Korean National Innovation System

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Korea has achieved remarkably rapid industrial and technological catch-up, transforming itself into a leading innovator in several high-tech areas in just a few decades.

The Korean National Innovation System (NIS) has evolved over time in accordance with its economic and industrial development and accumulation of technological capabilities since the 1960s.

The NIS was characterized as being a strongly formalized, government-driven, top-down structure in policy planning and decision-making. The system was quite successful for the past four decades of catching up technologically with the advanced countries.

However, in the early 2000s, the system was criticized for its weak systemic linkages and interfaces among innovation actors, inefficient duplication of resource allocation and uncoordinated setting of priorities among relevant ministries, in spite of the high level of R&D spending and relatively rich pool of well trained S&T human resources.

Driving forward science and technology innovation as the top priority strategy for the promotion of national competitiveness, the Korean government has been in the process of restructuring its NIS since 2004, transforming its imitative, catch-up-oriented NIS to an innovation-driven one.

It intends to establish a systematic cycle of creation and diffusion of outstanding R&D outputs, which eventually result in boosting economic growth, creating more jobs, and enhancing the quality of life.

The goal of the NIS is to promote the nation's S&T capabilities through innovation in the five major areas of actor, performance-diffusion, element, infrastructure, and system.

Actor innovation strengthens the creative innovation capacity of the three major players in NIS (companies, universities, and government-supported research institutes) and promotes their linkages and interfaces.

Element innovation efficiently allocates R&D resources based on socio-economic demands, bridge demand-supply mismatch, and expanding the infrastructure accordingly.

Performance-diffusion innovation involves supporting the creation and industrialization of innovative and creative R&D results in all phases.

System innovation establishes a knowledge-sharing, collaborative R&D environment and improves the efficiency of the S&T administrative system.

Infrastructure innovation develops S&T in harmony with society. The government is creating a supportive environment and culture based on infrastructure innovation.

In line with the above, the government focuses on three priority items that include securing a large pool of talented R&D personnel, strengthening the innovative capabilities of SMEs, and promoting the commercialization of technology innovation outputs.

For more effective and efficient implementation of its science and technology policy, the government underwent a revolutionary and unprecedented reshuffling of the science and technology administration system in October 2004.

The position of Minister of Science and Technology was elevated to Deputy Prime Minister. The Deputy Prime Minister chairs the Ministerial Meeting on Science and Technology, which is set up under the National Science and Technology Council, or NSTC, headed by the President. The NSTC holds ultimate power over the coordination of national R&D programs and budgets.

To act as the secretariat of the NSTC, the Office of the Ministry of Science, Technology Innovation (OSTI) was also newly established within the Ministry of Science and Technology. It has the responsibility of micro-economic policies, supervising not only planning, coordination and evaluation of S&T related policies (industrialization, financing, regional innovation, human resource development), but also coordinating and allocating the entire government R&D budget.

As an exclusive support agency for OSTI, the Korea Institute of Science & Technology Evaluation and Planning, or KISTEP, plays a key role in planning national S&T strategies, setting priorities for the coordination and allocation of R&D budgets, evaluating and analyzing national R&D programs, and capitalizing R&D knowledge.

To undertake national S&T strategic planning, KISTEP sets up mid- and long-term S&T innovation policies, develops S&T indicators, formulates national standard S&T classifications, identifies the nation's future strategic technologies, conducts planning studies, and assesses the socio-cultural impacts of technology.

For effective coordination and allocation of the R&D budget, it establishes the mid-term R&D investment plan and sets up basic investment directions for national R&D, develops an efficient budget coordination system for optimal allocation of R&D resources, plans and coordinates large scale national R&D programs, and performs feasibility studies for them.
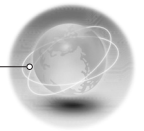
It evaluates and analyzes national R&D programs by conducting surveys of the programs, supporting the establishment of an efficient management system for them, evaluating their performance, and supporting the new role-setting of government-supported research institutes (GRIs).

Among various missions and activities as above, KISTEP recently identified the following 『Top Brand 3S projects』 as its strategic focus areas; Smart NES (National Evaluation System), Silk Road 21, and Supreme Academy. Smart NES represents developing the Korean-specific S&T evaluation system, while Silk road 21 and Supreme Academy symbolize the identification of the nation's future cash-cow technologies and customized training program for researchers according to their career development path (CDP), respectively.

KISTEP is also dedicated to the capitalization of R&D knowledge. It is establishing a comprehensive national R&D information system for efficient S&T planning and policy, organizing training courses for R&D planning, coordination and evaluation, and is actively promoting international collaboration.