1. Introduction

In recent years, regional competition has extended to the economy, encompassing such fields as attracting foreign investment. North-East Asia has entered a new era in which it must pursue greater economic development by strengthening economic integration in the region. In order to advance the region’s economy, the promotion of international trade is necessary; this can be achieved by strengthening regional economic integration. As things stand, given the relatively poor relationships between the countries of the region and the low level of regional economic integration, which can be seen from the underdeveloped transportation network in the region, North-East Asia cannot actualize its economic potential. In order to advance the development of North-East Asia economic benefit, North-East Asia has established the North-East Asian transportation corridors as region’s actual essential transportation routes to development whole North-East Asia economy and strengthened its economic integration through realization of the vision. With the North-East Asian transportation corridors North-East Asia obtains sufficient coordination between related countries and international financial institutions and shows the vision of transportation routes to be necessary from the viewpoint of international trade in whole NEA. It is important to promote use of the corridors by providing the most up-to-date information about each corridor to cargo owners, shipping companies and investor etc., in order to realize the transportation routes in a practical way. This section describes the North-East Asia transportation corridor network in more detail including to overland continental routes and marine routes, outlining their current status and issues.

2. The Nine Transportation Corridors in North-East Asia

This vision for the Nine North-East Asian Transportation Corridors was selected by the Transportation Subcommittee of the North-East Asia Economic Conference in Niigata’s Organizing Committee, with the participation of related officials from each country/district of North-East Asia. The corridor network may be amended to a lesser degree in the near future; however, this is the most accurate reflection of current opinions in all North-East Asia countries including the Democratic People’s Republic of Korea, although it only participates as an observer. In the process of establishing the corridor network, emphasis was placed on the following three points:
1) The trade corridor route is an existing major one.

2) The route connects inland North-East Asia with an outlet onto the Pacific Ocean, taking into account the fact that interaction with Pacific Rim countries will be important for North-East Asia in the future.

3) The route supports the future development of Heilongjiang and Jilin Provinces, taking into consideration the fact that these provinces are located in the geographical centre of North-East Asia and are home to the greatest concentration of the region’s population.

Figure A4-1 North-East Asia Transport Corridors

And 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 follows, these corridors will cross the seas and are supposed to be connected to Japan, the Republic of Korea, South-East Asian countries and North American.
I. Corridor 2 (Siberian Land Bridge (SLB) Trade Corridor)

This corridor runs from ports in Primorsky Territory, via Moscow, to northern, eastern and western parts of Europe. Diversions to Mongolia and Central Asia are also possible on this route.

Its significance lies in the fact that it is the only route at present with a single railway line connecting east and west Eurasia; it provides a fundamental link between the Russian Far East (abbreviated hereafter to Russian Far East) and Moscow. With regard to road transport, a road runs alongside almost the entire length of the Trans-Siberia railway; only the section running through a mountainous area of Amur Territory, between Khabarovsk and Chita, has yet to be completed, but construction work on this section is ongoing. Cargo truck transport is possible all year round apart from on this section, although there are few paved roads, even in the vicinity of Khabarovsk city.

The gateways to the SLB are Vostochny Port, Vladivostok Port and Nakhodka Port, which are ice-free even in midwinter. Vostochny Port is not only a gateway for SLB container transport but also exports timber, coal and chemical fertilizer, which are brought from central Siberia.

Vostochny Port has regular container route links with Japan, Busan and Shanghai, Vladivostok Port has container links with Busan and Viet Nam, and while Nakhodka Port has no regular container shipping route, it does have a conventional route to Japan.

With regard to container movements, the annual container handling capacity of Vostochny Port is 200,000 TEU, while the actual volume handled in 2001 amounted to 90,000 TEU, including a transit cargo volume of 50,000 TEU conveyed between Europe and Asia. Vladivostok has almost the same volume, but little transit cargo (80,000 TEU in total, including 330 TEU of transit cargo). As well as ISO-standard containers, small containers for domestic use are frequently used in railway transport.

Factors of issues and problems in freight handled by the SLB include the weakening of administration and coordination functions relating to international combined transportation. The railway is relatively well-maintained, although transit container volumes have dropped drastically in comparison with levels in the 1980s. This is due to the shift of overseas trade cargo to using maritime transport via the Indian Ocean and the Suez Canal (termed All Water transport). The All Water has weakened the SLB’s competitiveness in terms of both travel times and costs. Another issue is the construction of a double-track railway on the Amur River Bridge. The ports have improved comparatively, due to the competition of ports in Primorsky Territory, although there are still many out-of-date facilities. Given the SLB’s significance, regular SLB-related maritime routes are too small. The road network and paving situation is not good at present because a crucial expressway linking Moscow and the Russian Far East has not been completed and there are unpaved sections of road in some areas. In addition, most exported freight comes from Central Siberia and little from Primorsky Territory. This means that the level of industrial development in Primorsky remains low.
II. Corridor 1 (BAM Trade corridor)

This corridor begins at Vanino Port, which links Sakhalin with the Eurasian continent, and runs via the heavy industrial zone of Central Siberia to Taishet, where the corridor can link up with the SLB.

It has an important role as a substitute for the SLB in the event of a disaster, in addition to providing a connecting route to Sakhalin.

The BAM railway is 4300 kilometres long; the first 720 kilometres of the western section is double-track and electrified, while the remaining 3580 kilometres is single-track and non-electrified.

Vanino Port, which was opened in 1945, is an important Tatar Strait port, which capable of handling 14 million tons of freight annually and the actual cargo volume handled recorded a record high in 1983. As well as the regular bimonthly container service to Busan, a wagon ferry route to Kholmsk Port in Sakhalin. The 5025 GT ferry, which can accommodate train carriages, trucks and passengers, makes the trip every day, taking 9-10 hours. Its annual freight transporting capacity is 6 million tons. The highest actual annual volume was recorded in the latter part of the 1980s, when it reached 5 million tons, but this dropped to 1.4 million tons in 1998. As for passengers, the highest number recorded in the same period was 90,000, dropping to 40,000 in 1998. It is then sent back via the BAM railway and exported from Vanino Port, mostly to Japan, but also America and South-East Asia.

Regarding containerization, Vanino Port has one 11.5 metre-deep berth with two gantry cranes (30.5 tons), but the annual quantity of freight handled remains only 18 per cent of capacity (1999). As for railway container transport, it is possible to transport ISO-standard containers from Vanino to Moscow and other destinations. It continues on to Moscow along the SLB. The reason for this is that there is no container tracing system on the BAM railway. With regard to temperature-controlled transport, refrigerated wagons are more popular than reefer containers, as on the SLB. As for the roads, some truck container transport takes place between Sakhalin, Vanino and Khabarovsk.

In railway transport in this corridor, as on the SLB, a drastic fall in the volume of cargo being handled is being experienced. The railway and road facilities for handling container transport are out-of-date. In particular, wooden road bridges must be replaced with a structure made of a more durable material, such as steel or reinforced concrete.

III. Corridor 3 (Suifenhe Trade Corridor)

This corridor is the most important overland route between China and the Russian Federation. There are two borders in the corridor, both of which are crossed by rail and road traffic; in addition, there is another border that handles only road traffic (Dongning-Poltavka border), close to the Suifenhe-Grodekovo border crossing. The eastern part of the corridor, east of Harbin is termed Corridor 3-1, with the remaining part west of Harbin referred to as Corridor 3-2.
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Corridor 3-1 is significant in that it provides Heilongjiang Province with access to the Japan Sea using Russian ports. Since the Harbin-Dahlian route it is possible to shorten travel distances and times between Heilongjiang and Japan/US remarkably using this corridor (around 950 kilometres of the Harbin-Dahlian route and 760 kilometres of the Harbin-Vladivostok route). Corridor 3-2 is significant in that it is the main trade route between China and the Russian Federation and functions as a substitute for the SLB. The railway line is non-electrified along its entire length and most of that part of it lying in Chinese territory is double-track. In the Russian section are many sharp bends and steep slopes, which limit the speed of the train. A two-lane paved road runs along the entire length of the corridor. The port situation is described in detail in the chapter relating to the SLB.

The total volume of cross-border traffic on roads and railways at Suifenhe-Grodekovo reached about 4.3 million tons in 2000, of which 0.5 million tons was transported from China to the Russian Federation and consisted mainly of coal, foodstuffs and construction materials, with the remaining 3.8 million tons sent from the Russian Federation to China consisting mainly of timber (70 per cent), iron products, cement and chemical fertilizer. The volume of cross-border passenger traffic totaled 780,000 in 2000. At the Dongning-Poltavka road border, the volume of cross-border freight was 260,000 tons, with 280,000 passengers and 30,000 vehicles crossing the border. Cross-border truck transport consists mainly of container trailers. At the Manzhouli-Zabaikalsk border crossing point on Corridor 3-2, the volume of rail cargo amounted to 7 million tons in 2001 (5.64 million tons in 2000), road cargo totaled 280,000 tons in 2000 (240,000 tons from the Russian Federation to China, 40,000 tons from China to the Russian Federation). Throughput in 2001 reached 1.1 million persons and 160,000 vehicles respectively. Compared with 3.2 million tons of railway traffic in 1998, this is a rapid increase on recent years. At the border, the area within which trucks are permitted to move freely within the counterpart country is not fixed but depends upon the permission of the agency concerned.

With regard to railway transport in problems and issues, rail gauges of the two China-the Russian Federation border-crossing points differ; it is necessary to improve transshipment facilities at stations on national borders and increases their effectiveness. With regard to road transport, the range will issue the expansion of range in which truck transportation can take place. It is necessary to consider incentive for transit cargo, such as customer waivers and the abolition of customs handling charges, along with making customer procedures simpler.

IV. Corridor 4 (Tumen River Area Trade Corridor)

This corridor originates in Choybalsan in the eastern part of the Great East Mongolian Plain; The Tumen River Transportation Corridor is an international transportation route running from Tumen River to eastern area of area via the Mongolia-China border. There are two routes: the Russian route using Zarubino and Posiet ports in the Russian Federation, and the Democratic People’s Republic of Korea routes the port of Rajin. The aim in the Tumen River Transportation Corridor is to find its niche as a new route to the sea for Jilin Province and fulfill a role as a substitute route for the congested Dalian Transportation Corridor.
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As regards port facilities, there is competition between Rajin, Zarubino and Posiet ports. Each port has several berths about 10 metres deep. Rajin and Posiet ports are equipped with container cranes, while Zarubino Port uses forklift trucks to move containers, because it lacks suitable cranes. Rajin Port dealt with Russian cargo transported via the Khasan border crossing during the Cold War era, handling a record high of 830,000 tons in total in 1989; this freight volume had dropped to 150,000 tons in total by 1998, with little Russian cargo being handled. Both Zarubino and Posiet ports handled around 600,000 tons of freight in 1999. Corridor 4-2 has a regular container route between Busan and Rajin, which runs three times a month and handled about 5000 TEU in 1999.

The container route between Niigata and Rajin has a very small quantity of cargo and the service runs only once a month. A thrice-weekly international ferry service was inaugurated between Zarubino Port and Sokucho Port (Republic of Korea) in April 2000. About 2000 TEU was handled in the first year, 80 per cent of which was transit freight between the Republic of Korea and China. 58,000 people traveled on the ferry in the same period. The regular Posiet-Akita route was launched in August 1999, with about 4000 TEU being handled in the first year.

Trucks can already move (though there are some restrictions) between China and the Democratic People’s Republic of Korea, and between China and the Russian Federation. On the Rajin-Hunchun and Posiet-Hunchun routes, Chinese drivers are allowed to drive their trucks as far as the port area, but only Russian trucks transport containers on the Zarubino-Hunchun route, although trucks carrying wooden chips can be driven to the port area by Chinese drivers.

Developmental issues in this corridor include transport facilities repair of the road between Rajin and Wonjong and development of container cranes of gantry cranes in Zarubino Port and the sufficient size of the container handling yard in Posiet Port.

V. Corridor 5 (Dalian Trade Corridor)

This corridor is the main artery for China’s North-Eastern region, originates in the international trade port of Dalian, running to Harbin, the capital of Heilongjiang Province in the Russian Federation. The corridor is significant in that it is the main artery connecting China’s three North-Eastern provinces. These provinces form the geographical and economic centre of continental North-East Asia, and in the sense that the possibilities for the economic development of this region will have a great influence on the future of the North-East Asia; the corridor has great significance as a means of supporting this development.

The main railway in the corridor is the Dalian-Harbin line (944 kilometres) 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 deports 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 container are often transported by rail.
With regard to road development in China’s North-Eastern 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 Siping to Changchun stretch in 1998. The Changchun to Harbin stretch is also scheduled to be completed before long. It is though that the development of an expressway in China’s North-Eastern region may result in the rapid substitution of road transportation for railway transportation in the near future.

The main issue with the Harbin-Dalian railway has reached saturation point and has no scope for coping with the increase in cargo volumes that might arise from the development of Heilongjiang and Jiling provinces. Secondly, cross-border traffic between China and the Russian Federation is not efficient due to the lack of a bridge over the river that constitutes the border.

VI. Corridor 6 (Mongolia Trade Corridor)

This corridor runs from Tianjin Port in China, crossing into Mongolian territory further north, and linking up with the SLB at Ulan Ude. The corridor is Mongolia’s sole foreign trade route, with the exception of small customs posts. 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.

Tianjin Port on the Bohai Gulf has a long approach channel, is the seaboard gateway to Beijing. There are seven container berths with a depth of 11-12.5 metres and it handled 1.03 million TEU of containers in 1998, while its annual container handling capacity is 1.8 million TEU. Services on more than 30 regular international container routes call at this port.

Trucks are mainly used in the overland transport of containers exported from/imported to Tianjin Port, with railways occupying a share of only 10-15 per cent. There is little cross-border road freight transportation in Tinjin-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.

It is first necessary to develop the railway of Mongolia and development of Mongolia’s main roads is likely to become a pressing issue it should be noted that the Chinese transport situation has a great impact on Mongolian transport because Mongolia has to make use of Chinese rail and port facilities in passing through Chinese territory. With regard to containers, in order to promote exports of dairy products and meat, it would enable livestock-related products to be exported using reefer container trucks.
VII. China Land Bridge (CLB) Trade Corridor

The railway line would compete with the SLB in transport between East Asia and Central Asia. It is thought that the emergence of competition with the SLB will ultimately contribute to the latter’s development. Until now, this corridor has been the sole trunk road between North-East Asia and Central Asia. International TIR truck traffic from Europe is now possible up to Kazakhstan. It is anticipated that TIR trucks will begin to travel to North-East Asia in the near future, using this road.

The railway line between Lianyungang and Urumqi (3651 kilometres) is double-track, while the line from Urumqi to Alashankou (477 kilometres) is single-track. Deluxe double-decker passenger trains run on the Urumqi-Alashankou line. This means that considerable passenger movements are likely. Owing to the discrepancy in rail gauge between China and Kazakhstan, freight transshipment is necessary at 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. Some parts are already in use.

Lianyungang Port has one state-of-the-art container berth with a depth of 11 metres. Container cargo is loaded onto trains at this terminal. Moreover, 10 berths with a depth of 9 metres-7 metres for general cargo and three coal-loading berths are in use at present. 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 is CLB freight. The port has regular Europe-bound and North America-bound container freight services in addition to a maritime network connecting Busan, Hong Kong, Singapore and Japan.

With regard to cross-border traffic, there are large-scale facilities for transferring cargo in both Druzba and Alashankou. Both border cities experience strong winds, so in order that transshipment can take place even under these conditions, indoor transshipment facilities are being developed.

But there is the problem that, although transshipment facilities are operating at full capacity, the volume of cross-border trade is increasing, so it is necessary to enlarge the transshipment capacity. And also the container tracing in China is possible at major railway bureau and large stations, but it is difficult to achieve over the whole line.

VIII. Corridor 8 (Korean Peninsula West Trade Corridor)

This corridor links Busan Port in the Republic of Korea with Shenyang in China, via Seoul, Pyongyang, Sinuiju on the Democratic People’s Republic of Korea side of the border and Dandong on the Chinese side, at present the lines linking the Republic of Korea and the Democratic People’s Republic of Korea are disconnected, so it is not functioning. If progress were made on the development of the disconnected section, needless to say, this corridor would promote transportation between the Republic of Korea and the Democratic People’s Republic of Korea. Furthermore, the corridor fulfils various roles, providing direct overland linkage between the Republic of Korea and China, as well as connecting international sea routes to Busan Port with inland North-East Asia. The latter means that the corridor will compete with the SLB as one of the Eurasian Land Bridges.
The railway between Busan and Seoul is non-electrified and double-track, but as the train service is a mixture of Saemaul passenger trains running at 150 km/h and freight cars, the line has reached the limit of its capacity. Consequently, a new high-speed line between Seoul and Busan, the railway was agreed at the North-South Summit in 2000; the Republic of Korea has completed its part of the project.

Busan Port is the largest port in the Republic of Korea in terms of the quantity of cargo handled, a It has many trunk maritime routes serviced by Europe-bound and North America-bound container vessels. Consequently, Busan Port was ranked 3rd in the world port container league in 2001. Moreover, branch routes diverging from the Busan Port trunk routes spread throughout North-East Asia and a shipping route network known as the Busan hub network has been formed. Thus, as a result of the fact that many ports in North-East Asia are linked with Busan Port, cases of freight transport between North-East Asia ports undertaken through Busan Port are not rare.

In the Democratic People’s Republic of Korea, ISO-standard containers have been used in transporting textiles and derived products for commissioned trade, which are processed at factories in Pyongyang. These containers are used between Pyongyang and Nampo Port, a gateway to the capital.

Firstly, the disconnected section of railway line must be restored swiftly, based on the North-South Summit agreement. Along with work on the railway, renovation of the cross-border road is necessary, not to mention other improvements to transport infrastructure in the Democratic People’s Republic of Korea.

IX. Corridor 9 (Korean Peninsula East Trade Corridor)

This corridor originates in Busan Port and runs to Primorsky Krai, via the eastern part of the Korean Peninsula, the Rajin-Sonbong economic trade zone in the Democratic People’s Republic of Korea and the Khasan district of the Russian Federation. It merges with the SLB in Primorsky Krai. However, it is not functioning due to the disconnected section at the border between the Republic of Korea and the Democratic People’s Republic of Korea. The corridor is significant as an arterial road connecting the Republic of Korea and the Democratic People’s Republic of Korea and, furthermore, as a route linking the Republic of Korea and the Russian Far East.

As there is no railway in the east of the Republic of Korea, a railway line for the corridor has not yet been decided. There are a number of alternative routes, one of which is the Busan-Seoul-Wonsan-Khasan route via the currently disconnected part of the Kyong-ui Line.

On the Republic of Korea 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 Democratic People’s Republic of Korea side, the road from Kumgansan to Wonsan is a highway, but the road from Wonsan to Ra-san (Rajin-Sonbong) is believed to be unpaved.
With regard to cross-border traffic, there is a railway bridge across the border but no road bridge. The annual quantity of rail freight transported across the border amounted to 3.53 million tons in 1990 however, in 2000, this figure had dropped to only 0.14 million tons (consisting solely of cargo from the Russian Federation to the Democratic People’s Republic of Korea).

This corridor is not functioning at present. In order to fulfill a role as an international corridor, it is necessary to reconnect the north-south rail line and improve the current state of the Democratic People’s Republic of Korea’s transport infrastructure.

Although nine transportation corridors vary from fully-utilized corridors to those still in the conceptual, they are expected to become major corridors for international transportation in the region in the future.

3. Projects in the Proposed Development Plans

As pointed out in the previous chapter, with regard to their current status, there are differences in the level of development of the nine North-East 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**: (3) Suifenhe Corridor; (4) Tumen Corridor; (8) Korean Peninsula West Corridor; (9) Korean Peninsula East Corridor

Above basic formation period indicated that the corridor is at the stage of basic infrastructure development, focusing mainly on hard infrastructure.

**Propagation period**: (1) Vanino – Taishet Corridor; (6) Tianjin – Mongolia Corridor

The propagation period is the stage of attracting users requiring international transportation service, having developed basic infrastructure.

**Active period**: (2) SLB Corridor; (5) Dalian Corridor; (7) CLB Corridor

The active period refers to the stage of promoting further use of the corridor and expanding the quantity of freight transported.

These aim of these projects with regards to the further of the North-East Asian transportation corridors is to create a network in which transportation can take place throughout the whole region as smoothly as it does within a single country enhanced and
expanded standardization/containerization of transportation and a network that is effectively connected to transportation networks outside the region.

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 transshipment can take place, with regard to how far trucks can enter other countries, increasing the efficiency of border-crossing procedures and introducing Transport International Routine treaties. Projects aimed at enhancing and expanding container transportation include the development of container handling facilities at ports, the establishment and updating of inland container depots, and the establishment of a container tracing system. Also the effective connection of the network with networks outside North-East 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, area where development will be needed in the near future as the medium-term and areas where development is likely to be required in the longer term.

4. Toward the Realization of Vision for the North-East Asia Transportation Corridors

The most important thing for economic integration is to construct a relationship of mutual understanding and mutual trust among the countries of the region. In order to build such relationships, it is necessary to set up joint projects extending throughout North-East Asia. Many participants from across the region would be involved in these projects, from the initial planning stages up to the final implementation stage. Then trade corridors should be realized as a means of upgrading transport infrastructure. Trade corridor projects have already been undertaken in Europe and South America, with the participation of all related countries and international agencies; these projects have made a remarkable contribution to promoting the development of the inland transport system in those areas. As a result of frequent meetings and a spirit of compromise aimed at bringing the project to fruition, greater transparency between interested parties was achieved, which in turn fostered mutual trust and understanding and formed a base for regional stability. The North-East Asia trade corridor network project may be the most appropriate first step towards the economic integration of the region.

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 complement of North-East 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 North-East Asian transportation corridors’ functions,
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as trade and other development opportunities, has 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 North-East Asia Transportation Corridors, which is a prerequisite for that ultimate goal, the Transportation Subcommittee will actively continue its activities in the future.