

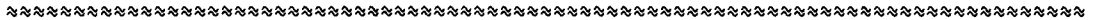


社會經濟開發에 對한 過去와 現在의 直面課題

Facing Past and Present Challenges to Social & Economic Development

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亞太科學技術者 指導 會議에 參席하여 發表한 論文이다
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Abstract

Koreans have emphasized education as the primary means to reconstruct our country after two catastrophic events—the Japanese occupation and the Korean War(1950-1953). A strong belief in education coupled with sheer determination spurred the period of industrial and economic development that started in the early 1970's. The "can-do" attitude of the general public was matched and aided by small S & T communities. Scientists and engineers provided the necessary expertise to manufacture goods and process the many raw materials imported from overseas.

After nearly three decades of reconstructing our completely devastated country, Korea has become a modern, cosmopolitan, fast-paced and dynamic country. In order to further increase our manufac-

turing capabilities and double the per-capita income by the beginning of the 21st century, we must improve productivity and encourage creativity in all sectors of our country. The S & T community's efforts in research and development, education, and international cooperation will be invaluable in determining our direction and reaching these goals.

The general public is eager to peacefully unite our motherland, divided so unfortunately by foreign powers since 1945. Toward that end, members of the S & T community are willing to cooperate with our north Korean counterparts in all areas of S & T with the exception of defense related endeavors. Establishing scientific ties with north Korea will result in mutual economic benefit and greater regional stability in East Asia. In particular, scientists and manufacturers in each province are eager to

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initiate cordial and professional relationships with north Korea in the hopes of securing these benefits.

The Korean Federation of Science and Technology Societies(KOFST) has played an important role both in developing S & T policies, and in fostering the growth of S & T societies. A non-governmental umbrella organization composed of over 251 professional societies, KOFST facilitates the transfer of research outcomes and technology from research institutions to the various industries. KOFST also seeks to increase cooperation between the countries of the Pacific Rim. As evidence of that, we have pursued joint research and industrial ventures with China. Established projects include those on environmental conditions in the Yellow Sea, and the improvement of aircraft manufacturing, telecommunication equipment, and agricultural products. Increased cooperation between the Pacific Rim countries, particularly in S & T, would foster social and economic development for the region as a whole.

Retrospective : The Roots of Our Development Strategy

Korea is often called "the land of morning calm", an apt description for the small peninsula where several dynasties flourished for over 5,000 years. Traditionally a peace-loving and gentle people, we have maintained harmonious relationships with our neighbors, particularly China. Japanese and other foreign powers

have been invading our land since 1894 ; Japan being particularly aggressive. In 1910 Japan took over Korea completely. By the end of the Japanese occupation, the people had lost almost everything, including their spirit. This was compounded by the effects of the 1950-1953 war a consequence of ideological influences from overseas. These two catastrophic events conspired to destroy the people and culture of the Korean peninsula.

One positive outcome of this depressing period was the recognition that establishing a good public education system was a prerequisite to reconstruct our society. This desire for improvement and the "can-do" attitude of the general public undergirded a drive to produce consumer goods using raw materials imported from industrialized countries. At that time the cost of imported materials was so high that the profit margin was minimal ; yet the experience proved valuable in different ways. These attempts at manufacturing allowed us to put education to the test. We garnered technological experience that we would eventually employ in the gradual expansion of the economy. Not surprisingly, we now have an illiteracy rate of less than 0.1%, and many with renewed spirits and enthusiasm for the future.

The Korean Federation of Science and Technology Societies

To support the educational needs of the general public and the technological

demands of industry, there had to be greater numbers of gainfully employed scientists and engineers. It became necessary to establish an umbrella organization to foster the growth of the many small science and technology(S & T) societies for the various disciplines. In 1966 the Korean Federation of Science and Technology Societies(KOFST) was founded to support and encourage scientific and economic development. There is no doubt that these learned societies have contributed significantly to the recent revitalization and successful economic development projects.

Since the 1970's, each successive Korean government has recognized the importance of higher education, especially in S & T, as well as research institutes, to support industry needs. The government has encouraged the establishment of new universities and given incentives to research institutes, like the Korea Institute of S & T, to boost technological growth.

We now have over 162 universities, 140 junior technical colleges, and 30 government supported institutes, largely funded by the Ministry of S & T. These government research institutes are the main driving force behind the present industrial and economic expansion, accounting for a full 20% of the growth. We fully expect that this investment will improve the quality of education, especially at the university level, by the beginning of the 21st century.

As stated in the abstract, KOFST is a non-governmental organization comprised of 251 scientific and technological societies, with about 257,000 professional members worldwide(14,000 overseas). Approximately 5 million of those individuals work in S & T related occupations. The administrative annual budget of KOFST is approximately \$8.5 million. The research and development (R & D) budgets of all the S & T communities in Korea total around \$7.6 billion, repre-

KOSFT's Objectives

- ◇ To Develop and Recommend S & T Policies
- ◇ To Foster the Growth of S & T Societies and Associations
- ◇ To Organize Conferences and Workshops
- ◇ To Encourage Exchange of Information and Foster International Cooperation
- ◇ To Recruit and Manage S & T Personnel
- ◇ To Promote Cooperation among Universities, Institutes, & Industry
- ◇ To Promote Education for S & T
- ◇ To Initiate S & T Exchanges with north Korea
- ◇ To Publish Research and Reference Materials
- ◇ To Promote the Welfare of Scientists and Engineers

senting 2.3% of the GNP.

KOFST's managing committee sets priorities for science policy while laying the ground work for new S & T laws. As you can see from KOFST's objectives listed in figure one, fostering the globalization of the constituent societies and enhancing the welfare of its members are essential parts of the organization's mandate.

Research and Development

Seventy million people live on a peninsula which is 220,000km² with few natural resources. Thus, Korea is a crowded country with many industrial and urban areas. Life expectancy is, on average, 76 years. Koreans are very concerned about their environment, particularly the anthropogenic air and water pollution that has increased overall in recent years. East Asia is now the third largest industrial region in the world. The region surrounding the Yellow Sea alone generates several billion tons of atmospheric gases and pollutants. As a consequence, the air and marine life around and in the Yellow Sea is nearly half dead.

Clearly both China and Korea are responsible for this degradation, so both must work to improve the air and water quality in and around the Yellow Sea. We must cooperate to reduce the pollution while still seeking technological advancement. We must share our available technology and resources to improve

the condition for our future generations. We agree with the UN's consensus that we must pursue sustainable development to protect the Yellow Sea.

In 1995, Korea exported goods worth just \$100 billion. Exports to China alone totaled \$9.1 billion, with an annual growth rate of about 47.4%. Both China and Korea expect to increase their trade volume two to three times before the 21st century. Some manufacturers want to establish joint ventures with their Chinese counterparts which should invite similar S & T partnerships. More R & D is needed to reduce costs and improve the quality of these collaborative efforts. We believe that technological innovation is the key for the success of all future joint industrial activities.

In 1995, the Korean per capita income was \$10,000 per annum. Within the next decade, Korea hopes to double this figure, relying in part on the country's S & T societies' innovations. With ever increasing labor costs and manufacturing ventures, these innovative technological improvements will be crucial to industry. We will call on greater creativity in the sciences and productivity in the R & D community in order to support manufacturing. Automatic production of consumer goods using robotics, a possibility in the coming years, represents just one example of this kind of collaboration. In this way the transfer of research results and sophisticated technology developed at universities and research institutes will impact the production process.

Current Manufacturing Trends

In the last 30 years, Korean S & T has changed tremendously. In order to understand our current priorities, it is critical to be aware of industrial trends in various fields, automotive, electronic, agriculture, and telecommunications, and the extent to which KOFST sees the potential impact of R & D and the academic community on these trends.

Korea is now the fifth largest automobile producer in the world. Our electronic industries have more than 20% of the world semiconductor market. While Korean heavy industry production has already increased, the quality of the output will continue to improve with the support of research communities.

Agricultural S & T has greatly improved, in fact since the 1950's Korea has doubled her agricultural production. However, we still import 50% of our basic food. To ensure future supplies, we are very interested in setting up joint agricultural ventures with other Pacific Rim countries.

Public services in telecommunication have improved significantly; every Korean home now has at least one telephone. The Internet is increasingly popular. Many primary schools are already on-line. Within a decade, 50% of all Korean homes are projected to have personal computers. KOFST has given high priority to the development of information and communication techno-

logy. Clearly, information and communication technology has definite potential for joint R & D with other Pacific Rim countries.

To achieve our goals for economic development, we need to increase our creativity and productivity while simultaneously seeking more international links for our S & T societies. S & T societies must play an active role and contribute meaningfully to small and medium-sized industries. Each of the major Korean scientific professional societies including the Korean Professional Engineers Association, the Korean Chemical Society, and the Korean Physical Society, are all actively participating in the process of globalization. This process may involve projects such as more actively supporting our scientists who are eager to publish their research results in international journals.

Unfortunately, because our land is still divided as a result of the Japanese occupation and the ideology of foreign powers, we spend too much of our national and personal budgets on defense and diplomacy. We waste energy and money on matters borne of ideological conflict. This waste is an obstacle that hinders our society's economic development. If 50% of the current military spending were used for scientific and economic development, we would improve our national welfare by about 20%, thus contributing to greater regional stability in East Asia. The peaceful unification of the Korean peninsula will help in the