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Economy Development in Northeast Asia and Scheme of International Exchange and Cooperation of S&T

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Abstract: Science and technology is the power of impelling the economic and social development. Promoting the international sci-tech communication and cooperation is one of the important ways of pulling the economic development of Northeast Asia area. Sci-tech communication and cooperation between the government and the folk are two wings of international sci-tech communication and cooperation. Both are supplemented mutually and indispensable. In order to promote the economic and social development of Northeast Asia area and further strength, some suggestions are put forward, i.e.fully exerting university the main roles in the sci-tech communication and cooperation of Northeast Asia area and fully exerting Liaoning province the important roles in the sci-tech communication and cooperation of Northeast Asia area.

1. Introduction

A modern society has changed greatly over the past years. Meantime, peace and social development have been the issues that all countries have focused on. To every nation, a certain level of scientific and technological development is essential for decent economic development. Actually, science and technology have been an engine for social and economic development, short cut to a bright future, and the core factors to be competitive in the world.

There have been 4 types of industry restructuring in a global society; labor-intensive, asset-intensive, technology-intensive, technology & knowledge-intensive. For a traditional industrial reform, three stages have been offered such as technology innovation, science & technology innovation, and knowledge innovation. Then, each country has prepared proper technology development strategy. The economy and technology in Northeast Asia has a great influence on world peace. An importance of science on economic and social development has been described in <Table 1> below. An international cooperation of science and technology is important for each nation's economic and social development. Therefore, Northeast Asian countries have focused on the local cooperation of science and technology.

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Tab. 1

	Population	GDP per Capita (USD)	Ratio of Science & Technology on GDP	Science & Technology Strategy
China	1.3 bil.	1,000	1.3% (2003)	Promotion of education
Japan	130 mil.	33,000	4.4% (2004)	Nation of science & technology
South Korea	48 mil.	10,000	2.64% (2003)	The 2nd technology innovation
North Korea	23 mil.	500		Economic reform, initial stage of market opening
Mongolia	2.3 mil.	450		
Russia	140 mil.	3,000	1% (2004)	
USA	290 mil.	37,000	16% (2004)	Technology innovation, reborn into a high-tech nation, emphasizes on innovation, keeps the top position
Europe			1.5% (2004)	Science & technology are the core factors for a bright future of Europe

2. International Exchange and Cooperation of Science and Technology

An economic globalization and local economic cooperation have caused new development. The world's top three economic regions are the North America, Europe, and Northeast Asia. The Northeast Asia includes China, Japan, South Korea, North Korea, Mongolia, and far east of Russia. Above all, China has continued its rapid economic growth while Japan is still one of the world's big economic powers. South Korea is one of the 'Four Dragons' of East Asia. North Korea is in an early stage of social structural reform. Mongolia is a agriculture & stock-farming country. Due to the diversity, Northeast Asian countries have drawn a great interest from the world with a great potential for economic development.

In order to promote economic development in Northeast Asia, China proposed to form a China-Japan-South Korea Free Trade Zone and Japan and South Korea expressed positive opinions. In Oct. 2002, the representatives of the three countries had a meeting and reached an agreement for 'Declaration of China-Japan-South Korea Joint Cooperation.' It was declared in Oct. 2003, which was the first step toward the establishment of three nations' free trade zone.

1) Science & Technology Cooperation between China and Japan

The science & technology cooperation

between China and Japan includes China-Japan Science & Technology Cooperation Agreement, China-Japan Environment Protection Cooperation Agreement, ICA Technology Cooperation, Science & Technology Sector Cooperation, and China-Japan Environment Nuclear Energy Cooperation Agreement. An interchange has been expanded in public sector between both countries and the cooperation in basic science, earth environment, and soft science has been increased. Besides, a cooperation has been kept in agriculture, construction, IT industry, transportation, railroad, and science & technology. An exchange of science & technology engineers has been promoted between two nations.

2) Science & Technology Cooperation between China and South Korea

On Aug. 24, 1992, an interchange between China and South Korea was initiated. On Sep. 30, both countries reached, 'China-South Korea Science & Technology Agreement.' China and South Korea were aware of the importance of science & technology exchange between both nations. In terms of China-South Korea Science & Technology Committee, the 7th meeting and the 3rd directors' meeting have been held. In July 2003, president Ro Mu-Hyun visited China and announced joint cooperation with President Hu Jintao. Besides, they agreed to promote joint research and cooperation in new-generation CDMA, next-generation IT technology, bio-process technology, and new material. On Sep. 13, the ministers of Science and Technology from both countries reviewed their top science & technology sectors. An ongoing science & technology cooperation between South Korea and China is as follows:

(1) Joint Research Item - weather forecast, bio technology, new material technology, environment technology, applied and basic science

(2) Mutual dispatch of science & technology research - Agreed on mutual science and technology cooperation

(3) Joint R&D-oriented - Focused on atmospheric science, marine science, new material, bio science - optical technology

(4) Exchange of young scientists - executed Young Scientist Exchange Program 1994 (post-doctor exchange)

(5) Cooperation by KOICA - exchange of professionals and expertise, nurture of skilled engineers, and R&D

3. Cooperation of S & T Exchange in Private Sector

A cooperation of science & technology exchange in private and public sectors is essential together with a cooperation of international science & technology exchange. Under certain historical conditions, the cooperation of science & technology exchange in private sector handles issues that have not even covered by the government. China-Japan exchange, China-US interchange, and China-South Korea exchange are the examples. For the past decades, an international cooperation was initiated by private sector and then expanded greatly. Actually, the international cooperation has gradually expanded and helped to form a friendly relationship between countries. In Northeast Asia, the exchange of science and technology in private sector was especially active.

The cooperation of science & technology exchange in private sector has the following characteristics; expansion of field, many participants, diverse types, strong influence, rapid effect, bridge role between private organizations / colleges / science & technology institutes / companies / schools, and diverse forms in international academic seminar / exchange for human resource development / cooperation of science & technology research / science popularization activities.

4. Strengthening of Cooperation of International Science & Technology Exchange in Private Sector

1) Role of Collage in Science & Technology Exchange and Cooperation in Northeast Asia

With an emergence of an age of knowledge-based economy, colleges have been transformed into an organization which focus on nurture of skilled labor, scientific research, and achievement of scientific technology.

Actually, a college has been playing an important role in development of science & technology and economic & social development. A cooperation of academic science & technology exchange has been active.

For example, 'China-South Korea College President's Meeting' dated May 12, 2004 includes academic exchange between POSTECH and Tohoku Univ., sistership exchange between Sungduk College and Shenyang University of Education, and friendship between Dongshin Univ. and college of traditional Chinese medicine with attendance of 80 officials including 15

college presidents from Korea and 23 college presidents in Shenyang. In an 'International College President's Meeting' dated May 28, 2005 attended 150 officials including 50 college presidents from 13 countries and presidents from 70 colleges across China. Besides, Korean, Japanese, Russian, the US, and UK, and French ambassador to China have attended the meeting. The meeting has become a stage for international exchange and cooperation and promoted internationalization of higher education, active participation of international competition & cooperation, and development of local economy. In 'the 3rd Magnetic-Industry Academic Seminar & the 1st Physics-IT International Academic Seminar' convened in Tohoku Univ. from Oct. 4 through 8, 2004 attended 130 professionals from 4 countries; China, South Korea, North Korea, and Japan. Si-Jung Kim (a chairman of the Korean Federation of Science and Technology Societies) and Yeong-Sin Park (secretary general of the North Korean Federation of Science and Technology Association) have also attended the meeting.

The professionals from POSTECH, Myongji Univ., Kyungpook National Univ., Kyungnam Univ., Suncheon Cheongam College, Mokwon Univ., Aeji Univ. (Japan), Kim Il-Sung Univ., Kim Chaek University of Technology, DPRK Academy of. Sciences, the Korean Institute of Electrical and Electronic Material Engineers, Institute of Korea Marine Information & Communication, and Speleological Society of Korea shared their knowledge in this seminar.

The professionals from Northeast Asia unanimously agreed to have an academic seminar on a regular basis. They agreed that the meeting would be held in North Korea, South Korea, Japan, and China in turn. Tohoku Univ. hosted an international academic seminar 2-4 times a year; 6 times in 2003, 12 times in 2004, 9 times until May 2005.

2) Liaoning Plays a Key Role in Cooperation of Science & Technology Exchange in Northeast Asia

Recently, the Liaoning's cooperation of science & technology exchange has been very active with Japan, South Korea, and North Korea. Shenyang Korea Week Festival is as follows:

2002	Shenyang Korea Week Festival was initiated 124 deals reached an agreement, USD 1.12 bil. in investment attraction
2003	5,200 Koreans visited during Shenyang

Korea Week Festival 189 deals reached an agreement, USD 1.819 bil. in investment attraction

2004 11,000 Koreans visited during Shenyang Korea Week Festival 234 deals reached an agreement, USD 2.389 bil. in investment attraction

A total of 15,000 celebrities including 42 congressmen and 27 mayors (ex: Jeong-Ho Lee (a vice president of the Presidential Committee on Northeast Asian Cooperation Initiative), Korean government delegates, Park Hui-Tae (a vice chairman of the assembly's legislation and judiciary committee)) have visited Shenyang and 2,417 deals (including 1,712 deals in heavy industry) reached an agreement among 45 Chinese cities with USD 2.906 bil. investment attraction.

3) Liaoning as a hub of Northeast Asian economies –

Empowered by geographical advantage and rich resources, Liaoning has been developed into a hub of Northeast Asian logistics, finance, and manufacturing and IT industries. Therefore, Northeast Asian countries need to develop Liaoning as a stage for cooperation of science and technology exchange and promote peace and local economy in Northeast Asia.

5. Conclusion

There is no national boundary in science and technology. They are an engine for economic and social development. Actually, an exchange of science and technology is essential for national and social development and cooperation between countries.

Therefore, government and private organizations should open a gate to promote interchange of science and technology and achieve world peace and prosperity. In turn, let's continue peace and progress in Northeast Asia.

"Wish balanced development and eternal peace in Northeast Asia by promoting international science & technology exchange among public and private organizations"