Northeast Asia Economic Conference Organizing Committee
Transportation Subcommittee

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Vision for the Northeast Asia Transportation Corridors

Contents

Chapter 1 Introduction

To mark the 2000 Northeast Asia Economic Conference, the Northeast Asia Economic Conference Organizing Committee was formed as an executive committee so that interested parties could be involved in related activities throughout the year; the Transportation Subcommittee was established as one of those activities. The reason why the theme of transportation was given precedence was that the free and efficient movement of people and transportation of things is understood to be the most basic requirement for development through mutual cooperation and collaboration in the Northeast Asian region.

Including concepts, Northeast Asia already has many transportation routes. There are limits to the funds and labor that can be invested in their development. Moreover, cooperation with neighboring countries is essential in developing cross-border routes. Given this situation, it is conceivable that the prerequisite for the efficient development of the transportation corridors will be collaboration by the countries of Northeast Asia in choosing representative routes for the region and undertaking concentrated investment in the financial and human resources necessary for the development of those routes. Consequently, based on reports from each country at the Northeast Asia Economic Conferences held to date, and on on-the-ground surveys carried out by ERINA, the Transportation Subcommittee has identified nine Northeast Asian transportation corridors that can be used by all the countries of the region as major international transportation routes.

In order to advance the development of these Northeast Asian transportation corridors and establish them as this region's actual essential transportation routes, it is first necessary to lobby each government, have them acknowledge the Northeast Asian transportation corridors and get them to obtain the cooperation of international institutions, while advancing the routes' development as transportation corridors to a desirable level. At that stage, sufficient coordination between related countries will be necessary, particularly with regard to the sections that cross national borders. Moreover, in order to obtain cooperation from international financial institutions, it is necessary sufficiently to debate and coordinate the routes' order of priority within the whole of Northeast Asia. Secondly, it is also important to promote use of the corridors by providing the most up-to-date information about each corridor to cargo owners, etc., for realizing the transportation routes in a practical way.

The roles of the subcommittee in heightening this spirit and promoting development are (1) to clarify the reality of the Northeast Asian transportation corridors; (2) to list points for improvement and specific projects that should be developed, and to assign an order of priority to these; and (3) to define the preferable shape of the corridors resulting from improvements and development.

This Vision for the Northeast Asian Transportation Corridors, as the raw material for future development as outlined above, is the result of the subcommittee's activities to date.

Hideo Kayahara

Chairman, Transportation Subcommittee
Northeast Asia Economic Conference Organizing Committee

Chapter 2 Nine Transportation Corridors in Northeast Asia

The nine transportation corridors specified at the Transportation Subcommittee are as follows:

1) Vanino~Taishet Transportation Corridor (Vanino ~ Taishet ~ SLB)
2) Siberian Land Bridge (SLB) Transportation Corridor (ports in Primorsky Territory in Russia ~ Europe)
3) Suifenhe Transportation Corridor (ports in Primorsky Territory ~ Suifenhe ~ Harbin ~ Manzhouli ~ Zabaikalsk ~ SLB)
4) Tumen River Transportation Corridor(Tumen River ~ Changchun ~ East Mongolia ~ SLB)
5) Dalian Transportation Corridor (Dalian ~ Harbin ~ Heihe ~ Blagoveschensk ~ SLB)
6) Tianjin~Mongolia Transportation Corridor (Tianjin ~ Beijing ~ Ulaanbaatar ~ SLB)
7) China Land Bridge (CLB) Transportation Corridor (Lianyungang Port ~ Kazakhstan ~ Europe)
8) Korean Peninsula West Transportation Corridor (Busan ~ Seoul ~ Pyongyang ~ Sinuiju ~ Shenyang ~ Harbin ~ SLB)
9) Korean Peninsula East Transportation Corridor (Busan ~ Ra-Son ~ Khasan ~ Ussuriysk ~ SLB)

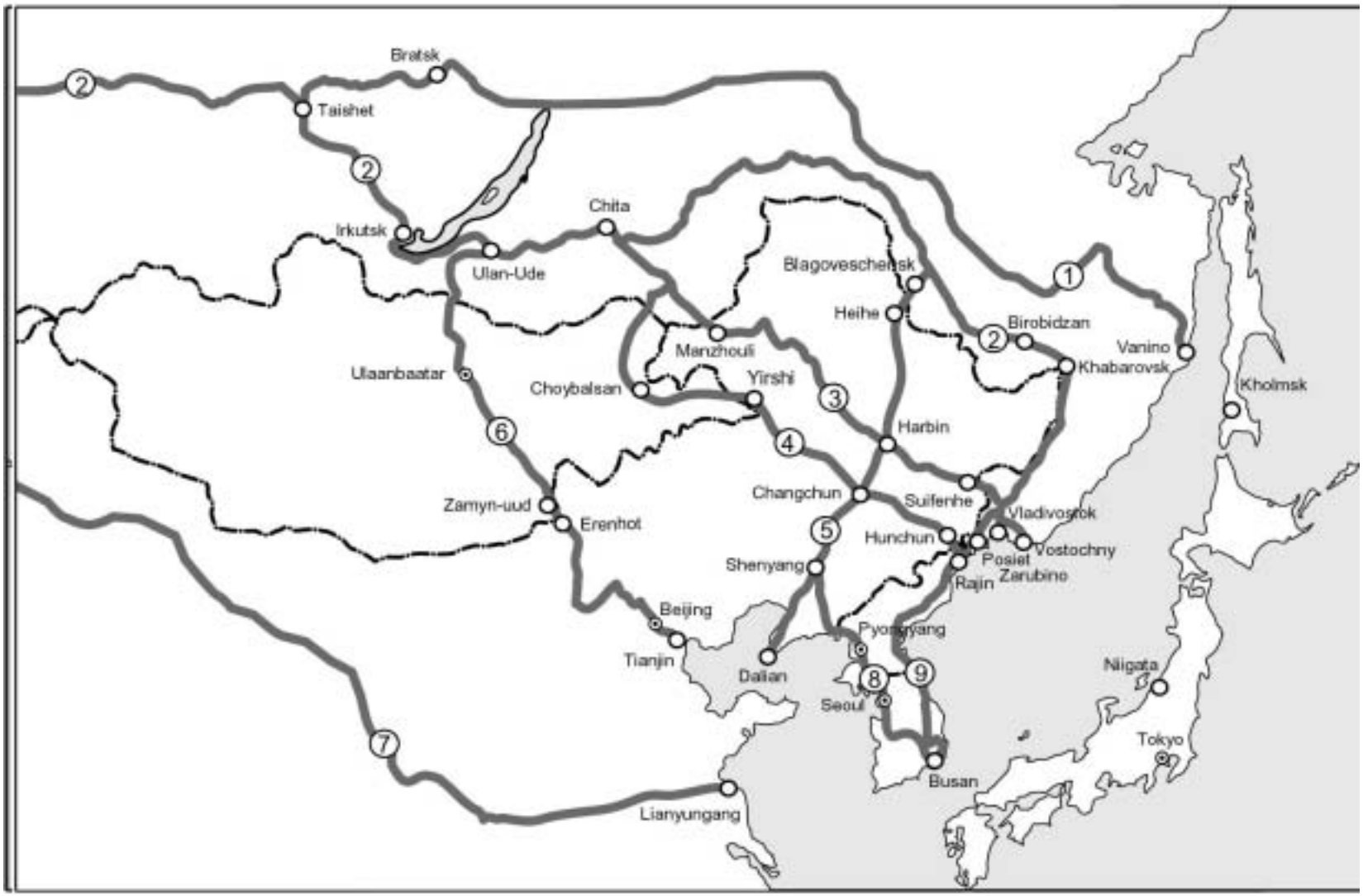
Although these transportation corridors vary from fully-utilized corridors to those still in the conceptual stage, they are expected to become major corridors for international transportation in the region in the future. In the description above, these corridors seem to include only land transportation. However, we should not forget that they will cross the seas and are supposed to be connected to Japan, the ROK, Southeast Asian countries and North America. The improvement of transportation corridors in Northeast Asia should be discussed with sea transportation in mind.

Discontinuous points in Northeast Asia's transportation corridors exist near borders, significantly preventing smooth transportation. They are as follows:

1) Discontinuous points caused by unconnected railways or roads.
2) Discontinuous points caused by differences in railway gauge.
3) Discontinuous points caused by CIQ inspections at borders.
4) Discontinuous points caused by truck cargo transshipment.

The eradication of these discontinuous points is essential for smooth transportation through the transportation corridors in Northeast Asia.

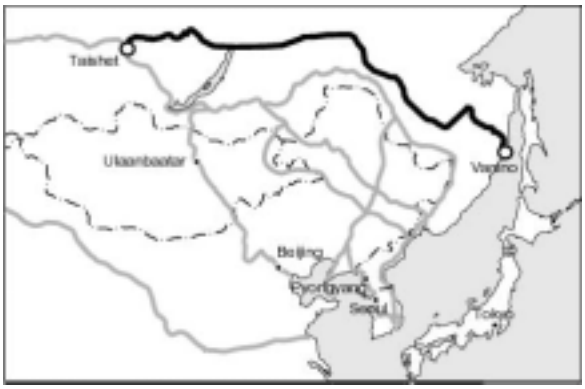
Transportation Corridors in Northeast Asia



Main Railroad Links Between Northeast Asia and Europe

Chapter 3 Current Situation and Problems of Nine Transportation Corridors

3.1 The Vanino – Taishet Transportation Corridor



Vanino Port

3.1.1 Significance

The Vanino – Taishet Transportation Corridor links the Russian Far East with Europe or Central Asia and fulfils a role as a substitute route for the Trans-Siberian Railway. It consists of a route running from Vanino Port, facing the Tartar (Mamiya) Strait, via the BAM Railway, which merges with the Trans-Siberian Railway, which in turn forms a link to Europe or Central Asia. Moreover, a ferry that can be loaded with rail freight cars is in service between Vanino Port and Kholmsk in Sakhalin, so it is also functioning as a connecting route to Sakhalin.

3.1.2 Current Situation

(1) Port (Vanino)

Vanino port, which was opened in 1945, is an important Tartar Strait port. As well as the regular container route between Vanino and Busan, a wagon ferry service operates to Kholmsk. The rail transport network stretches from the Toki goods yard, about 8km to the north, throughout the whole of Russia via the BAM Railway and the Trans-Siberian Railway.

As of 1999, the port had facilities capable of handling 14 million tons of freight annually, including 40,000 TEU of containers. The container wharf completed in 1989 has one 11.5 meter-deep berth and two gantry cranes (30.5 tons), but the annual quantity of freight handled remains only 18% of capacity.

Most of the freight handled at Vanino consists of petrochemical products, timber, aluminum, coal, scrap iron, fishery produce, etc. 1.3 million tons of petrochemicals come from the oil refinery in Komsomolsk-on-Amur each year; two-thirds of this is sent to Sakhalin, Kamchatka and Magadan, while the remainder is exported to the ROK, China and Malaysia. Of the 1.2 million tons of timber handled annually, 1 million tons consists of logs from Khabarovsk Territory. 80% of timber exports head for Japan, while the remainder goes to China and the ROK. The 570,000 tons of bauxite (alumina) handled annually is mostly imported from Australia, sent 3,900km via the BAM Railway to Bratsk, where it is refined into aluminum using electricity from the Bratsk Dam (the Angara River hydroelectric power station). It is then sent back via the BAM Railway and exported from Vanino Port, mostly to Japan, but also to America and Southeast Asia. The 400,000 tons of coal handled annually is mined in Kemerovo and exported to Japan and Taiwan. The 400,000 tons of iron and scrap iron handled annually mostly goes to the ROK, although some has been exported to

Japan as well in the last three years.

(2) Railways

At Vanino Port, 360 TEU from container ships can be loaded onto trains in a day and dispatched to Komsomolsk-on-Amur from the Toki goods yard the same day. At present, Vanino Port has no regulations regarding the dispatch of block container trains, and it sends 50-60 TEU container trains to Moscow and Central Asia about once every fortnight.

Container trains from Vanino bound for Moscow and Central Asia are sent via Komsomolsk-on-Amur to Khabarovsk, whence they are forwarded via the Trans-Siberian Railway. This is because the latter railway has a container tracking system. All cargo other than containers uses the BAM Railway (short for Baikal-Amur Railway).

The BAM Railway is a 4,300 kilometre-long line running through the taiga belt 200-500km north of the Trans-Siberian Railway, linking up Vanino with Taishet. The Toki goods yard, a hump-type yard located 8km to the north of Vanino Port, is capable of handling 170,000 carriages annually. Previously, 24 freight trains went there each day, but in 1999 it had dropped to 12-14 per day.

Of the whole of the BAM Railway in the Russian Far East, the part of the line from Vanino to Komsomolsk-on-Amur, which is single track and not electrified, is considered a transportation bottleneck because of the steep gradient (28‰) over the Kuznevsky Pass, not to mention continuous sharp bends. However, given the current quantity of freight being transported, it is conceivable that there is still unfilled capacity.

(3) Roads

The road between Vanino, Lidoga (south of Komsomolsk-on-Amur) and Khabarovsk is 500km long, of which 300km is unpaved. Road transportation began in the autumn of 1998 and the journey takes eight hours in winter, but once the whole road has been paved, this should be cut to five or six.

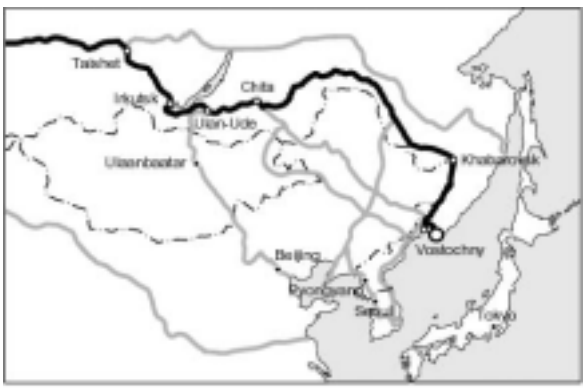
Regarding the road between Vanino and Lidoga (sub-trunk road), of its total length of 346km, only 7km has been paved and it would appear that work to improve the roadbed is being carried out everywhere. Furthermore, there are more than 50 wooden bridges. The quantity of traffic is not large, however 40ft container lorries, and low-loaders carrying construction machinery can be seen passing through.

3.1.3 Issues and Problems

Regarding the railway, it may be thought that it is necessary to convert the single-track sections to double-track and expand the electrified area. However, it is possible to deal with the current quantity of transported freight using existing facilities and, if anything, the maintenance of current transportation ability and measures to deal with cargo booking may be necessary. Furthermore, whereas Russian railway track is 1,520mm gauge, Sakhalin uses track that is 1,067mm gauge, so it is necessary to reload freight at Kholmsk.

With regard to the roads, development of the Vanino-Khabarovsk section, particularly the area between Vanino and Lidoga, will be an issue.

3.2 The Siberian Land Bridge (SLB) Transportation Corridor



Vostochny Port

3.2.1 Significance

The Siberian Land Bridge (SLB) is an international composite transportation system made up of marine transportation from Japan and the ROK to ports in the Russian Far East such as Vostochny Port, Vladivostok Port and Nakhodka Port, and rail transportation from there to Europe and Central Asia.

The SLB developed as a substitute for marine transportation from Asia to Europe, and the quantity of transit container transportation from/to Japan reached a record high in 1983. However, since then the quantity of freight handled has slumped and its revitalization has become an issue.

3.2.2 Current Situation

(1) Port(Vostochny)

Vostochny Port is in the eastern part of Nakhodka Bay. It handles such freight as coal, containers, timber, woodchips, clinkers, chemical fertilizer, coke, etc., with foreign freight accounting for 99% and export freight accounting for 90% - 95%. Its yearly freight handling capacity is 20 million tons and in 1990 it handled 11.4 million tons, but in 1998 the figure was only 6.25 million tons.

The foreign freight container wharf has two 12.5 meter-deep berths and four 30.5 ton gantry cranes. Its yearly freight handling capacity is 200,000 TEU, but the quantity of freight it handled in 1999 was about 60,000 TEU.

Rails linking up with the Trans-Siberian Railway have been laid in the precincts of the port and block trains (trains devoted entirely to containers) run between Vostochny Port and Europe. Furthermore, by means of a container ship linking Vostochny Port and Seattle Port on America's west coast, the East by West Corridor concept, which realizes efficient transportation between the Russian Far East and America's west coast, and also between Northeastern China and America's west coast, is being promoted.

(2) Railway

The gauge of the Trans-Siberian Railway is 1,520mm (5 feet), which is the Russian Railways' first class line. The Amur River Bridge section (2,658m) in Khabarovsk is only a single-track line, but the rest is all double-track. In addition, 96% of the line is electrified, and electrification work on the non-electrified Bikin – Ussuriysk stretch (417km) is progressing with a view to being completed in 2002.

The Amur River Bridge section is single-track, and as a result of aging has been a transport

bottleneck until now. Consequently, progress is being made on work to divert it to a new dual-purpose rail and road bridge (lower level a double-track railway line, upper level a four-lane road). A dual-purpose rail and road bridge (but with a single-track railway and a two-lane road - only half the whole plan) has been completed upstream of the old bridge, the rail section of which entered service in November 1998, and the road section of which entered service in November 1999.

Container terminals located along the SLB route that can handle 40ft containers are found, working eastwards, in Vostochny, Vladivostok, Novosibirsk, Tyumen, Nizhny Novgorod, Yaroslavl, Moscow and St Petersburg.

The Trans-Siberian Railway is capable of transporting one million TEU of containers annually. At present, only 50% - 70% of the line's train capacity is being utilized, so even given the current rail facilities, there is sufficient capacity to increase the number of trains.

(3) Roads

Currently, in the Russian Far East, other than the north-south Vladivostok/Nakhodka – Ussuriysk – Khabarovsk highway and the east-west Khabarovsk – Bilobizan highway, there is hardly any road network improvement and water transportation on the Amur River is used for freight distribution. Until the new Amur River Bridge was completed, trucks had to cross the Amur River by ferry; the crossing took 40 minutes, but since the bridge has been opened, the crossing can be done in five minutes. Roads between Khabarovsk and Moscow, excluding some districts in Amurskaya Territory, have almost been completed; however, there are still a lot of unpaved roads in the Russian Far East.

3.2.3 Issues and Problems

Factors in the slump in freight handled by the SLB include the weakening of administration and coordination functions relating to international combined transportation; the rise in SLB transportation costs and a low-cost offensive on the part of European marine routes; instability in terms of the number of days taken for transportation (irregularity); a deterioration in safety, with loss of freight occurring; the lack of a competitive service; container supply problems; and the annoying complexity of customs procedures.

In order to revitalize the SLB, it is necessary to achieve the revitalization of the administrative and operational aspects, such as the simplification of procedures; the strengthening of the SLB's competitiveness as a combined transportation route; marketing activities and the recovery of its credibility; and revitalization initiatives on the part of bureaucrats and the private sector.

Issues in terms of facilities include turning the Amur River Bridge into a double-track one; the reduction of transshipment times for freight at the Polish/Belarussian border, where there is a discontinuity in the gauge; the elimination of non-electrified areas; and an improvement in the average speed. Moreover, with regard to the running of trains, it is necessary to run regular block trains from Vostochny and ensure regularity regardless of whether there is cargo or not.

3.3 Suifenhe Transportation Corridor

Suifenhe Road Customs

3.3.1 Significance

The Suifenhe Transportation Corridor runs from Vladivostok, Nakhodka and Vostochny ports in the Russian Far East, through the Chinese border city of Suifenhe to Harbin, the administrative center of Heilongjiang Province, and then crosses from Manzhouli in the north-west to Zabaikalsk in Russia, before linking up with the Trans-Siberian Railway at Chita. This transportation corridor is a route giving Heilongjiang Province access to the sea and sea lanes, and links it to Japan, the ROK and the USA.

3.3.2 Current Situation

(1) Ports

Vladivostok Port

Vladivostok Port is a good natural harbor with the water inside the port reaching a depth of 30m, so it does not freeze, even in winter. Within the port can be found a commercial port, a fishing port and a naval port; the commercial port was privatized in 1993 and is run by Vladivostok Commercial Port, Ltd. The commercial port occupies berths 1-17; the depth of the water along the pier is 8-13m and the pier is 4,200 meters long. Berths 16 and 17 are used solely as container berths. At the container terminal, there are two 30.5-ton gantry cranes in operation, and the terminal is capable of handling 100,000 TEU annually. The pier is 420 meters long, the depth of the water along it is 13m and two container ships can be brought alongside the pier. The commercial port is connected to the Trans-Siberian Railway. At Vladivostok Port, loading and unloading takes place 24 hours a day. At present, there are four regular shipping routes, including the North America sea lane, which links the port with Seattle.

Nakhodka Port

Nakhodka Port is located on the western side of Nakhodka Bay and is a good natural harbor, lying in a cove enclosed by a peninsula. The depth of the water is 13m and it does not freeze in winter, so the pier can be used all year round. In the Soviet era, Nakhodka was the only port in the Russian Far East that was open to foreign ships. The Japan-Nakhodka sea lane that links Japanese ports with Nakhodka Port was established in 1958 and celebrated its 40th anniversary as a regular route in 1998. Conventional cargo ships still ply this route. Sometimes container freight is carried on these regular ships as well.

SLB container freight has shifted almost totally to Vostochny Port and Nakhodka now only handles a small quantity of container freight, but it is still possible to connect with the Trans-Siberian Railway.

(2) Railway

The Russian railway between ports in Primorsky Territory and Grodekovo, is double-track and electrified as far Ussuriysk. The section from Ussuriysk to Grodekovo, which is a spur from the SLB line, is a single-track, non-electrified one. As the gauges of Chinese and Russian rails differ, four parallel rails (standard gauge and wide gauge rails) run between Grodekovo and Suifenhe. In addition, the transshipment of freight at a station on the border is necessary. Transshipment at Suifenhe Station is carried out using cranes (including one crane capable of lifting 50 tons) and forklift trucks. About 150 carriages can be transshipped in a single day.

On the Suifenhe to Harbin stretch, the line between Suifenhe, and Mudanjiang is a single-track, non-electrified one. The line from Mudanjiang to Harbin is a double-track, non-electrified one.

The line between Harbin and Manzhouli is double-track between Harbin and Hailar, single-track between Hailar and Manzhouli, and non-electrified for its entire length.

Between Manzhouli and Zabaikalsk, there are single-track wide gauge lines and single-track standard gauge lines. Eight trains (400 carriages) come in from Russia every day, along with about the same number from China (however there are many empty carriages). It is a principle that the transshipment of cargo takes place on the side receiving the freight, so freight being transported from Russia to China is transshipped at Manzhouli, while that from China to Russia is transshipped at Zabaikalsk. Transshipment at Manzhouli Station is mostly of non-container freight, while containers are handled at the container terminal near Manzhouli Station. The facility is capable of handling 5 million tons annually. At Zabaikalsk, there is a container freight transshipment facility behind Zabaikalsk Station, and a terminal solely for the transshipment of container cargo, located slightly further away.

(3) Roads

On the Russian side, the Vostochny - Nakhodka - Vladivostok - Grodekovo road is also a two-lane paved road, with quite wide lanes that mean that containers can pass along it with no difficulty. In fact, most container trailers carrying 40ft containers travel along it between Nakhodka and Vladivostok. Close to the border, on the Russian side, there is a section that is unpaved, but this is not a problem when transporting 40ft containers. On the Chinese side, the road between Suifenhe and Harbin is a two-lane paved road, which widens to a four-lane paved road in parts. At present, the entry of trucks from China into Ussuriysk or trucks from Russia into Mudanjiang is permitted.

Regarding the road between Harbin and Chita, National Highway 301 runs on the Chinese side. There is a road customs post at Manzhouli, through which a fair volume of traffic is estimated to pass. The road on the Russian side, as far as could be seen from inside a train, appears to be paved.

3.3.3 Problems and Issues

With regard to the railways, as the gauges of Chinese and Russian rails differ, it is necessary to improve transshipment facilities at stations on national borders and increase their effectiveness.

In terms of road transportation, the issue is the expansion of the range in which truck transportation can take place. It is necessary to consider incentives for transit cargo, such as customs waivers and the abolition of customs handling charges, along with making customs procedures simpler.

3.4 Tumen River Transportation Corridor

Rajin Port

3.4.1 Significance

The Tumen River Transportation Corridor is an international transportation route running from Tumen River region ports (ports in Russia or the Democratic People's Republic of Korea(DPRK)) to the eastern area of Mongolia via Changchun in Jilin Province. There are two routes: the Russian route, using Zarubino and Posiet ports in Russia, and the DPRK route, which uses Rajin Port in the DPRK.

It is hoped that the Tumen River Transportation Corridor will find its niche as a new route to the Sea for Jilin Province and fulfil a role as a substitute route for the congested Dalian Transportation Corridor.

3.4.2 Current Situation

(1) Ports

Zarubino Port

Zarubino Port is located on the western side of Trojica Voe, in the middle of Posiet Bay, and is a good natural port surrounded by the Zarubino Peninsula. The total berth length is 650m and the present depth of water along the pier is between 6.8 and 9.9m. There are no gantry cranes. It mostly exports freight in the form of Siberian iron and logs, and marine products from the Russian Far East. An international ferry route between Zarubino Port and Sokcho Port (ROK) was opened in April 2000.

Posiet Port

Posiet Port is located on the western side of Novgorodskaya Bay, 20km west of Zarubino Port. The total berth length is 450m and the depth of water along the pier is 9.5m. At present, containers are handled by wharf cranes at number 2 berth. Exports of coal and logs accounted for 90% of freight handled at Posiet Port. A regular container route between Posiet Port and Akita Port was opened in August 1999.

Rajin Port

Rajin Port, comprising wharfs 1-3, is located at the centre of the "Rajin-Sonbong Economic and Trade Zone". There are 13 berths, the depth of the water is between 8 and 10.6m, with a total berth length of 2,510m; it is capable of accommodating ships in the 5,000 to 30,000 ton class. There are no gantry cranes. Containers are handled at wharf number two's pier number seven (water depth 9m, one berth) and are loaded and unloaded using ordinary wharf cranes. A regular container route

between Rajin Port and Busan Port was opened in October 1995, and Rajin and Niigata in August 1999.

(2) Railways

As China's railway uses standard gauge rails, as opposed to Russia's wide gauge rails, trains cannot travel between China and Russia. Consequently, Chinese standard gauge and Russian wide gauge lines were laid between Hunchun and Kraskino, and trains from both countries were able to travel into the other country from December 1999, thanks to a bilateral treaty. Trains began running in February 2000, however full use is still not being made of its capacity. At present, freight is transshipped from Chinese to Russian freight trains (or vice versa) on the Chinese side at Hunchun Transshipment Station. It has a transshipment capacity of 500,000 tons annually. Moreover, there is a plan to develop transshipment facilities at Kamyshovaya on the Russian side of the border in the future.

There is an existing railway on the DPRK Route (Namyang ~ Tumen), but it has hardly been used for freight transportation since 1997. Rails in the DPRK are the same standard gauge as rails in China, so it is possible for freight trains to travel from one country to the other without the need for transshipment.

(3) Roads

A road from Zarubino and Posiet ports to Hunchun is being developed. On the Russian side it is partly unpaved, but on both the Russian and Chinese sides it is a comparatively flat road and it poses no problems for truck transportation. Furthermore, on this route, the entry of trucks from China into Russia (or vice versa) is permitted under some conditions and Chinese trucks with Chinese drivers already transport wood chips to Zarubino and Posiet ports. Trucks from the Russian side can go as far as Hunchun.

The road between Rajin and Wonjong on the DPRK side, particularly the unpaved section between Sonbong and Wonjong (46 km) crosses over mountains and in bad weather it becomes a quagmire, making it difficult for container trucks to negotiate. On the other hand, a new road on the Chinese side between Hunchun and Quanhe was completed in December 2000. On this DPRK route, the entry of trucks from China into the DPRK (or vice versa) is also permitted under some conditions.

The DPRK has plans to construct an expressway from Sonbong to Wonjong that runs along the Tumen River; in one or two areas, work is already progressing on the roadbed, but construction has been delayed considerably for want of funds, and it is not yet known when the project will be completed.

At present, on the Chinese side a 560 kilometre-long expressway is being developed between Hunchun and Changchun. The stretches between Hunchun and Yanji, and between Jilin and Changchun are already in service, while work is progressing on the Yanji to Jilin stretch with a view to bringing it into service by 2004.

3.4.3 Problems and Issues

Developmental issues in this corridor include the repair of the road between Rajin and Wonjong and the development of container cranes at Zarubino Port. In addition, it is necessary to link Mongolia to China at an early stage.

It is necessary to consider incentives for transit cargo, such as customs waivers and the abolition of customs handling charges, along with making customs procedures simpler.

3.5 Dalian Transportation Corridor

Dalian Port

3.5.1 Significance

This transportation corridor is the main artery for China's northeastern region (Liaoning, Jilin and Heilongjiang provinces), starting from the international trade port of Dalian, running to Harbin, the capital of Heilongjiang Province, linking up with the SLB via Manzhouli at present and extending further to Heihe in the future.

China's three northeastern provinces form the geographical and economic center of continental Northeast Asia, and, in the sense that the possibilities for the economic development of this region will have a great influence on the future of Northeast Asia, the route has great significance as a means of supporting this development.

3.5.2 Current Situation

(1) Port(Dalian)

As of 1999, two container berths and two multi-purpose pier berths were in service at Dalian Port. The water is 12-14m deep and the total pier length is 1,400m. These berths were opened in July 1993, and there are plans to construct six deep-water berths as the second phase, and another ten berths, including miscellaneous and container berths, as the third phase. The quantity of containers being handled has increased dramatically, reaching 736,000 TEU in 1999 (an increase of 39.9% on the previous year). However, the capacity is said to be 1.1 million TEU at present, so the facilities still allow some scope for expansion.

85% of exports from the three northeastern provinces is transported via Dalian Port. It is said that 80% of the container freight handled at the port is from Dalian area, 10% from the Shenyang area and another 10% from the Changchun and Harbin areas. In terms of means of transportation to Dalian Port, most cargo is delivered by truck, with rail transport accounting for a mere 3% in 1998.

With regard to the main goods handled at Dalian Port, container imports are mostly of automotive parts for First Automobiles in Jilin Province, while container exports take the form of assembled automobiles, tobacco and rice. In Dalian there is a giant grain silo, which is used for imports of wheat and exports of corn and soybeans. Oil is piped to Dalian via a pipeline from the Daqing oilfield and, after refining, it is dispatched as sea freight. Iron ore is imported from overseas and transported to Anshan, Benxi and Changchun.

(2) Railways

Electrification work on the Dalian – Harbin line (944km) was completed in November 2001,

making it an electrified double-track line. The development of facilities for container transport by rail is progressing, and there are inland container depots at Harbin, Changchun and Shenyang, where customs checks can be carried out. Moreover, block container trains run between Dalian and Harbin, and in addition to ISO-standard containers, small containers are often transported by rail.

(3) Roads

Road development in China's northeastern provinces is progressing at a tremendous rate. With regard to an expressway from Dalian to Harbin in this corridor, the Dalian to Shenyang stretch was completed in 1990, the Shenyang to Siping stretch in 1994, and the Siping to Changchun stretch in 1998. The Changchun to Harbin stretch is also scheduled to be completed before long. It is thought that the development of an expressway in China's northeastern region may result in the rapid substitution of road transportation for railway transportation in the near future.

3.5.3 Problems and Issues

The main issue with regard to the rail route is the question of upgrading and expanding its transportation capability because its current state of saturation is highly likely to continue in the future. Electrification work has already begun on the Dalian ~ Harbin section and this is likely to increase the line's transportation capacity by about 30%. It is necessary to work out further countermeasures, given the increase in freight from Jilin and Heilongjiang provinces in the future.

Another issue with regard to rail transportation is the fact that a high proportion of container freight handled at Dalian Port is not loaded onto container trains but onto ordinary trains. Upgrades in container transportation are also required.

With regard to the road route, it is necessary to open up the expressway between Dalian and Harbin at an early stage.

Furthermore, in order to gain access to Russia, the construction of a bridge linking up Heihe with Blagoveshchensk is desirable.

3.6 Tianjin ~ Mongolia Transportation Corridor

Road Transportation in Mongolia

3.6.1 Significance

For the landlocked country of Mongolia, securing a route that passes through neighboring countries and connects up with a sea port is an important issue in terms of foreign trade. The shortest route from Mongolia to a sea port is the Tianjin ~ Mongolia Transportation Corridor. Major industrial and commercial cities in Mongolia are located along this line.

The corridor runs from Tianjin in China to Ulaanbaatar, the capital of Mongolia, via Beijing. The distance from the sea port of Tianjin to Ulaanbaatar is about 1,700km. In addition, going north from Ulaanbaatar and crossing into Russia, the corridor links up with the Siberian Land Bridge (SLB) at Ulan Ude.

As well as being the most important international transportation route for the landlocked country of Mongolia, the Tianjin ~ Mongolia Transportation Corridor is also used for transit transportation between Europe and Asia via the SLB.

3.6.2 Current Situation

(1) Port (Tianjin)

Tianjin Port is located at the estuary of a “sea river” in the central part of the Bohai Gulf, and is the seaboard gateway to Beijing. There are 48 berths of 10,000 tons or over (as of 1998), and in 1998, the total quantity of freight handled was 68.18 million tons. 4,000 ~ 5,000 TEU of Mongolian freight is handled at the port each year. Berths number 21, 27, 28 and 29 at the new port’s pier number 5 are in service as the container terminal. The total length of the container berths is 1,300m; it was the first modern terminal in China to be completed, and boasts 8 gantry cranes and 16 container transfer cranes (transtainers).

(2) Railways

Mongolia’s rail network consists of the main line running from north to south and seven branch lines that connect to this, as well as a spur in the northeastern region leading to the Trans-Siberian Railway. In Mongolia, where the development of roads is lagging behind somewhat, 95.6% (as of 1998, on a ton-km basis) of freight transportation relied on rail transport. The main cargo transported on domestic railways is coal, which accounts for 78% of total freight transported.

The international passenger train linking Beijing, Ulaanbaatar and Moscow also uses this route, making one round trip each week. There is one freight train mostly per week from Tianjin to Mongolia. This mixed load train consists of both container cars and ordinary freight cars.

As China's railway uses standard gauge rails, as opposed to Mongolia and Russia's wide gauge rails, freight transportation by rail between Mongolia and China requires transshipment, and in the case of passenger trains, the change of platform cars is required. Freight bound for China from Mongolia is transshipped at Erenhot on the Chinese side, while Chinese freight destined for Mongolia is transferred at Zamyn Uud, on the Mongolian side. The transshipment base at Zamyn Uud, which was developed with Japanese assistance, has been in operation since 1995.

In addition, in the case of passenger trains, the platform of both Mongolia- and China-bound trains is changed at Erenhot.

(3) Roads

There is little cross-border road freight transportation in the Tianjin ~ Mongolia Corridor. The majority of main roads on the Mongolian side are unpaved. The development of Mongolia's roads is progressing based on the Medium-Term Road Master Plan (MRMP), which was formulated in collaboration with the Asian Development Bank and accepted by the cabinet.

Moreover, under the Economic and Social Commission for Asia and the Pacific (ESCAP)'s Asian Highway Project, the road running parallel to the North-South Railway (from Altanblag on the Russian border to Zamyn Uud on the Chinese border) has been positioned as Mongolia's top priority route. This route is 1,021km long; the Ulaanbaatar – Altanblag section (335km) in the north is already paved, while paving work on the Ulaanbaatar – Zamyn Uud section in the south is taking place intermittently. The early development of the southern section, which forms the shortest route between Ulaanbaatar and Beijing, is a particular issue.

3.6.3 Problems and Issues

Mongolia's domestic transportation infrastructure of railways and roads is too fragile to function as an international transportation route. The country's immense area of land and its sparse population mean that dependence on the railways for freight transportation is unavoidable. It is first necessary to develop the railway of Mongolia. Once its rail transportation capability has been supplemented and strengthened, the swift development of Mongolia's main roads is likely to become a pressing issue.

With regard to containers, in order to promote exports of dairy products and meat, which are Mongolia's main produce, it is necessary to accommodate reefer containers.

3.7 China Land Bridge (CLB) Transportation Corridor

Lianyungang Port

3.7.1 Significance

The CLB Transportation Corridor fulfils a role as a route linking up East Asia with Central Asia at present. This line would compete with the SLB, becoming an international combined transportation route linking Asia and Europe overland (mainly by rail) via Kazakhstan from China in future.

The distance from Lianyungang Port to Alashankou is 4,158km. There are several routes from Kazakhstan to Europe by railway as well as road.

3.7.2 Current Situation

(1) Port (Lianyungang)

Lianyungang Port has two modern container berths, the total berth length of which is 650m and the depth of water in which is 11m. The inner length of the terminal is 400m. Container cargo is loaded onto trains at this terminal. Besides the container terminal, there is a miscellaneous wharf with 10 berths and 3 coal-loading berths running at present. This port boasts 3 gantry cranes. The total quantity of freight handled annually, including loose bulk material such as coal, is 25 million tons. Container freight accounts for 110,000 TEU, of which 10,000 TEU is CLB freight, bound for and coming from Central Asia.

(2) Railways

The line between Lianyungang and Ranzhou (1,759km) is a double-track one, with both electrified and non-electrified sections. The line from Ranzhou to Urmuchi (1,892km) is also double-track (single track in some parts), with electrified and non-electrified sections. The line between Urmuchi and Alashankou (477km) is a single-track, non-electrified one. Double-decker passenger trains run on this route.

Railway border stations are located in Alashankou (China) and Druzba (Kazakhstan), where the quantity of transit freight is increasing year by year, reaching about 4 million tons at present. 90% of the transit freight heads for China from Kazakhstan.

While China's railways use standard gauge rails, the Central Asian republics use the same wide gauge rails as Russia, so it is necessary to transship cargo near the border. Based on the principle of transshipment in the importing country, westbound international freight is transshipped at Druzba in Kazakhstan, while eastbound freight is transshipped at Alashankou in China. However, unusually, tankers bound for China and both westbound and eastbound passenger trains have their platform cars transferred at Druzba, because Druzba is the only place with the facilities for

transferring platform cars. Both Alashankou and Druzba experience strong winds, so in order that transshipment can take place even under those conditions, indoor transshipment facilities are being developed.

The transshipment facility at Alashankou Station operates 365 days a year for 12-hour shifts (split into three teams). In the event of strong winds, outdoor transshipment activities are cancelled. There are 100 track cranes (10-20 tons. The largest is 50 tons) and four gate cranes (5-20 tons).

Druzba Station has the capability to undertake transshipment 24 hours a day, 365 days a year. As the winds in this area are strong, an indoor transshipment facility is being developed, so that transshipment operations can continue to be undertaken even in high winds. For the transfer of passenger train platforms, several 50 ton lifting jacks are used for each carriage.

(3) Roads

The road runs almost parallel to the railway route, but branches off near to the border. The road from Lianyungang to Urumqi is considered by the Chinese government to be one of the most important routes, so there are plans to develop the entire length of the road as a highway. The section between Lianyungang and Tiansui (west of Xi'an) is in the process of being developed as a highway, with some parts already in use. The section between Turfan and Kuitun (west of Urumqi) is also being developed as a highway. However, roads in the area west of Urumqi are almost unpaved, other than within Urumqi City itself.

3.7.3 Problems and Issues

With regard to transportation corridor issues, firstly, there is the problem that the capacity of transshipment facilities has been reached, in comparison with increasing border trade, so it is necessary to enlarge the transshipment capacity.

Secondly, container tracing in China is possible at major railway bureaux and large stations, but it is difficult to do over the whole line. Consignors fervently hope that this container tracing system will be developed.

Moreover, as this corridor runs over 4,000km from Lianyungang to the Kazakhstan border, the establishment of inland container depots on the route is desirable. With this system, there would no need to worry about customs clearance at the border, and cross-border procedures would be completed more quickly. One issue common to any border is the huge task of cutting the time and transportation costs required for crossing borders.

3.8 Korean Peninsula West Transportation Corridor

Bridge Over the Yalu River

3.8.1 Significance

This corridor links Busan Port in the ROK with Shenyang in China, via Seoul, Pyongyang, Sinuiju on the DPRK side of the border and Dandong on the Chinese side. It is hoped that it will link up with the Dalian Transportation Corridor and then cross into Russia from Manzhouli to merge with the SLB. However, at present the lines linking the ROK and the DPRK are disconnected, so it is not functioning. If progress were made on the development of the disconnected section, this corridor would promote transportation between the ROK and the DPRK, and would not only contribute to the revitalization of economic interaction between the countries, but may also make the means of transporting freight from East Asia to Europe and Central Asia more diverse and convenient.

3.8.2 Current Situation

(1) Port (Busan)

Busan Port is a good natural port located at the southeastern tip of the Korean Peninsula; since its opening as a trade port in 1876, it has supported the ROK's economic development as the country's main international trade port. At present, Busan Port plays a major role in the East Asian economy, as one of East Asia's hub ports. The quantity of freight handled at the port in 1999 reached 107.76 million tons, of which cargo relating to foreign trade amounted to 93.04 million tons. In terms of the volume of container freight handled, the total reached 5.75 million TEU and 6.31 million TEU in 1998 and 1999, respectively, placing it 5th among the world's ports.

It has five specialist container wharfs and 18 berths, which are 5,147m long in total. As of October 2000, the specialist container wharfs (container terminals) are all run by private companies.

At Busan Port, the container terminals' storage area was originally rather cramped, so the completion of customs procedures, long-term storage and the storage of empty containers were carried out mostly in off-dock container yards within the city, as well as within the terminal. Between the transportation of containers stacked too high and road congestion, this was something of a public nuisance, but as a result of the opening of the Gamman and Gamchun wharfs and a new terminal coming into operation at Kwangyang Port in 1998, the terminal capacity increased greatly and container wharfs adopted the on-dock system, allowing everything to be dealt with within the terminal. Furthermore, the port is being managed effectively, with the realization of the development of the port's electronic data interchange (EDI) system and the automation of the container terminal gate.

(2) Railways

The railway between Busan and Seoul is the main artery of the ROK's railway system, and transports more than 12 million tons of freight annually. The 445km between the two cities is all double-track, but as the trains are a mixture of Saemaul passenger trains that run at 150km/h and freight cars, the line has reached the limit of its capacity. Consequently, a new high-speed line between Seoul and Busan, on which a top speed of 300km/h would be possible, is being planned.

The restoration of the railway linking the ROK and the DPRK is necessary for this transportation corridor to function. This is known as the Kyong-ui (Seoul-Sinuiji) Line. It is disconnected for 24km (20km, according to some sources) between Munsan in the ROK and Kaesong in the DPRK; moves towards the linkage of this section began at the North-South Summit in 2000. The ROK held a ground-breaking ceremony in September 2000 and is making progress on the work, including the removal of landmines, but no definite moves on the part of the DPRK have been seen.

A single-track electrified line runs from Pyongyang to Sinuijiu. At Sinuijiu, the railway is linked to Dandong in China by a bridge over the Yalu River. This bridge is a dual road-rail bridge with a single-track railway line and a 3 meter-wide road lane; about 80,000 cars crossed it in 1999. Moreover, an international train makes 4 return journeys between Pyongyang and Beijing each week.

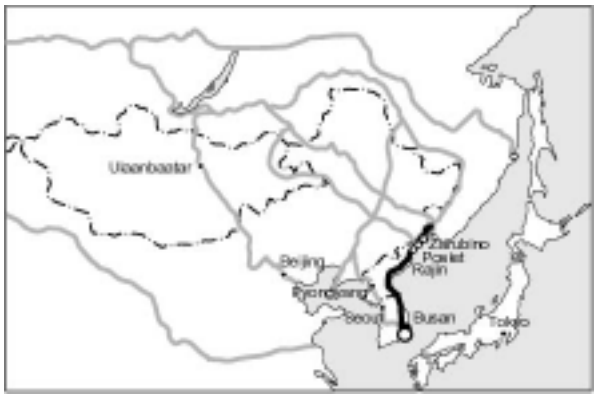
(3) Roads

A highway runs between Busan and Seoul, however the roads north of Seoul are ordinary roads. The road from Kaesong to Pyongyang on the DPRK side is a highway. Ordinary roads run from Pyongyang to Shinuiju via Anju, believed to be mostly unpaved. On the Chinese side, construction work on a highway from Dandong to Shenyang is flourishing at present.

3.8.3 Problems and Issues

The main issue in relation to this corridor is the completion of work to reconnect the railway linking the ROK and the DPRK. In parallel with this, it is also desirable for the two countries to connect their roads. Moreover, the upgrade and development of tangible rail and road infrastructure in the DPRK may be necessary. In order for the corridor to function as an international transportation corridor, the development of intangible infrastructure, such as the conclusion of transportation agreements between related countries including the ROK, DPRK, China and Russia regarding such issues as transportation costs and the calculation of fees, and transportation insurance; the coordination of international train operations; and safety guarantees are necessary, in addition to the development of tangible infrastructure.

3.9 Korean Peninsula East Transportation Corridor



Busan Port

3.9.1 Significance

The aim is for this corridor to run up the eastern side of the Korean Peninsula from Busan, as far as the Rajin-Sonbong Economic and Trade Zone in the DPRK, from where it will cross the Russian border into the Khasan area and join up with the SLB transportation corridor. As with the Western Korean Peninsula Transportation Corridor, because there are no connections between the ROK and the DPRK, this corridor is not yet functioning. In addition to promoting cargo transportation between the ROK and the DPRK, the development of this corridor would secure an overland transportation route from the ROK and Russian Far East. Furthermore, by connecting up with the SLB corridor, the corridor would diversify transportation routes from East Asia to Europe.

3.9.2 Current Situation

(1) Port (Busan)

Please refer to "3.8 Western Korean Peninsula Transportation Corridors"

(2) Railways

It is hoped that this corridor will provide an overland link between the ROK, the DPRK and Russia, but not only is there no rail link between the ROK and the DPRK, the railway running up through the eastern part of the ROK from Busan has not yet been developed.

In terms of a route linking the ROK, the DPRK and Russia, a route linking Busan, Seoul, Pyongyang and Khasan is the most likely option, to be achieved through the reconnection of the Kyong-ui Line, on which work is progressing at present. A route linking Busan, Seoul, Wonsan and Khasan via the Kyongwon Line is under consideration as the second stage, following on from the Kyong-ui Line. A route as far as Khasan, using a line linking Kangnung in the ROK and Onjeongri in the DPRK, known as the East Sea Northern Line, is being considered as the third stage. In addition to the connection of the ROK and the DPRK, the development of the ROK's eastern railway is necessary in order to use this third route, so the project may not be realized for a long time.

The DPRK and Russia are linked by a rail bridge over the Tumen River between the Tumangang Station in the DPRK and Khasan in Russia, and four parallel rails – one set of Russian gauge (1,520mm) and one set of DPRK gauge (1,435mm) rails – run as far as Chongjin. At present, there is a plan to change this line from a single-track to a double-track line.

(3) Roads

On the ROK side, the ordinary road from Busan to Sokcho going north along the eastern coastline of the Korean peninsula is a well paved one which is a highway in parts. On the DPRK side, the road from Kumgangsan to Wonsan is a highway, but the road from Wonsan to Ra-son (Rajin-Sonbong) is believed to be unpaved.

3.9.3 Problems and Issues

The main issue in relation to this corridor, as with the Western Korean Peninsula Transportation Corridor, is the completion of work to reconnect the railway linking the ROK and the DPRK. In parallel with this, for the connection of roads between the two countries is also desirable. Moreover, the upgrade and development of tangible rail and road infrastructure in the DPRK may be necessary. Furthermore, it is hoped that the development of the ROK's eastern railway network may be realized.

The DPRK and Russia are connected only by a railway, but it has not been used much recently due to the decrease in Russian freight. The railway between the border and Chongjin has both standard and wide gauge rails (4-rail track). Transshipment facilities need to be developed at the border between the DPRK and Russia in order to fully utilize this corridor, which connects the ROK, the DPRK and Russia.

In order for these corridors to function as international transportation corridors, the development of soft infrastructure, such as the conclusion of transportation agreements between related countries such as the ROK, DPRK, China and Russia regarding such issues as transportation costs and calculation of fees, and transportation insurance; the coordination of international train operations; and safety guarantees are necessary, in addition to the development of hard infrastructure.

Chapter 4 Proposed Development Plan (Project List)

As pointed out in the previous chapter, with regard to their current status, there are differences in the level of development of the nine Northeast Asian transportation corridors, with some already being used sufficiently and others still at the stage of being merely a concept. The level of maturity of the development and usage of the transportation corridors can be classified as being in one of three stages: basic formation period, propagation period and active period. “Basic formation period” indicates that the corridor is at the stage of basic infrastructure development, focusing mainly on hard infrastructure. The “propagation period” is the stage of attracting users requiring international transportation services, having developed basic infrastructure. The “active period” refers to the stage of promoting further use of the corridor and expanding the quantity of freight transported. Classified in this way, the status of the nine Northeast Asian transportation corridors is as follows:

Basic formation period: 3) Suifenhe Corridor, 4)Tumen Corridor,
5)Western Korean Peninsula Corridor,
9) Eastern Korean Peninsula Corridor
Propagation period: 1)Vanino - Taishet Corridor, 6)Tianjin - Mongolia Corridor
Active period: 2) SLB Corridor, 5)Dalian Corridor, 7)CLB Corridor

It is necessary to raise the development level of the various corridors, from developing sufficient basic infrastructure, to attracting and promoting their use, and ultimately to expanding the amount of cargo transported via them. Based on the problems and issues in each transportation corridor, outlined in the previous chapter, the Transportation Subcommittee has compiled the following table outlining the proposed development plans aimed at raising the development level of each corridor and ensuring that all the corridors function properly as international transportation routes.

These aim of these projects with regard to the future of the Northeast Asian transportation corridors is to create: (1) a network in which transportation can take place throughout the whole region as smoothly as it does within a single country; (2) enhanced and expanded standardization (containerization) of transportation; and 3) a network that is effectively connected to transportation networks outside the region.

(1) Projects aimed at creating a network in which transportation throughout the region can take place as smoothly as domestic transportation include improvements to the rail freight transshipment capacity of stations at national borders, the expansion of the range in which truck transportation can take place, with regard to how far trucks can enter other countries, increasing the efficiency of border-crossing procedures and introducing Transport International Routiers. (2) Projects aimed at enhancing and expanding container transportation include the development of container handling facilities at ports, the establishment and upgrading of inland container depots, and the establishment of a container tracing system. (3) Projects aimed at the effective connection of the network with networks outside Northeast Asia include the expansion of marine routes and the strengthening of the consistency of the network’s ability to transport cargo as far as Europe.

Moreover, the development projects listed have been classified into three categories, having been assigned an order of priority: areas where development should be undertaken urgently (short-term), areas where development will be needed in the near future (medium-term) and areas where development is likely to be required in the longer-term (long-term).

Table Development Plan (Project List) (1/3)

Name of Corridor	Development / Usage Stage	Period	Development Plans	Area	Scale
Vanino - Taisyet	Propagation period	Short-term (5 years)	- Road paving - Establishment of container transportation (tracing) - Establishment of regular container routes - Expansion of the facilities of the Ferry - Upgrading of cargo transshipment facilities	Lidga - Vanino Vanino - Taisyet Vanino Port - Sakhalin - Vanino Sakhalin - Vanino	346km
	Active period	Medium-term (10 years)	- Improvement in speed of transportation	Vanino - Taisyet (modifications to curves)	
		Long-term (20 years)	- Making railway lines double-track - Upgrading and expanding container berths in the port	All lines Vanino Port	
SLB	Active period	Short-term (5 years)	- Development of roads - Conversion of railways to double-track lines - Installation of a grain silo - Improvement in speed of transportation (Increase in international competitiveness) - Increase in the frequency of SLB services on the Japan route - Establishment of a cross-Japan Sea(East sea) ferry - Improving competitiveness with All-Water transport	Chita - Khabarovsk Over the Amur River Ports of Primorsky Krai All lines Ports of Primorsky Krai - Ports of Primorsky Krai -	
		Medium-term (10 years)	- Expanding and upgrading transportation capability - Mutual interaction with All-Water transport		
		Long-term (20 years)	- Introduction of double stack trains - Repairs to tunnel sections		
Suifenhe	Basic formation period	Short-term (5 years)	- Improvement in the efficiency of and extension of - the capacity for transshipment - Extending the area within which trucks are permitted to travel - Easing of restrictions on cross-border traffic	Suifenhe - Grodekovo Manzhouli - Zabaikalsk Harbin - Ports of Primorsky Krai	
	Propagation period	Medium-term (10 years)	- Making railway lines double-track	All lines	
	Active period	Long-term (20 years)	- Extension of the Chinese railway	Laying Chinese gauge all the way to Vladivostok Port	232km

Table Development Plan (Project List) (2/3)

Name of Corridor	Development / Usage Stage	Period	Development Plans	Area	Scale
Tumen River	Basic formation period	Short-term (5 years)	- Improvement of customs facilities at Kraskino - Repairs to the road - Repairs to Wonjong Bridge - Opening of an expressway - Development of container handling facilities - Expansion of the container yard - Installation of a grain silo - Improvements in the convenience of rail transportation - Development and linkage of the road between China and Mongolia - Increase in the frequency of services across the Japan Sea (East Sea)	Kraskino Rajin - Wonjong Wonjong Bridge Changchun- Hunchun Zarubino Port Posiet Port Zarubino & Posiet Ports Hunchun - Kraskino Choybalsan - Yirshi Zarubino, Posiet and Rajin Ports -	240m 150m×100m 500km
	Propagation period	Medium-term (10 years)	- Linkage of the railway	Choybalsan - Yirshi	500km
	Active period	Long-term (20 years)	- Extension of the Chinese railway	To Zarubino and Posiet Ports	60km
Dalian	Active period	Short-term (5 years)	- Opening of the entire expressway - Upgrading and expanding inland container depots	Harbin - Dalian Major cities between Harbin and Dalian	944km
		Medium-term (10 years)	- Expansion of rail transportation capacity by means of the conversion of the line into a quadruple-track one - Construction of a bridge	Harbin - Dalian Heihe - Blagoveshchensk	944km
		Long-term (20 years)	- Introduction of double stack trains		
Tianjin - Mongolia	Propagation period	Short-term (5 years)	- Improvement of transshipment facilities - Development of the road - Joining the Transport International Routier (TIR) treaty	Erenhot - Zamyn Uud Ulaanbaatar - Erenhot Mongolia, Russia, China	600km
	Active period	Medium-term (10 years)	- Improvement in the speed of rail transportation - Expansion in cargo allotted to Mongolia - Establishment of a specialist yard and warehouse for Mongolian freight - Establishment of refrigerated transportation - Upgrading and expanding rail transport capability (making railway lines double-track)	Areas with sharp curves China Tianjin Port All lines China	
		Long-term (20 years)	- Creation of a network with the SLB - Introduction of double stack trains		

Table Development Plan (Project List) (3/3)

Name of Corridor	Development / Usage Stage	Period	Development Plans	Area	Scale
CLB	Active period	Short-term (5 years)	- Improvement in the efficiency of border transshipment facilities - Development of container tracing - Direct connection to Europe - Expansion of Lianyungang Port routes	Alashankou - Druzba All lines Central Asia - Lianyungang Port -	
		Medium-term (10 years)	- Road development - Electrification of railway lines and making them double-track	particularly near the border All lines	
		Long-term (20 years)	- Introduction of double stack trains - Creation of a network with the SLB		
Korean Peninsula West/East	Basic formation period	Short-term (5 years)	- Swift re-linkage of the Railway - Securing an overland transportation passage between the ROK and the DPRK - Restoration of rail facilities - Restoration of roads - Increase in the number of cargo trains - Making the road and railway across Yalu Bridge double-track / double lane - Security of energy	Kyongui Railway (Seoul - Sinuiju) Between ROK and DPRK DPRK DPRK DPRK Yalu Bridge DPRK	
	Propagation period	Medium-term (10 years)	- Conversion of railways to double-track lines - Making road, rail and port connections smoother - ROK and DPRK join the TIR treaty	Pyongyang - Sinuiju - Shenyang	
	Active period	Long-term (20 years)	- Introduction of double stack trains - Electrification of railway	ROK	
Entire Network		Short-term (5 years)	- Switch to the acceptance of small containers as standard (popularization) - Introduction of an international ferry - Easing of border-crossing regulations for trucks - Establishment of inland depots		
		Medium-term (10 years)	- Introduction of international skeleton (container) routes (North American route) - Securing passage of transit cargo across borders via the TIR treaty		
		Long-term (20 years)	- Creating the Northeast Asia Transportation Corridor Network (including marine routes)		
		Ultra-long-term	- Connection of Vanino, Taishet and the SLB to Japan (via tunnels, etc.)		

TIR: Transport International Routier

Chapter 5 Conclusion (Towards the Realization of the Vision for the Northeast Asia Transportation Corridors)

The Transportation Subcommittee has distilled the results of its activities to date, to create the Vision for the Northeast Asia Transportation Corridors. The shape of the future Northeast Asian transportation corridors for which we are aiming is as follows: (1) a network in which transportation can take place throughout the whole region as smoothly as it does within a single country; (2) enhanced and expanded standardization (containerization) of transportation; and 3) a network that is effectively connected to transportation networks outside the region.

In the future, how this concept can be realized will become the biggest focus of discussions. In order to realize the concept, firstly it is necessary for the concept to be accepted and supported by many people.

Two types of development are necessary in the transportation corridors: development of 'hard' infrastructure and that of 'soft' infrastructure. With regard to developing hard infrastructure, there are many areas requiring large amounts of funding, and securing financial resources is an issue. In addition to support from each country, support from international financial institutions may also be necessary. In terms of soft infrastructure development, multilateral or bilateral negotiations and coordination will be necessary. It is conceivable that this may take place over the long term. However, the development of soft infrastructure does not require as much funding as that of hard infrastructure, it can be highly effective, and it is thought that the development of soft infrastructure may be a spur to the development of hard infrastructure.

In terms both of hard and soft infrastructure, approaches to the government of each country concerned may be needed to promote infrastructure development, to ensure they acknowledge the transportation corridors and support the concept. By means of this, it will become possible to invest limited financial and human resources in developing the transportation corridors, in a concentrated fashion. Moreover, through recognition of the importance of the nine Northeast Asian transportation corridors by the government of each country, it will be possible to obtain cooperation from international institutions.

At the same time as developing the transportation corridors, it is important to promote and attract actual use of them, by providing cargo owners, etc. with information about the Northeast Asian transportation corridors, such as that regarding the status of improvements to discontinuities near national borders.

It is expected that if the transportation corridors are developed sufficiently, the passage of goods for distribution and people back and forth across national borders will intensify, and the development of international trade that utilizes the inherent economic and geographical complementarities of Northeast Asia is conceivable. Furthermore, the existence of routes that function properly as international transportation routes will promote investment and movement into other countries by companies from outside the region, as well as within it. The future upgrade and expansion of the Northeast Asian transportation corridors' functions, as trade corridors and economic corridors linking infrastructure development and production, trade and other development opportunities, is already being sought, in order to promote economic development within the region and international cooperation.

Aiming at the future formation of economic corridors, and the realization of the Vision for the Northeast Asia Transportation Corridors, which is a prerequisite for that ultimate goal, the Transportation Subcommittee will actively continue its activities in the future.