

NORTH KOREA'S INFRASTRUCTURE CONDITIONS AND STRATEGIES FOR INVESTMENT

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Transportation networks such as railways, roads, and ports can be a means of building trust between South and North Korea through large scale material and human exchanges.

Supporting North Korea's industrial infrastructure is needed not only to help the recovery of North Korea's economy through expanded growth potential and competitiveness, but also to aid South Korean firms in their North Korean trade and investment ventures. Transportation networks such as railways, roads, and ports can be a means of building trust between South and North Korea through large scale material and human exchanges. They will also be important in the middle to long term in preparing for balanced economic development on the peninsula and in making a reunified Korea a central country in the Northeast Asian economy.

North Korea's SOC conditions

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North Korea has maintained a closed, planned economy based on the principle of self-sufficiency. Because social overhead capital was considered as a supplementary aspect of the economy rather than a factor of production, investment in SOC was extremely lacking. As a result, linkages between different means of transportation was poor, which hindered the free flow of goods across the country, proving to be an obstacle to regular production and the attraction of foreign capital.

Railways are North Korea's main means of transportation, while roads and marine transport play a supplementary role. This arrangement was caused by factors including a mountainous geography and coasts divided into east and west, a foreign policy of isolation, satisfactory railway access to China and Russia, the country's main trading partners, and the lack of capital for investment.

Railways are responsible for transporting 90% of North Korea's freight and 60% of its passengers. Over 95% of the railways are single-line, and railways are operated very inefficiently because of worn-down railroad ties, roadbeds, and locomotives, as well as an energy shortage. As a result, the Pyongui line (Pyongyang to Shinuiju) runs at an average speed of 63 km/hr, the Pyongnam line (Pyongyang to Nampo) runs at around 38 km/hr, and most other lines run at 30 to 40 km/hr. North Korea's main lines can be classified into the Kyungui line which runs along the west coast from Kyesong through Pyongyang to Shinuiju), the Wonra line, running along the east coast, connecting Wonsan, Chongjin, and Rajin, and the Pyongwon line (Pyongyang to Wonsan), which connects the east and west regions. Currently, there are a number of disconnected railways that can link South and North Korea, including the Kyungui, Kyungwon, Kumgang Mountain, and the Northern East Sea lines. If they are connected

and restored, these lines will provide large scale transport at a relatively low cost.

Roads are used mostly for transporting goods within distances of 30km rather than for inter-regional movement, and account for 10% of freight transport. North Korean roads are categorized into seven classes, from 1 to 6 and expressways. Roads classed at 1 or above account for only 4.2% of all roads, while fourth class roads, which are less than 2.5 meters wide, make up 79%. The proportion of paved roads is 40% for first class roads, 6.6% for second class, around 4% on average for all roads. Recently, due to a lack of fuel, the road transportation conditions have worsened even further. The country's expressways are mostly located in the west, centered around Pyongyang.

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With the seaboard divided into east and west, port conditions are even worse than that of roads, and their share of freight transport is around 2%. There are eight trade ports, accounting for 29.59 million tons of the country's 35.01 million ton cargo capacity, based on the east coast. The east coast has trade ports including Rajin, Sonbong, Chongjin, Hongnam, and Wonsan, and 10 fishing ports, while the west coast has Nampo, Songrim, and Haeju, as well as 4 fishing ports. Out of these, Pyongyang's outport of Nampo accounts for 40% of total trade, and Hongnam, which is located in an industrial area, is responsible for 30%. Chongjin is the only port with container facilities, and most loading equipment consists of 5 to 20 ton small cranes. Linkage of ports with roads is poor.

Communication is the weakest infrastructure category, because of North Korea's heavy industry oriented policies. Most communication equipment and systems are imported from and assembled in Japan, and the majority consist of analog devices. 4.9 out of 100 North Koreans own a telephone, which is a lower proportion than that of Chinese regions with similar incomes. The country's communication network centers around Pyongyang and operates on a centrally governed system. Internationally, North Korea can communicate with 170 countries. In the former socialist region, a wireless network connects Pyongyang with Beijing and Moscow, while a wire network connects Shinuiju with Beijing, and Chongjin with Vladivostok. Pyongyang can communicate with Singapore and Hong Kong through short-wave wireless connections as well as indirect connections through Beijing. In 1996, an automation/digitalization policy for telephones was started, and fiberoptic cable networks are being installed in the main cities. In 2000, in its New Year's announcement, North Korea stated that "emphasis on science and technology" is one of the three pillars of a strong country, and it is focusing on the software industry, which requires human capital such as creativity and intelligence rather than physical capital.

The energy sector is North Korea's greatest weakness and was the starting point of the country's economic collapse. It is also the first sector that must be restored for an economic recovery. The basic cause of the energy crisis was the cutoff in oil distribution due to the collapse of the socialist societies, high energy leakage rates (30% to 50%), and low heat efficiency from poor quality coal. North Korea is trying to break out of its energy crisis by creating small and medium sized generators (100 to 1,000kW) and rebuilding old facilities, but these efforts are not sufficient for industrial purposes.

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Table 1. Social Overhead Capital and Projected Demand

	Unit	SOC in South and North Korea				SOC Demand	
		South Korea		North Korea	South to North	Shortage (C)	Total Demand
		1980	1998(A)	1998(B)	A/B		(B+C)/B
Total railway length	km	6,007	6,683	5,214	1.3	3,504.8	1.7
Total subway length		-	661.3	4,132	0.2	-	-
Total road length	km	46,951	86,990	23,407	3.7	27,704.1	2.2
Expressway length		1,225	1,996	682	2.9	-	-
Port loading capacity	million tons	82.3	416.3	35.0	11.9	16.1	1.5
Number of telephone lines (per 100 persons)	thousand lines	2,835	24,445	1,307	18.3	1,927	2.8
	%	7.1	43.3	4.9	8.8	1	1
Total energy distribution	million TOE	43.9	166.7	14.0	11.9	14.4	2.0
Energy per person	TOE	1.15	3.59	0.64	5.6	-	-
Energy generation	trillion kwh	37.2	215.3	17.0	12.7	8.5	1.5

Notes: 1) North Korea's communication sector figures are based on 1996 standards.

2) Total demand indicates the amount needed for North Korea's 1998 production levels.

3) TOE means Ton of Oil Equivalent, and is the energy of 1 ton of oil.

South Korea's SOC support to the North

The most important issue in North Korean SOC ventures is how the money will be raised.

An analysis using per capita GNI and South Korea's economic development model showed that it would take North Korea five years and 1.9 times its current investment to acquire the level of social overhead capital possessed by South Korea in 1980. Therefore, the most important issue in North Korean SOC ventures is how the money will be raised. While the amount varies depending on the estimation method, the object, and the time frame of investment, it is expected that roughly 10 to 20 trillion won will be needed yearly. After reunification, Germany spent about 4% of its GDP yearly from 1991 to 1997, and this proportion is similar to what South Korea is expected to spend: the South's GNI was 478 trillion won in 1999, and it is estimated that about 19 trillion won will be required yearly to finance unification. The sum will be substantially smaller if it is intended not to finance unification, but just to develop North Korea's economy in the short term.

SOC support to North Korea should follow a number of basic directions and principles.

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First, support should be pursued in stages and gradually, with investors creating a list of priority categories and pursuing those that are presently possible. In addition, North Korea's ability to accommodate the project and the South's capacity to raise money should be considered. North Korea is likely to pursue a limited opening to preserve regime stability rather than overall reform or opening, and it will try to revive the economy as quickly as possible. Therefore, a development strategy should

use specific locations as bases, and mainly develop industries that have many linkages with other industries. This strategy would satisfy economic principles by bringing the greatest revenue at the lowest cost, and by creating cases of successful economic cooperation, would lead to increased trust between the South and North, and a more positive North Korean attitude towards economic cooperation. This in turn will lead to stronger public support in South Korea for cooperation, and allow the diversification and expansion of financing sources.

Second, financing should be based on the market principle, with the government and the private sector having distinct roles depending on a project's characteristics. Because it will be difficult to raise money through loans from international financial organizations or from foreign currency bonds in the short term, domestic funds (with 247 billion won currently available in the South-North Cooperation Fund) will have to be the main source of capital. Therefore, to create public goods in North Korea and remove barriers to firms investing in the North, the South Korean government should invest in categories that bring advantages to a wide variety of investors rather than profit-oriented categories. For example, supplying electricity and connecting railways will be urgent tasks. By increasing the operation rate of factories, this support will help restore North Korea's industries and expand growth potential, which will decrease the transportation costs of investing firms. When building SOC in an industrial area, private firms should supply SOC within the area, while public funds should be used for the SOC that helps firms enter the area.

Third, North Korea should actively participate in and bear the burden of the efforts to restore its economy. Because of the North's current economic depression, the country should use its mineral or tourism resources in the place of cash to contribute to SOC investment. In the mid to long term, through loans from international financial organizations, North Korea should directly supply at least a small portion of the investment funds. This will lead North Korea to reform and open more actively, and improve public support and help raise public funds in the South.

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Fourth, the participation of neighboring countries in investment projects should be actively enlisted. By attracting the participation of China in the west coast and Japan in the east coast of North Korea, the South will be able to disperse risk and raise money more easily.

Fifth, as investment in North Korea is inherently a venture with high risk, the government should play the role of venture firm incubator and support the private sector by creating a favorable environment for economic cooperation. The government should create a legal and institutional framework that includes investment guarantee agreements and dispute settlement agreements, provide information related to North Korea, change the financial and tax system to create incentives for firms investing in North Korea, and increase guarantees of public loans from international financial institutions. In addition, the government should create a semi-official bureau (possibly named the Economic Cooperation Committee) responsible for facilitating all aspects of economic cooperation, including mediation

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for companies investing in the North and provision of business, legal, financial, and technological consulting and support. The Economic Cooperation Committee should guarantee the freedom of private actors as far as possible, with the government acting as a intermediary and supporter of the private sector.

Strategies for investing in North Korea

Mutual trust between South Korean firms and the North must be established for them to regard each other as long term partners.

First of all, mutual trust between South Korean firms and the North must be established for them to regard each other as long term partners. Individual firms should have a sense that they are not only investors, but also playing an historical role in creating a Korean economic community. Therefore, firms should avoid taking a short term perspective and explore projects that will profit both the South and North.

Second, firms need to keep rational judgement based on efficiency and profitability, and create detailed investment strategies. Because investment in SOC is different in nature than trade, involving large amounts of capital and a long time frame, realistic judgement based on concrete factors such as profitability and return on investment is essential. In addition, before signing a contract, thorough preparation and viability studies are necessary to prevent disputes from occurring during the project. Labor relations and wages in particular are aspects that should be fully discussed and agreed upon in writing.

Third, while North Korea's wages in themselves are low, the actual labor cost is about 3 to 4 times the nominal figure if costs include factors such as productivity or other attendant costs. Currently, North Korea does not allow different pay to workers in the same field, and it is demanding an average of 600 dollars monthly in wages, which is about 5.5 times as high as the 100 dollars that was demanded in the Kumho region KEDO construction facility.

Fourth, firms should consider joint investment for better risk management and for a higher chance of participating in large scale projects. Transportation networks such as railways and roads can be built in sections, which can allow domestic and foreign firms as well as foreign financial institutions to invest together through a consortium. Small and medium sized firms, which are relatively weak in capital, information and organization, can avoid excessive competition by cooperating with large corporations in North Korean investment.

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Fifth, South Korean firms should actively explore ventures with overseas Korean nationals or western firms. With improvement in South-North relations and expected loosening of the investment rules for North Korea, Korean nationals and foreign investment funds are expected to enter into North Korean ventures. To reduce risk, these firms may examine the possibility of investing with South Korean firms that have experience in North Korean ventures. Such joint ventures should be actively considered by the South Koreans. **VIP**