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# Technological Cooperation in Northeast Asia's Development

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Nowadays, the tendency of an armament race between East and West has shifted to technological and economic competition among the countries in the world. As a result, economic and technological factors have come to play important roles in international relations. Moreover, regionalism has taken a foothold recently while the world economy is globalized. There appear to be five economic blocs in the world: the EEC; North America led by the United States; the Asia/Pacific sought by Japan; the former Soviet Union; and the China bloc. Geographically, Northeast Asia is located where four of these blocs, excepting the EEC, meet. As mutual relationships become closer and more dependent on one another within and between blocs, possibilities for cooperation among the countries of Northeast Asia become important and even unlimited.

Briefly, Northeast Asia holds about 20 percent of the total land area of Asia, about 10 percent of its population (about 290 million), and a gross national product of almost \$3 trillion. The potential for mutually beneficial, large-scale economic cooperation in this region is quite high. The production factors of each country or economy in Northeast Asia are diverse: South Korea's capital and production technology, Japan's advanced technology and huge capital, the former Soviet Union's coal, natural gas, nonferrous metals, wood, and marine resources, China's agricultural products and manpower, and North Korea's manpower and natural resources.

### THE NEED FOR TECHNOLOGICAL COOPERATION

In recent years, the international environment of technology development for securing technical advantage over others has become more competitive and more protective. Industrialized countries place a high priority on science and technological innovation as a means of solving their structural economic problems and maintaining external competitiveness in the world of intensive technology investment. They protect developed technologies whether basic or application-oriented. Recent moves toward the protection of intellectual property are a good example.

On the other hand, the newly industrialized economies (NIES) exert their efforts to reduce the technology gap between NIES and advanced countries and try to create a change away from a vertical cooperation system with advanced countries to a horizontal one. Also, the former Soviet Union and Eastern Europe are pursuing international techno-economic cooperation for economic development as one of the priorities of glasnost and perestroika.

As mentioned above, every country in the world is exerting efforts in technology competition. This is because technology is one of the most important factors affecting competitiveness and economic growth. Therefore, technological cooperation is expected to play a key role in cooperation among countries in Northeast Asia.

As the technology protectionism of industrialized countries tends to spread worldwide, technological cooperation in Northeast Asia can be utilized as an important opportunity of economic development—not only for the former Soviet Union, but for China and North Korea as well—and can be an opportunity for progress in South Korea's science and technology and a chance of market expansion for Japan.

## TECHNOLOGICAL COOPERATION BETWEEN SOUTH KOREA AND OTHER COUNTRIES

With increasing interests in Northeast Asia, there are many discussions of international cooperation in this region. On the basis of these discussions, we will now look at the status and future of technological cooperation in this region.

### **South Korea and China**

China actively promotes a policy of opening for pragmatic reasons. Along with its policy of modernization in agriculture, manufacturing, and science and technology, China has introduced a partial market economy and is attracting direct foreign investment. As a result of the promotion of South Korea's opening policy toward its northern neighbors, Trade Representative Offices have recently been set up in both Seoul and Peking. This official channel will help to stimulate technological cooperation as well as economic cooperation between the two countries.

### *The status of technological cooperation*

Considering the delicate relations between South Korea and China, South Korea is focusing on technological cooperation on a civilian level. In February 1989, agreements on technological cooperation between the Korea Institute of Machinery and Metals (South Korea) and the Institute of Aeronautical Materials (China), and between the Pohang Institute of Technology (South Korea) and the Institute of High Energy Physics (China) were signed. Also in May 1991, a memorandum of understanding for scientific cooperation between the Korea Science and Engineering Foundation (KOSEF) and the China Academy of

Science and China Association for International Science and Technology Cooperation was signed. In the memorandum, they agreed on a program of exchanges of scientists and on the promotion of joint research in fields of mutual interest. This kind of technological cooperation between the two countries on a private level will be continuously expanded. And if a more mutually beneficial relationship between the two countries is established, whether of a diplomatic nature or not, technological cooperation will be accelerated.

### *Further directions*

In technological cooperation between two countries, the establishment of a closer relationship through the exchange of scientists and engineers is important. Though diplomatic relations have not yet been established, the historical, geographical, and cultural relationship will facilitate technological cooperation between the two countries. Therefore, technological cooperation in these matters—such as agricultural technology, growing out of our long-standing cultural relationship, or weather and environmental research growing out of our geographical relationship—seems to be desirable. These types of cooperation may not be urgent, but such cooperation is necessary to help in the promotion of mutual understanding.

Moreover, complementary technological cooperation is needed. It is undesirable on either side to be shortsighted and focus on short-term interests. China's interest in technological cooperation with South Korea has perhaps much to do with benefiting from South Korea's experience in industrial development. China is also interested in South Korea's production technology in order to improve its own. On the other hand, Korea needs high technology. Complementary technological cooperation between the two countries, therefore, seems to be possible. While South Korea can provide development experience and production technology to China, China may lend support of high technology such as aerospace and other basic technology to Korea.

### **South Korea and the former Soviet Union**

Recently, Soviet policy has shown a shift to greater concern with citizen's welfare and economic growth away from its goal-oriented, socialist planned economy. The former Soviet Union is trying to apply its resources and high technology to production technologies and to promote its technological capacity through joint research with the United States and Western Europe.

### *The status of technological cooperation*

South Korea has tried to increase cooperation with the former Soviet Union in various sectors including economics, science, and technology. Before establishing diplomatic relations between the two countries, a protocol on scientific and technological cooperation was signed between KOSEF and the USSR Academy of Science in February 1990. In this protocol they agreed on joint research, joint seminars, and exchanges of scientists.

After the establishment of official diplomatic relations between South Korea and the former Soviet Union in December 1990, technological cooperation between the two countries has expanded rapidly. On the basis of this relation, an agreement on scientific and technological cooperation and a protocol on atomic energy cooperation were signed. On 1 February 1991, the Korea-Soviet Scientific and Technological Cooperation Center was established for the collection and distribution of scientific information and for the efficient promotion of cooperation between the two countries. In July 1991, Korea and the former Soviet Union signed an agreement on industrial standardization, raising their economic cooperation to an even higher level. The agreement calls for the mutual recognition of test results and quality certificates for traded goods, thus reducing redundant cross-inspection procedures to facilitate bilateral trade. By introducing the former Soviet Union's industrial standards to South Korea, the technology transfer barrier between the two countries is expected to be diminished.

### *Further directions*

Recently, technological cooperation between South Korea and the former Soviet Union has increased rapidly. The former Soviet Union is strong in the basic science and high technologies and weak in production technologies, while South Korea is strong in production technologies and weak in the basic science and high technologies. Therefore, technological cooperation between the two countries can provide opportunities for the former Soviet Union to improve its production technologies and for South Korea to import necessary technologies.

Desirable ways of technological cooperation for the future are believed to be as follows. First, personnel exchanges have to be expanded. Since personnel exchanges are the precondition for efficient technological cooperation, exchanges of scientists and technical training in production units are necessary. Second, it is desirable to carry out joint ventures in the basic sciences that have various applications and marketability for both South Korea and the former Soviet Union. Third, joint research on high technologies expected to play important roles in the future should be activated and expanded.

### **South and North Korea**

As tensions between East and West decrease, the necessity of technological cooperation between South and North Korea as a means of recovering homogeneity and laying a foundation for unification is becoming more important. South and North Korea's expected memberships in the United Nations in September 1991 will provide hope for technological cooperation between the two nations.

At an early stage, technological cooperation between South and North Korea must focus on the creation of a cooperating environment through mutual understanding and exchange of scientists and scientific information. Technological cooperation can then be expanded to various mutually beneficial fields.

In the technological cooperation between South and North Korea, the following sectors can be initially considered either bilaterally or through international organizations such as UNDP: the agricultural sector (the technologies of farming machines, agricultural pesticides, chemical fertilizer, and food processing); the biology sector (joint surveys on ecology of the DMZ and joint research on endemic diseases); the resource sector (joint exploration of mineral resources); the marine sector (marine food processing technology and joint research on the South Pole); the meteorology sector (exchange of atmospheric data and meteorological observation technology). In addition to these sectors, complementary and reciprocal technological cooperation through a combination of South Korea's production technologies and North Korea's technologies and resources seems to be possible.

### **Development of the Tumen River Area**

Recently China, North Korea, and the former Soviet Union have expressed strong interests in developing the Tumen River area; Korea and Japan have also shown significant interest in this development. The reason for this interest is due to the fact that the Tumen River area, the so-called Golden Delta, borders on China, North Korea, and the former Soviet Union. Thus the development of this area, though somewhat gradual or slow, may have greater potential with the easy transport of goods, using the river.

Geographically the Tumen River area is located in the center of Northeast Asia and has potential to surface as the center of development in the region. Currently Ungki and Saebiyul of North Korea, Hunchun of China, and Pos'yot of the former Soviet Union are said to be candidates for planned development in the Tumen River area. Since these areas border on each other, the development of one area is expected to affect its neighbors in one way or another. Thus close cooperation from the early planning stage is needed for the development of this area. Hence, the balanced development of this area demands international coordination and cooperation—not only for setting up the development program but also for its implementation. Since UNDP has been involved with the development of this region, a joint development project for the Tumen River area, through UNDP, seems to be a viable alternative among others.

Related to the development of the Tumen River area, it seems possible that South Korea might participate in various cooperative development areas. South Korea can contribute to infrastructural construction projects in harbors, telecommunications, transportation, and water supply and sewage with its ample economic development experience. At the same time, it can play a significant role in providing various production technologies for agricultural and industrial development in the Tumen River area. If South Korea's industry is to participate in the Tumen development more actively, the diplomatic relationship between South Korea and other countries in the region should be further developed. Since not only China, North Korea, and the former Soviet Union but

also South Korea and Japan are strongly interested in the Golden Delta's development, the establishment of mutually beneficial and complementary cooperative relationships among the Northeast Asian countries ought to be prioritized.

## DIRECTIONS OF TECHNOLOGICAL COOPERATION

As the core of the world economy shifts from the Atlantic to the Pacific, Northeast Asia is drawing more and more attention from the world, for Northeast Asia is one of the most important areas with possibilities for rapid economic growth in the Asia-Pacific region. Though certain political and military restrictions still exist and there are large national gaps in the development stages of the region, the geographical vicinity and cultural homogeneity will be of significant help in accelerating technological cooperation in Northeast Asia.

The importance of technological cooperation in this region may be summarized as follows. First, technological cooperation will help to establish durable structures of peaceful coexistence in Northeast Asia. The structure of peace can be set up not only by direct discussions on the issue, but also through the indirect means of socioeconomic cooperation and increased exchange. Second, technological cooperation in Northeast Asia will help countries achieve sustained growth and development. Since science and technology are considered key means of achieving national goals, technological cooperation is expected to accelerate the pace of technological change and the diffusion of socioeconomic development.

Therefore, technological cooperation is a precondition for socioeconomic development in Northeast Asia. Hence, the desirable means of technological cooperation are believed to be as follows. First, personnel exchanges have to be expanded. Since personnel exchange is the precondition for efficient technological cooperation, exchanges of scientists and technical training in production units are necessary. Second, joint ventures in various sectors must be carried out. Since there are gaps in development stages and in resources, joint venture is one of the most efficient ways of combining these various factors. Third, joint research in high technologies that are expected to play an important role in the future should be activated, as joint research is one of the most helpful and efficient ways of overcoming diverse barriers. Fourth, each country must have a positive attitude toward technological cooperation. Indeed a positive attitude in technological cooperation, including technology transfer, is a requisite for successful cooperation in Northeast Asia despite worldwide protectionism.

Considering that economic bloc formation is expected to be one of the most important characteristics of the coming twenty-first century, technological cooperation in Northeast Asia is necessary to overcome the technology protectionism of economic blocs in the world. From this viewpoint, the Hunchun

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Development Program and the Saebyoul Triangle Development Program will be the litmus tests of cooperation in Northeast Asia. If these development programs are carried out successfully, cooperation in Northeast Asia can be expanded and deepened. Northeast Asia could then become one of the core regions in the world.