

## REQUEST FOR INFORMATION

Please provide a written response for Section A below, which addresses general science, technology and innovation policies, and for those topics identified in Sections B through G in which significant shifts in policy have been made or new initiatives launched in 2004 or 2005. Information on anticipated changes in 2006 (or beyond) should also be included, where possible.

### **Section A: General framework and trends in science, technology, and innovation policy**

#### **1. Please provide a brief overview of the main directions, objectives and elements of national policies for science, technology, and innovation, highlighting the following topics:**

- Main features of recent science, technology, and innovation policy developments (*e.g.*, including new innovation strategies) and the rationale behind them:

Response:

- The current government's primary policy goal is to transform the nation into an advanced society through innovation.
- Toward this end, the government is preparing various policy programs to make a Korea a "S&T-oriented Society", which is characterized by the following:
  - . Knowledge-information-intelligence-based society
  - . Sustainable society based on value-chained industry
  - . A society that makes the best use of S&T for the national security, disaster prevention, safe food supply, and social integrity
  - . Increased role and responsibility of S&T in dealing with socio-economic problems
- Major changes in the legislative, administrative, organisational, institutional, or budgetary framework for the formulation and implementation of science, technology, and innovation policies (*e.g.*, new Ministerial structures, better inter-Ministerial coordination, increased involvement of non-governmental stakeholders):

Response:

- 'S&T Basic Plan' was established initially in 2001 and later revised in 2003.
- 'Revised S&T Basic Plan' (2003-2007)

- The concept of science and technology is being expanded and developed into technological innovation, and as part of this strategy, the Minister of Science and Technology has been promoted to the higher rank of Vice Prime Minister in 2004.
- In addition, an independent Office of the Ministry for Science and Technology Innovation, headed by a vice-ministerial level official, was established within the Ministry of Science and Technology. The head of the Office will also serve as the secretariat to the NSTC.
- New policy measures to foster increased innovation and productivity growth in the service sector (both services in general and specific service-sector, finance, etc.).

Response:

- Since 2004, government recognizes the importance of and promotes R&D Services activities.

**2. Please describe major shifts or changes in the priority given to different areas of science, technology, and innovation policy listed below or the policy instruments used to achieve them: i) strengthening the science system; ii) supporting business innovation; iii) linking science to innovation; iv) developing human resources for S&T; and v) establishing framework conditions that are conducive to innovation (e.g., IPR regimes).**

Response:

**3. Please describe the primary challenges that are expected to be addressed in future science technology and innovation policy initiatives and/or that have been identified in forward-looking exercises, such as foresight and technology road mapping (i.e., in the 2007-08 timeframe).**

Response:

**Section B: Public sector research and public research organisations**

**1. Please describe major policy changes related to the financing of public R&D, to include the following:**

- Changes in overall levels of R&D funding for public research organisations during last few years.

Response:

If funding data is available, please provide it below:

Year	2003	2004	2005	2006(forecast)	2007(forecast)
R&D funding ( )					

- Shifts in the allocation of funding across the following areas (please provide quantitative information if available):

1) different types of public research organisations (e.g. universities vs. government research institutions)

Response:

2) different socio-economic objectives (*e.g.* general advancement of knowledge, health, national security, environment, energy)

Response:

3) different fields of science and technology (*e.g.* information and communications technology, biotechnology, and nanotechnology.)

Response:

- Changes in the use of different types of funding instruments for financing R&D or the balance among them, *e.g.* institutional funding (block grants) and project funding (contracts and grants), or public funding vs. private funding. To what extent have funding mechanisms become more competitive?

Response:

**2. Please describe major initiatives to reform the organisation and governance of universities and other public research organisations to improve the quality of their R&D or their ability to contribute to economic growth and other social objectives. Please consider reforms such as:**

- Initiatives to increase the flexibility and/or accountability of universities and other public research organisations (*e.g.* granting more autonomy, performance measurement systems or stronger evaluation, new funding structures).

Response:

- New organisational structures for performing R&D, such as larger-scale research teams, centres of excellence, multi-disciplinary research centres, research networks, etc.:

Response:

- Revised procedures for setting research priorities at the institutional level in universities and public research organisations (*e.g.* involvement of outside stakeholders):

Response:

- Reformed rules governing ownership and licensing of publicly-funded research results, support for technology licensing, etc., whether or not these measures are focused on a specific type of IPR (patents, copyright, *etc.*) or certain technological fields:

Response:

- Other

Response:

**3. Please identify major shifts or changes in priority among the approaches for strengthening public sector research, including efforts to: *i*) increase levels of funding; *ii*) alter the structure of funding (*e.g.*, institutional vs. project-based funding; public vs. private-sector funding); *iii*) reform the governance of public research organisations; *iv*) implement new structures for performing**

research (*e.g.*, centres of excellence, multi-disciplinary centres); *v*) changing guidelines for ownership and management of IPR; and *vi*) implementing new evaluation procedures).

Response:

**4. Please describe any new or recent changes in policies adopted by government, public research funding bodies or public research institutions to improve access to data resulting from publicly funded research.<sup>1</sup>**

Response:

**5. Looking to the future, what are the main challenges that the science system is expected to face and the main issues that policy makers will need to address? What future actions are anticipated?**

- Imbalances in terms of R&D activities between large firms and SMEs,
- Imbalances in terms of R&D activities between central and regional governments
- Imbalances in terms of R&D focus between basic science and technology development
- Immobility among public research institutes, universities, and private sectors
- Weak global networking

### **Section C: Government support for private-sector R&D and innovation**

**1. Please describe major policy changes in the instruments used to support private sector R&D and innovation, including:**

- Tax treatment of business R&D (*e.g.* tax credits for R&D expenditure, changes in corporate tax regimes that could affect business R&D activities):

Response:

- Direct public funding of business R&D and innovation (*e.g.* grants, contracts, loans, etc.):

Response:

- Public procurement policies, new contractual guidelines, more competitive selection processes, etc:

Response:

- Changes in IPR regimes to create additional incentives for business investments in innovation, such as via new or revised guidelines for specific types of inventions (*e.g.* genetic, software, business methods), or new or strengthened mechanisms for enforcement of IPR (*e.g.* specialised courts):

Response:

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<sup>1</sup> Delegates may wish to consult with experts participating in the electronic discussion group to develop OECD guidelines for access to research data.

- Other forms of public support for innovation (*e.g.* consulting services and extension programmes):

Response:

**2. Please describe policy changes in programmes to support R&D and innovation in SMEs and new technology-based firms, *e.g.*, via efforts to:**

- Establish and develop venture capital funds and/or second-stage financing for the support of new technology-based firms or spin-offs from public research organisations:

Response:

- Provide additional R&D funding targeted to SMEs and new technology-based firms

Response:

- Encourage entrepreneurship through training, information services, or other means:

Response:

**3. Please identify major shifts or changes in the mix of instruments used to provide public support for private sector R&D and innovation, to include: *i)* direct financing of R&D, *ii)* R&D tax incentives, *iii)* support to entrepreneurship and SMEs and *iv)* IPR protection and other framework conditions. What shifts in the policy mix are anticipated in coming years?**

Response:

**4. Looking to the future, what are the main issues that policy makers will need to address regarding support to the business innovation system? Please describe any efforts that have been taken to identify or address them.**

- Imbalances between large firms and SMEs in terms of R&D investment and performance

**Section D: Enhancing collaboration and networking among innovating and research organisations**

**1. Please describe major initiatives to promote collaboration and networking among innovating firms, *e.g.* via joint R&D programmes, regional innovative clusters, international co-operation (attracting research labs of foreign firms or supporting access of domestic firms to foreign programmes).**

Response:

**2. Please describe major policy initiatives to promote stronger industry-science relationships, such as efforts to:**

- Enhance collaborative research (*e.g.*, through changes in regulations governing the types of agreements negotiated between public research organisations and businesses and their implications for access to and exploitation of research results);

Response:

- Increase the mobility of human resources between public and private sectors (*e.g.* by revising employment and financial rules governing public-sector researchers to allow them to more easily collaborate with industry, move between the public and private sectors, participate in the creation of spin-offs, take equity positions in technology-based firms emerging out of public research, *etc.*);

Response:

- Set up new modes of public/private partnerships for research and innovation:

Response:

- Others:

Response:

**3. How has policy shifted in recent years in its support for different channels of industry-science linkages (*e.g.*, collaboration, licensing, spin-outs, public/private partnerships). Please describe any anticipated shifts or changes in policy for strengthening industry-science linkages.**

## Section E: Globalisation<sup>2</sup>

**1. Please describe the most important policy issues and objectives with respect to the process of internationalisation of R&D:**

Response:

- The government identifies and promotes the vision of ‘Korea as R&D Hub in the North-east Asia’.

**2. Please identify and describe changes in policies to attract R&D through foreign direct investment. This may concern:**

- Direct financial support
- Fiscal incentives (tax breaks, R&D tax credits ...)
- Administrative support
- Provision of infrastructure
- Public procurement
- Active recruitment of foreign firms
- Advertising
- Other measures:

Please check the boxes above to indicate the types of policies used and provide more detail information here:

- Providing national treatment to foreign R&D firms stationed in Korea.

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<sup>2</sup> Many of these questions on globalisation were asked in a questionnaire circulated in November 2004 in the context of the CSTP/TIP project on globalisation of R&D. 13 countries (Australia, Canada, Denmark, Finland, France, Germany, Italy, Japan, Korea, Netherlands, New Zealand, Norway, and Poland) replied. These countries are invited report only significant changes since November 2004.

- Providing partial support to foreign R&D firms stationed in Korea when they hire Korean researchers.

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**3. Please describe any changes in the principles concerning the treatment of foreign firms (both non-domiciled firms and foreign-owned subsidiaries) or foreign research institutions in national R&D programmes (e.g. access to national R&D funding programmes, rules for co-operation with domestic public research institutions, rules for co-operation in public private partnerships, public procurement, etc.)**

Response:

**4. Please describe specific measures to support the internationalisation of domestic public research institutions (e.g., such as additional funding for projects with international partners, co-funding for project partners not located in-country, support for setting-up affiliates abroad).**

Response:

**5. Please describe measures to link domestic firms, in particular SMEs, to foreign sources of research and innovation, including international co-operation in R&D (e.g., additional/preferential funding for projects with international partners; co-funding for project partners not located in the country; and support to find international partners, etc.).**

Response:

## **Section F: Human resources<sup>3</sup>**

**1. Please identify and describe recent efforts to improve supplies of university graduates with science and engineering degrees (both quantity and quality), in particular as relate to the following areas:**

- Raising interest in and awareness of science among youth;
- Revising academic curricula to make science and technology more attractive to students, such as by expanding interdisciplinary training in S&E education;
- Improving teaching in mathematics and science, including through the use of ICT in teaching content and delivery;
- Reducing gender and ethnic minority gaps in science and technology education
- Enhancing financing opportunities for PhD study and post-doctorate training (such as through fellowships, funded research opportunities, etc.)
- Improving the quality of secondary university research laboratories/infrastructure

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<sup>3</sup> These questions are broader than those included in the OECD Questionnaire on the Working Conditions and Attractiveness of Research Careers in the Higher Education and Public Research Sectors (April 2005). Delegates may wish to consult their SFRI delegates in responding to these questions.

- Demand-side policies to increase the attractiveness of employment in public research organisations, make public sector employment more flexible, or improve provision of information to students regarding job opportunities in the public and private sectors.

Others:

Please check the boxes above to indicate the types of policies used and provide more detail information here:

Recent policy focus includes the followings:

- Promote specialization of universities
- Strengthen curricular in order to meet industrial demand
- Strengthen multi-disciplinary curricular: science and engineering with social sciences

**2. Please describe recent policy changes to enhance the international mobility of scientific and high-skilled personnel, including programmes to attract foreign (and expatriate) talent and encourage students/workers to gain international experience. Consider such policies as:**

- Changes in immigration legislation;
- Funding of scholarships, grants for international mobility of students/scholars;
- Creation of special positions at universities or public research centres;
- Fiscal incentives (*e.g.*, income tax breaks) for foreign workers
- Programmes to promote return migration of expatriate students, scientists and engineers
- Other measures:

Please check the boxes above to indicate the types of policies used and provide more detail information here:

**3. Please describe recent policy efforts to foster development of specific skills other than S&T skills needed to foster innovation in a knowledge-based economy (*e.g.*, management, communication, legal), notably as relates to the service sector.**

Response:

**4. Please describe any major shifts or changes in the priorities and mix of instruments used for developing human resources for innovation, *e.g.*, between development of domestic talent versus attraction of foreign talent; between development of S&T skills and non-S&T skills; between stimulation of demand and development of supplies; between support for teaching and support for research; etc.**

Response:

**5. Looking to the future, what are the main changes anticipated in the supply and demand for human resources, and what are the main policy challenges that policy makers will need to address? Please describe any efforts being made to identify future challenges or develop future policy directions.**

**Section G: Policy evaluation**

**1. Please describe recent changes in policies regarding ex-ante or ex-post evaluation of innovation policies and programmes, including new legislation or regulations, methodologies employed, criteria considered and the organisations/institutions that perform the evaluations.**

Response:

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- The government is planning to conduct a prior feasibility study for each R&D program with a budget higher than 50 billion KRW.

**2. Please describe recent changes in policies regarding the evaluation of public research organisations, including legislation or regulations requiring evaluation, methodologies employed, criteria considered and the organisations/institutions that perform the evaluations.**

Response:

**3. Please outline any significant changes in the priority given to evaluation in innovation policy, including the motivations for such changes and anticipated effects. Please include information about additional resources being invested in evaluation and approaches used to ensure that results of evaluation feed-back into policy making.**

Response:

**4. Please provide information or web-links, if available, about the outcomes of recent major evaluations of R&D or innovation policies.**

Response: