



Current Situation and Future Prospects of the Trans-GTR Corridors (Segments in PRC)

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1 Introduction

There are six transport corridors in Greater Tumen region. Four of them are located or at least partly stretched in China. They are *Tumen Transport Corridor* (Corridor 1), *Suifenhé Transport Corridor* (Corridor 2), *Dalian Transport Corridor* (Corridor 4), and *Korean Peninsula West Corridor* (Corridor 5).

Three provinces in northeast China: Liaoning, Jilin, Heilongjiang province and Inner Mongolia autonomous region are part of research scope, object of GTI transport corridor also includes relevant area of ROK, Mongolia and Russia.

Provinces in GTR (Heilongjiang, Jilin, Liaoning and Inner Mongolia) have a total area of 1.99 million km² and a population of 134 million, accounting for 20.74% and 10.01% of the national level respectively. Recently, this area has witnessed significant economic developments. In

2010, the total GDP in these provinces reached to RMB 4,917 billion (USD 774 million), accounting for 12.3% of the total GDP in China. The annual growth rate of GDP has reached 12.1% in 2001-2005, 1.8% more than the national level. While in 2006-2010, the GDP kept rising at the annual growth rate of 14.3%, 3.3% more than the national level.

These provinces have frequent trade and cooperation with Northeast Asian countries. Transportation infrastructure plays a basic and imperative role for the development of the foreign trade.

The report made diligence review to trade, transport, transport coordination and the legal environment of transport movement in GTR China, carried out the transport demand analysis and forecasts. It also analyzed main problems and solutions that restrict the influence of GTI transport corridor and proposed related regional and national strategies about strengthening transport

Figure 1.1 GTI corridors, BCPs and ports in China

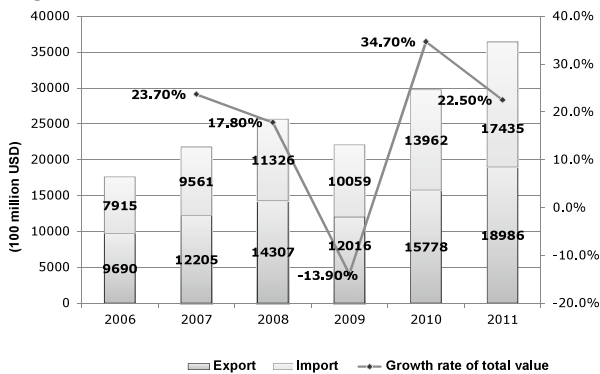


cooperation with northeast Asian countries, made a list of recent important projects for future action.

2 Foreign trade in GTR

Foreign trade of the PRC maintains stable and rapid increase, according with its dramatic growth of national economy in recent years. Excluding the decline in 2009, the growth rate of foreign trade is around 20% (Figure 2.1)

Figure 2.1 Total Amount of Trade of the PRC in 2006-2011



Source: China Statistical Yearbook 2011

The amount of trade between China and Northeast Asia (Japan, ROK, DPRK, Mongolia), is more than that of China-EU. Japan and ROK were to become the third and the sixth largest trading partner of China.

Trade of Japan with China

According to customs statistics, in 2011 Japan's foreign trade amount was USD 1.46 trillion, an increase of 29.2% over a year. The amount of export was USD 770.11 billion, while that of import was USD 692.84 billion. The trade surplus of Japan increased to USD 77.27 billion, with a dramatic increasing rate 169.4%.

China, the United States and ROK are the top three export partners of Japan, accounting for 42.9 percent of its total exports trade. China, the United States and Australia are top three import partners of Japan, sharing 38.3 percent of its total import trade.

In 2010, trade of Japan with China amounted to USD 303.06 billion, with an increase of 30.6%. China is the largest trading partner of Japan.

The main export products from Japan to China are electrical and mechanical products, base metals and transport equipment. The major commodities imported from China are mechanical and electrical products, textiles and toys, which represent 66.7% of total imports from China. China's labor-intensive products still have large advantage, such as textiles, footwear, umbrellas and bags and etc. These products usually get more than 50% market share in Japan.

Trade of ROK with China

In 2011, the foreign trade of Republic of Korea was USD 1.08 trillion, with an annual increase of 21.2%. China, the United States and Japan are top three export partners of ROK.

China is ROK's largest trading partner, largest export destination and largest import source. The bilateral trade turnover was USD 220.63 billion in 2011, with an increasing rate of 17.1%. Among them, the amount of exports was USD 134.2 billion and the amount of imports from China was USD 86.43 billion.

Machinery and electronic products, optical and medical equipment, and chemical products are the main product of ROK's exports to China. In 2011 the amount for these products were USD 50.06 billion, 22.99 billion and 16.46 billion respectively, together accounted for 66.7% of total exports to China.

Trade of Russia with China

In 2010, foreign trade in Russia has been growing intensely with an annual increasing rate of 43.9%. According to Russian customs statistics, its trade turnover in 2010 was USD 559.97 billion.

Trade of Russia with China was USD 57.05 billion, an increase of 49.6%. Mineral, wood and chemical products are the major of Russian exports to China. These three types of product represent 77.5 percent of total exports to China.

The main commodities imported from China are the mechanical and electrical products, textiles and its raw materials, and base metals and products, accounting for 64.3 percent of Russia's total imports from China. In addition to these products, footwear, umbrellas, furniture, toys and other light industrial products are important goods imported from China.

Trade of Mongolia with China

By the development of Sino-Mongolia economic and trade relations, China has become Mongolian most important trading partner, and continuous enhance this importance. From 1999, China has been the largest trading partner of Mongolia for 11 years.

The main commodities imported from Mongolia are primary raw materials such as metal ores, coal and oil. The major goods imported from China are clothing, steel, textile and fabrics.

In 2010, the trade volume of Mongolia reached USD 6.11 billion, an increase of 2.7 times compared with USD 2.24 billion in 2005. The trade volume between China and Mongolia reached USD 3.4 billion in same year.

Overview of Trade with provinces of GTR in China

The development of trade in provinces of GTR in China is shown on the tables 2.2. to 2.5. According to the tables, there are some features in trade between these provinces and Northeast Asia.

1) In 2006-2008, there has been great increase in trade in Heilongjiang, Jilin, Liaoning and Inner Mongolia. Heilongjiang has the largest annual growth rate above 30% before 2009. Due to the global financial crisis, trade in these provinces dropped by 11.9-29.9% in 2009 compared to the previous year. In 2010, however, the total volume of import and export achieved a new improvement with the growth rate of 28.2-57.1%.

2) When compared the import with export, Liaoning and Heilongjiang has an export volume far over the import

volume, while it is not the case in Jilin and Inner Mongolia.

3) As for major Northeast Asia countries in the trade with provinces in GTR in China, Russia occupies large part of trade in Heilongjiang, and Japan is the major country of trade in Jilin and Liaoning Province. Figure 2.6 presents the total value of import and export of Jilin Province with Northeast Asia in 2009. According to the figure, Trade with Japan accounted for about 20% of the total volume of import and export of Jilin Province in 2009.

Table 2.2 Value and Growth Rate of Trade of Heilongjiang Province, 2006-2010

(Unit: USD 100 Million, %)

	2006		2007		2008		2009		2010	
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
Total Value	128.6	34.3	173.0	34.5	229.0	32.4	162.2	-29.9	255.0	57.1
Russia	45.4	18.3	107.3	60.4	110.6	3.1	55.8	-49.7	74.7	34.0
ROK	3.3	-7.3	4.2	-11.9	9.6	130.0	5.2	-45.5	7.5	44.0
Japan	3.0	11.5	5.9	-5.9	6.2	4.7	6.0	-2.7	6.7	10.6
Total Export	84.4	38.9	122.7	45.4	165.7	35.1	100.8	-40.0	162.8	61.5
Total Import	44.2	26.3	50.3	13.8	63.2	25.7	61.4	-2.8	92.2	50.0

Source: Heilongjiang Statistical Yearbook 2006-2010

Figure 2.4 Total value of Foreign Trade and Annual Rate of Growth of Heilongjiang in 2006-2010

(USD 100 Million, %)



Source: Heilongjiang Statistical Yearbook 2006-2010

Table 2.3 Value and Growth Rate of Trade of Jilin Province, 2006-2010

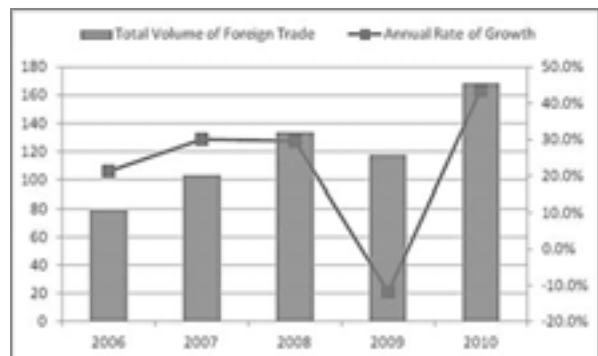
(Unit: USD 100 Million, %)

	2006		2007		2008		2009		2010	
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
Total Value	79.14	21.2	102.99	30.1	133.41	29.5	117.47	-11.9	168.46	43.5
Total Export	29.97	21.5	38.58	28.7	47.72	23.7	31.32	-34.4	44.76	43.2
Total Import	49.17	21.1	64.41	31	85.69	33	86.16	0.6	123.7	43.5

Source: Jilin Statistical Yearbook 2006-2010

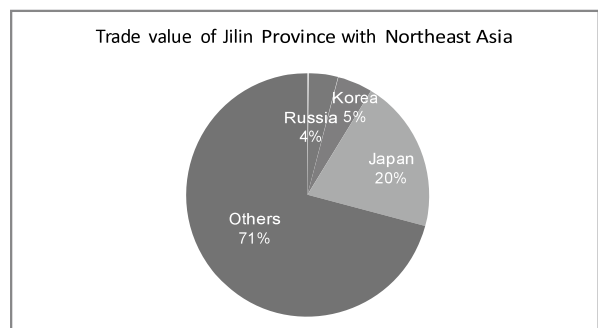
Figure 2.5 Total Value of Foreign Trade and Annual Rate of Growth of Jilin in 2006-2010

(USD 100 Million, %)



Source: Jilin Statistical Yearbook 2006-2010

Figure 2.6 Total value of import and export of Jilin with Northeast Asia in 2009



Source: Jilin Statistical Yearbook 2009

Table 2.4 Value and Growth Rate of Trade of Liaoning Province, 2006-2010

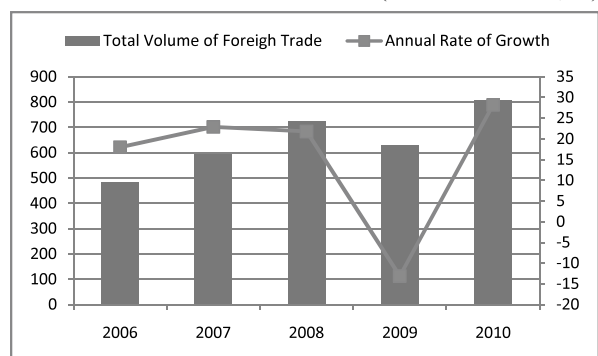
(Unit: USD 100 Million, %)

	2006		2007		2008		2009		2010	
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
Total Value	483.9	18	594.72	22.9	724.4	21.8	629.2	-13.1	806.7	28.2
Total Export	283.2	20.8	353.25	24.7	420.6	19.1	334.4	-20.5	431.2	28.9
ROK	33.7	16.9	46.02	36.7	56	21.8	33.3	40.5	39.8	19.5
Japan	68.9	9.2	79.05	14.7	92.6	17.1	77.1	16.7	97.3	26.2
Russia	-	-	7.98	-	9.28	16.3	0.09	-99.0	-	-
Total Import	200.7	14.2	241.47	20.3	303.8	25.8	294.8	-3	375.5	27.4

Source: Liaoning Statistical Yearbook 2006-2010

Figure 2.7 Total Value of Foreign Trade and Growth Rate of Liaoning in 2006-2010

(USD 100 Million, %)



Source: Liaoning Statistical Yearbook 2006-2010

Table 2.5 Value and Growth Rate of Trade of Inner Mongolia, 2006-2010

(Unit: USD 100 Million, %)

	2006		2007		2008		2009		2010	
	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate	Amount	Rate
Total Value	59.47	22.4	77.45	30.2	89.33	15.4	67.64	-24.1	87.19	28.7
Total Export	21.41	20.7	29.48	37.6	35.79	21.6	23.16	-35.3	33.35	44
Total Import	38.06	23.2	47.97	26.1	53.54	11.6	44.48	-16.6	53.84	20.8

Source: Inner Mongolia Statistical Yearbook 2006-2010

Figure 2.8 Total Value of Foreign Trade and Annual Rate of Growth of Inner Mongolia in 2006-2010
(USD 100 Million, %)

Source: Inner Mongolia Statistical Yearbook 2006-2010

3 Due Diligence Review of GTR Corridors

3.1 Traffic review

There are six transport corridors in Greater Tumen region. Four of them are located or at least partly stretched in China. They are:

- Tumen Transport Corridor (Corridor 1): ports in the Tumen River area (Zarubino/Posiet/Rajin) - Tumen/Hunchun - Changchun - Yirshi (Arxan) - East Mongolia - Trans-Mongolia Railway or SLB.
- Suifenhe Transport Corridor (Corridor 2): ports in the Primorsky Territory (Vostochny, Nakhodka, Vladivostok) - Grodekovo - Suifenhe - Harbin - Manzhouli - Zabaykalsk - SLB.
- Dalian Transport Corridor (Corridor 4): Dalian - Shenyang - Harbin - Heihe - Blagoveshchensk - SLB.
- Korean Peninsula West Corridor (Corridor 5): Busan - Seoul - Pyongyang - Sinuiju - Shenyang - Harbin.

The border crossing points (BCPs and ports) specified along the four corridors are:

- Arxan (Mongolia - Inner Mongolia)
- Hunchun (Yanbian - Primorsky Territory)
- Dandong (Liaoning - DPRK)
- Suifenhe (Heilongjiang - Primorsky Territory)
- Manzhouli (Inner Mongolia - Chita State)
- Dalian
- Heihe (Heilongjiang - Amursky Oblast)

The cities of Dalian, Dandong and Yingkou have been developed as major ports and economic gateways in Liaoning Province to all of northeast China and Northeast Asia countries. Figure 1.1 illustrates the GTR corridors,

BCPs and ports.

3.1.1 Traffic along corridor stretches

There are altogether 17 road sections in four Transport Corridors in China. The specific technical indicators of these roads are shown below in Table 3.1.

Tumen Transport Corridor (Corridor 1)

Tumen Transport Corridor is the first corridor in GTI project. Across Jilin Province and the eastern part of Inner Mongolia Autonomous Region, Tumen Transport Corridor stretches from Tumen City of Yanbian Prefecture to the east Mongolia. The corridor is connected with Trans-Mongolia Railway or Siberian Land Bridge (SLB). The length in China is about 1,100 Km. There are both railway and road transportation in Tumen Corridor. Railway network includes sections of Hunchun-Jilin, Jilin-Changchun and Changchun- Songyuan-Ulanhot-Arxan with a length of 1,267 km in total. Road network includes sections of Zarubino- Hunchun, Hunchun-Yanji-Changchun, Changchun-Ulanhot and Ulanhot-Arxan with a total length of 1,707 km.

Suifenhe Transport Corridor (Corridor 2)

The total length of Suifenhe Transport Corridor in China is about 1,500 km. Across north Heilongjiang Province and east Inner Mongolia, Suifenhe corridor connects three important ports in the Primorsky Territory (Vostochny, Nakhodka, Vladivostok), then passes through Grodekovo, Suifenhe, Harbin and Manzhouli, and is finally linked to SLB. The corridor is the major channel for the trade with Russia in Northeast China.

Dalian Transport Corridor (Corridor 4)

Right through the three provinces in Northeast China, Dalian Transport Corridor runs all the way north to Heihe in Heilongjiang Province and then connects with Trans-Mongolia Railway and Siberian Land Bridge (SLB). The total length in China is around 1,600 km. There are both railway and road in Dalian Corridor. Apart from Harbin-Heihe section, all the other sections use electrified double-track railway. The highway between Dalian to Harbin has been established with mainly four-lane highway; the road between Harbin to Heihe is a secondary road technically.

Korean Peninsula West Corridor (Corridor 5)

Korean Peninsula West Corridor connects ROK with DPRK, and then stretches northwest to China. The corridor in China connects Dandong port to Shenyang in Liaoning Province, and then overlaps with the Dalian Corridor from Shenyang to Harbin.

3.1.2 Traffic at entry points (BCP and ports)

There are 58 cross-border ports and points. Details are shown in Table 3.2.

Ports along the coastal line of Liaoning Province

Ports along the coastal line of Liaoning Province have always been major starting points for vessels from GTR areas of China to Northeast Asia.

There are six such ports, Dalian, Yingkou, Jinzhou,

Table 3.1 Key technical indicators for roads in GTR corridors in China

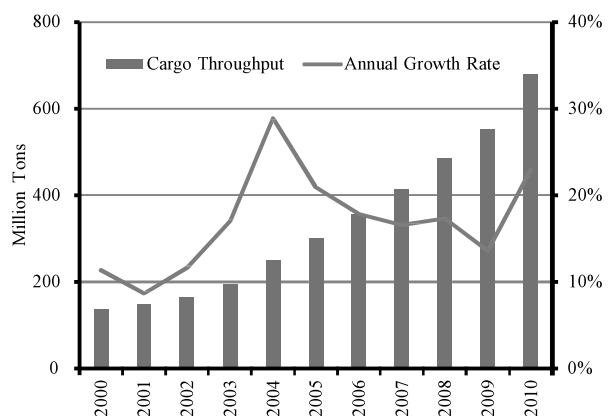
Corridor	Technical indicators						
	Section	Road number	¹ Technical classification	Mileage above level 2 (Km)	Total mileage (km)	Administrative classification	Average traffic (pcu/d)
Suifenhe Transport Corridor	Vladivostok to Suifenhe	-	Above level 2	210	210	-	-
	Suifenhe to Mudanjiang	G301	Above level 3	42	160	National	1,585
	Mudanjiang through Harbin to Daqing	G10	Express Way	432	432	National	11,785
		G301	Above level 3	181	549	National	2,686
	Daqing to Manzhouli	G301	Above level 2	620	620	National	2,649
	Manzhouli to Chita	-	Below level 2	-	486	-	-
Tumen Transport Corridor	Zarubino to Hunchun	-	Above level 2	63	63	-	-
	Hunchun through Yanji to Changchun	G12	Express Way	423	423	National	11,196
		G302	Above level 3	358	567	National	4,780
Tumen Transport Corridor	Changchun to Ulanhot	G302	Above level 2	427	427	National	6,593
	Ulanhot - Arxan	S203	Above level 3	95	290	Provincial	-
Dalian Transport Corridor	Dalian to Yingkou	G15	Express Way	150	150	National	28,053
		G202	Above level 2	216	216	National	11,524
	Yingkou to Shenyang	G15	Express Way	74	74	National	35,026
		G202	Above level 2	103	103	National	17,501
	Shenyang to Harbin	G1	Express Way	433	433	National	18,176
		G102	Above level 2	297	297	National	12,404
		G202	Above level 2	535	535	National	7,004
	Harbin to Heihe	G202	Above level 2	286	286	National	4,589
Korean Peninsula West Corridor	Dandong to Shenyang	G1113	Express Way	134	134	National	13,663
		G304	Above level 3	210	256	National	5,620
	Shenyang to Harbin	G1	Express Way	433	433	National	18,176
		G102	Above level 2	297	297	National	12,404
		G202	Above level 2	535	535	National	7,004

Source: Transport Planning and Research Institute, Ministry of Transport

Dandong, Hulu Island and Panjin Port. Till the end of 2010, these ports had altogether 267 berths of different categories (among these berths, 160 are of the capacity of more than 10,000 tons); the transfer capacity of the ports adds up to 530 million tons (including the 12.06 million TEU of containers).

In 2010, the throughput of these ports was 680 million tons, among which 170 million were of foreign trade; the container throughput was 9.69 million TEU. These three figures are respectively up by 125%, 75% and 156% from the 2005 to 2010. The cargo throughput of the ports from 2000 to 2010 is shown in Figure 3.1.

Dalian Port and Yingkou Port are the main container ports in this area. The container throughput of the two ports was 5.26 million TEU and 3.34 million TEU respectively. Among these, the Japanese line contributed 900,000 TEU; and the ROK line, 700,000 TEU. Throughput of Dalian

Figure 3.1 Growth in Cargo Throughput of the Liaoning Ports

Source: Consultant.

¹ Level 2 highway is a two-lane road with roadbed width of about 12m and paved in asphalt and concrete.

Table 3.2 Cross-Border Ports and Points in the GTR Region

Location	Bordering country	Number of ports	Railway	Roads	Water ports	Airline ports
Total		58	8	18	23	9
Heilongjiang	Russia	15	Suifenhe	Dongning, Suifenhe, Mishan, Hulin	Mohe, Huma, Heihe, Xunke, Jiayin, Tongjiang, Raohe, Luobei, Sunwu, Fuyuan	
	----	10	Harbin		Harbin, Jiamusi, Huachuan, Suibin, Fujin.	Harbin, Jiamusi, Qiqihar, Mudanjiang
Jilin	Russia	2	Hunchun	Hunchun		
	DPRK	7	Tumen, Ji'an	Quanhe, Sanhe, Linjiang, Kaishantun, Nanping		
	----	2			Da'an	Changchun
Liaoning	DPRK	3	Dandong	Dandong	Dandong	
	----	6			Dalian, Yingkou, Jinzhou, Hulu Island	Shenyang, Dalian
Inner Mongolia	Russia	6	Manzhouli	Manzhouli Heishantou, Shiwei	Heishantou, Shiwei	
	Mongolia	5	Erenhot	Zhuengada buq, Ganqimao dao, Erenhot, Arihashate		
	----	2				Hohhot, Hailar

Source: Consultant.

Port, Yingkou Port and Dandong Port in 2010 was shown in Table 3.3.

Table 3.3 Throughput of Chinese Ports in 2010

(Unit: million tons)

Freight category	Total	Dalian Port	Yingkou Port	Dandong Port
1.Total	593	314	226	53
2.Dry bulk	196	66	91	39
2.1 Coal	50	10	33	7
2.2 Mines	81	30	42	9
3.Liquid bulk	82	61	21	-
3.1 Crude oil	42	34	8	-
4.Break-bulk freight	174	128	37	9
5.Containers	8.9	5.3	3.3	0.3

Source: Transport Planning and Research Institute, Ministry of Transport

Suifenhe Port

Suifenhe Port is located in Heilongjiang Province, southeast of Suifenhe City, with both road and rail crossings. The main items imported are timber, oil, fertilizer, concentrate, powder, pulp, scrap steel and rubber etc. The items exported are mainly clothing, footwear, household appliances, fruits and vegetables, grain, meat, lumber and building decoration materials etc.

Commodity import through Suifenhe Port has been increasing. From 2006 to 2009, Customs in Suifenhe has

monitored 33.124 million tons freight of import and export, involving a total value of USD 8.4 billion. 1.387 million vehicles and 4.846 million persons crossed through the border point Suifenhe. In 2010, 7.2 million tons freight passed through the port.

The freight flow of Suifenhe railway port is steadily rising (see Table 3.4). In 2011, the total value of import and export was USD 2.335 billion, decreasing by 4% over the previous year and taking up 14.1% of the total value in Heilongjiang Province. Of the total import and export value, export contributed USD 1.024 billion, decreasing by 6.5% and taking up 23.6% of the total in Heilongjiang Province; whereas import was USD 1.312 billion, decreasing by 1.8% and taking up 10.7%.

Table 3.4 Import and Export by the Railway Port of Suifenhe 2007 -2011

(Unit: 10,000 tons)

Year	Import	Export	Total
2007	923.8	34.8	958.7
2008	832.5	32.8	865.4
2009	666.5	34.5	701
2010	708.4	35.6	744
Jan. to June 2011	286.86	15.25	302.11

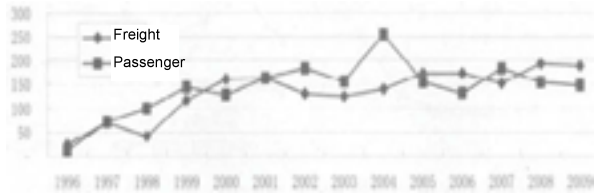
Source: Consultant

Quanhe Port

The growth of freight transport through Quanhe Port

has stopped after the rapid growth from 1996 to 2000. Backward infrastructure in DPRK has stayed in the way of transportation. Even at its highest, the volume of freight transported was only 192,000 tons, quite limited in its scale (as shown on the Figure 3.2). Latest figures show that from January to September of 2012, import and export volume of Quanhe Port reach 143,753 tons, entry- exit passenger volume reach 250,417, at a year-on-year growth of 30.7%.

Figure 3.2 Volume of Freight and Passengers through Quanhe Border-Crossing Port
(Unit: 1,000 tons, 1,000 persons)

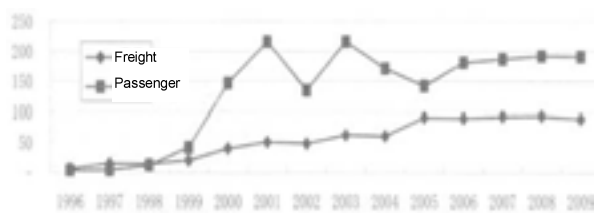


Hunchun Port

Hunchun Port is located in southeast of Jilin Province, the Tumen River downstream areas. The road and rail ports in Hunchun are both the national first class port. It is the only road port in Jilin Province that is open to Russia.

The backwards in infrastructure and software in Russia and disputes between China and Russia have constrained development of the Tumen (Hunchun) transport corridor. Volume of freight transported through Hunchun Port rose from the 21,000 tons in 1999 to 90,000 tons in 2005. After that, the growth stopped. The number of passengers that passed the port rose to 146,000 in 2000, and then to 216,000 in 2001. The 2001 performance has never been surpassed ever since (as shown on the Figure 3.3). Latest figures show that from January to September of 2012, import and export volume of Hunchun Port reach 63,370 tons, entry- exit passenger volume reach 247,753, at a year-on-year growth of 13.5%.

Figure 3.3 Volume of Freight and Passenger passed in Hunchun Port
(Units: 1,000 tons, 1,000 persons)



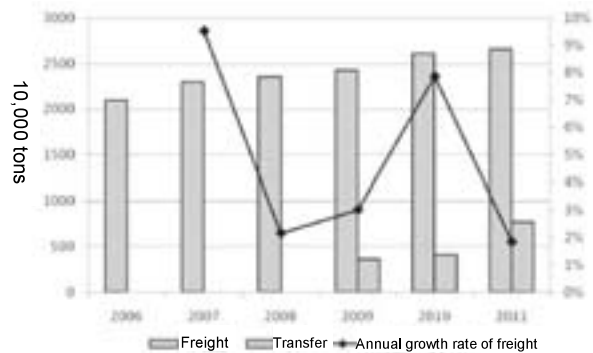
Manzhouli Port

Located in the triangle area of China and Russia and Mongolia, Manzhouli Port is an important transportation hub of the Eurasian Continental Bridge. It is China's largest railway and road ports, and is responsible for over 60% of Sino-Russian trade.

Imported goods to Manzhouli Port are crude oil, refined oil, timber, pulp, primary plastics, steel scrap and steel, etc. The major exported goods are textiles, steel, automobiles, mechanical equipment, mechanical and electrical products, fruits and vegetables etc.

Manzhouli port, the largest land port in China, witnessed the passage of 26.60 million tons of freight, up by 1.8% from a year ago, keeping the growth trend (see Figure 3.4). Among the freight volume, railway import contributed 16.104 million tons, decreasing by 19.8% over the previous year; export 2.109 million tons with a growth rate of 62.5%; transport transfer 7.725 million tons, increasing by 58%. The import and export freight volume of road ports was 658,000 tons, up by 7.6%. The total number of passengers entering and exiting the port was 1.406 million, keeping slight changes on a yearly basis.

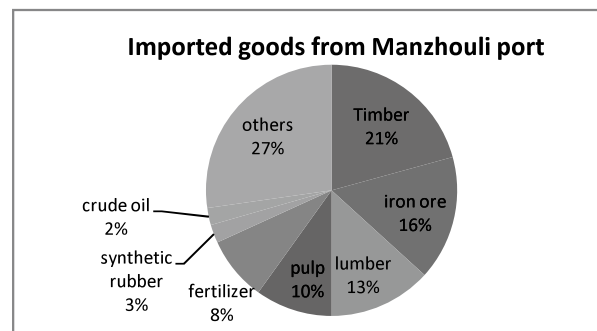
Figure 3.4 Freight Volume in Manzhouli Port from 2006-2011



Source: Consultant.

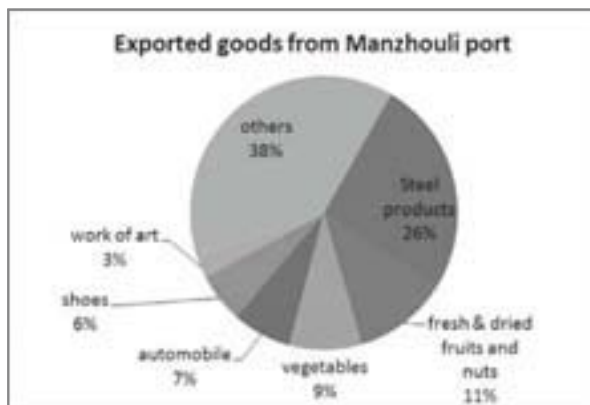
According to the customs, total value of imports and exports through Manzhouli Ports reached USD 6.44 billion in 2011, decreasing by 34.6% over the previous year. Total value of imports was USD 5.06 billion, decreasing by 43.6% over the previous year; total value of exports was USD 1.38 billion, up by 58.6% over the year 2010. Figures 3.5 and 3.6 show the percentage of imported goods and exported goods from Manzhouli Port in 2011.

Figure 3.5 Percentages of imported goods from Manzhouli port in 2011



Source: China Association of Port-of-Entry

Figure 3.6 Percentage of exported goods from Manzhouli port in 2011



Source: China Association of Port-of-Entry

Arxan Port

Arxan Port is the second class port of China. It is located 45km away west from Arxan City (Figure 3.7), Mongolia's Sumber Port is on its opposite side, this is an important channel for China carrying out economic and technical cooperation with Mongolia, Commonwealth of Independent States and the whole Europe, expanding product and labor export, expanding opening to the outside and developing international tourism industry. It realized temporary customs clearance on October 25th of 2009. After fully completed, in short run, passenger and cargo capacity will reach 50,000 tons and 100,000 persons, and in the long run, they will respectively reach 4 million to 10 million tons and 1million to 3 million persons.

Figure 3.7 Location of Arxan Port



Source: Consultant

3.2 Infrastructure capacity review

3.2.1 Road network

In 2007, the state council issued "Plan to Reinvigorate Northeast China", proposing that we should consummate the comprehensive transportation system of northeast China, and strengthen the construction of highway and foreign channel. Under the push of regional integration strategy, highway network in northeast China has already begun to take shape, by the end of 2010, the expressway mileage of northeast China has reached 6,900 km, among which Liaoning Province has the highest expressway network density, nearly doubled compared with the data of 2005.

In contrast, road network density of Inner Mongolia is relatively low. However, with expressway mileage of Inner Mongolia reached 2,000 km in 2009, the traffic condition has improved a lot, location advantage further revealed, and investment environment has also further optimized, it has provided a better developing platform for the economic development for both Inner Mongolia and the whole GTR.

The provinces in GTR have witnessed a significant increase in the length of highways above grade 2 during the last five-year period.

By 2010, the length of highways in Heilongjiang Province has reached 151,945.2 kilometers and the road density has reached 33.5 km/100km². There have been 1,357.5 km of expressways, 1,451.2 km of Grade 1 highways and 9,063.1 km of Grade 2 highways in Heilongjiang. According to the administrative classification, there are 5,268.6 km of national highways and 8,106.8 km of provincial highways.

By 2010, Inner Mongolia has completed 85,000 km of highways, including 2,600 km of expressways, 4,400 km of Grade 1 highways and 13,000 km of Grade 2 highways. The highways above Grade 2 accounted for 23.5% of the total mileage.

The total road mileage in Liaoning Province has reached 103,228 km by 2011, including 3,300 km of expressways, 2,595 km of Grade 1 road and 16,987 km of Grade 2 road. The road density has reached 70.14 km/100 km². According to the administrative classification, there are 6,465 km of national highways and 8,557 km of provincial highways.

Until the end of 2011, Jilin highway mileage reached 91,800 km, increasing by 1.55% compared with previous year. Among them, classified highway mileage was 83,800 km, accounting for 91.3% of the whole mileage, and expressway mileage reached 2,252 km, an increase of 402 km with last year.

3.2.2 Rail network

The railway mileage in Liaoning, Jilin, Heilongjiang and east Inner Mongolia is 16,885.6 km, accounting for 19.5 percent of the national railway operating mileage. The average railway density is 136.1 km/10,000 km². Table 3.5 shows the railway network along GTR corridors. As can be seen in the table, Suifenhe Corridor and Dalian Corridor have relatively better rail infrastructure. In Suifenhe Corridor, the sections from Grodekovo to Suifenhe (26 km) and from Mudanjiang to Hailar (1,119 km) use double-track railway. In Dalian Corridor, the section of Harbin-

Changchun-Shenyang-Dalian (928 km) use electrified double-track railway. Overlapped with Dalian Corridor from Shenyang to Harbin, Korean Peninsula West Corridor also enjoys a better railway condition. The under-construction railway of Shenyang-Dandong will also use double-track railway. The infrastructure in Tumen Corridor is relatively backwards with most of the railway single-track. The railway infrastructure in Heilongjiang Province is further introduced then.

Table 3.5 Railway network along GTR corridors

Section		Total mileage (km)	Multiple track (km)	Electrification (km)	Track gauge	Notes
Suifenhe Transport Corridor	Grodekovo-Suifenhe	26	26		Broad/Standard	
	Suifenhe-Mudanjiang	193			Standard	
	Mudanjiang-Harbin-Hailar	1,119	1,119		Standard	
	Hailar-Manzhouli	186			Standard	
	Manzhouli-Zabaykalsk	10			Broad/Standard	
Tumen Transport Corridor	Zarubino-Hunchun	63			Broad	
	Hunchun-Jilin	470			Standard	
	Jilin-Changchun	128	128		Standard	
	Changchun-Songyuan-Ulanhot-Arxan	669			Standard	
Dalian Transport Corridor	Blagoveshchensk-Heihe	85				Planned
	Heihe-Suihua	548			Standard	
	Suihua-Harbin	125	125		Standard	
Korean Peninsula West Corridor	Harbin-Changchun-Shenyang-Dalian	928	928	928	Standard	
	Harbin-Changchun-Shenyang	546	546	546	Standard	
	Shenyang-Dandong	277			Standard	
	Shenyang-Dandong	208	208	208	Standard	Under construction

Source: various

By the end of 2009, the total railway operating mileage in Heilongjiang Province is 4,920.1 km, of which 4,840.1 km are state-owned and 80 km are joint-venture railways. Railway density in Heilongjiang Province is 1.53 times more than the national level and the railway mileage per capita is 1.5 km/million people.

Table 3.6 shows the carrying capacity indicators for main railways in Suifenhe Corridor. There are two railways in Suifenhe Corridor, namely, Harbin-Suifenhe Railway (Binsui Railway) and Harbin-Manzhouli Railway (Binzhou Railway). The utilization ratio of carrying capacity of Binsui Railway is around 46% to 67% in 2010. Binzhou Railway has the lowest utilization ratio of 30.1% and the highest utilization ratio of 85.8%.

Table 3.6 Carrying capacity indicators for main railways in corridors

Railway	Section	Total mileage (km)	Carrying load in 2010 (10,000 tons/km)		Max. Freight Density in 2010 (10,000 tons)		Utilization ratio of carrying capacity (%)
			Up	Down	Up	Down	
Binsui (Harbin-Suifenhe) Railway	Harbin-Mudanjiang	351	16,588,072	2,117,198	5,513	792	46.3
	Mudanjiang-Xiachengzi	98.3	618,933	35,506	687	41	66.6
	Xiachengzi-Suifenhe	94.5	600,306	43,113	516	34	66.7
Binzhou (Harbin-Manzhouli) Railway	Harbin-Ranghulu	170	6,022,242	5,154,388	3,487	2,522	36
	Ranghulu-Hongqiying	90.4	5,871,157	1,112,555	5,707	728	59
	Hongqiying - Ang'angxi	9.2	5,871,157	1,112,555	4,209	318	85.8
	Ang'angxi - Boketu	278.2	7,655,151	661,823	6,600	723	52.5
	Boketu - Tuduhe	95.5	5,658,654	352,961	5,813	340	66.3
	Tuduhe - Hailar	114.7	5,861,298	359,885	5,844	526	40
	Hailar - Manzhouli	186.7	4,975,656	362,534	4,511	328	30.1

Source: Railway Administration

3.2.3 Land BCP

Suifenhe

Suifenhe Port is located in southeast Heilongjiang Province, boarding Primorsky Territory in Russia in the east. There are two roads and a railway connected to Russia. The railway in Suifenhe is linked to Vladivostok in Russia, and connects three important ports in the Primorsky Territory (Vostochny, Nakhodka, and Vladivostok).

The railway yard includes a south part and a north part. The south yard is used for both passengers and cargoes with a total area of 100,000 square meters. There are domestic waiting lounge (2,800 m²), International Joint Inspection Office (7,000 m²) and platforms for passengers (4,551 m²) and cargoes (1,170 m²) in the south yard. There are also 4 standard-gauge railways, 14 broad-gauge railways and 4 transshipment lines. The north yard is only for cargoes, occupying 270,000 square meters, of which platforms take up 1,170 square meters. There are 11 railways in standard-gauge, 13 railways in broad-gauge and 4 mechanical transshipment lines. The railway yard in Suifenhe Port has achieved an annual capacity of cargo transshipment of 10 million tons and passenger capacity of 1 million people.

Hunchun

Port of Hunchun has both road and railway crossings. The road crossing has an annual cargo capacity of 600,000 tons and an annual passenger capacity of 600,000 people, with a total area of 48 thousand square meters and a construction area of 4,894 square meters. Hunchun railway crossing occupies 1.220 thousand square meters with a construction area of 21.5 thousand square. The railway crossing has a transshipment and inspection capacity of 800,000 tons and 500,000 people for cargo and passenger in the initial stage. The capacity will rise to 25 million tons and 1 million people respectively in the medium-term.

Photograph 3.1 Hunchun BCP



Quanhe

Quanhe BCP is an international passenger transportation port, on the other side is Yuanting Port of Democratic People's Republic of Korea, it is the only passage for China enter Rajin Economic Zone and was approved national first-class port in December of 1988. Government invested 23 million RMB into Quanhe Road Port, completing the construction of inspection building (3,000 m²) and frontier inspection station monitoring squadron barracks(1,700 m²), closed port area, construction of parking lot (3,000 m²), maintenance project of Quanhe frontier bridge, and the construction of water supply, water drainage, power supply, heating, telecommunications and related infrastructure. Till now, Quanhe Port has formed the delivery capacity of 600,000 tons of cargo and 600,000 persons. Local transport department has invested 240 million RMB to build a concrete port road from urban to frontier (43 km).

Photograph 3.2 Hunchun Quanhe BCP



Tumen Port

Tumen Port has both road and railway crossings. It has been invested RMB 3.2 million in the construction of the inspection office. Now a 200,000 tons annual capacity of freight traffic and a 300,000 annual capacity of passenger traffic have been achieved in Tumen Port.

Photograph 3.3 Tumen BCP -photo 1



Photograph 3.4 Tumen BCP-photo 2



Source:www.Liuping902.blog.163.com

Manzhouli Port

The railway crossing in Manzhouli port has 24 railways in broad-gauge, 27 railways in standard-gauge and more than 90 transshipment lines and other specific lines. It has been invested 600 million RMB to improve the facility in Manzhouli port. Recently the broad-gauge station has a parking capacity of 2,020 trucks and the standard-gauge station 1,712 trucks. The annual transshipment capacity has reached over 20 million tons.

Photograph 3.5 Manzhouli Railway BCP



The international road crossing in Manzhouli port was put into use in 1998 with 340 thousand square meters of inspection area for cargo and 300 thousand square meters for passenger. The carrying capacities for freight and passenger traffic have reached 2 million tons and 2 million people respectively.

Photograph 3.6 Manzhouli Road BCP



Arxan Port

Arxan is seasonal road BCP. It has already opened and operated seasonally from May 1 to November 1. The facility in Arxan Port was relatively backwards before. The road linked to the port was in a third technical level. The plan for a new port road was approved in Dec. 2009. The new road adopted a second technical level was built and completed in 2010. The joint inspection building and the bridge between Arxan and Sumber, with 325 meter in length and 12 meter in height, was done in 2009.

Photograph 3.7 The Bridge between Arxan and Sumber



Port logistics park: with a total area of 50,000 m², including the parking lot (16,000 m²), and the trade, logistics, processing and warehousing areas.

Photograph 3.8 Arxan Road BCP



Source: www.china.org.cn

3.2.4 Ports

Dalian Port

Dalian is a major city and seaport in the south of Liaoning province, Northeast China. It faces Shandong to the south, the Yellow Sea to the east and the Bohai Sea to the west and south. Dalian is China's northernmost warm water port. Dalian port has a significant history of being used by foreign powers. Today it serves as a regional financial base and an important international shipping center and logistics hub in Northeast Asia.

Traffic in Dalian Port is very convenient, Harbin-Dalian Line is connected with the developed railway line of Northeast China, China's longest highway Shenyang - Dalian line is connected with national highway network of Northeast China, thus it plays an important role in international trade and domestic material exchange. Till now, Dalian Port is equipped with 7 professional handling operation area and 48 berths. Through the railway and highway network of Northeast China, Dalian Port is connected with Russia and DPRK and has the ability to be the starting point of Asia- Europe bridge. Transportation by sea has opened up 8 international container routes to Hong Kong, Japan, Southeast Asia and Europe, 8 domestic passenger transportation routes, and regular tourism routes. Main transport network has provided a superior condition for the development of Dalian Port.

Dandong Port

The Port of Dandong is located on the right bank at the mouth of the Yalu River. It is bordered by the Yellow Sea in the south and is separated from the DPRK in the east. It was set up as a trading port in 1907. Till now, it has become the center of Northeast Asian Economic Zone and East section of Economic Zone of Bohai Sea, the north most international trade port, the new sea channel of Northeast China, the most convenient marine railway logistic channel to Russia, Mongolia, ROK, DPRK and Japan, it is also the main channel connection of China to Korean peninsula and Eurasia. Since large-scale construction began in the mid-1980s, the Port, together with the ports at Dalian and Yingkou, has become an important distributing center in northeast China. Dandong is a port city connected by rail with Shenyang and Sinuiju in DPRK.

3.3 Performance Review of Corridors

3.3.1 Supporting legal environment of transport movements: facilitation measures and frameworks

In recent years, economic and trade activities, goods and personnel exchanges between China and Northeast Asia have been increasing rapidly. Despite the adverse impact of the financial crisis, trade value of Northeastern China with Japan and ROK totaled USD 28 billion, with an increase of 44% from 2005. The Implementation of the Planning for Cooperation between Northeastern China and the Far East and Siberia of Russia (2009-2018), the Planning for Joint Development of Rajin and Golden Flat Economic Zone by China and DPRK, as well as the Declaration of the 4th Trilateral Leader's Meeting of the ROK, the PRC and Japan, all put forward the goal of 'realizing land and waterway connectivity in northeast

Asia', paving the way for establishment of regional transportation cooperation mechanism.

A. Multiple-tiered transport cooperation mechanisms initially formed

China has primarily established a multiple-tiered transport cooperation mechanism with Northeast Asian countries. Currently, major transport cooperation mechanism includes:

National and Ministerial level:

The Meeting of Transport Ministers under the Shanghai Cooperation Organization (SCO) mechanism designates the major tasks in formulating multilateral transport facilitation agreement, improving international transport routes in the region, researching on and developing integrated multi-modal transport system and ensuring the implementation of Asia Highway Agreement etc.

Ministerial Meeting on Logistics between ROK, PRC and Japan aims to exchange information on international logistics and solve issues of common concern so as to establish efficient and seamless international logistics network in Northeast Asia.

Other mechanisms shall also include the annual meeting of the sub-committee of transport under the Committee for the Sino-Russian Premiers' Meeting and Vice-Ministerial Meeting on Transport between PRC and Japan.

Provincial and Local Level

Inner Mongolia and the 3 provinces in Northeastern China all have regular or as needed meeting and visits with Russia, Mongolia, DPRK and other neighboring countries. For example, since 2004 Heilongjiang province has established the transport cooperation and regular meeting mechanism with counterpart neighboring regions in Russia. They discussed and have solved some practical issues in trade facilitation and transport.

B. Bilateral and Multilateral Transport Agreement Signed

Bilaterally, China signed road transport agreements with Mongolia, Russia and DPRK (Table 3.7). China signed shipping agreements with Japan and ROK respectively. Besides, China has also signed the agreement on utilizing Zarubino Port, Posiet Port with Russia and utilizing Rajin Port, Chongjin Port with DPRK. Between PRC and Russia, a total of 6 road transport cooperation agreements and 10 waterway transport cooperation agreements have been signed. There are 2 road transport agreements between China and Mongolia. A total of 2 road transport cooperation agreements and 10 waterway transport cooperation agreements have been signed between China and DPRK.

Multilaterally, China is discussing with other 5 member states of the SCO for signing governmental agreement on facilitating international road transport under the SCO. Ever since the year of 2000, under the coordination of United Nations Conference on Trade and Development (UNCTAD), China, Russia and Mongolia have held multiple meeting on trilateral cross-border

transport framework agreement. In addition, China, Russia, Japan and ROK also signed the agreement on the international project of establishment of Loran C and Chayka Joint Navigation Service.

Table 3.7 List of bilateral international road transport agreement signed in Northeastern Asia

Signatories	Time signed	Current status
PRC and Mongolia (International Road Transport Agreement between PRC and the Mongolia Government)	1991	Implemented
PRC and Russia (International Road Transport Agreement between PRC and Russia Government)	1992	Implemented
PRC and DPRK (International Road Transport Agreement between China and the DPRK Government)	2008	Implemented

C. Regional transport facilitation agreement concluded or to be concluded

Tumen municipal government of China and Onsong People's Committee entered into a Border Trade Market Agreement to establish a border trade market in Namyang of DPRK on April 27, 2007. The borderers' trade was officially opened on October 13, 2010, becoming the second border trade market to DPRK in Jilin province.

Shenyang Railway Administration of China, Chongjin Railway Administration of DPRK, and Far East Railway Administration of Russia held the Joint Conference of Railway Administration Department from DPRK, Russia and China (The Regional Railway Freight Transport Conference Among China, DPRK and Russia) in Tumen, China on December 25, 2007, and International Railway Freight Transport Agreement of Tumen (China)-Namyang (DPRK), Tumangang - Khasan (Russia) was concluded to fully restart the railway intermodal transport among China, Russia and DPRK. A delegation from Tumen visited Russian Far East Railway Administration to discuss about the implementation of the terms in the agreement signed by the three parties in March 2008. Tumen Xinhuan Material Trade Company Limited and DPRK Railway Province, together with DPRK Railway Association entered into an Agreement on the Issues of International Railway Freight Forwarding Transport in November, 2010. Tumen-Tumangang - Khasan railway international transport work is progressing steadily.

A political delegation from Tumen visited Chongjin to investigate and proposed to bring the agreement of joint developing Chongjin by DPRK and China into the National Economical Cooperation Agreement Bill of China and DPRK in February 2011. Based on negotiation, agreements including the Tumen-Chongjin Railway Transport Agreement, the Joint Utilization of Chongjin Port Agreement, and the Dock Leasing and Renovation Agreement of the 3-4 Linkage Routes of Chongjin Port are concluded. In terms of the economical cooperation, an agreement on the establishment of a joint venture by Haihua Company (China) and Korea Association have been signed.

As the only representative of China, Suifenhe in Heilongjiang province presented the Global Mayor Forum in Moscow in 2008 and China-Russia Economy and Trade Cooperation Forum in Moscow in 2009 successively; hosted the first session of Logistics Cooperation Forum, the second China-Russia Economy & Trade Cooperation Forum and the Senior Forum on the Development of Yanbian, China; and also undertook the second China-Russia Political Party Forum, the fourth International Wood Fair and three Famous Commodity Fairs in succession.

3.3.2 Overall noted Constraints and Challenges of freight and passenger movements along GTR corridors

Since 1978, the national government has emphasized on the development in Northeast China. National and local governments have invested more and more to improve the transportation and infrastructure along major GTR corridors. There is much room for improvement, however, due to the unbalanced development among and within different areas. The major problems remain in the transportation infrastructure and its facilitation and service, representing for both the hardware and the software of the transportation system.

Major problems in infrastructure are:

- Some road sections in GTR corridors are low in technical grade. Road sections to some ports are Grade 2 highways such as Ports of Manzhouli, Heihe, Suifenhe and Tongjiang, while others are below technical grade 3.
- The ports' transshipment capacity is insufficient for further development. There is a shortage of infrastructure in many boarding ports. For instance, limited storehouses and transshipment equipment in ports of Heihe, Tongjiang and Mishan induce the problem of low transshipment capacity in Heilongjiang Province.
- The boarding bridges are constructed in low efficiency, and some roads are not even linked up. Yalu River Bridge has been built, while the projects to build bridges in other ports are proceeding slowly. The construction of Heihe Bridge, for instance, has been considered for ten years, but is still without concrete schedules.
- The infrastructure in BCPs and ports is lagging behind. There are limited inspection area for both cargoes and passengers in Tumen Port, Ji'an Port and Hunchun Port in Jilin Province.

Major problems in transportation facilitation and service are:

- Unnecessary procedures and relatively high fees in customs clearance contribute to the low efficiency in ports' transportation. Some boarding ports still maintain the outdated way in customs clearance, thus resulting in a long procedure and a low accuracy.
- There are problems of inconsistent technical standards of size and weight of vehicles on highways. According to the transport agreement between China and Russia, size and weight of vehicles are limited as 21m*4.2m*2.5m, 44 tons. While the inconsistent technical standards in China

cause problems.

- International freight transport lines cover little of major cities in international trade. The international transport lines from Heilongjiang Province going directly to major inland cities in Russia merely account for 25% of the total coverage. Therefore, trucks from big cities in China such as Harbin, Changchun, Mudanjiang and Jiamusi can only wait for goods transferring in the port city in Russia without going directly to the central cities.

4 Future Development Potential

4.1.1 Transport Development Projects

According to provincial "12th Five-Year" plan for transportation development (2011-2015), Inner Mongolia, Liaoning, Jilin and Heilongjiang will have specific plans and relevant projects to improve their transportation in the next five years.

Heilongjiang

- Railway: Heilongjiang will build railways totaled 800 km in the next five years. By 2015, Heilongjiang will achieved over 7,000 km of railway operations, 700 km of passenger transportation line, 40% coverage of double-track railways and a great improvement in electrified railways. Passenger transportation line will be built in sections of Harbin to Dalian, Harbin to Qiqihar and Harbin to Mudanjiang. The railway container terminal in Harbin will also in the plan.
- Highway: Heilongjiang will accelerate the construction of highways linking to other provinces, and enhance the transportation with surrounding provinces and with the Russian Far East. By 2015, there will be 4,500 km of express highways, 18,000 km of highways above Grade 2 and 140,000km of rural highways in Heilongjiang. Express highways between Suifenhe to Mudanjiang will be constructed as well as a number of terminals for passenger and freight.
- Civil aviation: The Harbin airport expansion will be accomplished by 2015.

Jilin

In 2011-2015, Jilin is planning:

- To expand or newly build section of Siping-Changchun in Beijing-Harbin railway and section of Jilin- Changchun in Hunchun-Ulanhot express highways;
- To improve the technical grade of highways to Ports of Quanhe and Changlingzi etc.; finish the construction of boarding bridges in Quanhe Port;
- To construct integrated terminals for passengers and logistics park in Chang-Ji-Tu areas;
- To develop cross-border transportation from Ogutu areas and improve the coverage of international transport lines to major ports and inland cities in Russia and DPRK based on the international transport corridors;
- To lead the international transport enterprises to be specialized and large-scaled enterprises.

Liaoning

- **Railway:** The total railway operation mileage will reach to 7,000 km, including more than 1,700 km of passenger transportation line.
- **Highway:** Liaoning will enhance the construction of express highway network with its center in Shenyang and a radius of three hours transportation distance. Much emphasize is placed on building a number of express highways, expansion of sections of Beijing-Harbin expressway in Liaoning and improving road network in the coastal economic zone.
- **Port:** Focused on the International Shipping Center of Dalian and Northeast Asia, and port group along the coast, Liaoning will gradually improve the port distribution. Terminals particularly for crude oil, ore, coal and containers are to be built. Navigation channel of the harbor will be improved. Another ten harbor areas will be newly built. By 2015, there will be six great ports with a cargo throughput of 1 billion tons and a container throughput of 18 million TEU.

4.1.2 Freight traffic

Table 4.1 shows the freight traffic in major provinces in GTR during the last decade. In Jilin Province and Liaoning Province, road traffic carries the largest part of the freight, accounting for 81.5% and 86.03% of the total volume.

As for road transportation, Liaoning Province carries the most part of freight among the major provinces in GTR. The large traffic may because of the great carrying capacity of Dalian Port, Yingkou Port and Dandong Port in Liaoning. Its freight traffic on road doubled from 645 million tons in 2000 to 1,273 million tons in 2010, which is two times and three times more than that in Inner Mongolia and in Jilin Province.

Table 4.1 Freight Volume through railway and road in Jilin, Liaoning, Heilongjiang and Inner Mongolia, 2000-2010

(Unit: 10,000 tons)

Year	Jilin		Inner Mongolia		Heilongjiang		Liaoning	
	Railway	Road	Railway	Road	Railway	Road	Railway	Road
2000	5,766	23,640	9,648	34,979	13,077	39,685	13,057	64,515
2001	5,671	23,649	10,151	36,145	13,371	40,135	13,616	63,281
2002	5,781	24,777	11,107	37,239	13,369	40,317	13,869	64,104
2003	6,153	25,211	12,288	38,532	14,267	39,031	13,885	65,981
2004	6,552	26,659	14,739	42,697	15,143	40,712	15,014	70,164
2005	6,634	27,441	18,167	51,020	16,123	44,376	15,029	74,799
2006	6,159	28,965	21,393	58,978	15,859	48,389	16,306	82,142
2007	6,199	31,573	25,382	73,300	16,599	51,996	17,752	90,387
2008	7,422	23,558	39,070	60,941	17,511	35,424	19,141	92,938
2009	7,478	18,262	43,084	70,832	16,558	36,486	20,316	105,088
2010	7,490	33,013	52,069	85,162	17,463	40,582	20,689	127,361

Source: Jilin Statistical Yearbook 2011, Liaoning Statistical Yearbook 2011, Inner Mongolia Statistical Yearbook 2011, Heilongjiang Statistical Yearbook 2011

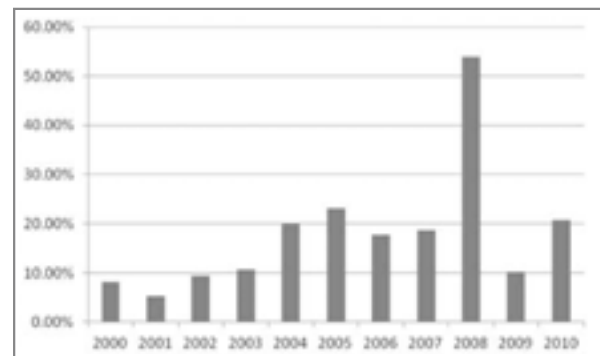
Table 4.2 Annual growth rates of freight traffic in major provinces in GTR 2000-2010

Year	Inner Mongolia		Liaoning Province		Jilin Province		Heilongjiang Province	
	Railway	Road	Railway	Road	Railway	Road	Railway	Road
2000-2005	10.7%	5.4%	3.5%	1.2%	1.6%	3.7%	8.7%	1.1%
2006-2010	24.1%	13.2%	5.5%	10.6%	2.6%	8.4%	14.0%	1.3%

Source: Consultant

When we look at the annual growth rates of freight traffic in major provinces in GTR (Table 4.2), Inner Mongolia stands out as the province with highest annual growth rates in both railway and road. Figure 4.1 shows the growth rate of road freight traffic each year in 2001-2010 in Inner Mongolia. There is a significant decrease in transportation in 2008, which may due to the global financial crisis. The financial crisis affected foreign trade among GTR and consequently influence the freight traffic.

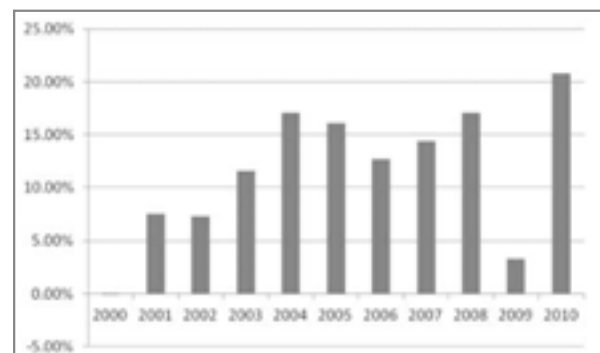
Figure 4.1 Growth rate of road freight traffic in Inner Mongolia 2001-2010



Source: Based on Inner Mongolia Statistical Yearbook 2011

Railway freight volume also presents steady growing trend, as is shown in figure, except influence of 2008 financial crisis, the growth rate of railway freight volume has remained at around 15% since 2005 (Figure 4.2).

Figure 4.2 Growth Rate of Railway Freight Volume in Heilongjiang, 2000-2010



Source: Heilongjiang Statistics Yearbook, 2011

5 Measures and Investment Programme proposed to improve transport movements along the corridors

5.1 Constraints for traffic flows along the trans-GTR corridors

Despite a lot of the efforts and work made by Chinese government and the four GTR provinces in infrastructure and supporting facilities, some problems still exist in such issues due to the differences in mechanism, standard, facilities and capacity, as well as the development phase. These mainly lie in:

5.1.1 Infrastructure

The issues have been described in Chapter 3. The variance in gauge between China and Russia generates an increase of 40%-50% in cost in transshipment, making the railway less competitive. In China, the operating mode of Hunchun-Makhalino Railway is "joint-venture", while that of Tumen-Hunchun Railway is "local" one. The coordination between the two railways of different nature results in a big barrier in the railway development.

Just take Suifenhe Railway as an example. The yearly handling capacity from Russia's station to Suifenhe Station is only 10 million tons, so is Suifenhe Station to the next domestic city. However, currently, the freight volume of receiving and distributing as well as transshipment of Suifenhe Station is more than 10 million tons. Thus, the cargo is always backlogged in the Station. Harbin-Manzhouli and Harbin-Suifenhe railway lines are fully loaded, but the facilities are in low standard. Combined with low speed and long operation duration, it falls into a bottleneck to the foreign trade.

5.1.2 Transport facilitation

I. Excessive customs working procedures

The facilities for joint inspection are small and the old mode for the site check and inspection is still in use. The customs clearance is in low efficient for long time of inspection, low accuracy, excessive work load and complicated procedures.

In international corridor 2 (Suifenhe-Manzhouli) and corridor 1 (Arxan-Hunchun), the problems such as the complicated customs procedures and the low efficiency of the customs clearance etc. in Russian side still remain. For example, the investigation on the Russian port shows that the manual check in Russian side is still in use for incoming freight cars, the clearance time in Russian side takes about 8 times longer than that in Chinese side and the clearance time for the passengers in Russian side is generally about 5 times longer than that in Chinese side.

II. Short of staff allocation for port inspection and insufficient port opening time

With the increment of the freight volume at the port, the problem of inconvenient working time exists in many ports in the past years. Currently, round-the-clock opening of the port for the railway freight transport is realized, and the 12-hour opening of port daily for the highway passenger traffic is carried out at Suifenhe Port. However, there are still the problems of the insufficient staff allocation for port inspection and inconvenient working time in port. At

present, the work system of eight hours per day and 6 working days weekly carries out for cargo inspection at Suifenhe Highway Port, this causes the consequence that almost 80 freight trucks can't get the clearance in time and stay at the port every day. Especially, in the important festivals stipulated by Russian and during the period of the river being frozen, the issue of the truck delay is especially serious.

III. Long time for visa procedures of driver and conductor

The employed people (including driver and conductor, personnel for transport management etc.) for the international road transportation will frequently go back and forth between the border ports because of business. However, the visa procedures of these persons are same as the ordinary ones. They have to be subject to the unified inspection by the relevant department for the clearance formalities. Due to the complicated procedures and long duration, as well as the short validity time of the visa, it brings big influence on the work of people for the international road transportation.

IV. Different items and standards of charge and high cost

There are many problems such as many items and high standards of charge being collected at the cross border ports between China and Russia. Due to the difference of the items and standards of charge, the Chinese transport enterprises shall pay more clearance fees each time when crossing the ports of Russia side. For example, the charging items at the general port shall include: 2,300 Rubles/car escort fee by customs, 1,800 Rubles/car fees by municipal government, 700 Rubles/car service fees by port, 210 Rubles/car fees for document and translation fees by Automobile Transport Company (Ltd.) and 250 Rubles/car bill fees by customs. All these fees reach to an amount of 5,260 Rubles/car, about RMB 1,547. The charging standard is different too. These make a big burden for China's transport enterprises and make them less competitive.

V. Difference in road vehicle size and loading standard

The specifications of the outline size and loading standard of vehicles are different between China and Russia. For example, most Russian cargo trucks have sizes exceeding 16m and the maximum limit is up to 20m. The limit of China's semi-trailer is 13m long and the hinge-truck 16.5m according to the specification of Limits of dimensions, axle load and masses for road vehicles (GB1589).

The difference in standard not only decreases the versatility of domestic and international transport resulting in poor efficiency, but also leads to repeated weighing and check resulting in poor transport efficiency and higher cost.

VI. Poor cargo transport route extension and less radiation area

According to the planning for sea-land intermodal transport in Northeastern Asia, a series of road transport corridors will be constructed for connecting the pivotal cities and harbors. The extension of transport route is the key for the support of the plan.

Currently, there are only a few lines extending to the

Table 5.1 Constraints along the trans-GTR corridors

Infrastructure	Constraint	Importance (How much it restricts the flow)	Timeframe (Reflects the Urgency)	Mitigation measures
Rail	Missing link between Arxan-Nomrog-Khuut Difference in gauges and axle load requirements	Severe Moderate	Urgent Urgent	Connection of the rail link Harmonization of technical specifications of rails with Russia and other countries
Road	Some road sections to BCPs are in low technical grade.	Moderate	Quite urgent	Construction of the road sections
Bridge	Bridges between neighbor countries are needed.	Severe	Urgent	Speed up the processes for construction of Heihe Bridge, etc.
BCP	The ports' transshipment capacity is insufficient.	Severe	Quite urgent	Improve the storehouses and transshipment equipment in ports of Heihe, Tongjiang and Mishan, etc.
Transport regulation	Transit transportation agreement between Mongolia and PRC is not signed still.	Moderate	Quite urgent	To continue the negotiations and sign the agreement
	Difference in road vehicle size and loading standard	Moderate	Quite urgent	To harmonize the standard and adjust specification of vehicle dimension
	Different items and standards of charge and high cost	Severe	Quite urgent	To cut off and harmonizing charges for border crossing
Cooperation mechanism	The effective bilateral or multilateral cooperation mode and cooperation mechanism is urgently to be established.	Severe	Urgent	To have the agreement and approval of central governments of related countries To set smoother coordination among governments and enterprises

inland of China and Russia. As of 2010, only two lines, i.e., Harbin-Suifenhe-Vladivostok and Harbin-Dongning-Vladivostok, extend into pivotal cities of the two countries. This constrains the expansion of transport market. Cargoes are transferred in the ports, increasing the transferring procedures and transport time, as well as cost. Thus, it dampens the technical and economical advantages in door-to-door transport services.

VII. Defective international transport insurance and compensation system

Different countries have quite varied compulsory transport liability insurance requirements. In case of traffic accidents, liabilities and compensation can hardly be agreed.

VIII. Underdeveloped logistics industry

Most logistics supplier enterprises are small-sized and their management concept and level is relative low. From view of businesses in Tumen transport corridor, transport enterprises and logistics firms of related countries generally have a small size and insufficient financial strength, poor logistics management technology and capability, insufficient use of information technology, thus, they are incapable of business in a large scale.

5.1.3 Cooperation mechanism

The infrastructure construction of transport and treaty ports at borders requires the agreement and approval of central governments of related countries. The effective bilateral or multilateral cooperation mode and cooperation

mechanism is urgently to be established.

To be specific, the transport corridor from Hunchun to Busan via Rajin, in the form of leasing port, has poor transport facilities in DPRK; the transport corridor from Hunchun to Sokcho via Zarubino, in the form of cooperation, has poor supervision system at port in Russia; Rason International Logistics Joint Venture, in the form of cooperation, lacks proper financial strength. All these issues have to be addressed by governments and enterprises through the smooth coordination.

5.2 Suggestions

I. Signing of transport agreements

- Expedite the signing of bilateral and multilateral transport agreements such as Transit transportation agreement between Mongolia and PRC Government and Transport Facilitation Agreement of Shanghai Cooperation Organization (SCO). At the same time, the GTI member countries would seek new multilateral transport agreement among all GTI members.
- Determine the conditions on the sea-land intermodal transport among four countries -China, Russia, Japan and ROK- in the Northeast Asia area. Discuss the key issues on the signing of sea-land intermodal transport Agreement among countries based on the available bilateral transport agreement between China and ROK, China and Japan, China and Russia.

II. Coordination of rules and standards

- Coordinate port charging items and standard.
- Coordinate international transport vehicle insurance system and compensation mechanism, as well as standards concerned.
- Discuss the vehicle size, load of the transport vehicles on international road transport routes acceptable to countries concerned. Discuss the issues on the treatment measures of oversize or overload transport in the international road transport routes based on the current status of vehicle technical standards between two countries concerned.

III. Strengthen border crossing port construction and enhance clearance efficiency

- Simplify customs formalities and upgrade inspection efficiency. Make positive discussion with Russia side and find the agreed solutions in terms of sampling frequency and inspection time, to solve the problems in low inspection speed, redundant formalities and varied standards.
- Prolong the working time at border crossing ports. The clearance of a work system of 6 days a week, 12-hour service per day and round-the-clock service at the ports can be carried where applicable. Currently, round-the-clock opening of the port for the railway freight transport is realized, and the 12-hour opening of port per day for the highway passenger traffic is carried out at Suifenhe Port. In the coming time, try to carry out a work system of 6-days a week and 12-hour service per day in summer for highway cargo transport in Suifenhe, Dongning, Mudanjiang and Manzhouli Port.
- Strengthen informatization construction and popularize electronic business service platforms at ports, implement the function of electronic declaration, electronic transfer of forms and electronic clearance; popularize paperless clearance and electronic business at more ports.
- Intensify the cooperation and coordination of customs with the relative departments for implementing the regulation of the inspection application in advance so that one-time inspection can be completed.

IV. Expand the opening of transport market and create an equivalent transport environment

- Complete the research on the demands of passenger and cargo, recover and improve existing sea-land intermodal transport routes, open and maintain new transport routes.
- Open and extend international transport routes. Focus on the negotiation of the opening time for Vostochny-Suifenhe (Dongning)-Harbin-Qiqihar, Harbin-Qiqihar-Fuyuan-Birobidzhan; summarize the experience in existing transport routes, and extend the routes further to other key cities of two sides.
- Discuss the bonded system and specific policies, simplify the customs inspection procedures for

cross-border transport, and enormously cut the taxes for cross-border transport, to significantly increase the feasibility and cost efficiency of transporting from Northeast China to a third country via Russian ports.

- Explore cross-border tourism. Take opportunity to plan the cross-border tourism routes in Tumen River area in conjunction with the cooperation development activities in Changchun-Jilin-Tumen and other regions. Plan and advertise a cross-border tourism routes across China, DPRK, Russia, Japan and ROK through highway, railway and marine transport, to create an international tourism passage and to upgrade the development level of border tourism business.

V. Improve transport efficiency and decrease transport logistics cost

- Intensify the coordination with other departments to facilitate the entry and exit of the crew. For the entry and exit of drivers, crew, and escort personnel having registered in transport and customs authorities, a fast-track procedure shall be adopted to reduce the period for visa. Meanwhile, actively try to simplify the border control procedures and clearance formalities for drivers and crew to realize a rapid customs clearance.
- Establish logistics terminals and logistics centers at port. Promote the construction of logistics terminal centers at port to create a modern logistics center with multiple functions including bonded warehouse, collecting and distribution and information inquiry.
- Build up the public logistics information system and popularize the application of electronic information technology. Jointly develop the container intermodal transport management information system and establish international logistics information sharing platform between governmental bodies and enterprises.

5.3 Measures

I. Enhance the exchange and coordination

Enhance the exchange and coordination with the neighboring governmental bodies and enterprises via multiple cooperation mechanism to advance the international cooperation development activities in Tumen River area to proceed in a systematic and permanent way.

From the perspective of balancing the domestic economic development and closing the regional cooperation in Tumen River area, take advantage of the multiple cooperation mechanisms of relevant countries, such as the summit conference mechanism, the regional cooperation & development mechanism of Tumen River area, the regional cooperation mechanism for revitalizing the Northeast China and Northeast Asia, the investment and trade expo mechanism of Northeast Asia, and etc., to establish the bilateral & multilateral dialogue and information exchange system among all the countries participating in the development of Tumen River area, to intensify the communication and contact among the countries concerned,

and to promote the international cooperation development activities in Tumen River area to proceed in a systematic and permanent way. Regularly discuss and coordinate issues necessary to the Tumen River transport corridor, including transport, port, tariff, customs clearance, regulations and etc.

Based on the intergovernmental communication, strengthen the communication between government and enterprises and between different enterprises to establish a linkage mechanism between government and enterprises. Promote the regional economic development by guidance from the government and fund from the enterprises.

Based on enterprises and facilitated by government in fund and technology, adopt the operation mode of joint venture. Jointly negotiate the equity proportion, sign the contract, establish and operate the joint venture, and share the risks by both investing parties. Integrated in the planning and implementing of the infrastructure construction, including ports, railways, highways, sea transport routes, etc., and of the comprehensive operation and development.

II. Simultaneously perform the corridor construction and logistics construction, especially the logistics construction

Make full use of the resource advantages of neighboring countries and the policy advantages of our country, actively organize the logistics, and improve the cargo handling capacity of ports in Tumen River area to advance its international cooperation development.

Firstly, attract export and import commodities from more enterprises to the export channel and attract more logistics industry by optimizing all the preferential policies. Secondly, accelerate the construction of development zones and industrial parks and some big investment projects to flourish logistics.

III. Explore more channel to raise fund for project construction

As fund being a big problem for the construction of international transport passage in Tumen River area, schemes for fund raising shall be established based on the economic development fact of the neighboring countries.

Russian Far East is located in underdeveloped economy area. Therefore, for the Russian side, fund source shall be extending to the central area of Russia to attract Russian corporations with good economical strength to participate in the implementation of projects.

Economy of DPRK is underdeveloped, but the preferential policies granted by the DPRK government can be utilized to achieve the special China-aided fund. Actively attract the surplus fund from developed countries such as ROK and Japan to be involved in the development process. Meanwhile, compete for the policy and financial support from the United Nations Development Programme (UNDP).

Mongolia, in its fledging period of industrialization, is lack of economical resources such as fund, labor and technology, but is abundant in natural resources. Therefore, both the foreign investment attracted by mineral exploration and the fund from international financial organizations can be an important financial source for the infrastructure

construction fund.

In China, discuss the way to attract international capital and folk capital to participating in the development in addition to the corresponding input by governments at all levels. Step up the promotion, improve the investment environment to attract foreign fund; perfect the governmental guarantee policies to decrease the risks for enterprises to participate in the development of Tumen River area; find the way to make full of scattered folk capital in Yanbian region to shift it to investment from consumption, and further to convert them to key project investment from service industry investment of scattered form and small amount.

5.4 Typical Projects

I. Jilin-Hunchun Passenger-dedicated Railway Line

With a total length of 359km, Jilin-Hunchun Passenger-dedicated Railway Line starts from Jilin city and terminates in Hunchun city of Jilin province. With a designed speed of 250km/h, this railway runs through 7 counties and cities i.e. Jilin, Jiaohe, Dunhua, Antu, Yanji, Tumen and Hunchun. Along the whole line, there are 106 bridges with a total length of 87km and 86 tunnels with a total length of 149km. An investment of about RMB 41.6 billion was invested in this project which was commenced on November 1, 2010. With a total construction period of 18 months, the whole line is expected to be put into the operation in October 2014. After its completion, it will be connected with high-speed railways such as Harbin-Dalian Passenger-dedicated Line and Harbin-Qiqihar Passenger-dedicated Line through Changchun-Jilin Intercity Railway. This project will relieve transportation pressure of eastern region of Jilin province, strengthen traffic link between interior of Jilin and Tumen River area, accelerate construction of Changchun-Jilin-Tumen Development and Opening up Pilot Area and enhance regional communication of Northeast Asia.

II. China-Russia Tongjiang Railway Bridge Project

China-Russia Tongjiang Railway Bridge is located between Tongjiang city of Heilongjiang province and Nizhnelenskoye of Russia. The bridge starts from North Tongjiang Station of local railway of Tongjiang of China in the south, runs into Russia across Heilongjiang River through Hayu Island in the north and is connected with sub-branch of Birobidzhan-Nizhnelenskoye Railway in Nizhnelenskoye, being able to connect with Far East Railway. The line has a total length of 31.615km and the total length of the bridge is 6.864km. North Tongjiang Transshipment Station and Chinese frontier inspection station are established. The designed cargo handling capacity of the bridge will reach 20 million to 25 million tons per year, with an estimated investment of RMB 2.026 billion from China. On April 28, 2012, China and Russia signed a revised agreement on the construction of the bridge.

III. Hunchun Pohang Modern International Logistics Park Project

Hunchun Pohang Modern International Logistics Park Project is invested by Pohang Group of ROK and the

planned investment is RMB 1.2 billion. This project covers an area of 1.5km² and will be developed and constructed by 3 stages. Development and construction of the project at the first stage (covering an area of 0.315km²) will be completed in 2013. This logistics park will become a logistics center, a transportation organization and management center with transportation junction terminal facility, as well as a logistics information center serving Northeast Asia. In this way, it will drive rapid development of commercial and trade logistics business of Northeast Asia and promote development of Hunchun International Cooperation Demonstration Area. On September 10, 2012, construction commencement ceremony of Hunchun Pohang Modern International Logistics Park was performed in Hunchun.

IV. Northeast Asian (Hunchun) International Trade Logistics Center Project

Covering an area of 361,600m², Northeast Asian (Hunchun) International Broader Trade Logistics Collection & Distribution Center is invested and constructed by Jilin Lvdu Zhiye Co., Ltd. with a total investment of RMB 3 billion. This project will be constructed by three stages and totally RMB 135 million will be invested for the first stage at which broader trade market and office building will be mainly constructed. This project was commenced in May 2012 and currently, the construction was in progress. It is expected to be put into trial operation in March 2013. After its completion, the logistics center will become an large size broader trade logistics collection & distribution center for broader zone of China, DPRK and Russian, promoting resource development and formation of logistics of Hunchun and Northeast Asia area further.

V. China-Russia Hunchun-Kamyshovaya (Railway Ten-million-ton International Interchange-loading Station Project.

China-Russia Hunchun-Kamyshovaya Railway is an important traffic & transportation channel between Hunchun and Zarubino of Russia. The Ten-Million-Ton International Interchange-loading Station will be constructed by Northeast Asia Railway Group through reconstructing Hunchun Interchange-loading Station. With a total investment of about RMB 270 million, this project will improve cargo transportation capacity of Hunchun-Kamyshovaya Railway further, meet the demand for transportation of China-Russia international bulk cargo and effectively promote cooperation in economy and trade between China and Russia. On August 3, 2011, ground-breaking ceremony of the Ten-million-ton International Interchange-loading Station was performed in Hunchun.

VI. Dachen Hunchun International Aquatic Product Trading Market & International Cold Chain Logistics Center Project

Dachen Hunchun International Aquatic Product Trading Market & International Cold Chain Logistics Center Project is invested by Yantai Dachen Hunchun Aquatic Product Co., Ltd. With a planned total investment

of RMB 110 million, the project covers an area of 2.78 hectares, for which million-ton refrigeration house, aquatic product processing & trading market as well as cold chain logistics will be mainly established. After the aquatic product trading market is completed, it will radiate countries such as Russia, DPRK, ROK, Mongolia and Japan. After the International Cold Chain Logistics Center is completed, refrigeration capability of the refrigeration house will reach 10,000 tons. Currently, the project is in progress.

VII. China-DPRK Yalu River Broader Highway Bridge Project

China-DPRK Yalu River Broader Highway Bridge has a total length of 12.71km, 11.07km of which is in China and 1.64km of which is in DPRK. The bridge has a length of 3030.4m, including 1,408m in China and 1,622m in DPRK. After its completion, the bridge will have a long-term traffic capacity of 50,000 person-times per day in terms of passengers and 20,000 trucks per day. This bridge will promote contact and economic & trade communication between China and DPRK, being helpful to construct a big channel from Northeast Asia area to Europe. On February 25, 2010, an agreement for construction of the bridge was concluded formally. Then the main bridge project was commenced formally on September 2, 2011 with a construction period of 3 years.

VIII. Dongning-Hunchun Railway Project

With a total length of 220km, Dongning-Hunchun Railway has a planned construction period of 4 years and a total investment of RMB 7.7 billion. This project will connect important port cities along the border such as Tumen and Hunchun of Jilin province and Dongning and Suifenhe of Heilongjiang province thus to connect multiple ports along China-DPRK boarder and China-Russia boarder within this area, becoming a key channel which will drive and promote regional economic growth of ports along the borders. Currently, preliminary work of the project is on its way.

IX. Won Jing Ri Port-Rajin Port Highway Reconstruction Project of DPRK

With a total length of 53.5km, Won Jing Ri Port-Rajin Port Highway Reconstruction Project of DPRK is connected with Quanhe River Port of China in the north and Rajin Port of DPRK in the south. The total planned investment is RMB 226 million which will be mainly used for reconstruction of subgrade, bridges & culverts, protection works, road surface etc. Its designed speed is 40km/h. This project is an important project for joint development of Rason Area by China and DPRK based on cooperation. After its completion, driving from Quanhe River port of Hunchun to Rajin Port of DPRK will take only 40 minutes instead of 90 minutes before its completion. As of April 2012, an investment of RMB 165 million had been invested and basic vehicle traffic of the highway was realized.