

# International Cooperation for Regional Transportation System in the Northeast Asian Countries

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## I. Introduction

The world is now moving toward the goal of economic prosperity freeing itself from political and ideological confrontation. As the two super power countries in the Northeast Asian region, Soviet Union and China, begin to adopt market principle gradually in their economic activities, international cooperation in the Region emerges to attract new

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concerns.

Econo-geographical conditions of the Northeast Asian region countries is conceived best to take advantage of economic cooperation, compared to such regionalization economies in the world as the European Community(EC), and the North America Free Trade Area(NAFTA). The potentials of economic cooperation in the Northeast Asia region have long been appreciated due to the geographical proximity to each other and economic complementarity in terms of natural resources, labor, technology and capital.

Economic cooperation necessarily brings about increased demand for transportation and communication. Without adequate supply of transportation means, the bloc economy can not be flourished. The coordinated transportation system in the Northeast Asia countries will contribute not only to the advancement of its regional economy but also to strengthening the ties with the fairly solid EC bloc economy. It is because by extending and rehabilitating both the highway and railroad networks, the two bloced continent economies may eventually come closer by the Eurasia Landbridges to each other. With this paper, it is intended to examine the current conditions of transportation systems and related problems in the Northeast Asia countries and suggest policy directions to build a coordinated transportation system in the Region on the principle of mutually-beneficial cooperation.

## II. Transportation Problems and Prospects

### 1. General Status of Infrastructure

Traffic volumes of passengers and goods between the Northeast Asian countries are very rapidly increasing since China, the Soviet Union and other communist countries had taken steps toward transforming their Communist institution. Table 1 shows trade volumes of South Korea with some Communist countries. During the past years, the trade volumes between them have been increasing at the rate of 50-100% per annum.

Table 1. Trade Volume of S. Korea with Communist countries  
(unit : million dollar)

Year		1985	1986	1987	1988	1989	1990	1991	1992
Total	Total	1,438	1,609	2,027	3,541	4,044	5,491	7,818	9,616
	Export	850	900	982	1,887	1,854	2,640	3,533	5,210
	Import	588	709	1,045	1,654	2,190	2,851	4,285	4,406
China	Total	1,161	1,336	1,679	3,087	3,143	3,848	5,811	8,218
	Export	683	715	813	1,700	1,438	1,580	2,371	4,493
	Import	478	621	866	1,387	1,705	2,268	3,440	3,725
Russia	Total	102	133	200	278	600	889	1,202	860
	Export	60	65	67	100	208	519	625	365
	Import	42	68	133	178	392	370	577	495
East Europe	Total	175	140	148	176	301	754	805	538
	Export	107	120	102	87	208	541	537	352
	Import	68	20	46	89	93	213	268	186

Source: Korea Trade Promotion Corporation and Korea Customs Administration

However, it is fair to say that the transport volume presently generated among them looks far short of the true demand because of many capacity restraints. It seems to be attributed to such factors, among others, as following;

- immature mood of cooperation for the regional transportation system
- poor level of infrastructure stocks
- persistent isolation policy of the North Korea

The immature mood of cooperation must be considered first as for the underlying causes of restrained transportation in the Region. For an instance, commercial air route agreements between related countries have got to be made. Traffic volumes of passenger and cargo will be drastically increased, once commercial agreements for air transport network and/or scheduled sea line service between South Korea and China inclusive of Soviet Union and North Korea are made on full scale.

Secondly, the poor conditions of infrastructure in Northeast Asia countries with some exceptions of the Japanese archipelago, is considered a stumbling block. Table 2 shows that the stock level of transportation infrastructure in the Northeast Asia countries is far short of the standard level of other developed countries.

The lowest level of infrastructure in Northeast Asia may have resulted partly from such causes as high population density, freezing cold climate and vastness of massive land. But the more decisive cause must have been the political confrontation which had long persisted and negated economic cooperation in any form among them. Economic cooperation can be viable only upon a well-developed transportation system interweaving them together.

Table 2. Country profile and transportation in Northeast Asia

Country and Region	Area (1000 sq. km)	Population (1000)	Population density (persons /sq. km)	Road length (km)	Rail length (km)	Road density (km/1000 sq. km)	Rail density (km/1000 sq. km)
Soviet Far East(1989)	6,216	7,941	1.3	21,158	7,727	3.4	1.3
Maritime Kray	166	2,260	13.6	2,058	2,475	3.4	0.3
Khabarovsk Kray	825	1,824	2.2	4,133	1,295	29.9	7.8
Amur Oblast	364	1,058	2.9	4,094	-	2.2	-
Kamchatka Oblast	472	466	0.9	1,038	-	2.2	-
Magadan Oblast	1,199	543	0.5	2,997	-	2.5	-
Sakhalin Oblast	87	709	8.1	2,183	817	25.1	10.2
Yakut USSR	3,103	1,081	0.3	4,655	124	1.5	0.04
Northeast China	1,970	119,110	60.5	127,266	17,088	64.6	8.7
Heilongjiang	454	35,100	77.3	41,399	5,045	91.2	11.1
Jilin	187	24,030	128.2	16,785	3,488	89.6	18.6
Liaoning	146	36,760	266.0	36,152	3,558	248.1	24.4
Inner Mongolia	1,183	21,220	17.9	32,930	4,998	27.8	4.2
Mongolia(1989)	1,565	2,000	1.3	3,950	1,807	2.5	1.2
North Korea(1989)	125	21,370	170.6	23,000	5,024	184.0	40.2
South Korea(1990)	100	43,520	439.5	55,778	3,120	557.8	31.2
Japan(1990)	378	122,783	329.3	1,095,021	27,012	2,898.4	71.5
Total	10,354	316,724	30.6	1,326,173	61,778	128.1	6.0

Source: Allan Rodgers (ed.), *The Soviet Far East*, p. 3 and p. 191. W. B. Kim and B. O. Campbell (eds.), *Proceedings of Conference on Economic Development in the Coastal Area of Northeast Asia* (Europe Publications Ltd., Statistical Survey: The Far East & Australia, 1992).

But now, as Soviet Union and China started to adopt an open-door policy, the long standing repressive circumstance seems to be significantly changing. Amidst the ongoing cooperative mood recently occurred, however, the progress toward cooperation in the North east Asia would have been much more speedy and substantial if North Korea had joined in reciprocal stance.

## 2. Transportation Prospects

Transportation demand of passengers and goods between Northeast Asia countries is quite rapidly increasing in the recent years, but it is lamentable that the traffic volume is seriously restrained by the lack of transportation facilities. Development of industrial activities undergoing actively in China and of natural resources in the region necessitate increasingly high interaction and transport among them. But the deficient connectivity in transportation system is the primal problem to be solved so as to activate such cooperative interaction in the Northeast Asia. In consideration of the market potential in terms of population size and development perspective, the development of transportation network will be more than payed off, not to mention its impact on conducting economic development in the Region. The comparative advantages of each countries can be best exploited only through transportation network to link them with adequate capacity. Table 3 shows some major economic indicators for the future in China.

As the economic development plan is successfully carried out in China and joint venture investments proliferate around the region, the transport demand for commodities such as agricultural products, light industrial goods, manufactured goods, timbers, natural gas and petroleum, coal and minerals will continually expand in addition to rapid growth of passenger travel demand. But such economic development could result only after prior development of infrastructure. The first step toward development of transportation network in the Region would better start from cooperation in the use of existing facilities and then move toward investment to build up a full system by steps.

Table 3. Some major economic indicators for the 2000's China

Economic Indicators	1980	2000	Annual Average Growth Rate(%)
GNP(Billion \$)	285.5	1,140	7.2
Per capita GNP(\$)	291	800	
Manufacturing Production(100M.)	7,077	28,000	7.2
Food Production(100M. Won)	3.2	4.93-5.3	2.2-2.6
Population(100M.)	9.8	12.2	1.15
Foreign Trade(100M. \$)	378	1,600	7.2
Coal(100M. t)	6.2	12.0	3.4
Oil(100M. t)	1.0	2.0	3.2
Electricity(100M. Kwh)	3,006		7.2
Autos(1000 veh.)	22	120	

Source: Korea Institute of Industry and Technology Information

### III. Policy Directions for Regional Transportation System

#### 1. Maritime Transportation and Port Development

Marine transport has existed in the world since the start of civilization. Because of its physical characteristics, the marine transport is considered an international transport mode which is least influenced by any discord between the transporting parties. For that nature, it has been able to upkeep trade between countries at ideological and political confrontation. It is the transport mode which, even though it stopped, can be most easily and swiftly restorable.

Among the Northeast Asia countries, maritime transport has long been the only mode enabling interaction crossing the national border even at political dispute. It is quite natural that the maritime traffic is most rapidly increasing, compared





There locates on the East coast Najin, Chongjin, Kimchaek, Hungnam, Wonsan in the North Korea versus Donghae, Pohang, Ulsan, Pusan and Kwangyang in the South Korea.

In contrast to the severance of communication between South and North Korea, shipping lines between other countries are fairly well developed. Fig 2 shows some major shipping lines of passengers and freight under operation between some Northeast Asia countries.

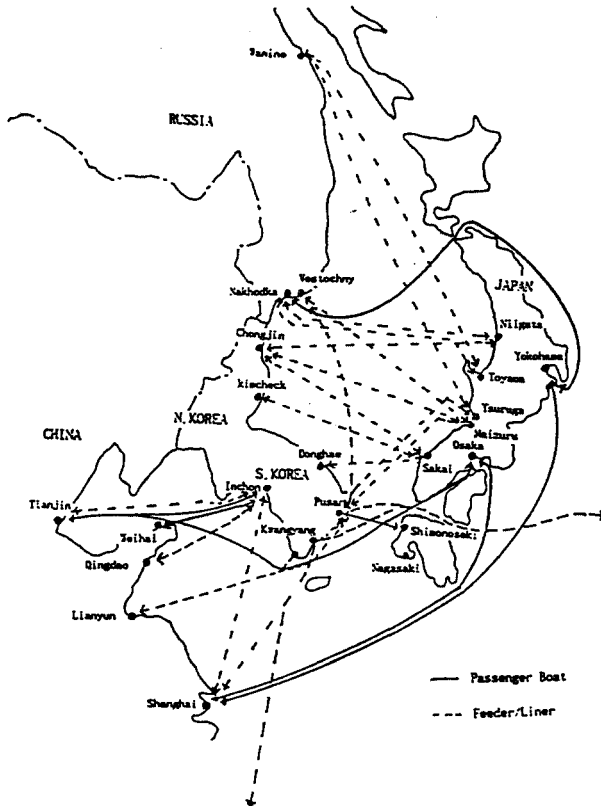


Fig 2. Major Shipping Lines of Passengers and Freight under operation between some Northeast Asia Countries

Table 4. Cargo Volume Handled in Major Ports of China  
(Unit:1000ton)

Port \ Year	1952	1957	1965	1978	1984	1985	1986	1987
Total	13,680	34,430	67,790	192,209	267,280	302,190	331,730	351,978
Dalian	1,510	5,880	10,570	28,640	40,160	43,810	44,290	46,100
Qinwangdao	1,810	2,830	4,780	22,190	35,790	44,190	48,730	53,790
Tianjin	740	2,840	5,490	11,310	16,110	18,560	18,180	17,213
Yantai	260	480	980	4,580	6,740	6,890	6,910	10,825
Qingdao	1,750	2,210	4,480	20,020	24,220	26,110	28,010	30,700
Lianyung	460	1,050	2,650	5,940	9,000	9,290	9,490	8,940
Shanghai	6,560	16,490	31,940	79,550	100,660	112,910	126,040	128,840
Ningbo	-	-	-	-	5,970	10,400	17,950	19,400
Huangpu	470	1,860	4,700	10,500	16,680	17,720	19,170	-
Guanzhou	120	790	2,200	9,479	11,950	12,310	12,960	17,000

Source: Korea Maritime Institute, *Current Conditions and Prospects of China's Maritime Industry*, Dec. 30, 1989.

## 2. Railroad Network

Railways are the artery of the regional transportation system. Of surface transportation modes, railroad is the transportation mode which moves so fast in speed and loads massive in quantity at relatively low cost. Consequently it is well known that the railroad transportation is well competitive with air transportation for passengers and with maritime transportation for freight. For the moderately long-distance transportation both for passengers and freights, railroad is considered superior to other modes of competing transportation in terms of cost, rapidity, safety and reliability.

Socialist countries of China, Russia, Mongolia, and Russia have so far depended almost entirely on the railways. As seen in Table 2, the railroad system is relatively well developed in the region. In terms of railroad density, the three provinces of Liaoning, Jilin and Heilongjiang in the Northeast China rank

the highest second to the North Korea. Fig 3 and Fig 4 show that, if the North Korea could cooperate with the South Korea and succeed in building the unified railroad system, most of major cities and ports in the Northeast Asia countries could be inter-connected by railways.

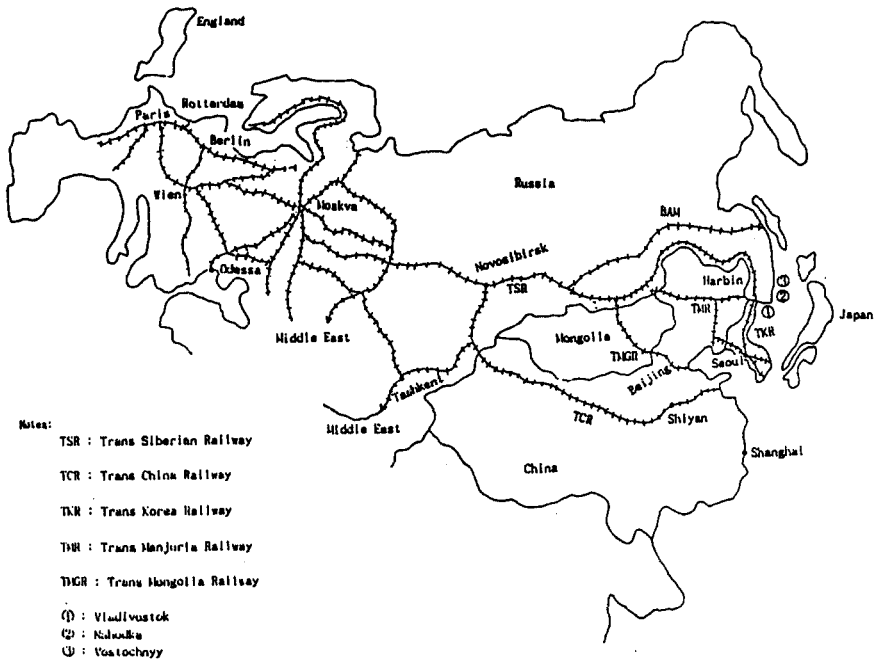


Fig 3. Various Routes of Trans Continent Railways

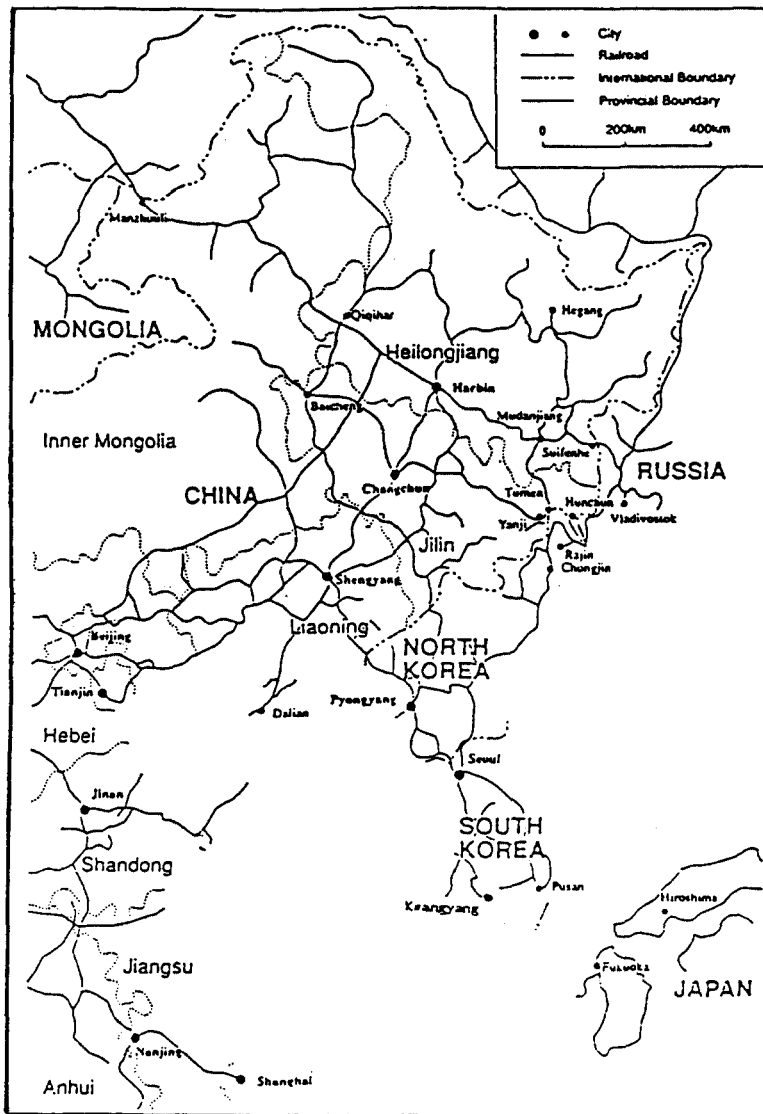


Fig 4. Railroad Network in Northeast Asia

Two principal ports on the south coast of the Korean Peninsula, Kwangyang and Pusan, which are considered to be the hub ports in the Northeast Asia Region with respect to trans-pacific sea routes, could be connected via railways to most other principal cities such as Pyongyang, Wonsan, Nampo and Chongjin in the North Korea and to Shengyang, Changchun, Beijing, Harbin, etc. in China, and to Ulan Bator of Mongolia, and to other major Russian cities. Landlocked Mongolia has recently succeeded in securing its way toward sea outlets of Nakhodka and Tianjin via railways but she can also eventually reach the Trans Pacific hub ports, Kwangyang and Pusan.

To go further for an ambitious dream in the world transportation, development of the transcontinental railroad system is most noteworthy. Fig 5 shows that the cooperation of the two Korea's railway systems could complete the Eurasia Landbridge connecting the Pacific rim hub ports of the Northeast Asia with those of the Atlantic ocean inclusive of most of major cities dispersed in between. The railroads starting from Kwangyang or Pusan via Trans-Siberian Railway or Trans-Manjuria Railway to European cities could save almost 30-40 percent of the distance to be traveled by maritime traffic as shown in Table 5.

In order to make such scheme into reality, close cooperation is necessary for the management and operation of the railway system over respective countries. Because Russia had adopted the wider-gauge of railway track, while most of other countries did the standard-gauge, it is additionally necessary to install the terminal facilities for transshipment. In order to develop a fully-integrated landbridge system, effort should be put into improvement of such hard-ware facilities as track alignment, integrated multi-modal terminals, signal and control etc. But

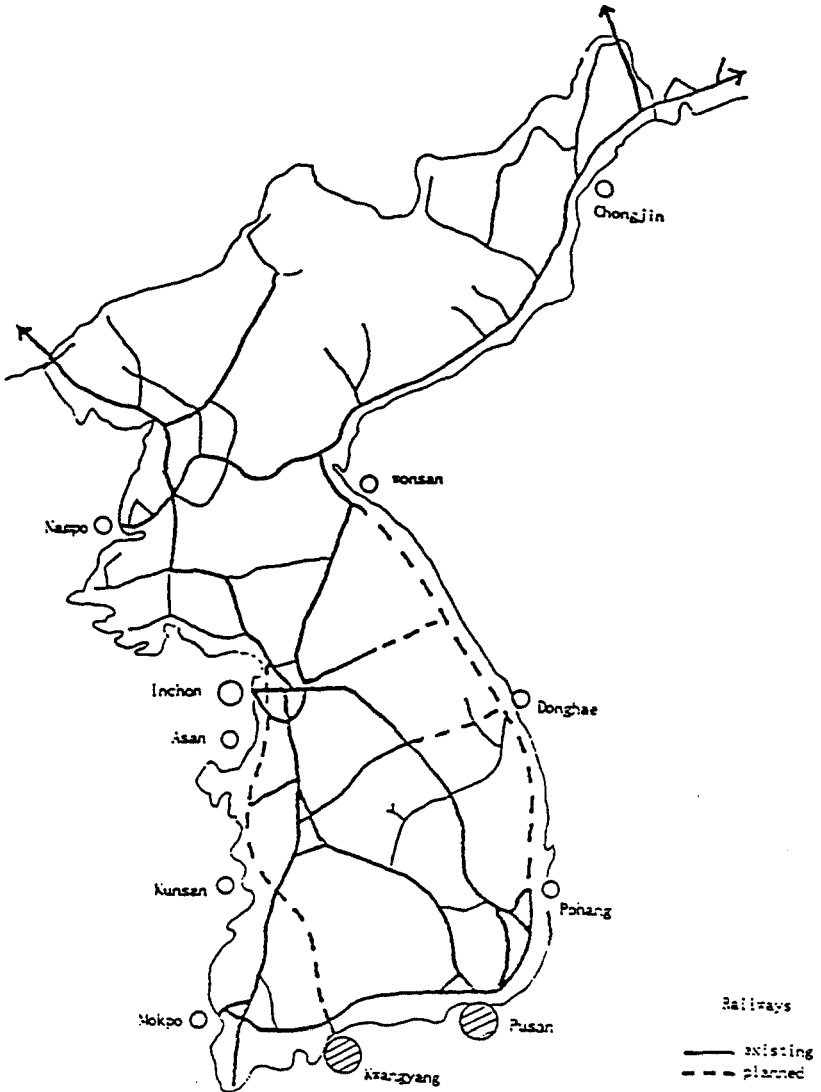


Fig 5. Railroad Network of Korea Peninsula

Source: Korea Transportation Research Society, Study of the Long-term Korea Railway Development Plan, Korea National Railroad, December 1992.

Table 5. Comparison of Distance, Time and Freight between Northeast Asia and Rotterdam

Route	Mode	Pusan	Inchon	Kobe
Distance (km)	TKR	13,023	12,608	12,320
	TCR	10,370	10,246	11,000
	TSR	12,230	12,230	12,820
	Sea	20,024	20,118	20,352
Freight (US\$)	TKR	1,388	1,388	1,859
	TCR	1,464	1,449	1,541
	TSR	1,700	1,779	1,764
	Sea	1,850	1,845	1,629
Time (days)	TKR	24-35	25-35	25-35
	TCR	24-32	24-32	24-32
	TSR	25-35	25-35	25-35
	Sea	26-32	26-32	25-32

Source: Korea Maritime Institute, *Operation of Trans-continental Railroad and Counterstrategy of Scheduled Shipping Liner*, Oct. 30, 1991.

more important is to develop the soft-ware management system such as pricing, principles of cooperation and coordination, business and handling precedures etc.

### 3. Air Ways and Airports

Northeast Asia countries are considered as the region where air transportation is least developed so far. Despite the potential for air market, the ideological and political conflict among neighboring countries in the region seems to be the stumbling block against development of air transportation. There are now 27 international airports in the Region - 14 in Japan, 6 in East China, 3 in S. Korea, 1 in N. Korea, 2 in Far east Russia, 1 in Mongolia - and 95 scheduled international direct air routes among the operating airports in the region.

However, most of direct air routes from the airports in the Region connect with the outside areas and few of direct air routes

connects with themselves. Recently, many lines have started operation between Japan and Chinese cities such as Beijing and Shanghai, but direct air routes crossing North Korea connected with such areas as South Korea, Northeast China, Far east Russia, and Mongolia are far away to be realized. The disconnection of air routes in the region could only be solved by cooperation between the centered countries – Northeast China and North Korea and other surrounding countries.

Based upon the forecasts by the International Air Transport Association(IATA), the annual average air traffic growth rates in the Northeast Asia countries is significantly higher than those of other areas in international scheduled passenger numbers. Establishing the direct air routes flying over the centered zone - North Korea and Northeast China - and connecting the Northeast Asia cities with the direct linear routes would greatly contribute to promoting the air transportation industry in the region.

It is crucial to establish an air transport network between South Korea and North Korea, which will provide China and Japan with new opportunity to shortcut the current air route too. Considering that there is no official diplomatic ties yet between South Korea and North Korea, effort could be made to establish an indirect air transport network first. But as a direct approach, it would rather start from cooperation between airline companies of the two Koreas to set up a mutual cooperative system ranging from interline traffic services to joint operation. Establishing the air routes via commercial agreement between airline companies together with formation of air traffic control organization conducted by the International Civil Aviation Organization (ICAO) will eventually lead to the establishment of fully direct air transport network in the Region. Fig 6 shows the existing conditions of air routes between the neighboring four countries,



which will eventually develop to establishing the direct linear routes between most Northeast Asia cities.

Fig 6-1. Present and ICAG proposed Routes between Beijing and Tokyo

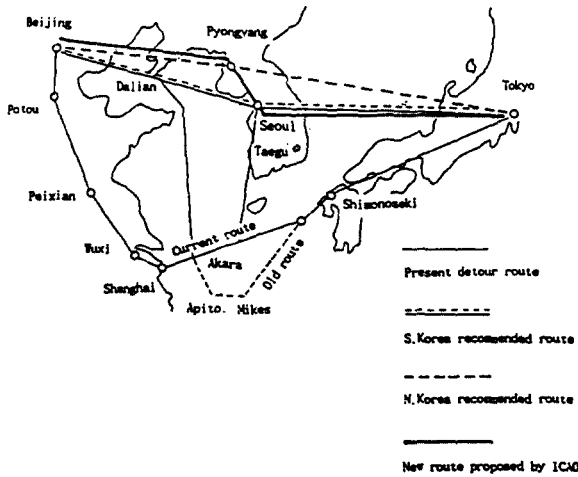


fig 6-2. Establishing the Cross Air Routes between the 4 countries

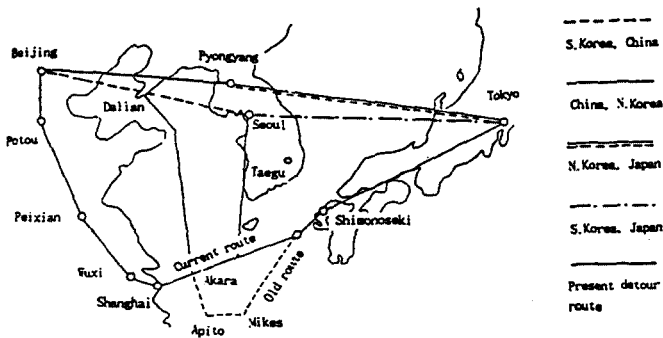


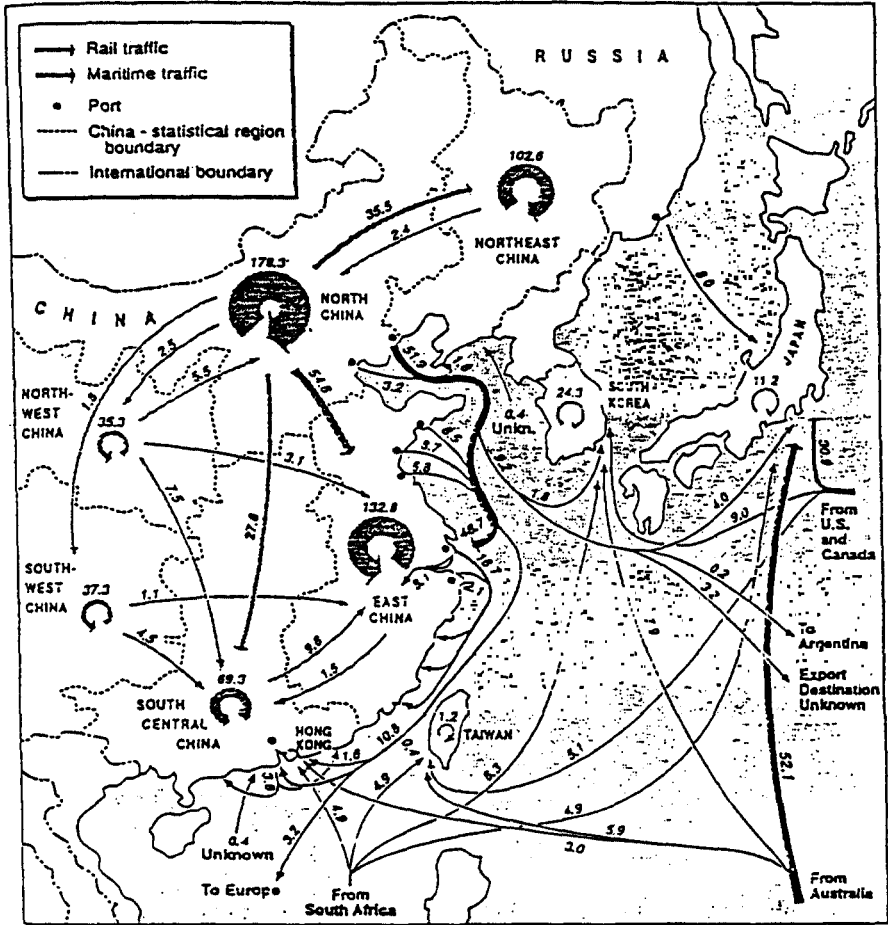
Fig 6. The Present and Proposed Air Routes between the Four Countries

Source: Lee, Tai Won, "A Study on the Alternative Methods of Establishing an Air Transport Network between South Korea and North Korea," Master's Thesis, Dept. of North Korea Studies, Graduates School of Public Policy, Sogang University, Seoul, Dec. 1990

#### 4. Pipelines

As the far East Russia is endowed with rich natural resources such as natural gas, timber and other minerals, cooperation for transportation development is the key factor to bring regional economic development. The regional economy of the Northeast Asia countries is characterized by complementarity to each other with respect to capital, quality labor and natural resources. Under consideration of relatively inhabitable environment such as harsh climate in the East Siberia, it seems better idea to bring the natural resources there to other industrialized areas.

The natural gas reserves in Yakutsk, which would be the world largest natural gas field, would seemingly be the leverage for extracting cooperation among related countries in the cold war mood. Most of industrialized Northeast Asia countries are under serious energy shortage. Fig 7 shows major flows of coal energy in the Northeast Pacific Rim. As the estimated quantity of natural gas deposits in Yakutsk is known to amount to some 3,500 billion m<sup>3</sup>, the construction of pipelines for transporting the natural gas into neighboring regions such as Far East Russian cities, Northeast China, North Korea, South Korea and Japan would be quite easily justified. The continued high rate of economic development and industrialization in the Northeast Asia countries is the most demanding factor for development and supply of clean energy in the region. As the clean air standard becomes more of political agenda for the international cooperation, the economic feasibility of the Yakutsk natural gas pipeline project, which would require approximately more than 20 billion U.S. \$ for construction of about 6,000km in total length would be much



Source: U.S. Energy Information Administration, China State Planning Commission, and International Energy Agency.  
 \* Imports/exports are for 1989; Chinese flows are for 1990. Most flows under 1 million metric tons not shown.

Fig.7 Northeast Pacific Rim Major Coal Flows, 1989-1990  
 (Millions of Metric Tons)

hightened and method should be found to push the project ahead. The pipeline would probably have to link from Yakutsk through those areas of Skovorodino, Blagoveshchensk, Khabarovsk, Vladivostok in the Far East Russia, Pyongyang in the North Korea, Seoul in the South Korea, and then Kitakyushu in Japan. Alternatively the route may include Chinese cities such as Harbin, Changchun, Shenyang and Beijing in between. The success of the mammoth project which would be crucial for driving economic development and environmental enhancement in the Northeast Asia countries rather hinges on political will-power to cooperate for economic purpose, especially from North Korea, than on ability to mobilize capitals for investment into it, and the decision should be agreed upon before too late.

#### IV. Concluding Remarks

As the world moves toward dismantling ideological and military antagonism between East and West in search of economic development, it has soon propagated into the Northeast Asia countries with unprecedented new opportunity for economic progress. But it must be understood that the unprecedented opportunity opted in the Region now cannot be made use of in time for developing the Regional economic development, having cooperation not achieved timely between North and South in the Region.

Transportation is the sector which most needs cooperation, because it should work on the network as a system and not on links and/or nodes. Having entered into the era in which bloc-economies such as EC and NAFTA are shaping, the

emerging need of bloc-economy in the Northeast Asia countries is more than justified. It comes with respect to the complementarity of economic conditions, geographical proximity and close cultural background of member countries. Transportation network is the backbone to establish such a bloc-economy in the Northeast Asia Region in the long term.

Putting aside the hard-cored dream of bloc-economy, however, it should be recognized that the transportation system is the basic structure enabling trades to the benefits of each member country. In order to speedily take advantage of the historic opportunity confronting us, it is imperative to make efforts building the transportation networks covering the Northeast Asia countries with modes such as maritime and port facilities, railroad networks, airways and airports, pipelines and so on.

Building the regional transportation system over the Northeast Asia countries would greatly contribute to the well-beings and prosperity of each member country. Not only would it save a great portion of travel time and cost, but also the development of regional economy would be promoted by exploiting comparative advantage of each area in the Region to the fullest extent. It would undoubtedly favorably affect to shaping friendly political relations too. From the start, however, the regional transportation system could be built upon cooperative economic relations. If we fail to cooperate and build the regional transportation system in time as indicated above, it is evident that enormous economic loss will have to be borne by all of related countries in the Northeast Asia region.

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