	2.0	2.3	2.7	2.7	2.7	2.7	3.0	3.0
Kyrgyz	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Russia	2.3	2.3	2.3	2.3	2.3	2.3	2.7	2.7	2.7
Tajikistan	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Note: 1 Monolithic structure operated as government department, with few commercial freedoms. No private sector involvement and extensive cross-subsidization.
2 Rail operations distanced from state, but weak commercial objectives. Some business planning, but targets are general and tentative. No budgetary funding of public service obligations. Ancillary businesses separated, but little divestment. Minimal private sector involvement.
3 Commercial orientation in rail operations. Freight and passenger services separated and some ancillary businesses divested. Some budgetary compensation available for passenger services. Improved business planning with clear investment and rehabilitation targets, but funding unsecured. Some private sector involvement in rehabilitation and/or maintenance.
4 Railways fully commercialized, with separate internal profit centers for freight and passenger services. Extensive market freedoms to set tariffs and investments. Implementation of medium-term business plans. Ancillary industries divested. Private sector participation in freight operation, ancillary services and track maintenance.
4+ Separation of infrastructure freight and passenger operations. Full divestment and transfer of asset ownership implemented or planned, including infrastructure and rolling stock. Rail regulator established and access pricing implemented.

Source: EBRD, "Transition Report 2006."

Table 4.1.1-4 EBRD Index of Infrastructure Reform (Road)

Country	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Azerbaijan	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Georgia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Kazakhstan	1.0	1.0	1.0	1.0	1.0	1.0	1.7	1.7	1.7	1.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Kyrgyz	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Russia	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.7	2.0	2.0	2.0	2.0	2.0	2.3	2.3	2.3	2.3	2.3
Tajikistan	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Turkmenistan	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0

Note: 1 Minimal degree of decentralization and no commercialization. All regulatory, road management and resource allocation functions centralized at ministerial level. New investments and road maintenance financing dependent on central budget allocations. Road user charges not based on the cost of road use. Road construction and maintenance undertaken by public construction units. No public consultation in the preparation of road projects.

2 Moderate degree of decentralization and initial steps in commercialization. Road/highway agency created. Improvements in resource allocation and public procurement. Road user charges based on vehicle and fuel taxes, but not linked to road use. Road fund established, but dependent on central budget. Road construction and maintenance undertaken primarily by corporatized public entities, with some private sector participation. Minimal public consultation/participation on road projects.

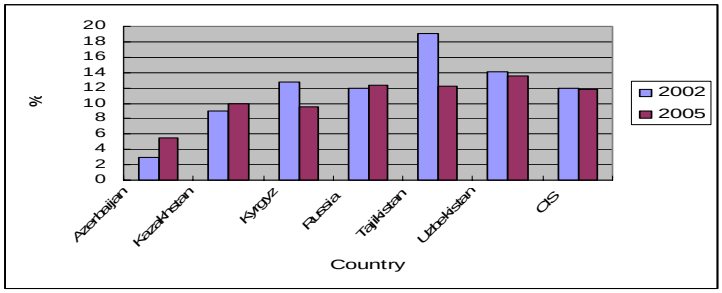
3 Fair degree of decentralization and commercialization. Regulation and resource allocation functions separated from road maintenance and operations. Level of vehicle and fuel taxes related to road use. Private companies able to provide and operate roads under negotiated commercial contracts. Private sector participation in road maintenance and/or through concessions to finance, operate and maintain parts of highway network. Limited public consultation/participation and accountability on road projects.

4 Large degree of decentralization. Transparent methodology used to allocate road expenditures. Track record in competitive procurement of road design, construction, maintenance and operations. Large-scale private sector participation in construction, operations and maintenance directly and through public-private partnerships. Substantial public consultation/participation and accountability on road projects.

4+ Fully decentralized road administration. Commercialized road maintenance operations competitively awarded to private companies. Road user charges reflect the full costs of road use and associated factors, such as congestion, accidents and pollution. Widespread private sector participation in all aspects of road provision. Full public consultation on new road projects.

Source: The EBRD, “Transition Report 2006.”

The EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS) has been carried out in three rounds in 1999, 2002 and 2005 and covers virtually all of Central and Eastern Europe and the CIS as well as Turkey. (However, it has not been possible to implement the survey in Turkmenistan.) One of the problems is “Transportation as a Problem Doing Business.” The percentage of firms stating that transportation is a problem doing business in each country is shown in Figure 4.1.1-1.



Source: The EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS), 2006

Figure 4.1.1-1 Percentage of Firms Stating that Transportation Is A Problem Doing Business

Among these countries, Azerbaijan scores the lowest and Kyrgyz is the second lowest in 2005. However, Kazakhstan was the second lowest in 2002.

"Transport and Trade Facilitation Issues in the CIS-7, Kazakhstan and Turkmenistan" (2003) by Eva Molnar and Lauri Ojala shows the logistics friendliness index for some CIS countries(Table 4.1.1-5).

Table 4.1.1-5 Economic Freedom Score and Logistics Friendliness

Country	Azerbaijan	Uzbekistan	Kazakhstan	Russia
Economic Freedom Score in 1999	-	-	-	3.88
Logistics Friendliness (%)	17	13	9	0

Note: Logistics Friendliness is 100 in Sweden, the Netherlands, Australia, Austria, Japan, Belgium and Italy.
The highest Economic Freedom Score is 9.38 in Hong Kong and next is 9.28 in Singapore.

Source: Ojala and Queiroz, (eds. 2001) "Transport Sector Restructuring in the Baltic States," World Bank.

Logistics friendliness is the highest in Azerbaijan. Uzbekistan is the second and Kazakhstan is the third. The transport sector in each country adjacent to Kazakhstan is described below.

(2) Investment Environment for Transport Sector in Adjacent Countries

1) Russia

(a) Roads

According to the World Bank, statistical data as of 2004 shows that the current length of the road network is a little less than 900,000 km. (However, other statistics indicate 948,000 km of road networks.) Out of that number, only 84 percent are paved and the rest do not allow all-season transit, leaving almost 40,000 communities frequently isolated. This affects a population of 12 to 18 million, i.e., almost 10 percent of the nation. In addition, major Corridor, such as those between Moscow, the European borders, and the Black Sea and Caspian Sea regions, are now so heavily congested and unsafe that they have become barriers to further economic and social development of the regions they serve.

The Government of Russia published a new Federal Transport Program (FTP), "Modernization of the Transport System of Russia," in 2001. In this program, "Roads" for 2002-2010 is included as a subprogram for the road subsector, aiming at (i) maintaining the functioning of the public road network and new construction only in the most overloaded nodes of the network for the period 2002-2005 and (ii) accelerating road maintenance activities to decrease the share of roads in need of urgent repair, and construction of main traffic arteries connecting Russia with the international transit system for the period of 2006-2010.

(b) Railways

The World Bank states that the Russian economy is more rail-dependent than any other large country in the world. Railway density in Russia is in the middle among the eleven neighboring countries. Although the road network length, which is the largest in the eleven countries, is much longer than that of the railway

network, railway freight traffic is more than ten times than that of roads in Russia. But while a decade ago long-distance road transport had a negligible share of the market, it now accounts for up to 20 percent of the total freight market. Road transport is increasing and the railway system must be restructured to reflect the changed structure of demand for railway transport.

The incorporation of the Russian Railway system as RZhD OAO in October 2003, directed to legal, organizational and regulatory reform. It was restructured in a short period and improvement of investment, productivity and traffic were achieved. Rolling stock was invested in by private operators and the necessary legal framework was created. In addition, rail tariffs were modified. Promotion of competition (both intra-rail and inter-modal), tariff regulation and involvement of local governments are the next restructuring stage.

Source: Lonely Planet

Figure 4.1.1-2 Map of Russia

(c) Ports

According to the World Bank, Russia's remaining seaports have suffered from lack of investment and modernization, but some of this is also attributed to a railway tariff policy that made it less costly to transport freight to foreign ports than to Russian ports. Port development is now important for the Russia and regional governments. It is necessary to rebuild the maritime infrastructure and increase the volume of international trade through Russia's own ports. The container berths of most ports are operated under concession to private companies. These companies are subsidiaries of the larger shipping lines that use the ports.

(d) Air transport

According to the World Bank, the new air transport licensing law prescribes that any Russian airline certified and licensed for air transportation may operate regular flights to any destination inside the country. The airline only requires approval of the destination airport that provides slots, which are times for landing and takeoff for the airline. Therefore, the air transportation market is regulated to a large extent by airports

which are under the influence of both local authorities and the major airline companies. In the past, airports, aircraft and air transport functioned as an integrated operation. The process of splitting air-transport enterprises into airline companies and airports independent from each other, which began in the early and mid 90s, was stopped. Some existing operators can protect their markets by not allowing competitors to use their airports. Therefore, new entrants will find unequal competitive conditions. A continuing decline in the number of airports from more than 530 down to fewer than 500 worsens competition.

2) Kyrgyz

(a) Roads

According to the World Bank, road transport is the predominant mode, accounting for 60% of freight ton-km and 86% of passenger movements. The road network density is relatively high among the eleven neighboring countries. The road network under the Ministry of Transport and Communications (MTC) totals almost 19,000 km. In addition, there are 15,000 km of farm access roads, outside the MTC's jurisdiction. Due to a limited budget, road maintenance in recent years covered only half of the network under MTC. This resulted in neglect of local roads. Urban roads and streets are the responsibility of city governments. Inter-city road transport has been almost totally corporatized and the private sector is developing rapidly. Private truckers now carry 43% of the freight in the country. The former state transport companies, now joint-stock companies under the State Property Fund, carry the rest. MTC has kept only the international trucking company.

(b) Railways

Kyrgyz railways operate about 320 km of single track lines (with a total track length of 428 km). The railway network density is relatively low (one of the lowest excluding Afghanistan, which has no railway) among the eleven neighboring countries. There is a main line in the north, running off the Kazakhstan railways to Bishkek and Balykchy on Lake Issik Kul and eight branch lines off the Uzbek railway in the south of the country. There is no rail connection between the north and the south of the country. Track condition basically corresponds to the low level of traffic.

At the partition of the Soviet railways, Kyrgyz Railways got 2,500 freight cars, 450 passenger cars and 50 locomotives, about half main line and half branch lines. All the equipment was old and obsolete. Traffic has been falling rapidly since 1990. The decline of freight was further accelerated by the financial crisis of 1998. Freight traffic is now only 13% of its 1990 level, 330 million ton-km in 2001, versus 2,620 million ton-km in 1990, but recovered to 561 million ton-km in 2003.

After running operating deficits until 1998, the railways now operate with a small, but increasing, operating surplus which reached 72 million soms in 2001 (US$1.5 million). This was obtained by i) reducing staff by almost 20% and ii) reducing the number of passenger trains. While freight services are profitable, passenger services are losing money like in Kazakhstan, because fares are regulated by the Anti-Monopoly Committee. There are no public funds going to the railways at this time.

(c) Air transport

According to the World Bank, in May 2001 the Kyrgyz civil aviation sector was reorganized into three independent entities. They are the national airline, the airports and air navigation. The first two are

joint-stock companies under the State Property Fund and the third is a department of the Ministry of Transport and Communications (MOTC).

Air transport is now only one tenth of its 1990 level, both for freight and passengers. In 1997, the national airline (KAJ) dealing also with airports and air navigation was corporatized with some 82% of the shares remaining with the state, 8% transferred to the social fund and 10% sold on coupons. In addition to the national airline, sixteen companies registered to operate as private airlines, of which five or six started operations. There are no subsidies from the state to either the national or the private airlines. The national airline somehow cross-subsidizes its domestic losses with surpluses from international flights.

The Airport company includes the three main airports of the country, Manas (Bishkek), Osh and Karakol. Other small airports and landing strips have virtually been abandoned. Only Manas airport is presently financially self-sufficient; the other two airports are losing money.

Source: Lonely Planet

Figure 4.1.1-3 Map of Kyrgyz

3) Turkmenistan

In Turkmenistan, most freight transport is dominated by the road and railway sectors. Railway transport is playing a major role at present for transit transportation to the CIS countries and exit from Turkmenistan to the world railway systems of Europe and Asia. The total length of railways in 2002 was 2,555 km. The inter-continental Trans Asian main railway was completed in 1996, when the new railway Tedzhen-Sarahs-Meshkhed (Iran) was put into operation. Road and air transport are very important for those areas distant from railways and water routes. The total length of hard surfaced road in 1999 was 24,000 thousand km. The international airport complex, which has been erected in Ashgabat, has allowed the opening of new air routes between Europe and Asia.

Source: Lonely Planet

Figure 4.1.1-4 Map of Turkmenistan

4) Uzbekistan

According to the World Bank, the development and modernization of the transport sector has been a government priority, because the urban population is highly dependent on public transport and the domestic and international trade is important for the economy. The road length is relatively long (the second in eleven neighboring countries next to Russia, and the road density is the highest).

The railway freight traffic is twice that of the roads, showing the important role of the railway. Restructuring of the railway, Uztemiryollari, progressed and involved spinning off unrelated businesses, laying off redundant workers, and tariff rationalization. The process of railway corporatization also started.

In the road and air transport sectors, the government has focused on investments including the modernization and rehabilitation of equipment and facilities and the creation of a key road link between the Fergana valley and the rest of the country.

However, the transport sector excluding urban transport is still dominated by state-owned enterprises and there is no appropriate financial, regulatory and institutional framework for competitive provision of transport services. Sector management and accountability for performance are weak because of the absence of a Ministry of Transport

The Government's strategy in the transport sector has been focusing on the following.

- Developing a step-by-step approach to restructure institutions and reform sector policies to enable market-based transport management and operations
- Establishing an appropriate policy, legal, and regulatory framework for the sector
- Providing adequate transport infrastructure and maintenance to support the transition to a market-based economy
- Developing domestic transportation routes that bypass neighboring countries, maintaining Uzbekistan's role as a regional transportation hub and ensuring reliable access to alternative seaports in Europe and Asia via trans-national transport corridors

Source: Lonely Planet

Figure 4.1.1-5 Map of Uzbekistan

5) Azerbaijan

Azerbaijan shares a northern border with Russia, southern border with Iran, western border with Armenia and Georgia, and in the east, there are Kazakhstan and Turkmenistan beyond the Caspian Sea. It is strategically located as a crossroads of Europe and Asia and has the natural function of a connecting point for Eurasian traffic.

Cargo transportation by transportation mode in Azerbaijan is shown in Table 4.1.1-6.

Table 4.1.1-6 Cargo Transportation by Mode

Transport	2001		2002		2003		2004		2005	
	1,000tons	%	1,000tons	%	1,000tons	%	1,000tons	%	1,000tons	%
Railway	15,390	16.6%	17,464	17.7%	20,345	18.5%	20,671	17.6%	26,522	20.7%
Sea	10,247	11.1%	11,381	11.6%	13,272	12.1%	13,209	11.3%	13,680	10.7%
Air	31	0.0%	31	0.0%	52	0.0%	75	0.1%	74	0.1%
Pipeline	16,517	17.8%	15,831	16.1%	17,262	15.7%	18,145	15.5%	18,534	14.4%
Oil	11,172	12.1%	9,977	10.1%	11,283	10.3%	11,589	9.9%	11,692	9.1%
Gas	5,345	5.8%	5,854	5.9%	5,979	5.4%	6,556	5.6%	6,842	5.3%
Road	50,463	54.5%	53,738	54.6%	59,070	53.7%	65,214	55.6%	69,518	54.2%
Total	92,648	100.0%	98,445	100.0%	110,001	100.0%	117,314	100.0%	128,328	100.0%

Turnover of transportation by transportation mode is shown in Table 4.1.1-7.

Table 4.1.1-7 Cargo Turnover by Mode

Transport	2001		2002		2003		2004		2005	
	mil. tons/km	%	mil. tons/km	%	mil. tons/km	%	mil. tons/km	%	mil. tons/km	%
Railway	6,141	33.3%	6,980	34.4%	7,719	34.6%	7,536	32.4%	9,628	36.3%
Sea	5,744	31.1%	6,077	30.0%	6,555	29.4%	6,771	29.1%	7,521	28.3%
Air	76	0.4%	84	0.4%	204	0.9%	315	1.4%	310	1.2%
Pipeline	1,643	8.9%	1,602	7.9%	1,572	7.1%	1,696	7.3%	1,539	5.8%
Oil	717	3.9%	648	3.2%	649	2.9%	656	2.8%	624	2.4%
Gas	926	5.0%	954	4.7%	923	4.1%	1,041	4.5%	914	3.4%
Road	4,843	26.3%	5,534	27.3%	6,241	28.0%	6,965	29.9%	7,536	28.4%
Total	18,447	100.0%	20,277	100.0%	22,291	100.0%	23,283	100.0%	26,534	100.0%

(a) Railways

Azerbaijan State Railway operates 2,117km within the country. Annual cargo volume transported by the railway has been constantly increasing since the opening of a Kazakhstan oil receiving terminal in 1998 in the vicinity of Baku. The oil is shipped from Aktau Port to the receiving terminal in Baku, and then transported by rail to Batumi Port in Georgia for further transshipment through the Black Sea. About 6 million tons oil per year is transported by railway and it constitutes 90% of railway export cargo. Other than oil, major railway cargo movement is between Azerbaijan and Russia which constitutes over 50% of non-oil cargo. The major constraint of railway transportation in the Caucasus area is the lack of capacity in the Georgian railway. For westbound traffic, the number of wagons dispatched from the Azerbaijan side is adjusted in relation to the handling capability of Georgian railway. It is expected that the delivery of Kazakhstan oil to Baku terminal will increase in the future after commencement of commercial operation of new oil fields. The situation will become more critical unless countermeasures are taken in advance. The Georgia side is taking countermeasures to avoid delay of train operation by installing additional rail lines in the border area. In the meantime, there is a future plan for a new line connecting Akhalkalaki in Georgia and Kars in Turkey. Upon completion of this new route, Azerbaijan rail can be connected to the Turkey rail network and form a direct link up to the Bosporus Channel area. When the Bosporus Channel tunnel project materializes, this rail line will extend physically all the way to Central Europe without the Black Sea seaway passage.

Based on an inter-governmental memorandum concluded in 2005, a project to establish container train service connecting Kazakhstan, Azerbaijan and Georgia was launched. The first pilot container train running through Poti-Baku-Aktau-Almaty was formed with 28 wagons at the end of December 2005. According to the plan, regular container train service is provided twice a month. Several years of experimental period would be needed to establish regularity of service.

(b) Road transport

The total length of the Azerbaijan road system is 31,863 km, out of which 6,882 km is a trunk line. The major trunk line routes are east/west and north/south corridors. The east/west route connects Baku-Alaty-Ganja-Kazakh-Georgia border. Total length of the corridor is 503 km and it forms part of the TERACECA road network. The north/south route connects the Russian border-Baku-Astara-Iranian border. Total length of the corridor is 521 km and it forms the Azerbaijan portion of the north/south corridor. Major destinations for truck cargo from Azerbaijan are Iran and Turkey. 50% of cross border export cargo by road is for those two countries. Truck cargo movement to/from Russia is less active.

Figure 4.1.1-6 Map of Azerbaijan

(c) Ports

Baku is the national port of Azerbaijan. Baku Port was opened in 1902. During the Soviet era, the port was the center of maritime activities in the Caspian Sea. After the fall of the Soviet Union, trading volume with Russia and Iran has decreased and it has become less active. The main functions of the port today are oil import from Kazakhstan and a gateway role for the east/west corridor. Consequently, a close relationship with Georgian ports, Batumi and Poti, has been established. Baku Port is managed by the state-owned organization the "International Sea Trade Port of Baku." The port facilities are composed of three terminals. They are oil, general cargo and rail ferry terminals. The oil terminal is located in Dubendi 40km away from Baku and other two terminals are located in the waterfront area of Baku. The oil terminal can accommodate 4 tankers of 5,000 to 12,000 D/W at the same time. Handling capacity is 10 million tons per annum and actual handling volume in 2005 was 2.9 million tons. The general cargo terminal is equipped with 6 berths. Total length of berths is 866m and depth of water in front of the berths is 7m. Shore-side equipment includes 16 cranes with a capacity of 5-40 tons. Total length of railway siding within the terminal is 8km. Designed cargo handling capacity is 1 million tons per year, but actual cargo volume of 2005 was only 75,000 tons. This is because the port facility is becoming obsolete and dry bulk cargo imports to the port were poor. The rail ferry terminal has 2 railway sidings and 2 landing bridges. It is designed so that 2 rail ferries can work simultaneously. However, one of the landing bridges is currently under repair and not in service. The depth of water near the landing bridge is 8 to 10m. This is the mother port of the rail ferry fleet of CASPAR, the Azerbaijan National Shipping Company. 6 rail ferries are engaged in shuttle service

between Baku and Turkmenbashi. Another rail ferry is placed for the Baku/Aktau route. Rail ferry cargo handled at Baku port in 2005 was 2.6 million tons. In order to modernize the port facility, the Government of Azerbaijan has a plan to relocate the port about 70km away from the current location, but no actual steps have been taken so far.

(d) Maritime transport

The Azerbaijan National Shipping Company (CASPAR) was founded in 1858. During the Soviet era, the company monopolized Caspian shipping and acted as the controlling arm in regional shipping activities. After 1991, the company was re-formed as a national shipping company based in Azerbaijan but it still maintains a dominant position in the Caspian Sea shipping circle.

Fleet composition of CASPAR is 44 tankers, 25 dry bulk carriers and 7 rail ferries, which makes total of 76 ships. Tanker fleet includes five 14,000 D/W tankers, which is the maximum size in the Caspian Sea. Major trade of CASPAR is oil transportation between Aktau/Baku, Turkmenbashi/Baku, Aktau/Iran, and oil products transportation between Baku/Iran. 7 rail ferries are sister ships with the same characteristics. They can accommodate 28 railway wagons and 50 passenger cars. Trucks can be loaded in the space remaining on the railway wagon deck. 6 ferries operate on the Turkmanbashi/Baku route and 1 operates on the Aktau/Baku route. Required navigation time between Aktau/Baku is 18 hours and the ferry calls every 10 days, subject to sufficient attraction of cargo.

About 80% of cargo on the Turkmenbashi route is transit cargo. Major commodities on the route are minerals, oil products and general merchandise from China.

Other players in Caspian shipping include a Russian company based in Makhachkala with 15 tankers and general cargo ships and the Kazakhstan national tanker company, Kazmortransflot. But the overwhelming position of CASPAR remains unchanged, especially in railway cargo and container cargo.

(e) Civil aviation

Air cargo turnover of Azerbaijan is about 35,000 tons per year, which is the second largest among the CIS countries after Russia. A considerable part of this air cargo is for transportation needs to the Nakhichevan enclave. Due to regional conflict, the road to Nakhichevan is closed and no land transportation means can used. The only available means for transport is air freighter. Major airports in Azerbaijan are Baku, Genje and Nakhichevan. Domestic service by Azerbaijan Airlines covers those airports. For international routes, Baku Airport has connections to Russia, Europe, the Middle East and Central Asia. The major external air cargo route is to Dubai in the UAE. Baku Airport is also a major crossroads for air cargo. Transit traffic from Europe to Middle East and Asia uses Baku as a hub airport. There are new oil field development projects in the Caspian Sea. Some materials for the project are transported by air due to urgency or extremely high value. This trend has pushed up the air cargo turnover of Azerbaijan in recent years.

6) Iran

(a) Roads

Road transportation constitutes the main mode of transport in Iran. Almost 95% of passenger and freight transportation in the country are carried by road transport. Despite the clear policy of the Iranian

government to enhance and promote railway transportation, the subsidized and extremely low prices of gasoline and diesel make this mode of transport extremely cheap and financially advantageous.

Road transportation for freight operations is practically fully privatized in Iran. There are a few state-owned truck companies which handle transportation in the country of basic products, which are also subsidized, such as rice, sugar, flour, meat, etc. Freight transport is under the jurisdiction of the Ministry of Roads and Transportation and its affiliated organization, the "Road Maintenance and Transportation Organisation."

The Ministry of Roads and Transportation is responsible for planning and policies concerning all modes of transport including road transport.

Total road network in Iran: 171,711 km, of which 100,000 km are rural roads, and the rest, i.e.:

- 1,230 km freeways (with tolls)
- 5,161 km highways
- 21,997 km main regional road network
- 40,868 km secondary regional road network
- 2,454 km other roads.

The modal split of imports/exports (non-oil commodities) in Iran is as follows. Sea transport accounts for 94.1% of all imports and 88.9% of all exports, which is quite natural for the country that is not landlocked. Road transport accounts for 3.2% of imports and 8.9% of exports, which are considerably higher than the 2.7% and 2.2%, respectively, accounted for by railway transport.

Figure 4.1.1-7 Map of Iran

Table 4.1.1-8 Modal Split of Imports/exports (unit: 1,000 ton)

Transportation	Import		Export	
	Amount	%	Amount	%
Ship	32,998	94.1	16,891	88.9
Road	1,123	3.2	1,698	8.9
Rail	945	2.7	413	2.2
Total	35,066	100.0	19,002	100.0

Source: Road Maintenance & Transport Organization 2005.

Regarding the transit of goods through the territory of Iran for non-oil products, road-only transit accounts for 31% of the total, road to port accounts for only 5%, while port to road accounts for 37% of transit, and railway transport (rail-rail and rail/port) accounts for 19% of transit. If oil products are taken into account too, the share of railways increases to 26%.

Table 4.1.1-9 Transit of Goods through Iran (unit: ton)

Transportation	Oil Products	Non-oil goods	Total
Road to Road (by truck)	299.454	1.247.035	1.546.489
Road Boundary entry (by truck) Exit from Port	16.215	208.676	224.891
Port entry, exit Road Boundary (by truck)	201.315	1.495.732	1.697.047
Port to port (by trucks)	1.599	302.348	303.947
Via Railway	541.483	781.027	1.322.510
Total	1.060.066	4.034.818	5.094.884

Source: Road Maintenance & Transport Organization 2005.

Types of commodities in transit from Iran by road and rail are shown in Table 4.1.1-10. Oil products account for 20.8% of total transit volumes.

Table 4.1.1-10 Types of Commodities in Transit through Iran (Unit: ton)

Name of goods	tons	%
Oil products	1.060.066	20,8
Non-oil products		
Different types of cotton	720.293	14,1
Construction products	241.272	4,7
Food products	240.013	4,7
Home appliances	212.773	4,2
Vehicles	190.895	3,7
Garments	171.789	3,4
Cooking oil	157.557	3,1
Different types of threads & fibers	99.905	2,0
Different types of spare parts	93.392	1,8
Agricultural products	100.240	2,0
Different types of chemical combinations	88.227	1,7
Different types of tires	84.434	1,7
Rice	83.619	1,6
Different types of steel pipes	71.251	1,4
Cement	53.482	1,0
Different types of steel products	47.020	0,9
Different types of steel plates	41.100	0,8
Different types of cast steel	39.886	0,8
Chemical fertilizers	42.389	0,8
Different types of carpet/rugs	41.600	0,8
Others	1.213.681	23,8
Total	5.094.884	100,0

Source: Road Maintenance & Transport Organization 2005.

(b) Railways

Organization/Infrastructure

The railway is owned and operated by the Railway of the Islamic Republic of Iran (RAI).

There are 13,726 persons working for RAI in 2005. 3,300 persons were working in the headquarters offices and 10,426 persons were working in the general departments of the provinces. The length of railway lines in 2004 was 8,353 km, of which 6,405 km are main lines. 81.6% of the main lines are single track and 18.4% are double-track lines.

Operation

Total cargo transport volume handled by railways is shown in Table 4.1.1-11.

Table 4.1.1-11 Cargo Volume by Railway

Year	Net total tonnage (Thousand)	Net total ton-km (million)	Average length of transport (kms)	Number of loaded wagons
2000	25,119	14,179	563	446
2001	26,392	14,613	554	459
2002	26,468	15,842	599	463
2003	28,797	18,048	627	505
2004	29,453	18,182	617	517

Source: RAI.

Out of total tonnage, the most common types of non-oil commodities carried by railway are shown in Table 4.1.1-12.

Table 4.1.1-12 Non-oil Cargo Volume by Railway (unit: 1,000 t)

Type of goods	2000	2001	2002	2003	2004
Mineral ores	10,119	11,062	11,387	13,071	14,683
Agricultural products	1,517	2,041	1,365	1,072	1,109
Foodstuffs	385	416	492	521	493
Industrial goods	4,586	4,126	4,552	5,148	5,467
Other commodities	4,833	5,613	4,610	4,400	3,311
Total	21,440	23,258	22,406	24,212	25,062

Source: RAI.

Out of total tonnage, the portion of international cargo carried is shown in Table 4.1.1-13.

Table 4.1.1-13 International Cargo Volume by Railway (unit:1,000 t)

Year	Imports	%	Exports	%	Total	Transit tonnage	Overall Total
2000	6,371	77.57	1,842	22.43	8,213	623	8,836
2001	5,724	75.87	1,820	24.13	7,544	558	8,102
2002	4,882	60.58	3,176	39.42	8,058	811	8,869
2003	5,531	56.71	4,221	43.29	9,752	1,172	10,924
2004	5,682	49.65	5,763	50.35	11,445	1,418	12,863

Source: RAI

Future railroad future

According to the Fourth Economic Social and Cultural Development Plan of the I.R. of Iran for the years 2005-2009, the following strategic objectives are set for accomplishment by 2009 for the railways in Iran:

- Completion of the north-south and east-west cargo and passenger railroad network
- Completion of the Asian railroad network inside the country (implies an east-west corridor, also known as part of TAR)
- Creation of the opportunity for the non-government sector to enter the country's railroad industry (privatization)
- Complete equipping of the country's railroad network with a system of signals and communications
- Renovation of the country's railroad fleet using the administered fund in such a way that the average age of the railroad passenger fleet would be 15 years at the most by the end of the plan
- Connecting the capital with the major metropolitan areas, the coastal areas in the north and south, and major tourist centers by high-speed trains and through participation of the non-government sector

International "North-South" Transport Corridor

This corridor called Corridor No. 9 establishes a transit link between North European, Scandinavian countries and Russia to the Indian Ocean, the Persian Gulf and Southeast Asian states.

The North-South corridor in reality links the goods trade connection in transit between European countries and Northern Europe, Scandinavia and Russia through the ports of Amsterdam, Copenhagen, Hamburg, Stockholm and Helsinki in Europe to St. Petersburg and Moscow in Russia and can extend to the southern ports of the Caspian Sea (Anzali and Amirabad) and to Central Asian states (Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, ...) through Russian ports in the north of the Caspian Sea and can even extend to southern Iranian ports (Bandar Abbas, Bandar Emam, …). The continuation of this route can extend from southern Iranian ports to the Persian Gulf and Indian Ocean countries (India, Sri Lanka, …) and to Southeast Asian countries (Malaysia, Singapore, Indonesia, ….).

A great portion of Asian and European countries are able to exchange their commercial goods through the North-South corridor. In trade between Asia and Europe, different countries will be able to move their goods through this route at twice the speed compared to the Suez Canal route. With due attention to the emergence of the new countries in the Central Asian region and the new worldwide markets in the Indian Ocean and Persian Gulf areas, this issue is very important for both the European and Asian Continents.

(c) Ports

Organization

The Port and Shipping Organisation (PSO) is the organization under the Ministry of Roads and Transportation that is responsible for ports, shipping and maritime affairs in Iran. It has a Managing Director, who has the position of Deputy Minister in the Ministry of Roads and Transportation, and four Deputy Directors. They are involved in the management and implementation of maritime affairs, ports and special zones, technical and engineering matters and finance/administration.

The PSO employs 2,550 persons of whom 245 are in the Tehran HQ and the rest in 11 ports around the country. Bandar Imam Khomeini and Bandar Abbas employ the largest number of personnel (659 and 325, respectively). The three ports along the Caspian Sea, Bandar Anzali, Bandar Nowshahr and Bandar

Amirabad, together employ 577 persons.

Operation

Total cargo volumes and containers handled at the main Iranian ports are shown in Table 4.1.1-14.

Table 4.1.1-14 Cargo Handled at Iranian Ports

	Containers TEU's		Total cargo tons (includes oil)		
	2004	2003	2004	2003	oil
Arabian Gulf ports					
Bandar Abbas	1.142.659	965.011	41.935.893	39.444.859	56%
Khoramsar	75.735	49.781	415.636	331.801	0
Imam Khomeini	32.905	40.256	17.232.766	16.397.578	4%
Bushehr	27.114	23.686	2.211.026	2.038.066	69%
Caspian Sea ports					
Anzali	10.619	9.281	3.670.688	3.682.533	0
Nowshahr	1.316	1.046	1.198.723	1.429.053	22%
Amirabad	106	207	874.273	805.665	0
Others	8.888	4.126	24.140.482	21.396.278	78%
Grand Total	1.299.342	1.093.394	91.679.487	85.525.833	48%

Source: PSO Annual Reports, 2003, 2004.

There are four ports on the Caspian Sea side of Iran, namely Bandar Anzali, Bandar Nowshahr, Bandar Amirabad and Bandar Neka. Bandar Neka is specialized for oil handling only. The port handles 3.9 million tons of oil products.

Bandar Anzali

This port is located in the western part of the Caspian Sea. Associated with the port is the Special Economic Zone established in 1996. There is also a Free Industrial Economic Zone 20km away from the port. The port has 10 berths with total capacity of 5 million tons for general cargo. The throughput in 2005 was 3.4 million tons. The port has 10 berths with a total length of 1,671m. The port's cargo handling equipment includes 10 shore cranes moving on rails (10-15 tons lifting capacity), 2 mobile cranes (120 tons) and 14 mobile cranes (30-100 tons).

The PSO has a plan to expand the throughput annual capacity of the port from the current 5 million tons to 8 million tons. RAI has a plan to extend the railway line to the port.

Bandar Nowshahr

This port is located in the middle of Iran's Caspian Sea coast, that is, Nowshahr city surrounds it. Bandar Nowshahr has 5 berths, 4 for general cargo and 1 jetty for oil import (not swap, which is made in Bandar Neka). The total capacity of the port is 2 M tons of general cargo and 1.5M tons of oil, annually. But 2005 general cargo traffic was less than 1M ton. The depth at the berths is -7m and the draft allowed for ships is -5.5m.

Bandar Amirabad

This port is located at the eastern end of the Iranian coast on the Caspian Sea. This is a new port created in 2002. Bandar Amirabad is surrounded by a wider complex of Special Economic Zone, the most important characteristics of which are: an oil refinery, an industrial zone, a general cargo area, and a railway line with a total length at the port of 12 km. This is the only port on the Caspian Sea with railway access. The railway line was opened to service in Dec. 2003. The railway line was built to the port in order to enhance its role as a transit port in the North-South corridor between Helsinki-St. Petersburg-Moscow-Astrakhan to the North and Bandar Abbas-Karachi-Bombay to the South. Nevertheless, although during the first year of operations, the railway line handled 200,000 tons in 2005, the volume declined to 92,000 tons and in the current year (2006) the total tonnage that was transported by the railway line is less than 5,000 tons. This is because customers consider transit by truck cheaper than transit by rail. As a result, today most transit cargos move to/from Bandar Amirabad by truck. There are 8 berths in operation –one of which is for containers, giving an overall capacity of 4 million tons today. Current usage of the port is lower than 1 million tons. Although there is one RO-RO ramp to serve RO-RO vessels, there are no record of any such ships calling there yet. The depth of the berths is -6.5m. The depth of the entry channel is -5.5m. The maximum allowed draft of ships is -4.5m.

(d) Maritime transport

Khazar Shipping Lines was established in 1992. It is a 100% subsidiary of IRISL, the national flag of Iran, serving all over the world based in Bandar Abbas. It provides marine transportation service in the Caspian Sea area. It employs 60 persons in Anzali, 6 in Nowshahr, 3 in Amirabad and 5 in Tehran. The line owns 6 dry cargo vessels. They also have 2 more chartered from Russia and Azerbaijan. They have ordered 4 new vessels, one of which will be delivered soon. The ships are built at the Volgograd shipyard. The line is also planning to buy a new RO-RO vessel.

Total volume the line carries is 1.5 million tons per year. Their operations are mostly tramp type service to Baku, Turkmenbashi and Mahathckala, since there is not enough cargo from Iran. They have weekly operations to Aktau and every two weeks to Astrakhan.

Transit traffic is increasing. This year they have carried 1,500 cars in transit from Dubai to Russia and to Kazakhstan.

Most common imports from Kazakhstan:	Iron products, grain in bulk,
Most common exports to Kazakhstan:	Flat glass, mineral concentrates in bulk or sacks (Aktau Port does not accept bulk cargo),
Transit from other countries to Kazakhstan:	Full containers and cars (in hull or on deck)
Transit to other countries from Kazakhstan:	Scrap, steel, cereals, empty containers, used machinery for oil drilling.

7) China (Xinjiang Uygur Autonomous Region)

According to the ADB's "Regional Trade Facilitation and Customs Cooperation Program (Phase II), Xinjiang Uygur Autonomous Region, Trade Facilitation and Logistics Development Research Project"

(June 2006), the transport infrastructure in Xinjiang is described as follows.

(a) Roads

Xinjiang currently has a total length of 90,000 km of roads (4.8% of total road length in PRC) of which 541km is expressway, 883km is Class I highway, 6,450km is Class II highway and 82,126km is Class III and below. Currently, all 15 zones and major cities of Xinjiang have access to paved roads. Centered round Urumqi and established mainly along the national highway, the road network connects the northern and southern parts of Xinjiang through Tianshan. To the east, it links Xinjiang to the inland PRC provinces of Gansu and Qinghai while to the west, it links Xinjiang to Central/West Asia.

Compared to other PRC provinces and autonomous regions, Xinjiang's road transport infrastructure can be improved further. For example, while its total length of roads is 2.8 times longer than that in the Pearl River Delta Area, its road density (of only 5.4 km per 100 km^2) is less than 8% of the delta area. In addition, the share of good quality roads (Class II and above) in Xinjiang is only 8.7%, which is far below the national average.

As of the end of 2004, Xinjiang had 45 cargo terminals, of which more than half are in Urmqi and Yining. In southern Xinjiang, most of the terminals are located in Korla and Kashgar, while in eastern Xinjiang, some terminals can be found in Turpan. In general, most of these cargo terminals are quite old – even older than the road infrastructure.

(b) Railways

The huge expanse of land in Xinjiang implies that rail transport plays an essential role in local transportation. As of the end of 2004, there were 2,998.5 km of railways (of which 987 km are double tracked) under the administration of the Railway Authority of Urumqi connecting 24 towns/cities, and the rail network comprises two trunk lines and three branch lines. The two major lines are the Lanxin line in the north that leads to the Mt. Ala border post and the southern line that links Turpan to Kashgar via Korla. The three branch rail lines are the northern line, the Xiaohuangshan line and Liudaowan line.

The northern Lanxin line is the only line that connects Xinjiang to inland China (via Xi'An) and is in itself an important part of the new Euro-Asia Highway. Classified as a state Class I railroad, the annual capacity of this 460 km-long line is 10 million tons. Linking Urumqi westwards with Kazakhstan, the Lanxin line began serving the Euro-Asia route on 12th September 1990 when it was connected with the former Russian railways at the Druzba (Dostyk) border post. The southern 1,445 km-long rail line consists of two sections – the Turpan-Korla Class I section (1,476 km) and the Class II Korla-Kashgar section (969 km).

Linked in all directions by a tight network of surrounding rail lines, Urumqi stands as the undisputed transport and transit center of Xinjiang. The city has five cargo terminals in the south, north and west, as well as the Wenkuang and Shihua Terminals, with a total annual cargo capacity of 22.67 million tons.

Other cities with major cargo terminals are Sansan, Hamid, Turpan and Korla, of which the city of Sansan handles a particularly heavy volume reaching 7 million tons annually.

Source: http://encarta.msn.com/map_701517738/Xinjiang_Uygur.html

Figure 4.1.1-8 Map of Xinjiang Uygur Autonomous Region

(c) Pipelines

Xinjiang has the longest length of pipelines in PRC, totaling more than 3,000 km. The construction of the pipelines is a strategic initiative of the central authorities to ensure that the eastern provinces have easy access to the rich supplies of oil and natural gas from the western PRC region. With investments of 120 billion RMB, these pipelines have an annual carrying capacity of 1.2 billion m^3 of crude oil and gas.

(d) Aviation

Xinjiang has 12 airports in total, of which the only international airport is located in Urumqi. Served by 92 airlines, the Urumqi airport is currently connected to 19 cities in 15 countries, and is also serving as a hub for domestic air travel to 65 other PRC cities.

(e) Border Posts

Xinjiang has 17 Class I and 11 Class II border posts. They are mostly clustered around the border areas of Boertala, Yi Li, Ta Cheng and Kashgar. All of the border posts service only land transport--other than Urumqi and Kashgar which host air cargo terminals. To date, there are 13 Class II border posts established to facilitate trade with Kazakhstan, Kyrgyz and Tajikistan.

4.1.2 Customs Systems

(1) Comparison of Neighboring Countries

The customs systems relating to conventions and regional agreements are compared in Table 4.1.2-1.

Table 4.1.2-1 Customs Conventions and Regional Agreement Membership of Neighbouring Countries

Country	Afghanistan	Azerbaijan	Georgia	Iran	Kazakhstan	Kyrgyz	Russia	Tajikistan	Turkmenistan	Uzbekistan	XUAR
TIR Carnet	+	+	+	+	+	+	+	+	+	+	
Revised Kyoto Convention		+									+
CIS		+	+		+	+	+	+	+	+	

Sources: WCO and others.

The CIS countries and Afghanistan and Iran are members of the TIR Carnet Convention. China is not a member, but it is expected that China will become a signatory to the TIR Carnet convention soon.

According to ADB, "Central Asia: Increasing Gains from Trade through Regional Cooperation in Trade Policy, Transport and Customs Transit" 2006, the TIR system has proven to be very effective in facilitating customs transit by road, especially when it involves crossing multiple borders. However, the problems of the TIR systems are pointed out as follows.

- Costs
  The costs are too high for most transport operators for these countries, because i) they have to buy or lease a truck which meets the requirement of the TIR Convention and needs to be re-certified every two years and ii) the national association controlling access to the TIR system needs to have insurance that covers its guarantee liabilities.
- Border infrastructure problems
  The main delay factor is the waiting time to reach the border control zone rather than the actual processing time.
- Non compliance by customs
  Customs officials often require TIR vehicle drivers produce a full set of documentation almost identical to that required for non-TIR vehicles**.** (even though the submission of documents is statutory obligation for customs purpose.)
- Unofficial payments
  Unofficial payments are necessary to avoid excessive paper work and physical cargo examination.
- Short distance transit
  The fixed costs are too high to be used in external customs transit that requires crossing one country or in internal customs transit.

Only China and Azerbaijan are signatories to the Revised Kyoto Convention for simplification and harmonization. Kazakhstan is preparing to join the Convention. Kazakhstan enacted a Revised Customs Code in 2003 and Kyrgyz in 2004. Tajikistan and Uzbekistan are following suit. Domestic laws need to be revised to comply with the Convention in order for them to become signatories.

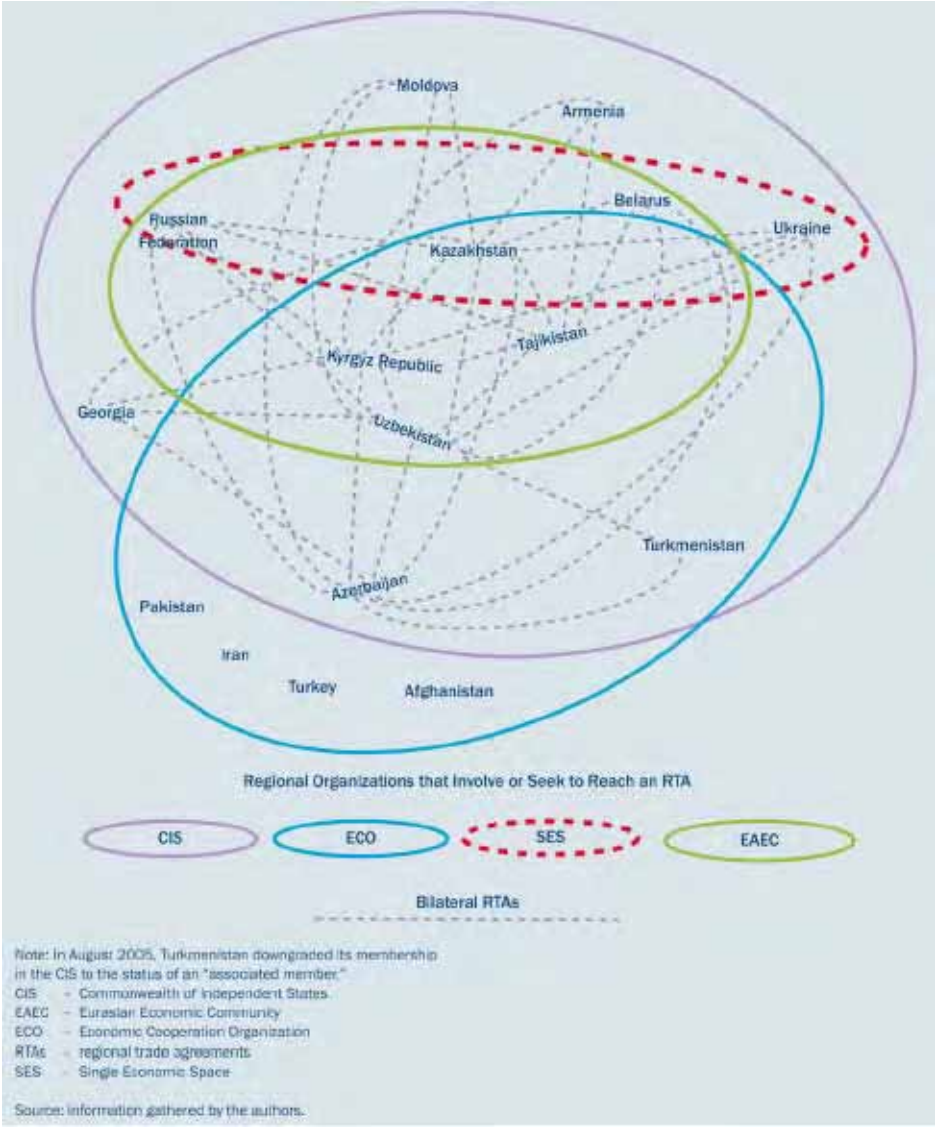
The CIS countries have established the CIS Customs Committee which addresses the development and regulation of transit trade flows along the traditional corridors and routes via Russia. According to the World Bank "Trade Performance and Regional Integration of the CIS Countries" (2004), the Committee also plays an important role in efforts to harmonize customs documentation and procedures, training of customs personnel, technical assistance and others. However, the results of the Committee's activities are limited and customs coordination among the CIS countries seems far from efficient. However, it is said that there is a green lane system in the CIS like in the ASEAN.

The ADB's "Central Asia" report mentioned above also describes that the Central Asian countries have joined several regional organizations with multilateral regional trade agreements and entered into numerous bilateral regional trade agreements. The situation is called the "spaghetti bowl effect" shown in Figure 4.1.2-1.

However, the report indicates that some of these bilateral regional trade agreements have never entered into force because they have not been ratified by at least one signatory country and at the same time, the

effectiveness of those that have formally entered into force has been limited due to narrow coverage, complex rules of origin and less than full implementation.

The World Bank publishes "Doing Business: Creating Jobs" annually. It shows evaluation of the environment for doing business in various countries by firms. The most recent report is from 2006. The indices start from "Starting a business" and include "Trading across borders." Specifically, "Trading across borders" consists of import/export documents and time. The results are shown in Table 4.1.2-2. Tajikistan and Turkmenistan are not included in this survey. In addition, only China is available, not the Xinjiang-Uygur Autonomous Region.



Source: ADB, "Central Asia: Increasing Gains from Trade through Regional Cooperation in Trade Policy, Transport and Customs Transit" 2006

Figure 4.1.2-1 Spaghetti Bowl of Regional Trade Agreements Involving Central Asian Republics

Compared with neighbouring countries, Kazakhstan's time for export is the longest (93 days), although the number of signatures for export is not the largest. China's time for export is the shortest (20 days), but this may show results in the coastal regions. Uzbekistan's time for import is the longest (139 days). Kyrgyz's is the second (127 days) and Afghanistan's is the third (97 days). Kazakhstan's is the fourth-longest.

China's time for import is the shortest (24 days) and Russia's is the second-shortest.

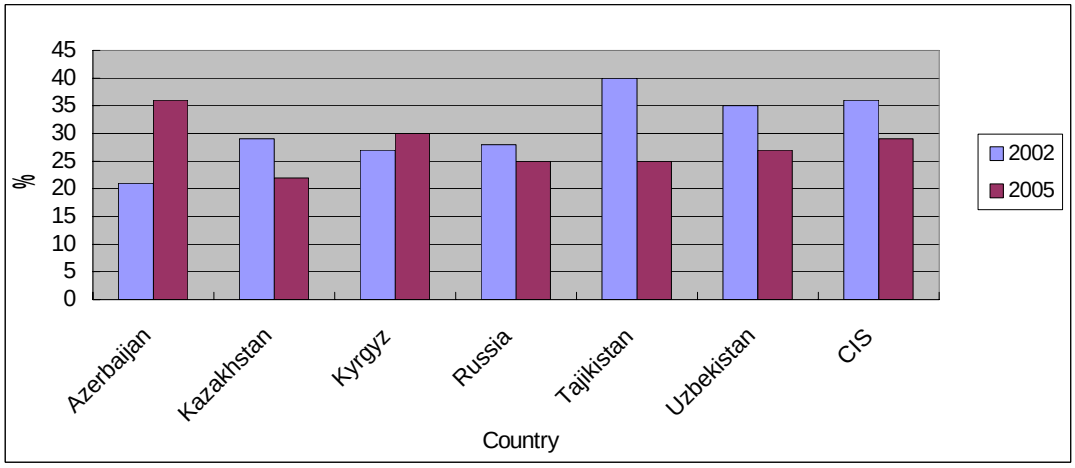
Table 4.1.2-2 Trading Across Borders

Country	Afghanistan	Azerbaijan	Georgia	Iran	Kazakhstan	Kyrgyz	Russia	Tajikistan	Turkmenistan	Uzbekistan	China
No. of documents for export	-	7	9	11	14	-	8	n.a.	n.a.	-	6
No. of signature s for export	-	40	35	30	15	-	8	n.a.	n.a.	-	7
Time for export (day)	-	69	54	45	93	-	29	n.a.	n.a.	-	20
No. of documents for import	10	18	15	11	18	18	8	n.a.	n.a.	18	11
No. of signature s for import	57	55	42	45	17	27	10	n.a.	n.a.	32	8
Time for import (day	97	79	52	51	87	127	35	n.a.	n.a.	139	24

Note: Time for export or import starts from official document preparation to export or import.

Source: The World Bank "Doing Business in 2006", 2006.

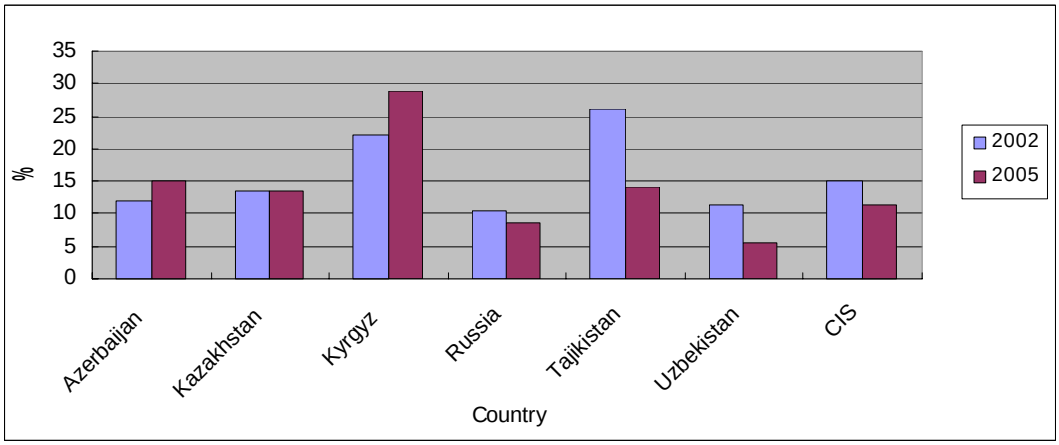
The BEEP Survey mentioned above (4.1.1) includes also "Customs and Taxes" indicators. There are two indicators relating to customs. One is the percentage of firms indicating "customs regulations as a problem doing business." The other is the percentage of firms stating that unofficial payments for customs are frequent. The results can be seen in Figures 4.1.2-3 and 4.1.2-4.



Source: The EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS), 2006.

Figure 4.1.2-3 Percent of Firms Indicating "Customs Regulations as a Problem Doing Business"

The highest percentage is for Azerbaijan in 2005, with Kyrgyz in second place. Kazakhstan has the lowest percentage in 2005. Complaints decreased from 2002 to 2005 in most countries except Azerbaijan and Kyrgyz.



Source: The EBRD-World Bank Business Environment and Enterprise Performance Survey (BEEPS), 2006.

Figure 4.1.2-4 Percent of Firms Indicating that Unofficial Payments for Customs are Frequent

The highest percentage is for Kyrgyz in 2005 and the percentage increased from 2002 to 2005. The lowest percentage is for Uzbekistan in 2005. Russia has the second-lowest percentage and Kazakhstan the third lowest. The percentages for Azerbaijan and Kyrgyz increased, but those for the other countries decreased. The change in the two graphs seems to show that customs procedure conditions in these two countries became worse.

The customs system in each country adjacent to Kazakhstan is described below.

(2) Customs Systems in Neighboring Countries

1) Russia

A new Customs Code was introduced on January 1, 2004 to address the problems of unofficial payment and customs clearance process unpredictability and bring Russian legislation in line with WTO standards. According to the survey results, the amount of time spent on customs clearance decreased for at least 35% of importers. However, for 33% of importers and 42% of exporters the costs of customs intermediaries' services increased; only 5% of the firms surveyed saw these costs decrease. More than half of the firms ranked controversial and unpredictably changing legislation as a serious or very serious problem.

The customs administration organization in Russia is the State Customs Committee (SCC). The SCC has four areas of activities as follows.

- Development of customs infrastructure
- Compliance of customs legislation with international norms
- Development and implementation of customs technologies
- Effective human resources policy

The problems of the SCC are as follows.

- Insufficient development of the customs broker institution
- Higher-level customs organization decision needed for goods release and clearance
- A lot of uncoordinated steps in customs control, causing unjust financial and downtime costs of foreign trade participants
- Absence of straight feedback between customs control and methodology
- No provision for information technologies and hardware to meet modern requirements and planned development
- Current post-audit procedures not meeting present requirements

In order to improve the problems above, the SCC is planning the following.

- Reduction of declaration number selected for inspection of goods using risk management
- Reduction of average time taken for clearance at border posts
- Reduction of average time taken for major customs clearance of imports
- Reduction of the compliance gap measured by the following ratio: value of the EU exports to Russia and value of imports from EU
- Increased enforced compliance in the collection of customs fees

The US Trade commission evaluates Russian trade barriers as follows (2005).

> The new Customs Code simplifies customs procedures and establishes specific procedures for the application and payment of tariffs.
> The Russian government proceeded with tariff unification to help combat customs fraud and improve collections; however, while there have been some improvements in this regard, the overall weakness of Russian customs administration still leads to many abuses.

2) Kyrgyz

The Decree of the Government of the Kyrgyz Republic No. 632 dated September 19, 2002 “About the simplification of procedure of control over imported goods based on security indicators” introduced the “single window” Principle. This excludes the duplication of control functions and various governmental organizations and simplifies the procedure for obtaining permission documents necessary for customs clearance.

The past Customs Code did not include a risk evaluation system and risk management that is the most progressive form of customs control and promotes increased trade. Therefore, the inspection of all cargos was conducted by using the continuous method which is ineffective and did not exclude errors.

Another problem was lack of computer technologies for achieving customs control and the low level of computerization and automation for customs procedures.

Thus, the 2004 Customs Code replaced the 1997 Code. The legal business framework, including licensing and registration, has been simplified, but it remains cumbersome and greatly impedes business. The Presidential Council on Good Governance was set up in 2004, but the problems remain in this area, including unofficial payment. Intellectual property rights have been strengthened, with the Kyrgyz Republic joining most international conventions, but weak enforcement, especially by customs, permits

many formal pirated imports. The Code strengthened the legal basis of customs, the procedures on customs control, clearance and enforcement, and introduced important changes to clarify operations of customs brokers and other intermediaries. Since its introduction, the Government has made significant progress in reducing deficiencies in customs administration; customs revenue grew from 0.5% of GDP in 2004 to 1.7% of GDP in 2005. The Kyrgyz Republic intends to accede to the Revised Kyoto Convention and, according to the authorities, the 2004 Customs Code is in full compliance with its main principles and provisions.

A modernization program is developing the Single Automated Information System (SAIS), including development of software systems and enhanced communication links and improving inadequate infrastructure at border entry points (around 40). However, electronic customs processing remains poorly developed and customs administration is weak with unofficial payment remaining a major problem.

A risk-management system based on risk analysis is being developed to target high-risk imports, but is largely embryonic operationally.

The WTO's "Trade Policy Review, Kyrgyz Republic" (September 2006) points out customs procedures as follows.

> Goods generally must be declared within 15 days of arrival, with all required supporting documentation provided within 45 days from the declaration date. If information submitted is inadequate, provisional clearance is possible using a temporary goods declaration (TGTD) or an incomplete goods declaration (IGTD). Importers regularly importing the same good may submit a periodic goods declaration (PGTD), which is a single customs declaration for all the goods conveyed across the customs border within a certain period of time (Resolution No. 961 of 26 December 2004).
>
> Customs must decide on clearance within one day of declaration, and goods are to be cleared in principle within three days. While data on average release times were unavailable, it reportedly frequently takes from three to five days. There are numerous complaints of excessive documentation and other cumbersome administrative requirements, including corruption by officials with substantial discretion in setting valuations. In this respect, it should be noted that inefficient customs administration using outdated procedures can substantially raise traders' transactions costs, especially for less well-established or less well-connected firms. Transit of goods through the Kyrgyz Republic is often hindered by time-consuming convoy escort requirements.

3) Turkmenistan

The State Customs Service of Turkmenistan is encouraged to change its procedures and rules for customs control while introducing the risk management system by economic and foreign trade development, annual transit movement increase and opportunity to apply modern information technologies.

The State Customs Service of Turkmenistan is implementing certain works in this direction, i.e., the list of goods that require experts of the corresponding public authorities to participate in their customs clearance was identified along with the list of goods import which requires compulsory escort. Technological schemes and methodical recommendations on the basis of which customs inspection of vehicles and goods is made have been developed, customs officials are trained in methods of inspecting vehicles and cargos and are studying how goods can be concealed and transportation of smuggled goods and measures are

being taken to further technically equip customs posts to detect smuggling. High risk goods moved through the customs border of Turkmenistan and which could violate customs rules are selectively determined based on the criteria.

Funds are continuously being allocated to the Customs Service to build modern customs posts and equip them with the latest means to control vehicles, cargos and baggage..

All border customs posts with large cargo-passenger flow and also main temporary storage customs warehouses have installed x-ray-scanning facilities for inspection and control of vehicles and luggage.

Customs authorities are equipped with radiation control means and hardware, and the work is ongoing to equip them with communications.

To improve customs administration, corresponding customs structural subdivisions were imposed with the task of detecting the threat of breach of customs and other registration.

Imports and transit on Turkmenistan territory of spirits, alcoholic beverages and tobacco goods by automobile transport are made with compulsory customs escort.

A new Customs Code has been being drafted and it will reflect significant positive experience accumulated by the customs service and also the main principles of international practice including risk evaluation and management.

A paper about Turkmenistan prepared for the sub-regional workshop on Accession to WTO, July 2001, describes customs regulations as follows.

> Foreign companies doing business in Turkmenistan consider the Turkmen customs clearance process very complicated, in terms of paper work, and lengthy (sometimes up to 2 months). Requests for bribes have been a typical occurrence in day-to-day customs operation.
>
> To pass through customs, an importer of goods must submit the following documents.
>
> - A trade contract registered with the SCRME (State Commodity and Raw Materials Exchange). The contract should contain information about quantities and costs in hard currency that will be the basis for the customs valuation;
> - A bill of lading with similar information on qualities and costs;
> - A customs cargo declaration form that can be obtained in the Ashagabat-Expertisa firm of the Chamber of Commerce of Turkmenistan;
> - A conformance certificate confirming the quality of delivered goods. The certificate can be obtained from the State Standards Inspectorate;
> - A certificate of origin; and
> - A Central Bank document confirming money transfer for purchasing goods or an irrevocable Letter of Credit.
>
> The customs cargo declaration and bill of lading are only accepted in English or Russian. Other documents can be in Russian. The Chamber of Commerce must certify translated copies. The fee for certification ranges from US$ 1 to 2 per page. Faxes and copies are not accepted as official documents by the customs authority.
>
> During the customs clearance process, customs charges a service fee of 0.2 percent of the contract cost and 20 percent of the value added tax assessed on the customs service fee sum.

4) Uzbekistan

The Government of Uzbekistan's acceptance of the International Monetary Fund's Article VIII agreement as of October 15, 2003 changed legislation in the country's import registration system and overall import regime dramatically. The Government of Uzbekistan eliminated its import registration system, which verified import prices and rationed access to foreign exchange. Nevertheless, the government continues to restrict consumer goods imports in order to prevent hard currency flows and curb the threat of devaluation of the soum. The procedure importers must go through to buy foreign exchange changed to include only three steps. Each step requires two to three business days. The first step is the registration of an import contract at the importer's bank. The second step requires the importer to register the contract with the customs committee. The documents must clarify customs value of the goods and their places of origin. As the third step, the commercial bank submits an application for hard-currency conversion to the Central Bank for the importer. The Central Bank approves the application and allocates the requested amount to the bank. The whole procedure takes between five and seven days for most importers. However, the total time for import is 139 days according to the World Bank "Doing Business" above.

Customs authorities of the Republic of Uzbekistan is trying to introduce the risk management system in order to create a modern customs administration system that ensures efficient customs control based on selectiveness principles and optimal distribution of customs service resources at most important and priority directions in the work of customs authorities to prevent violations of customs legislation. The introduction of the risk management system assumes the following phases.

- Development of appropriate regulatory framework regulating the application of risk management system in the operation of customs authorities
- Introduction of modern information technologies including modern data transfer, international data transfer standards, corresponding software and computer hardware and technical means of customs control
- Creation of information support for risk management system including different data bases and software to process them
- Analysis of available customs legislation violations to detect the existing risks
- Analysis of legislation in consignor/consignee countries with respect to Uzbekistan
- Interaction with business community
- Systematization of measures applied to minimize risks
- Determination of criteria for inclusion of analysis objects into risk areas
- Expansion of selection practice in application of forms of customs control by customs authorities

The US Trade commission describes the trade barriers in Uzbekistan (2006) as follows.

> The Government of Uzbekistan restricts imports in many ways, including high import duties, licensing requirements for importers and wholesale traders, restricted access for sellers of imported items to retail space, and limited access to hard currency and the local currency (the soum).
>
> Combined with unofficial payments that often must be made to border and customs officials to import goods, most imported goods are prohibitively expensive for the majority of Uzbeks.

According to reports from foreign investors, “unofficial duties” combined with other tariffs and taxes can cost as much as 100 percent to 150 percent of the amount of the actual value of the product, making the product unaffordable for virtually everyone in the country.

The customs clearance process is full of unofficial bureaucratic obstacles leading to significant processing delays of two to three months, even for US-Uzbek joint ventures. Problems include the arbitrary seizure of goods, as well as frequent official and unofficial changes in customs procedures without prior notification. Excessive documentation also makes the Uzbek importing process costly and time consuming.

The lack of proper equipment and legislative regulations provides an environment in which the customs official on duty can arbitrarily apply his or her own case-by-case search and seizure procedures. In 2004, the Government of Uzbekistan made an effort to increase regulation transparency at customs border posts, primarily by posting all relevant regulations and decrees where traders can review them.

5) Azerbaijan

Customs in Azerbaijan is managed by the State Customs Committee. The main aim of the Committee is to modernize customs operations in Azerbaijan.

At present, the State Customs Committee has in its structure 18 regional customs bodies and 58 customs posts, of which 25 are located at border crossings. The Committee is managed by the customs council, which is in reality an “economic co-operation.” The head of the Council is the Chairman of the Customs Committee.

The objective of the Customs Committee is to facilitate transit of goods in a safe manner. According to State Customs Committee officials, any problem that may occur at customs points and does not involve illegal operations is solved within 30 minutes maximum.

The main problems with customs have always been customs relations and customs business. This is why meetings are organized during the customs fair . A lot of problems are solved there. Also, problems can be solved through the use of the “hot line”, which every citizen can use inside the TRACECA offices. Customs operations are fully integrated with EU customs procedures.

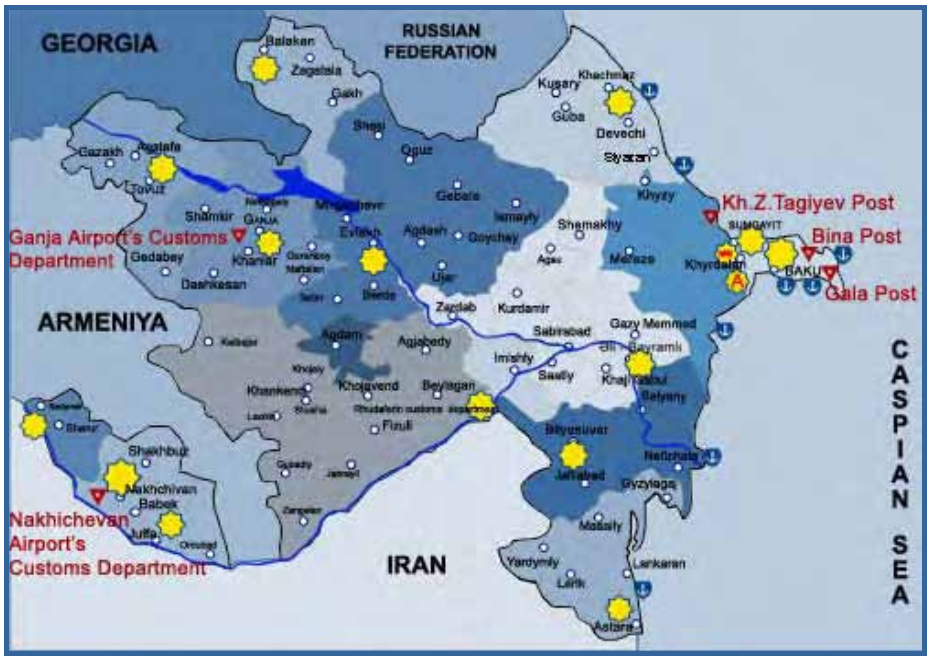


Figure 4.1.2-5 Customs Offices in Azerbaijan

The Committee has signed the Kyoto Convention on trade. They have transferred this to Azerbaijan under a new Law, the draft of which has been very recently presented (15 November) and which is not in effect yet.

The operating hours of customs are between 09:00 and 18:00 every day of the year. It is possible to operate outside these working hours following a relevant application by those interested. The extra charges are published on the website. The cost is 0.15% during working hours and 0.3% during non–working hours.

Regarding transit cargo from Iran, there are some limitations in the Bandar Abbas port of Iran from where operators transport most of their shipments towards Baku. Sometimes, the containers come with 28 tons cargo while in Bandar Abbas the maximum allowable tonnage is 23 tons. In such cases, they are obliged to use Poti Port instead of Bandar Abbas, taking more than 35 days for the shipment delivery, where the transit time from Bandar Abbas is only 15 days.

Regarding the future, Customs Committee representatives referred to the new customs Law which will come into effect, the further development of co-operation and the application of the Kyoto Convention.

Training is crucial for the Committee. In particular, training on capacity building is the first priority. It is important that one of the four training centers of the World Customs Organization be located in Baku.

For transit there is a certain facilitation procedure according to the TIR convention. Any problems can be solved by the Committee, following any transit customer's application to the Committee, which acts as soon as possible. There is no deposit required for transit operations. The TIR carnet is used, but it is not applied with Armenia due to political conflict. Apart from the TIR convention, the Railways Convention has also been signed. During the past seven months, 10 million tons have been transported through customs by rail.

Modern technology is used for scanning the containers and therefore most containers/wagons are not unpacked (around 98-99% of transit goods are not unpacked). This also depends heavily on the correctness of the cargo documents. There are a lot of programs running on EDI basis. The most important

is the "GUUAM" system, which connects the members participating in this system through EDI. Also, the connection between border customs offices and the central customs offices is established through ASTOK software (Automated System of custom clearance and control). Finally, pilot projects are running for electronic declarations.

Data are being gathered and analyzed by the statistics department of the Committee, which publishes them on the website of the Committee (www.az-customs.net). All relevant laws and presidential decrees are included in the customs website.

Crossing points are located at borders of the Azerbaijan Republic with Georgia, Russia, Turkey and Iran. There are also sea borders with Kazakhstan, Turkmenistan, Russia and Iran, and ferry services are active with Kazakhstan and Turkmenistan. Green and Red Channels are used at border crossing points.

The State Customs Committee (SCC) has finished the preparation of the Customs Code. The new Code was prepared as part of the project "Improvement of the Customs System of Azerbaijan" assisted by the UNDP. The SCC and UNDP presented the new Customs Code in the middle of November 2006. According to the Code, basic standard customs registration can be conducted on the basis of minimum information. The Code stipulates legislative rules on the transition to automated systems and decreases work related to papers and documents, corresponding with international standards and particularly with EU customs standards.

In addition, to make the customs procedure quicker, IT applications have been included as main customs services at the beginning of 2007 and 45 customs bodies were automated. The new Code was applied in the first months of 2007.

6) Iran

The Iran Customs Administration (IRICA) is positioned under the Ministry of Commerce. It employs 7,000 employees in the central, regional and border offices. There are in total 160 customs offices across the country, including Tehran. 2,000 employees work in Tehran (distributed in two central buildings and 4 customs offices) and the remaining 5,000 employees work in the regional and border offices (land and port employees of the Persian Gulf and Caspian Sea), of which 400 in Bandar Abbas, 120 in Bandar Imam, 130 in Bandar Anzali, 110 in Bazargan, etc.

The Customs Law of Iran has been in force since 1971. Meanwhile, it has undergone some minor modifications in accordance with developments since that period. A new Customs Law is at present being submitted for approval to the Parliament. At the same time the Export-Import Regulation Act & the Executive Ordinance of Law on Export-Import Regulations and Customs Tariff Tables based on the Harmonized Commodity Description and coding system, published on 15/5/2001 by the Institute for Trade Studies & Research, are also in force.

Customs services in ports are open from 07:00 till 19:00 on a continuous daily basis. Customs Services for road transport to geographically neighbouring countries operate on a 24-hour daily basis and continuously for transit transports. For the rest, Customs services operate from 08:00 till 16:00 during work days, every Thursday from 08:00 - 14:00, but are closed on Friday.

Iran has not yet signed the Kyoto Convention. This issue is under examination by the Government for the time being. However, certain articles of this Convention have been passed completely or in part to the national legislation but without referring to the Kyoto Convention and creating a precedent that this Convention will finally be signed by the Government (in such case it will be ratified by the Parliament and will be put in force on the basis of the existing provisions).

Concerning computerization of Customs administration, ASYCUDA plus has been applied starting 10 years ago. Today it is applicable to 95% of the Customs. EDI is applicable only in the largest Customs, because the smaller ones do not have the required technical infrastructure.

7) China (Xinjiang Uygur Autonomous Region)

According to ADB's "Regional Trade Facilitation and Customs Cooperation Program (Phase II), Xinjiang Uygur Autonomous Region Trade Facilitation and Logistics Development Research Project" (June 2006), Xinjiang had 17 Class I and 11 Class II border posts. They are mostly clustered around the border areas of Boertala, YiLi, Ta Cheng and Kashgar. All of the border posts service only land transport other than Urumqi and Kashgar, which host air cargo terminals. To date, there are 13 Class II border posts established to facilitate trade with Kazakhstan, Kyrgyz and Tajikistan.

Typical customs clearance procedures such as on-site customs declaration and inspection and waiver of border checks (for customs-sealed goods) are available at both Class I and II ports.

In 2004, Xinjiang targeted special efforts at improving the efficiency of its border posts through strengthening customs process management and upgrading the infrastructure and information technology systems. Other trade facilitation and customs cooperation activities were further enhanced, particularly with respect to relations with Kazakhstan, Kyrgyz and Pakistan.

At present, there is a significant disparity in the customs documentation of the two countries. The Chinese authorities currently provide a standardized neat document (with a maximum of five products entries on each sheet) in both Chinese and Russian languages to the Kazakh authorities. Kazakh's supporting documents and packing lists are, however, in only Russian and less organized (with too many item entries on one form). This makes the documents difficult to comprehend. The expended efforts required to verify the information on the papers delay border clearance and any initiative in mutual recognition of customs documents.

The ADB report describes the following recommendations concerning the customs.

- Adoption of the TIR Convention

  The TIR Convention is an international convention aimed at facilitating road transport. It is based on the five principles of secure vehicles or containers, international chain of guarantee, TIR carnet, mutual recognition of customs controls and controlled access. The People's Republic of China is currently preparing to join the TIR (it is also studying the associated costs and benefits), while most of the neighboring countries (the Central Asian countries, the Russian Federation and Mongolia) have all already acceded to the convention. With demonstrated benefits from the TIR system, it is recommended that China quicken its pace of accession by targeting and resolving, in particular, ratification of bilateral and multilateral agreements, correct truck specifications, capacity building of skilled personnel and cooperation with foreign customs offices.

- Customs cooperation including harmonization of customs documents such as cargo manifests

  Customs documentation exchanges between China and Kazakhstan (as well as with the other CARs) currently suffer from a lack of harmonization. With differences stemming mainly from the languages used, document formats and data elements, customs documentation now requires a longer processing time. The cargo manifests of China and Kazakhstan are, in particular, very different. To reduce such administrative hindrances, it is recommended that

the countries work together to standardize and align the proper documents. This will facilitate the preparation of customs declarations and thus reduce agents' efforts (freeing them to provide other higher value-added services) as well as customs clearance time, which in turn facilitates trade and other exchanges.

4.1.3 Trade and Transit Trade

4.1.3.1 General Trade Situation of Kazakhstan

Kazakhstan's trade performance (exports and imports) in goods (capital goods and production goods, etc.) is described below.

(Exports)

Mining products (oil, ferrous resources, raw materials, processed sheets, etc.) account for a large share of Kazakhstan's exports, accounting for more than 80% of the total value of exports (see Table 4.1.3-1).

In terms of export value by item (2004), oil and concentrated gas account for 56.81% of total exports (US$11,417 million), followed by ferrous metals accounting for 5.21% (US$1,046 million) and smelted copper for 5.03% (US$1,011 million). Thus, mineral resources and items processed from mineral resources (rolled steel, etc.) account for 80.21% of total exports. Other major export items are cereals (2.19%, US$440 million), raw cotton (0.84%, US$169 million) and wool (0.025%, US$5 million).

Export items that have an impact on logistics are mineral resources and items processed from mineral resources, which accounted for 96.96% of the total tonnage of exports (excluding exports of natural gas and other items) in 2004. The ratio of cereals, raw cotton and wool in terms of total tonnage was just 3.06%.

In particular, grain exports have fluctuated greatly in recent years, i.e., 5,612 tons in 2000, 5,835 tons in 2003, and 2,923 tons in 2004. Grain is currently transported over various routes from the north of the country that constitutes the breadbasket of Kazakhstan. The main routes are as follows: (1) truck or rail transportation to Russia, (2) rail transportation to Aktau followed by marine transportation to overseas, (3) transportation to southern areas such as Uzbekistan, etc. and (4) rail transportation to China via Dostyk.[1)]

[1)] For details on grain exports, see "JBIC, Pilot study for Development of Integrated Grain Export and Transport System in Central Asia and Around Caspian Sea 2003 Part 1 and Part 2."

Table 4.1.3-1 Kazakhstan Exports (2000-2004)

(Units: tons and US$ million)

Item	2000			2001			2002			2003			2004		
	Amount	Export Value	Unit Value Index	Amount	Export Value	Unit Value Index	Amount	Export Value	Unit Value Index	Amount	Export Value	Unit Value Index	Amount	Export Value	Unit Value Index
Oil and concentrated gas	27,713	4,429	160	32,378	4,463	138	39,334	5,037	128	44,339	7,023	158	52,419	11,417	217
Coal	25,157	165	7	28,515	232	8	22,664	172	8	26,905	250	9	24,339	266	11
Refined petroleum products	992	100	101	1,467	130	89	1,107	119	108	1,869	248	133	2,316	420	181
Aluminum	1,206	161	134	1,194	180	151	1,371	173	126	1,414	187	132	1,466	271	185
Smelted copper	391	666	1,702	398	605	1,519	393	578	1,468	387	619	1,598	399	1,011	2,535
Zinc	212	180	847	237	158	665	259	154	595	232	145	627	276	216	787
Lead	144	60	414	134	56	418	132	53	403	108	46	430	126	83	663
Chrome	557	22	39	504	23	45	483	23	47	499	25	50	775	58	75
Rolled iron	6,140	60	10	7,343	86	12	9,022	110	12	10,291	179	17	11,473	435	37
Alloy iron	794	281	354	823	315	383	951	341	358	1,028	452	440	1,109	827	746
Ferrous metals	3,262	764	234	3,177	577	182	3,554	716	201	3,309	931	281	3,499	1,046	299
Yellow phosphorous	13	12	911	19	16	817	31	28	907	50	46	914	71	69	978
Grain	5,612	496	88	3,336	344	103	4,311	346	80	5,835	565	97	2,929	440	150
Raw cotton	90	85	946	96	83	864	138	105	763	126	139	1,110	143	169	1,189
Wool	11	5	450	9	5	543	8	5	618	10	5	465	7	5	737
Natural gas*	5,214	38	7	5,539	79	14	10,437	215	21	126	229	21	17,285	496	28
Others		1,291			1,280			1,495		10	1,811			2,861	
Total		8,812			8,632			9,670			12,900			20,096	

* Quantities of gas are shown as m^3. Moreover, export values and quantities are shown as figures clearing customs.

Source: IMF, 'Republic of Kazakhstan: Statistical Appendix (IMF Country Report 05/239).

As shown in Table 4.1.3-2, Kazakhstan's main export destination in terms of export value in 2005 is Europe, accounting for the largest share of 61.4%, followed by Asia (17.6%) and the CIS (14.6%). Looking at movements over the past five years, in terms of individual countries, Switzerland accounted for the highest share of 19.8% in 2005, followed by Italy (15.0%) and Russia (10.5%). For the last six years, Russia has significantly dropped its export share from 25.7% in 1999 to 10.5% in 2005. As a result, Switzerland's share has grown the most (from 5.6% in 1999 to 19.8% in 2005, with exports of value-added rare metals such as titanium making a major contribution). This recent change reflects increased exports of mineral resources and inflation in their prices.

China's share increased from 8.0% in 1999 to 12.8% in 2003 (electrical appliances, etc.), but dropped again to 8.7% in 2005.

The share of Iran, boosted by exports of grain from Kazakhstan, also increased from 1.6% in 1999 to 3.2% in 2005. The share of Azerbaijan remained unchanged from 0.5% in 1999 to 0.5% in 2005.

Table 4.1.3-2 Main Trading Partners: Movements in Actual Exports

(Unit: %, only total export values: in US$ million)

Region	Country	1999	2000	2001	2002	2003	2004	2005
CIS		25.7	26.5	30.6	22.7	23.1	20.4	14.6
	Russia	19.5	19.9	20.4	15.5	15.2	14.1	10.5
	Kyrgyzstan	1.0	0.7	1.0	1.1	1.2	1.1	0.8
	Uzbekistan	1.1	1.5	1.7	1.0	1.1	1.0	0.9
	Azerbaijan	0.5	0.5	0.8	1.2	0.9	1.4	0.5
	Tajikistan	0.7	0.6	0.7	0.5	0.6	0.7	0.5
	Turkmenistan	0.2	0.1	0.2	0.2	0.3	0.1	0.1
	Ukraine	2.2	2.9	5.7	3.0	3.3	1.4	0.7
	Other CIS total	0.5	0.3	0.1	0.2	0.5	0.6	0.6
Europe		33.7	31.1	31.0	30.3	32.4	54.6	61.4
	Switzerland	5.6	5.1	4.7	8.2	13.0	18.7	19.8
	Italy	7.3	10.4	11.1	9.3	7.8	15.5	15.0
	France	0.4	0.2	0.1	0.3	2.2	7.3	9.6
	Poland	1.6	0.6	1.9	3.3	1.6	0.9	1.3
	Netherlands	2.8	2.6	1.7	1.3	1.4	2.3	3.2
	Other EU total	16.0	12.2	11.5	7.9	6.4	9.9	12.5
Asia		14.2	13.7	16.8	22.2	21.7	18.3	17.6
	China	8.0	7.6	7.6	10.6	12.8	9.8	8.7
	Iran	1.6	2.3	2.4	3.2	3.2	3.5	3.2
	Arab United Emirates	0.1	0.1	3.8	4.9	1.7	0.2	N/A
	Other Asia total	4.5	21.1	17.2	11.6	14.7	14.6	5.7
Americas	Americas total	25.8	28.4	21.5	24.3	22.6	6.6	6.3
Africa	Africa total	0.5	0.2	0.1	0.5	0.2	0.1	0.1
Total value of exports (%) (US$ million)		100% (5,871)	100% (8.812)	100% (8,639)	100% (9,670)	100% (12,926)	100% (20,096)	100% (27,849)

Prepared from Republic of Kazakhstan, "Statistical Yearbook of Kazakhstan 2004, 2005 & 2006."

Based on other statistics offered by the UN, export destinations in terms of item and value are indicated below (see Table 4.1.3-3[2)]). Russia is the top export trade partner and is ranked in the top five for every item, but the high ranking of China is noteworthy for iron and steel (first), copper and copper articles (second), and ore, slag and ash (second). Trade with China has been growing rapidly in recent years.

Table 4.1.3-3 Main Export Destinations of Kazakhstan by Item

(2004: US$19,935 million)

Item		Country		Export Value (US$ million)	*Share out of All Exports (%)
1st	Mineral fuels, mineral oils and products of their distillation) Total exports: US$12,901 million [Equivalent to 64.7% of all exports]	1	Switzerland	3,235	25.1
		2	Italy	2,375	18.4
		3	France	1,459	11.3
		4	Russia	918	7.1
		5	Others (British Virgin Islands, etc.)	4,912 (763)	38.1
		Total		12,901	100
2nd	Iron and Steel Total exports: US$2,187 million [Equivalent to 11.0% of all exports]	1	China	496	22.7
		2	Russia	322	14.7
		3	Switzerland	319	14.6
		4	Iran	306	14.0
		5	Others (Netherlands, etc.)	742 (185)	34.0
		Total		2187	100
3rd	Copper and articles Total exports: US$ 1,19 [Equivalent to 6.0% of all exports]	1	Italy	645	54.2
		2	China	389	32.7
		3	Germany	50	4.2
		4	Switzerland	36	3.1
		5	Others (S. Korea, etc.)	68 (23)	5.8
		Total		1,190	100
4th	Ore, slag and ash Total exports: US$723 million [Equivalent to 3.6% of all exports]	1	Russia	570	78.8
		2	China	110	16.3
		3	Uzbekistan	36	5.0
		4	Ukraine	5	0.7
		5	Others (Kyrgyzstan)	1.28(0.97)	0.18
		Total		723	100
5th	Cereals Total exports: US$440 million [Equivalent to 2.2% of all exports]	1	Russia	241	64.9
		2	Azerbaijan	64	14.8
		3	Ukraine	49	11.3
		4	Georgia	13	3.2
		5	Others (Turkey, etc.)	68(10)	15.8

Prepared from UNCTAD UNcomtrade (2006)

[2)] This table was prepared from the UN comtrade data of UNCTAD.

(Imports)

Viewed in terms of value, the major imports to Kazakhstan are manufactured products such as electrical appliances and machine tools, consumer goods and vehicles, etc. This structure has remained largely the same over the past five years (see Table 4.1.3-4).

In terms of separate items, electrical appliances and machine tools (US$3,422 million) account for 26.77% of total imports, followed by consumer goods, which account for 14.44% (US$1,845 million), vehicles, which account for 13.90% (US$1,777 million), and food and foodstuffs, which account for 6.62% (US$846 million) in 2004. Combined, these items account for 61.73% of all imports to Kazakhstan.

The major sources of imports to Kazakhstan are the CIS with 46.9% in 2005, followed by the EU with 26.6% and Asia with 16.6%. Looking at figures over the past five years, Russia accounts for the largest share with 38.0% and China has greatly extended its share, too (China’s share grew from 2.2% in 1999 to 6.2% in 2003 to 7.2% in 2005). The share of imports from Azerbaijan and Iran has also remained largely unchanged (see Table 4.1.3-5).

Table 4.1.3-4 Kazakhstan Imports (2000-2004)

(Units: tons and US$ million)

Item	2000			2001			2002			2003			2004		
	Amount	Import Value	Unit Value Index	Amount	Import Value	Unit Value Index	Amount	Import Value	Unit Value Index	Amount	Import Value	Unit Value Index	Amount	Import Value	Unit Value Index
Oil and concentrated gas	1,010	80	79	2,337	232	99	2,631	231	88	2,332	259	111	3,250	511	157
Refined petroleum products	1,152	250	217	1,290	291	226	1,048	186	177	1,114	267	233	1,900	511	268
Electric power*	2,842	40	14	3,660	43	12	2,390	29	12	3,283	41	13	5,234	70	13
Natural gas**	4,219	120	28	4,226	146	35	8,176	240	29	8,669	253	29	11,652	371	31
Coal	663	12	18	206	5	23	196	5	26	356	10	29	460	20	43
Rolled iron	51	26	522	73	35	478	79	35	438	103	51	488	85	61	710
Electrical appliances and machine tools		1,402			1,852			1,882			2,149			3,422	
Foods and foodstuffs		236			325			490			586			846	
Consumer goods (excluding foods)		428			468			907			1,250			1,845	
Vehicles		563			625			803			1,202			1,777	
Other		1884			2,739			1,777			2,260			3,347	
Total		5,040			6,446			6,584			8,327			12,781	

* Quantities of gas are shown as m^3. Moreover, import values and quantities are shown as figures clearing customs.
Source: IMF, 'Republic of Kazakhstan: Statistical Appendix (IMF Country Report 05/239)

Table 4.1.3-5 Main Trading Partners: Movements in Actual Imports

(Unit: %, only total import values: in US$ million)

Region	Country	1999	2000	2001	2002	2003	2004	2005
CIS		43.9	54.2	51.3	46.2	46.8	47.9	46.9
	Russia	37.0	48.4	44.9	38.7	39.0	37.6	38.0
	Uzbekistan	2.5	1.4	1.3	1.3	1.1	1.8	1.5
	Azerbaijan	0.1	0.2	0.2	0.2	0.2	0.1	0.1
	Tajikistan	0.1	0.1	0.0	0.0	0.1	0.0	0.1
	Kyrgyzstan	0.9	0.6	0.5	0.5	0.7	0.7	0.7
	Turkmenistan	0.5	0.9	1.2	1.1	0.6	0.6	0.3
	Ukraine	1.6	1.6	2.4	3.3	3.9	5.7	4.9
	Other CIS total	1.2	1.0	0.8	1.1	1.2	1.4	1.3
Europe		30.9	25.0	28.6	29.1	29.2	28.9	26.6
	Germany	6.2	4.4	3.9	3.9	3.0	8.2	7.5
	UK	2.9	3.1	4.2	3.3	3.0	2.4	2.4
	Italy	1.5	1.5	2.2	1.7	2.3	3.3	3.9
	France	0.7	0.5	0.7	0.8	1.7	2.5	1.7
	Sweden	2.7	1.3	1.3	1.3	1.5	1.4	1.5
	Netherlands	1.7	1.2	1.0	1.1	1.4	1.3	0.8
	Poland	7.5	6.3	7.7	8.1	7.6	1.4	1.1
	Other EU total	7.7	6.7	7.6	8.9	8.7	8.4	7.7
Asia		12.2	12.2	11.1	14.4	15.5	15.8	16.6
	China	2.2	3.0	2.7	4.7	6.2	5.9	7.2
	Iran	0.2	0.3	0.2	0.2	0.2	0.1	0.1
	Turkey	2.9	2.9	2.1	2.6	2.5	2.7	2.3
	Japan	3.2	2.1	2.2	2.5	2.5	3.1	3.5
	S. Korea	1.3	1.7	1.7	1.7	1.4	1.9	1.5
	Other Asia total	2.4	2.2	2.2	2.7	2.7	2.1	2.0
Americas	Americas total	12.3	8.0	8.3	9.7	8.1	6.9	9.3
Africa	Africa total	0.4	0.5	0.4	0.3	0.3	0.4	1.0
Total value of imports (%) (US$ million)		100% (3,655)	100% (5,040)	100% (6,446)	100% (6,584)	100% (8,408)	100% (12,781)	100% (17,352)

Prepared from Republic of Kazakhstan, 'Statistical Yearbook of Kazakhstan 2004, 2005 &2006'

Based on the statistics offered by the UN, import origins in terms of item and value are indicated in Table 4.1.3-6[3]. Russia is the top import source trade partner and ranked first for every item.

Table 4.1.3-6 Main Import Origins for Kazakhstan by Item

(2004: US$12,634 million)

Item		Country		Import Value (US$ million)	*Share out of All Imports (%)
1st	Machinery and mechanical appliances; parts Total imports: US$2,359 million [Equivalent to 18.7% of all imports]	1	Russia	465	19.7
		2	Germany	290	12.3
		3	Italy	185	7.9
		4	United States	176	7.5
		5	Others (China, etc.)	1,240 (142)	52.5
		Total		2,359	100
2nd	Mineral fuels, mineral oils and products of their distillation) Total imports: US$1,693 million [Equivalent to 13.4% of all imports]	1	Russia	1,341	79.2
		2	Uzbekistan	137	8.1
		3	Turkmenistan	74	4.4
		4	China	58	3.4
		5	Others (Kyrgyzstan, etc.)	80 (21)	4.9
		Total		1,693	100
3rd	Vehicles other than railway or tramway rolling stock Total imports: US$1,161 million [Equivalent to 9.2% of all imports]	1	Russia	370	31.9
		2	Japan	253	21.8
		3	Germany	213	18.4
		4	Belarus	45	4.0
		5	Others (US, etc.)	276 (42)	23.9
		Total		1,161	100
4th	Electrical machinery and equipment and parts thereof; sound recorders Total imports: US$1,062 million [Equivalent to 8.4% of all imports]	1	Russia	197	18.6
		2	Germany	151	14.2
		3	Sweden	84	7.9
		4	China	83	7.8
		5	Others (S. Korea, etc.)	544 (69)	51.4
		Total		1,062	100
5th	Articles of iron or steel Total imports: US$918 million [Equivalent to 7.3% of all imports]	1	Russia	313	34.2
		2	Ukraine	99	10.8
		3	Germany	80	9.7
		4	Italy	59	6.5
		5	Others (UK, etc.)	54	39.8
		Total		918	100

Prepared from UNCTAD UN comtrade (2006)

[3]) This table was prepared from the UN comtrade data of UNCTAD.

4.1.3.2 Major Trade Partners of Kazakhstan (Overall Analysis)

(1) Trade Outline of Countries around Kazakhstan

Trade conditions in other countries in Central Asia (Azerbaijan, Kyrgyzstan, Tajikistan, Uzbekistan, and Turkmenistan), Russia, China and Iran are as described below (see Table 4.1.3-7a&b[4]).

Central Asian Countries (Azerbaijan, Kyrgyz, Tajikistan, Turkmenistan and Uzbekistan)

The countries of Central Asia mainly export products to Russia, which exerts the biggest influence in terms of geographical and historical conditions, and Europe (Switzerland, Italy, France, the Netherlands, etc.), which has strong purchasing power.

The main sources of imports to the Central Asian countries are Russia, Kazakhstan, Ukraine, China, South Korea, Europe (Germany, France) and the United States, etc.

Other Nearby Countries (Russia, China, Iran)

Russia's main export trade partners are the CIS and the Netherlands, etc., while China mainly exports to the United States, Hong Kong, Japan, South Korea and Germany, etc. Major export destinations for Iran are the United Arab Emirates, India, Japan, etc.

The major importing nations to Russia are Germany, Ukraine, China and Japan and the main importing nations to China are Japan, S. Korea, Taiwan and the United States, etc. As for Iran, it receives imports mainly from the United Arab Emirates, Germany, France, Italy and China.

[4]) 'Central Asia: Increasing Gains from Trade Through Regional Cooperation in Trade Policy, Transport, and Customs Transit' by the ADB gives other detailed figures on trade amounts and movements by item for five countries of Central Asia (Kazakhstan, Azerbaijan, Kyrgyz, Tajikistan and Uzbekistan, not including Turkmenistan) from 1999 to 2004.

Table 4.1.3-7a (Exports) Main Export Trade Partners: Export Share (%)

Country	Kazakhstan		Azerbaijan		Kyrgyzstan		Tajikistan		Uzbekistan		Turkmenistan		Russia		China		Iran	
1st	Switzerland	19.8	Italy	30.3	United Arab Emirates	25.8	Netherlands	41.4	Russia	19.0	Ukraine	49.7	Netherlands	10.2	USA	21.4	UAE	16.1
2nd	Italy	15.0	France	9.4	Russia	20.0	Turkey	15.3	Iran	8.0	Iran	18.5	Germany	8.1	Hong Kong	16.3	India	6.2
3rd	Russia	10.5	Russia	6.6	Kazakhstan	17.3	Uzbekistan	7.2	Turkey	6.4	Turkey	4.5	Italy	7.9	Japan	11.0	Japan	4.5
4th	France	9.6	Turkey	6.3	Switzerland	9.7	Latvia	7.1	UK	6.2	Italy	6.2	Ukraine	5.1	S. Korea	4.6	Germany	4.3
5th	China	8.7	Turkmenistan	6.3	China	4.0	Switzerland	6.9	Kazakhstan	4.6	UAE	3.4	Belarus	4.1	Germany	4.3	Italy	4.0
All others		36.4		41.1		23.3		22.1		55.8		17.7		64.6		42.3		64.9
Total exports (US$ million)	27,849	100	4,347	100	679	100	999	100	5,409	100	4,939	100	181,629	100	761,953	100	7,576	100

Table 4.1.3-7b (Imports) Main Import Trade Partners: Import Share (%)

Country	Kazakhstan		Azerbaijan		Kyrgyzstan		Tajikistan		Uzbekistan		Turkmenistan		Russia		China		Iran	
1st	Russia	38.0	Russia	17.0	Russia	34.2	Russia	20.2	Russia	25.4	Ukraine	15.5	Germany	13.4	Japan	15.2	UAE	17.2
2nd	USA	9.3	U.K.	9.1	Kazakhstan	16.3	Uzbekistan	14.2	S. Korea	10.1	Russia	14.8	Ukraine	7.8	S. Korea	11.6	Germany	12.6
3rd	Germany	7.5	Singapore	9.1	China	9.3	Kazakhstan	12.8	Kazakhstan	9.2	USA	10.0	China	7.3	Taiwan	11.3	France	7.3
4th	China	7.2	Turkey	7.4	United States	6.1	Azerbaijan	7.2	China	7.5	UAE	7.8	Japan	5.9	USA	7.4	Italy	6.8
5th	Ukraine	4.9	Germany	5.8	Uzbekistan	5.4	USA	6.6	Ukraine	7.4	Turkey	7.3	Belarus	5.8	Singapore	2.5	China	5.8
All others		33.1		51.6		28.7		39.0		47.9		44.6		59.8		51.9		50.3
Total imports (US$ million)	12,634	100	4,211	100	1,195	100	1,330	100	4,091	100	3,638	100	75,578	100	561,226	100	25,634	100

Sources:
2005: Kazakhstan: Statistical Yearbook of Kazakhstan 2006
Azerbaijan: The foreign Trade of Azerbaijan 2001-2006 (The State Statistical Committee of Azerbaijan)
Kyrgyz, Uzbekistan, Turkmenistan: Central Asia and Caucasus country profiles 2006, JETRO
Russia: Monthly Report 9-10, 2006, Russia Japan Association for Trade with Russia & NIS
China: China Statistical Yearbook 2006, China Statistics Press
Iran: Islamic Republic of Iran: Statistical Appendix; IMF Country Report 06/129; February 23, 2006 (Original source: Central Bank of Iran), IMF (oil and oil-based products are excluded.)
2004: Tajikistan: Central Asia and Caucasus country profiles 2006, JETRO

(2) Outline of Trade between Kazakhstan and Europe

The share of overall EU trade with Kazakhstan is less than 1% in terms of both exports and imports (0.78% of imports and 0.34% of exports in 2005). However, viewed in terms of the overall trade of Kazakhstan, the share of trade with the EU in 2005 is 24.77% of imports and 39.99% of exports (see Table 4.1.3-8a&b). Accordingly, the EU represents a major market for Kazakhstan and is an important trade partner.

Table4.1.3-8a Ratio of Kazakhstan in Overall EU Trade

(Unit: million Euros)

Year	2001	2002	2003	2004	2005
Imports	3,295	3,845	3,738	6,343	9,140
Share of Kazakhstan in imports (%)	0.34	0.41	0.40	0.61	0.78
Exports	1,786	1,836	2,059	3,230	3,608
Share of Kazakhstan in exports (%)	0.20	0.20	0.23	0.33	0.34

Prepared from European Union, 'Evolution of the EU Trade balance with Kazakhstan, 2006'

Table 4.1.3-8b Ratio of the EU in Overall Kazakhstan Trade

(Unit: million Euros)

Year	2001	2002	2003	2004	2005
Imports	1,949	1,902	2,064	3,526	3,962
Share of EU in imports (%)	26.97	27.35	27.80	29.70	24.77
Exports	2,506	2,102	2,176	5,897	8,265
Share of EU in exports (%)	24.71	20.57	19.05	35.39	39.99

Prepared from European Union, 'Evolution of the EU Trade balance with Kazakhstan, 2006'

Major imports to the EU from Kazakhstan (2005) are mineral resources such as petroleum, etc., which account for 86.4% of the total, followed by raw materials used in manufacturing, which account for 7.1% (see Table 4.1.3-9). On the other hand, major exports from the EU to Kazakhstan are machinery and transportation equipment (57.0%), chemicals (12.8%), chemical raw materials (11.9%) and other manufactured goods (10.0%). In this way, the trade structure has developed based around specific products.

Table 4.1.3-9 EU-Kazakhstan Trade Items (2005)

(Unit: value: million Euros, share: %)

Imports			Exports		
Item	Value	Share	Item	Value	Share
Mineral resources	7,894	86.4	Machinery and transportation equipment	2,056	57.0
Manufacturing products	651	7.1	Chemicals	461	12.8
Raw materials	88	1.0	Chemical raw materials	429	11.9
Chemicals	81	0.9	Other manufactures	360	10.0
Food and livestock	75	0.8	Food and livestock	74	2.1
Others	351	3.7	Others	228	6.3
Total	9,140	100.0	Total	3,608	100.0

Imports: Imports to the EU from Kazakhstan

Exports: Exports to Kazakhstan from the EU

4.1.3.3 Trade that Impacts Logistics in Kazakhstan (Bilateral Trade and Transit Trade)

(1) State of Bilateral Trade (Overall Analysis)

Trade conditions of Kazakhstan's main trade partners are as described below (see Table 4.1.3-10a&b and Figure 4.1.3-1). Kazakhstan's bilateral trade (export and import) in 2004 was US$32,877 million, which was 3.45 times the value of trade in 1999 (US$9,526 million). In particular, the share of major countries (EU, Russia, etc.) in Kazakhstan's trade (total exports and imports) increased from 60.5% (1999) to 68.2% (2004) for exports and from 88.0% (1999) to 89.3% (2004) for imports. Kazakhstan's main trading partner in 2004 was the EU, which accounted for 28.3%[5] of Kazakhstan's trade value (exports and imports), and this was followed by Russia (23.3%) and China (8.3%). In comparison with 1999, the relative importance of the EU increased (23.3% in 1999, 28.3% in 2004), while the relative importance of Russia decreased (26.2% in 1999, 23.3% in 2004). Meanwhile, China increased its share of trade with Kazakhstan (5.8% in 1999, 8.3% in 2004). However, concerning trade with the five nations of Azerbaijan, Kyrgyz, Tajikistan, Uzbekistan and Turkmenistan, the share of Kazakhstan's total exports and imports remained unchanged at 3.9% in 1999 and 2004.

[5]) This figure (28.3%) differs slightly from the one given in European Union, 'Evolution of the EU Trade Balance with Kazakhstan' on the previous page. Using the EU data, the share in (total exports + total imports) works out as 28.7%.

Table 4.1.3-10a Bilateral Trade (2004)

(Unit: US$ million)

2004					
Country	Main Trade Partner	Exports	Imports	Total	Share in (total exports + total imports)
Kazakhstan	EU	6,309	2,983	9,292	28.3
	Russia	2,838	4,812	7,650	23.3
	China	1,967	758	2,725	8.3
	Other CIS	386	891	1,277	3.9
	United States	274	562	836	2.5
	Iran	712	12	724	2.2
	Turkey	147	342	489	1.5
	Uzbekistan	201	227	428	1.3
	Japan	29	398	427	1.3
	S. Korea	162	247	409	1.2
	Kyrgyzstan	222	91	313	1.0
	Azerbaijan	287	16	303	0.9
	Tajikistan	136	3	139	0.4
	Turkmenistan	26	75	101	0.3
	Total	13,696	11,417	25,113	76.4
Total exports, total imports		20,096	12,781	32,877	
Share in total exports and total imports		68.2	89.3	76.4	

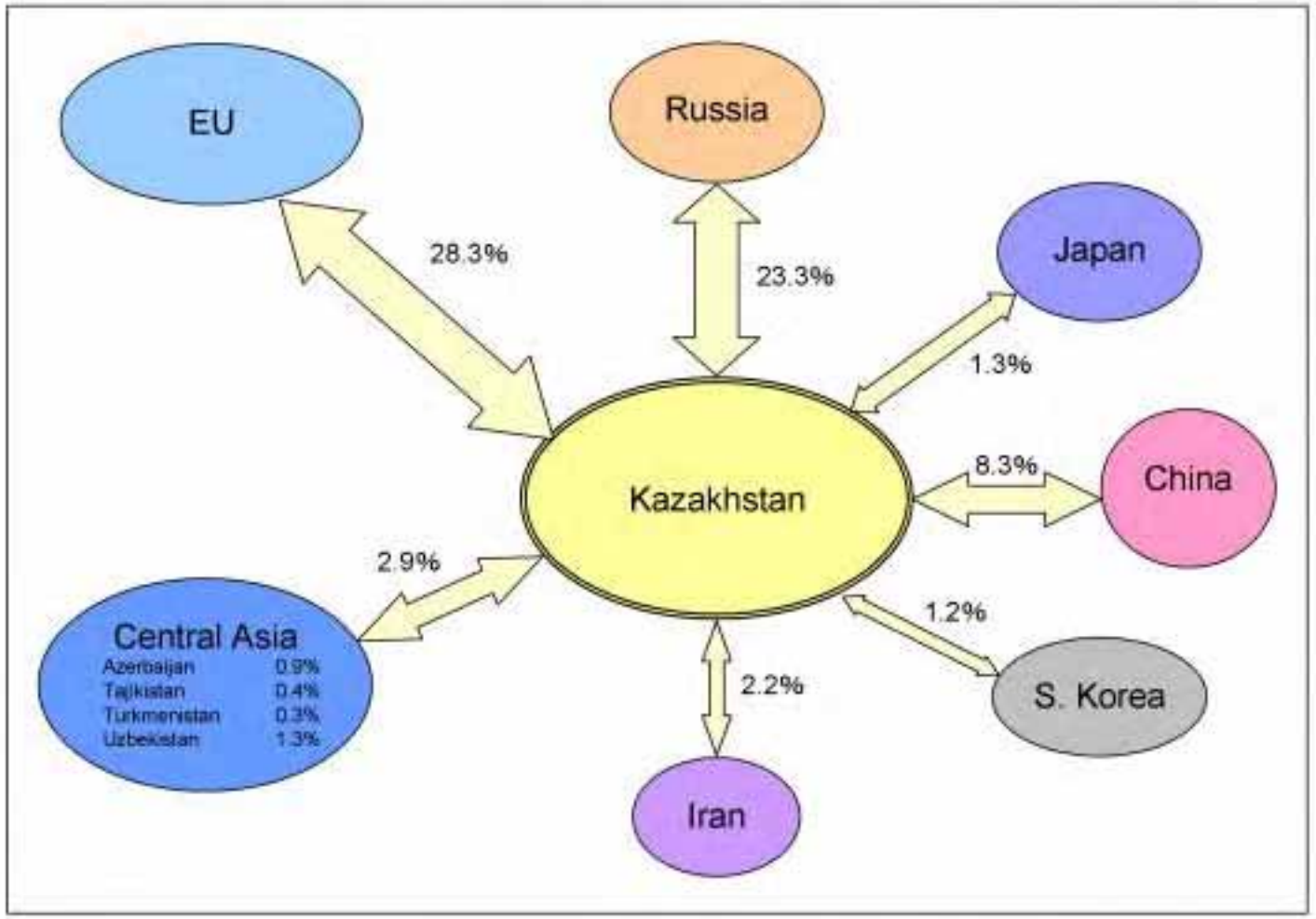
Table 4.1.3-10b Bilateral Trade (1999)

(Unit: US$ million)

1999					
Country	Main Trade Partner	Exports	Imports	Total	Share in (total exports + total imports)
Kazakhstan	EU	1,146	1,351	2,497	26.2
	Russia	1309	913	2,222	23.3
	China	469	79	548	5.8
	Other CIS	81	344	425	4.5
	United States	152	101	253	2.7
	Iran	66	92	158	1.7
	Turkey	36	106	142	1.5
	Uzbekistan	23	118	141	1.5
	Japan	91	7	98	1.0
	S. Korea	59	32	91	1.0
	Kyrgyzstan	35	49	84	0.9
	Azerbaijan	43	3	46	0.5
	Tajikistan	30	4	34	0.4
	Turkmenistan	12	17	29	0.3
	Total	3,552	3,216	6,768	71.0
Total exports, total imports		5,871	3,655	9,526	
Share in total exports and total imports		60.5	88.0	71.0	

Prepared from ADB, 'Central Asia: Increasing Gains from Trade through Regional Cooperation in Trade Policy, Transport, and Customs Transit.'

Figure 4.1.3-1 Bilateral trade between Kazakhstan and Major Trade Partners (2004)



Bilateral Trade		
Exports	US$ million	20,096
Imports	US$ million	12,781
Total	US$ million	32,877
Transit cargo of Russia, China, Japan and S. Korea passing through Kazakhstan		
Exports	US$ million	921
Imports	US$ million	2,147
Total	US$ million	3,068
US$ 3,068 million is only 9.32 % of Kazakhstan's total bilateral trade (US$ 32,877 mil)		
Data on transit goods taken from: ADB, 'Central Asia: Increasing Gains from Trade Through Regional Cooperation in Trade Policy, Transport, and Customs Transit' and the Xinjiang Uygur Autonomous Region Statisticstical Yearbook 2005.		

(2) Trade Relating to Transit Cargo in Kazakhstan

With regard to bilateral trade with major trade partners passing through Kazakhstan (Kyrgyz, Tajikistan, and Uzbekistan, Iran-Russia, China, South Korea and Japan), under the assumption that all goods are transported by passing through Kazakhstan, total amounts of trade in 2004 was US$3,068 million, which is 1.4 times greater than in 1999 (US$2,184 million) (see Table 4.1.3-11a&b). However, the figure of US$ 3,068 million is only 9.32 % of Kazakhstan's total bilateral trade (US$32,877) in 2004. For three Central Asian countries (Kyrgyz, Tajikistan and Uzbekistan), Russia is the largest trade partner in terms of transit goods passing through Kazakhstan. However, the makeup of trade partners from the second place onwards differs for each country. For example, for Uzbekistan, which has an assembly plant of a South Korean automaker, the second largest trade partner via Kazakhstan is South Korea. Meanwhile, the value of trade passing through Kazakhstan between Iran and China[6] (Xinjiang Uygur Autonomous Region) only amounts to US$0.6 million per year.

Table 4.1.3-11a Bilateral Trade (Cash Assessment of Kazakhstan Transit Freight: 2004)

(Unit: US$ million)

Country	Main Trade Partners	Exports	Imports	Total
Kyrgyz	Russia	137	293	430
	China	39	80	119
	S. Korea	1	25	26
	Japan	0	11	11
Tajikistan	Russia	60	178	238
	China	6	57	63
	Japan	0	1	1
	S. Korea	3	4	7
Uzbekistan	Russia	537	860	1,397
	S. Korea	43	341	384
	China	87	252	339
	Japan	7	45	52
Iran	China* (excluding oil)	0.5	0.1	0.6
Value of above transit trade	Total	921	2,147	3,068

Prepared from ADB, 'Central Asia: Increasing Gains from Trade through Regional Cooperation

[6]) Trade between Iran and China excluding oil (2004) consists of US$200 million of exports and US$1,328 million of imports. (Calculated from Islamic Republic of Iran Management & Planning Organization Statistical Centre of Iran, 'Iran Statistical Yearbook 1383 (March 2004-March 2005)' 430 476). Here, in order to demonstrate the trade value of goods passing through Kazakhstan, exports from Xinjiang Uygur Autonomous Region in China to Iran and imports from Iran to China are shown (taken from the Xinjiang Uygur Autonomous Region Statistical Yearbook 2005).

in Trade Policy, Transport, and Customs Transit:' data for Iran is trade data with the Xinjiang Uygur Autonomous Region.

Remarks[7]) With regard to transportation modes for exports from China to Iran, 96.89% of total tonnage is carried by sea, 3.08% by truck and 0.03% by rail.

Table 4.1.3-11b Bilateral Trade (Kazakhstan Transit Goods: 1999)

(Unit: US$ million)

Country	Main Trade Partners	Exports	Imports	Total
Kyrgyz	Russia	70	109	179
	China	25	36	61
	S. Korea	0.2	27	27
	Japan	0.5	12	13
Tajikistan	Russia	115	148	263
	S. Korea	7	2	9
	China	2	2	4
	Japan	0	0.7	1
Uzbekistan	Russia	379	393	772
	S. Korea	93	386	479
	China	163	59	222
	Japan	5	149	154
Iran	China* (excluding oil)	N/A	N/A	
Value of above transit trade	Total	860	1,324	2,184

Prepared from ADB, 'Central Asia: Increasing Gains from Trade through Regional Cooperation in Trade Policy, Transport, and Customs Transit:' data for Iran is trade data with the Xinjiang Uygur Autonomous Region.

4.1.3.4 Major Trade between Kazakhstan and Countries Outside of Central Asia

The current conditions of major trade (direct and transit trade analysis) between Kazakhstan and countries outside of Central Asia are described below.

The following trade patterns are targeted for analysis here: (1) China (Lianyungang, Xinjang, etc.) and Kazakhstan, (2) Azerbaijan and Kazakhstan, (3) Iran and Kazakhstan, (4) Japan and Kazakhstan and (5) South Korea and Kazakhstan. In particular, since China, Iran, Azerbaijan, Japan and South Korea have goods passing through Kazakhstan, analysis of this transit trade will be included in the study here.

[7]) From data prepared in a local study implemented in October and November, 2006 in Iran ('Current Administrative and market Conditions of Transportation sectors in Islamic Republic of Iran, 2006')

(1) Trade between China and Kazakhstan (including goods passing through Kazakhstan)

East Asia Coast: Lianyungang (starting point of the China Land Bridge: CLB)

The port of Lianyungang in Jiangsu Province is the starting point of the CLB. Lianyungang has 36 berths and handles 37,520,000 tons of cargo per year (2003) (see Table 4.1.3.-12). However, its share of the total cargo handled by China's major ports in 2003 was just 1.87%, much less than Shanghai (15.72%), Ningbo (9.22%), Guangzhou (8.55%), Tianjin (8.05%) and Qingdao (7.01%), etc. Leaving aside cargo that is transported from Japan and South Korea to Lianyungang, there are cargos that are landed at Tianjin or Qingdao Port, carried by rail to a CLB station such as Zhengzhou, and then to Central Asia via the CLB route.

Table 4.1.3-12 Cargo Handled at Main Ports in China (1980-2003)

(Unit: 10,000 tons)

	1980	1985	1990	1995	2000	2003	2003(%)
Dalian	3,263	4,952	4,952	6,417	9,084	12,602	6.27
Yingkou	24	98	237	1,156	2,268	4,009	1.99
Qinhuangdao	2,641	4,419	6,945	8,382	9,743	12,562	6.25
Tianjin	1,192	1,856	2,063	5,787	9,566	16,182	8.05
Qingdao	1,708	2,611	3,034	5,103	8,636	14,090	7.01
Rizhao	-	-	925	1,452	2,674	4,507	2.24
Lianyungang	**739**	**929**	**1,137**	**1,716**	**2,708**	**3,752**	**1.87**
Shanghai	8,483	11,291	13,959	16,587	20,440	31,621	15.72
Ningbo	326	1,040	2,554	6,853	11,547	18,543	9.22
Guangzhou	1,210	1,772	4,163	7,299	11,128	17,187	8.55
Others (small and medium ports)	2,145	2,186	8,352	19,414	37,809	66,071	32.85
Total	21,731	31,154	48,321	80,166	125,603	201,126	100.00
Share of Lianyungang (%)	**3.40**	**2.98**	**2.35**	**2.14**	**2.16**	**1.87**	

Prepared from China's National Bureau of Statistics, 'China Statistical Yearbook 2004'

(China Land Bridge: CLB Route Profile)

CLB connects Lianyungang with Alashankou in Xinjiang Uygur Autonomous Region (total length: 4,158 km) and forms a bridge between East Asia, Central Asia and Europe.

Lianyungang		Xuzhou		Xian		Lanzhou		Urumqi		Alashankou
(Jiangsu Province)		(Jiangsu Province)		(Anhui Province)		(Zhengzhou)		(Xinjiang)		Xinjiang Uygur Autonomous Region
223 km		860 km		676 km		1,892 km		477 km		
Double track										
Non-electrified		Non-electrified		Electrified		Electrified /Non-electrified		Non-electrified		

From ERINA Chapter 4 Current Conditions and Development Prospects for Land Transportation
Electrification of railway between Lianyungang and Xuzhou will be completed by early 2008.

(Trade Conditions in China along the CLB)

(2) Trade Overview of Jiangsu Province

According to the Jiangsu Statistical Yearbook 2006, the main export destinations are the United States (US$27,260 million), Japan (US$15,996 million), Hong Kong (US$13,609 million) and Germany (US$7,385 million). Kazakhstan is not one of the main export destinations, but products are exported to surrounding Russia (US$765 million) and Ukraine (US$320 million). The major export commodities are data processing parts (US$23,714 million), textile products (US$10,964 million) and garment products (US$7,851 million).

Major sources of imports (2005) are South Korea (US$21,687 million), Taiwan (US$21,143 million), Japan (US$15,996 million) and USA (US$5,950 million). Kazakhstan is not one of the main import sources, but products are imported from surrounding Russia (US$465 million) and Ukraine (US$74 million). The major import commodities are data processing parts (US$3,47 million), rolled steel (US$3,314 million) and electrical appliances (US$2,106 million).

Trade Outline of Xinjiang Uygur Autonomous Region

The largest trading partner of Kazakhstan in China is Xinjiang Uygur Autonomous Region and movements in overall trade with this area are indicated below.

The value of exports in 2005 was US$5,040 million, while that of imports was US$2,901 million and these combined give a total trade figure of US$7,941 million. Total exports and imports in 2005 were approximately 41% higher than in 2004. (see Table 4.1.3-13)

Table 4.1.3-13 Trade (Movements in Exports and Imports)

(Unit: US$ million)

Year	Exports	Imports	Total	Increase over Previous Year (%)
2003	2,542	2,229	4,771	
2004	3,046	2,589	5,635	18.11
2005	5,040	2,901	7,941	40.92

Prepared from China Statistical Yearbook 2005, 2006

Main Export and Import Items

The main exported item in terms of both quantity and value from Xinjiang Uygur Autonomous Region in 2005 is tomato jam/paste (441,400 tons, US$210 million). As for imports, petroleum is the most valuable (US$320 million), while cattle and horse hides (27,631 tons) are the largest item in terms of volume (see Table 4.1.3-14a&b).

Table 4.1.3-14a Xinjiang Uygur Autonomous Region: Main Exports 2003-2005

(Unit value: US$ 10,000)

Main exports	2003		2004		2005	
	Quantity	Value	Quantity	Value	Quantity	Value
Raw cotton (tons)	53,481	5,852	5,669	1,030	2,554	474
Cotton (Yarn) (tons)	16,037	4,158	7,794	2,370	4,983	1,205
Cotton textiles ($1,000m^3$)	2,751	159	3,804	255	1,474	60
Casing (tons)	551	1,663	571	1,921	398	1,031
Sugar (tons)	1,620	325	2,821	86	3,066	115
Tomato jam (tons)	343,927	17,454	345,991	17,437	441,400	21,000
Medical materials (tons)	21,306	640	3,345	533	2,910	680
TV2 (10,000 units)	103	3,219	107	4,407	68	2,782
Carpet ($100m^2$)	41	15	128	40	1,376	353
Leather shoes	N/A	450,790	N/A	37,100	N/A	88,888

Prepared from the Xinjiang Uygur Autonomous Region Statistical Yearbook 2005 & 2006

Table 4.1.3-14b Xinjiang Uygur Autonomous Region: Main Imports 2003-2005

(Unit value: US$10,000)

Main Import Items	2003		2004		2005	
	Quantity	Value	Quantity	Value	Quantity	Value
Timber (tons)	4,962	592	2,243	270	3,097	431
Rolled steel plate (10,000 tons)	102	35,119	53	24,232	30	17,110
Paper and paper rolls (10,000m^3)	10,011	573	871	75	765	66
Logs (10,000m^3)	11	791	11	846	9	703
Agricultural chemicals (tons)	73	56	77	47	92	57
Chemical fertilizer (10,000 tons)	15	1,962	31	4,889	36	7,103
Crude oil (10,000 tons)	29	4,692	39	8,567	76	32,085
Petroleum products (10,000 tons)	16	2,079	16	3,538	16	4,148
Cattle and horse hides (tons)	11,746	1,404	27,545	3,352	27,631	3,535
Medical devices and parts	N/A	2,173	N/A	2,136	N/A	2,237

Prepared from the Xinjiang Uygur Autonomous Region Statistical Yearbook 2005 & 2006

Major Trading Partners of the Xinjiang Uygur Autonomous Region

Regarding the major trading partners (exports and import) of Xinjiang Uygur Autonomous Region, Kazakhstan has the largest share (2005) at 63.15%, followed by Kyrgyz (9.40%), Russia (2.95%) and Azerbaijan (2.06%) (see the table 4.1.3-15). For the Xinjiang Uygur Autonomous Region, Kazakhstan is the most important trade partner in Central Asia and surrounding nations. The EU accounts for just 3.04% of its total trade. In Central Asia, leaving aside Kyrgyzstan, the other shares are 1.74% for Uzbekistan, 1.25% for Tajikistan, 1.7% for Turkmenistan and 0.08% for Ukraine. Iran in the Middle East accounts for just 0.16%, indicating that trade in transit goods through Kazakhstan is still negligible.

Table 4.1.3-15 Xinjiang Uygur Autonomous Region Main Export and Import Trade Partners (2003-2005)

(Unit: US$10,000)

Region		Main Countries	2003			2004			2005			2005 Share of each country in the total (%)
			Exports	Imports	Total	Exports	Imports	Total	Exports	Imports	Total	
Europe total			186,508	180,188	366,696	245,267	205,821	451,088	418,152	247,735	665,887	83.84
	Central Asia and surrounding countries	Kazakhstan	127,293	127,320	254,613	178,166	328,607	328,607	304,203	197,360	501,563	63.15
		Kyrgyzstan	16,266	6,828	23,094	35,771	46,206	46,206	64,591	10,095	74,686	9.40
		Russia	5,460	21,993	27,453	4,789	22,314	22,314	5,931	17,469	23,400	2.95
		Azerbaijan	15,222		15,222	9,046	9,050	9,050	16,298	33	16,331	2.06
		Uzbekistan	799	2,974	3,773	1,648	8,576	8,576	4,148	9,684	13,832	1.74
		Tajikistan	329	544	873	2,264	3,088	3,088	9,018	913	9,931	1.25
		Turkmenistan	2,397	75	2,472	236	359	359	1,259	96	1,355	0.17
		Ukraine	88	1,127	1,215	148	313	313	323	323	646	0.08
	EU	Italy	7,540	6,786	14,326	4,393	10,409	10,409	4,204	1,213	5,417	0.68
		Germany	2,356	5,770	8,126	1,978	8,826	8,826	2,036	4,985	7,021	0.88
		UK	1,723	847	2,570	1,507	2,401	2,401	1,146	1,153	2,299	0.29
		Switzerland	593	595	1,188	711	1,995	1,995	552	1,347	1,899	0.24
		France	1,459	1,849	3,308	515	1,829	1,829	801	1,272	2,073	0.26
		Netherlands	975	237	1,212	1,022	1,365	1,365	612	243	855	0.11
	Other countries		4,008	3,243	7,251	3,073	5,750	5,750	3,030	1,549	4,579	0.58
Asia			51,110	21,317	72,427	39,965	18,351	58,316	69,235	13,799	83,034	10.46
	Middle East	Saudi Arabia	834	316	1,150	844	565	1,409	988	239	1,227	0.15
		Iran	174	56	230	551	103	654	1,242	30	1,272	0.16
		United Arab Emirates	249		249	479		479	2,309	8	2,317	0.29
		Israel	203	533	736	207	231	438	117	487	604	0.08
		Kuwait	99	64	163	61	220	281	107	39	146	0.02
		Lebanon	35		35	56		56	85		85	0.01
		Jordan	29		29	44		44	24		24	0.00
		Turkey	104	71	175	142	167	309	279	187	466	0.06
		Yemen	249		249	479		479				0.00
		Pakistan	25,067	472	25,539	16,159	156	16,315	34,188	87	34,275	4.32
	East and Southeast Asia	Japan	4,176	10,942	15,118	5,664	3,335	8,999	5,084	3,763	8,847	1.11
		Hong Kong	7,194	120	7,314	4,596	67	4,663	8,058	28	8,086	1.02
		S. Korea	3,029	1,590	4,619	2,160	2,516	4,676	1,960	3,038	4,998	0.63
		Thailand	1,487	518	2,005	494	369	863	1,149	113	1,262	0.16
	Other countries		8,181	6,635	14,816	8,029	10,622	18,651	13,645	5,780	19,425	2.45
North America total			11,189	9,254	20,443	11,742	13,245	24,987	9,279	18,443	27,722	3.49
South America total			2,666	9,825	12,491	1,617	18,463	20,080	1,765	6,975	8,740	1.10
Oceania total			1,316	2,349	3,665	808	1,124	1,932	523	1,563	2,086	0.26
World total			254,221	222,977	477,198	304,658	258,905	563,563	504,024	290,165	794,189	100.00

Prepared from Xinjiang Uygur Autonomous Region Statistical Yearbook 2005 and 2006 (Kazakhstan is classed as Europe in this literature)

Others (Henan Province, Shanxi Province, Gansu Province along the CLB)

Trade figures for the other provinces through which the China Land Bridge runs (2004) are as follows (see Table 4.1.3-16)

Table 4.1.3-16 Trade Performance of Henan Province, Shanxi Province and Gansu Province

(Unit: US$ million)

Province	2004			2005		
	Exports	Imports	Total	Exports	Imports	Total
Henan	4,176	2,437	6,613	5,100	2,635	7,736
Shanxi	2,396	1,245	3,641	3,075	1,501	4,576
Gansu	996	766	1,762	1,540	1,090	2,631

Prepared from the Statistical Yearbook 2006 of each province.

The main trade destinations and import sources for each province are as indicated in Table 4.1.3-17. Major export destinations for each province are East Asian coastal countries such as Japan and South Korea, the United States and European countries. Exports are largely transported overseas to countries with relatively high purchasing power, whereas there are hardly any exports to Kazakhstan and other Central Asian nations.

Table 4.1.3-17 Major Export Destinations of Provinces along the China Land Bridge

Province	Exporting destinations/commodity (2005)
Henan	U.S.(US$770million), Japan (US$445 million), South Korea (US$491million) Major export products: Base metals and other related products(US$1,225million), Chemical products(US$542million), Shoes(US$338million)
Shanxi	US(US$447million), Japan(US$280million), Germany(US$197million) Major export products: Mineral resources(US$632million), Fruits(US$191million), Chemical products (US$117million)
Gansu	South Korea(US$225million), Japan(US$191million)、U.S. (US$155million) Major export products: Bearings(US$630million), Sheep casings(US$689million), Tin(US$432million), Shoes(US$338million)

Province	Importing countries (2005)
Henan	N/A
Shanxi	Japan(US$241million), U.S.(US$235million), Germany(US$214million)
Gansu	Australia(US$562million), Chile(US$201million), Germany(US$175million)

Prepared from the Statistical Yearbook 2006 of each province.

(Reference: Kazakhstan-China Trade Item Composition)

JETRO has surveyed detailed trade items (exports and imports) and values between Kazakhstan and all of China (including Xinjiang Uygur Autonomous Region) for 2003-2005. This is shown in Appendix 4.1.3-1.

(3) Current Condition of China-Europe Trade with Kazakhstan Involvement

3,730,000 TEU of cargo[8] was transported from China to Europe in 2005. After being transported by sea to major European ports (Rotterdam in the Netherlands and Hamburg in Germany, etc.), these goods are transported to European countries by sea or overland (hubs in each area: e.g., Hanko Port in Northern Europe). Marine transportation from China to Europe currently benefits from low costs, accurate shipping lead time (about 30 days) and large and stable transportation space (6,000 TEU/container ship). Compared to transportation from Chinese coastal centers to European ports such as Rotterdam and Hamburg, the CLB - Kazakhstan - European ports route is not advantageous. (Detail explanation is made in subsequent 4.2)

(4) Azerbaijan-Kazakhstan Trade (including Kazakhstan transit goods)

Azerbaijan, which has a population of approximately 8.46 million people (2005), achieved an economic (GDP) growth rate of 26.4% from 2004 to 2005. In terms of industrial structure, manufacturing based on petroleum accounts for 48.6% of GDP, the service sector for 10.4%, construction for 9.8% and agriculture for 7.8%.

Total exports from Azerbaijan in 2004 amounted to US$3,614 million and total imports were US$3,504 million[9]. Exports and imports combined to give total trade of US$7,118 million.

The main export items are mineral resources, etc., which account for 82.3% of all exports. The second largest item of construction-related products such as surveying devices, etc. has only a 4.0% share. Accordingly, the export structure is limited to just a few specialized items. There is a greater variation in the types of imports, with the major imported items in 2004 being machinery and electrical equipment (30.6%), base metals (17.4%), products refined from mineral resources (14.5%) and vegetables (6.6%), etc.

Concerning export destinations from Azerbaijan, the EU (15 countries) accounts for 50.98% (2004), followed by the CIS with 17.0%. Over the past five years (1999-2004), the share of exports from Azerbaijan to Kazakhstan has remained more or less the same (0.4% in 1995, 0.3% in 2004).

Concerning import sources, EU (15 countries) and the CIS are at the top with 34%. Over the past five years (1999-2004), the share of imports from Kazakhstan has increased markedly from 2.4% to 6.8%. Imports from the CRAs (Central Asian Republics, i.e. Kazakhstan, Kyrgyz, Tajikistan, Uzbekistan) have increased from 3.7% to 9.1%. Regarding trade between Azerbaijan and China, the share of exports in 2004 was just 0.9%, but the share of imports was relatively higher at 4.2%.

8) Data from Mitsui O.S.K. Lines (Kaiunnshikyou [Maritime Transport Market Conditions] 2006)

9) These figures are given in reference to 'Central Asia: Increasing Gains from Trade Through Regional Cooperation in Trade Policy, Transport, and Customs Transit' by the ADB.

(5) Iran-Kazakhstan Trade (including Kazakhstan transit goods)

(Exports)

The main exports excluding oil are industrial products such as chemical products, etc., which account for 63.34% of the total non-oil export value. Agricultural products and traditional crafts such as fruits and carpets, etc. account for 25.77% (see Table 4.1.3-18).

Table 4.1.3-18 Export Items and Value

(Unit: US$ million)

Export Item	2000/01	2001/02	2002/03	2003/04	2004/05	2004/05 Share (%)
Agricultural and traditional cra	1,466	1,603	1,724	1,987	1,952	25.77
Carpets	620	553	514	573	490	6.47
Fruits (dried and fresh)	504	666	779	985	893	11.79
Leather and leather products	79	69	82	64	91	1.20
Caviar	39	39	22	33	22	0.29
Packaging materials	30	27	28	66	53	0.70
Cumin	9	6	12	70	12	0.16
Others	185	243	287	195	391	5.16
Metal	38	77	32	174	96	1.27
Industrial products	2,259	2,543	2,852	3,268	4,799	63.34
Detergents and soap	39	41	57	44	53	0.70
Chemical products	110	1,053	837	1,018	1,732	22.86
Shoes	65	95	71	54	47	0.62
Copper bare metal, plate, wire,	85	73	72	214	113	1.49
Ready-to-wear clothes	85	70	7 1	208	85	1.12
Building materials: cement, st tiles, etc.	95	104	97	80	123	1.62
Transportation devices	39	50	38	105	90	1.19
Iron	301	278	350	318	926	12.22
Gas	194	431	282	371	...	0.00
Others	1,246	348	978	857	1,630	21.52
Others	418	341	663	1,326	728	9.61
Total	4,181	4,565	5,271	6,636	7,576	

IMF, 'Islamic Republic of Iran: Statistical Appendix; IMF Country Report 06/129; February 23, 2006'

Source: Central Bank of Iran).

The main export destinations (excluding oil and petroleum products) are the United Arab Emirates (16.18%), India (6.24%), Japan (4.53%), Germany (4.30%) and Italy (4.08%). Within the Central Asian countries, Azerbaijan accounts for 3.38% while the others are less than 2%. Russia also accounts for just 1.9%, while China has a 3.51% share (see Table 4.1.3-19).

Table 4.1.3-19 Trade Performance by Export Destination (excluding oil and petroleum products)

(Unit: US$ million)

	2000/01	2001/02	2002/03	2003/04	2004/05	2004/05 Share (%)
United States	99	108	132	138	100	1.32
Japan	127	239	237	360	343	4.53
Germany	354	313	289	347	326	4.30
France	45	59	35	36	49	0.65
Italy	191	192	157	170	309	4.08
United Arab Emirates	444	641	754	916	1,226	16.18
Saudi Arabia	88	68	93	128	236	3.12
Kuwait	74	106	135	126	179	2.36
Pakistan	65	87	142	138	132	1.74
Turkey	166	58	103	111	128	1.69
Azerbaijan	249	314	250	307	256	3.38
Armenia	50	53	62	101	149	1.97
Turkmenistan	87	76	88	136	94	1.24
Uzbekistan	81	83	70	76	76	1.00
Ukraine	99	142	28	25	23	0.30
Russia	69	59	73	95	144	1.90
India	153	187	189	296	473	6.24
S. Korea	74	50	20	46	132	1.74
Thailand	53	44	39	7	33	0.44
China	170	177	198	232	266	3.51
Hong Kong	49	73	64	72	111	1.47
Taiwan	52	53	61	75	97	1.28
Singapore	43	44	66	75	75	0.99
Spain	53	78	99	101	160	2.11
Belgium	45	28	27	29	139	1.83
Others	1,201	1,237	1,861	2,494	2,318	30.60
Total	4,181	4,565	5,271	6,636	7,576	100.00

IMF, 'Islamic Republic of Iran: Statistical Appendix; IMF Country Report 06/129; February 23, 2006'

Source: Central Bank of Iran.

Remark: The fiscal year is from April to March.

(Imports)

The major import items are raw materials and industrial products such as intermediate materials and these account for 47.75% of the total import value excluding oil. Moreover, capital goods (plants, etc.) account for 34.21% (see Table 4.1.3-20).

Table 4.1.3-20 Import Items and Import Value

(Unit: US$ million)

Imports	2000/01	2001/02	2002/03	2003/04	2004/05	2004/05 Share (%)
Raw materials, intermediate goods	7,402	8,228	9,765	12,187	16,898	47.75
Industrial produc	6,091	6,529	7,329	9,543	12,004	33.92
Mineral products	330	578	1,067	1,319	3,044	8.60
Construction	438	502	535	753	873	2.47
Services	329	426	650	336	436	1.23
Agriculture	214	193	184	235	542	1.53
Capital goods	4,834	7,127	9,668	11,226	12,105	34.21
Industry and mining	3.594	6,117	8,020	...	...	
Services	1,122	863	1,375	...	...	
Agriculture	118	147	273	...	...	
Consumer goods	2,112	2,270	2,842	3,185	6,386	18.05
Other	0	1	0	0	0	0.00
Total	14,347	17,626	22,275	26,598	35,389	

IMF, 'Islamic Republic of Iran: Statistical Appendix; IMF Country Report 06/129; February 23, 2006'

Source: Central Bank of Iran.

Main import sources (2004/05) are the United Arab Emirates (17.22%), Germany (12.66%), France (7.30%) and Italy (6.87%) (see Table 4.1.3-21). Out of the Central Asian countries, Kazakhstan only accounts for 0.65%, while Russia has a share of 2.65%. Meanwhile, China has a share of 5.83% (2004/05). Considering that imports from China accounted for 3.93% of all imports to Iran in 2000/2001, imports from China have been gradually increasing.

Main items imported from China to Iran in terms of weight (total weight: 1,860,440 tons in 2005) are chemical products (323,829tons), materials (313,026tons), base metals (244,975tons), machinery (193,244tons) [10]. Main items of imports from Kazakhstan to Iran in terms of weight (total weight: 570,310 tons in 2005) are base metals (396,177tons), foodstuffs (111,900tons) and vegetables (58,398tons).

[10]) From data prepared in a local study implemented in October and November, 2006 in Iran ('Current Administrative and market Conditions of Transportation sectors in Islamic Republic of Iran, 2006').

Table 4.1.3-21 Trade Performance by Import Source

(Unit: US$ million)

	2000/01	2001/02	2002/03	2003/04	2004/05	2004/05 Share (%)
Japan	684	787	714	997	951	2.69
Germany	1,504	1,807	3,777	3,042	4,481	12.66
UK	510	666	769	888	1,030	2.91
France	617	1,109	1,318	2,262	2,585	7.30
Italy	856	996	1,389	1,677	2,432	6.87
Canada	477	383	199	204	189	0.53
United Arab Emirates	1,154	1,633	2,152	3,536	6,093	17.22
Russia	920	914	874	1,098	868	2.45
Kazakhstan	345	270	262	285	230	0.65
Turkey	233	291	369	518	724	2.05
S. Korea	737	958	894	1,315	1,871	5.29
India	254	561	717	883	1,221	3.45
China	565	887	1,046	1,541	2,062	5.83
Thailand	228	108	123	231	354	1.00
Indonesia	156	92	103	128	188	0.53
Singapore	155	159	321	443	600	1.70
Brazil	538	896	843	833	729	2.06
Argentina	304	319	95	0	13	0.04
Australia	403	455	357	205	123	0.35
Spain	343	308	300	340	353	1.00
Switzerland	327	435	1,989	866	1,441	4.07
Sweden	310	377	350	674	1,046	2.96
Belgium	426	440	396	517	724	2.05
Austria	277	239	252	345	648	1.83
Netherlands	270	346	308	420	531	1.50
Others	2,438	2,978	3,072	3,348	3,901	11.02
Total	14,347	17,626	22,275	26,598	35,389	100.00

IMF, 'Islamic Republic of Iran: Statistical Appendix; IMF Country Report 06/129; February 23, 2006'

Source: Central Bank of Iran.

Remarks: The fiscal year is from April to March. Imports are CIF price + overheads.

Reference: Iran-China: Composition and Value of Trade Items

JETRO has surveyed the detailed items and value of trade (exports and imports) between Iran and China overall (including the Xinjiang Uygur Autonomous Region) for 2003-2005. These data are given in Appendix 4.1.3-2.

(6) Japan-Kazakhstan Trade (including Kazakhstan transit goods)

Trade between Japan and Kazakhstan was worth US$41 million (exports from Japan: US$27 million, imports from Kazakhstan: US$13 million) in 1992, but this had grown to US$513 million (exports from Japan: US$178 million, imports from Kazakhstan: US$336 million) by 2005. The value of trade thus increased 12.5 times over this period. In recent trade between Japan and Kazakhstan, the main exports from Japan are machinery and equipment, especially used vehicles, which account for 68.7%

of total exports. The second-place item of metals and metal products is far behind with a share of 10.3%. Concerning imports, metals and metal products account for 97.9% of total imports (see Table 4.1.3-22a&b).

Table 4.1.3-22a Exports (from Japan to Kazakhstan)

(Unit: US$1,000)

Item	Unit	2004		2005		
		Quantity	Value	Quantity	Value	Share (%)
Chemical products			1,027		1,919	1.1
Metals and metal products	Ton	7,465	18,422	2,485	18,155	10.3
Machines and equipment (including vehicles)			159,840		146,675	82.8
	Ton	10,692	128,054	20,333	121,635	(68.7)
Others			5,392		9,782	5.5
Total exports			185,024		177,089	100.0

Table 4.1.3-22b Imports (from Kazakhstan to Japan)

(Unit: US$1,000)

Item	Unit	2004		2005		
		Quantity	Value	Quantity	Value	Share (%)
Foods			105		254	0.1
Raw materials	Kg			1,130	27	
Mineral fuel						
Chemical products			2,477		2,076	0.6
Textile products			92		329,847	97.9
Metals and metal products	Ton	244,201	241,805	289,495	11,344	
Machinery and equipment			152		19	
Others			1,010		4,551	1.4
Total imports			245,642		336,766	100.0

Prepared from the Russia East European Association, 'Russia East European Trade 2006, Monthly Survey 6'

Concerning vehicles, exports of second-hand cars from Japan to Kazakhstan greatly increased, from 6,489 units in 2004 to 16,970 units in 2005. In particular, the number of units transported in containers by (assumed) rail transportation increased from 5,276 (2004) to 11,140 units (2005), representing an increase of 2.11 times (see Table 4.1.3-23).

Table4.1.3-23 Exports of Used Cars from Japan

Country	2004		2005	
	Units	Units Shipped in Containers	Units	Units Shipped in Containers
Russia	120,052	3,167	268,685	6,192
New Zealand	135,006	8,078	132,645	7,384
UAE	144,090	71,548	113,823	57,446
Chile	27,400	1,533	47,491	13,800
UK	57,006	2,693	31,967	508
South Africa	37,896	15,677	31,415	12,543
Philippines	32,942	22,298	21,497	10,499
Peru	21,834	66	19,522	439
Kenya	16,929	945	18,322	405
Sri Lanka	18,892	560	17,550	540
Malaysia	11,586	1,261	15,544	1,252
Kazakhstan	6,489	5,276	16,970	11,140
Australia	11,036	1,900	14,177	1,181
Cyprus	20,127	6,032	12,708	3,935
Pakistan	2,370	1,018	11,780	4,627

Source: Shipping Gazette February 27, 2006, survey by the International Automobile Distribution Association.

Future prospects for used car exports from Japan to Kazakhstan

It is estimated that the number of cars shipped by container increased greatly in 2006. However, in November 2006, a law stating that import of cars with right-hand steering will be banned from January 2007 was submitted to the Parliament by the President of Kazakhstan and enacted. A great volume of the export of cars from Japan to Kazakhstan will be affected adversely.

(7) Japan-Uzbekistan: Kazakhstan transit goods

Goods that are traded between Japan and Uzbekistan pass through Kazakhstan. Trade between Japan and Uzbekistan in 1992 was worth US$21 million (exports from Japan: US$12.9 million, imports from Uzbekistan: US$8 million), but this had increased to US$160 million (exports from Japan: US$36 million, imports from Uzbekistan: US$125 million) by 2005 (see Table 4.1.3-24a&b). The increase in the actual amount over this period was not so great, but the rate of growth was approximately 8 times. In recent trade between Japan and Uzbekistan, the main exports from Japan are machinery and equipment, accounting for 60.73% of total export value and far ahead of the second-placed item of textiles and textile products (4.44%). Moreover, concerning imports from

Uzbekistan, chemicals account for a share of 14.73%, followed by textile products with a share of 2.6%.

Table 4.1.3-24a Exports (from Japan to Uzbekistan)

(Unit: US$1,000)

Item	Unit	2004		2005		
		Quantity	Value	Quantity	Value	Share (%)
Textiles and textile products			2,073		1,604	4.44
Chemical products			102		259	0.72
Metals and metal products	Ton	27,395	12,458	1	297	0.82
Machines and equipment			25,726		21,928	60.73
Others			11,684		12,016	33.28
Total exports			52,093		36,108	100.00

Table 4.1.3-24b Imports (from Uzbekistan to Japan)

(Unit: US$1,000)

Item	Unit	2004		2005		
		Quantity	Value	Quantity	Value	Share (%)
Foods			161		113	0.09
Raw materials	Ton	1,246	1,381	1,396	1,195	0.95
Chemical products			6,031		18,524	14.73
Textile products			5,035		3,218	2.56
Nonferrous metals and mineral products			-		68	0.05
Metals and metal products			2,046		787	0.63
Machines and equipment			63		44	0.03
Others (re-import, special handling items such as gold, etc.)			71,956		101,819	80.96
Total imports			86,698		125,768	100.00

Prepared from the Russia East European Association, 'Russia East European Trade 2006, Monthly Survey 6'

(8) South Korea-Kazakhstan Trade (including Kazakhstan transit goods)

Products exported from South Korea are auto parts, CKD and electrical products via the CLB. In particular, many products are transported from South Korea to Lianyungang, Qingdao, Tianjin, etc. from where they are carried by rail to Kazakhstan and Uzbekistan. In particular, Uzbekistan has an

automobile assembly plant and large quantities of parts and CKD, etc. are transported by container along the CLB (see Table 4.1.3-25a&b).

Table 4.1.3-25a Exports (from South Korea to Uzbekistan)

(Unit: US$ million)

Year	1999	2000	2001	2002	2003	2004	2005
Total exports	143,685	172,268	150,439	162,471	193,817	253,845	284,419
Kazakhstan	57	82	108	126	217	314	273
Share of Kazakhstan in exports (%)	0.040	0.05	0.07	0.08	0.11	0.12	0.095
Uzbekistan	341	230	346	188	247	359	493
Share of Uzbekistan in exports (%)	0.24	0.13	0.23	0.12	0.13	0.14	0.17

Table 4.1.3-25b Imports (From Uzbekistan to South Korea)

(Unit: US$ million)

Year	1999	2000	2001	2002	2003	2004	2005
Total imports	119,752	160,481	141,098	152,126	178,827	224,463	261,238
Kazakhstan	51	49	56	72	153	204	242
Share of Kazakhstan in imports (%)	0.043	0.03	0.04	0.05	0.09	0.09	0.09
Uzbekistan	208	104	137	97	79	77	29
Share of Uzbekistan in imports (%)	0.17	0.06	0.10	0.06	0.04	0.03	0.01

Prepared from International Trade Year Book 2006.

4.1.3.5 Current and Potential Growth Regarding Trade and Transit Trade

In order to construct logistics marketing in Kazakhstan, it is first necessary to do the following: (1) examine the direction of Kazakhstan's trade policy (which industries to increase exports and imports); and (2) examine current and future economic growth, in particular the purchasing power growth potential of direct and indirect trading partners (countries having transit goods passing through Kazakhstan). It is necessary to comprehensively implement logistics development upon clarifying the target industries for imports and exports from these countries and the main trading partners of Kazakhstan. The following paragraphs describe the direction of trade promotion in Kazakhstan.

(1) Direction of Kazakhstan Trade Promotion

As mentioned in the description of trade trends, major exports that currently impact logistics are mineral resources and products processed from mineral resources, which accounted for 96.96% of the total export tonnage in 2004 (excluding exports of natural gas and other items). Cereals, raw cotton and wool accounted for just 3.06% of the total export tonnage. In terms of value, exports of mineral resources and products processed from minerals accounted for 83% of the total value. In reality, overseas investment in the mining industry (oil and gas industries, etc.) has increased greatly by 1.84

times from US$4,566.6 million (2001) to US$8,423.7 million (2004) and this trend is likely to continue in the future.

In these circumstances, the Government of Kazakhstan (Ministry of Industry and Trade) has made diversification of export items while promoting the development and export of oil and gas resources its top trade objective. The Government of Kazakhstan aims to promote more exports of processed raw materials (for example, production and export of aluminum-related products from aluminum bauxite) and other items such as cereals and raw cotton, etc.

Kazakhstan must import some comparatively disadvantageous goods such as electrical equipment, machine tools, foodstuffs, vehicles, etc., which are not produced in Kazakhstan. Therefore, efficient import of goods at lower costs with shorter transit times and just-in-time deliveries must be established In particular, in order to promote the efficient import of items which can be loaded into containers, it is essential to establish efficient means of transportation, i.e., an efficient transportation setup for container cargo.

(2) Current Economic Growth of Kazakhstan's Direct and Indirect Trade Partners

Gauging the current economic growth of Kazakhstan's direct and indirect (having transit goods passing through Kazakhstan) trading partners is essential in order to examine the future approach to logistics in Kazakhstan. The following paragraphs briefly outline the current economic growth and purchasing power of Kazakhstan's direct and indirect trading partners (countries with transit goods passing through Kazakhstan).

1) CIS and its surrounding countries

The annual average economic growth rates[11] of countries around Kazakhstan (2000-2004) are as follows: Azerbaijan: 10.6%, Kyrgyz: 4.5%, Tajikistan: 10.0%, Uzbekistan: 4.8%, Russia: 6.1%, and Iran: 6.2%. As for the other surrounding countries, the average annual economic growth rates have been 4.2% in Turkey, 8.6% in Ukraine and 6.8% in Belarus during the same period. Accordingly, each country has experienced a high degree of economic growth.

2) China

China possesses high growth potential for trade with not only Kazakhstan but also the countries around Kazakhstan and countries in Europe. China achieved an extremely high annual average economic growth rate of 9.4% between 2000 and 2004.

For Kazakhstan, China is one of the countries with the greatest trade growth potential. As already mentioned, China is already an important bilateral trade partner as of 2004 and Chinese trade with Kazakhstan (exports and imports) accounts for the third highest share of 8.3% following the EU (28.3%) and Russia (23.3%). The share of bilateral trade between Kazakhstan and China increased from 5.8% in 1999 to 8.3% in 2004 and the volume of trade between the two countries is expected to

[11] Growth rates of each country described in this section are from World Development Indicator, 2006.

grow further in the future. In particular, in 2005 the China National Petroleum Corporation (CNPC) acquired the stocks in Petro Kazakhstan and commenced the transportation of petroleum along a pipeline between China and Kazakhstan (932 km, 10,000,000 tons per year)[12]. As a result, it is forecast that the value of trade between the countries will increase a great deal from now on.

(Economic Indicators in China)

Fully understanding the growth potential of China, which will have more direct trade and transit trade with Kazakhstan in the future, is extremely important for examining the future shape of logistics in Kazakhstan. Accordingly, it is essential for Kazakhstan to set and monitor economic indicators with respect to China. The macroeconomic indicators (GDP, trade statistics, etc.) indicated below[13] are the basic data for determining growth potential of the Chinese economy and must be fully grasped.

(Chinese Economic Indicators)

- Basic Economic Indicators (Macro)

GDP Growth Rate (Unit: %)

Annual average growth rate	1984-94	1994-04	2003	2004	2004-2008
GDP	9.4	8.3	9.3	9.5	8.0
Per capita GDP	7.9	7.4	8.6	8.9	7.3
Exports (goods, services)	8.1	17.3	26.8	28.4	14.4

2004-2008: estimate values

Movements by GDP Sector (Unit:%)

Sector	1984	1994	2003	2004
Agricultural sectors	32.0	20.2	14.6	15.2
Industry	43.3	47.8	52.2	52.9
*Manufacturing	35.5	34.4	36.7	37.3
Service sector	24.7	31.9	33.2	31.9
Total	100%	100%	100%	100%
GDP(US$)	(US$ 256.1 billion)	(US$ 542.5 billion)	(US$ 1,418.3 billion)	(US$ 1,653.8 billion)

Annual Average Economic Growth Rate by Sector (Unit :%)

Sector	Sector	1994-04	2003	2004
Agricultural sectors	Agricultural sectors	3.3	2.5	6.3
Industry	Industry	10.0	12.7	11.1
*Manufacturing	11.7	10.1	14.9	13.2
Service sector	Service sector	8.2	7.3	8.3

[12]) Based on JETRO data “China’s External Economic Strategy during the 11th Five-Year Plan.”

[13]) These data can be obtained from the China Statistical Yearbook published every year and ministerial statistical yearbooks also published annually. Furthermore, the Chinese five-year plan (currently the 11th Five-Year Plan 2006-2011) provides the basic policy of state development in China.

Share of Exports and Imports in GDP (Unit: %)

Trade (exports, imports)	1984-94	1994-04	2003	2004
Share of exports in GDP	4.0	3.3	2.5	6.3
Share of imports in GDP	12.3	10.0	12.7	11.1

Movements in International Balance of Payments (Unit: US$ million)

Item		1984	1994	2003	2004
Trade balance	(a) Exports of goods and services	29,039	137,378	485,003	655,827
	(b) Imports of goods and services	29,183	127,210	448,924	606,543
	Net difference(a)-(b)	-144	10,168	36,079	49,284
Income balance	Net income	1,534	-1,036	-7,838	-3,523
Transfer balance	Net transfer	442	1,337	17,634	22,898
Current balance		1,832	10,469	45,875	68,659
Capital balance	Net capital balance	-2,363	20,058	71,148	137,705
Change in foreign currency reserves		531	-30,527	-117,023	-206,364

Composition of China's Export and Import Trade (monetary value) (Unit: US$ million)

Trade		1984	1994	2003	2004
Total exports		26,139	121,006	438,228	593,369
	Food	3,232	10,015	17,533	18,870
	Fuel	6,027	4,069	11,110	14,476
	Manufactured goods	14,205	101,298	403,560	552,818
Total imports		27,410	115,614	412,760	561,423
	Food	2,331	3,137	5,959	9,156
	Fuel	139	4,035	29,214	48,003
	Manufactured goods	7,245	51,467	192,869	252,624

* Exports and imports: The breakdown shows representative items, so totals do not constitute total exports and imports.

Composition of China's Export and Import Trade
(index display: assuming the value in 1984 to be 100)

Trade		1984	1994	2003	2004
Total exports		100	463	1,677	2,270
	Food	100	310	542	584
	Fuel	100	68	184	240
	Manufactured goods	100	713	2,841	3,892
Total imports		100	422	1,506	2,048
	Food	100	135	256	393
	Fuel	100	2,903	21,017	34,535
	Manufactured goods	100	710	2,662	3,487

From the World Bank's At a glance, China

3) Europe and the United States

Annual average economic growth rates of major trading partners of Kazakhstan (2000-2004) are as follows: the Netherlands: 5.2%, France: 1.5%, Italy: 0.8%, Switzerland: 0.6%, Germany: 0.6% and the United States: 2.3%. Unlike developing nations, these countries are maintaining steady economic growth, possess healthy purchasing power and are important trade partners of Kazakhstan and surrounding nations. This is indicated by the fact that Europe accounts for 28.3% of all Kazakhstan trade (2004) and the United States for 6.7%.

4) Japan and South Korea)

The annual average economic growth rate (2000-2004) is 0.9% in Japan and 4.2% in South Korea. Japan, which has experienced economic recovery in recent years, is greatly increasing exports to Kazakhstan centered on automobiles. Moreover, South Korea is increasing exports of mainly used cars to Kazakhstan and cargo comprising mainly automobile assembly parts to Uzbekistan (transit goods passing through Kazakhstan).

(3) Purchasing Power

Per capita national incomes in Kazakhstan's main trade partners (Russia and Central Asian states, etc.) are currently low in comparison with other developed countries shown in Table 4.1.3-26. This indicates that even if high economic growth can be expected in Kazakhstan and surrounding countries, absolute quantities and values of trade are restricted. This fact is manifested by the dependence of Kazakhstan on exporting goods to the countries of Europe and the USA, which have high purchasing power. However, China possesses latent cargo intended for Europe that can pass through Kazakhstan. Moreover, Azerbaijan and other countries around Kazakhstan realize that China is a massive and attractive market.

Table 4.1.3-26 Per Capita National Income in Kazakhstan's Main Trade Partners (2004)

Country	Per Capita National Income	Country	Per Capita National Income
Kazakhstan	2,250	Turkey	3,750
Azerbaijan	940	Japan	37,050
Kyrgyzstan	400	South Korea	14,000
Tajikistan	280	Switzerland	49,600
Turkmenistan	N/A	Italy	26,280
Uzbekistan	480	France	30,370
Russia	3,400	United Kingdom	33,630
China	1,290	United States	41,440
Iran	2,320		

Prepared from each country's data in the World Bank Development Indicator

(4) Future Economic Growth Potential of Kazakhstan's Direct and Indirect Trade Partners

The economic growth potential of the major trade partners surrounding Kazakhstan is demonstrated by a number of agencies (national governments and donors, etc.). Future growth rates based on data

obtained from the IMF are indicated below. (Forecasting long-term economic growth under conditions of political, economic and social uncertainty is difficult, and the fact is that the forecasts of many agencies are limited to the short and medium term).

It is forecast that Kazakhstan will sustain high economic growth of more than 8% till at least 2007. High rates of economic growth are also forecast in the surrounding countries. In the Asian region, it is forecast that China will maintain economic growth of at least 8% in 2007. As for Europe and the USA, it is forecast that they will maintain their present steady growth (see Table 4.1.3-27).

Table 4.1.3-27 Economic Growth Rate of Kazakhstan and Major Trade Partners (2000-2004)

(Unit: %)

Country	2001	2002	2003	2004	2005	2006	2007
Kazakhstan	13.5	9.8	9.3	9.6	9.4	8.0	8.3
Azerbaijan	8.3	9.1	10.0	10.1	9.9	9.5	9.0
Kyrgyzstan	3.7	7.5	6.7	5.6	5.9	5.3	5.0
Tajikistan	6.5	8.1	10.4	10.2	24.3	26.2	22.9
Turkmenistan	5.3	-	7.0	7.0	-0.6	5.0	5.5
Uzbekistan	10.2	9.1	10.2	10.6	6.7	8.0	6.0
Georgia	20.4	15.8	17.1	17.2	9.6	6.5	6.0
Armenia	4.1	3.1	1.5	7.4	7.0	7.2	5.0
Afghanistan	4.7	5.5	11.1	6.2	7.7	6.4	5.0
Russia	9.6	13.2	13.9	10.1	13.9	7.5	6.0
China	-	28.6	15.7	8.0	13.8	11.7	10.6
Iran	5.1	4.7	7.3	7.2	6.4	6.0	5.8
Japan	0.4	0.1	1.8	2.3	2.7	2.8	2.1
South Korea	3.8	7.0	3.1	4.6	4.0	5.5	4.5
EU	1.9	0.9	0.7	2.1	1.3	2.0	1.9
United States	0.8	1.6	2.7	4.2	3.5	3.4	3.3

Prepared from IMF, World Economic Outlook; April 2006; Statistical Appendix

（2006 and 2007: Estimates）

4.1.4 International Logistics

(1) Existing conditions in China

There is no scale to measure the magnitude of Chinese influence on world trade and international logistics. It is not within the scope of this report to describe the whole picture of Chinese activities in international logistics. The observation is limited to the area where Chinese activities have direct influence on the transit cargo movement of Kazakhstan, the Central Asian countries and beyond.

China's major trade partners are the following. Europe (EU) is the number one trade partner of China. Kazakhstan is number 20 export partner with export amount 3,134 million Euro.

Table 4.1.4-1 Major Trade Partners of China in 2005

The major import partners				The major export partners				The major trade partners			
	Country	Million Euro	%		Country	Million Euro	%		Country	Million Euro	%
	World	470,673	100.0%		World	599,460	100.0%		World	1,070,133	100.0%
1	Japan	80,756	17.2%	1	USA	131,298	21.9%	1	EU	174,753	16.3%
2	Korea	61,791	13.1%	2	EU	115,627	19.3%	2	USA	170,680	15.9%
3	EU	59,127	12.6%	3	Hong Kong	100,076	16.7%	3	Japan	148,352	13.9%
4	USA	39,381	8.4%	4	Japan	67,597	11.3%	4	Hong Kong	109,908	10.3%
5	Malaysia	16,163	3.4%	5	Korea	28,227	4.7%	5	Korea	90,017	8.4%
6	Singapore	13,287	2.8%	6	Singapore	13,436	2.2%	6	Singapore	26,723	2.5%
7	Australia	12,979	2.8%	7	Russia	10,619	1.8%	7	Malaysia	24,697	2.3%
8	Russia	12,769	2.7%	8	Canada	9,370	1.6%	8	Russia	23,388	2.2%
9	Thailand	11,248	2.4%	9	Australia	8,894	1.5%	9	Australia	21,873	2.0%
10	Philippines	10,345	2.2%	10	Malaysia	8,534	1.4%	10	Thailand	17,533	1.6%
11	Saudi Arabia	9,876	2.1%	11	India	7,183	1.2%	11	Canada	15,412	1.4%
12	Hong Kong	9,832	2.1%	12	UAE	7,019	1.2%	12	India	15,045	1.4%
13	Brazil	8,023	1.7%	13	Indonesia	6,727	1.1%	13	Philippines	14,114	1.3%
14	India	7,861	1.7%	14	Thailand	6,285	1.0%	14	Indonesia	13,503	1.3%
15	Indonesia	6,776	1.4%	15	Vietnam	4,533	0.8%	15	Saudi Arabia	12,950	1.2%
16	Canada	6,042	1.3%	16	Mexico	4,450	0.7%	16	Brazil	11,905	1.1%
17	Iran	5,463	1.2%	17	Brazil	3,882	0.6%	17	UAE	8,664	0.8%
18	Angola	5,290	1.1%	18	Philippines	3,769	0.6%	18	Iran	8,114	0.8%
19	Chile	3,973	0.8%	19	Turkey	3,418	0.6%	19	Vietnam	6,582	0.6%
20	Oman	3,330	0.7%	20	Kazkhstan	3,134	0.5%	20	Mexico	6,240	0.6%

Source: IMF

The following shows World Container Flow in which Asia/Europe trade shows the second largest flow of containers.

Table 4.1.4-2 World Sea Container Flow in 2005 Unit: million TEU

	Westbound	Eastbound	Total
Trans-Pacific	5.3	12.7	18.0
Asia/Europe	9.0	5.0	14.0
Trans-Atlantic	3.8	3.2	7.0
Rest of the world and Intra-regional			60.0
Total			99.0

Source: US Chamber of Commerce

Concerning Asia/Europe container movements, the share of Chinese cargo is estimated to be more than 50 percent and the yearly growth rate continues to be in the range of 10%. Currently, all-water route is the dominant route of cargo transportation between Asia and Europe. The international container ship operators have significantly expanded capacity to meet the demand. The volume of international containerized cargo transported using rail or truck between China and Europe is very limited.

Table 4.1.4-3 Modal split: Container transportation China/Europe

Unit: million TEU

	China/Europe	Europe/China	Total
All-water	4.5	2.5	7.0
Rail	0.2	0.1	0.3
Road (Truck)	0.03	0.03	0.06

Source: US Chamber of Commerce

The volume of cargo (all kinds, including non-container cargo) transported using rail between China and Central Asia and the CIS countries in 2005 was about 2 million tons, out of which container cargo was 0.53 million tons. 60% of cargo is for Kazakhstan and the remaining 40% is moved for other countries as transit cargo.

Table 4.1.4-4 Destination of Rail Cargo from China in 2005

Unit: tons

Destination	ton	%
Kazakhstan	1,170,276	58.5%
Uzbekistan	291,934	14.6%
Russia	246,046	12.3%
Tajikistan	154,688	7.7%
Turkmenistan	49,507	2.5%
Kyrgyz	48,161	2.4%
Afganistan	23,501	1.2%
Azerbaijan	13,892	0.7%
Other CIS	2,208	0.1%
TOTAL	2,000,213	100.0%

Source: KTZ

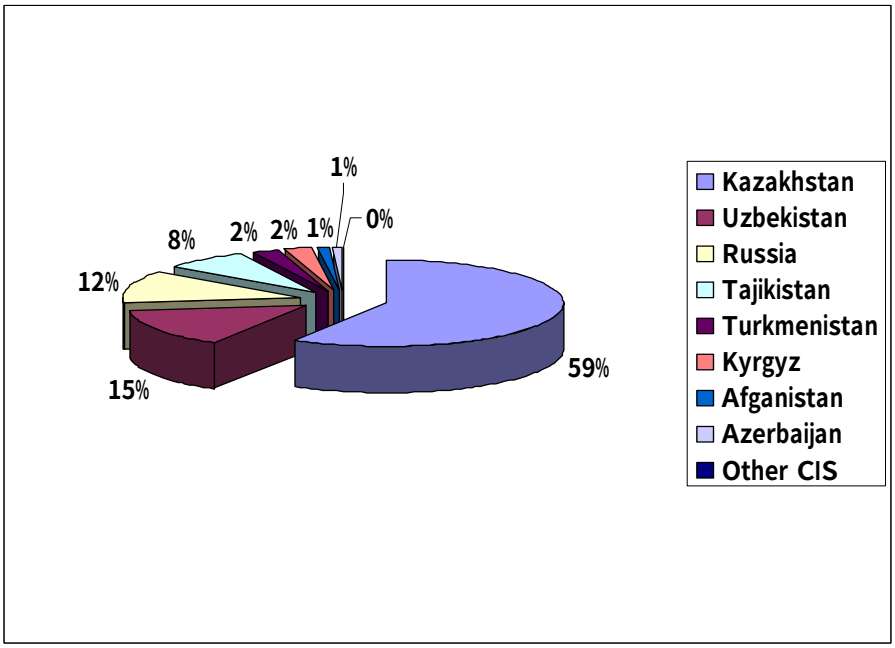


Figure 4.1.4-1 Destinations of Rail Cargo from China

Major commodities of Chinese export cargo by rail are as follows. The highest volume commodity is container cargo.

Table 4.1.4-5 Major Commodities of Rail Cargo from China in 2005

Units: Number of wagons and tons

Commodity	Wagon	Ton
Container	30,407	530,564
Coke	7,984	441,565
Construction materials	4,440	237,064
Chemicals	3,086	184,697
Metals/Ores	5,507	159,746
Equipment	3,629	87,661
Gasoline	1,178	62,478
Foodstuffs	1,365	79,673
Consumer goods	2,123	90,112
Grain	48	2,863
Others	2,845	123,790
TOTAL	62,612	2,000,213

Source: KTZ

The following shows the destination of railway container cargo from China.

Table 4.1.4-6 Destination of Container Cargo from China in 2005

Unit: wagons

Container Cargo Destination by wagon		
Kazakhstan	15,845	52.1%
Uzbekistan	10,231	33.6%
Russia	154	0.5%
Tajikistan	1,833	6.0%
Turkmenistan	532	1.7%
Kyrgyz	1,521	5.0%
Afganistan	264	0.9%
Azerbaijan	25	0.1%
Other CIS	2	0.0%
TOTAL	30,407	100.0%

Source: KTZ

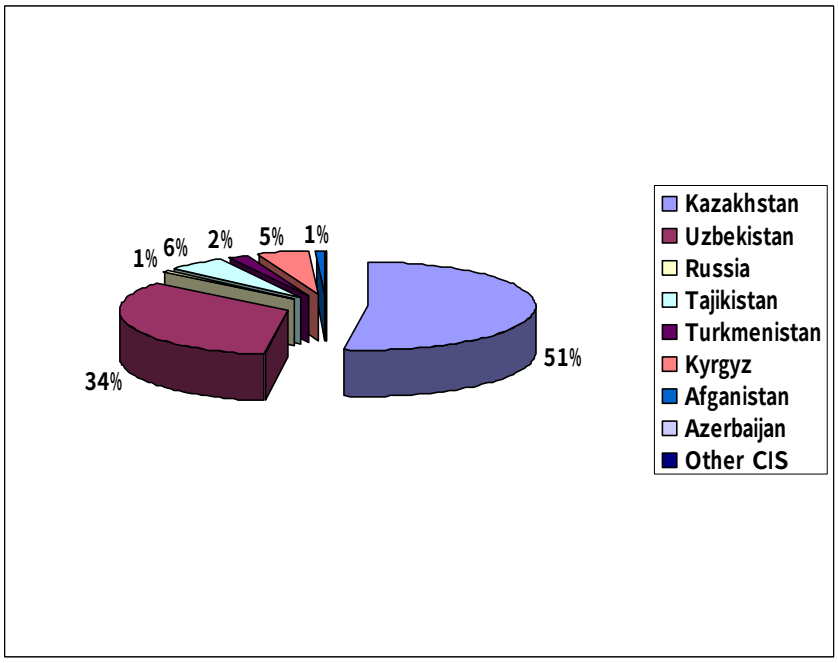


Figure 4.1.4-2 Destination of Container Cargo from China

(2) China Land Bridge

This route connects Chinese coastal areas to western inland areas and further to the Central Asian countries. The route can be extended to European countries through the trans-Siberian railway route. The route was developed in the 1980s and the first train to directly connect the Chinese east coast to Central Asia was launched in 1992. The starting point of this route is Lianyungang, the new deep sea port especially developed in the 1980s as a gate port for China Land Bridge. Currently, the port

handles about 1 million TEUs of containers per year and volume is increasing every year. Out of total containers handled in Lianyungang port, about 30 thousand TEUs are China Land Bridge cargo. The containers for China Land Bridge are brought into the port mainly from Korea and Japan, and then passed to the railroad for inland transportation to the Central Asian countries. The majority of China Land Bridge cargo is destined to Kazakhstan and Uzbekistan. Only a few containers go to the other Central Asian countries. For the moment, there are no substantial cargo movements destined to European countries on the China Land Bridge route.

In line with development in the western region of inland China, it is expected that additional cargo would be generated from the area along the China Land Bridge.

(3) Truck Transportation between China/Kazakhstan

The volume of cargo moving from China to Kazakhstan and beyond is limited. Most cargo goes through the truck border crossing point in Khorgos. The following shows the cargo volume by truck.

Table 4.1.4-7 Transit Cargo from China by Road through Kazakhstan Unit: ton

From	To	2001	2002	2003	2004	2005
China	Kazakhstan	31,763	186,222	287,308	307,076	227,818

Source: Road Transport Division, MTC

The following shows the transit cargo volume from China by truck via Kazakhstan.

Table 4.1.4-8 Transit Cargo from China by Road through Kazakhstan Unit: ton

From	To	2001	2002	2003	2004 1st half
China	Azerbaijan	1,344	1,489	1,735	2,196
	Armenia	796	632	538	329
	Afghanistan	0	0	42	566
	Georgia	1,141	1,420	1,721	841
	Iran	225	0	213	1,045
	Kyrgyz	18,505	34,901	13,502	44,775
	Russia	35,800	31,655	20,513	6,271
	Tajikistan	3,597	13,553	34,967	14,055
	Turkmenistan	302	1,004	1,307	6,102
	Uzbekistan	11,101	11,438	1,107	2,744
	Ukraine	12,252	905	75	92
	Others	262	82	15	32
	TOTAL	85,325	97,079	75,735	79,048

Source: Public Policy Research Center, Kazakhstan

(4) Transit cargo through Kazakhstan

In order to capture and streamline the cargo flow between Europe and Central Asia, there are many attempts by various government and international organizations to form international transit corridors. It is also one of the key strategic issues for the government of Kazakhstan to promote international transit cargo movement passing through the country using those transit corridors.
There are several international railway corridors crossing Kazakhstan:

Northern corridor:
Beijing-Alashankou/Dostyk-Almaty-Astana-Petropavlovsk-Brest-Berlin
This corridor corresponds to a fragment of the southern part of the trans-Siberia corridor and goes through the industrially developed regions of Kazakhstan. Out of the total transportation volumes along the railway sections of this corridor, about 40% is export/import transportation and around 10% is transit transportation.

Central Corridor:
(Tashkent-Saryagash-Chengeldy-Arys-Kandyagash-Ozinki-Russian border)
This corridor goes through the industrially developed area of southern Kazakhstan and is closely linked with central Asian countries for cargo movement to/from Russia.

Southern Corridor:
(Beijing- Alashankou/Dostyk-Arys-Tashkent-Chardjou-Teheran-Istanbul)
This corridor goes through the southern part of the country and directly connects the Central Asian countries, all the way through Turkey.

TRACECA
(Beijing-Alashankou/Dostyk-Almaty-Aktau-Baku-Poti)
This corridor forms a part of the TRACECA corridor and passes through the country in the east/west direction. The main route of TERACECA goes through Uzbekistan and Turkmenistan.

North-South
(St.Petersburg-Astrakhan-Atyrau-Aktau-Noushahr-Bandar Abbas-Mumbai)
This corridor has been developed by Russia and Iran and there are many possibilities to enhance the volume of transit cargo through Kazakhstan by connecting it with the east/west corridors.

Theoad system in Kazakhstan incorporates some parts of main international road corridors in the Eurasian region. The Government of Kazakhstan put a priority on the maintenance of the following part of the main road within its territory.
Tashkent – Shymkent – Taraz – Almaty – Khorgos
Shymkent – Kyzylorda – Aktobe – Uralsk – Samara

Almaty – Karaganda – Astana – Petropavlovsk
Astrahan – Atyrau – Aktau – Turkmenistan border
Omsk – Pavlodar – Semipalatinsk – Maikapchagay
Astana – Kostanay – Chelyabinsk – Yekaterinburg

Historically, the Eurasian transportation corridor concept is the attempt to promote and develop cargo movement between Europe and Central Asia. But now the eastern end of the corridor has moved further and targeted China. The Chinese government, with its “Go West” program, is carrying on extensive development programs in its western region including Xinjiang Uygur. In addition to traditional products such as agricultural products and natural resources in the region, industrial products will be newly produced in this area. A considerable volume of cargos will be expected to cross the China/Kazakhstan border heading toward the west. Since this area is located in deep in the inland part of China, about 3,500km away from major domestic consumption areas along the eastern coastline, neighboring countries in Central Asia are the most prominent market for this area. And depending on the development of the transportation network, there is great potential that the market would be further expanded to European countries.
This potential depends entirely on how the international logistics chain is developed in this area. It is the key element for this issue to establish efficient and effective transportation corridors and attract cargos to such routes. Kazakhstan directly faces the long border line with China and maintains active border crossing points.
There exists a great possibility for Kazakhstan to lead the new cargo flow by establishing a strong east/west corridor in the country.
There are several other transport routes which directly compete with those transit corridors.

1) The trans-Siberian railway line (Siberian Land Bridge)
This service provides the shortest transit time between the Far East and Europe. The service started in the early 1970s and quickly established its status as one of the main transportation routes between those areas. The advantages of this service are described as follows:

- Shortest transit time
- Flat commodity rate and lower rate level than ocean route
- More flexible freight cost structure than ocean route
- Free from interruption of service caused by labor disputes at ports

From the late 1970s, the cargo volume of this route showed a remarkable increase. At the peak period of the 1980s, total annual cargo volume reached the record level of 110,000 TEUs. However, after the fall of the Soviet Union, unified control of the whole route became difficult and total cost of transportation was increased. In the meantime, due to competition among the shipping lines, freight rates for the ocean route went down and the quality of service was improved. Ocean carriers developed inland transportation service from major European ports. Under the circumstances, cargo volume on the Siberian route started to show a downward trend and this tendency has continued since

then. For the moment, there is no sign of regaining the share in the trade.

2) The deep sea route through the Suez Canal

At present, most cargos moving between the Far East and Europe use an all-water maritime route through the Suez Canal. The maritime route offers a great many advantages over the land routes. Major advantages include the following:

- Regular and reliable shipping schedule
- Less risk of loss or damage to the cargo
- Fewer customs procedures and lower handling fees
- Lower transportation cost

Due to competition among the shipping lines serving on the maritime route, ocean transportation cost is getting lower to the bottom and this trend is expected to continue for more time to come. The size of ships is also getting bigger, to pursue economies of scale, and this gives ample space for transportation to the trade.

4.2 Analysis of Routes Competing with the Trans-Kazakhstan Route

4.2.1 General

In order to strengthen and promote the transport corridor passing through Kazakhstan, it is necessary to analyze and compare the current condition of competing corridors surrounding Kazakhstan.
Overall trade situation and methodology adopted in the analysis are outlined as follows:

1) Overall Trade Situation

The regional trade situation within the scope of this analysis is summarized as follows:

(1) Total trade volume between East Asia and Europe/Russia/Iran/Caucasus/Central Asia is 877 billion dollars. 90% of trade is generated between East Asia and West Europe, 4.7% with Russia, 3.9% with East Europe, followed by other regions such as Iran, the Caucasus and Central Asia, each representing more or less 1% of the total.
(2) For Japan/Korea, West Europe is the biggest trade partner in the region with a dominant share, followed by Russia and East Europe.
(3) For the China Coastal Area, the biggest trade partner is also West Europe, but a certain share is spread over East Europe and Russia along with the Central Asian Region.
(4) As to the China Inland Area, trade partners are spread over in a similar proportion as in the case of Coastal Area, but the clear difference is total amount of trade volume which is only about 10% of the amount generated from the Coastal Area.

Table 4.2.1-1 Regional Trade Volume 2006

(unit: million US$)	Country/Region	Import	Export	Total	%share
Japan/Korea	West Europe	84,966.9	361,979.4	446,946.3	92.5
	East Europe	1,957.3	11,033.6	12,990.9	2.7
	Russian	6,849.4	11,565.6	18,415.0	3.8
	Iran	258.6	2,807.8	3,066.3	0.6
	Caucasus	18.7	143.6	162.4	0.0
	Central Asia	378.4	1,350.2	1,728.6	0.4
	Total	94,429.3	388,880.2	483,309.5	100.0
China Coastal Area	West Europe	102,529.9	228,389.3	330,919.1	85.1
	East Europe	3,027.9	17,797.1	20,825.0	5.4
	Russian	7,590.7	15,311.7	22,902.3	5.9
	Iran	547.0	3,857.1	4,404.1	1.1
	Caucasus	37.9	461.5	499.4	0.1
	Central Asia	2,059.9	7,255.2	9,315.2	2.4
	Total	115,793.3	273,071.9	388,865.1	100.0
China Inland Area	West Europe	1,036.7	3,016.2	4,052.9	83.7
	East Europe	34.5	246.9	281.4	5.8
	Russian	101.0	209.2	310.2	6.4
	Iran	5.3	53.6	58.9	1.2
	Caucasus	0.4	6.3	6.8	0.1
	Central Asia	29.2	102.7	131.9	2.7
	Total	1,207.1	3,634.9	4,842.1	100.0
East Asia Total	West Europe	188,533.5	593,384.9	781,918.3	89.2
	East Europe	5,019.7	29,077.6	34,097.3	3.9
	Russian	14,541.1	27,086.5	41,627.5	4.7
	Iran	810.9	6,718.5	7,529.3	0.9
	Caucasus	57.0	611.4	668.6	0.1
	Central Asia	2,467.5	8,708.1	11,175.7	1.3
	Total	211,429.7	665,587.0	877,016.7	100.0

Source: World Trade Atlas, Global Trade Atlas based on UN Statistics

2) Corridors Studies

The following major transport corridors which go through the territory of Kazakhstan or have potential to go through the territory of Kazakhstan are the objects of the study:

East Asia – West Europe Transport Corridor

East Asia – East Europe Transport Corridor

East Asia – Russia Transport Corridor

East Asia – Iran Transport Corridor

East Asia – Caucasus Transport Corridor

East Asia – Central Asia Transport Corridor

Iran – Russia Transport Corridor

3) Routes Studied

For each transport corridor, the following different routes are studied to highlight the comparative strengths and weaknesses of each route.

Trans-Asian Route (passing through China and Kazakhstan)

Trans-Siberian Route (going through the Trans-Siberian Railway line)

TRACECA Route (passing through Kazakhstan and the Caspian Sea via Aktau)

All-water Route (going through all the way on the ocean to the destination area)

4) Coupling of Corridors and Routes

The following steps are taken to examine and compare various routes on one given transport corridor: For example, in the East Asia-West Europe transport corridor, the origin areas are divided into the following 3 regions: 1) Japan/Korea, 2) China Coastal Area and 3) China Inland Area.

For each corridor studied, sensitivities are examined on the 4 different routes as mentioned above.

In this way, a total 12 cases of transportation routes are examined in the East Asia-Europe corridors.

Likewise, in all other transport corridors, the same kind of analysis is carried out and a total 58 cases of transport routes on 20 different corridors are thoroughly examined.

Table 4.2.1-2 Study Routes and Corridors

O \ D	West Europe	East Europe	Russia	Iran	Caucasus	Central Asia
Japan/Korea	Trans-Asian Trans-Siberian TRACECA All-water	Trans-Asian Trans-Siberian TRACECA All-water	Trans-Asian Trans-Siberian All-water	TRACECA(via Aktau) TRACECA(via Rail) All-water	TRACECA All-water	TRACECA Trans-Siberian
China (Coastal)	Trans-Asian Trans-Siberian TRACECA All-water	Trans-Asian Trans-Siberian TRACECA All-water	Trans-Asian Trans-Siberian All-water	TRACECA(via Aktau) TRACECA(via Rail) All-water	TRACECA All-water	TRACECA Trans-Siberian
China (Inland)	Trans-Asian Trans-Siberian TRACECA All-water	Trans-Asian Trans-Siberian TRACECA All-water	Trans-Asian Trans-Siberian All-water	TRACECA(via Aktau) TRACECA(via Rail) All-water	TRACECA All-water	TRACECA Trans-Siberian
	Total 12 cases	Total 12 cases	Total 9 cases	Total 9 cases	Total 6 cases	Total 6 cases

O \ D	West Russia	Central/E. Russia
Iran	via Aktau via Astrakhan	via Aktau via Astrakhan
	Total 2 cases	Total 2 cases

TOTAL 20 CORRIDORS
58 Casses

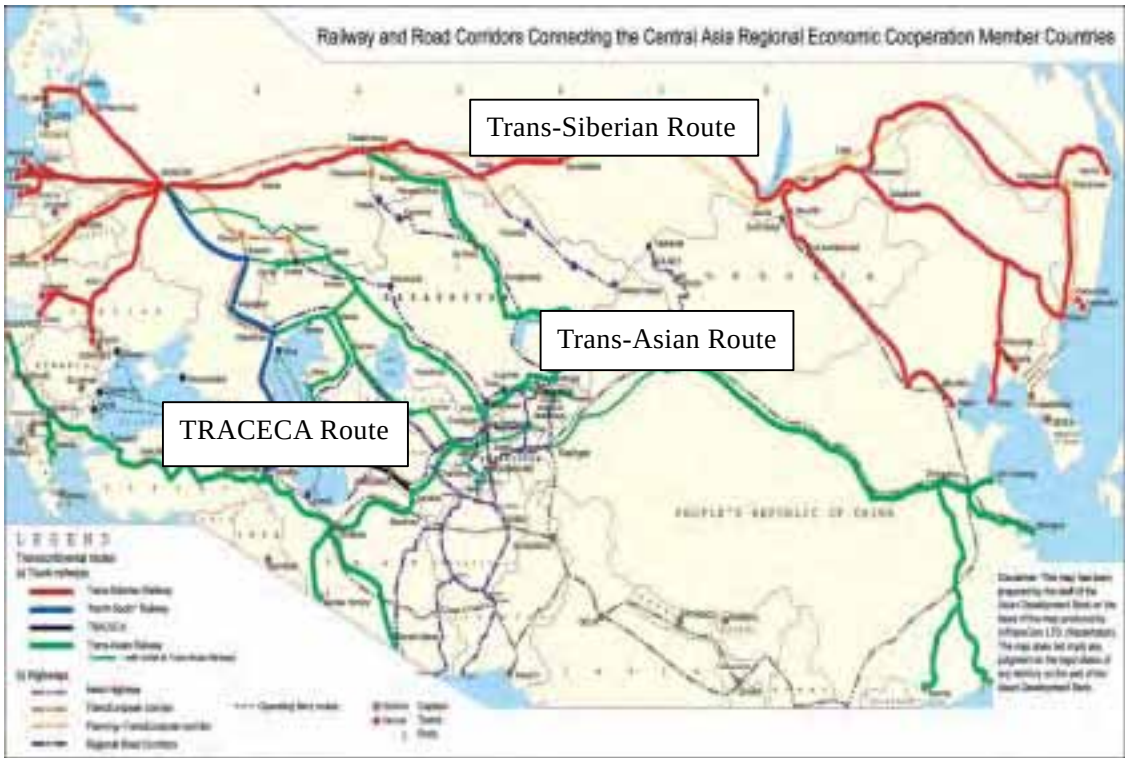


Figure 4.2.1 Corridors and Routes

5) Selection of Origin

The following trade origin areas are picked up in the East Asian Region:

Japan: Tokyo (Yokohama)

Korea: Pusan

China (Coastal Area): Shanghai

China (Inland Area): Urumqi

6) Selection of Destination

The following trade destination areas are picked up in every destination area:

West Europe: Berlin, Germany

East Europe: Warsaw, Poland

Russia: Moscow

Iran: Tehran

Caucasus: Baku, Azerbaijan

Central Asia: Tashkent, Uzbekistan

7) Transshipment Points

The following geographical points are marked as the transshipment points located along the transport routes of the study:

Vostochny port in littoral Russia

Lianyungang port in China

Rotterdam port in Netherlands
Brest in Belarus
Dostyk in Kazakhstan
Aktau port in Kazakhstan
Bandar Abbas and Bandar Anzali in Iran
Serakhs in Iran
Poti port in Georgia
Odessa port in Ukraine
Istanbul port in Turkey

8) Evaluation Factors

Comparative strengths and weaknesses of the route are analyzed for each transport corridor. Primary elements to measure in the characteristics of each route are transit time and transport cost.

(1) Transit time:

Transit time is calculated as a sum of net running time and additional time.

The net running time is obtained by the traveling distance for each segment and the corresponding average running speed of railways and ships.

The distance is divided by a given number of average railway speed or ship speed depending on the mode of transport on each segment to obtain standard net running time on the route.

The additional time is obtained by a fixed formula set for the special geographical points along the route. The special points are border-crossing points and cargo transshipment points.

At border-crossing points, it is required to go through customs checking procedure. Average dwell time of one day is counted at the point.

There are two kinds of cargo transshipment points. One is the sea-port where trans-loading work from ship to shore or from shore to ship is carried out and the other is break-of-gauge points of railways such as Dostyk, Brest and Sarakhs. Average dwell time of two days is counted at the point.

(2) Transport Cost:

Transport cost is calculated by adding up all the transport cost pertaining to each transport route which consists of the rail freight, the ocean freight and other costs. Transport cost for one 40-foot container is calculated throughout this analysis.

For other costs, a fixed amount of $100 is applied for every special point along the route.

4.2.2 Route Competitiveness Analysis

Following is the results of the analysis.

1) Japan/Korea – West Europe

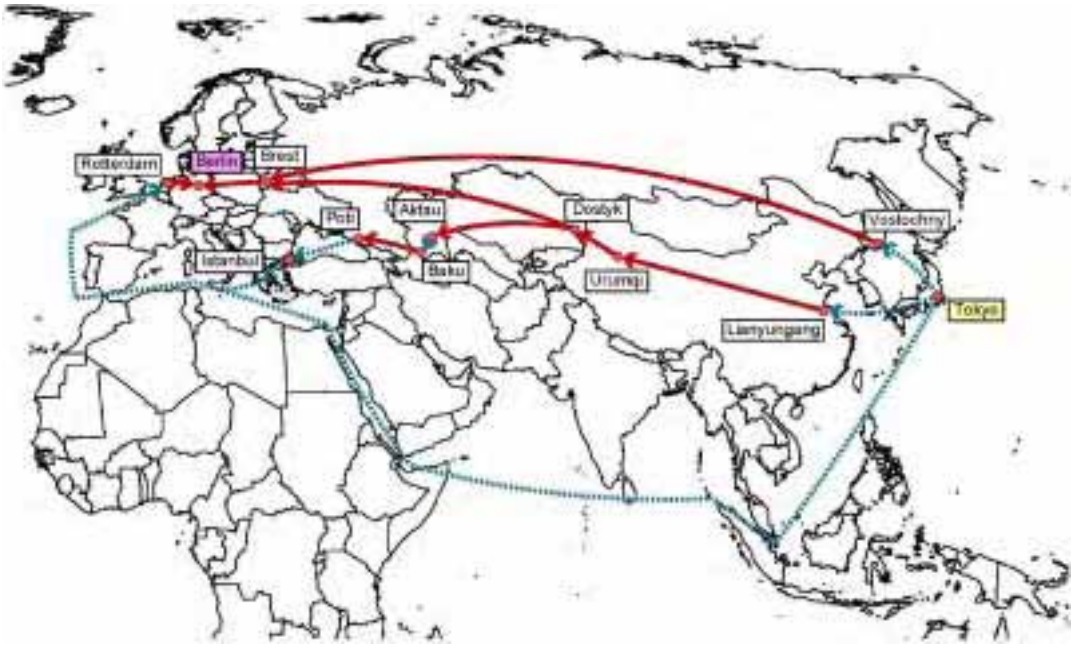


Figure 4.2.2-1 Transport Route: Japan/Korea – W. **Europe**

(1) Transit Time

Total transit time from Tokyo to Berlin by the all-water route is 32 days (ocean transport 27 days + land transport 2 days + additional time 3 days).

Total transit time by the Trans-Asian Route is 32 days (ocean transport 3 days + land transport 18 days + additional time 11 days) which is eventually the same as the all-water route. However, the transit time for this route is 9 days longer than Trans-Siberian Route.

Total transit time by the Trans-Siberian Route is 23 days (ocean transport 3 days + land transport 13 days + additional time 7 days) which is shorter than the all-water route by 9 days.

The TRACECA route needs 50 days to complete the transit.

(2) Additional Time

There is 1 Customs Check Point and 1 Transshipment Point in the all-water route from Japan/Korea to Europe. The Trans-Siberian Route involves 3 Customs Check Points and 2 Transshipment Points.

The Trans-Asian Route has 5 Customs Check Points and 3 Transshipment Points. The TRACECA Route has 5 Customs Check Points and 7 Transshipment Points.

Table 4.2.2-1 Comparison of Transit Time (Tokyo-Berlin)

	Trans-Asia Route		Trans-Siberia Route		TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Moscow - Brest - Berlin		Tokyo - Vostochny - Moscow - Brest - Berlin		Tokyo - Lianyungang - Dostyk - Aktau - Baku - Poti- Berlin		Tokyo - Rotterdam - Berlin	
Transport Time (Days)	Tokyo/Lianyungang	3	Tokyo(Y'hama)/Vostoch	3	Tokyo/Lianyungang	3	Tokyo/Rotterdam	27
	Lianyungang/Dostyk	7	Vostochny/Brest	12	Lianyungang/Dostyk	7	Rotterdam/Berlin	2
	Dostyk/Brest	10	Brest/Berlin	1	Dostyk/Aktau	6		
	Brest/Berlin	1			Aktau/Baku	1		
					Baku - Poti	3		
					Poti - Rotterdam	9		
					Rotterdam - Berlin	2		
	Total	21	Total	16	Total	31	Total	29
Customs Check Points (No.)		5		3		5		1
Transhipment Points (No.)		3		2		7		1
Customs Check and Transshipment (day)		11		7		19		3
Transport Time(day)		32		23		50		32

(3) Transport Cost

Transport cost by the All-water Route between Japan/Korea and Europe is $4,400. Ocean freight rates show upward trends and downward trends depending on the market situation.

Transport cost by the Trans-Siberian Route is $5,100 which is higher than the All-water Route by $700.

Transport cost by the Trans-Asian Route is $4,700, which is $300 higher than the All-water Route but $400 lower than the Trans-Siberian Route. The TRACECA route costs $8,900.

Table 4.2.2-2 Comparison of Transport Cost (Tokyo-Berlin)

	Trans-Asia Route		Trans-Siberia Route		TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Moscow - Brest - Berlin		Tokyo - Vostochny - Moscow - Brest - Berlin		Tokyo - Lianyungang - Dostyk - Aktau - Baku - Poti- Berlin		Tokyo - Rotterdam - Berlin	
Transport Cost (US $/ Container)	Tokyo/Lianyungang	850	Tokyo(Y'hama)/Vostoch	2,500	Tokyo/Lianyungang	850	Tokyo/Rotterdam	3,500
	Lianyungang/Dostyk	1,260	Vostochny/Brest	1,550	Lianyungang/Dostyk	1,260	Rotterdam/Berlin	720
	Dostyk/Brest	1,275	Brest/Berlin	540	Dostyk/Aktau	684	Other Costs	200
	Brest/Berlin	540	Other Costs	500	Aktau/Baku	720		
	Other Costs	800			Baku - Poti	1,700		
					Poti - Rotterdam	1,800		
					Rotterdam - Berlin	720		
					Other Costs	1,200		
	Total	4,725	Total	5,090	Total	8,934	Total	4,420

(4) Overall Assessment

On the transport corridor connecting Japan/Korea to Europe, the All-Water Route possesses a comparative advantage of transport cost while a comparative advantage of transit time goes to Trans-Siberian Route. The Trans-Siberian Route has 3 Customs Check Points and depending on the work procedure at each point, there may be a possibility of unexpected holdups. The Trans-Asia Route gives fairly competitive transport cost but it also has 5 Customs Check Points and 3 Transshipment Points and it may cause unstable transit time.

Table 4.2.2-3 Overall comparison of Corridor (Japan/Korea – W. Europe)

	Trans-Asia Route		Trans-Siberia Route		TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Moscow - Brest - Berlin		Tokyo - Vostochny - Moscow - Brest - Berlin		Tokyo - Lianyungang - Dostyk - Aktau - Baku - Poti- Berlin		Tokyo - Rotterdam - Berlin	
Trade Volume (US$ Million)	446,946							
Trade Volume (Million TEU)	1.867							
Distance (km)	Tokyo/Lianyungang	2,183	Tokyo(Y'hama)/Vostoch	1,695	Tokyo/Lianyungang	2,183	Tokyo/Rotterdam	20,916
	Lianyungang/Dostyk	4,500	Vostochny/Brest	10,336	Lianyungang/Dostyk	4,500	Rotterdam/Berlin	1,200
	Dostyk/Brest	6,377	Brest/Berlin	900	Dostyk/Aktau	3,843		
	Brest/Berlin	900			Aktau/Baku	463		
					Baku - Poti	1,340		
					Poti - Rotterdam	7,043		
					Rotterdam - Berlin	1,200		
	Total	13,960	Total	12,931	Total	20,572	Total	22,116
Average Speed (km/day)	Tokyo/Lianyungang	800	Tokyo(Y'hama)/Vostoch	800	Tokyo/Lianyungang	800	Tokyo/Rotterdam	800
	China Railway	660	Vostochny/Brest	870	Lianyungang/Dostyk	660	Rotterdam/Berlin	1,000
	Kaz Railway	650	Brest/Berlin	1,000	Dostyk/Aktau	650		
	Euro Railway	1,000			Aktau/Baku	600		
					Baku - Poti	650		
					Poti - Rotterdam	800		
					Rotterdam - Berlin	1,000		
Transport Time (Days)	Tokyo/Lianyungang	3	Tokyo(Y'hama)/Vostoch	3	Tokyo/Lianyungang	3	Tokyo/Rotterdam	27
	Lianyungang/Dostyk	7	Vostochny/Brest	12	Lianyungang/Dostyk	7	Rotterdam/Berlin	2
	Dostyk/Brest	10	Brest/Berlin	1	Dostyk/Aktau	6		
	Brest/Berlin	1			Aktau/Baku	1		
					Baku - Poti	3		
					Poti - Rotterdam	9		
					Rotterdam - Berlin	2		
	Total	21	Total	16	Total	31	Total	29
Customs Check Points (No.)		5		3		5		1
Transhipment Points (No.)		3		2		7		1
Customs Check and Transshipment (day)		11		7		19		3
Transport Time(day)		32		23		50		32
Unit Transport Cost (US $/ Container)	Tokyo/Lianyungang	0.389	Tokyo(Y'hama)/Vostoch	1.470	Tokyo/Lianyungang	0.389	Tokyo/Rotterdam	0.170
	Lianyungang/Dostyk	0.280	Vostochny/Brest	0.150	Lianyungang/Dostyk	0.280	Rotterdam/Berlin	0.600
	Dostyk/Brest	0.200	Brest/Berlin	0.600	Dostyk/Aktau	0.144		
	Brest/Berlin	0.600			Aktau/Baku	1.555		
					Baku - Poti	1.269		
					Poti - Rotterdam	0.256		
					Rotterdam - Berlin	0.600		
					Other Costs			
Transport Cost (US $/ Container)	Tokyo/Lianyungang	850	Tokyo(Y'hama)/Vostoch	2,500	Tokyo/Lianyungang	850	Tokyo/Rotterdam	3,500
	Lianyungang/Dostyk	1,260	Vostochny/Brest	1,550	Lianyungang/Dostyk	1,260	Rotterdam/Berlin	720
	Dostyk/Brest	1,275	Brest/Berlin	540	Dostyk/Aktau	684	Other Costs	200
	Brest/Berlin	540	Other Costs	500	Aktau/Baku	720		
	Other Costs	800			Baku - Poti	1,700		
					Poti - Rotterdam	1,800		
					Rotterdam - Berlin	720		
					Other Costs	1,200		
	Total	4,725	Total	5,090	Total	8,934	Total	4,420

2) China (Coastal Area) – West Europe

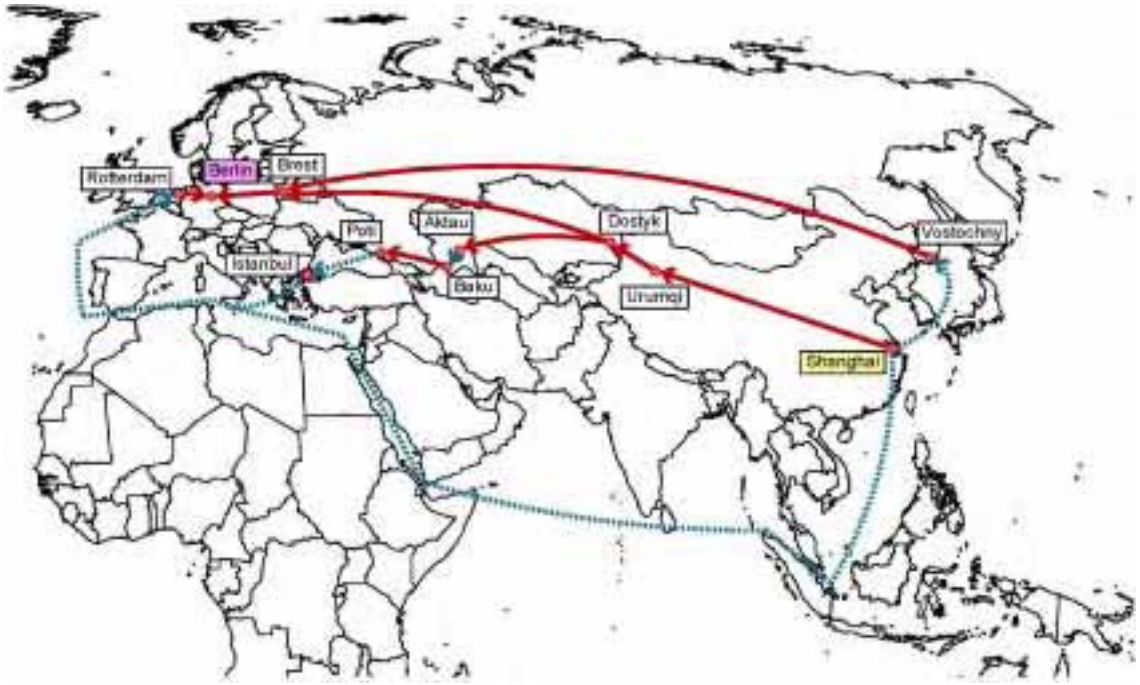


Figure4.2.2.-2 Transport Route: China (Coastal Area) – W. Europe

(1) Transit Time

Total transit time from the China Coastal Area to W. Europe by the All-water Route is 28 days (ocean transport 24 days + land transport 2 days + additional time 3 days).

Total transit time by the Trans-Asian Route is 26 days (land transport 18 days + additional time 8 days) which is shorter than the All-water Route by 2 days.

Total transit time by the Trans-Siberian Route is 22 days (ocean transport 2 days + land transport 13 days + additional time 7 days) which is shorter than the All-Water Route by 6 days and shorter than Trans-Asian Route by 4 days. The TRACECA route needs 42 days to complete the transit.

(2) Additional Time

There is 1 Customs Check Point and 1 Transshipment Point in the All-water Route from the China Coastal Area to Europe. The Trans-Siberian Route involves 3 Customs Check Points and 2 Transshipment Points. The Trans-Asian Route has 4 Customs Check Points and 2 Transshipment Points. The TRACECA Route has 4 Customs Check Points and 6 Transshipment Points.

Table 4.2.2.-4 Comparison of Transit Time (Shanghai-Berlin)

Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Shanghai - Dostyk - Moscow - Brest - Berlin		Shanghai - Vostochny - Moscow - Brest -Berlin		Shanghai - Dostyk - Aktau - Baku - Poti- Berlin		Shanghai - Rotterdam - Berlin	
China Railway	7	Shanghai/Vostochny	2	Shanghai/Dostyk	7	Shanhai/Rotterdam	24
Dostyk/Brest	10	Vostochny/Brest	12	Dostyk/Aktau	6	Rotterdam/Berlin	1
Brest/Berlin	1	Brest/Berlin	1	Aktau/Baku	1		
				Baku - Poti	2		
				Poti - Rotterdam	9		
				Rotterdam - Berlin	1		
Total	18	Total	15	Total	26	Total	25
	4		3		4		1
	2		2		6		1
	8		7		16		3
	26		22		42		28

(3) Transport Cost

Transport cost of the All-water Route between the China Coastal Area and Europe is $4,400. The ocean freight rate fluctuates depending on the market situation.

Transport cost by the Trans-Siberian Route is $4,100, which is at almost similar level to that of the All-water Route.

Transport cost by the Trans-Asian Route is $3,800, which is $600 lower than by the All-water Route and $300 lower than by the Trans-Siberian Route. The TRACECA route costs $8,000.

Table 4.2.2-5 Comparison of Transport Cost (Shanghai-Berlin)

Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Shanghai - Dostyk - Moscow - Brest - Berlin		Shanghai - Vostochny - Moscow - Brest -Berlin		Shanghai - Dostyk - Aktau - Baku - Poti- Berlin		Shanghai - Rotterdam - Berlin	
Shanghai/Dostyk	1,350	Shanghai/Vostochny	1,500	Shanghai/Dostyk	1,350	Shanghai/Rotterdam	3,500
Dostyk/Brest	1,275	Vostochny/Brest	1,550	Dostyk/Aktau	684	Rotterdam/Berlin	720
Brest/Berlin	540	Brest/Berlin	540	Aktau/Baku	720	Other Costs	200
Other Costs	600	Other Costs	500	Baku - Poti	1,700		
				Poti - Rotterdam	1,800		
				Rotterdam - Berlin	720		
				Other Costs	1,000		
Total	3,765	Total	4,090	Total	7,974	Total	4,420

(4) Overall Assessment

On the transport corridor connecting the China Coastal Area to Europe, the Trans-Asian Route has a comparative advantage of transport cost. On the other hand, the Trans-Siberian Route holds a comparative advantage of transit time. But the Trans-Siberian Route has 3 Customs Check Points and Trans-Asian Route has 4 Customs Check Points and there may be a possibility of unexpected delay depending on the work procedure at each point. The TRACECA Route has too many Customs Check and Transshipment Points, which makes this route less competitive among the other alternatives.

Table4.2.2-6 Overall comparison of Corridor (China Coastal Area-W. Europe)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Moscow - Brest - Berlin		Shanghai - Vostochny - Moscow - Brest -Berlin		Shanghai - Dostyk - Aktau - Baku - Poti- Berlin		Shanghai - Rotterdam - Berlin	
Trade Volume (US$ Million)	330,919							
Trade Volume (Million TEU)	7,855							
Distance (km)	Shanghai/Dostyk	4,500	Shanghai/Vostochny	1,785	Shanghai/Dostyk	4,500	Shanhai/Rotterdam	19,552
	Dostyk/Brest	6,377	Vostochny/Brest	10,336	Dostyk/Aktau	3,843	Rotterdam/Berlin	1,200
	Brest/Berlin	900	Brest/Berlin	900	Aktau/Baku	463		
					Baku - Poti	1,340		
					Poti - Rotterdam	7,043		
					Rotterdam - Berlin	1,200		
	Total	11,777	Total	13,021	Total	18,389	Total	20,752
Average Speed (km/day)	China Railway	660	Shanghai/Vostochny	800	Shanghai/Dostyk	660	Shanhai/Rotterdam	800
	Dostyk/Brest	650	Vostochny/Brest	870	Dostyk/Aktau	650	Rotterdam/Berlin	1,000
	Brest/Berlin	1,000	Brest/Berlin	1,000	Aktau/Baku	600		
					Baku - Poti	650		
					Poti - Rotterdam	800		
					Rotterdam - Berlin	1,000		
Transport Time (Days)	China Railway	7	Shanghai/Vostochny	2	Shanghai/Dostyk	7	Shanhai/Rotterdam	24
	Dostyk/Brest	10	Vostochny/Brest	12	Dostyk/Aktau	6	Rotterdam/Berlin	1
	Brest/Berlin	1	Brest/Berlin	1	Aktau/Baku	1		
					Baku - Poti	2		
					Poti - Rotterdam	9		
					Rotterdam - Berlin	1		
	Total	18	Total	15	Total	26	Total	25
Customs Check Points (No.)		4		3		4		1
Transshipment Points (No.)		2		2		6		1
Customs Check and Transshipment (day)		8		7		16		3
Total Transport Time(day)		26		22		42		28
Unit Transport Cost (US $/ Container)	Shanghai/Dostyk	0.289	Shanghai/Vostochny	0.840	Shanghai/Dostyk	0.300	Shanghai/Rotterdam	0.170
	Dostyk/Brest	0.200	Vostochny/Brest	0.150	Dostyk/Aktau	0.178	Rotterdam/Berlin	0.600
	Brest/Berlin	0.600	Brest/Berlin	0.600	Aktau/Baku	0.144		
					Baku - Poti	1.269		
					Poti - Rotterdam	0.256		
					Rotterdam - Berlin	0.600		
Transport Cost (US $/ Container)	Shanghai/Dostyk	1,350	Shanghai/Vostochny	1,500	Shanghai/Dostyk	1,350	Shanghai/Rotterdam	3,500
	Dostyk/Brest	1,275	Vostochny/Brest	1,550	Dostyk/Aktau	684	Rotterdam/Berlin	720
	Brest/Berlin	540	Brest/Berlin	540	Aktau/Baku	720	Other Costs	200
	Other Costs	600	Other Costs	500	Baku - Poti	1,700		
					Poti - Rotterdam	1,800		
					Rotterdam - Berlin	720		
					Other Costs	1,000		
	Total	3,765	Total	4,090	Total	7,974	Total	4,420

3) China (Inland Area) – West Europe

At this moment, the trade volume between China Inland Area and West Europe is not so striking in comparison with China Coastal Area. Present trade volume is less than 2% of that from China Coastal Area. However, this area is situated adjacent to Kazakhstan and has good potential to grow as a cargo generating area for the Trans-Kazakhstan Route. It is important to explore the marketing plan focusing on China Inland Area or more precisely, the Xingjian Uygur Autonomous Region.

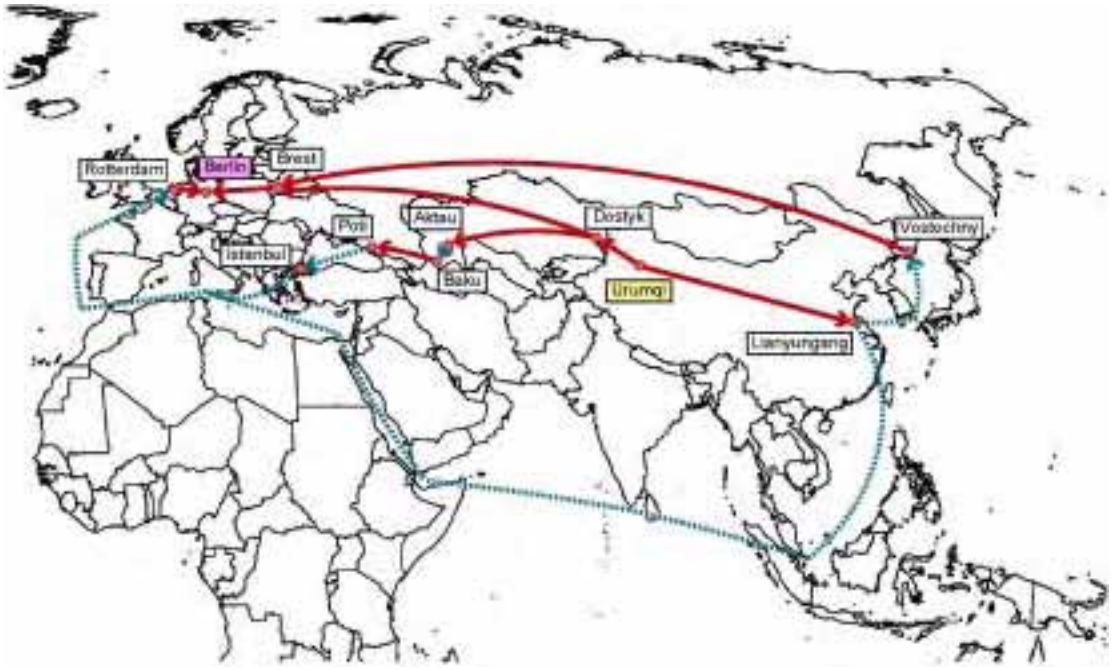


Figure 4.2.2-3 Transport Route: China (Inland Area) – W. Europe

(1) Transit Time

Currently, the most prevailing transport route to W. Europe from China Inland Area is going by rail down to China Coastal Area to get a ship for Europe. Total transit time through this all-water route is 38 days (ocean transport 25 days + land transport 8 days + additional time 5 days).

Total transit time by the Trans-Asian Route is 20 days (land transport 12 days + additional time 8 days) which is shorter than the all-water route by 18 days.

Total transit time by the TRACECA Route is 38 days, which is 18 days longer than the Trans-Asian Route.

(2) Additional Time

There are 4 Customs Check Points and 2 Transshipment Points in Trans-Asian Route. In order to take full advantage of the shortest traveling distance, the key element is to achieve rapid transit through these numerous points. The All-Water Route involves only 1 Customs Check Point and 2 Transshipment Points. The Trans-Siberian Route has 3 Customs Check Points and 2 Transshipment Points. The TRACECA Route has 4 Customs Check Points and 6 Transshipment Points.

Table 4.2.2-7 Comparison of Transit Time (Urumqi-Berlin)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Mocow - Berlin		Urumqi - Manzhhouli - Moscow - Berlin		Urmqi - Dostyk - Aktau - Baku - Poti- Berlin		Urumqi - Lianyungan - Rotterdam - Berlin	
Transport Time (Days)	Urumqi/Dostyk	1	Urumqi /Manzhhouli	9	Urumqi/Dostyk	1	Urumqi /Lianyungan	6
	Dostyk/Brest	10	Manzhouli/Brest	9	Dostyk/Aktau	6	Lianyungan/Rotterdar	25
	Brest / Berlin	1	Brest/ Berlin	1	Aktau/Baku	1	Rotterdam/Berlin	2
					Baku - Poti	3		
					Poti - Rotterdam	9		
					Rotterdam - Berlin	2		
	Total	12	Total	19	Total	22	Total	33
Customs Check Points (No.)		4		3		4		1
Transhipment Points (No.)		2		2		6		2
Customs Check and Transshipment (day)		8		7		16		5
Total Transport Time(day)		20		26		38		38

(3) Transport Cost

Transport cost of the All-water Route between China Inland Area and Europe is $7,500. The ocean freight rate fluctuates depending on the market situation.

Transport cost by the Trans-Asian Route is $2,600, which is almost one third of the All-water Route cost.

The TRACECA route costs $8,000 as the total transport cost.

Table 4.2.2-8 Comparison of Transport Cost (Urumqi-Berlin)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Mocow - Berlin		Urumqi - Manzhhouli - Moscow - Berlin		Urmqi - Dostyk - Aktau - Baku - Poti- Berlin		Urumqi - Lianyungan - Rotterdam - Berlin	
Transport Cost (US $/ Container)	Urumqi/Dostyk	143	Urumqi /Manzhhouli	1,552	Urumqi/Dostyk	149	Urumqi /Lianyungan	2,500
	Dostyk/Brest	1,275	Manzhouli/Brest	1,311	Dostyk/Aktau	684	Lianyungan/Rotterdar	4,000
	Brest / Berlin	540	Brest/ Berlin	540	Aktau/Baku	720	Rotterdam/Berlin	720
	Other Costs	600	Other Costs	500	Baku - Poti	1,700	Other Costs	300
					Poti - Rotterdam	1,800		
					Rotterdam - Berlin	720		
					Other Costs	1,000		
	Total	2,558	Total	3,903	Total	6,773	Total	7,520

(4) Overall Assessment

On the transport corridor connecting China Inland Area to W. Europe, the Trans-Asian Route has an overwhelming advantage of both transit time and transport cost over the other competing routes. However, the route has 4 Customs Check Points and 2 Transshipment Points. Depending on the arrangements at those points, there may be additional delays.

Table 4.2.2-9 Overall comparison of Corridor (China Inland Area – W. Europe)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Mocow - Berlin		Urumqi - Manzhhouli - Moscow - Berlin		Urmqi - Dostyk - Aktau - Baku - Poti- Berlin		Urumqi - Lianyungan - Rotterdam - Berlin	
Trade Volume (US$ Million)	4,053							
Trade Volume (Thousand TEU)	1,143							
Distance (km)	Urumqi/Dostyk	496	Urumqi /Manzhhouli	5,369	Urumqi/Dostyk	496	Urumqi /Lianyungan	3,671
	Dostyk/Brest	6,377	Manzhouli/Brest	7,713	Dostyk/Aktau	3,843	Lianyungan/Rotterdar	19,789
	Brest / Berlin	900	Brest/ Berlin	900	Aktau/Baku	463	Rotterdam/Berlin	1,200
					Baku - Poti	1,340		
					Poti - Rotterdam	7,043		
					Rotterdam - Berlin	1,200		
	Total	7,773	Total	13,982	Total	14,385	Total	24,660
Average Speed (km/day)	Urumqi/Dostyk	660	Urumqi /Manzhhouli	660	Urumqi/Dostyk	660	Urumqi /Lianyungan	660
	Dostyk/Brest	650	Manzhouli/Brest	870	Dostyk/Aktau	650	Lianyungan/Rotterdar	800
	Brest / Berlin	1,000	Brest/ Berlin	1,000	Aktau/Baku	600	Rotterdam/Berlin	1,000
					Baku - Poti	650		
					Poti - Rotterdam	800		
					Rotterdam - Berlin	1,000		
Transport Time (Days)	Urumqi/Dostyk	1	Urumqi /Manzhhouli	9	Urumqi/Dostyk	1	Urumqi /Lianyungan	6
	Dostyk/Brest	10	Manzhouli/Brest	9	Dostyk/Aktau	6	Lianyungan/Rotterdar	25
	Brest / Berlin	1	Brest/ Berlin	1	Aktau/Baku	1	Rotterdam/Berlin	2
					Baku - Poti	3		
					Poti - Rotterdam	9		
					Rotterdam - Berlin	2		
	Total	12	Total	19	Total	22	Total	33
Customs Check Points (No.)	4		3		4		1	
Transhipment Points (No.)	2		2		6		2	
Customs Check and Transshipment (day)	8		7		16		5	
Total Transport Time(day)	20		26		38		38	
Unit Transport Cost (US $/ Container)	Urumqi/Dostyk	0.289	Urumqi /Manzhhouli	0.289	Urumqi/Dostyk	0.289	Urumqi /Lianyungan	0.289
	Dostyk/Brest	0.200	Manzhouli/Brest	0.170	Dostyk/Aktau	0.328	Lianyungan/Rotterdar	0.170
	Brest / Berlin	0.600	Brest/ Berlin	0.600	Aktau/Baku	0.144	Rotterdam/Berlin	0.600
					Baku - Poti	0.537		
					Poti - Rotterdam	0.256		
					Rotterdam - Berlin	0.600		
Transport Cost (US $/ Container)	Urumqi/Dostyk	143	Urumqi /Manzhhouli	1,552	Urumqi/Dostyk	149	Urumqi /Lianyungan	2,500
	Dostyk/Brest	1,275	Manzhouli/Brest	1,311	Dostyk/Aktau	684	Lianyungan/Rotterdar	4,000
	Brest / Berlin	540	Brest/ Berlin	540	Aktau/Baku	720	Rotterdam/Berlin	720
	Other Costs	600	Other Costs	500	Baku - Poti	1,700	Other Costs	300
					Poti - Rotterdam	1,800		
					Rotterdam - Berlin	720		
					Other Costs	1,000		
	Total	2,559	Total	3,903	Total	6,773	Total	7,520

4) Japan/Korea – Eastern Europe

The study looks at 4 representative transport routes for Japan/Korea-Eastern Europe (Warsaw). The TRACECA Route and the All-water Route approach to European continent via Odessa through the Black Sea.

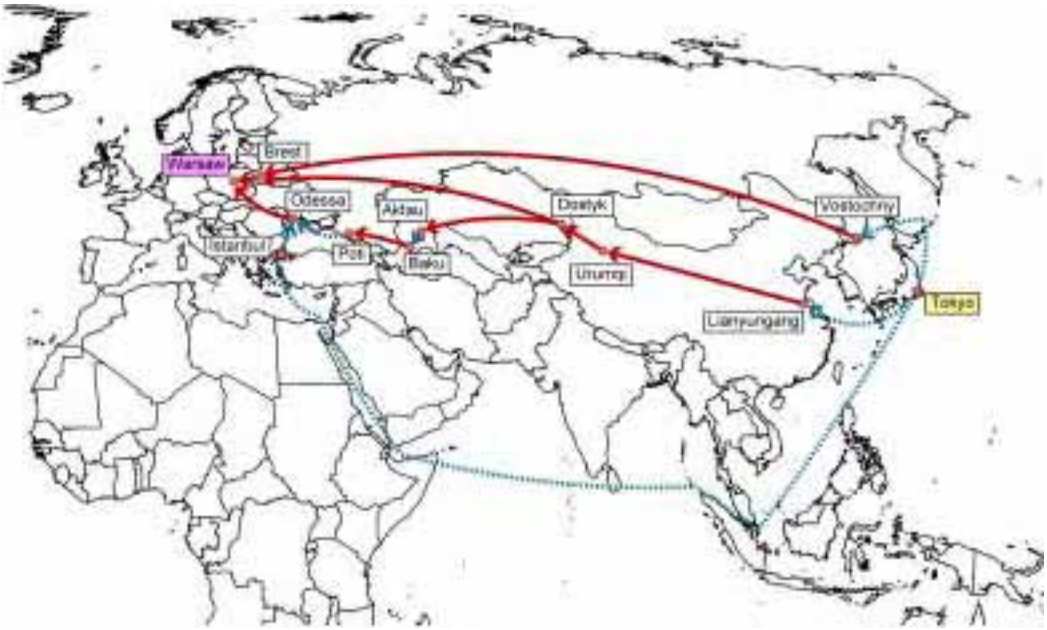


Figure 4.2.2-4 Transport Route: Japan/Korea – E. Europe

(1) Transit Time

Total transit time from Tokyo to Warsaw by the All-water Route is 34 days (ocean transport 22 days + land transport 3 days + additional time 9 days).

Total transit time by the Trans-Asian Route is 31 days (ocean transport 3 days + land transport 17 days + additional time 11 days) which is 8 days longer than the Trans-Siberian Route.

Total transit time by the Trans-Siberian Route is 23 days (ocean transport 3 days + land transport 13 days + additional time 7 days) which provides the shortest transit time among the 4 routes.

The TRACECA route needs 45 days to complete the transit.

(2) Additional Time

There are 3 Customs Check Points and 3 Transshipment Points in the All-water Route from Japan/Korea to Eastern Europe via the Black Sea. The TRACECA Route has 6 Customs Check Points and 7 Transshipment Points. The Trans-Siberian Route involves 3 Customs Check Points and 2 Transshipment Points. The Trans-Asian Route has 5 Customs Check Points and 3 Transshipment Points.

Table 4.2.2-10 Comparison of Transit Time (Tokyo-Warsaw)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Brest - Warsaw		Tokyo(Y'hama) - Vostochny - Brest - Warsaw		Tokyo - Lianyungang - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Tokyo - Odessa - Warsaw	
Transport Time (Days)	Tokyo/Lianyungang	3	Tokyo(Y'hama)/Vostoch	3	Tokyo/Lianyungang	3	Tokyo/Odessa	22
	Lianyungang/Dostyk	6	Vostochny/Brest	12	Lianyungang/Dostyk	7	Odessa/Warsaw	3
	Dostyk/Brest	10	Brest/Waesaw	1	Dostyk/Aktau	6		
	Brest/Warsaw	1			Aktau/Baku	1		
					Baku /Poti	3		
					Poti/Odessa	2		
					Odessa /Warsaw	3		
	Total	20	Total	16	Total	25	Total	25
Customs Check Points (No.)		5		3		6		3
Transhipment Points (No.)		3		2		7		3
Customs Check and Transshipment (day)		11		7		20		9
Transport Time(day)		31		23		45		34

(3) Transport Cost

Transport cost of the All-water Route between Japan/Korea and Eastern Europe is $5,000. The ocean freight rate shows upward trends and downward trends depending on the market situation.

Transport cost by the Trans-Siberian Route is $4,670 which is lower than the All-water Route by $370.

Transport cost by the Trans-Asian Route is $4,305, which is $365 lower than by the Trans-Siberian Route and $700 lower than by the All-water Route. The TRACECA route costs $8,100 for full transit.

Table 4.2.2-11 Comparison of Transport Cost (Tokyo-Warsaw)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Brest - Warsaw		Tokyo(Y'hama) - Vostochny - Brest - Warsaw		Tokyo - Lianyungang - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Tokyo - Odessa - Warsaw	
Transport Cost (US $/ Container)	Tokyo/Lianyungang	850	Tokyo(Y'hama)/Vostoch	2,500	Tokyo/Lianyungang	850	Tokyo/Odessa	3,700
	Lianyungang/Dostyk	1,260	Vostochny/Brest	1,550	Lianyungang/Dostyk	1,260	Odessa/warsaw	700
	Dostyk/Brest	1,275	Brest/Warsaw	120	Dostyk/Aktau	684	Other Costs	600
	Brest/Warsaw	120	Other Costs	500	Aktau/Baku	720		
	Other Costs	800			Baku /Poti	1,700		
					Poti/Odessa	900		
					Odessa /Warsaw	700		
					Other Costs	1,300		
	Total	4,305	Total	4,670	Total	8,114	Total	5,000

(4) Overall Assessment

On the transport corridor connecting Japan/Korea to Eastern Europe, the Trans-Asian Route possesses a comparative advantage on transport cost. For transit time, the comparative advantage goes to the Trans-Siberian Route. As the Trans-Siberian Route has only 3 Customs Check Points and 2 Transshipment Points, it will help to keep transit time shorter compared with other routes. The Trans-Asia Route gives a fairly competitive transport cost but it has 5 Customs Check Points and 3 Transshipment Points and it may cause unstable transit time.

Table 4.2.2-12 Overall Comparison of Corridor (Japan/Korea-E. Europe)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Brest - Warsaw		Tokyo(Y'hama) - Vostochny - Brest - Warsaw		Tokyo - Lianyungang - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Tokyo - Odessa - Warsaw	
Trade Volume (US$ Million)	12,991							
Trade Volume (Million TEU)	0.096							
Distance (km)	Tokyo/Lianyungang	2,183	Tokyo(Y'hama)/Vostoch	1,695	Tokyo/Lianyungang	2,183	Tokyo/Odessa	16,897
	Lianyungang/Dostyk	4,500	Vostochny/Brest	10,336	Lianyungang/Dostyk	4,500	Odessa/Warsaw	1,165
	Dostyk/Brest	6,377	Brest/Waesaw	200	Dostyk/Aktau	3,843		
	Brest/Warsaw	200			Aktau/Baku	463		
					Baku /Poti	1,340		
					Poti/Odessa	1,019		
					Odessa /Warsaw	1,165		
	Total	13,260	Total	12,231	Total	14,513	Total	18,062
Average Speed (km/day)	Tokyo/Lianyungang	800	Tokyo(Y'hama)/Vostoch	800	Tokyo/Lianyungang	800	Tokyo/Odessa	800
	Lianyungang/Dostyk	660	Vostochny/Brest	870	Lianyungang/Dostyk	660	Odessa/Warsaw	400
	Dostyk/Brest	650	Brest/Waesaw	200	Dostyk/Aktau	650		
	Brest/Warsaw	200			Aktau/Baku	600		
					Baku /Poti	650		
					Poti/Odessa	600		
					Odessa /Warsaw	400		
Transport Time (Days)	Tokyo/Lianyungang	3	Tokyo(Y'hama)/Vostoch	3	Tokyo/Lianyungang	3	Tokyo/Odessa	22
	Lianyungang/Dostyk	6	Vostochny/Brest	12	Lianyungang/Dostyk	7	Odessa/Warsaw	3
	Dostyk/Brest	10	Brest/Waesaw	1	Dostyk/Aktau	6		
	Brest/Warsaw	1			Aktau/Baku	1		
					Baku /Poti	3		
					Poti/Odessa	2		
					Odessa /Warsaw	3		
	Total	20	Total	16	Total	25	Total	25
Customs Check Points (No.)		5		3		6		3
Transhipment Points (No.)		3		2		7		3
Customs Check and Transshipment (day)		11		7		20		9
Transport Time(day)		31		23		45		34
Unit Transport Cost (US $/ Container)	Tokyo/Lianyungang	0.389	Tokyo(Y'hama)/Vostoch	1.470	Tokyo/Lianyungang	0.389	Tokyo/Odessa	0.219
	Lianyungang/Dostyk	0.280	Vostochny/Brest	0.150	Lianyungang/Dostyk	0.280	Odessa/Warsaw	0.601
	Dostyk/Brest	0.200	Brest/Warsaw	0.600	Dostyk/Aktau	0.178		
	Brest/Warsaw	0.600			Aktau/Baku	1.555		
					Baku /Poti	1.269		
					Poti/Odessa	0.883		
					Odessa /Warsaw	0.601		
Transport Cost (US $/ Container)	Tokyo/Lianyungang	850	Tokyo(Y'hama)/Vostoch	2,500	Tokyo/Lianyungang	850	Tokyo/Odessa	3,700
	Lianyungang/Dostyk	1,260	Vostochny/Brest	1,550	Lianyungang/Dostyk	1,260	Odessa/warsaw	700
	Dostyk/Brest	1,275	Brest/Warsaw	120	Dostyk/Aktau	684	Other Costs	600
	Brest/Warsaw	120	Other Costs	500	Aktau/Baku	720		
	Other Costs	800			Baku /Poti	1,700		
					Poti/Odessa	900		
					Odessa /Warsaw	700		
					Other Costs	1,300		
	Total	4,305	Total	4,670	Total	8,114	Total	5,000

5) China (Coastal Area)-Eastern Europe

The study is made on 4 representative transport routes for China Coastal Area-Eastern Europe (Warsaw).

They are the Trans-Asian Route, the Trans-Siberian Route, the TRACECA Route and the All-water Route.

The TRACECA Route and the All-water Route approach the European continent via Odessa through the Black Sea.

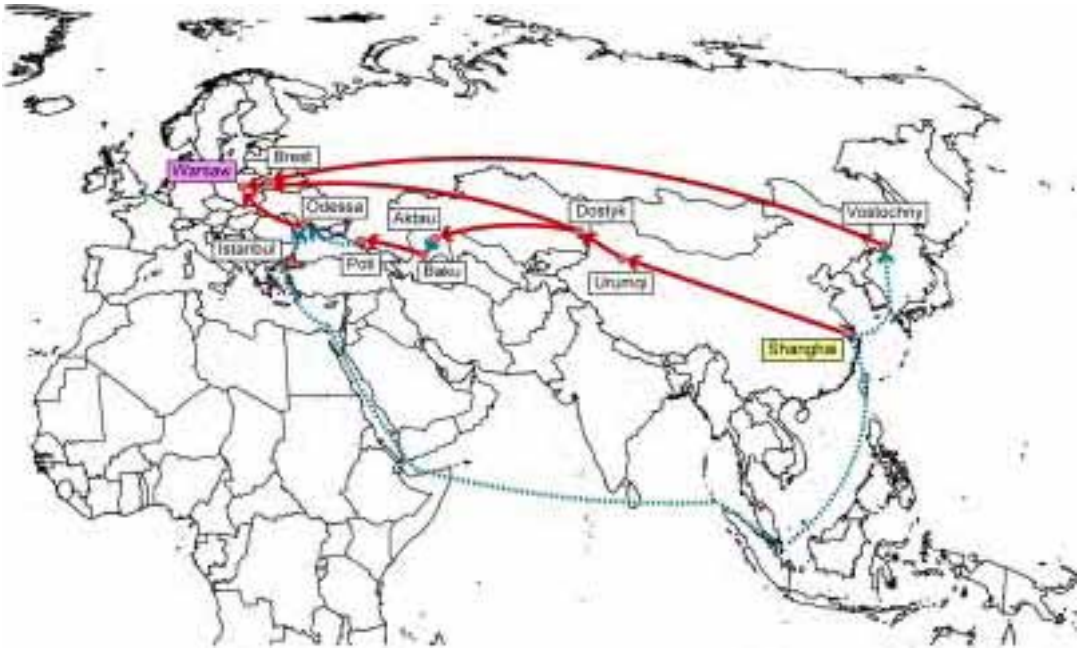


Figure 4.2.2-5 Transport Route: China (Coastal Area)-E. Europe

(1) Transit Time

Total transit time from China Coastal Area to Eastern Europe by the All-water Route is 32 days (ocean transport 20 days + land transport 3 days + additional time 9 days).

Total transit time by the Trans-Asian Route is 26 days (land transport 18 days + additional time 8 days), which is shorter than that of the All-water Route by 6 days.

Total transit time by the Trans-Siberian Route is 23 days (ocean transport 3 days + land transport 13 days + additional time 7 days), which is shorter than the All-Water Route time by 9 days and the Trans-Asian Route time by 3 days. The TRACECA route needs 39 days to complete the transit.

(2) Additional Time

There are 3 Customs Check Points and 3 Transshipment Points on the All-water Route from China Coastal Area to East Europe. The Trans-Siberian Route involves 3 Customs Check Points and 2 Transshipment Points. The Trans-Asian Route has 4 Customs Check Points and 2 Transshipment Points. The TRACECA Route has 5 Customs Check Points and 6 Transshipment Points.

Table 4.2.2-13 Comparison of Transit Time (Shanghai-Warsaw)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Brest - Warsaw		Shanghai - Vostochny - Brest - Warsaw		Shanghai - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Shanghai - Odessa - Warsaw	
Transport Time (Days)	Shanghai/Dostyk	7	Shanghai/Vostochny	3	Shanghai/Dostyk	7	Shanghai /Odessa	20
	Dostyk/Brest	10	Vostochny/Brest	12	Dostyk/Aktau	6	Odessa/Warsaw	3
	Brest/Warsaw	1	Brest/Waesaw	1	Aktau/Baku	1		
					Baku /Poti	3		
					Poti/dessa	2		
					Odessa /Warsaw	3		
	Total	18	Total	16	Total	22	Total	23
Customs Check Points (No.)		4		3		5		3
Transhipment Points (No.)		2		2		6		3
Customs Check and Transshipment (day)		8		7		17		9
Transport Time(day)		26		23		39		32

(3) Transport Cost

Transport cost of the All-water Route between China Coastal Area and Eastern Europe is $5,000. The ocean freight rate fluctuates depending on the market situation.

Transport cost by the Trans-Siberian Route is $3,670. Transport cost by the Trans-Asian Route is $3,345, which is $1,650 lower than the All-water Route cost and $320 lower than the Trans-Siberian Route cost. The TRACECA route calls for $7,150, which is double the amount of the Trans-Asian Route.

Table 4.2.2-14 Comparison of Transport Cost (Shanghai-Warsaw)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Brest - Warsaw		Shanghai - Vostochny - Brest - Warsaw		Shanghai - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Shanghai - Odessa - Warsaw	
Transport Cost (US $/ Container)	Shanghai/Dostyk	1,350	Shanghai/Vostochny	1,500	Shanghai/Dostyk	1,350	Shanghai /Odessa	3,700
	Dostyk/Brest	1,275	Vostochny/Brest	1,550	Dostyk/Aktau	684	Odessa/Warsaw	700
	Brest/Warsaw	120	Brest/Warsaw	120	Aktau/Baku	720	Other Costs	600
	Other Costs	600	Other Costs	500	Baku /Poti	1,700		
					Poti/Odessa	900		
					Odessa /Warsaw	700		
					Other Costs	1,100		
	Total	3,345	Total	3,670	Total	7,154	Total	5,000

(4) Overall Assessment

On the transport corridor connecting China Coastal Area to Eastern Europe, the Trans-Asian Route has a comparative advantage of transport cost. On the other hand, the Trans-Siberian Route holds a comparative advantage of transit time. But the difference with the Trans-Asian Route is only 2 days. The TRACECA Route shows the longest transit time and the highest transport cost among the 4 transport routes.

Table 4.2.2-15 Overall Comparison of Corridor (China Coastal Area-E. Europe)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Brest - Warsaw		Shanghai - Vostochny - Brest - Warsaw		Shanghai - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Shanghai - Odessa - Warsaw	
Trade Volume (US$ Million)	20,825							
Trade Volume (Million TEU)	0.502							
Distance (km)	Shanghai/Dostyk	4,500	Shanghai/Vostochny	1,785	Shanghai/Dostyk	4,500	Shanghai /Odessa	15,536
	Dostyk/Brest	6,377	Vostochny/Brest	10,336	Dostyk/Aktau	3,843	Odessa/Warsaw	1,165
	Brest/Warsaw	200	Brest/Waesaw	200	Aktau/Baku	463		
					Baku /Poti	1,340		
					Poti/Odessa	1,019		
					Odessa /Warsaw	1,165		
	Total	11,077	Total	12,321	Total	12,330	Total	16,701
Average Speed (km/day)	Shanghai/Dostyk	660	Shanghai/Vostochny	800	Shanghai/Dostyk	660	Shanghai /Odessa	800
	Dostyk/Brest	650	Vostochny/Brest	870	Dostyk/Aktau	650	Odessa/Warsaw	400
	Brest/Warsaw	200	Brest/Waesaw	200	Aktau/Baku	600		
					Baku /Poti	650		
					Poti/dessa	600		
					Odessa /Warsaw	400		
Transport Time (Days)	Shanghai/Dostyk	7	Shanghai/Vostochny	3	Shanghai/Dostyk	7	Shanghai /Odessa	20
	Dostyk/Brest	10	Vostochny/Brest	12	Dostyk/Aktau	6	Odessa/Warsaw	3
	Brest/Warsaw	1	Brest/Waesaw	1	Aktau/Baku	1		
					Baku /Poti	3		
					Poti/dessa	2		
					Odessa /Warsaw	3		
	Total	18	Total	16	Total	22	Total	23
Customs Check Points (No.)		4		3		5		3
Transhipment Points (No.)		2		2		6		3
Customs Check and Transshipment (day)		8		7		17		9
Transport Time(day)		26		23		39		32
Unit Transport Cost (US $/ Container)	Shanghai/Dostyk	0.300	Shanghai/Vostochny	0.840	Shanghai/Dostyk	0.300	Shanghai /Odessa	0.238
	Dostyk/Brest	0.200	Vostochny/Brest	0.150	Dostyk/Aktau	0.178	Odessa/Warsaw	0.601
	Brest/Warsaw	0.600	Brest/Warsaw	0.600	Aktau/Baku	1.555		
					Baku /Poti	1.269		
					Poti/dessa	0.883		
					Odessa /Warsaw	0.601		
Transport Cost (US $/ Container)	Shanghai/Dostyk	1,350	Shanghai/Vostochny	1,500	Shanghai/Dostyk	1,350	Shanghai /Odessa	3,700
	Dostyk/Brest	1,275	Vostochny/Brest	1,550	Dostyk/Aktau	684	Odessa/Warsaw	700
	Brest/Warsaw	120	Brest/Warsaw	120	Aktau/Baku	720	Other Costs	600
	Other Costs	600	Other Costs	500	Baku /Poti	1,700		
					Poti/Odessa	900		
					Odessa /Warsaw	700		
					Other Costs	1,100		
	Total	3,345	Total	3,670	Total	7,154	Total	5,000

6) China (Inland Area) – Eastern Europe

At this moment, the trade volume between China Inland Area and Eastern Europe is not so striking in comparison with China Coastal Area. Present trade volume is less than 2% of that from China Coastal Area. However, this area is situated adjacent to Kazakhstan and has good potential to grow as a cargo generating area for the Trans-Kazakhstan Route. It is important to explore a marketing plan focusing on this area.

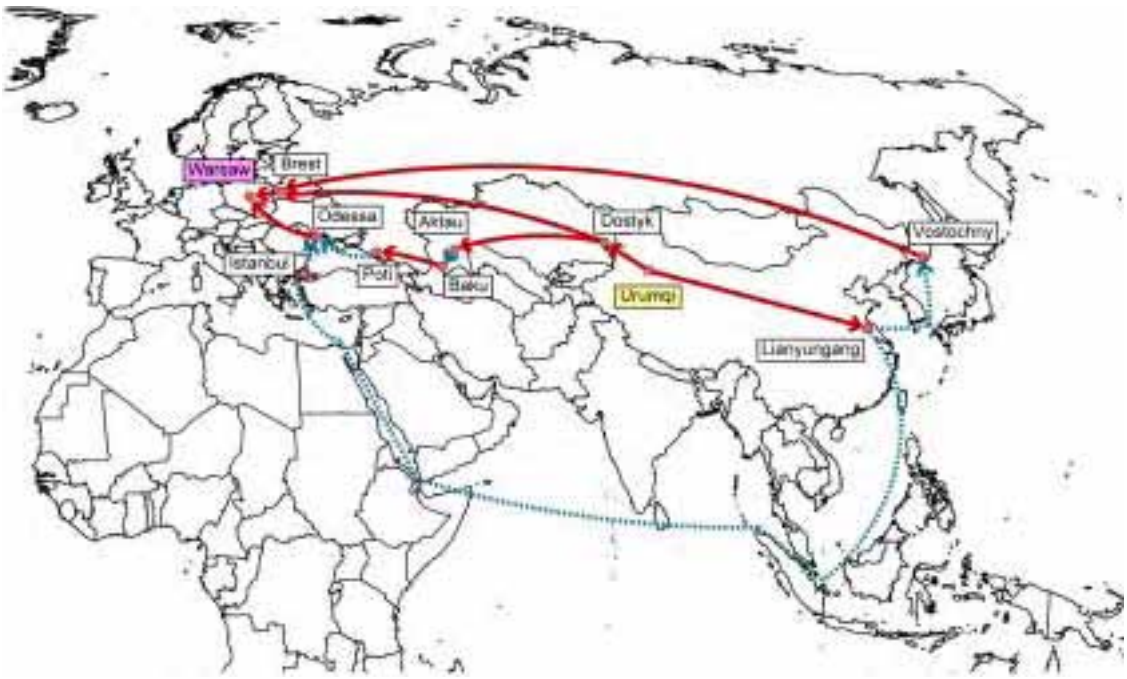


Figure 4.2.2-6 Transport Route: China (Inland Area) – E. Europe

(1) Transit Time

Total transit time by the Trans-Asian Route is 20 days (land transport 12 days + additional time 8 days) which has an overwhelming advantage among the 4 routes. Total transit time by the TRACECA Route is 33 days, which is 13 days longer than the Trans-Asian Route time and 7 days longer than Trans-Siberian Route time.

Total transit time through the All-water Route is 40 days (ocean transport 20 days + land transport 9 days + additional time 11 days).

(2) Additional Time

There are 4 Customs Check Points and 2 Transshipment Points on the Trans-Asian Route. In order to take full advantage of the shortest traveling distance, the key element is to achieve rapid transit through these numerous points. The All-Water Route involves 3 Customs Check Points and 4 Transshipment Points. The Trans-Siberian Route has 3 Customs Check Points and 3 Transshipment Points. The TRACECA Route has 5 Customs Check Points and 6 Transshipment Points, which makes

this route less advantageous.

Table 4.2.2-16 Comparison of Transit Time (Urumqi-Warsaw)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Brest - Warsaw		Urumqi - Manzhouli - Moscow - Brest - Warsaw		Urumqi - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Urumqi - Lianyungang - Odessa - Warsaw	
Transport Time (Days)	Urumqi/Dostyk	1	Urumqi/Manzhouli	9	Urumqi/Dostyk	1	Urumqi/Lianyungang	6
	Dostyk/Brest	10	Manzhouli/Brest	9	Dostyk/Aktau	6	Lianyungang/Odessa	20
	Brest/Warsaw	1	Brest/Waesaw	1	Aktau/Baku	1	Odessa/Warsaw	3
					Baku /Poti	3		
					Poti/Odessa	2		
					Odessa /Warsaw	3		
	Total	12	Total	19	Total	16	Total	29
Customs Check Points (No.)		4		3		5		3
Transhipment Points (No.)		2		2		6		4
Customs Check and Transshipment (day)		8		7		17		11
Transport Time(day)		20		26		33		40

(3) Transport Cost

Transport cost of the All-water Route between China Inland Area and Eastern Europe is $8,100. The ocean freight rate fluctuates depending on the market situation.

Transport cost by the Trans-Asian Route is $2,150, which is less than one third of the All-water Route cost.

The TRACECA route costs $5,950 as the total transport cost.

Table 4.2.2-17 Comparison of Transport Cost (Urumqi-Warsaw)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Brest - Warsaw		Urumqi - Manzhouli - Moscow - Brest - Warsaw		Urumqi - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Urumqi - Lianyungang - Odessa - Warsaw	
Transport Cost (US $/ Container)	Urumqi/Dostyk	149	Urumqi/Manzhouli	1,552	Urumqi/Dostyk	149	Urumqi/Lianyungang	2,500
	Dostyk/Brest	1,275	Manzhouli/Brest	1,311	Dostyk/Aktau	684	Lianyungang/Odessa	4,200
	Brest/Warsaw	120	Brest/Warsaw	120	Aktau/Baku	720	Odessa/Warsaw	700
	Other Costs	600	Other Costs	500	Baku /Poti	1,700	Other Costs	700
					Poti/Odessa	900		
					Odessa /Warsaw	700		
					Other Costs	1,100		
	Total	2,144	Total	3,483	Total	5,953	Total	8,100

(4) Overall Assessment

On the transport corridor connecting China Inland Area to Eastern Europe, the Trans-Asian Route has an overwhelming advantage of both transit time and transport cost over the other competing routes. However, the route has 4 Customs Check Points and 2 Transshipment Points. Depending on the arrangement at those points, it may cause additional delay. The TRACECA Route involves 6 transshipments, which makes this routing less competitive.

Table 4.2.2-18 Overall Comparison of Corridor (China Inland Area – E. Europe)

	Trans-Asian Route		Trans-Siberian Route		TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Brest - Warsaw		Urumqi - Manzhouli - Moscow - Brest - Warsaw		Urumqi - Dostyk - Aktau - Baku - Poti- Odessa - Warsaw		Urumqi - Lianyungang - Odessa - Warsaw	
Trade Volume (US$ Million)	281							
Trade Volume (Million TEU)	0.007							
Distance (km)	Urumqi/Dostyk	496	Urumqi/Manzhouli	5,369	Urumqi/Dostyk	496	Urumqi/Lianyungang	3,671
	Dostyk/Brest	6,377	Manzhouli/Brest	7,713	Dostyk/Aktau	3,843	Lianyungang/Odessa	15,773
	Brest/Warsaw	200	Brest/Waesaw	200	Aktau/Baku	463	Odessa/Warsaw	1,165
					Baku /Poti	1,340		
					Poti/Odessa	1,019		
					Odessa /Warsaw	1,165		
	Total	7,073	Total	13,282	Total	8,326	Total	20,609
Average Speed (km/day)	Urumqi/Dostyk	660	Urumqi/Manzhouli	660	Urumqi/Dostyk	660	Urumqi/Lianyungang	660
	Dostyk/Brest	650	Manzhouli/Brest	870	Dostyk/Aktau	650	Lianyungang/Odessa	800
	Brest/Warsaw	200	Brest/Waesaw	200	Aktau/Baku	600	Odessa/Warsaw	400
					Baku /Poti	650		
					Poti/Odessa	600		
					Odessa /Warsaw	400		
Transport Time (Days)	Urumqi/Dostyk	1	Urumqi/Manzhouli	9	Urumqi/Dostyk	1	Urumqi/Lianyungang	6
	Dostyk/Brest	10	Manzhouli/Brest	9	Dostyk/Aktau	6	Lianyungang/Odessa	20
	Brest/Warsaw	1	Brest/Warsaw	1	Aktau/Baku	1	Odessa/Warsaw	3
					Baku /Poti	3		
					Poti/Odessa	2		
					Odessa /Warsaw	3		
	Total	12	Total	19	Total	16	Total	29
Customs Check Points (No.)		4		3		5		3
Transhipment Points (No.)		2		2		6		4
Customs Check and Transshipment (day)		8		7		17		11
Transport Time(day)		20		26		33		40
Unit Transport Cost (US $/ Container)	Urumqi/Dostyk	0.300	Urumqi/Manzhouli	0.289	Urumqi/Dostyk	0.300	Urumqi/Lianyungang	0.681
	Dostyk/Brest	0.200	Manzhouli/Brest	0.170	Dostyk/Aktau	0.178	Lianyungang/Odessa	0.266
	Brest/Warsaw	0.600	Brest/Warsaw	0.600	Aktau/Baku	1.555	Odessa/Warsaw	0.601
					Baku /Poti	1.269		
					Poti/Odessa	0.883		
					Odessa /Warsaw	0.601		
Transport Cost (US $/ Container)	Urumqi/Dostyk	149	Urumqi/Manzhouli	1,552	Urumqi/Dostyk	149	Urumqi/Lianyungang	2,500
	Dostyk/Brest	1,275	Manzhouli/Brest	1,311	Dostyk/Aktau	684	Lianyungang/Odessa	4,200
	Brest/Warsaw	120	Brest/Warsaw	120	Aktau/Baku	720	Odessa/Warsaw	700
	Other Costs	600	Other Costs	500	Baku /Poti	1,700	Other Costs	700
					Poti/Odessa	900		
					Odessa /Warsaw	700		
					Other Costs	1,100		
	Total	2,144	Total	3,483	Total	5,953	Total	8,100

7) Japan/Korea – Russia

There are 3 major transport routes for the Japan/Korea-Russia Corridor. They are the Trans-Siberian Route connecting the areas by the Trans-Siberia Railway, the Trans-Asian Route through China and Kazakhstan and the All-water Route by ocean transportation.

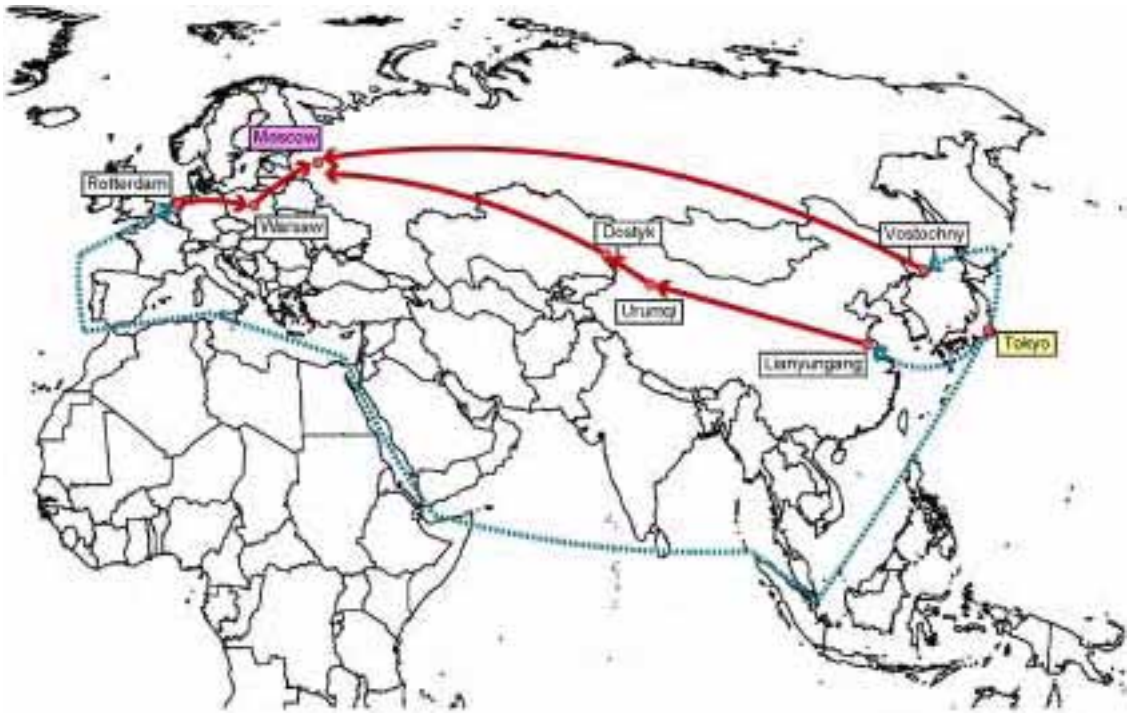


Figure 4.2.2-7 Transport Route: Japan/Korea-Russia

(1) Transit Time

Total transit time from Japan (Tokyo) to Russia (Moscow) by the Trans-Siberian Route is 17 days (ocean transport 3 days + land transport 11 days + additional time 3 days).

Total transit time by the Trans-Asian Route is 24 days (ocean transport 3 days + land transport 14 days + additional time 7 days), which is longer than the Trans-Siberian Route time by 7 days.

The All-water Route needs 39 days for the entire journey (ocean transport 28 days +land transport 4 days + additional time 7 days), which is 15 days longer than the Trans-Asian Route and 22 days longer than the Trans- Siberian Route.

(2) Additional Time

There is only 1 Customs Check Point and 1 Transshipment Point on the Trans-Siberian Route. The Trans-Asian Route involves 3 Customs Check Points and 2 Transshipment Points. The All-water Route has 3 Customs Check Points and 2 Transshipment Points.

Table 4.2.2-19 Comparison of Transit Time (Tokyo-Moscow)

	Trans Siberian Route		Trans-Asian Route		All Water Route	
Route	Vostochny/Moscow		Lianyungang/Dostyk Dostyk/Moscow		Rotterdam/Warsawa Warsaw/Moscow	
	Tokyo(Y'hama)/Vostochny		Tokyo/Lianyungang		Tokyo/Rotterdam	
Transport Time (Days)	Russian railway	11	Lianyungang/Dostyk Dostyk/Moscow	7 7	Rotterdam/Warsawa Warsaw/Moscow	2 2
	Tokyo(Y'hama)/Vosto	3	Tokyo/Lianyungang	3	Tokyo/Rotterdam	28
	Total	14	Total	17	Total	32
Customs Check Points (No.)		1		3		3
Transhipment Points (No.)		1		2		2
Customs Check and Transshipment (day)		3		7		7
Transport Time(day)		17		24		39

(3) Transport Cost

Transport cost of theTrans-Siberian Route between Japan (Tokyo) and Russia (Moscow) is $4,000. Transport cost by the Trans-Asian Route is $3,700. The All-water Route costs $6,700 for ocean freight and rail freight (European main port to Moscow).

Table 4.2.2-20 Comparison of Transport Cost (Tokyo-Moscow)

	Trans Siberian Route		Trans-Asian Route		All Water Route	
Route	Vostochny/Moscow		Lianyungang/Dostyk Dostyk/Moscow		Rotterdam/Warsawa Warsaw/Moscow	
	Tokyo(Y'hama)/Vostochny		Tokyo/Lianyungang		Tokyo/Rotterdam	
Transport Cost (US$)	Vostochny/Moscow	1,307	Lianyungang/Dostyk Dostyk/Moscow	1,260 1,075	Rotterdam/Warsawa Warsaw/Moscow	1,350 1,380
	Tokyo(Y'hama)/Vosto	2,500	Tokyo/Lianyungang	850	Tokyo/Rotterdam	3,500
	Other cost	200	Other cost	500	Other cost	500
	Total	4,007	Total	3,685	Total	6,730

(4) Overall Assessment

On the transport corridor connecting Japan/Korea to Russia, the Trans-Siberian Route has an overwhelming advantage of transit time over the other routes. The route has only 1 Customs Check Point and Transshipment Point at a Russian littoral port, Vostochny. The Trans-Asian Route has the shortest traveling distance among the competing routes, but many customs check points and transshipment points place the route behind the Trans-Siberian Route in terms of transit time. The All-water Route is in a disadvantageous position in both transit time and transport cost.

Table 4.2.2-21 Overall Comparison of Corridor (Tokyo-Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Vostochny/Moscow		Lianyungang/Dostyk Dostyk/Moscow		Rotterdam/Warsawa Warsaw/Moscow	
	Tokyo(Y'hama)/Vostochny		Tokyo/Lianyungang		Tokyo/Rotterdam	
Trade Volume (US$ Million)	18,415					
Trade Volume (Million TEU)	0.157					
Distance (km)	Vostochny/Moscow	9,336	Lianyungang/Dostyk Dostyk/Moscow	4,500 5,377	Rotterdam/Warsawa Warsaw/Moscow	2,250 2,300
	Tokyo(Y'hama)/Vosto	1,695	Tokyo/Lianyungang	2,183	Tokyo/Rotterdam	20,916
	Total	11,031	Total	12,060	Total	25,466
Average Speed (km/day)	Vostochny/Moscow	870	Lianyungang/Dostyk Dostyk/Moscow	660 870	Rotterdam/Warsawa Warsaw/Moscow	1,000 1,000
	Tokyo(Y'hama)/Vosto	800	Tokyo/Lianyungang	800	Tokyo/Rotterdam	800
Transport Time (Days)	Russian railway	11	Lianyungang/Dostyk Dostyk/Moscow	7 7	Rotterdam/Warsawa Warsaw/Moscow	2 2
	Tokyo(Y'hama)/Vosto	3	Tokyo/Lianyungang	3	Tokyo/Rotterdam	28
	Total	14	Total	17	Total	32
Customs Check Points (No.)		1		3		3
Transhipment Points (No.)		1		2		2
Customs Check and Transshipment (day)		3		7		7
Transport Time(day)		17		24		39
Unit Cost (US$/km)	Vostochny/Moscow	0.15	Lianyungang/Dostyk Dostyk/Moscow	0.28 0.26	Rotterdam/Warsawa Warsaw/Moscow	0.60 0.60
	Tokyo(Y'hama)/Vosto	1.47	Tokyo/Lianyungang	0.39	Tokyo/Rotterdam	0.17
Transport Cost (US$)	Vostochny/Moscow	1,307	Lianyungang/Dostyk Dostyk/Moscow	1,260 1,075	Rotterdam/Warsawa Warsaw/Moscow	1,350 1,380
	Tokyo(Y'hama)/Vosto	2,500	Tokyo/Lianyungang	850	Tokyo/Rotterdam	3,500
	Other cost	200	Other cost	500	Other cost	500
	Total	4,007	Total	3,685	Total	6,730

8) China (Coastal Area) – Russia

There are 3 major transport routes for the China (Coastal Area)-Russia Corridor. They are the Trans-Siberian Route connecting the areas by the Trans-Siberia Railway, the Trans-Asian Route through China and Kazakhstan and the All-water Route by ocean transportation via main European ports.

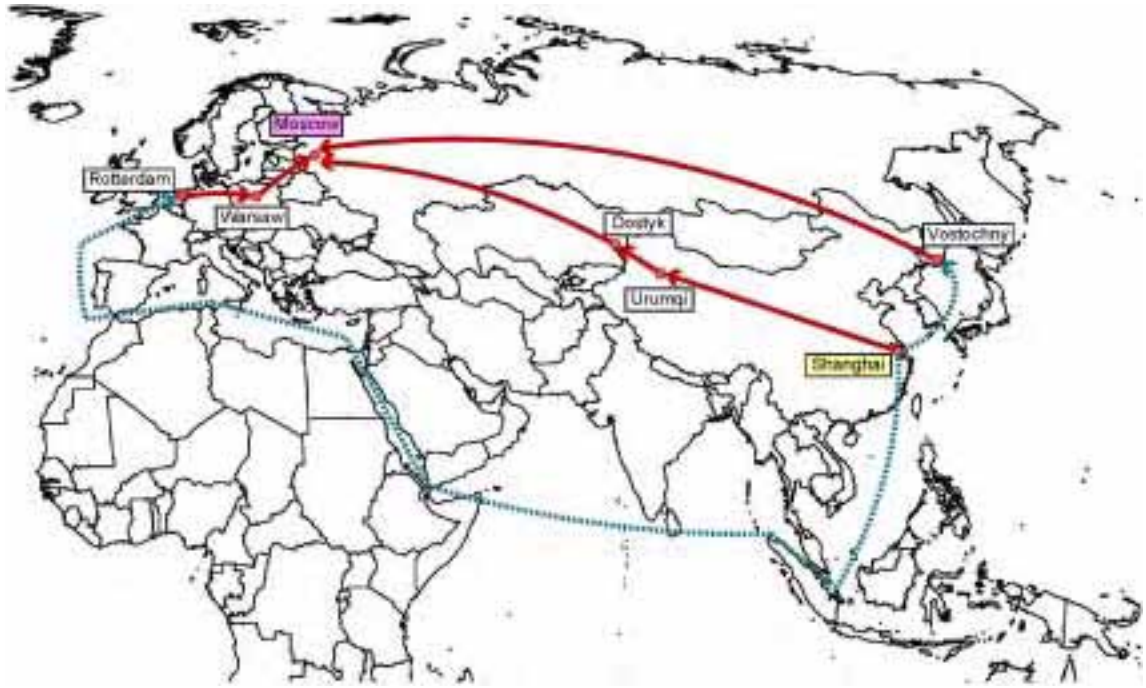


Figure 4.2.2-8 Transport Route: China (Coastal Area) - Russia

(1) Transit Time

Total transit time from China (Coastal Area) to Russia (Moscow) by the Trans-Siberian Route is 17 days (ocean transport 3 days + land transport 11 days + additional time 3 days).

Total transit time by the Trans-Asian Route is 18 days (land transport 14 days + additional time 4 days).

The All-water Route needs 37 days for the entire journey (ocean transport 26 days +land transport 4 days + additional time 7 days), which is 19 days longer than the Trans-Asian Route and 20 days longer than the Trans-Siberian Route.

(2) Additional Time

Through the entire journey from China (Coastal Area) to Russia (Moscow), there is only 1 Customs Check Point and 1 Transshipment Point on the Trans-Siberian Route. The Trans-Asian Route involves 2 Customs Check Points and 1 Transshipment Point. The All-water Route has 3 Customs Check Points and 2 Transshipment Points.

Table 4.2.2-22 Comparison of Transit Time (Shanghai-Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Russian Railway		China Railway KTZ, Russian Railway		Rotterdam/Warsawa Warsaw/Moscow	
	Shanghai/Vostochny				Shanghai/Rotterdam	
Transport Time (Days)	Vostochny/Moscow	11	Shanghai/Dostyk Dostyk/Moscow	7 7	Rotterdam/Warsawa Warsaw/Moscow	2 2
	Shanghai/Vostochn	3			Shanghai/Rotterdam	26
	Total	14	Total	14	Total	30
Customs Check Points (No.)		1		2		3
Transhipment Points (No.)		1		1		2
Customs Check and Transshipment (day)		3		4		7
Transport Time(day)		17		18		37

(3) Transport Cost

Transport cost of the Trans-Siberian Route between China (Shanghai) and Russia (Moscow) is $2,900.

Transport cost by the Trans-Asian Route is $2,700. The All-water Route requires $6,200 for ocean freight and rail freight (main European port to Moscow).

Table 4.2.2-23 Comparison of Transport Cost (Shanghai-Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Russian Railway		China Railway KTZ, Russian Railway		Rotterdam/Warsawa Warsaw/Moscow	
	Shanghai/Vostochny				Shanghai/Rotterdam	
Transport Cost (US$)	Vostochny/Moscow	1,307	Shanghai/Dostyk Dostyk/Moscow	1,350 1,075	Rotterdam/Warsawa Warsaw/Moscow	1,350 1,380
	Shanghai/Vostochn	1,500			Shanghai/Rotterdam	3,500
	Other cost	1,700	Other cost	1,800	Other cost	3,700
	Total	2,880	Total	2,730	Total	6,230

(4) Overall Assessment

On the transport corridor connecting China (Coastal Area) to Russia, the Trans-Siberian Route and

Trans-Asian Route have almost equal transit time. In terms of transport cost, the Trans-Asia Route has a comparative but not significant advantage over the Trans-Siberian. The All-water Route holds a disadvantageous position in both transit time and transport cost.

Table 4.2.2-24 Overall Comparison of Corridor (Shanghai-Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Russian Railway		China Railway KTZ, Russian Railway		Rotterdam/Warsawa Warsaw/Moscow	
	Shanghai/Vostochny				Shanghai/Rotterdam	
Trade Volume (US$ Million)	22,902					
Trade Volume (Million TEU)	0.543					
Distance (km)	Vostochny/Moscow	9,336	Shanghai/Dostyk Dostyk/Moscow	4,500 5,377	Rotterdam/Warsawa Warsaw/Moscow	2,250 2,300
	Shanghai/Vostochn	1,785			Shanghai/Rotterdam	19,552
	Total	11,121	Total	9,877	Total	24,102
Average Speed (km/day)	Vostochny/Moscow	700	Shanghai/Dostyk Dostyk/Moscow	800 500	Rotterdam/Warsawa Warsaw/Moscow	500 500
	Shanghai/Vostochn	700			Shanghai/Rotterdam	800
Transport Time (Days)	Vostochny/Moscow	11	Shanghai/Dostyk Dostyk/Moscow	7 7	Rotterdam/Warsawa Warsaw/Moscow	2 2
	Shanghai/Vostochn	3			Shanghai/Rotterdam	26
	Total	14	Total	14	Total	30
Customs Check Points (No.)		1		2		3
Transhipment Points (No.)		1		1		2
Customs Check and Transshipment (day)		3		4		7
Transport Time(day)		17		18		37
Unit Cost (US$/km)	Vostochny/Moscow	0.15	Shanghai/Dostyk Dostyk/Moscow	0.30 0.26	Rotterdam/Warsawa Warsaw/Moscow	0.60 0.60
	Shanghai/Vostochn	0.84			Shanghai/Rotterdam	0.18
Transport Cost (US$)	Vostochny/Moscow	1,307	Shanghai/Dostyk Dostyk/Moscow	1,350 1,075	Rotterdam/Warsawa Warsaw/Moscow	1,350 1,380
	Shanghai/Vostochn	1,500			Shanghai/Rotterdam	3,500
	Other cost	200	Other cost	300	Other cost	500
	Total	2,880	Total	2,730	Total	6,230

9) China (Inland Area)-Russia

There are 3 major transport routes for the China (Inland Area)-Russia Corridor. They are the Trans-Siberian Route connecting the areas by Trans Siberia Railway, the Trans-Asian Route through China and Kazakhstan, and the All-water Route by ocean transportation via main European ports.

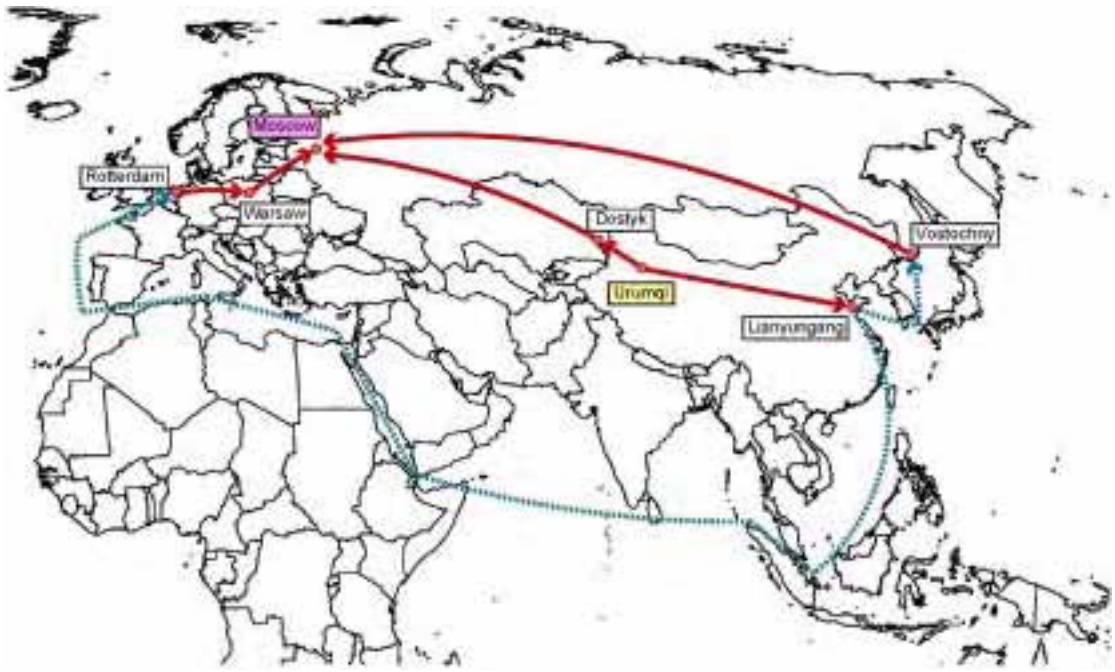


Figure 4.2.2-9 Transport Route: China (Inland Area)-Russia

(1) Transit Time

Total transit time from China (Inland Area) to Russia (Moscow) by the Trans-Siberian Route is 25 days (ocean transport 3 days + land transport 17 days + additional time 5 days).

Total transit time by the Trans-Asian Route is 12 days (land transport 8 days + additional time 4 days).

The All-water Route needs 46 days for the entire journey (ocean transport 27 days +land transport 10 days + additional time 9 days), which is 21 days longer than the Trans-Siberian Route and 34 days longer than the Trans- Siberian Route.

(2) Additional Time

From China (Inland Area) to Russia (Moscow), there are only 1 Customs Check Point and 2 Transshipment Points on the Trans-Siberian Route. The Trans-Asian Route involves 2 Customs Check Points and 1 Transshipment Point. All-water Route has 3 Customs Check Points and 3 Transshipment Points.

Table 4.2.2-25 Comparison of Transit Time (Urumqi-Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Urumqi/Lianyungang Vostochny/Moscow Lianyungang/Vostochny		Urumqi/Dostyk Dostyk/Moscow		Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow Lianyungang/Rotterdam	
Transport Time (Days)	Urumqi/Lianyungang Vostochny/Moscow	6 11	Urumqi/Dostyk Dostyk/Moscow	1 7	Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow	6 2 2
	Lianyungang/Vostochn Total	3 20	 Total	 8	Lianyungang/Rotterdam Total	27 37
Customs Check Points (No.)		1		2		3
Transhipment Points (No.)		2		1		3
Customs Check and Transshipment (day)		5		4		9
Transport Time(day)		25		12		46

(3) Transport Cost

Transport cost of the Trans-Siberian Route between China (Urumqi) and Russia (Moscow) is $6,400. Transport cost by the Trans-Asian Route is $1,500. The All-water Route costs $9,200 for ocean freight and rail freight (main European port to Moscow).

Table 4.2.2-26 Comparison of Transport Cost (Urumqi -Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Urumqi/Lianyungang Vostochny/Moscow Lianyungang/Vostochny		Urumqi/Dostyk Dostyk/Moscow		Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow Lianyungang/Rotterdam	
Transport Cost (US$)	Urumqi/Lianyungang Vostochny/Moscow	1,101 1,307	Urumqi/Dostyk Dostyk/Moscow	149 1,075	Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow	1,101 1,350 1,380
	Lianyungang/Vostochn Other cost	2,500 2,500	 Other cost	 1,200	Lianyungang/Rotterdam Other cost	4,000 4,600
	Total	6,380	Total	1,529	Total	9,230

(4) Overall Assessment

On the transport corridor connecting China (Inland Area) to Russia, the Trans-Asian Route possesses a definite advantage over the other routes.

Table 4.2.2-27 Overall Comparison of Corridor (Urumqi -Moscow)

	Trans-Siberian Route		Trans-Asian Route		All Water Route	
Route	Urumqi/Lianyungang Vostochny/Moscow Lianyungang/Vostochny		Urumqi/Dostyk Dostyk/Moscow		Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow Lianyungang/Rotterdam	
Trade Volume (US$ Million)	310					
Trade Volume (Million TEU)	0.007					
Distance (km)	Urumqi/Lianyungang Vostochny/Moscow	3,671 9,336	Urumqi/Dostyk Dostyk/Moscow	496 5,377	Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow	3,671 2,250 2,300
	Lianyungang/Vostochn Total	1,887 14,894	 Total	 5,873	Lianyungang/Rotterdam Total	19,789 28,010
Average Speed (km/day)	Urumqi/Lianyungang Vostochny/Moscow	400 700	Urumqi/Dostyk Dostyk/Moscow	500 500	Urumqi/Lianyungang Rotterdam/Warsawa	400 500
	Lianyungang/Vostochn	800			Lianyungang/Rotterdam	800
Transport Time (Days)	Urumqi/Lianyungang Vostochny/Moscow	6 11	Urumqi/Dostyk Dostyk/Moscow	1 7	Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow	6 2 2
	Lianyungang/Vostochn Total	3 20	 Total	 8	Lianyungang/Rotterdam Total	27 37
Customs Check Points (No.)		1		2		3
Transhipment Points (No.)		2		1		3
Customs Check and Transshipment (day)		5		4		9
Transport Time(day)		25		12		46
Unit Cost (US$/km)	Urumqi/Lianyungang Vostochny/Moscow	0.68 0.15	Urumqi/Dostyk Dostyk/Moscow	0.30 0.26	Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow	0.68 0.60 0.60
	Lianyungang/Vostochn	1.32			Lianyungang/Rotterdam	0.20
Transport Cost (US$)	Urumqi/Lianyungang Vostochny/Moscow	1,101 1,307	Urumqi/Dostyk Dostyk/Moscow	149 1,075	Urumqi/Lianyungang Rotterdam/Warsawa Warsaw/Moscow	1,101 1,350 1,380
	Lianyungang/Vostochn Other cost	2,500 300	 Other cost	 300	Lianyungang/Rotterdam Other cost	4,000 600
	Total	6,380	Total	1,529	Total	9,230

10) Japan/Korea – Iran

There are 3 representative transport routes for the Japan/Korea-Iran Corridor.

The TRACECA (Kaz) Route connects Japan/Korea through China/Kazakhstan/the Caspian Sea.

The TRACECA (Turkmenistan) Route connects Japan/Korea through China/Kazakhstan/Turkmenistan.

The All-water Route connects Japan/Korea by ocean transport to the Iranian port of Bandar Abbas.

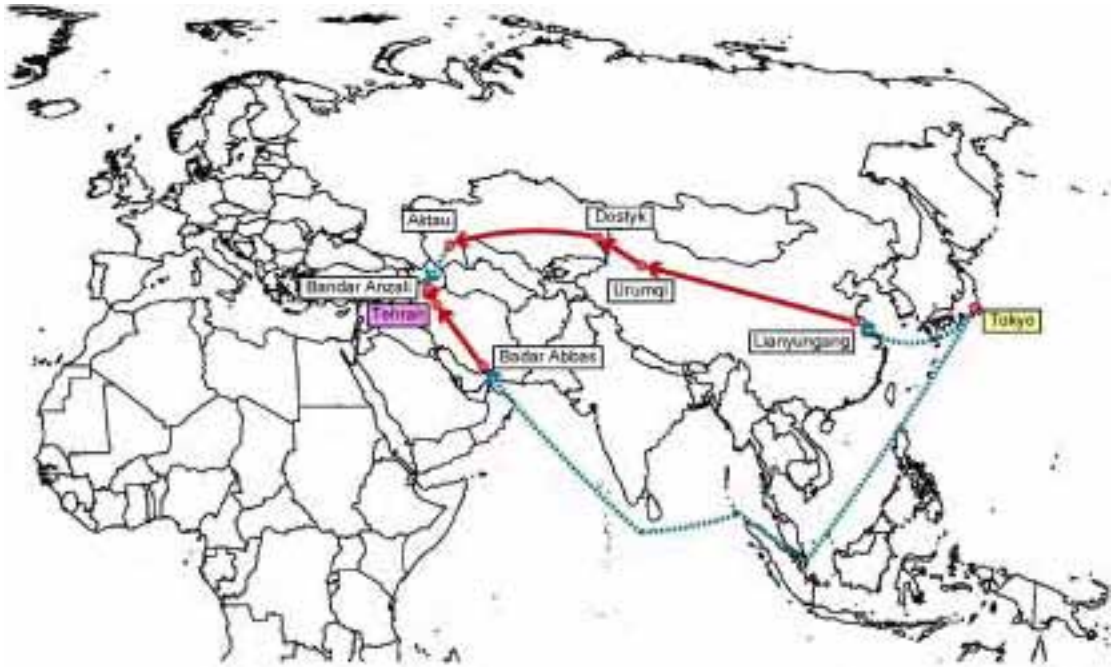


Figure 4.2.2-10 Transport Route Japan/Korea-Iran

(1) Transit Time

Total transit time by the TRACECA (Kaz) Route is 30 days (ocean transport 5 days + land transport 14 days + additional time 11 days).

Total transit time by the TRACECA (Turkmenistan) Route is 28 days (ocean transport 3 days + land transport 14 days + additional time 11 days).

The All-water Route needs 21 days for the entire journey (ocean transport 16 days + land transport 2 days + additional time 3 days), which is 7 days shorter than the TRACECA (Turkmenistan) Route and 9 days shorter than the TRACECA (Kaz) Route.

(2) Additional Time

The All-water Route has only 1 Customs Check Point and 1 Transshipment Point. The TRACECA (Kaz) Route needs to pass 3 Customs Check Points and 4 Transshipment Points and in case of the TRACECA (Turkmenistan) Route, 5 and 3, respectively.

Table 4.2.2-28 Comparison of Transit Time (Tokyo-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali		Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang		Bandar Abbas/Tehran Tokyo/Bandar Abbas	
Transport Time (Days)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali Total	7 6 1 3 2 19	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang Total	6 1 1 2 2 2 3 17	Bandar Abbas/Tehran Tokyo/Bandar Abbas Total	2 16 18
Customs Check Points (No.)		3		5		1
Transhipment Points (No.)		4		3		1
Customs Check and Transshipment (day)		11		11		3
Transport Time(day)		30		28		21

(3) Transport Cost

Transport cost on the TRACECA (Kaz) Route between Tokyo and Iran (Tehran) is $4,600.

Transport cost by the TRACECA (Turkmenistan) Route is $5,100. The All-water Route costs $4,500.

Table 4.2.2.-29 Comparison of Transport Cost (Tokyo-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali		Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang		Bandar Abbas/Tehran Tokyo/Bandar Abbas	
Transport Cost (US$)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali Other cost Total	1,260 692 342 850 775 700 4,619	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang Other cost Total	1,101 149 409 500 306 1,033 850 800 5,147	Bandar Abbas/Tehran Tokyo/Bandar Abbas Other cost Total	1,299 3,000 200 4,499

(4) Overall Assessment

On the transport corridor connecting Japan/Korea to Iran, the All-water Route possesses a comparative advantage of transit time over TRACECA routes by 7 to 9 days. Transit time for the TRACECA routes requires 11 additional days. Therefore, if customs check and transshipment arrangement are performed satisfactorily, the gap of the transit time can be narrowed. Regarding

transport cost, the TRACECA (Turkmenistan) Route shows the highest cost at $5,100, while the All-water Route hits the lowest rate of $4,500.

Table 4.2.2-30 Overall comparison of Corridor (Tokyo-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali		Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang		Bandar Abbas/Tehran Tokyo/Bandar Abbas	
Trade Volume (US$ Million)	3,066					
Trade Volume (Million TEU)	0.022					
Distance (km)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali Total	4,500 3,843 380 2,183 709 11,615	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang Total	3,671 496 870 999 1,223 1,148 2,183 10,590	Bandar Abbas/Tehran Tokyo/Bandar Abbas Total	1,443 11,732 13,175
Average Speed (km/day)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali	660 650 650 800 600	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang	660 660 650 650 650 650 800	Bandar Abbas/Tehran Tokyo/Bandar Abbas	650 800
Transport Time (Days)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali Total	7 6 1 3 2 19	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang Total	6 1 1 2 2 2 3 17	Bandar Abbas/Tehran Tokyo/Bandar Abbas Total	2 16 18
Customs Check Points (No.)	3		5		1	
Transhipment Points (No.)	4		3		1	
Customs Check and Transshipment (day)	11		11		3	
Transport Time(day)	30		28		21	
Unit Cost (US$/km)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali	0.28 0.00 0.90 0.39 1.09	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Tokyo/Lianyungang	0.30 0.30 0.47 0.50 0.25 0.33	Bandar Abbas/Tehran Tokyo/Bandar Abbas	0.90 0.26
Transport Cost (US$)	Lianyungang/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Tokyo/Lianyungang Aktau/Bandar Anzali Other cost Total	1,260 692 342 850 775 700 4,619	Urumqi/Lianyungang Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Tokyo/Lianyungang Other cost Total	1,101 149 409 500 306 1,033 850 800 5,147	Bandar Abbas/Tehran Tokyo/Bandar Abbas Other cost Total	1,299 3,000 200 4,499

11) China (Coastal Area) – Iran

There are 3 representative transport routes for the China Coastal Area (Shanghai)-Iran Corridor.

The TRACECA (Kaz) Route connects Shanghai to Tehran through China/Kazakhstan/the Caspian Sea.

The TRACECA (Turkmenistan) Route connects Shanghai to Tehran through China/Kazakhstan/ Turkmenistan.

The All-water Route directly connects Shanghai to Tehran by ocean transport to the Iranian port of Bandar Abbas.

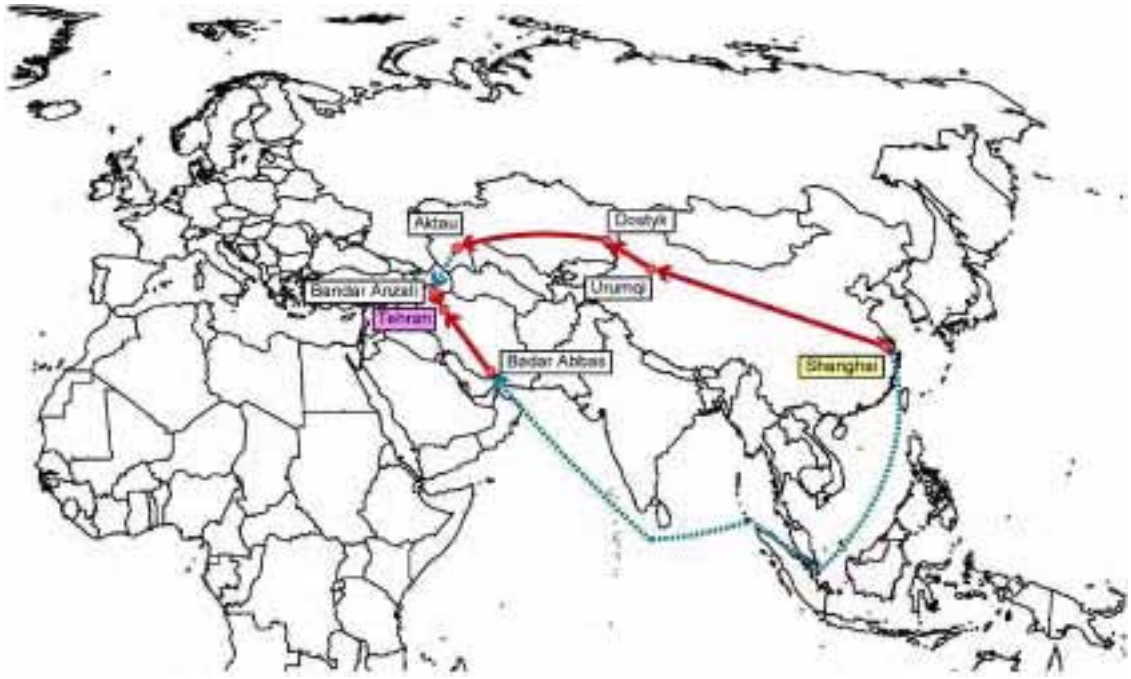


Figure 4.2.2-11 Transport Route China (Coastal Area)-Iran

(1) Transit Time

Total transit time by the TRACECA (Kaz) Route is 24 days (ocean transport 2 days + land transport 14 days + additional time 8 days). Total transit time by the TRACECA (Turkmenistan) Route is 22 days (land transport 14 days + additional time 8 days).

The All-water Route needs 19 days for the entire journey (ocean transport 13 days + land transport 3 days + additional time 3 days), which is 3 days shorter than the TRACECA (Turkmen) Route and 5 days shorter than the TRACECA (Kaz) Route.

(2) Additional Time

The TRACECA (Kaz) Route needs to pass 2 Customs Check Points and 3 Transshipment Points and in case of the TRACECA (Turkmen) Route, 4 and 2, respectively. The All-water Route has only 1 Customs Check Point and 1 Transshipment Point at the landing port in Iran, Bandar Abbas.

Table 4.2.2-31 Comparison of Transit Time (Shanghai-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali		Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran		Bandar Abbas/Tehran Shanghai/Bandar Abbas	
Transport Time (Days)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Total	7 6 1 2 16	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Total	6 1 1 2 2 2 14	Bandar Abbas/Tehran Shanghai/Bandar Abbas Total	2 14 16
Customs Check Points (No.)		2		4		1
Transhipment Points (No.)		3		2		1
Customs Check and Transshipment (day)		8		8		3
Transport Time(day)		24		22		19

(3) Transport Cost

Transport cost of the TRACECA (Kaz) Route between Shanghai and Iran (Tehran) is $3,600.

Transport cost by the TRACECA (Turkmenistan) Route is $4,200. The All-water Route costs $4,500.

Table 4.2.2-32 Comparison of Transport Cost (Shanghai-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali		Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran		Bandar Abbas/Tehran Shanghai/Bandar Abbas	
Transport Cost (US$)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Other cost Total	1,350 692 342 775 500 3,659	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Other cost Total	1,201 149 409 500 306 1,033 600 4,197	Bandar Abbas/Tehran Shanghai/Bandar Abbas Other cost Total	1,299 3,000 200 4,499

(4) Overall Assessment

On the transport corridor connecting China (Coastal Area) to Iran, the All-water Route possesses a comparative advantage of transit time over the TRACECA routes by 3 to 5 days. In this study, the

transit time on the TRACECA routes counts 8 days as additional time. Therefore, if Customs Check and transshipment arrangement were performed satisfactorily, the gap in transit time can be narrowed. Regarding transport cost, the TRACECA (Kaz) Route shows the lowest cost with $3,600 while the All-water Route hits the highest rate of $4,500.

Table 4.2.2-33 Overall comparison of Corridor (Shanghai -Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali		Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran		Bandar Abbas/Tehran Shanghai/Bandar Abbas	
Trade Volume (US$ Million)	4,404					
Trade Volume (Million TEU)	0.106					
Distance (km)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Total	4,500 3,843 380 709 9,432	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Total	4004 496 870 999 1223 1148 8740	Bandar Abbas/Tehran Shanghai/Bandar Abbas Total	1,443 10,397 11,840
Average Speed (km/day)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali	650 650 650 360	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran	700 500 900 500 600 600	Bandar Abbas/Tehran Shanghai/Bandar Abbas	650 750
Transport Time (Days)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Total	7 6 1 2 16	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Total	6 1 1 2 2 2 14	Bandar Abbas/Tehran Shanghai/Bandar Abbas Total	2 14 16
Customs Check Points (No.)	2		4		1	
Transhipment Points (No.)	3		2		1	
Customs Check and Transshipment (day)	8		8		3	
Transport Time(day)	24		22		19	
Unit Cost (US$/km)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali	0.30 0.18 0.90 1.09	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran	0.3 0.3 0.47 0.5 0.25 0.9	Bandar Abbas/Tehran Shanghai/Bandar Abbas	0.90 0.29
Transport Cost (US$)	Shanghai/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Other cost Total	1,350 692 342 775 500 3,659	Shanghai/Urumqi Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Other cost Total	1,201 149 409 500 306 1,033 600 4,197	Bandar Abbas/Tehran Shanghai/Bandar Abbas Other cost Total	1,299 3,000 200 4,499

12) China (Inland Area)-Iran

There are 3 representative transport routes for the China Inland Area (Urumqi)-Iran (Tehran) Corridor.

The TRACECA (Kaz) Route connects Urumqi to Tehran through China/Kazakhstan/the Caspian Sea.

The TRACECA (Turkmenistan) Route connects Urumqi to Tehran through China/ Kazakhstan/ Turkmenistan.

The All-water Route first connects Urumqi to the Chinese port of Lianyungang by rail, then by ship to the Iranian port of Bandar Abbas.

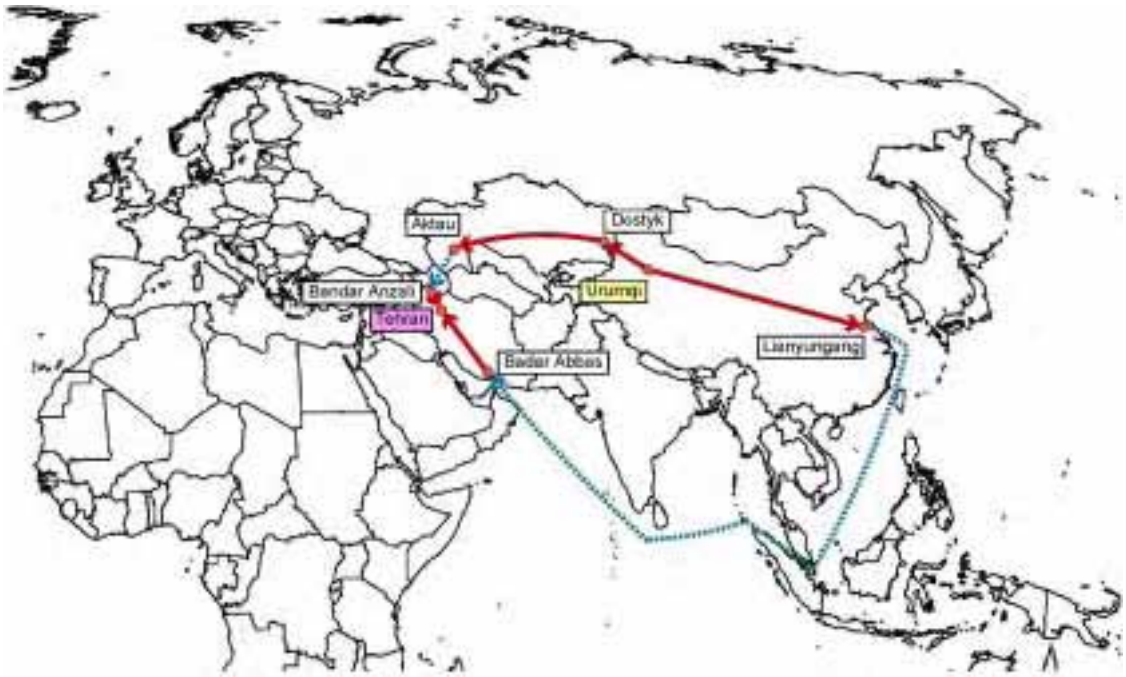


Figure 4.2.2-12 Transport Route: China (Inland Area) - Iran

(1) Transit Time

Total transit time by the TRACECA (Kaz) Route is 18 days (ocean transport 2 days + land transport 8 days + additional time 8 days). Total transit time by the TRACECA (Turkmenistan) Route is 16 days (land transport 8 days + additional time 8 days). The All-water Route needs 27 days for the entire journey (ocean transport 14 days + land transport 8 days + additional time 5 days).

(2) Additional Time

The TRACECA (Kaz) Route needs to pass 2 Customs Check Points and 3 Transshipment Points and in case of the TRACECA (Turkmenistan) Route, 4 and 2, respectively. The All-water Route has only 1 Customs Check Point and Transshipment Point at the landing port in Iran, Bandar Abbas.

Table 4.2.2.-34 Comparison of Transit Time (Urumqi-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali		Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran		Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abbas	
Transport Time (Days)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Total	1 6 1 2 10	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Total	1 1 2 2 2 8	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba Total	6 2 14 22
Customs Check Points (No.)		2		4		1
Transhipment Points (No.)		3		2		2
Customs Check and Transshipment (day)		8		8		5
Transport Time(day)		18		16		27

(3) Transport Cost

Transport cost of TRACECA (Kaz) Route between Urumqi and Iran (Tehran) is $2,500.

Transport cost by TRACECA (Trukmenistan) Route is $3,000. All-water Route requires $6,200.

Table 4.2.2-35 Comparison of Transport Cost (Urumqi-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali		Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran		Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abbas	
Transport Cost (US$)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Other cost Total	149 692 342 775 500 2,458	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Other cost Total	149 409 500 306 1,033 600 2,996	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba Other cost Total	1,101 1,299 3,500 300 6,200

(4) Overall Assessment

On the transport corridor connecting China (Inland Area) to Iran, the All-water Route loses competitiveness in both transit time and cost. On the other hand, the TRACECA routes gain overall competitiveness. Regarding transport cost, the TRACECA (Kaz) Route has a comparative advantage while the TRACECA (Turkmenistan) Route has an advantage in terms of transit time.

Table 4.2.2-36 Overall comparison of Corridor (Urumqi-Tehran)

	TRACECA Route		TRACECA Turkmen-route(Dostyk)		All Water Route	
Route	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali		Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran		Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abbas	
Trade Volume (US$ Million)	59					
Trade Volume (Million TEU)	0.001					
Distance (km)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Total	496 3,843 380 709 5,428	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Total	496 870 999 1,223 1,148 4,736	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba Total	3,671 1,443 10,621 15,735
Average Speed (km/day)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali	660 650 650 600	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran	660 650 650 650 650	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba	660 650 800
Transport Time (Days)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Total	1 6 1 2 10	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Total	1 1 2 2 2 8	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba Total	6 2 14 22
Customs Check Points (No.)	2		4		1	
Transhipment Points (No.)	3		2		2	
Customs Check and Transshipment (day)	8		8		5	
Transport Time(day)	18		16		27	
Unit Cost (US$/km)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali	0.30 0.18 0.90 1.09	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran	0.30 0.47 0.50 0.25 0.90	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba	0.30 0.90 0.33
Transport Cost (US$)	Urumqi/Dostyk Dostyk/Aktau Bandar Anzali/Tehran Aktau/Bandar Anzali Other cost Total	149 692 342 775 500 2,458	Urumqi/Dostyk Dostyk/Almaty Almaty/Tashkent Tashknt/Sarakh Sarakh/Teheran Other cost Total	149 409 500 306 1,033 600 2,996	Urumqi/Lianyungang Bandar Abbas/Tehran Lianyungang/Bandar Abba Other cost Total	1,101 1,299 3,500 300 6,200

13) Japan/Korea – Caucasus

The study is made on 2 representative transport routes for Japan/Korea-the Caucasus Region (Baku, Azerbaijan) Corridor.

The TRACECA Route connects Japan (Tokyo) to Baku through China/Kazakhstan/the Caspian Sea.

The All-water Route goes from Japan/Korea by ship through the Suez Canal, the Mediterranean and the Black Sea to Poti, Georgia, and from there by rail to Baku.

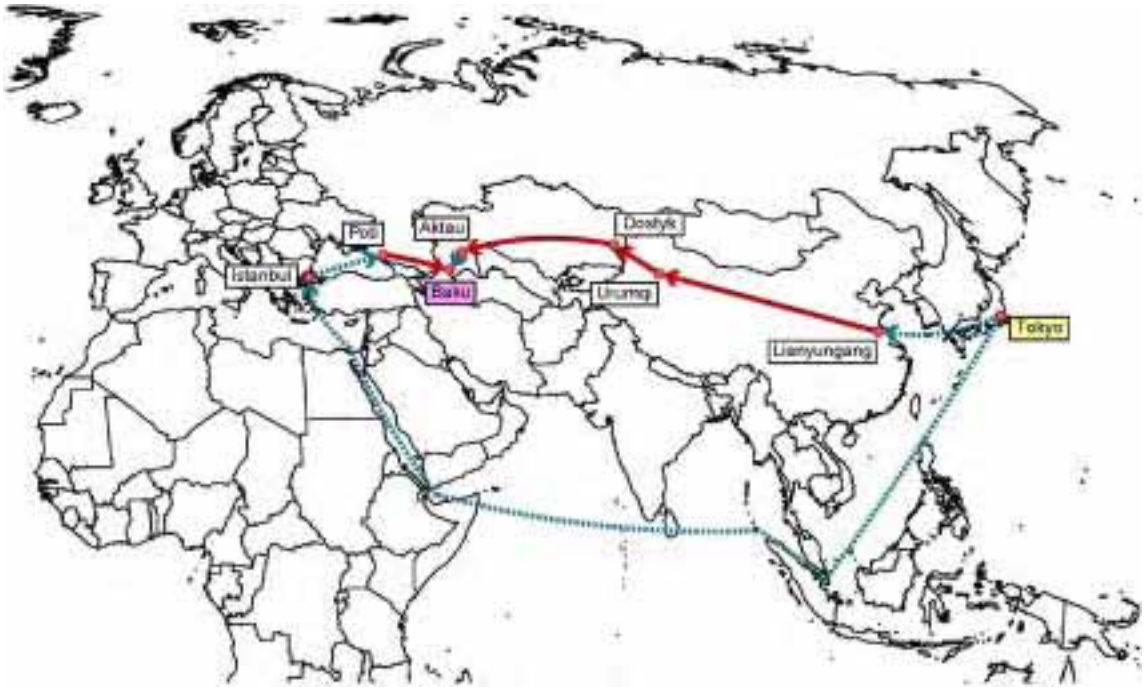


Figure 4.4.2-13 Transport Route: Japan/Korea-Caucasus

(1) Transit Time

Total transit time by the TRACECA Route is 26 days (ocean transport 4 days + land transport 13 days + additional time 9 days). The All-water Route needs 33 days for the entire journey (ocean transport 22 days + land transport 5 days + additional time 6 days).

(2) Additional Time

The TRACECA Route needs to pass 3 Customs Check Points and 3 Transshipment Points. The All-water Route has 2 Customs Check Points and 2 Transshipment Points along the route.

Table 4.2.2-37 Comparison of Transit Time (Tokyo-Baku)

	TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Aktau - Baku		Tokyo - Istanbul -Poti - Baku	
Transport Time (Days)	Tokyo/Lianyungang	3	Tokyo/Istanbul/Poti	22
	China Railway	7	Poti/Baku	5
	Kazakhstan Raiway	6		
	Aktau/Baku	1		
	Total	17	Total	27
Customs Check Points (No.)		3		2
Transhipment Points (No.)		3		2
Customs Check and Transshipment (day)		9		6
Transport Time(day)		26		33

(3) Transport Cost

Transport cost of the TRACECA Route between Tokyo and Baku is $4,100.

Transport cost by the All-water Route is $5,800.

Table 4.2.2-38 Comparison of Transport Cost (Tokyo-Baku)

	TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Aktau - Baku		Tokyo - Istanbul -Poti - Baku	
Transport Cost (US $/ Container)	Tokyo/Lianyungang	850	Tokyo/Istanbul/Poti	3,700
	Lianyungang/Dostyk	1,260	Poti/Baku	1,700
	Dostyk/Aktau	684	Other Costs	400
	Aktau/Baku	720		
	Other Costs	600		
	Total	4,114	Total	5,800

(4) Overall Assessment

On the transport corridor connecting Japan/Korea to Baku, the TRACECA Route gains overall competitiveness in both transit time and transport cost over the All-water Route. On this route, despite the travel itinerary mostly on land, the number of Customs Check Points and Transshipment Points is relatively fewer, and this fact contributes to the route's competitiveness.

Table 4.2.2-39 Overall comparison of Corridor (Tokyo-Baku)

	TRACECA Route		All Water Route	
Route	Tokyo - Lianyungang - Dostyk - Aktau - Baku		Tokyo - Istanbul -Poti - Baku	
Trade Volume (US$ Million)	162			
Trade Volume (Million TEU)	0.000			
Distance (km)	Tokyo/Lianyungang	2,183	Tokyo/Istanbul/Poti	17,381
	Lianyungang/Dostyk	4,500	Poti/Baku	1,340
	Dostyk/Aktau	3,843		
	Aktau/Baku	463		
	Total	10,989	Total	18,721
Average Speed (km/day)	Tokyo/Lianyungang	800	Tokyo/Istanbul/Poti	800
	China Railway	660	Poti/Baku	300
	Kazakhstan Railway	650		
	Aktau/Baku	600		
Transport Time (Days)	Tokyo/Lianyungang	3	Tokyo/Istanbul/Poti	22
	China Railway	7	Poti/Baku	5
	Kazakhstan Raiway	6		
	Aktau/Baku	1		
	Total	17	Total	27
Customs Check Points (No.)		3		2
Transhipment Points (No.)		3		2
Customs Check and Transshipment (day)		9		6
Transport Time(day)		26		33
Unit Transport Cost (US $/ Container)	Tokyo/Lianyungang	0.389	Tokyo/Istanbul/Poti	1.470
	Lianyungang/Dostyk	0.280	Poti/Baku	0.150
	Dostyk/Aktau	0.178		
	Aktau/Baku	1.555		
Transport Cost (US $/ Container)	Tokyo/Lianyungang	850	Tokyo/Istanbul/Poti	3,700
	Lianyungang/Dostyk	1,260	Poti/Baku	1,700
	Dostyk/Aktau	684	Other Costs	400
	Aktau/Baku	720		
	Other Costs	600		
	Total	4,114	Total	5,800

14) China (Coastal Area)- the Caucasus

The study is made on 2 representative transport routes for the China Coastal Area (Shanghai)-the Caucasus Region (Baku, Azerbaijan) Corridor.

The TRACECA Route connects Shanghai to Baku by rail through China/Kazakhstan and then to the Caspian Sea.

The All-water Route goes from Shanghai by ship through the Suez Canal, the Mediterranean and the Black Sea to Poti, Georgia, and from there by rail to Baku.

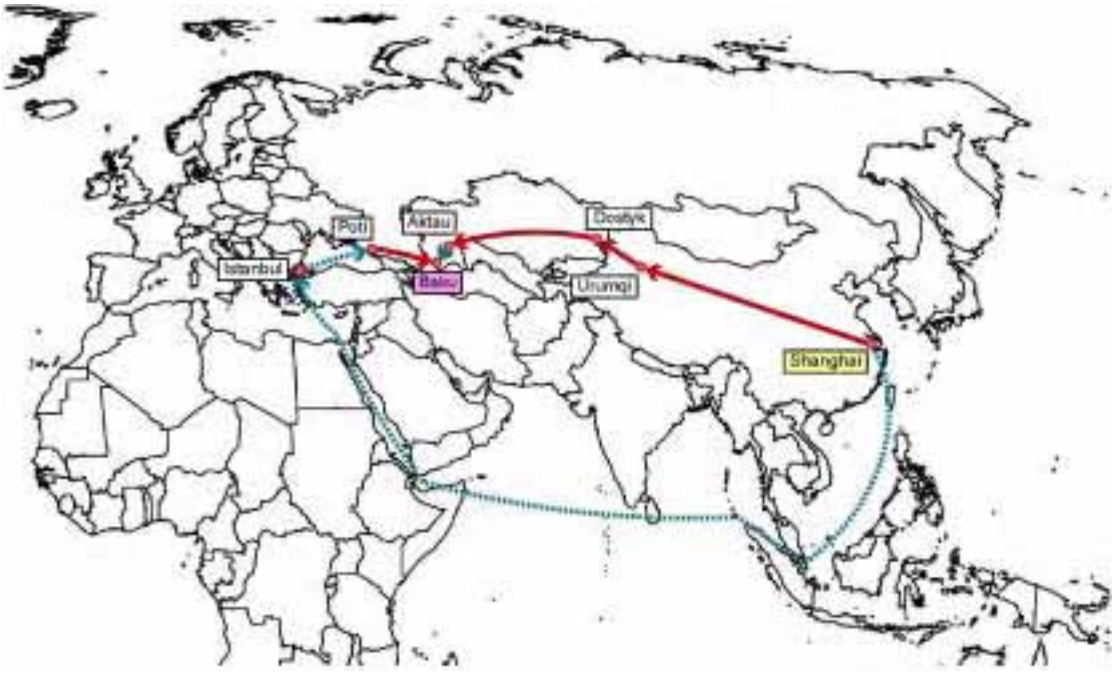


Figure 4.2.2-14 Transport Route: China (Coastal Area) - Caucasus

(1) Transit Time

Total transit time from Shanghai to Baku by the TRACECA Route is 20 days (land transport 13 days + ocean transport 1 day + additional time 6 days). The All-water Route needs 32 days for the entire journey (ocean transport 21 days +land transport 5 days + additional time 6 days), which is 12 days longer than the TRACECA Route.

(2) Additional Time

During the journey from Shanghai to Baku, the TRACECA Route needs to pass 2 Customs Check Points and 2 Transshipment Points. The All-water Route has 2 Customs Check Points and 2 Transshipment Points along the route.

Table 4.2.2-40 Comparison of Transit Time (Shanghai-Baku)

	TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Aktau - Baku		Shanghai - Istanbul -Poti - Baku	
Transport Time (Days)	Shanghai/Dostyk	7	Shanghai/Istanbul/Poti	21
	Dostyk/Aktau	6	Poti/Baku	5
	Aktau/Baku	1		
	Total	14	Total	26
Customs Check Points (No.)		2		2
Transhipment Points (No.)		2		2
Customs Check and Transshipment (day)		6		6
Transport Time(day)		20		32

(3) Transport Cost

Transport cost of the TRACECA Route between Shanghai and Baku is $3,100 while transport cost by the All-water Route is $5,800.

Table 4.2.2-41 Comparison of Transport Cost (Shanghai-Baku)

	TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Aktau - Baku		Shanghai - Istanbul -Poti - Baku	
Transport Cost (US $/ Container)	Shanghai/Dostyk	1,350	Shanghai/Istanbul/Poti	3,700
	Dostyk/Aktau	684	Poti/Baku	1,700
	Aktau/Baku	720	Other Costs	400
	Other Costs	400		
	Total	3,154	Total	5,800

(4) Overall Assessment

On the transport corridor connecting China Coastal Area (Shanghai) to Baku, the TRACECA Route gains overall competitiveness in both transit time and transport cost over the All-water Route. On this route, despite the travel itinerary mostly on land, the number of Customs Check Points and Transshipment Points is relatively fewer, which contributes to this route's competitiveness.

In addition to the routes studied, there is another route going through Iran (Shanghai-Bandar

Abbas-Baku) by ship and truck. Transit time of this route is said to be 22-32 days, and the transport cost $3,700-$6,500.

Table 4.2.2-42 Overall Comparison of Corridor (Shanghai -Baku)

	TRACECA Route		All Water Route	
Route	Shanghai - Dostyk - Aktau - Baku		Shanghai - Istanbul -Poti - Baku	
Trade Volume (US$ Million)	499			
Trade Volume (Million TEU)	0.012			
Distance (km)	Shanghai/Dostyk	4,500	Shanghai/Istanbul/Poti	16,020
	Dostyk/Aktau	3,843	Poti/Baku	1,340
	Aktau/Baku	463		
	Total	8,806	Total	17,360
Average Speed (km/day)	Shanghai/Dostyk	660	Shanghai/Istanbul/Poti	800
	Dostyk/Aktau	650	Poti/Baku	300
	Aktau/Baku	600		
Transport Time (Days)	Shanghai/Dostyk	7	Shanghai/Istanbul/Poti	21
	Dostyk/Aktau	6	Poti/Baku	5
	Aktau/Baku	1		
	Total	14	Total	26
Customs Check Points (No.)		2		2
Transhipment Points (No.)		2		2
Customs Check and Transshipment (day)		6		6
Transport Time(day)		20		32
Unit Transport Cost (US $/ Container)	Shanghai/Dostyk	0.300	Shanghai/Istanbul/Poti	1.470
	Dostyk/Aktau	0.178	Poti/Baku	0.150
	Aktau/Baku	1.555		
Transport Cost (US $/ Container)	Shanghai/Dostyk	1,350	Shanghai/Istanbul/Poti	3,700
	Dostyk/Aktau	684	Poti/Baku	1,700
	Aktau/Baku	720	Other Costs	400
	Other Costs	400		
	Total	3,154	Total	5,800

15) China (Inland Area)-the Caucasus

The study is made on 2 representative transport routes for the China Inland Area (Urumqi)-the Caucasus Region (Baku, Azerbaijan) Corridor.

The TRACECA Route connects Urumqi to Baku by rail through Kazakhstan, then to the Caspian Sea. The All-water Route goes by rail to Shanghai and from there by ship through the Suez Canal, the Mediterranean and the Black Sea to Poti, Georgia and from Poti to Baku by rail.

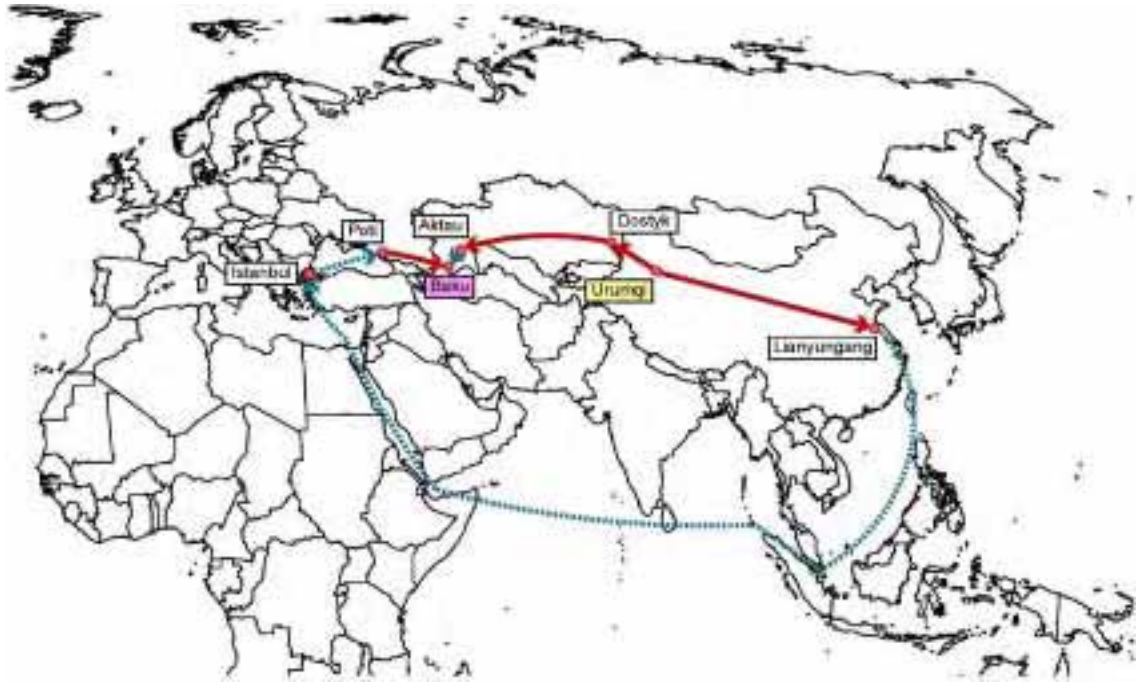


Figure 4.2.2-15 Transport Route: China (Inland Area)-Caucasus

(1) Transit Time

Total transit time from Urumqi to Baku by the TRACECA Route is 14 days (land transport 7 days + ocean transport 1 day + additional time 6 days). The All-water Route needs 40 days for the entire journey (ocean transport 21 days + land transport 11 days + additional time 8 days), which is 26 days longer than the TRACECA Route.

(2) Additional Time

During the journey from Urumqi to Baku, the TRACECA Route needs to pass 2 Customs Check Points and 2 Transshipment Points. The All-water Route has 2 Customs Check Points and 3 Transshipment Points along the route.

Table 4.2.2-43 Comparison of Transit Time (Urumqi-Baku)

	TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Aktau - Baku		Urumqi - Lianyungang - Istanbul -Poti - Baku	
Transport Time (Days)	Urumqi/Dostyk	1	Urumqi/Lianyungang	6
	Dostyk/Aktau	6	Lianyungang/Istanbul/P	21
	Aktau/Baku	1	Poti/Baku	5
	Total	8	Total	32
Customs Check Points (No.)		2		2
Transhipment Points (No.)		2		3
Customs Check and Transshipment (day)		6		8
Transport Time(day)		14		40

(3) Transport Cost

Transport cost from China Inland Area (Urumqi) to Baku by the TRACECA Route is $1,900 while transport cost by the All-water Route is $8,800.

Table 4.2.2.-44 Comparison of Transport Cost (Urumqi-Baku)

	TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Aktau - Baku		Urumqi - Lianyungang - Istanbul -Poti - Baku	
Transport Cost (US $/ Container)	Urumqi/Dostyk	149	Urumqi/Lianyungang	2,500
	Dostyk/Aktau	684	Lianyungang/Istanbul/P	4,200
	Aktau/Baku	720	Poti/Baku	1,700
	Other Costs	400	Other Costs	500
	Total	1,953	Total	8,900

(4) Overall Assessment

On the transport corridor connecting the China Inland Area (Urumqi) to Baku, the TRACECA Route possesses overall competitiveness in both transit time and transport cost over the All-water Route, owing to the shortest traveling distance. Also in this route, despite the travel itinerary mostly on land,

the number of Customs Check Points and Transshipment Points is relatively fewer, which contributes to this route's competitiveness.

Table 4.2.2.-45 Overall Comparison ofCorridor (Urumqi -Baku)

	TRACECA Route		All Water Route	
Route	Urumqi - Dostyk - Aktau - Baku		Urumqi - Lianyungang - Istanbul -Poti - Baku	
Trade Volume (US$ Million)	7			
Trade Volume (Million TEU)	0.000			
Distance (km)	Urumqi/Dostyk	496	Urumqi/Lianyungang	3,671
	Dostyk/Aktau	3,843	Lianyungang/Istanbul/P	16,257
	Aktau/Baku	463	Poti/Baku	1,340
	Total	4,802	Total	21,268
Average Speed (km/day)	Urumqi/Dostyk	660	Urumqi/Lianyungang	660
	Dostyk/Aktau	650	Lianyungang/Istanbul/P	800
	Aktau/Baku	600	Poti/Baku	300
Transport Time (Days)	Urumqi/Dostyk	1	Urumqi/Lianyungang	6
	Dostyk/Aktau	6	Lianyungang/Istanbul/P	21
	Aktau/Baku	1	Poti/Baku	5
	Total	7	Total	32
Customs Check Points (No.)	2		2	
Transhipment Points (No.)	2		3	
Customs Check and Transshipment (day)	6		8	
Transport Time(day)	13		40	
Unit Transport Cost (US $/ Container)	Urumqi/Dostyk	0.300	Urumqi/Lianyungang	0.681
	Dostyk/Aktau	0.178	Lianyungang/Istanbul/P	0.258
	Aktau/Baku	1.555	Poti/Baku	1.269
Transport Cost (US $/ Container)	Urumqi/Dostyk	149	Urumqi/Lianyungang	2,500
	Dostyk/Aktau	684	Lianyungang/Istanbul/P	4,200
	Aktau/Baku	720	Poti/Baku	1,700
	Other Costs	400	Other Costs	500
	Total	1,953	Total	8,900

16) Japan/Korea – Central Asia

The study is made on 2 representative transport routes for Japan/Korea-Central Asia Corridor.

The Trans-Siberian Route goes from Japan/Korea to a Russian littoral port by ship and then by rail through Russia and Kazakhstan to reach Central Asia.

The TRACECA Route goes from Japan/Korea to Chinese ports by ship and then rail through China and Kazakhstan to reach Central Asia.

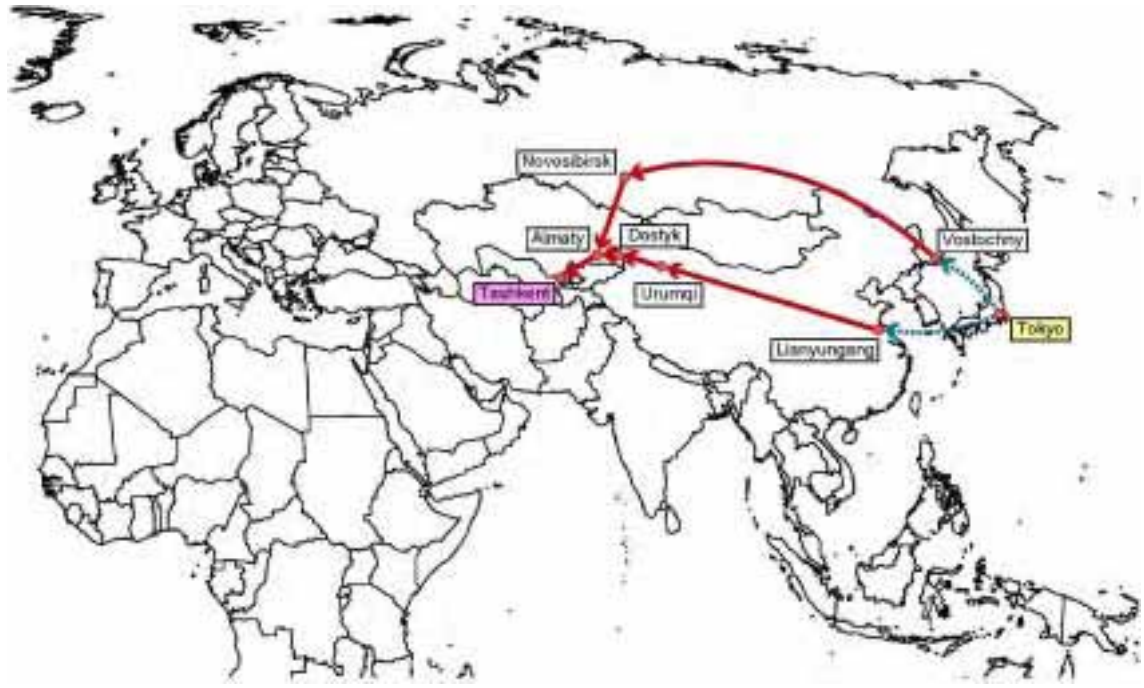


Figure 4.2.2-16 Transport Route: Japan/Korea-Central Asia

(1) Transit Time

Total transit time from Japan to Central Asia (Tashkent) by the Trans-Siberian Route is 20 days (ocean transport 2 days + land transport 13 days + additional time 5 days). The TRACECA Route also takes 20 days for the journey (ocean transport 3 days + land transport 10 days + additional time 7 days).

(2) Additional Time

During the journey from Japan to Central Asia, the Trans-Siberian Route passes 3 Customs Check Points and 1 Transshipment Point. The TRACECA Route has 3 Customs Check Points and 2 Transshipment Points along the route.

Table 4.2.2-46 Comparison of Transit Time (Tokyo-Tashkent)

	Trans siberian Route		TRACECA Route	
Route	Tokyo(Y'hama) - Vostochny - Tashkent		Tokyo - Lianyungang - Dostyk - Almaty - Tashkent	
Transport Time (Days)	Tokyo/Vostochny	2	Tokyo/Lianyungang	3
	Vostochny/Tashkent	13	Lianyungang/Dostyk	7
			Dostyk/Almaty	1
			Almaty/Tashkent	2
	Total	15	Total	13
Customs Check Points (No.)		3		3
Transhipment Points (No.)		1		2
Customs Check and Transshipment (day)		5		7
Transport Time(day)		20		20

(3) Transport Cost

Transport cost from Japan to Central Asia (Tashkent) by the Trans-Siberia Route is $5,000.

Cost from Korea by the Trans-Siberia Route is $4,300, due to lower ocean freight to Vostochny.

Transport cost from Japan (and Korea) to Central Asia by the TRACECA Route is $3,500.

Table 4.2.2-47 Comparison of Transport Cost (Tokyo-Tashkent)

	Trans siberian Route		TRACECA Route	
Route	Tokyo(Y'hama) - Vostochny - Tashkent		Tokyo - Lianyungang - Dostyk - Almaty - Tashkent	
Transport Cost (US $/ Container)	Tokyo/Vostochny	2,500	Tokyo/Lianyungang	850
	Vostochny/Tashkent	2,180	Lianyungang/Dostyk	1,260
	Other cost	400	Dostyk/Almaty	409
			Almaty/Tashkent	500
			Other Costs	500
	Total	5,080	Total	3,519

(4) Overall Assessment

On the transport corridor connecting Japan/Korea to Central Asia (Tashkent), transit times for the

Trans-Siberian Route and the TRACECA Route are almost the same. The TRACECA Route has 2 transshipment points while the Trans-Siberian Route has only 1. The TRACECA Route may be at a disadvantage because of the possibility of delay at the points. Concerning the cost, the TRACECA Route has a comparative advantage over the Trans-Siberian Route by $1,500. The gap is narrowed to $800 in case of shipment from Korea.

Table 4.2.2-48 Overall comparison of Corridor (Tokyo-Tashkent)

	Trans siberian Route		TRACECA Route	
Route	Tokyo(Y'hama) - Vostochny - Tashkent		Tokyo - Lianyungang - Dostyk - Almaty - Tashkent	
Trade Volume (US$ Million)	1,729			
Trade Volume (Million TEU)	0.014			
Distance (km)	Tokyo/Vostochny	1,695	Tokyo/Lianyungang	2,183
	Vostochny/Tashkent	8,720	Lianyungang/Dostyk	4,500
			Dostyk/Almaty	870
			Almaty/Tashkent	999
	Total	10,415	Total	8,552
Average Speed (km/day)	Tokyo/Vostochny	800	Tokto/Lianyungang	800
	Vostochny/Tashkent	650	Lianyungang/Dostyk	660
			Dostyk/Almaty	650
			Almaty/Tashkent	650
Transport Time (Days)	Tokyo/Vostochny	2	Tokyo/Lianyungang	3
	Vostochny/Tashkent	13	Lianyungang/Dostyk	7
			Dostyk/Almaty	1
			Almaty/Tashkent	2
	Total	16	Total	12
Customs Check Points (No.)		3		3
Transhipment Points (No.)		1		2
Customs Check and Transshipment (day)		5		7
Transport Time(day)		21		19
Unit Transport Cost (US $/ Container)	Tokyo/Vostochny	1.475	Tokyo/Lianyungang	0.389
	Vostochny/Tashkent	0.250	Lianyungang/Dostyk	0.280
			Dostyk/Almaty	0.470
			Almaty/Tashkent	0.501
Transport Cost (US $/ Container)	Tokyo/Vostochny	2,500	Tokyo/Lianyungang	850
	Vostochny/Tashkent	2,180	Lianyungang/Dostyk	1,260
	Other cost	400	Dostyk/Almaty	409
			Almaty/Tashkent	500
			Other Costs	500
	Total	5,080	Total	3,519

17) China (Coastal Area) – Central Asia

The study is made on 2 representative transport routes for the China Coastal Area (Shanghai)-Central Asia (Tashkent) Corridor.

The Trans-Siberian Route goes from Shanghai to a Russian littoral port by ship and then by rail through Russia and Kazakhstan to reach Central Asia.

The TRACECA Route goes from Shanghai by rail through China and Kazakhstan to reach Central Asia.

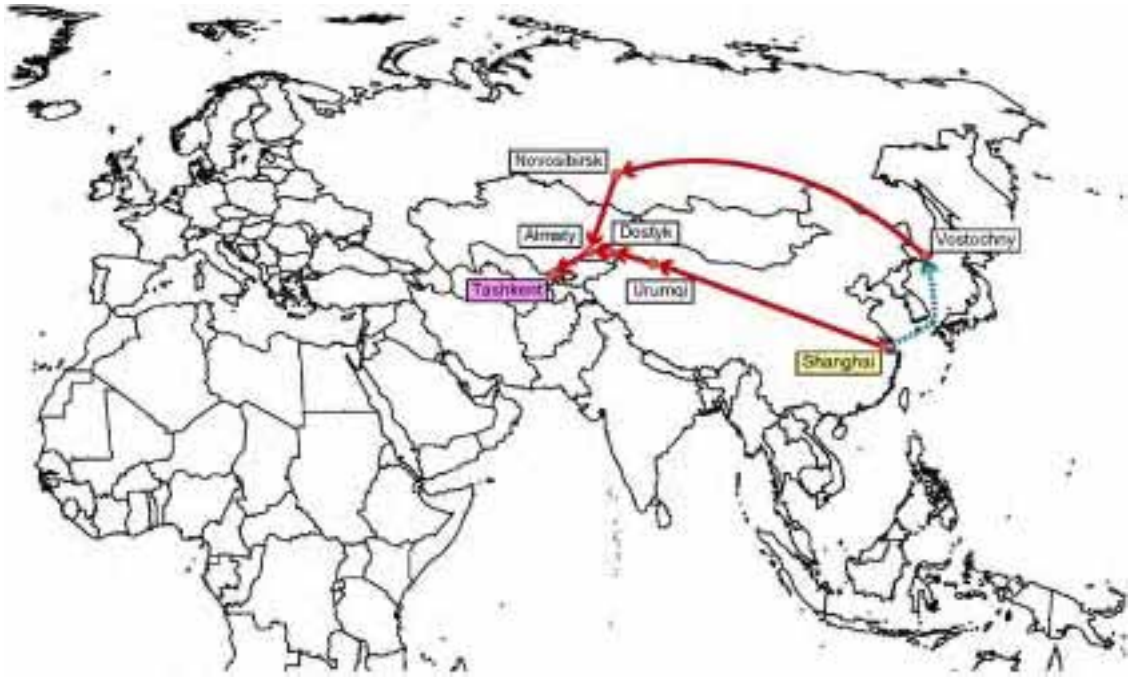


Figure 4.2.2-17 Transport Route: China (Coastal Area)-Central Asia

(1) Transit Time

Total transit time from Shanghai to Central Asia (Tashkent) by the Trans-Siberian Route is 20 days (ocean transport 2 days + land transport 13 days + additional time 5 days). The TRACECA Route takes 14 days for the entire journey (land transport 10 days + additional time 4 days).

(2) Additional Time

During the journey from Shanghai to Central Asia (Tashkent), the Trans-Siberian Route passes 3 Customs Check Points and 1 Transshipment Point. The TRACECA Route has 2 Customs Check Points and 1 Transshipment Point along the route.

Table 4.2.2-49 Comparison of Transit Time (Shanghai-Tashkent)

	Trans siberian Route		TRACECA Route	
Route	Shanghai - Vostochny - Tashkent		Shanghai - Dostyk - Almaty - Tashkent	
Transport Time (Days)	Shanghai/Vostochny	2	Shanghai/Dostyk	7
	Vostochny/Tashkent	13	Dostyk/Almaty	1
			Almaty/Tashkent	2
	Total	15	Total	10
Customs Check Points (No.)		3		2
Transhipment Points (No.)		1		1
Customs Check and Transshipment (day)		5		4
Transport Time(day)		20		14

(3) Transport Cost

Transport cost from Shanghai to Central Asia (Tashkent) by the Trans-Siberia Route is $4,000. Transport cost by the TRACECA Route is $2,600.

Table 4.2.2-50 Comparison of Transport Cost (Shanghai-Tashkent)

	Trans siberian Route		TRACECA Route	
Route	Shanghai - Vostochny - Tashkent		Shanghai - Dostyk - Almaty - Tashkent	
Transport Cost (US $/ Container)	Shanghai/Vostochny	1,500	Shanghai/Dostyk	1,350
	Vostochny/Tashkent	2,180	Dostyk/Almaty	409
	Other cost	400	Almaty/Tashkent	500
			Other Costs	300
	Total	4,080	Total	2,559

(4) Overall Assessment

On the transport corridor connecting the China Coastal Area (Shanghai) to Central Asia (Tashkent), the TRACECA Route has a definite advantage of transit time and transport cost over the Trans-Siberia Route.

Table 4.2.2-51 Overall comparison of Corridor (Shanghai -Tashkent)

	Trans siberian Route		TRACECA Route	
Route	Shanghai - Vostochny - Tashkent		Shanghai - Dostyk - Almaty - Tashkent	
Trade Volume (US$ Million)	9,315			
Trade Volume (Million TEU)	0.223			
Distance (km)	Shanghai/Vostochny	1,785	Shanghai/Dostyk	4,500
	Vostochny/Tashkent	8,720	Dostyk/Almaty	870
			Almaty/Tashkent	999
	Total	10,505	Total	6,369
Average Speed (km/day)	Shanghai/Vostochny	800	Shanghai/Dostyk	660
	Vostochny/Tashkent	650	Dostyk/Almaty	650
			Almaty/Tashkent	650
Transport Time (Days)	Shanghai/Vostochny	2	Shanghai/Dostyk	7
	Vostochny/Tashkent	13	Dostyk/Almaty	1
			Almaty/Tashkent	2
	Total	16	Total	10
Customs Check Points (No.)	3		2	
Transhipment Points (No.)	1		1	
Customs Check and Transshipment (day)	5		4	
Transport Time(day)	21		14	
Unit Transport Cost (US $/ Container)	Shanghai/Vostochny	0.840	Shanghai/Dostyk	0.300
	Vostochny/Tashkent	0.250	Dostyk/Almaty	0.470
			Almaty/Tashkent	0.501
Transport Cost (US $/ Container)	Shanghai/Vostochny	1,500	Shanghai/Dostyk	1,350
	Vostochny/Tashkent	2,180	Dostyk/Almaty	409
	Other cost	400	Almaty/Tashkent	500
			Other Costs	300
	Total	4,080	Total	2,559

18) China (Inland Area)-Central Asia

The study is made on 2 representative transport routes for China Inland Area (Urumqi)-Central Asia (Tashkent) Corridor.

The Trans-Siberian Route goes from Urumqi to a Chinese port by rail first and then to a Russian littoral port by ship, and from there by rail through Russia and Kazakhstan to reach Central Asia.

The TRACECA Route goes from Urumqi by rail through China and Kazakhstan to reach Central Asia.

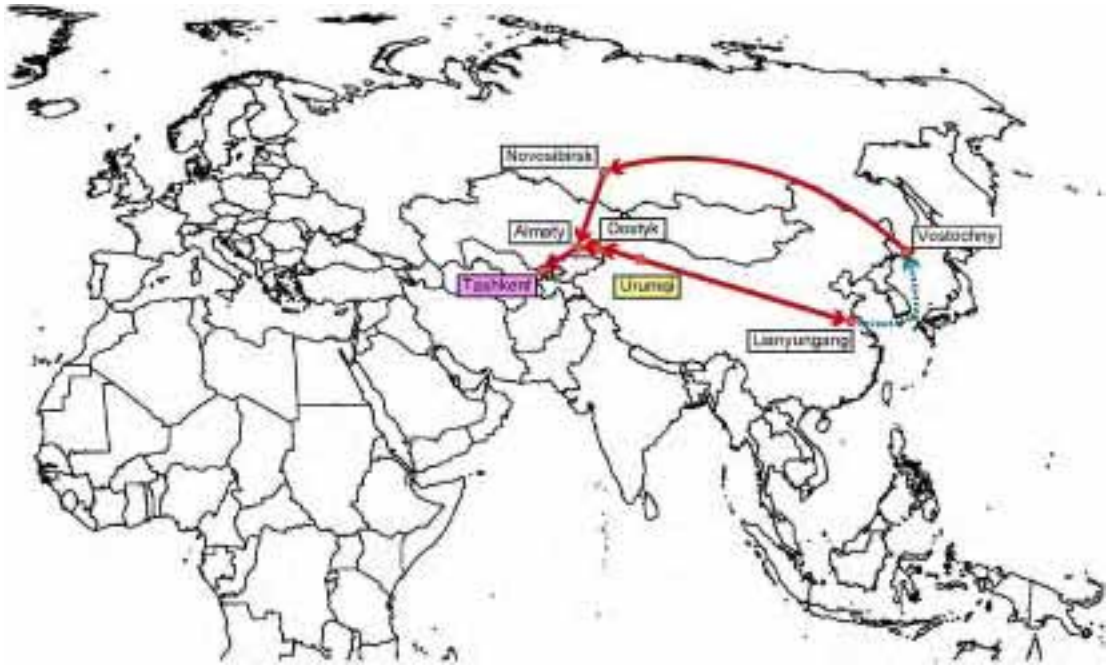


Figure 4.2.2-18 Transport Route: China (Inland Area)-Central Asia

(1) Transit Time

Total transit time from Urumqi to Central Asia (Tashkent) by the Trans-Siberian Route is 28 days (ocean transport 2 days + land transport 19 days + additional time 7 days). The TRACECA Route takes 9 days for the journey (land transport 5 days + additional time 4 days), which is shorter than the Trans-Siberian Route by 19 days.

(2) Additional Time

During the journey from Urumqi to Central Asia (Tashkent), the Trans-Siberian Route passes 3 Customs Check Points and 2 Transshipment Points while the TRACECA Route has 2 Customs Check Points and 1 Transshipment Point along the route.

Table 4.2.2-52 Comparison of Transit Time (Urumqi-Tashkent)

	Trans Siberian Route		TRACECA Route	
Route	Urumqi - Lianyungang - Vostochny - Tashkent		Urumqi - Dostyk - Almaty - Tashkent	
Transport Time (Days)	Urumqi/Lianyungang	6	Urumqi/Dostyk	1
	Lianyugang/Vostochny	2	Dostyk/Almaty	2
	Vostochiny/tashkent	13	Almaty/tashkent	2
	Total	21	Total	5
Customs Check Points (No.)		3		2
Transhipment Points (No.)		2		1
Customs Check and Transshipment (day)		7		4
Transport Time(day)		28		9

(3) Transport Cost

Transport cost from Urumqi to Central Asia (Tashkent) by the Trans-Siberia Route is $7,700. On the other hand, transport cost by the TRACECA Route is $1,400.

Table 4.2.2-53 Comparison of Transport Cost (Urumqi-Tashkent)

	Trans Siberian Route		TRACECA Route	
Route	Urumqi - Lianyungang - Vostochny - Tashkent		Urumqi - Dostyk - Almaty - Tashkent	
Transport Cost (US $/ Container)	Urumqi/Lianyungang	2,500	Urumqi/Dostyk	149
	Lianyugang/Vostochny	2,500	Dostyk/Almaty	409
	Vostochiny/tashkent	2,180	Almaty/tashkent	500
	Other Costs	500	Other Costs	300
	Total	7,680	Total	1,358

(4) Overall Assessment

In the transport corridor connecting China Inland Area (Urumqi) to Central Asia (Tashkent), the TRACECA Route has a definite advantage of both transit time and transport cost over the Trans-Siberia Route. It is a natural result derived from the large difference in traveling distance.

Table 4.2.2-54 Overall Comparison of Corridor (Urumqi -Tashkent)

	Trans Siberian Route		TRACECA Route	
Route	Urumqi - Lianyungang - Vostochny - Tashkent		Urumqi - Dostyk - Almaty - Tashkent	
Trade Volume (US$ Million)	132			
Trade Volume (Million TEU)	0.003			
Distance (km)	Urumqi/Lianyungang	3,671	Urumqi/Dostyk	496
	Lianyugang/Vostochny	1,887	Dostyk/Almaty	870
	Vostochiny/Tashkent	8,720	Almaty/tashkent	999
	Total	14,278	Total	2,365
Average Speed (km/day)	Urumqi/Lianyungang	660	Urumqi/Dostyk	660
	Lianyugang/Vostochny	800	Dostyk/Almaty	650
	Vostochiny/tashkent	650	Almaty/tashkent	650
Transport Time (Days)	Urumqi/Lianyungang	6	Urumqi/Dostyk	1
	Lianyugang/Vostochny	2	Dostyk/Almaty	2
	Vostochiny/tashkent	13	Almaty/tashkent	2
	Total	21	Total	5
Customs Check Points (No.)	3		2	
Transhipment Points (No.)	2		1	
Customs Check and Transshipment (day)	7		4	
Transport Time(day)	28		9	
Unit Transport Cost (US $/ Container)	Urumqi/Lianyungang	0.681	Urumqi/Dostyk	0.300
	Lianyugang/Vostochny	1.325	Dostyk/Almaty	0.470
	Vostochiny/tashkent	0.250	Almaty/tashkent	0.501
Transport Cost (US $/ Container)	Urumqi/Lianyungang	2,500	Urumqi/Dostyk	149
	Lianyugang/Vostochny	2,500	Dostyk/Almaty	409
	Vostochiny/tashkent	2,180	Almaty/tashkent	500
	Other Costs	500	Other Costs	300
	Total	7,680	Total	1,358

19) Iran-West Russia

This is the trunk line of the North/South Corridor, connecting Iran and Russia. The aim of this analysis is to examine the potential of diverting the route to Kazakhstan via Aktau.

The study is made on 2 transport routes for Iran (Tehran)-West Russia (Moscow) Corridor.

On the Aktau Route, cargos are landed at Aktau Port in Kazakhstan and transported by rail to Moscow through Kazakhstan and Russia.

On the Astrakhan Route, cargos are landed at Astrakhan Port in Russia and transported by rail to Moscow so the entire transport is through Russian territory.

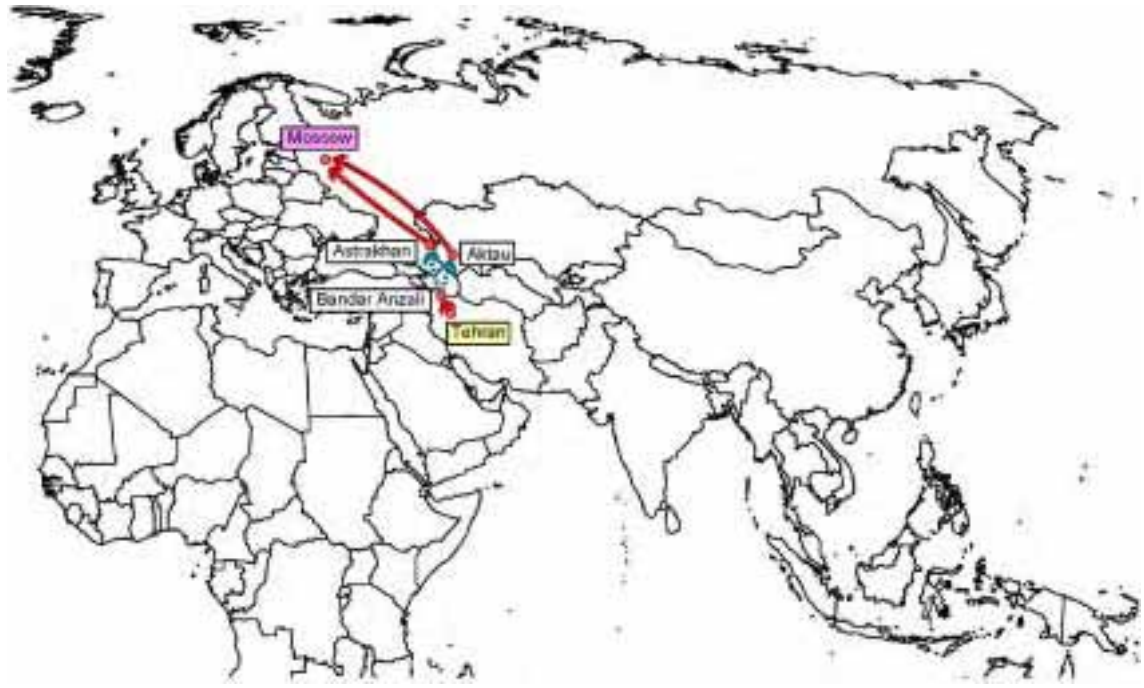


Figure 4.2.2-19 Transport Route: Iran-West Russia

(1) Transit Time

Total transit time from Iran (Tehran) to Moscow via Aktau Route is 14 days (ocean transport 2 days + land transport 6 days + additional time 6 days). The Astrakhan Route needs 12 days for the journey (ocean transport 2 days + land transport 5 days + additional time 5 days), which is shorter than the Aktau Route by 2 days.

(2) Additional Time

En route to Moscow, the Aktau Route passes 2 Customs Check Points and 2 Transshipment Points while

The Astrakhan Route has 1 Customs Check Point and 2 Transshipment Points along the route.

Table 4.2.2-55 Comparison of Transit Time (Tehran-Moscow)

	Akutau Route		Astrakhan Route	
Route	Tehran - Bandar Anzali - Aktau - Moscow		Tehran - Bandar Anzali - Astrakhan - Moscow	
Transport Time (Days)	Tehran/Bandar Anzali	1	Tehran/Bandar Anzali	1
	Bandar Anzali/Aktau	2	Bandar Anzali/Astrakha	2
	Aktau/Moscow	5	Astrakhan/Moscow	3
	Total	8	Total	6
Customs Check Points (No.)		2		1
Transhipment Points (No.)		2		2
Customs Check and Transshipment (day)		6		5
Transport Time(day)		14		11

(3) Transport Cost

Transport cost from Tehran to Moscow by the Aktau Route is $2,800. On the other hand, transport cost by the Astrakhan Route is $3,000.

Table 4.2.2-56 Comparison of Transport Cost (Tehran-Moscow)

	Akutau Route		Astrakhan Route	
Route	Tehran - Bandar Anzali - Aktau - Moscow		Tehran - Bandar Anzali - Astrakhan - Moscow	
Transport Cost (US $/ Container)	Tehran/Bandar Anzali	342	Tehran/Bandar Anzali	342
	Bandar Anzali/Aktau	670	Bandar Anzali/Astrakha	1,000
	Aktau/Moscow	1,380	Astrakhan/Moscow	1,380
	Other Costs	400	Other Costs	300
	Total	2,792	Total	3,022

(4) Overall Assessment

For the transport Corridor Iran-Moscow, the Astrakhan Route has a comparative advantage of shorter transit time by 2 days. Also, the Astrakhan Route has the advantage of transport cost, but the difference is small.

Table 4.2.2-57 Overall comparison of Corridor (Tehran-Moscow)

	Akutau Route		Astrakhan Route	
Route	Tehran - Bandar Anzali - Aktau - Moscow		Tehran - Bandar Anzali - Astrakhan - Moscow	
Trade Volume (US$ Million)	534			
Trade Volume (Million TEU)	0.068			
Distance (km)	Tehran/Bandar Anzali	380	Tehran/Bandar Anzali	380
	Bandar Anzali/Aktau	709	Bandar Anzali/Astrakha	1,120
	Aktau/Moscow	3,758	Astrakhan/Moscow	2,630
	Total	4,847	Total	4,130
Average Speed (km/day)	Tehran/Bandar Anzali	650	Tehran/Bandar Anzali	650
	Bandar Anzali/Aktau	600	Bandar Anzali/Astrakha	600
	Aktau/Moscow	760	Astrakhan/Moscow	870
Transport Time (Days)	Tehran/Bandar Anzali	1	Tehran/Bandar Anzali	1
	Bandar Anzali/Aktau	2	Bandar Anzali/Astrakha	2
	Aktau/Moscow	5	Astrakhan/Moscow	3
	Total	8	Total	6
Customs Check Points (No.)		2		1
Transhipment Points (No.)		2		2
Customs Check and Transshipment (day)		6		5
Transport Time(day)		14		11
Unit Transport Cost (US $/ Container)	Tehran/Bandar Anzali	0.900	Tehran/Bandar Anzali	0.900
	Bandar Anzali/Aktau	0.945	Bandar Anzali/Astrakha	0.893
	Aktau/Moscow	0.367	Astrakhan/Moscow	0.525
Transport Cost (US $/ Container)	Tehran/Bandar Anzali	342	Tehran/Bandar Anzali	342
	Bandar Anzali/Aktau	670	Bandar Anzali/Astrakha	1,000
	Aktau/Moscow	1,380	Astrakhan/Moscow	1,380
	Other Costs	400	Other Costs	300
	Total	2,792	Total	3,022

20) Iran-Central & East Russia

This transport corridor belongs to the North/South Corridor, connecting Iran and Russia. In this analysis, the aim is to see the potential of diverting the route to Kazakhstan via Aktau.

The study is made on 2 transport routes for Iran (Tehran)-Central & East Russia (Omsk) Corridor.

On the Aktau Route, cargos are landed at Aktau Port in Kazakhstan and transported by rail to Omsk through Kazakhstan and Russia.

On the Astrakhan Route, cargos are landed at Astrakhan Port in Russia and transported by rail to Omsk so that all the way is through Russian territory.

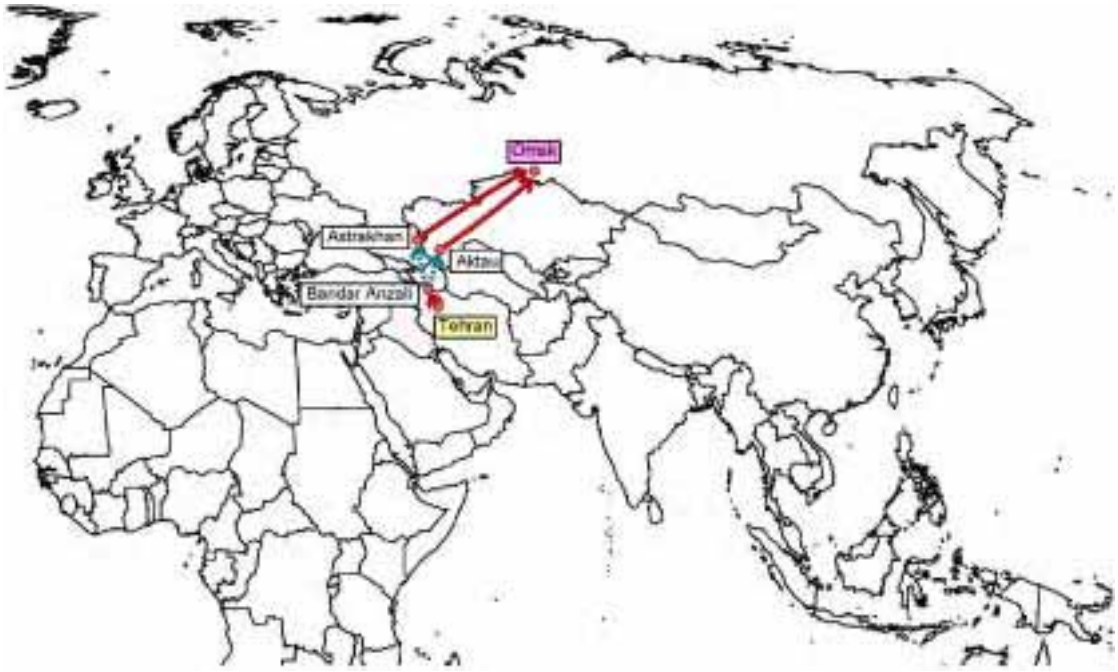


Figure 4.2.2-20 Transport Route: Iran-Central & East Russia

(1) Transit Time

Total transit time from Iran (Tehran) to Omsk via the Aktau Route is 13 days (ocean transport 2 days + land transport 5 days + additional time 6 days). The Astrakhan Route needs 12 days for the journey (ocean transport 2 days + land transport 5 days + additional time 5 days).

(2) Additional Time

En route to Omsk, the Aktau Route passes 2 Customs Check Points and 2 Transshipment Points while the Astrakhan Route has 1 Customs Check Point and 2 Transshipment Points along the route.

Table 4.2.2-58 Comparison of Transit Time (Tehran-Omsk)

	Aktau Route		Astrakhan Route	
Route	Tehran - Bandar Anzali - Aktau - Petropavlovsk - Omsk		Tehran - Bandar Anzali - Astrakhan - Omsk	
Transport Time (Days)	Tehran/Bandar Anzali	1	Tehran/Bandar Anzali	1
	Bandar Anzali/Aktau	2	Bandar Anzali/Astrakha	2
	Aktau/Petropavlovsk/O	4	Astrakhan/Omsk	4
	Total	7	Total	7
Customs Check Points (No.)		2		1
Transhipment Points (No.)		2		2
Customs Check and Transshipment (day)		6		5
Transport Time(day)		13		12

(3) Transport Cost

Transport cost from Tehran to Omsk by the Aktau Route is $2,200. On the other hand, transport cost by the Astrakhan Route is $2,500.

Table 4.2.2-59 Comparison of Transport Cost (Tehran-Omsk)

	Aktau Route		Astrakhan Route	
Route	Tehran - Bandar Anzali - Aktau - Petropavlovsk - Omsk		Tehran - Bandar Anzali - Astrakhan - Omsk	
Transport Cost (US $/ Container)	Tehran/Bandar Anzali	342	Tehran/Bandar Anzali	342
	Bandar Anzali/Aktau	670	Bandar Anzali/Astrakha	1,000
	Aktau/Petropavlovsk/O	760	Astrakhan/Omsk	838
	Other Costs	400	Other Costs	300
	Total	2,172	Total	2,480

(4) Overall Assessment

For the transport corridor Iran-Omsk, the Aktau Route has a comparative advantage in terms of transport cost and there is no significant difference in transit time. Therefore, depending on the ship service frequency between Iran/Aktau and Iran/Astrakhan, there is good potential for the Aktau Route

to gain the overall advantage over the Astrakhan Route.

Table 4.2.2-60 Overall Comparison of Corridor (Tehran-Omsk)

	Aktau Route		Astrakhan Route	
Route	Tehran - Bandar Anzali - Aktau - Petropavlovsk - Omsk		Tehran - Bandar Anzali - Astrakhan - Omsk	
Trade Volume (US$ Million)	104			
Trade Volume (Million TEU)	0.013			
Distance (km)	Tehran/Bandar Anzali	380	Tehran/Bandar Anzali	380
	Bandar Anzali/Aktau	709	Bandar Anzali/Astrakha	1,120
	Aktau/Petropavlovsk/O	3,168	Astrakhan/Omsk	3,350
	Total	4,257	Total	4,850
Average Speed (km/day)	Tehran/Bandar Anzali	650	Tehran/Bandar Anzali	650
	Bandar Anzali/Aktau	600	Bandar Anzali/Astrakha	600
	Aktau/Petropavlovsk/O	760	Astrakhan/Omsk	870
Transport Time (Days)	Tehran/Bandar Anzali	1	Tehran/Bandar Anzali	1
	Bandar Anzali/Aktau	2	Bandar Anzali/Astrakha	2
	Aktau/Petropavlovsk/O	4	Astrakhan/Omsk	4
	Total	7	Total	7
Customs Check Points (No.)		2		1
Transhipment Points (No.)		2		2
Customs Check and Transshipment (day)		6		5
Transport Time(day)		13		12
Unit Transport Cost (US $/ Container)	Tehran/Bandar Anzali	0.900	Tehran/Bandar Anzali	0.900
	Bandar Anzali/Aktau	0.945	Bandar Anzali/Astrakha	0.893
	Aktau/Petropavlovsk/O	0.240	Astrakhan/Omsk	0.250
Transport Cost (US $/ Container)	Tehran/Bandar Anzali	342	Tehran/Bandar Anzali	342
	Bandar Anzali/Aktau	670	Bandar Anzali/Astrakha	1,000
	Aktau/Petropavlovsk/O	760	Astrakhan/Omsk	838
	Other Costs	400	Other Costs	300
	Total	2,172	Total	2,480

(5) Alternative Route

Just recently (July 2007), the Governments of Kazakhstan, Turkmenistan, and Iran concluded an agreement on the construction of a new railway line. This new line connects Uzen (Kazakhstan), which is located near Aktau, and Kazandgik (Turkmenistan) and goes to Gorgan (Iran).

This new line will be a powerful alternative to the current North-South Corridor, which primarily uses sea transportation through the Caspian Sea. Upon successful completion of this new line, cargo from Iran can be transported all the way by railway without any transshipment at both ends of the Caspian Sea.

4.3 Potential of Trans-Kazakhstan Route in Eurasia

Assessment of the Trans-Asian Routes

Each transport route has its own strengths and weaknesses by nature. It is important to enhance the strengths and take necessary measures to overcome the weaknesses.

The following are the strengths and weaknesses pertaining to the Trans-Asian Route:

Strengths

1) It has the shortest traveling distance between Asia and Europe.
2) It can provide seamless railway route from the East Asian coastline to major European industrial areas with a minimum number of transshipment points (Dostyk and Brest).
3) It can provide competitive conditions in terms of transit time and/or transport cost for the cargo originating from China Coastal Area and China Inland Area.

Weaknesses

1) There is a lack of awareness in the market of this route as an alternative trunk line to connect Asia and Europe, while it is well-known as a trunk line for the Central Asia region. Due to limited experience of actual transport on this route, some cargo-owners/forwarders are hesitant to choose this route.
2) Due to combined transportation mode, it is difficult to warrant the reliability of through transport

service (punctuality, safety and cargo information provision) by one transporter to cargo-owners. Measures for overcoming the weaknesses and enhancing the strengths of the route are discussed below.

Potential of the Trans-Kazakhstan Route (TRACECA Route)

As stated in the Basic Agreement concluded in 1993, one of the main objectives of TRACECA is to assist in the development of economic relations, trade and transport communication in Europe, the Black Sea region, the Caucasus, the Caspian Sea region and Asia. Because of the vastness of the area covered and TRACECA's rather loose formation as a single unit to penetrate entire states, its function as a concrete transportation corridor is limited to the regional level. It certainly works as a catalyst for bilateral talks for the development of transportation links among the countries involved, but commercial development of this transportation route still remains to be seen. The main reason for this is its multi-modal characteristics as a transportation route. The TRACECA route is composed of various land routes and sea routes, thus involving many points of mode change that require transshipment of the cargo. It is a well-observed fact that, as the number of transshipment points increases, the efficiency of the route decreases. This is also true about the number of border-crossing points, of which the TRACECA route has many due to the number of countries involved in the scheme. For the future development of the route, it is important to improve efficiency at transshipment points and border-crossing points as well.

Currently, the following three main rail/sea routes in TRACECA connect East Asia to the Caucasus and beyond:

- Turkmenbashi TRACECA Route
  (Dostyk – Almaty – Tashkent – Turkmenbashi –the Caspian Sea – the Caucasus – Europe)
- Kazakhstan - Aktau TRACECA Route
  (Dostyk – Almaty – Kaadyagash – Aktau – the Caspian Sea – the Caucasus – Europe)
- Uzbekistan - Aktau TRACECA Route
  (Dostyk – Almaty – Tashkent – Aktau – the Caspian Sea – the Caucasus – Europe)

Traditionally, the most commonly used route is the Turkmenbashi TRACECA Route.

Table 4.3-1shows the comparison of those three TRACECA Routes.

Table 4.3-1 Comparison of three TRACECA Routes (Dostyk-Baku)

	Turkmenbashi Route	Kazak-Aktau Route	Uzbek-Aktau Route
Traveling Distance (km)	4,006	4,619	4,610
Transit Time (day)	7.1	8.1	8.1
No. of Transshipment	1	1	1
No. of Customs Check	5	1	2
No. of coutries connected to the route	TRACECA 8 countries plus China & Iran Total 10	China, Kazakhstan, Kyrgystan Total 3 contries	China, Kazakhstan, Kyrgystan, Uzbekistan Total 4 contries
No. of Ferry Service on Caspian Sea	3-4 ships per week	1 ship per week	1 ship per week

(Source: Compiled by JICA Study Team)

The following points are extracted as advantageous factors of the Turkmenbashi TRACECA Route:

1) A total of 10 countries are involved in the TRACECA Route along the railway line. Each country can take advantage of utilizing TRACECA to move products from one country to the other. The accumulation of such regional cargo enables the railway companies to actively operate freight train service. Frequent ferry service between Turkmenbashi and Baku also helps activate regional trade across the Caspian Sea.
2) The Turkmenbashi TRACECA Route has the advantage of being a shorter traveling distance by 610 km compared to the Kazakhstan-Aktau TRACECA Route. This further leads to advantages in transit time and transport cost (estimated $100 reduction in rail freight). Despite many Customs

Check Points involved, it would be possible to anticipate fairly stable transport service, backed by the TRACECA scheme.

On the other hand, the following points can be extracted as disadvantageous factors for the Kazakhstan-Aktau TRACECA Route:

1) The traveling distance is longer than the Turkmenbashi TRACECA Route by 610 km which leads to longer transit time and higher transport cost.
2) The Kazakhstan-Aktau TRACECA Route involves fewer countries along the route and makes it difficult to collect sufficient cargo volume to justify frequent freight train service on the route. This results in a lesser number of Caspian ferry sailings from Aktau Port.

In 2006, the Government of Kazakhstan announced a mid-term transport development plan published as “Transport Strategy of the Republic of Kazakhstan till 2015.” Construction of several new railway lines is included in this strategy. Construction of the Khorgos-Saryozek line is mentioned as providing sufficient capacity for the possible increase of transit cargo from China and construction of the Dzhezkazkan-Bejneu link is mentioned to shorten transit on the East-West railway corridor.

In conjunction with the analysis of the present TRACECA Route, a study is made to see how the construction of these new railway lines contributes to the improvement of the future TRACECA Route.

The study is made in two cases, i.e.:

New line constructed in full length from Dzhezkazkan to Bejneu

New line constructed only from Shalqar to Bejneu (western part)

In all cases, it is assumed that the new line between Khorgos and Saryozek is constructed as well.

Observations from the analysis are summarized as follows:

1) With the construction of the new Shalqar-Beyneu line, the improved Kazak-Aktau Route can have a comparative advantage of both transit time and transport cost over the Turkmenbashi TRACECA Route. New Dzhezkazkan-Bejneu line construction in full length naturally should give a better outcome in terms of running mileage and thus transit time. However, actual saving on the basis of a full trip between Khorgos-Baku is only 110km in distance.
2) Although the Turkmenbashi TRACECA Route still holds the advantage in terms of the number of countries along the route, the cargo generating potential from East Asian countries will give more benefit on this Kazak-Aktau route.
3) Facility expansion work currently in progress at Aktau Port will improve the storage capacity and dwell time for transshipments at the port. That will also lead to an increased number of ferry sailings.

Table 4.3-2 Analysis of TRACECA Route (Khorgos-Baku)

	Turkmenbashi Route	Kazak-Aktau Route	Kazak-Aktau Route (improved)	
			with construction of Shalqar-Beyneu	with construction of Zhezqazghan-Beyneu
Traveling Distance (km)	3,538	4,151	3,417	3,307
Transit Time (day)	6.5	7.4	6.3	6.1
No. of Transshipments	1	1	1	1
No. of Customs Checks	4	1	1	1
No. of countries connected to the route	TRACECA 8 countries plus China & Iran Total 10	China, Kazakhstan, Kyrgystan Total 3 countries	China, Kazakhstan, Kyrgystan Total 3 countries	China, Kazakhstan Total 2countries

(Source: Compiled by JICA Study Team)

Summarizing all of the above analysis, the following is the assessment of the TRACECA Route:

1) The Kazakhstan-Aktau TRACECA Route is 450km longer than the Turkmenbashi TRACECA Route and also the Caspian Sea passage Aktau-Baku is 130km longer than Trukmenbashi-Baku. Under the present routing, the Kazakhstan-Aktau TRACECA Route has no comparative advantage.
2) If the new Shalqar-Beyneu railway line is constructed, the improved Kazakhstan-Aktau TRACECA Route would possesses a comparative advantage of both transit time and transport cost over the Turkmenbashi TRACECA Route.
3) The difference of total traveling distance between Khorgos and Baku in the case of full construction between Dzhezkazkan-Bejneu and partial construction between Shalqar-Beyneu is only 110km. Therefore, it is economically advisable to initially construct the Shalqar-ejneu portion in order to be competitive against the Turkmenbashi Route.
4) The completion of the Khorgos-Saryozek portion shortens transit by 470km than the current route through Dostyk. Consequently, freight earnings for the railway may decrease in proportion to the shortened distance. But the new railway route providing shorter transit and lower freight cost will bring additional cargos to the new rail service and this will be more than enough to cover for the decrease in the rail rate. (However, PPP is to be used for the new line construction, so that may increase the tariff.)

CHAPTER 5 FREIGHT TRAFFIC DEMAND FORECAST

5.1 Future Socio-economic Framework

"Transportation Strategy till 2015" indicates that Kazakhstan's economic growth rate is expected to be at the level of 8.8 – 9.2% per year. The forecast results using this average growth rate, 9%, are shown in Table 5.1-1. Population is also estimated using the recent increase rate trend.

Table 5.1-1 Real GDP and Population Forecast

Year	2005	2010	2017	2017/2005
GDP (Mill. US$)	49,053	75,475	137,971	2.81
Population	15,219.3	15,916.6	16,946.8	1.11
GDP per capita	3,223	4,742	8,141	2.53

Note: GDP is real (net), US$ in 2000 price

Source: JICA Study Team based on the World Bank "Global Economic Prospects 2005"

The World Bank publishes "Global Economic Prospects" on worldwide economic prospects annually. Its 2005 edition shows future regional economic growth rates from 2006 to 2015 shown in Table 5.1-2. The IMF's "World Economic Outlook 2006" indicates estimated economic growth rates in 2006 and 2007 for each country.

Table 5.1-2 Regional Real GDP Annual Percent Change Forecast

Region	E. Asia & Pacific	Europe & Central Asia	Latin America	M. East & N. Africa	South Asia	Sub-Sahara
GDP annual change	6.1%	3.5%	3.6%	4.4%	5.5%	3.5%

Source: JICA Study Team based on the World Bank "Global Economic Prospects 2005"

5.2 Freight Traffic Demand Forecast

5.2.1 General

Freight demand forecast is divided mainly into two phases. The first phase is macro- and meso-scale. The macro-scale treats international trade freight between Kazakhstan and worldwide regions. The meso-scale deals with international trade freight between Kazakhstan and the neighboring countries and also Kazakhstan's transit potential, that is, freight between the neighboring countries themselves. However, it should be noted that the transit potential includes freight by routes other than via Kazakhstan such as all water or via other countries.

The second phase is micro-scale and treats freight movements within Kazakhstan. Therefore, it consists

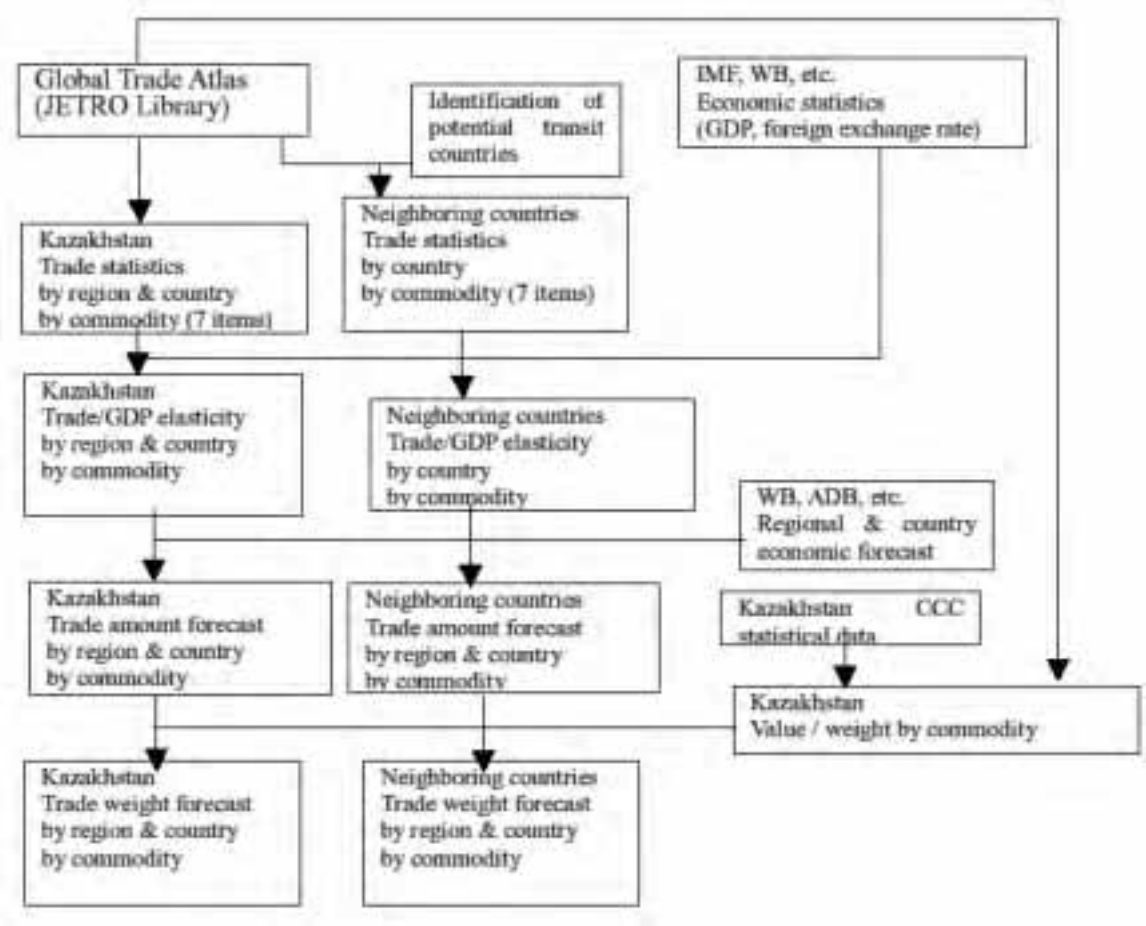
mainly of domestic freight movements, but it includes the international trade freight and transit above.

5.2.2 Macro- and Meso-scale Freight Demand Forecast

(1) Method

The method for macro- and meso-scale demand forecast is shown in Figure 5.2-1.

Although the international trade statistics of Kazakhstan and equivalent trade statistics of the other countries could not be collected in Kazakhstan, Global Trade Atlas, which is supplied by Global Trade Information Services, Inc. through the Internet, is available at the JETRO library in Tokyo.



Source: JICA Study Team

Figure 5.2-1 Macro- and Meso-scale Demand Forecast Method Flowchart

The data can show trade (US$ value and weight, volume or number) between two countries in recent years (depending on the countries) by commodity item (HS code). The “weight, volume or number” does not show the total weight, because that depends on the commodity. Some commodities are shown in weight (kg) and other commodities are measured by volume (liter) or number.

In this method, the commodities are categorized as follows.

- Total
- Cereal (HS code 10)

- Ore (HS code 25, 26)
- Mineral fuel (HS code 27)
- Iron and steel (HS code 72, 73)

Assuming the commodities with HS codes 10, 25, 26, 27, 72 and 73 are bulky freight, general cargo is the remainder, subtracting the sum of HS codes 10 to 73 from the total.

Concerning the years of Kazakhstan trade, Global Trade Atlas shows data only from 1998 to 2003 excluding 2002.

The neighboring countries are selected as follows.

- Russia
- Azerbaijan
- Georgia
- Kyrgyz
- Tajikistan
- Turkmenistan
- Uzbekistan
- China
- Iran

The routes of the other countries seem to be by all water, because the ocean routes are too strong in competition (fare, frequency and reliability). Even Georgia may use mostly the Black Sea route. Afghanistan is not included because trade is small and not stable.

In order to analyze trade between two neighboring countries for future transit potential, there is the problem of which country's statistical data to use. In this method, the trade data of Russia and China have been chosen. Those data are from 2000 to 2005.

Based on the data sets above, elasticity of trade increase rate to GDP increase rate is calculated by import or export and by commodity annually and estimated according to past trends. In this case, the GDP of the importing country is used for import trade. The other country's GDP is used for its export trade.

Past GDP data are obtained from 2.2 in Chapter 2.

Future GDP can be calculated by multiplying present GDP by the future economic growth rates obtained from 5.1 above.

Estimated future trade values are converted to weight using value/weight shown in Table 5.2-1, calculated based on the Kazakhstan Customs Control Committee data.

Table 5.2-1 Value/Weight Converter

Unit: US$/Kg

Import	2004	2005
10 CEREALS	0.2388	0.2140
25 SALT, SULPHUR, EARTH & STONE, LIME & CEMENT	0.0388	0.0432
26 ORES SLAG & ASH	0.2783	0.3838
25&26	0.0730	0.0750
27 MINERAL FUELS, OILS, WAXES & BITUMINOUS SUB	0.0956	0.1155
72 IRON & STEEL	0.4626	0.4808
73 ARTICLES OF IRON OR STEEL	1.2147	1.3062
72&73	0.7776	0.8762
Others	0.7289	1.3342

Export	2004	2005
10 CEREALS	0.1372	0.1052
25 SALT, SULPHUR, EARTH & STONE, LIME & CEMENT	0.0265	0.0219
26 ORES SLAG & ASH	0.0488	0.0695
25&26	0.0443	0.0572
27 MINERAL FUELS, OILS, WAXES & BITUMINOUS SUB	0.1241	0.1820
72 IRON & STEEL	0.2808	0.2871
73 ARTICLES OF IRON OR STEEL	0.1089	0.1385
72&73	0.2682	0.2770
Others	0.7175	0.8228

Note: US$ is net, not gross.

Source: JICA Study Team

(2) Forecast Results

Estimated results are shown in Tables 5.2-2 and -3.

Table 5.2-2 Total Cargo Volume of Kazakhstan

Import (ton)	2005	2010	2017	2017/2005
Eu&CIS (TtlIm)	22,957,939	31,642,746	50,495,447	2.20
Russia (TtlImprt)	15,223,016	20,466,683	31,584,570	2.07
Azer (TtlImprt)	81,913	108,929	164,835	2.01
Grg (TtlImprt)	11,770	18,546	35,430	3.01
Krg (TtlImprt)	302,672	370,835	515,534	1.70
Tjk (TtlImprt)	71,687	105,908	183,842	2.56
Trkm (TtlImprt)	651,737	735,985	872,541	1.34
Uzbek (TtlImprt)	907,145	1,206,243	1,799,375	1.98
Other Eu&CIS	5,708,000	8,629,617	15,339,320	2.69
N. America (TtlIm	839,694	1,103,793	1,622,877	1.93
L. America (TtlIm)	423,567	490,432	690,788	1.63
Japan&Korea	513,476	749,934	1,276,298	2.49
China (TtlImprt)	1,197,698	1,845,244	3,433,251	2.87
SEAs&Pacific	375,067	471,958	727,229	1.94
S Asia (TtlIm)	128,218	176,991	279,073	2.18
M. East (TtlImprt)	517,744	659,108	936,259	1.81
Iran (TtlImprt)	25,457	37,014	63,911	2.51
S-Sahara (TtlImpr	25,978	36,109	57,261	2.20
Import Total	26,979,381	37,176,314	59,518,482	2.21
Export (ton)	2005	2010	2017	2017/2005
Eu&CIS (TtlExprt)	59,515,475	81,412,881	126,855,694	2.13
Russia (TtlEx)	18,064,675	19,581,263	22,593,087	1.25
Azer (TtlEx)	1,107,499	1,507,721	1,977,270	1.79
Grg (TtlEx)	96,455	104,805	116,480	1.21
Krg (TtlEx)	264,205	403,789	733,235	2.78
Tjk (TtlEx)	317,232	408,772	588,608	1.86
Trkm (TtlEx)	104,305	135,962	201,700	1.93
Uzbek (TtlEx)	1,106,392	1,232,663	1,459,875	1.32
Other Eu&CIS	38,454,713	58,037,905	99,185,439	2.58
N. America (TtlEx	230,781	272,832	346,902	1.50
L.AmExclBrm	938,404	1,217,735	1,763,825	1.88
E&SEAsiaPac	9,867,650	15,489,246	27,258,756	2.76
China (TtlEx)	9,354,960	14,485,939	25,302,586	2.70
S Asia (TtlEx)	64,193	76,878	99,319	1.55
M. East (TtlEx)	5,417,207	6,935,048	9,809,029	1.81
Iran (TtlEx)	2,513,455	3,448,316	5,258,437	2.09
S-Sahara (TtlEx)	64,202	75,582	95,527	1.49
Export Total	76,097,913	105,480,204	166,229,052	2.18

Table.5.2-3 General Cargo Volume of Kazakhstan

Import (ton)	2005	2010	2017	2017/2005
Eu&CIS (GCIm)	7,751,963	12,552,729	24,226,757	3.13
Russia (GCImprt)	3,517,835	6,016,130	12,106,485	3.44
Azer (GCImprt)	14,529	24,535	49,103	3.38
Grg (GCImprt)	6,870	12,725	28,020	4.08
Krg (GCImprt)	65,818	110,814	218,849	3.33
Tjk (GCImprt)	5,044	9,260	20,781	4.12
Trkm (GCImprt)	1,883	2,092	2,420	1.29
Uzbek (GCImprt)	37,466	60,781	113,922	3.04
Other Eu&CIS	4,102,517	6,316,391	11,687,177	2.85
N. America (GCI	757,724	1,001,582	1,479,906	1.95
L. America (GCIr	215,748	328,335	574,989	2.67
Japan&Korea	507,463	744,835	1,271,352	2.51
China (GCImprt)	750,197	1,233,558	2,462,906	3.28
SEAs&Pacific	115,716	186,182	350,838	3.03
S Asia (GCIm)	113,261	157,620	250,260	2.21
M. East (GCImpr	401,718	540,046	812,235	2.02
Iran (GCImprt)	19,787	30,656	56,419	2.85
S-Sahara (GCIm	25,248	35,193	56,005	2.22
Import GC total	10,639,039	16,780,080	31,485,249	2.96
Export (ton)	2005	2010	2017	2017/2005
EuCIS(GCEx)	2,604,692	4,686,967	9,790,006	3.76
Russia (GCEx)	1,279,255	2,114,219	3,517,835	2.75
Azer (GCEx)	45,729	87,795	158,031	3.46
Grg (GCEx)	1,713	3,636	6,645	3.88
Krg (GCEx)	244,566	382,163	708,648	2.90
Tjk (GCEx)	63,946	101,737	179,906	2.81
Trkm (GCEx)	48,899	70,550	116,310	2.38
Uzbek (GCEx)	57,087	70,101	80,145	1.40
Other Eu&CIS	863,497	1,856,766	5,022,485	5.82
N. America (GCE	119,579	136,850	164,716	1.38
L.AmExclBrm	859,874	1,138,923	1,684,394	1.96
E&SEAsiaPac	1,694,964	3,577,477	8,151,252	4.81
China (GCEx)	1,509,761	3,202,289	7,297,176	4.83
S Asia (GCEx)	5,907	8,568	13,909	2.35
M. East (GCEx)	49,898	115,238	263,225	5.28
Iran (GCEx)	40,677	57,705	55,022	1.35
S-Sahara (GCEx	1,934	4,039	8,088	4.18
Export GC total	5,336,848	9,668,062	20,075,590	3.76

5.2.3 Freight Demand Forecast (Domestic)

(1) Demand forecast process for domestic railway freight volume

The micro-scale demand forecast method is shown in Figure 5.2-2.

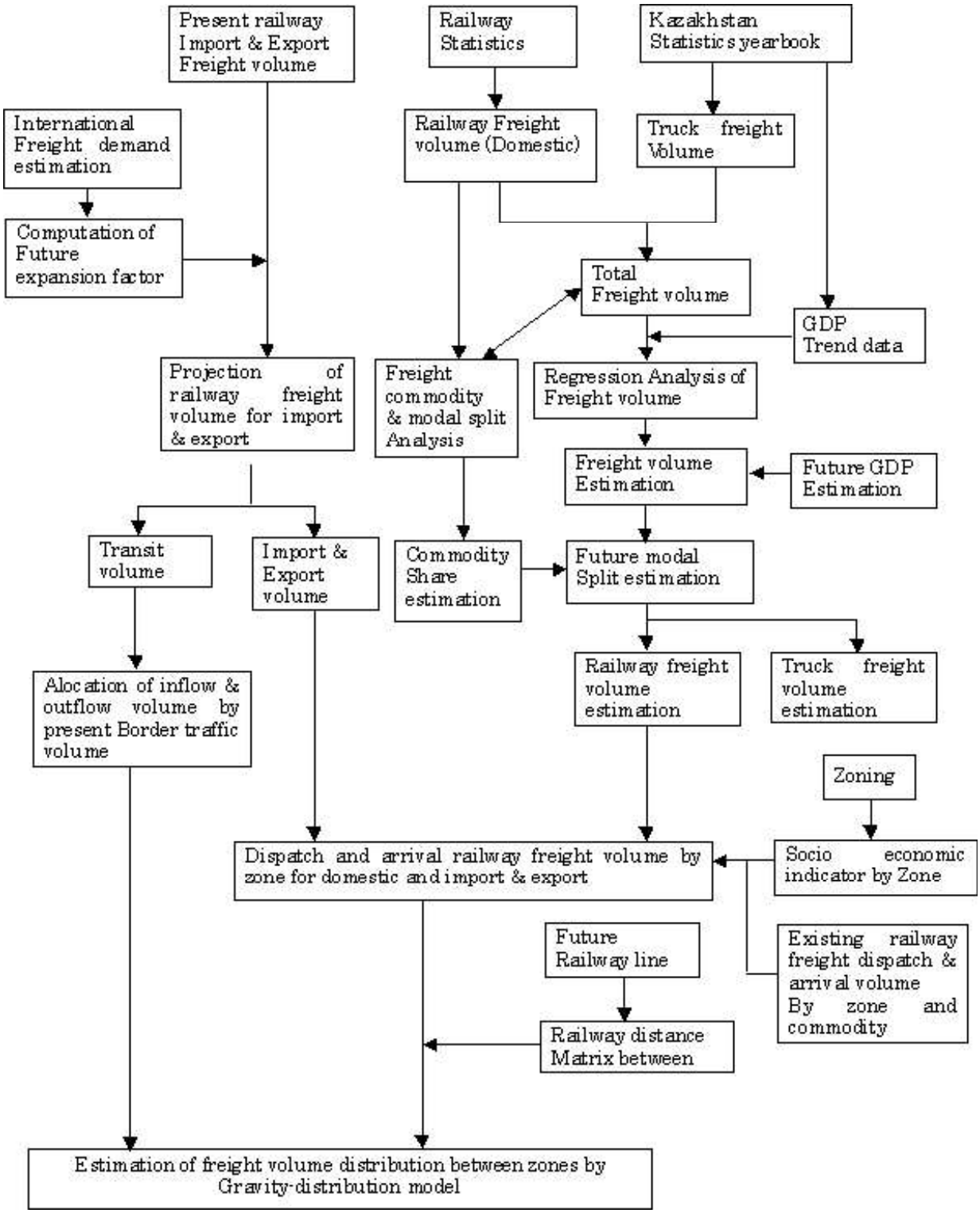


Figure 5.2-2 Flow Chart for Freight Demand Forecast (Domestic Demand)

(2) Estimation of future freight volume

1) Past trends for railway and truck freight

Past trends for railway and truck freight are shown in Tables 5.2-4 and -5.

Table 5.2-4 Trends for Railway Freight Volume

	1999	2000	2001	2002	2003	2004	2005
Freight turnover (mill. ton*kilo, net)	91,700	124,983	135,653	133,088	147,672	163,420	171,900
Domestic	43,872	54,301	60,387	60,648	68,848	74,896	
export	36,323	56,260	59,188	55,242	58,574	62,559	
import	3,843	5,809	7,631	7,854	10,100	12,954	
transit	7,662	8,614	8,447	9,345	10,150	13,011	
Freight turnover (thousand ton)	133,669	171,773	183,772	178,661	202,737	215,544	222,700
Domestic	75,312	89,447	99,576	99,420	113,644	122,548	
export	47,787	69,312	70,648	65,166	72,289	72215.9	
import	5,746	7,396	7,962	7,940	10123.8	12,748	
transit	4,824	5,619	5,585	6,135	6680.8	8,031	

Source: KTZ, Statistical Yearbook 2006

Table 5.2-5 Trends for R Truck Freight Volume

	2001	2002	2003	2004	2005
Freight turnover (bill. ton*kilo)	33.0	37.6	40.2	43.9	47.1
Freight turnover (mill. ton)	1076.9	1219.3	1318.2	1444.8	1511.1
Av. Transport length (km)	30.6	30.8	30.5	30.4	31.2

Source: Statistics Yearbook 2006

2) Total freight volume forecast

To estimate total freight volume which consists of railway freight (domestic) and truck freight, regression analysis was applied. The estimated result for transit cargo volume is shown in the Appendix.

Table 5.2-6 GDP and Freight

Year	2000	2001	2002	2003	2004
GDP in bill. Tenge	2,599.9	3,250.6	3,776.3	4,612.0	5,870.1
Freight total in mill. ton	1,071.4	1,176.5	1,318.7	1,431.8	1,567.3
GDP/Freight ton	2,426.6	2,762.9	2,863.7	3,221.1	3,745.4

As a result of the analysis, the following formula was obtained.

$F_t = 0.1533 * P + 696.55$ $(R^2=0.9717)$

Where F_t is total freight volume in mill. ton, and P is the amount of GDP in bill. KZT.

Substituting future value of GDP for the estimation formula, the following projected values are obtained.

F_{2010}: 2,456 mill. ton

F_{2017}: 3,912 mill. ton

3) Estimation of railway freight transport

(A) Estimation of future commodity composition in freight

According to past trends in railway freight, commodity shares in railway freight have changed year by year. The general cargo share, including primary industrial products, is increasing while the bulk cargo share, including coal and oil, which are the principal railway freight, is decreasing.

Table5.2-7 Past Trends for Commodities in Railway Freight Transport

Commodity type	1999	2000	2001	2002	2003	2004
	Volume in 1000 ton					
Coal	59,399	75,637	80,781	72,976	83,151	83,470
Oil cargo	16,750	20,715	22,993	21,047	21,676	24,259
Ore all	23,117	30,482	29,586	32,106	35,303	38,174
Black metal	4,737	5,735	6,205	6,351	7,310	8,171
Fertilizer	1,692	1,181	1,759	2,254	2,373	3,179
Construction	5,740	7,954	10,531	10,992	14,805	17,319
Timber	644	1,026	1,173	1,360	1,685	2,284
Grain	4,879	7,602	5,796	7,316	8,748	6,020
Others	16,710	21,441	24,948	24,259	27,687	32,667
Total	133,669	171,773	183,771	178,661	202,737	215,544

Source: KTZ

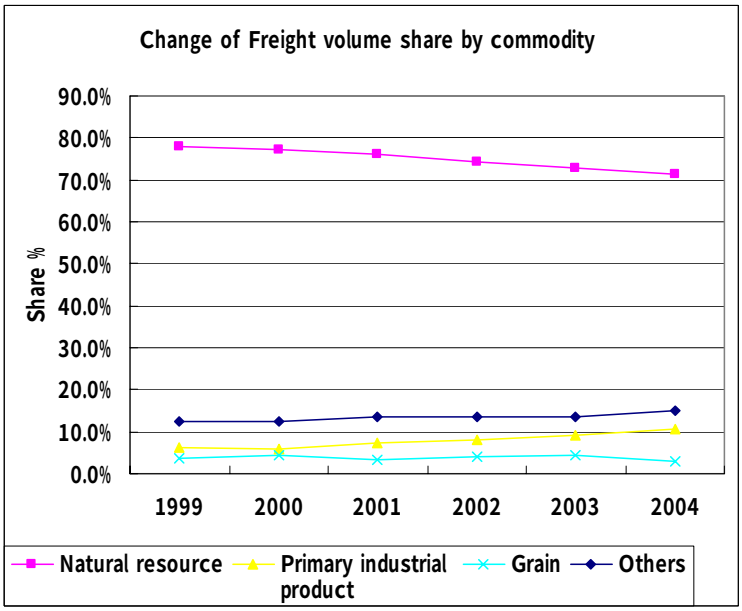


Figure 5.2-3 Past Trends for Freight Commodity Shares

"Natural resource" includes coal, oil, ore and black metal and "primary industrial product" includes fertilizer, construction material and timber.

Future share composition of each commodity is estimated by exploring the past trend value at each target year.

The results are shown in Table 5.2-8.

Table 5.2-8 Future Commodity Type Share

Commod. type / Year	Natural resource	Primary industrial product	Grain	Others
2004	71.5%	10.6%	2.8%	15.2%
2010	66.4%	15.3%	1.0%	17.3%
2017	66.3%	15.3%	1.0%	17.3%

Source: JICA study team

This result is compared with the current commodity share in other countries as shown in Table 5.2-9.

Table 5.2-9 Comparison of Commodity Composition Rate by Country

Country	Natural resource	Primary industrial product	Grain	Others
Belarus	37.1%	44.8%	7.8%	10.3%
Turkey	52.8%	18.5%	1.4%	27.4%
Iran	20.9%	39.2%	5.2%	34.7%
Poland	28.2%	50.1%	8.0%	13.7%
France	16.6%	34.8%	10.1%	38.5%
Germany	37.2%	21.8%	2.5%	38.5%
China	59.9%	24.1%	4.8%	11.2%
Kazakhstan In 2004	71.5%	10.6%	2.8%	15.2%

Source: UIC statistics, China statistics

4) Correlation between commodity share and railway mode share

Regarding mode share in terms of freight ton between railway and truck, the share of railway is decreasing, as shown in Table 5.2-10.

Table 5.2-10 Change of Mode Share in Freight Transport

Ton-share	2000	2001	2002	2003	2004
Railway	8.3%	8.5%	7.5%	7.9%	7.8%
Truck	91.7%	91.5%	92.5%	92.1%	92.2%

Source: JICA study team

It is observed that there is a relationship between the decrease of railway share and the decrease of bulk cargo share in freight commodities, as shown in Figure 5.2-4.

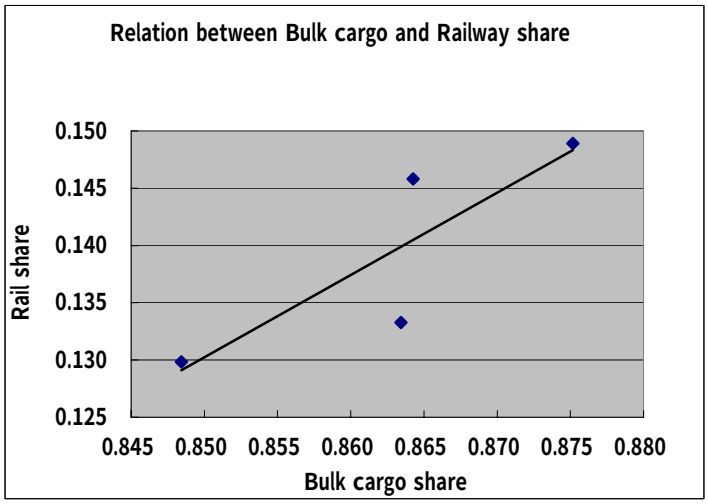


Figure 5.2-4 Relation between Bulk Cargo Share and Railway Mode Share

Although it is not clear enough, a tendency that the less bulk cargo share means the less railway freight share is assumed. Based on this assumption, a demand elasticity factor for railway freight share is defined as shown below.

Demand elasticity factor of railway = railway share difference / bulk cargo share difference

The future share change in railway freight is estimated, applying the elasticity to the bulk cargo share difference in the future.

5) Estimation of railway freight transport

Future domestic railway freight volumes are estimated as shown in Table 5.2-11.

Table5.2-11 Estimation of Railway Freight Transport

		Current trend					Projection	
		2000	2001	2002	2003	2004	2010	2017
Freight Turnover in mill. Tons	Railway freight (Domestic)	89	100	99	114	123	178	256
	Truck freight	982	1,077	1,219	1,318	1,445	2,277	3,655
	Total freight	1,071	1,177	1,319	1,432	1,567	2,456	3,912
Modal split	Railway share	8.3%	8.5%	7.5%	7.9%	7.8%	7.3%	6.6%
	Truck share	91.7%	91.5%	92.5%	92.1%	92.2%	92.7%	93.4%
Composition rate by commodity	Natural resource	77.2%	75.9%	74.2%	72.7%	71.5%	66.3%	66.2%
	Primary industrial product	5.9%	7.3%	8.2%	9.3%	10.6%	15.3%	15.4%
	Grain	4.4%	3.2%	4.1%	4.3%	2.8%	1.1%	1.0%
	Others	12.5%	13.6%	13.6%	13.7%	15.2%	17.3%	17.4%

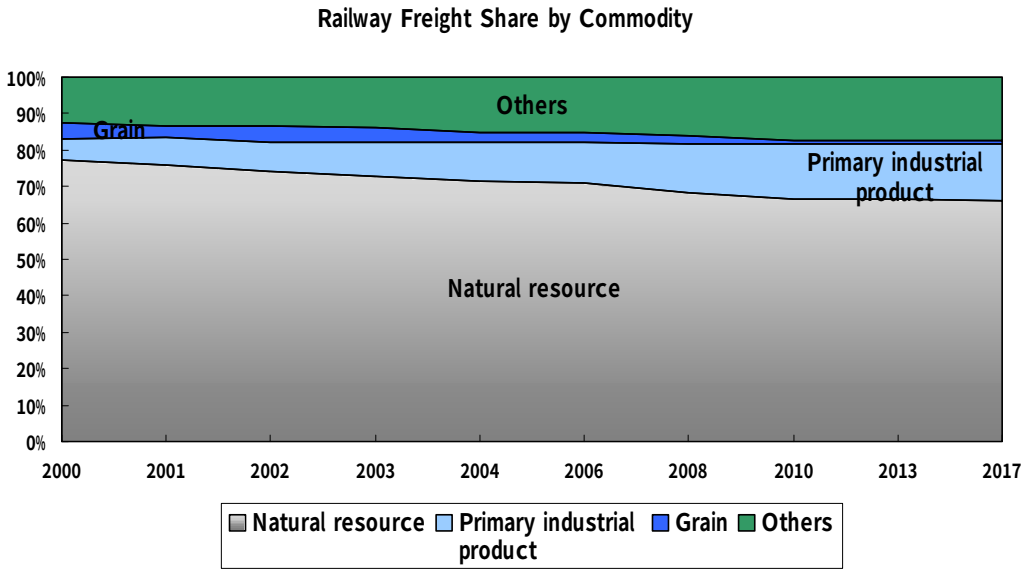


Figure 5.2-5 Estimation of Freight Commodity Share

5.2.4 Railway Freight Demand Including International Cargos

In this section, total demand is estimated by combining both international demand and domestic demand based on the previous forecast.

(1) Interpretation of international freight demand forecast result

In previous section 5.2.2, macro- and meso-level demand forecast including import and export cargo volumes in Kazakhstan was conducted. This estimation is supposed to give a forecast for all transport modes and it is required to extract the portion of railway freight. As shown in Figure 5.2-6 which compares past trends by railway and all transport modes in import and export cargo volume index, the time series variation for both transport modes is not necessarily the same. In particular, the lines for export show large differences among them. This is because the latest rapid increase in exports resulted from increases in oil and natural gas exports while major railway freight consists of dry bulk cargos, and total export increase does not contribute to railway export growth. Based on this assumption, the elasticity factor between railway freight increase and that of all transport modes is taken into account when the export, import and transit cargo volumes of railway are estimated.

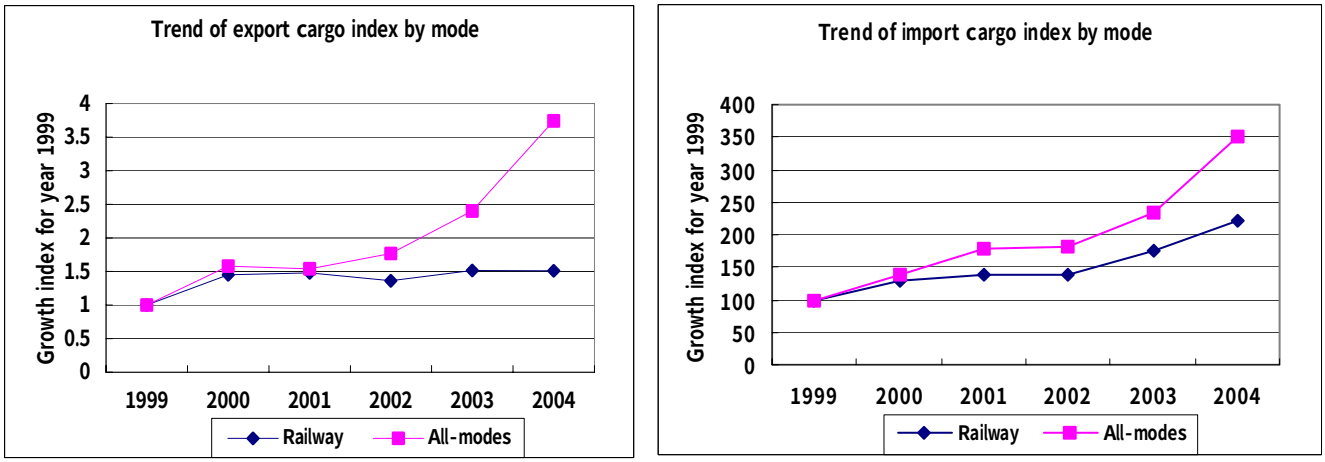


Figure 5.2-6 Comparison of Freight Growth Pattern between Railway and All Transport

(2) Dispatch and arrival railway freight volume by zone

Estimated total railway freight volume for domestic cargo, taking import or export cargo volumes into account, is divided in proportion with the present zone dispatch, and arrival volumes and the dispatch and arrival railway freight volumes are estimated taking into consideration changes in commodity composition of freight. The result is as shown in Tables 5.2-12-(1) and -(2) and Figures 5.2-7-(1) and –(2).

Table5.2-12-(1) Dispatch Volume of Railway Freight by Zone

	Present	2010	2017
Almatinskoe	12,696	20,578	30,780
East Kazakhstan	4,575	8,847	14,291
Pavlodarskoe	33,262	45,440	57,663
North Kazakhstan	14,784	20,236	25,845
Akmolinskoe	14,784	20,238	25,843
Karagandinskoe	32,124	44,656	58,280
Zhambylskoe	4,754	8,662	13,398
Shymkentskoe	7,692	12,410	19,324
Kyzylordinskoe	1,148	1,846	2,790
Kostanaiskoe	21,120	28,036	35,377
Aktiubinskoe	3,210	5,904	8,903
West Kazakhstan	4,431	10,359	16,509
Atyrauskoe	20,506	31,514	44,019
Mangistauskaya	7,904	12,425	17,445
Total	182,990	271,151	370,467

Table5.2-12-(2) Arrival volume of railway freight by zone

	Present	2010	2017
Almatinskoe	3,173	7299	13014
East Kazakhstan	6,241	9359	14856
Pavlodarskoe	58,902	61755	80936
North Kazakhstan	3,140	3425	5730
Akmolinskoe	3,140	3423	5730
Karagandinskoe	35,847	44843	64666
Zhambylskoe	3,018	6228	11193
Shymkentskoe	6,573	8399	12402
Kyzylordinskoe	676	1307	2203
Kostanaiskoe	19,034	19542	25953
Aktiubinskoe	7,380	9669	15961
West Kazakhstan	996	2573	4283
Atyrauskoe	10,403	11414	15316
Mangistauskaya	6,487	11122	18749
Total	165,010	200,358	290,992

Source: JICA study team

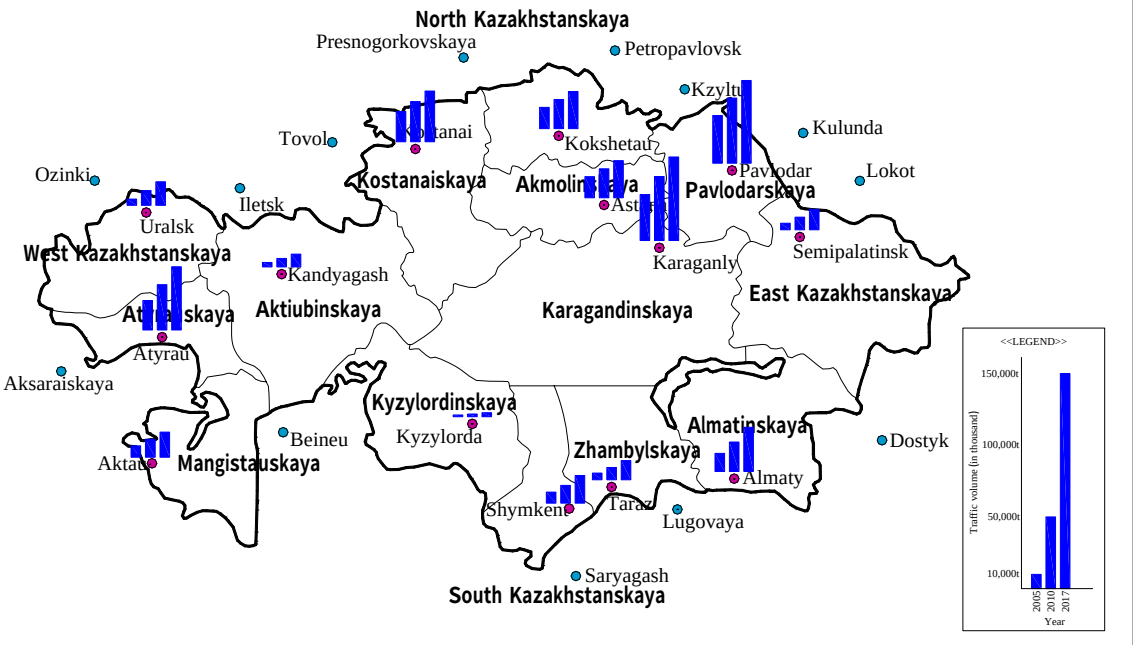


Figure 5.2-7(1) Dispatch Cargo Volume of Railway Freight by Zone

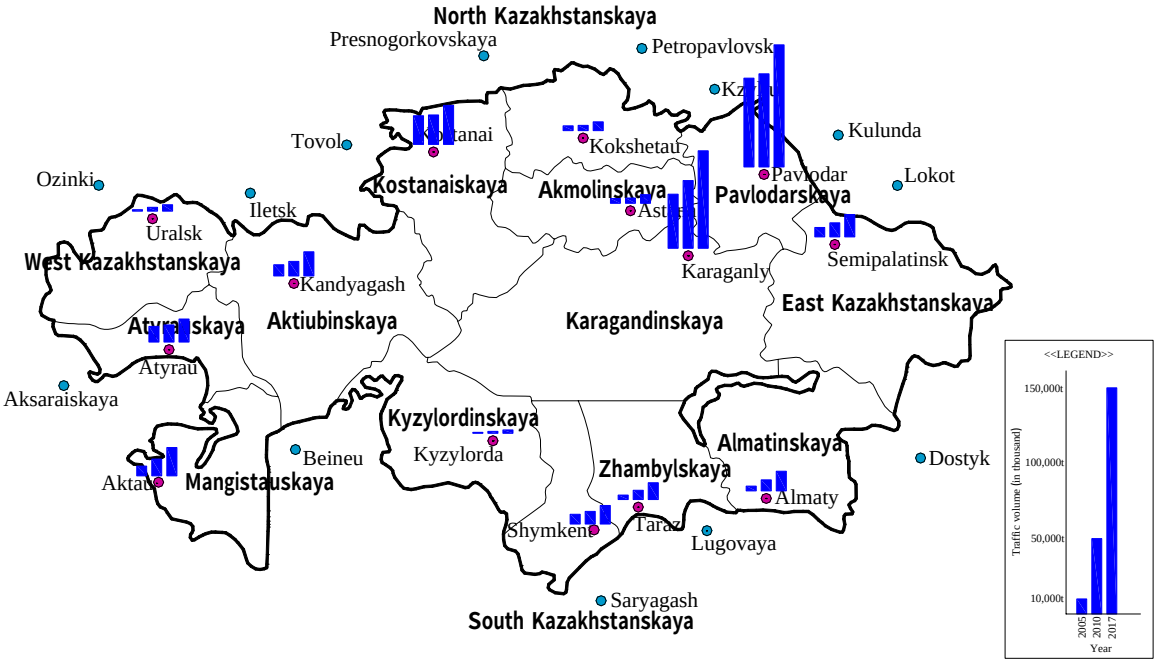


Figure 5.2-7(2) Arrival Cargo Volume of Railway Freight by Zone

(3) Distribution of Cargo Volumes

Railway cargo flow between each region (Oblast) is estimated using a gravity model. The formula of the model applied is shown below.

$F_{ij} = D_i * A_j / Dij^{1.6}$

Where: F_{ij} is cargo flow volume between region i and region j; D_i is dispatch cargo volume for region i; A_j is arrival cargo volume for region j; and Dij is railway route length between region i and region j.

1.6 of distance parameter is determined by regression analysis taking average transport length as a control variable. The result is shown in Table 5.2-13 and Figures 5.2-8-(1) and -(2).

Table 5.2-13 Summary of Railway Freight Demand Forecast Result

	1999	2000	2001	2002	2003	2004	2005	2010	2017
Freight Turnover (1000 Tons)									
Total	133,669	171,774	183,771	178,661	202,738	215,543	222,701	306,100	424,200
Domestic	75,312	89,447	99,576	99,420	113,644	122,548	123,154	178,200	256,500
Export	47,787	69,312	70,648	65,166	72,289	72215.9	77,945	92,900	114,000
Import	5,746	7,396	7,962	7,940	10123.8	12,748	13,362	22,200	34,500
Transit	4,824	5,619	5,585	6,135	6680.8	8,031	8,240	12,800	19,200
Share (%)									
Domestic	56.34%	52.07%	54.18%	55.65%	56.05%	56.86%	55.30%	58.22%	60.47%
Export	35.75%	40.35%	38.44%	36.47%	35.66%	33.50%	35.00%	30.35%	26.87%
Import	4.30%	4.31%	4.33%	4.44%	4.99%	5.91%	6.00%	7.25%	8.13%
Transit	3.61%	3.27%	3.04%	3.43%	3.30%	3.73%	3.70%	4.18%	4.53%
Av. Annual Growth Rate									
Total			28.51%	6.98%	-2.78%	13.48%	6.32%	3.32%	6.57%
Domestic			18.77%	11.32%	-0.16%	14.31%	7.83%	0.49%	7.67%
Export			45.04%	1.93%	-7.76%	10.93%	-0.10%	7.93%	3.57%
Import			28.72%	7.65%	-0.28%	27.50%	25.92%	4.82%	10.69%
Transit			16.48%	-0.61%	9.85%	8.90%	20.21%	2.60%	9.21%

Source: JICA study team

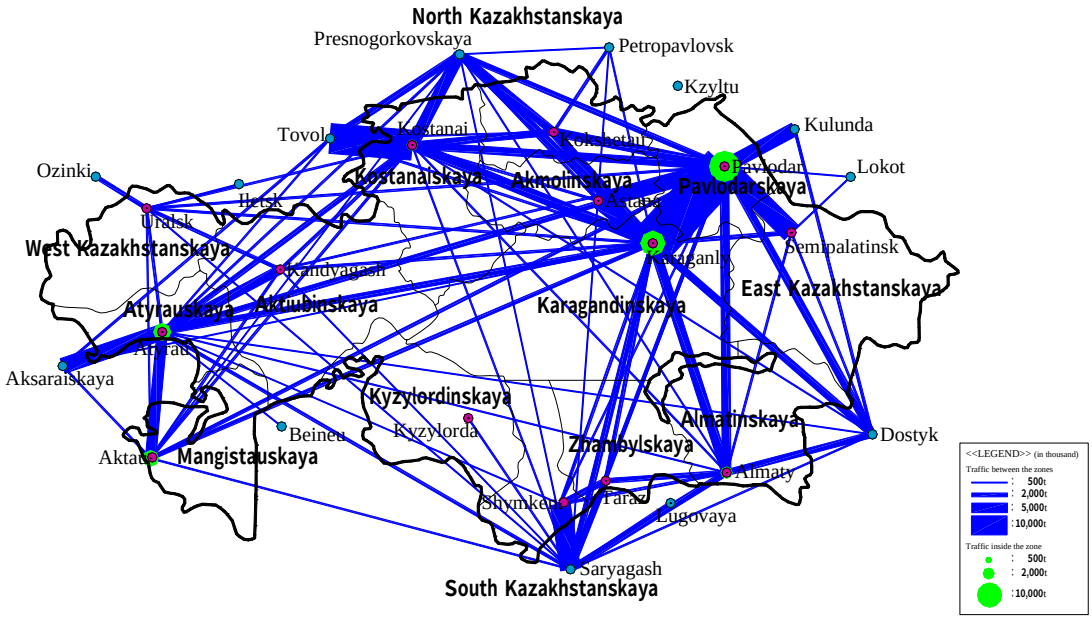


Figure 5.2-8(1) Freight Demand on the Existing Network in 2010

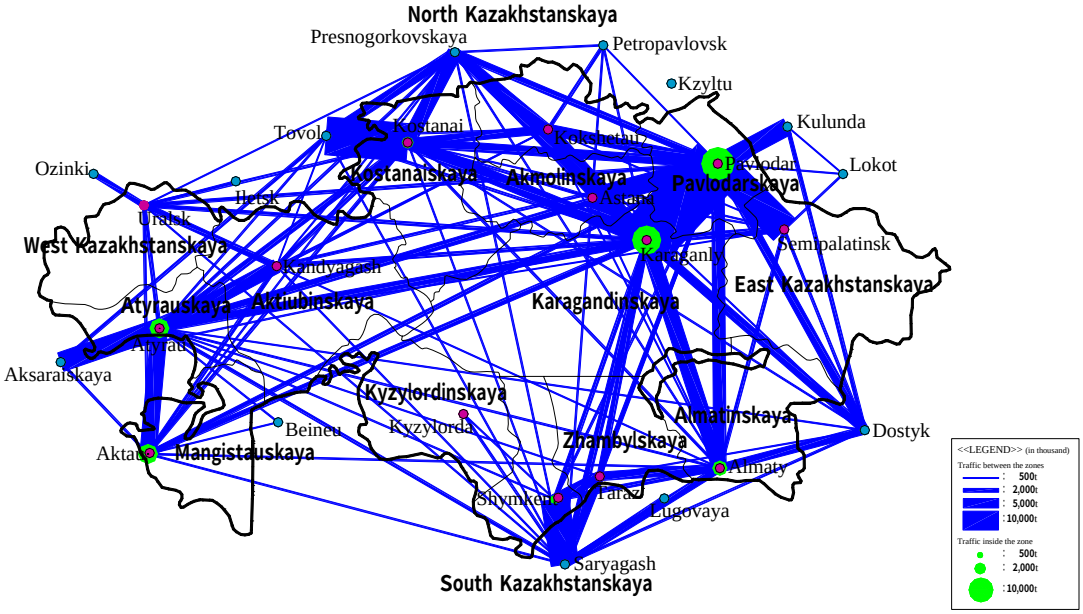


Figure 5.2-8(2) Freight Demand on the Existing Network in 2017

5.2.5 Demand Forecast for Railway Improvement Case

As the railway network development in the future, several new railway lines are presumed in the railway infrastructure development plan by the MTC. In this section, additional transport demand is forecast if the new railway line is put on the existing railway network.

(1) Hypothesis of Demand Forecast and Methodology

For the target railway network in demand estimation, a new railway line project, which connects Shalkar and Beyneu with the length of 360km, is taken as planned network alternative. By the railway network improvement, the time required between stations is reduced considerably and the following dynamic changes are expected.

i. Due to the time reduction for the railway sections, some freight transport will be transferred from its current route to another route. (Trip transfer)

ii. By increase of accessibility to the area along the improved railway corridor, new freight demand will be induced or developed. (Trip development)

In this analysis, only the first factor is taken into the analysis because the second requires considerable years by creating new freight demand depending on the area development along the railway corridor with various unknown factors.

Figure 5.2-9 shows the overall impact distribution generated by network improvement in case of new railway construction. According to this figure, considerable impact is expected between Aktau Port and Dostyk Station. Based on this, the demand forecast about the trip transfer of freight transport on TRACECA route is conducted. In general, the freight shipping on TRACECA route chooses the route of Kazakhstan, Uzbekistan, Turkmenistan and Azerbaijan via Turkmenbasi of Turkmenistan. If the freight transport condition is improved by the new railway, considerable portion of freight volumes on TRACECA will be exclusively transferred to Kazakhstan route.

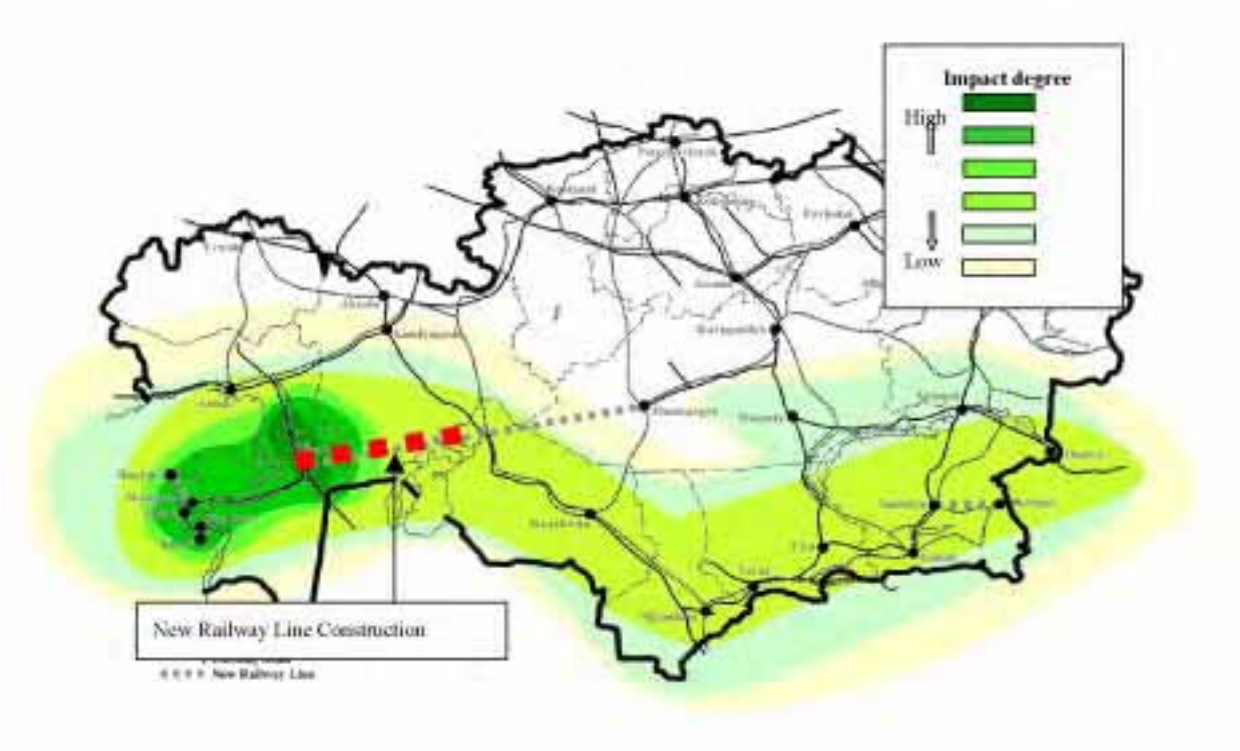


Figure 5.2-9 Impact Distribution of the Time Reduction Effect by Network Improvement

For the demand forecast model, a logit function model, of which explanatory variables consist of transport cost and transport time, was employed as shown below:

$$P_i = e^{-(a * Ci + b*Ti)} / [e^{-(a * Ci + b*Ti)} + e^{-(a * Cj + b*Tj)}]$$

Where:

P_i: Route choice rate for route i (%), C_i : Transport cost for route i, T_i : Transport time (day)

a, b: Parameters for explanatory variables

(2) Demand Estimation

1) Basic data of freight volumes

According to the data obtained from the forwarder and customs in Azerbaijan, current freight volumes using TRACECA route and passing through Baku Port is estimated 2.6 million tons in 2005, of which 80% are international transit freight. The future freight volumes are estimated by expanding present freight volumes, using the same growth rate of international transit freight in this study.

Year 2017: 6.1 million tons, Year 2010: 4.0 million tons

Regarding the transport choice rate for TRACECA route via Turkmenbash, exact information was

not obtained, but it was estimated by cargo ship operation data as shown in Table 5.2-14.

Table 5.2-14 Present Rail Ferry Shipping Service at Baku Port

Section	Number of vessels	Service frequency
Aktau-Baku	1	every 10days
Turkmenbasi-Baku	6	3 times per day

Note: Railway ferries operation data

Regarding the transport condition for both comparable routes, Table 5.2-15 gives the details.

Table 5.2-15 Transport Condition for Comparable Freight Route

Route	Section	Distance (km)	Time (day)	Cost (USD)
Kazakhstan	Dostyk-Aktau	3,553	6.00	1,066
	Aktau-Baku		0.75	720
Total			6.75	1785.9
Turkmenistan	Dostyk-sary Agash	1,886	3.00	566
	Sary Agsh-Turkmenbasl	1,838	3.00	551
	Turkmenbash-baku		0.50	480
Total			6.50	1597.2
Kazakhstan (improved)	Dostyk-Aktau	2,887	5.00	866
	Aktau-Baku		0.75	720
Total			5.75	1586.1

Source: JICA Study team assumption

2) Demand estimation result

Using computer calibration technique, the model parameters are estimated as shown below.

$$P_i = 1 / e^{-0.0183*(Ci - Cj) - 0.0526*(Ti - Tj)}$$

Based on the route choice estimation model, respective freight volumes for both comparative routes are estimated in Table 5.2-16.

Table 5.2-16 Demand Estimation result

	Route choice ratio		Demand estimation (mill. Ton)		
Route	Present network condition	After Future improvement case	Present	2010	2017
Kazakhstan route	3.00%	56.00%	0.08	2.2	3.4
Turkmenistan route	97.00%	44.00%	2.52	1.8	2.7
total (million tons)			2.6	4.0	6.1

Approximately 3 million tons of freight volumes is expected as the additional demand increase in 2017 if the new railway line between Shalkar and Beyneu is constructed.

5.3 Estimation of Container Freight Demand

5.3.1 Existing Situation of Railway Container Freight

1) Number of container unit and TEU for containers transported

According to the recent figures of container freight, around 240 thousand units of containers are transported in 2006. This volume includes number of MCC, 3t and 5t containers and number of LCC, 20ft and 40ft containers. Assuming the conversion factor, corresponding number in TEU is estimated around 165 thousand TEUs.

Breakdown by trade pattern of total containers volume is shown in Figure 5.3-1. About half of the total volumes are accounted for import cargoes, followed by transit cargos and the rest of that are domestic and export cargos, but their volumes are very few. Comparing with the number in container unit and the corresponding number of TEU, reverse order is seen between the import and transit. That is because the container units of transit include considerable number of empty containers.

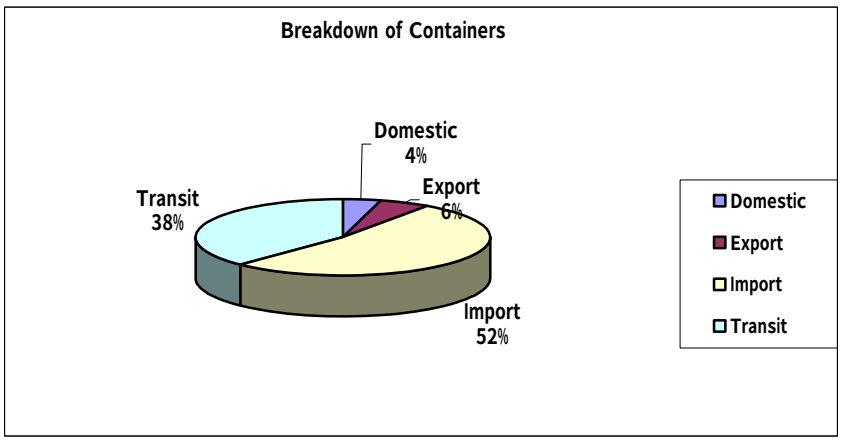


Figure 5.3-1 Breakdown of Containers by Trade Pattern

The increase tendency of containers in recent years varies by each trade pattern. Rapid growth was seen for import containers followed by transit containers while containers for both export and domestic stay in little change.

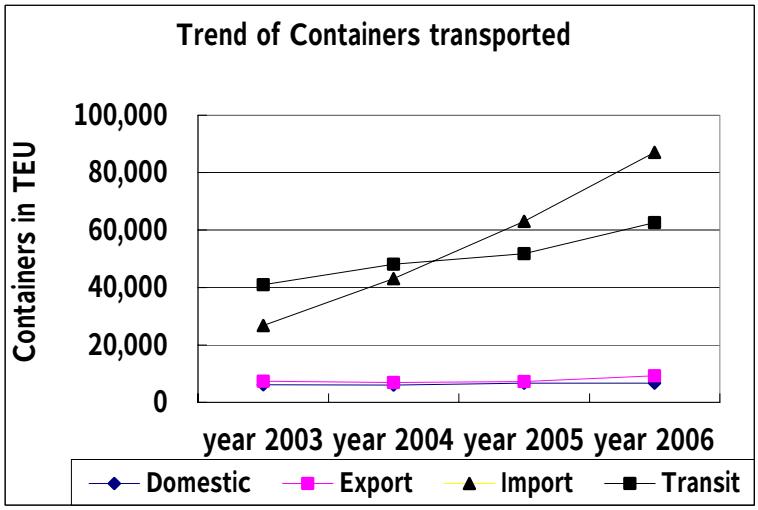


Figure 5.3-2 Trend of Containers Volume in TEU

Table 5.3-1 Containers Unit by Trade Pattern

	Number of containers unit			
	year 2003	**year 2004**	**year 2005**	**year 2006**
Domestic	33,999	28,419	28,113	30,410
Export	24,135	25,823	33,470	42,767
Import	36,609	45,840	60,623	77,583
Transit	90,747	87,747	89,746	93,462
Total	185,490	187,829	211,952	244,222

Table 5.3-2 Containers in TEU by Trade Pattern

	Number of containers in TEU			
	year 2003	**year 2004**	**year 2005**	**year 2006**
Domestic	6,083	6,037	6,727	6,697
Export	7,339	6,883	7,293	9,208
Import	26,795	43,129	63,076	87,014
Transit	40,916	48,075	51,823	62,599
Total	81,132	104,123	128,919	165,518

2) Commodity in containers and container freight rate

Next analysis is made of what kind of cargo trade tends to choose container freight. In order to calculate the container rate, so called containerization rate, a comparison in freight weight was made, using the freight data for all types of railway freight and the container freight data. As shown in Table 5.3-3 in terms of freight trade type, the highest container ratio is seen for transit freight and the second highest ratio is seen for import freight. In general, since transit freight has a tendency to aim at multi-modal freight transport whose process consists of several transport means running over many national borders, it is considered the freight users and forwarders prefer the container transport by which freight handling loss will be eliminated and less damage will be also expected. For the import freight, it is pointed out that most of imported goods are non-bulk cargos such as machines and consumers goods suitable for container transport. On the contrary, bulk cargos are still dominant in domestic and export freight.

Table 5.3-3 Container Freight Ratio

	Freight Turnover in thousand tons				Container Rate	
	Total Cargo volumes		of which container cargoes			
	2005	2006	2005	2006	2005	2006
Domestic	129,757	135,028	72	69	0.1%	0.1%
Export	69,017	83,777	116	157	0.2%	0.2%
Import	15,004	17,750	599	759	4.0%	4.3%
Transit	8,895	10,325	557	620	6.3%	6.0%
Total	222,673	246,880	1,344	1,605	0.6%	0.7%

Source: KTZ

Note: Freight turnover for containers is estimated using average tons for each trade category.

In order to calculate the container freight ratio by commodity, weight is converted from container unit to freight volumes in ton using the average weight by container type and trade type. Weight values for container cargos were estimated using the average weight for container type and number of 20 ft. and 40 ft. container units. Tables 5.3-4 and -5 show the current data of freight turnover in thousand tons for all railway freight including conventional wagon freight, and container freight by commodity type. The figures for container are obtained through conversion by average weight factor for containers.

Table 5.3-4 Container Rate by Commodity Type (Import cargos)

Import/container	number of 40'+20'		thousand ton		Container rate	
Commodity type	**2005**	**2006**	**2005**	**2006**	**2005**	**2006**
Chemicals and soda	3,717	4,867	46	58	3.7%	4.0%
Coal	8	6	0	0	0.0%	0.0%
Construction cargoes	1,589	2,097	20	25	1.7%	1.6%
Ferrous metals	2,516	3,416	31	41	1.5%	1.8%
Ferrous metals scrap		4	0	0	0.0%	0.1%
Grain	12	9	0	0	0.1%	0.1%
Iron ore		7	0	0	0.0%	0.0%
Non-ferrous metals	270	322	3	4	10.5%	7.6%
Non-ferrous ore	25	3	0	0	0.1%	0.0%
Oil cargoes	946	1,097	12	13	0.6%	0.5%
Others	36,939	50,664	458	603	5.9%	6.5%
Total	46,025	62,498	571	744	3.8%	4.1%

Table 5.3-5 Container Rate by Commodity Type (Transit cargos)

Transit/container	number of 40'+20'		thousand ton		Container rate	
Commodity type	**2005**	**2006**	**2005**	**2006**	**2005**	**2006**
Aluminum	113	157	2	2	0.5%	0.9%
Alumina	8	0	0	0	0.1%	0.0%
Timber and wood products	866	880	12	12	0.8%	0.6%
Coke and coal	7	7	0	0	0.2%	0.4%
Ferrous metals scrap	152	92	2	1	6.5%	4.5%
Machines and equipment	14,514	20,611	209	274	56.3%	57.0%
Metalwork (metal goods)	1,068	1,179	3	16	3.7%	3.8%
Metalwork (metal roll)	209	287	15	4	0.7%	1.0%
Oil products	319	354	5	5	0.4%	0.3%
Vegetables and fruits	297	479	4	6	0.9%	1.0%
Food cargoes	2,590	2,214	37	29	9.4%	6.3%
Others	11,538	12,407	166	165	16.5%	16.2%
Non-ferrous metals ore	28	40	0	1	0.6%	0.8%
Gums	1,729	2,476	25	33	17.9%	17.7%
Building materials	1,064	1,296	15	17	4.6%	4.9%
Fertilizers	960	1,151	14	15	2.9%	3.2%
Cotton	883	560	13	7	1.6%	0.9%
Non-ferrous metals	288	453	4	6	4.4%	5.4%
Total	36,633	44,643	528	594	6.4%	6.2%

According to the tables, the followings are pointed out.

- By commodity, its container rate has changed largely. In general, the commodity types including delicate material goods such as machine/equipment and consumers goods, have higher container rates whereas bulk cargos such as natural resource goods have lower container rates.
- However, even the cargo types classified in bulk cargos use containers in some cases as seen in chemical goods and food cargos. This is because some cargos require specific cargo handling.
- In terms of container volumes, commodity which has large freight volumes including other than containers and the high container rate seems to have potential in container utilization. Needless to say, the commodity classified in others stands for the general cargo including consolidated cargos and is typical cargos to be containerized. Other than this category, the commodity types such as “Machines/equipment”, “Gums”, “Chemical goods” and “Ferrous metal” are considered to be the cargo category which has certain potential in container development.

5.3.2 Estimation of Containerizable Freight Ratio

According to the “Transport Strategy till 2015”, 55% of the total freight volumes are estimated as the future target of containerization ratio. However, this figure is thought to be high estimation because currently actual ratio of container cargo is estimated around 35% for the total freight even in the worldwide freight traffic, including ocean freight. Whether a cargo is containerizable or not depends on the commodity type. In general, bulk cargos such as coal, mineral ore and crude oil are considered to be unsuitable for container freight. This supposition is shown in the previous discussion on the container rate by commodity. Based on this, selection of containerizable commodity was made and its share for the total freight is calculated by

trade division of freight, i.e., domestic, export, import and transit cargos and future estimation is also obtained by calibrating the total average figure nearly equal to the commodity share of general cargo category, taking the volume share in each trade division into account. The result is shown in Table 5.3-6

Table 5.3-6 Estimation of Share of Containerizable Commodity Share

	Total Cargo Volumes in 000tons			Containerized commodity share		
	2005	**2010**	**2017**	**2005**	**2010**	**2017**
Domestic	129,757	178,200	256,500	0.132	0.150	0.156
Export	69,017	92,900	114,000	0.100	0.112	0.097
Import	15,004	22,200	34,500	0.552	0.676	0.821
Transit	8,895	12,800	19,200	0.179	0.213	0.243
Total	**222,673**	**306,100**	**424,200**	**0.152**	**0.173**	**0.174**

Note: Figures in 2005 are actual.
Source: JICA Study team

5.3.3 Estimation of Container Freight Volumes

Regarding the future container freight volumes, its container rate for containerizable commodity is assumed. Current container rate for the contenerizable commodity is about 4%, but it varies considerably by trade divisions. A high container rate is seen in transit cargos and import cargos, but small number is seen for domestic cargos and export cargos. Regarding the future container rate, it is considered that if the general cargo portion increases, container rate also increases. With regard to the container rate for containerizable commodity, two scenarios are prepared, i.e., moderate increase and higher increase as shown in Table 5.3-7.

Table 5.3-7 Assumption of Container Rate for Containerizable Commodity (General Cargos)

Case	Existing	Scenario 1	Scenario 2
container rate	3.9 %	7.0 %	15.0 %

Breakdown of the given container rate was made by each trade division through modifying the present container rate.

Based on the assumption, future container freight volumes are estimated as shown in Table 5.3-8.

Table 5.3-8Estimation Result of Future Container Freight Volumes

	Container rate			Container Freight Volumes in '000 tons				
				Existing	Scenario1		Scenario2	
	Exiting	**Scenario1**	**Scenario2**	**2005**	**2010**	**2017**	**2010**	**2017**
Domestic	0.45	0.80	1.72	72	215	322	460	691
Export	1.30	2.32	4.97	116	241	258	516	552
Import	6.30	11.25	24.11	599	1,689	3,187	3,620	6,830
Transit	16.30	29.11	62.37	557	793	1,356	1,700	2,906
Total	**3.92**	**7.00**	**15.00**	**1,344**	**2,938**	**5,123**	**6,296**	**10,979**

Source: Estimation by JICA Study team

5.4 Foreseeable Transport Issues and Problems

Based on the demand forecast result, several transport issues and problems are pointed out in this section.

(1)Outline of Future Demand

1) Growth of freight demand

Total freight demand was estimated about 424 thousand tons in 2017 and increase rate is 1.9 times of the present. Out of total freight, higher growth was seen for import cargos followed by transit cargos, but on the contrary, lower growth was observed for export cargos.

2) Freight commodity

Regarding the composition of commodity in freight, natural resource, of which share is biggest at present, lowers its dominant position with 5 points. On the contrary, general cargos including industrial goods and others show moderate increase. This result implicates low growth of bulk cargos while high growth will be expected for general cargos.

3) Container freight

The container freight in the future was estimated preparing high and moderate growth scenarios. In case of the high growth scenario, total container freight volumes in 2017 are estimated about 10 million tons which are 8 times of the present volume. In case of the moderate scenario, it is estimated 5 million tons, 4 times. The high scenario assumes 15% of container rate which is 3.8 times of the present rate and it seems too rapid for the given time span. Probable demand in the future is considered to be materialized between the high and moderate scenarios, about annually 7 million tons.

4) Demand forecast for the railway network improvement

For evaluation of the impact by the future railway network development, additional demand forecast was carried out using a future network alternative plan with new railway line. The result shows about 3 million tons of cargos will be loaded additionally in Kazakhstan railway sections. This volume does not include the demand by the related corridor development.

(2)Foreseeable Issues from Demand Forecast

1) Necessity of action in railway operation management

The transport of bulk cargos is the most important duty of KTZ and also the most profitable business at present. However, its future prospect might not be so bright because of low growth in export and moderate change from bulk to general cargos in freight. For the time being, the dominant position of bulk cargo transport is beyond suspicion, but too optimistic supposition is harmful and it is better to study the new operation and management in railway activity in advance taking future trend in freight market into account.

2) Coping with growing container freight

At present, it is clear that the railway container freight is growing steadily. Needless to say, as the market globalization is intensified, the container freight need will grow drastically. In the demand forecast result, this situation was supported to some extent. Promotion of container freight is not only advantageous for freight users but also economically reasonable for railway operators. KTZ should take necessary actions for increase of container cargos and promote the containerization in railway freight transport.