
Transportation System in Northeast Asia and Measures for an Effective Integration

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Introduction

Northeast Asia is where big economies such as Japan, China, South Korea, and Russia as well as small economies like North Korea and Mongolia are located. Differences in economic system and production capability prohibited these countries from forming an integrated economic bloc, and as a result, economic interactions are mostly limited to bilateral relationships. In order for the Northeast Asia to overcome economic crisis and achieve stable growth, level of economic integration need to be enhanced. Especially needed is intra-regional trade and development of natural resources. Even a loose economic bloc is required to attain these goals. What is most important to achieve economic integration is to link transportation system effectively.

This study focuses on the transportation system in Northeast China, Russian Far East and North Korea. This area not only contains a great potential for the development of natural resources but also makes a growth belt especially when linked to South Korean economy. Our main concern is to examine current state of transportation system and to develop ideas for effective links among the transportation systems of the countries in this region.

The Current State of Transportation System in Northeast Asia

Transportation System in Northeast Asia

1) Northeast China

• Railways and Roads

The main line of transportation in three provinces of Northeast China is the route that links Harbin-Changchun-Shenyang-Dalian reflecting geographic conditions. Dalian is used as a major sea port. Most of the freight is transported by railways whose capacity is already up to the limit. Without the expansion of railway lines, increasing demand for transportation cannot be met. Road transportation is rising in recent days thanks to the expanded road network and increasing number of vehicles. Major items of freight

<Table 1> Share of Transportation in Northeast China (1997)

freight volume	total		railways		roads		waterways	
	volume (10,000t)	share (%)	volume (10,000t)	share (%)	volume (10,000t)	share (%)	volume (10,000t)	share (%)
Jilin	7,644	100	6,483	84.8	1,112	14.5	49	0.6
Heilongjian	15,565	100	14,526	93.3	934	6.0	105	0.7
Liaoning	19,501	100	13,223	67.8	5,921	30.4	357	1.8
NE China	42,710	100	34,232	80.1	7,967	18.7	511	1.2
China	297,311	100	169,734	57.1	46,523	15.6	61,927	20.8

freight turnover volume	total		railways		roads		waterways	
	turnover volume (100m t/km)	share (%)	turnover volume (100m t/km)	share (%)	turnover volume (100m t/km)	share (%)	turnover volume (100m t/km)	share (%)
Jilin	520.7	100	441.3	84.8	78.3	15.0	1.1	0.2
Heilongjian	15,565	100	14,526	93.3	934	6.0	105	0.7
Liaoning	1,403.0	100	1,041.4	74.2	226.4	16.1	135.2	9.6
NE China	2,880.8	100	2,300.4	79.9	438.4	15.2	142.0	4.9
China	38,211.8	100	13,097.1	34.3	5,271.5	13.8	19,235.0	50.3

Source: *China Transportation Yearly, 1998*

consist mostly of coal, building materials, iron, and grains which use both railways and roads. So there is a tendency that transportation distance determines the choice of transportation means. For example, average distance carried by each transportation means in Jilin Province is in average 680 km for railways freight, 159 km for railway passengers, 3 km for road freight, and 43km for road passengers. Expansion of road network including construction of highway and more diverse freight would strengthen this tendency of differentiation of transportation means according to the nature of the freight.

<Table 2> Railway Freight Transit among the Provinces in Northeast China (1997)

freight volume	transit within province		transit within Northeast China		transit with other regions of China		total	
	volume (10,000t)	share (%)	volume (10,000t)	share (%)	volume (10,000t)	share (%)	volume (10,000t)	share (%)
Jilin	2,611	24.6	5,659	53.3	2,352	22.1	10,622	100.0
Heilongjian	6,701	37.6	7,620	42.7	3,519	19.7	17,840	100.0
Liaoning	8,402	38.6	7,493	34.4	5,871	27.0	21,766	100.0

Source: *China Transportation Yearly*, 1998

Roads in Northeast China are not developed as much as railways. North-South main road between Dalian and Shenyang is the central axis. Extension of this road to Harbin is under construction. In Jilin Province, construction of Changchun-Jilin-Yengil-Tumen-Hunchun expressway (total length of 604km) will be completed by 2004. As of now about 100 km is completed. Yengil-Tumen expressway will be completed in November 1999.

- Sea Ports

Sea transportation in Northeast China is made through Liaoning Province. The most important port is Dalian, others include Yinkou, Jinzhou, Dandong. Dalian was the largest sea port until 1995 most exporting grains and oil, but since 1996 with the dramatic decrease in the export of those products, freight volume it handles is behind Shanghai, Tienjin, Yangpu which mostly handle general goods.

<Table 3> Current State of Sea Ports in Liaoning Province (1997)

Ports	no. of berth	freight volume (10,000ton)		major freight
			trade volume	
Dalian	62	7,044	3,218	oil, grains, steel
Yingkou	19	1,605	951	mineral ore, grains, non-ferrous metal, iron
Dandong	8	220	116	mineral ore, steel material
Jinzhou	6	218	-	oil, grains
total, Liaoning (A)		9,087	4,285	
total, China (B)		90,822	36,679	
(A) / (B)		10.0	11.7	

Source: *China Transportation Yearly*, 1998

Note: Figures for Jinzhou represent 1995.

2) Transportation in Russian Far East

• Railways and Roads

Russian Far East region is located at the east end of Siberian railways. Railways cover 60% of the freight transportation in this region. Out of total length of 1,600 km (broad gauge), Siberian railways (both main and branch lines) covers 748 km. Economic crisis of Russia also afflicted serious negative effect on the transportation sector of the Maritime Provinces. Complicated Customs Law made it difficult to ensure safe transportation in time, which resulted in decrease in the container volume through the Siberian railways. Overall, Russian Far East saw decrease of 62% in the freight, 27% in the passengers since 1991. Situation has been getting better due to the combined efforts by central and local governments from 1997.

• Siberian Railways

Freight volume Siberian railways (Siberian Land Bridge: SLB) transport has decreased from yearly average of 70,000 TEU in 1991 to just about half, averaging 35,000 TEU a year during last six years. It is due to the lack of competitiveness. Sea containers from South Korea or Japan to Europe cost about 700 U.S. dollars/TEU (in case of ships size of 4,000-5,500 TEU), but SLB costs about 1,700

U.S. dollars. Number of days needed for transportation is uncertain, freights are separated in transit stations, and many thefts or losses have been reported.

There are some changes occurring now. Since 1997 Russian has tried to revamp SLB through tax cut, simplification of customs procedures, and price cut.¹ What is more important, however, is the certainty and stability in transportation time. For the SLB to revive, Russian legal system and service need to reach an international standard.

- Sea Ports

Russian Far East is where only a few non-freezing ports are concentrated in Russia. Vladivostok, Nakhodka, Vostochny, Zarubino, Posiet ports are those. After the dissolution of old USSR, port administration became privatized. Sea Port Administration Committee, still a state body, takes care of only the maintenance of berths which are a national property. Unloading is done by commercial port firms. Cargo capability of Maritime Provinces are about 36 million tons, but cargo they actually handle is less than 20 million tons. Cargo handled by the sea ports of Maritime Provinces in 1997 is about 80% of 1990. Most of the cargo(86%) is for the export.

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<Table 4> Cargo handled in the sea ports of Maritime Provinces

	1994	1995		1996		1997	
			rate(%)		rate(%)		rate(%)
Vladivostok	448.0	407.2	-9.1	399.5	-1.9	328.8	-17.7
Nakhodka	867.0	553.0	-36.2	557.8	0.9	495.7	-11.1
Vostochny	820.0	850.0	3.7	847.5	-0.3	808.2	-4.6
Posiet	44.0	73.0	65.9	60.6	-17.0	27.9	-54.0
Zarubino	39.0	49.8	27.2	61.2	23.4	7.3	-88.1

Source: ERINA, *Report on Zarubino*, November, 1996; *Vladivostok* February 25, 1998.

¹ Since June 1997, freight fees and maritime transportation fees have been cut down by 10% and port fees for the transit cargos were discounted by 50%. For one year from October 1 1997, property tax for the firms engaged in transit transportation was cut by half.

The most important problem in the sea transport of Russian Far East is obsolete vessels. Provincial governments are planning to get rid of 80% of their vessels by 2000, because vessels over 15 years old are denied entrance to the foreign ports due to the environmental considerations. Vladivostok is a non-freezing nature-given port and the final destination of the Siberian Railways but expansion of cargo handling capacity is difficult because piers are located very near the downtown. Exports articles are mostly metal and general goods, imported goods are mostly grains.

Nakhodka is also a non-freezing sea port consisting piers for fisheries, containers, and oil. Siberian Railways are linked to the port. It used to export oil products, woods, iron ore, fertilizers, and building materials. But with the recession cargos have dramatically decreased especially since 1995 when export cargos began to use Vostochny port.

Vostochny port is located opposite the Nakhodka port in the Nakhodka Bay. It is also a non-freezing port and has berths for containers and coal. It has a link with Siberian Railways and imports general goods, machineries, and vehicles, and exports coal and fertilizers.

Zarubino port has been a small port mostly handling export cargo². However, Khasan Commercial Port Company proceeded with the study to convert the port to transit hub for the Chinese cargos, which was affected by the promotion of Tumen River area development by Chinese government and Tumen River Development Plan of UNDP. Russian government's giving priority to Vladivostok worked against the conversion plan at the first stage. But, since Russian government gave conditional green light in 1995, port expansion is being proceeded.

Posiet is located 20 km west of Zarubino. It is frozen for three months in winter. Environmental regulations are quite strong due to the clam farming near the port. Refueling of ships and handling of petrochemical products and fertilizers are not allowed in the

² By 1995 most of the cargo came from Russia mostly consisting of metal goods, woods, and foods. Container cargoes are not handled. Cargo handling capacity is about 1.2 million tons. From 1996 Chinese wood chips began to be handled. Ninety eight percent of the cargoes are for export which are destined mostly for Hongkong (80-85%) and South Korea (15-20%). But cargoes in 1997 were reduced to 70,000 tons.

port. Railways are linked to Gvozdevo through 13 km-long branch line (single track). Roads are linked to A-189 through unpaved roads which makes difficult the transportation by the heavy weight trucks. Annual cargo handling capacity is at around 1.5 million tons but due to the decrease in the cargo Posiet handled only 0.28 million tons in 1997. Steel, non-ferrous metal, and woods for export are important articles.

Recently, shipping company of Yanbian Autonomous Prefecture in China has concluded a contract with the Posiet Commercial Port Company to open a route to export Chinese products to Japan. Posiet is likely to be used, like Zarubino, as a transit port for the Chinese freight.

3) Transportation in North Korea

- Railways and Roads

Railways are the main transportation in North Korea covering 90% of all the transportation need. Total length of railways is 5,112 km (about 78% of South Korean railways) of which 4,030 km is electrified. But 98% of the railways is single track, and lack of energy source makes difficult normal operation of the electrified lines. Railways in North Korea are composed of western network with the Kyongui Line as a main line and Eastern network with Pyongla Line as a main line. In general, railway transportation has its strength in long distance, large volume, heavy weight transportation. But, in North Korea efficiency of railway transportation is greatly hampered by the fact that railways are handling even a short distance transportation. Out of 60 railway lines, lines with more than 100 km is just ten and half of the lines are under 30 km in length. Average transportation distance for the major freights is 136 km for coal, 130 km for mineral ore, 103 km for cement, and 210 km for chemical fertilizers. More than half of the freight consists of coal and mineral ore, Composition of freight is 32% for coal, 11.8% for mineral ore, 7.8% for building materials, 5.9% for metal, 3.6% for grains, and 2.9% for chemical fertilizers.

Roads play a complementary role in transportation and are

being used for short distance transportation mostly within 30 km. Total length of roads are 34,000 km. Thirty percent of the roads, about 10,000 km, is too narrow (less than 2.4 m wide) for the cars to run. Express way extends 524 km through 6 routes. Paved roads(1,881 km) make up just 8.1% of the total length as of 1994. Express way is paved with cement, but with obsolete technology one cannot drive faster than 50 km an hour. For the normal operation of the vehicles, most of the roads need to be repaved or expanded.

- Sea Ports

Shipping in North Korea was never given the priority in the transportation policy. Separation of east and west coasts, insufficient facilities, small number of ships, small scale trade with the Western countries, trade with China and old Soviet Russia through railways, all these contributed to the underdevelopment of the shipping industry. Cargo handling capacity is 35.1 million tons as of 1994, just 13% of that of South Korea (276.2 million tons). Actual handling of cargo is also less than half of the capacity at 15 million tons. Cargos transported by the North Korean ships are about 3 million tons (20%). There are five ports in the east coast and three in the west coast. Seventy percent of the cargoes are handled in four major ports, with Nampo and Wonsan ports handling 29% each, Chongjin 19%, and Heungnam 18%.

<Nampo port>

- Nine berths, export freight 70%, import freight 30%
- Export cargoes are mostly cement, steel product, and hard coal
- There is separate berth for cement and hard coal, but no berth for containers which are handled in sundry berth
- Imports are crude rubber, sugar, machinery. Recently, grains are on the rise.
- Silos for cement (60,000 tons) and grains (20,000 tons) are equipped.
- There are 3,500 employees.

- Transportation in Rajin and Sonbong

North Korea has invested about 100 million dollars since 1995 to develop Rajin-Sonbong area as a transportation hub. Northern ring railway was electrified in 1995. Administration of Namyang-Rajin section was transferred to Rajin-Sonbong Railway Station to simplify transportation system. From the end of 1997 Rajin-Namyang freight trains began to be operated, handling six thousands containers a year. Problem is that train runs at a speed less than 20 km/h due to the obsolete facility and poor maintenance since it was first built in the 1930s. It is reported that North Korea is negotiating with Chinese firm to modernize railways. Rajin-Wonjongri road is under construction following the coast line, whose total length is 67 km. If completed within 1999, travel time between the two cities would be reduced from current two-three hours to forty-fifty minutes³.

The most important part in the transportation system in Rajin-Sonbong is the international shipping through a sea port. To increase the cargo handling capacity 100 ton-class crane was installed in the berth of No. three pier of Rajin port in 1997.

<Table 5> Trends in Cargo Transportation between Pusan and Rajin

	(unit: TEU)			
	1995	1996	1997	1998
cargo volume	114	2,475	3,019	3,823

Source: Ministry of Reunification, *Trends of North-South Korean Economic Cooperation*

North Korea has produced a plan to develop Rajin and Chongjin as a international shipping hub, in an effort to making these two ports more competitive than Zarubino or Posiet port of Russia.

³ Existing road is unpaved and winds through the mountain areas. Total length is 54 km. New road was supposed to be completed during 1998, but construction is being delayed due to the shortage of fund by Hongkong Tyson Co., a partner for the construction project.

<Table 6> Development Plan for Rajin and Chongjin Port

(unit: million dollars)

Port	Development Plan		Investment
Rajin	Improvement of existing facility	• Improvement of No. 5 and No. 7 berth of No. 2 Pier: belt conveyer, unloading facilities	24
		• Reformation of No. 3 Pier for Coal only	23
		• Reformation of berth for passenger ship: repair of berth for the length of 124 m	2
		• Vessel repairing dock: increase of capacity from existing 20,000 ton class to 50,000 ton class	60
	construction of new pier	• No. 4 pier for containers (800,000 TEU): handling 6.2 million tons a year	180
	• No. 5 pier: handling 4 million tons a year enabling receiving 36 vessels of 20,000 ton class all at once including 200,000 ton class	170	
	• Passenger pier: capable of handling 1.1 million people (return trip)	80	
Chongjin	Improving existing pier	• reformation of a pier in the west port into container only pier (800,00 TEU)	35
	constructing new pier	• No. 4, and No. 5 pier in the east port: for container and bulk, capacity of 6 million tons a year	140
total			714

Source: Committee for the Promotion of External Economic Cooperation, *Comprehensive List for Investment*, July, 1996

Transportation in China-North Korea-Russia Border Areas

1) China-Russia Border

The Suifenhe-Grodekovo route, which is linked to Vladivostok and Vostochny is one major line that transport rich mineral and grains of Heilongjian to Japan. Freight volume of this route is on the rise recently since 1995. Suifenhe's freight han-

ding capacity is at the moment about 3 million tons a year, which is to increase up to 5 million tons by 2000. Grodekovo's capacity is just about 1.5 million tons a year, requiring 2 million dollars of expansion work in the future. Out of 1.02 million tons of freight which this route handled in 1996, 870,000 tons of freight moved from Russia to China while only 150,000 tons moved from China to Russia. Most of the freight (920,000 tons) are transported by trains. China imports from Russia fertilizers, pulp, woods, chemical raw materials, steel products, while exporting to Russia grains and light industry products such as textiles. From 1997 coal from the eastern part of Heilongjian are being exported to other countries including South Korea through Suifenhe and Vostochny port.⁴

<Table 7> Transit Freight through Suifenhe and Grodekovo

(unit: 10,000 tons)						
year	1992	1993	1994	1995	1996	1997(1:)
freight volume	130.7	136	101.9	81.9	102.0	55

Source: Igori L. Beljchuk, *Issues in the Transportation in the Russian Far East*(Feb. 17-19, 1998), Niigata Conference on Northeast Asian Economy

Another important route between China and Russia is railway and road that link Changchun, Hunchun and Kraskino of Russia. Road is paved with concrete with the width of 9-12 m. It was built in 1990 and is being used for transit transportation to Zarubino. Railway link was made in October 1996, and will be completed during July 1999 with the opening of railway customs offices in Hunchun and Kraskino. China has raised the level of customs office in Hunchun to first-class and Russian government has also finished inspection of railway section that belongs to its territory. Due to the difference in railway gauge in China (standard gauge of 1,435 mm) and Russia (broad gauge of 1,524 mm), transit station is required. Hunchun International Station which is being used as the transit station. is now capable of handling 500,000 tons of freight a

⁴ In 1997, 330,000 tons of Chinese coal was exported through Vostochny port.

year. Expansion is being planned to increase its capacity to 3 million tons a year by 2010.

2) China-North Korea

Routes between China and North Korea include railway and road lines that link Dandong-Sineuju, Jiban-Manpo, Tumen-Namyang, and roads that link Samhap-Hoeryong, Gaesandun-Sambong, Hunchun-Hunyung, Kwonha-Wonjongri. Transit capability between Tumen-Namyang is about 3.2 million tons a year. In 1995 actual transportation through this route was 90% of its full capacity (total 2.86 million tons, from China to North Korea 1.9 million tons, North Korea to China 0.96 million tons). Trains run 12 time a day in this route. China and North Korea run this route every other year. Given the old trains of North Korea, current transit volume is almost up to its limit. Road is becoming major means of transportation between China and North Korea with the opening of road customs office between Kwonha-Wonjongri. As a result, freight volume going through Kwonha customs office is rapidly increasing, recording 194.5 % increase in 1997 compared to the previous year at 70,021 tons, and 29.3 % increase in 1998 at 90,520 tons. Kwonha customs office was promoted to the first-class in Dec. 1998.

3) North Korea-Russia

Transit freights between North Korea and Russia are carried through Khasan and Tumangang Station. Freight handling capacity of Tumangang Station is about 5.5 million tons, but freight vol-

<Table 8> Freight Volume and Items between Khasan-Tumangang Station

		(unit: 10,000 tons)			
year		1993	1994	1995	1996
freight volume		269.7	117.5	74.9	55.6
direction		freight items			
Russia → North Korea		fertilizer(59%), woods(27%), metal(7%),			
North Korea → Russia		building materials(82%), aluminum(10%)			

Source: Ministry of Reunification, *Trends of North-South Korean Economic Cooperation*

ume it handles has been decreasing. Especially since March 1997 when Friendly Cooperation Treaty with old Soviet Russia was out of effect, transportation through this route has become almost nil. At the moment, irregular passenger trains which carry North Korean workers working in Russia are in operation.

Measures to Ensure Effective Link among the Transportation Systems in Northeast Asia

Link of Transportation Systems in Northeast China, Russian Far East and Korean Peninsula

Railway transportation in Northeast Asia is linked to the ocean through Dalian and Vostochny.

<Table 9> Comparison of Major Ports in Northeast Asia

		distance from major cities (km)	number of berths (10,000 t)	handling capacity (10,000 t)	yearly handling volume (10,000 t)	remaining capacity
China	Dalian	Harbin: 940 Changchun: 700	65	6,300	7044	-744.0
	Vladivostok	Harbin: 800 Magadan: 450	17	600	329	271.2
Russia	Nakhodka	Harbin: 1,000 Magadan: 650	22	800	496	304.3
	Vostochny	Harbin: 1,300 Magadan: 680	12	1,560	808	751.8
	Zarubino	Changchun: 670 Magadan: 390	4	120	7	112.7
	Posiet	Changchun: 650 Jilin: 530 Hunchun: 60	3	150	28	122.1
North Korea	Rajin	Tumen: 165 Hunchun: 120	13	400	80	320.0
	Chongjin	Tumen: 180 Hunchun: 200	13	800	300	500.0

Source: *China Traffic Yearly, 1998*, Department of Sea and Air Ports, Niigata Prefecture, Japan, *Report on Transit through China-Russia Border*, March 1998, recited from p. 2

Dalian is already beyond its handling capacity but Vostochny still has available capacity of 7.5 million tons. Rajin and Chongjin of North Korea also have extra capacity. Zarubino and Posiet have about 2.3 million tons of extra capacity together, but they still need expansion work due to its small capacity.

Use of traffic link through Korean Peninsula seems to be beneficial to reduce the over-dependence of Dalian and to relieve Vostochny's geographical bias that deals with the cargos mostly within Heilongjian and Russia. There are two possibilities that link China and Russia through Korean Peninsula: western axis and eastern axis.

1) Western Axis: Shenyang-Dandong-Shineuju-Pusan Link

Considering the fact that distance between Shenyang and Pusan is just about 1,100 km, railways could be more economical compared to shipping.⁵ The late Kim Il-sung was also very much interested in this idea just before he was scheduled to have a summit meeting with the South Korean President in 1994. He even estimated that this project, if carried out, could bring in 400 million dollars a year.⁶ But given the fact that North Korean railways are mostly single track and average speed is under 40 km an hour,

<Table 10> Estimate of Cargo Volume in the Ports of Liaoning Province

(unit: 10,000 tons)

year	cargo handled in 1997	2000	2010
Dalian	7,044	8,000	15,680
Yingkou	1,605	2,700	3,200
Dandong	220	600	1,300
Jinzhou	218	515	820
Total	9,087	13,700	23,000

Source: Planning Committee of Liaoning Province

Note: The figures for Jinzhou is for 1995.

⁵ For the effect of railway link between North and South Korea, see Pyongmin Ahn, "Meaning and Effect of Liking North and South Korean Railways," *Tongilgyungjae* (Monthly Reunified Economy), February, 1992

⁶ Works of Kim Il-sung, Vol. 44, p. 471

North Korea would need to build a double track railway line between Shineuju and Gaesung, as Kim Il-sung mentioned. Maritime transportation would be playing an important part until this improvement in railways facilities in North Korea is made. What is needed, then, is for China to expand the handling capacity of Liaoning Province with Dalian as its hub, and to promote the building of double track lines in North Korea, which will be greatly affected by the Seoul-Pyongyang economic cooperation. If half of the estimated increase in the cargo traffic of the Liaoning Province is covered by the railways on Korean Peninsula, the freight volume that goes through the Korean railways from China will be about 35 million tons by 2010.⁷

2) Eastern Axis: Yanbien-Russia-Rajin · Chongjin Link

This land route is already in operation, and at the moment, Russia and North Korea is competing for the transit transportation of Northeast China.

The late president of North Korea, Kim Il-sung, once said in 1994 that transit export of cargos from Russia and Heilongjian Province through Rajin would bring in more than 1 billion dollars a year. But, in order for the Rajin · Sonbong area to be developed as a cargo transit hub, two conditions need to be met. First, as an external condition, Northeast China should record a stable growth and regional trade between Korea and Japan need to grow further. Second, as an internal condition, North Korea need to develop SOC and train trade-related workforce. North Korea also needs to secure competitive edge compared with other rival ports. About the external condition, gradual improvement is expected, because China, South Korea, and Japan all agree that regional development should be furthered to overcome economic crisis. Internal condition is also expected to be improving. SOC in Rajin · Sonbong, though still insufficient, has been steadily built and strengthened.

⁷ Freight increase in Liaoning Province by 2010 is estimated at 140 million tons. Since about half of the cargo traffic in Liaoning Province in 1997 is for the international trade, about 70 million tons are estimated to be international cargo trade in 2010. If the half of the international cargo is covered by the Korean railways, then the volume that goes through the Korean Peninsula will be about 35 million tons.

Training of trade officials are being actively pursued by the North Korean government. Competitive advantage of Rajin · Sonbong with regard to other ports in the Northeast Asia, however, need to be examined.

First, cargo handling capacity of Rajin and Chongjin ports. Combined capacity of these two ports are at the moment about 12 million tons, which will be expanded to 27 million tons according to the plan of the North Korean authorities. It is capable of handling all the foreign trade volume of Jilin Province, which is standing at 10 million tons. Actual handling volume of these two Korean ports combined stands at 3,8 million tons (0.8 million tons for Rajin and 3 million tons for Chongjin) which renders them about 8 million tons of extra capacity. If reformation and improvement of the port facilities are made and if railways linked to China is expanded, existing extra capacity will make these two ports function as a good transit hub. This leads us to believe that foreign investment to build new berths, beyond improving and modernizing the port facilities, would not be made.

Second consideration is the transportation cost. According to the report of Niigata Prefecture which includes comparison of Rajin and Zarubino, Zarubino is more competitive if land transportation is made through railways, and Rajin has an edge if the

<Table 11> Transportation Cost of Various Routes

(unit: dollars/TEU)

Departure	Harbin		Changchun			Hunchun		
Transit	Changchun	Suifenhe	-	Tumen	Hunchun	Kwonha	Changryoungja	
Means	Railways	Railways	Railways	Railways	Railways	Roads	Roads	
Transit port	Dalian	Vostochny	Dalian	Rajin	Zarubino	Rajin	Zarubino	
Arrival	Niigata, Japan							
cost	land	390	690	320	500	420	330	480
	sea	950	500	950	500	500	500	500
	sum	1,340	1,190	1,270	1,000	920	830	980
	/ton	74.4	66.1	70.6	55.6	51.1	46.1	54.4

Source: Dept. of Air and Sea Port of Niigata Prefecture, *Report on Current State of Transit through China-Russia Border*, March, 1998

transportation in land is made through roads.

If Zarubino and Posiet are actively pursuing transit trade and if their capacities are expanded, competitiveness of Rajin would be reduced. Sea route between Posiet and Japan would have a negative effect on the growth of Rajin as an international port.

Systemization of Railway and Sea Transportation

As the railway system in Northeast Asia is relatively well developed compared to other regions of the Asia, most of the land transportation is relying on railways. Transportation among China-Russia-North Korea is done mostly through railways. It is also true, however, that different gauges pose obstacles to the international transportation. In contrast, transportation among China, South Korea, and Japan is being made through sea or air. One of the major international sea route is the one that links Hongkong, Kyoong, and Kobe. Shanghai and Pusan have emerged recently and international competition among the major sea ports is quite strong. Backed by the trend toward bigger vessels and more frequent use of container, rationalization of sea route based on Hub and Spoke System will be further proceeded.

South Korea has developed Kwangyang port as a container port to relieve the heavy burden on Pusan. but it is not likely that Kwangyang would play a important role in international transportation system based on its own special merit. There is no distinctiveness between the Pusan and Kwangyang that legitimates the existence of two main ports in the southern coast of the Korean Peninsula. Then, the first priority ports in international sea route will be the ports that are located along the Hongkong-Kiryooong-Shanghai-Pusan-Kobe route. Kwangyang, Inchon, Dalian can be categorized as the second priority ports. The new sea route that is emerging now and could play a second priority route is the East Sea route.

Considerations in order for the above mentioned sea routes to be fully developed and rationalized, includes economic growth in Northeast China, economic growth and political stability of Russia, active pursuit of economic opening on the part of North Korea, and

enhanced economic cooperation between the Northern countries and the west Japan. It will be difficult to expect all these conditions to be met in the midst of economic crisis that is going on now. Gradual approach to these issues will contribute to the development of complex tripartite transportation system which will be composed of sea routes in the East and the Yellow Sea and land route through Korean Peninsula.

Given this prospect, the immediate task for the development of transportation system in Northeast Asia will be the inducement of transit cargos, development of freight information system, further investment in the transportation sector, and standardization and rationalization of transportation cost. In longer term, what is most important for the transport systematization in the Northeast Asia is the link of land route in Korean Peninsula. ■■■