
The Prospects of Korean Science and Technology Policy

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The role and prospects of science and technology in Korea

Up to the present, science and technology has supported our economic and industrial development. However, in the future, science and technology will lead the development in politics, economics, society and culture.

Let's review the technology development from a historical point of view. The 1960's can be said to be the period of forming the external basis in science and technology. Under the background of building up the social overhead capital and supporting labor-intensive light industry and technology-intensive industry, which are the biggest tasks, technology development was mostly dependent upon imitation and the introduction of technology embodied to the capital goods.

As a result, our main policy concentrated

on technology investment of 1.3% of GNP, and manpower development based on skilled labor workers.

On the other hand, we can regard the 1970's as the period of expansion of the technology foundation.

On the basis of basic industry and the infrastructure, the export-oriented industrialization of consumer goods and the technology-intensive heavy-chemical industry became the principal target of economic development.

Corresponding to this, great emphasis was placed on the role of technology in order to introduce advanced technology, and to imitate or improve it.

Therefore, we pursued the policy of manpower development based on skilled workers and engineers, with the investment of 0.4 - 0.7% of GNP.

The 1980's have witnessed a quantitative

growth period of technology, with the main target being the stable growth of the economy and the strengthening of international competitiveness. The role of policy was the introduction and application of technology in the growth stage, as well as creative R&D activities. Therefore, we invested 0.8% - 2% of GNP per annum and established a cultivation system for high-caliber manpower in science and technology. From the 1990's, we should pursue the qualitative transition period for advanced technology.

- As one of the most important countries in the world, we should provide a clear overall picture of Korean industry and cope with international politics and economies which have become diverse and divided into blocks. As a leader in the Asia and Pacific Era, we must learn to cope with international situation.

- By participating actively in the new industrial revolution and expansion of resources for creating national development, we should pursue the information-oriented society and rationalization of industrial structure. Additionally, our duties include exploiting new frontiers and overcoming the limitations of energy, food and resources.

- Meanwhile, we should push forward with balanced development between the economic and social sectors as well as the overall improvement of welfare. Achieving the solutions to medical and environmental problems, creating a comfortable living atmosphere, progress in localization and urbanization, preparation for the high education age and a society of longevity, independent national defence and unification will be our goals in national development. Therefore, technology development will play the leading role in economics, industry, society, diplomacy, national defense, edu-

cation, culture, overcoming international competition and challenges, and leading the rapid revolution of the 21st century. Everyone in the technological arena recognizes that for this, strategy for science and technology development is absolutely necessary.

The direction for the promotion of science and technology

Development goal

After gathering the opinions of experts, the Government established its plan for science and technology development in the 2000's.

The Government is carrying out this plan through its Long-Term Development Plan and its Five-Year Socio-Economic Development Plans.

As has already been reported, our basic goal of technology development is to become one of top 10 technologically advanced countries by the year 2000, along with achieving an advanced level in selected areas in which we possess a comparative advantage, for example, semi-conductors, fine chemicals, and By realizing this goal, the promotion of social welfare as well as industrial and software economic development will be possible.

However, as our development capacity and research development resources are limited, it is not possible for us to reach the advanced level in all science and technology areas simultaneously. Therefore, considering our ability and circumstances, we should select the promising strategic areas and pursue our advantages in specialization by utilizing these advantages and developing them intensively.

To accomplish this objective, we selected the following areas as the most critical for development :

- Information processing industry technology, to stimulate the information society (computers, semi-conductors, software and communications);

- Material-related technology which can create new industries (fine chemicals, bio-technology and new materials);

- Basic Industrial technology, which is essential in maintaining competitiveness in consideration of value-added (design engineering, main components and factory automation);

- Energy-related technology to secure energy resources (nuclear and other);

- Public welfare technology for the promotion of social welfare, the environment and health;

- Big science technology involving future exploration (ocean and aerospace technology); and

- Basic research areas, to expand technology resources and technology innovation.

In accordance with a particular order, we will select the major important projects for technology development and will pursue this strategy in cooperation between the Government and private sector.

Information Industry Technology

To support the high degree of the information society, which is the core of the future advanced society, we will pursue the efficient improvement in economic activities and comfortable home life living environment.

By developing high performance workstations connecting personal computers with the communications function, developing, developing the intelligent computer, and developing computers utilizing a natural language or voice, everybody will be able to use computers easily.

We will also promote the development of software which can be used in the medical,

education, management and other areas.

As for the semi-conductor area, which in Korea is not far below that of advanced countries, we will produce semi-conductors, for example 256 Mega DRAM and 1 Giga ROM, with a goal to achieve a 20% share in the international semi-conductor market.

Additionally, based on key communication networks, which we are now advancing into, various information services can be provided to all areas by installing the integrated information communication network.

With this advancement of the information processing industry, we will maximize convenience and efficiency in society by realizing our goal of "one terminal for each household".

Material Related Technology

Material related technology, which supplies various resources and materials in industrial production, is a brain-intensive and resource conserving industry. Also, as this is an adequate technology area for us, we will maintain international competitiveness by concentrating our full efforts in technology development.

To cope with liberalization, including the enforcement of the product patent system, we will enhance the foundation of related technology. For the fine chemical area, we will intensively develop production technology of raw materials and intermediate materials, which are currently weak as for us. In the 2000's, we can develop over 10 new materials in the areas of agriculture, medicine, dyestuffs, and others, and develop the high-tech items which are promising for export.

In the year 2001, our exports will reach US \$ 18 billion, which is 3% of the world the chemical market.

Also, we will transform the structure of the

chemical industry to that of the high value fine chemical industry.

As for bio - technology, which can be used intensively in food development, environmental preservation and development of new medicine and energy, we will pursue goal oriented development for manpower and investment expenditures. In the 2000's, our bio - technology level will reach that of advanced countries and be utilized in related industry areas.

In the new materials area, new metals, fine ceramics, engineering plastic, and high - tech precision materials, which rely on imports, can be produced in Korea. For future industry, we will concentrate on developing new materials and utilize them effectively.

Basic Industrial Technology

By developing the basic industrial technology, which is essential technology for determining the quality, efficiency and productivity of all industrial goods, we will maintain international competitiveness in major industries which lead productivity and effectiveness.

Additionally, we will fully endeavor to reduce the dependency rate, which is increasing.

We will have Korea become the international supply center of components and parts by independently developing the design and engineering technology for imported machinery and industrial equipment.

Also, by developing and utilizing automatic technology such as computer design and industrial robots, we can automate all procedures for design and production to inspection, while coping with diversification of the international market by realizing production of small quantities and various goods.

Energy Resource Technology

As for the energy resources technology area, which is the basis of industrial economic development, emphasis will be placed on the stable supply of energy resources and maximization of utilization.

In line with our desire to change our energy supply system from dependence on fossil fuels such as coal petroleum to dependence on technology, we should develop and secure alternative energy sources, including nuclear power, which is both adequate in supply and economical. In this way, our dependence will be reduced from the present 56 % to below 40 %.

By securing the nuclear system technology, nuclear raw material production technology and secure technology in accordance with the construction and management of nuclear power plants, the localization rate will be increased from the present 40 % to 90-95 % in the 2000' s. Also, we will make the development of unlimited energy possible at an earlier stage in line with the research on high speed reactors.

As for the resource area, we will develop the ability of resource exploration and reconsider the percentage of mechanization.

Based on the exploration of fuel resources and strategic mineral resources, we can participate in the development of foreign resources.

Welfare Related Technology

In order to accomplish our goal of "constructing an advanced welfare nation in the 2000' s", where people can live longer in a comfortable atmosphere, we will develop technology in the environmental and public health areas, which we have previously overlooked during our rapid economic growth.

In the environmental area, we will create a general environment management system which can forecast pollution.

In the public health area, by operating a total disease control system which can efficiently manage the diagnosis of diseases and treatment, we can contribute to the preservation of the environment and improvement of people's health.

Big Science

In the areas of ocean and aerospace technology, which lags for behind advanced countries, as well as in the area of big science, which requires a great amount of expenditures for investment, we will concentrate on the systematic and legislative foundation, the basic research and manpower development, achieving our goal by the mid-1990's. Emphasis will be placed on the utilization of technology which is partially developed.

We will cope with ocean development, which is a treasure of future resources, by developing ocean resources and studying space utilization.

We will prepare the foundation to participate

in the space science age by producing aircraft such as STOL which will have a large increase in demand after the 1980's and securing the technology to operate satellites.

Basic Science

In conclusion, considering the trend that the percentage of basic research is increasing in technology innovation and the relation between basic research and applied research is strengthening, emphasizing basic research is essential to achieving a technological advantage in the future.

By training experts to reach the top international level through the activation of potential in universities and institutes, we can create the foundation for independent technology development and contribute to manpower development in technology and cultural activities. In line with this, we expect that Korea will have a Nobel Prize Laureate in the science area by the year 2000.

