

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:

Aiming to be an advanced science and technology oriented nation, Science and Technology Basic Law was enabled in 1995. Basic Policy behind the Formulation of the 3rd Science and Technology Basic Plan was decided on Dec. 27, 2005 and communicated to Prime Minister by Council for Science and Technology Policy. (The 3rd Science and Technology Basic plan will be finalized by the end of March 2006.)

English version of “Basic Policy behind the Formulation of the 3rd Science and Technology Basic Plan” will be available and sent to the Secretariat in about a few weeks.

- 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:

(1) The Science and Technology Basic Plan is drawn up based on the Science and Technology Basic Law (enacted in 1995) and grounded in the fundamental science and technology policies formulated by the CSTP (The Council for Science and Technology Policy). The proposed basic plan formulated by the government is decided upon after deliberations by the CSTP.

(CSTP was established for that purpose in the Cabinet Office as one of the “councils concerned with important policy matters,” pursuant to the Cabinet Office Establishment Law (January 2001)).

(2) National university in Japan became an independent institute, so-called the national university corporation, in 2004 April. This reform was the result of the Law on national university corporation in 2003 July. The basic aim of the reform was to enlarge the operational autonomy of the national university in the sense of budget, organization, staffing, and so on. By making their legal status independent (from government), it is expected that the more responsibility to society is ensured and

that the more unique and fascinating activity in education, research and social contribution is realised. In this new system, Ministry of Education, Culture, Sports, Science and Technology (MEXT) allocates the operating cost subsidy to each national university corporation. The operating cost subsidy does not have a specific limitation on how to use, thus the flexible budgeting is now possible. The national university corporation can also freely change their organization. It ensures each university to design a suitable research organization structure, reacted to the immediate needs on research. The evaluation of the national university corporation is now done by independent committee by National University Corporation Evaluation Committee. Moreover, in order to support the remarkable projects unique to the university, special education and research expenses was created. This Special Education and Research Expenses is allocated to the cost for the strategic activity, the international activity, the voluntary contribution at local level, and so on. The allocation of Special Education and Research Expenses by MEXT is based on the proposal based.

- 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:

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:

(1) The CSTP, acting with reference to the work of the Expert Panel on R&D System Reform, was compiling basic guidelines for measures being taken by the relevant government agencies to achieve the science and technology system reforms set forth in the Science and Technology Basic Plan.

- System reform toward world-class S&T excellence -

- ◆ Further reform of university system for stronger competitiveness
 - Producing 30 world-class research centers of excellence
- ◆ Activation of the regional S&T mainly conducted by local universities
 - Program for regional revitalization utilizing local universities' resources
- ◆ Drastic reform of public research institutes to strengthen their function
- ◆ Upgrading of government-wide R&D data base for efficient and appropriate Budget allocation
- ◆ Enhancing of industry-academia-government collaboration
 - Joint program of advanced research centers on integrated fields for innovation
- ◆ Providing equipment & facilities, and improving intellectual infrastructures and research-informational infrastructures including network & data base

(2) In July, 2004, the CSTP founded the Science Coordination Program of Science and Technology Projects to eliminate unnecessary redundancy and reinforce collaboration. In September, based on the views of outside of each coordination program and examined the related measures each ministry and agency would carry out. To enhance the effects of coordination, the CSTP will establish working groups and assign coordinators to put a system for promoting research and development effectively on the basis of cooperation by the relevant ministries, agencies, and institutions.

(3) Some typical projects which other ministries promote are below:

“The Knowledge Cluster Initiative”, which has been implemented in the 18 areas in Japan, is to create a "concentration of knowledge and talent" (i.e. a Knowledge Cluster) for internationally competitive technological innovation. This is achieved by research organizations, R&D-oriented companies and other participants, working around a core of the universities and public research institutions which are the centers of knowledge creation. Stress is placed on the autonomy of local governments.

Moreover, “City Area Program” has been also implemented in the 50 areas.

It uses wisdom of the universities in the region, invents new technological seeds, and aims at the creation of a new business.

Besides holding joint conference to announce project results has been held every year, since 2005, university in the region started the collaborative research with the firms participated in” The Industrial Cluster Project”.

After 2006, projects of METI (Ministry of Economy, Trade and Industry) and other ministries concerned plan to promote more collaboration with the Knowledge Cluster Initiative of MEXT, developing the environment to act in unison among national and local related organizations in each region.

In addition, Japan Science and Technology Agency (JST) , which is an independent administrative institution under MEXT, integrates “Collaboration of Regional Entities for the Advancement of Technological Excellence” with “Science and Technology Incubation Program in Advanced Regions”, and develops ”Comprehensive Support Program for Creation of Regional Innovation” since 2006, which is a new funding scheme on the creation of innovation in JST’s “Innovation Plaza”, collaborating with local government and so on.

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:

The science and technology expenditure has decreased since FY 2005. It is because the total budget of government decreased for the overall budgetary reform. However, even under this severe budgetary situation, the budget on R&D is prioritised for the recognition on the importance of S&T. As a result, the decreasing rate of the science and technology expenditure is smaller than the decreasing rate of the overall budget. (FY 2006 (to FY 2005): The over all budget decreased 0.7% (if we exclude the social security expenditure, the decreasing rate became 3.3%), while the Science and technology expenditure decreased only 0.8%)

If funding data is available, please provide it below:

Year	2003	2004	2005	2006(forecast)	2007(forecast)
R&D funding	35,974	36,084	35,779	35,733	

(Unit: 100M Yen)

- 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:

Based on “Reorganization and Rationalization Plan for Public Corporations”, the special corporation was reformed into Independent administrative institution. As a result, the budget for the special corporation decreased, while the budget for the independent administrative institution increased.

(Unit: 100M Yen)	2003	2004	2005	2006 (estimated)
Government research institutes	2,307	2,505	2,056	2,458
Independent administrative institution	5,925	9,496	10,490	11,444
Special corporation	6,134	2,042	1,080	0
University etc.	12,388	12,103	12,158	12,237
other	9,219	9,937	9,996	9,594
total	35,974	36,084	35,779	35,733

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

Response:

	2003	2004	2005	2006 (estimated)
Energy	6,714	6,691	6,327	
Manufacturing Technology	198	201	178	
Social Infrastructure	2,561	2,894	2,420	
Frontier (such as space)	3,029	1,909	1,878	

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

Response:

	2003	2004	2005	2006 (estimated)
Life sciences	4,270	4,457	4,512	
ITC	1,696	1,966	2,055	
Environment	1,099	1,515	1,493	
Nano-tech, Material sciences	912	935	971	

- 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:

○ In 2004 April, national university in Japan has become national university corporation, which is an independent entity from government. The aim of reform to enlarge the autonomy and the degree of independence, and to activate the operation of each university.

○ The new budgetary scheme was created for national university corporation. The operating cost subsidy does not have a specific limitation on how to use. “Special education and research expenses” is allocated to a unique activity which fits the characteristics of the university. (The allocation is competitive based.)

○ Each national university corporation must make and publish Financial statements based on the business accounting principle. This rule makes it easy for national university corporation to keep a good social responsibility.

The competitive funding system, including “the 21st Century COE Program”, is promoted. It is expected to increase accountability by realising the good environment based on fair principle of competition. (“the 21st Century COE Program”: Provide prioritised support mainly to centers of excellence in education and research of universities with high research potentialities, including support for functions to educate highly-advanced personnel.)

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

Response:

MEXT starts the new program “Establishment of innovation creating COEs in the Cutting-edge and interdisciplinary field” by using scheme of “Special coordination funds for promoting science and Technology” since FY 2006. The aim of this program is to support COE (Center of excellence) which consists of both academic and industry sector and to make them conduct the mid-term (last years) R&D which creates the new technology (the seeds of industry). By the support of this program, MEXT expects that the creation of innovation became easier and that COEs can train and supply the next-generation researcher/engineer at the high level. For example, COEs are expected to challenge the following issues.

- (1) Close collaboration between academy and industry from the initial strong of R&D.

- Attract outstanding human research to COE (whose core would be university). Training is also done by their collaboration.
 - Equal partnership (including the sufficient inputs of research resources from industry) of industry and academy from the initial stage of R&D.
- (2) Promoting mission-oriented R&D system with orientation to innovation
- Acceleration of R&D system reform: Making a special rule in university to promote the collaboration with industry.
 - Human mobility: Introduction of merit system and reform of salary system in COE university.
 - Internationalization: Collect researches internationally, and prepare the social support to foreign researchers.
 - Diversification of human resources: Utilize young, female, foreign researchers.
- (3) Overcome the discontinuous “death valley” between science and industry.
- Prepare the R&D organization who can oversee from basic research to application.
 - Flexible evaluation system which do not stick to the short-term results.
- Revised procedures for setting research priorities at the institutional level in universities and public research organisations (*e.g.* involvement of outside stakeholders):

Response:

The national university changed into the national university corporation. As result, the flexible staffing rule became possible, and the exploitation and utilization of research result was clearly (legally) defined as one of tasks of university. (This is based on the Article 22 and 29 of National University Corporation Law. Moreover, the relaxation of financial rule made it possible for university to deal with the fund from the outside easily and immediately. With these reforms, the academy-industry collaboration has been promoted, and the more relevant agenda setting became easier in research projects at university.

- 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:

At the same time of the reform of national universities (creation of “national university corporations”), the rule on the research results of university has been changed since FY2004. The basic principle on the IPR from research results changed from the right of researchers themselves to the right of university. This reform aims at encouraging the new independent “national university corporations” to make efforts to accumulate their IPR by their initiative. In order to support their initiative, MEXT selected and support 43 IPR headquarters in university which are responsible for the strategic management of IPR within their university. The way of management of IPR and the target of licensing basically depends on the

policy of each university. However, the focus on specific field is not seen as a major trend. In the university, the establishment of “Technology licensing organization” is promoted, and 41 designated TLOs are now supported by government (as of 2005 September).

Moreover, “Japan Science and Technology Agency (JST)”, which is an independent administrative institution under MEXT, has implemented a series of programs, so-called “Technology Transfer Support Center”, such as the consultation service on patent, the feasibility survey of technology, the financial support to applying patents overseas, and so on.

- 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.¹

Response:

(Although there is no major policy change after 2004) “Japan Science and Technology Agency (JST)” has implemented “The research information database construction business” in order to make the accessibility of data easier.

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?

Response:

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:

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

Stimulating business R&D is a significant challenge for the future of our economy, and the Japanese government drastically amended its R&D tax incentive system in FY 2003. In concrete terms, the government modified its tax incentive system to establish a permanent 8-10% credit of total R&D expenditures as a measure to promote competitiveness in the global economy. At the same time, the government created an additional 2% temporary credit as an aid in overcoming the depressed economic situation. In FY 2005, partly as a result of this tax incentive system, the economic situation in Japan improved significantly, and the government decided to abolish the additional 2% credit. But in order to maintain the incentive for companies to increase R&D expenditures, the current tax credit for R&D expenditures (which varies according to whether companies choose to apply it to their total R&D expenditures, or only to the increase in those expenditures) will be integrated into a single credit based on total R&D expenditures. Moreover, as a temporary measure, for the next 2 years an additional credit equivalent to 5% of the amount exceeding 'comparable R&D expenses,' defined as the average of R&D expenditures over the past 3 years, will be implemented.

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

Response:

Japan Science and Technology Agency (JST), which is an independent administrative institution under MEXT, starts the new matching-fund program since FY2006. The program aims at promoting feasibility study (FS) and post-FS research by collaboration between industry and academy. The true innovation is expected to realize by this collaboration.

- 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:

Strengthening Measures against Intellectual Property Infringements in Japan

Background: It is often pointed out that large companies imitate or misappropriate technologies developed by SMEs (Small and Medium Enterprises) and venture companies, by abusing their bargaining position and applying sophisticated approaches, such as placing a large bulk order with an SME for a large number of lots that exceed the SME's production capacity and effectively depriving the SME of the technology for the reason that the SME cannot accept such an order, or approaching an SME with joint research or creation of sample and concluding a contract in which the large company will hold an unilaterally superior position and be able to snatch the technology from the SME.

System: To solve this situation, from FY2005, the Japanese government has upgraded the liaison section at "the Comprehensive Support Center for SMEs and Venture Companies" so that it serves as an intellectual property rescue organization, and provided consultation services concerning how to detect and respond to infringements of intellectual property rights committed by large companies and report such infringements to the Japan Fair Trade Commission. The Japanese government has also encouraged organizations concerned such as prefectural SME support centers to take such measures.

- 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.

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:

The Knowledge Cluster Initiative was implemented in the 18 areas in Japan. The Knowledge Cluster Initiative is aimed at accumulation of knowledge for innovation and international competitiveness. The Knowledge Cluster Initiative supports a series of research institutes in the region, which collaborate each other. Among them, the university in the region is expected to play a role of COE (Center of Excellence) in the Knowledge Cluster Initiative. Moreover, "CITY AREA program" was also implemented in the 50 areas.

In addition, Japan Science and Technology Agency (JST), which is an independent administrative institution under MEXT, launched "Comprehensive Support Program for Creation of Regional Innovation" since 2006, which is a new funding scheme on the creation of innovation in JST's "Innovation Plaza", collaborating with local government and so on.

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:

- National university was re-organized into “national university corporations” in April 2004. After this reform, many of “national university corporations” identified the collaboration with industry as their core mission in their mid-term plan of management. The regulation on the industry-academic collaboration was relaxed by this reform, and this deregulation enables each “national university corporations” to implement unique activities.
- The industry-academy joint R&D increase young by year. In FY 2004, the number of joint R&D increased to 10,728, which was firstly beyond 10 thousands. Similarly, the number of “commissioned research” increased beyond 15,000 in FY2004.
- Part of universities in Japan have started to sign the comprehensive collaboration agreement, which is not only for an individual project, but also for the general cooperation such as the permission of access to the information on research results.
- Japan Science and Technology Agency (JST), which is an independent administrative institution under MEXT, starts the new matching-found program since FY2006. The program aims at promoting feasibility study (FS) and post-FS research by collaboration between industry and academy. The true innovation is expected to realize by this collaboration.
- After 2006, projects of METI and other ministries concerned plan to promote more collaboration with the Knowledge Cluster Initiative of MEXT, developing the environment to act in unison among national and local organizations in each region.
This program puts weight on the independent activity of the regions, utilizing knowledge of universities, forcefully advancing cooperation of industry, academia and government.
- 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:

The reform of national university (the creation of national university corporations) made the university possible to invite the outstanding researchers at the high-level of salary. Moreover, the flexible and immediate staffing, including the part-time job in private times.

While the relation between S&T and society become more deepened and diversified, it is growing the importance to utilize human resources having speciality (such as PhD holders) outside universities and public research institutes. For this, MEXT launched “Promote Diversification of HRST's Career Field” program, since FY2006. In this program, MEXT supports the consortium which would try to promote the diversification of HRST's through their organizational effort (such as career-guidance, arranging meeting between private firms and young researchers, internship programs). It is expected that the consortium consists of university private firm, NPOs and so on.

- 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: Globalisation²

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

Response:

In order to identify the key factors for realizing the globalization of R&D, MEXT set up the Committee on International Affairs under the Council for Science and Technology (an advisory board for the minister of MEXT). The report published by the committee in 2005 January identified the four key factors. MEXT is now promoting its international S&T policies with considering these factors.

Major policy issues raised in the Council Report "Strategic Promotion of the International Activity of Science and Technology" (Committee on International Affairs, Council of Science and Technology, MEXT, 2005 Jan)

(1) Intensive promotion of international activity with strategy

Taking a strategic approach is important for international activity in S&T. The following activities are necessary.

- Strengthening the system to look into and analyze international trends in S&T
- improving and strengthening the funding system to support international activities in S&T with a strategic objective

(2) Building Partnerships in Asia

Considering the rapid development of East Asia and the idea of an "East Asian Community", it is important to build a S&T community in Asia. Thus, it is necessary to promote the following activities with considering the diversity of each country.

- promote the exchange of research personnel and developing personnel in Asia for the future
- challenge for regional common problems such as environmental issue, natural disaster, and emerging/reemerging infectious disease
- promote to create the platform for sharing S&T information and the multilayered frame work to support

² 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.

an activity of community in Asia

(3) Developing and Securing, and Building a Network of, International Research Personnel

Following activities are necessary to enhance research personnel through international activities.

- to hold more international for, and to build networks of research personnel
- to invite outstanding foreign and Japanese researchers to work abroad
- efforts to send young Japanese researchers abroad

(4) Strengthening the Foundations of International Activity

To support the above initiatives, it is important to strengthen the foundation of international activity and following activities are necessary

- supporting universities' international activities with an organizational strategy
- promotion of activities facilitated by overseas branch of public institutes
- strengthen the international transmission of information on research achievements

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:

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:

Moreover, MEXT launched “Asia Science and Technology Strategic Cooperation Promotion Program” since FY 2006 by using of the scheme of “Special coordination funds for promoting science and Technology”. This program is aimed at encouraging the Japanese research institutes and universities to start the collaborative R&D projects with their Asian counterparts. “Japan Science and Technology Agency (JST)”, which is a independent administrative institution under MEXT, has enlarged their research funding for the international R&D collaboration, so called “Strategic Fund for Establishing the International HQs of Universities”.

In Japan, the internationalization of S&T is promoted based on the Second Science and Technology Basic Plan (FY 2001-2005) and the Council for Science and Technology Policy has started discussion concerning the next basic plan (FY 2006-2010). In January 2005, the Committee on International Affairs of the Council for Science and Technology Policy (Advisory Board to the Minister of Education, Culture, Sports, Science and Technology) published the report: Strategic Promotion of International Activities in Science and Technology. The main strategies in this report include:

- Prioritization of international activities based on the strategic thinking.
- Building partnerships in Asia.
- Building a network of international research personnel.
- Strengthening the foundations of international activity by creating (research and living) environments attractive for foreign researchers and promoting research exchange (facilitated by overseas branch of public research institutes).

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 resources³

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;

MEXT has implemented “Science Literacy Enhancement Initiatives”, which is a package program to promote the S&T education policies. For example, “Super Science High School” is aimed to develop the science/mathematics intensive curriculum and to study the innovative education methods with collaborating to universities and research institutes. Super Science High School is applied to specific high-schools designated by MEXT. Other example is “Science Partnership Project”, which supports the activity to increase the contact and experience of pupils through special study program supplied by the collaboration of schools with universities and science museums. These programs are finally aimed to embrace the interest of pupils in S&T at the primary and secondary education level, and to foster the high-quality HRSTs.

³ 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.

- Revising academic curricula to make science and technology more attractive to students, such as by expanding interdisciplinary training in S&E education;

In recent years, it is recognised that the fostering of highly expert human resource is an important policy agenda. Those expertise people are expected to understand their expert knowledge in a societal context and to set the agenda in their expertise from realistic societal needs. Under this recognition, MEXT has implemented “Long term internship program for graduate students”, which support the development of program to train HRSTs in each research area.

- Improving teaching in mathematics and science, including through the use of ICT in teaching content and delivery;

MEXT has been developing the digital study material which can be used in science study in primary and secondary school, and has been providing the digital material to primary and secondary school through internet with free cost.

- Reducing gender and ethnic minority gaps in science and technology education

The ration of women in the overall researchers is very low in Japan, comparing other OECD countries. It means that role models for female researchers are scarce, and that the female students do not tend to feel familiar to the career –path as a researcher. For this, since FY2006, MEXT starts the new program for increasing female HRSTs. The program would provide the opportunity for female students to meet the female researchers and engineers, introduce the good example of the acknowledged female researchers, and provide the practical information on the career building for female students.

- Enhancing financing opportunities for PhD study and post-doctorate training (such as through fellowships, funded research opportunities, *etc.*)

MEXT has tried to enlarge the competitive research fund for young researchers in “Grant - in - Aid for Scientific Research”. This is aimed at encouraging excellent young researchers with innovation idea and challenging mindset to research automatically without the interference of senior researchers. Moreover, “Japan Society for the Promotion of Science (JSPS)”, which is an independent administrative institution under MEXT, has tried to enlarge the fellowship for young researchers through “Research Fellowships for Young Scientists Program”. The target of JSPS fellowship is the post-doctoral researchers and PhD students. The aim of JSPS fellowship is to give excellent young researchers opportunity to conduct their independent research at the very initial period of their career-path of researchers, which they may tend to have problems for ensuring enough research costs and living costs.

- Improving the quality of secondary university research laboratories/infrastructure
- 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.

Japan Science and Technology Agency (JST), which is a independent administrative institution under MEXT, has providing the information covered the recruitment/staffing of researchers (in public and private sectors) to researchers, and providing the information on researchers seeking research posts to research institute, though the data base, “JREC-IN; Japan Research Career Information Network”, available on the website.

- Others:

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

MEXT has implemented “the 21st Century COE Program” since FY 2002 in order to establish world class COEs (Centers of Excellence). Moreover, MEXT launched “Initiative for Attractive Education in Graduate Schools” since FY2005 in order to support the efforts in ambitious and unique education by graduate schools to strengthen their functions of fostering creative young scientists (These programs are not closed with in national science fields).

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;

The Japanese government has a basic policy of openly accepting foreign workers in professional or technical fields. In this regard, the Japanese immigration legislation or policy has been consistent fundamentally.

“Promoting Acceptance of Foreign Workers in Professional or Technical Fields”

Basic Measures on Acceptance of Foreign Workers in Professional or Technical Fields

- The acceptance of foreign nationals who have passed foreign examinations or obtained qualifications on information processing skills, which are mutually certified by Japanese IT-related examinations or qualifications will be expanded by considering various qualifications of foreign countries.
- Regarding other skills as well, the easing of requirements for statuses of residence and other matters will be reviewed in order to appropriately accept foreign workers who contribute to a high value output, vital in maintaining and enhancing Japan’s international competitiveness, while simultaneously assessing and confirming their specialties and technical skills through the results of mutual certification of examinations or qualifications.
- With respect to foreign nurses qualified through Japan’s national examinations, their acceptance will be expanded by easing the present restrictions that limit their stay for training purposes in Japan to four years. Regarding foreign medical doctors qualified through Japan’s national examinations, the present restrictions on their working locations and those limiting their stay for training purposes to six years will be eased. As for foreign medical doctors or dentists, who are accepted based on written agreements with foreign governments to mutually accept medical doctors and dentists from each other’s countries and who are allowed to treat foreign nationals in Japan on passing a national examination in English, the requirements for landing permission will be established while observing the conditions of conclusion of such agreements, from the point of view that their acceptance can contribute to creating an environment where foreign nationals can live comfortably.
- The Japanese government implemented preferential measures as exceptions to the existing regulations after hearing proposals from the local governments. In this relation, the government implemented the project to further accept foreign researchers to Japan as an exception to the Immigration Control Act. In these designated regions under the scheme of “Special Zones for Structural Reform”, for example, the condition of residence permit for researchers was relaxed, the maximum period of stay for researchers was extended from 3 years to 5 years. These preferential regulatory measures in the special zones are evaluated by the Evaluation Committee of the Headquarters for the Promotion of Special Zones for Structural Reform (HPSZSR). If the

Evaluation Committee finds that there are no problems with a preferential measure, the government will immediately apply it nationwide. In the first half of 2004, the Evaluation Committee assessed the project for further acceptance of foreign researchers. As a result, the committee found that there were no problems with this project. On September 10, 2004, the HPSZSR decided to apply the project nationwide within FY 2005. In addition, the Evaluation Committee also assessed the project for further attracting foreign data processing specialists to Japan. As a result, the committee found that there were no problems with this project, and subsequently, on February 9, 2005 the HPSZSR decided to apply the preferential project nationwide within FY 2005.

- It is beneficial to Japanese society as a whole to take measures to promote the entry, settlement and permanent residence of highly-skilled workers among those that Japan should welcome. In order to demonstrate to foreign nationals and Japanese society that Japan welcomes highly-skilled foreign nationals, the requirements of permission for permanent residence for foreign nationals will be clarified and published in order to encourage settlement.
- Foreign students who seek jobs in Japan after graduation from college may change their status of residence from “College Student” to “Temporary Visitor” and extend their period of stay if the college they graduated from recommends them as eligible candidates to change their status of residence for the purpose of seeking jobs in Japan. Such students may stay in Japan for a maximum period of 180 days. As most Japanese firms employ new graduates in April, some experts have pointed out that foreign students will not be able to stay in Japan if they graduate from college and are due to start working for a company in April of the following year. To address this problem, foreign students may stay in Japan until they start work if they submit a document describing their employment information (e.g., start of employment, the valid period of the contract, and the activities) The Immigration Bureau is planning to take necessary actions in FY 2005.
- ⑦ According to the applicable Criteria Ordinance, a foreign national may start his own business in trading or another business category under the status of residence of “Investor/Business Manager,” if he has his business office in Japan. In this relation, some foreign business owners may receive assistance from an incubator (i.e., an organization that provides advice on business affairs or other business-related services necessary for business operations). In this case, if the business owner submits the incubator’s written consent that authorizes him to use the incubator’s office, he will be regarded as having satisfied the requirement of “having his business office in Japan”, as long as he temporarily rents a business office at JETRO Investment Japan Business Support Center (JETRO IBCS) or other incubation offices in order to start his own business. The Immigration Bureau started to apply this new rule from July 2004.

- Funding of scholarships, grants for international mobility of students/scholars;

Japan Society for the Promotion of Science (JSPS), which is a independent administrative institution under MEXT, has offered the fellowships for young foreign researchers, so-called “Postdoctoral Fellowships for Foreign Researchers to study in Japan “, the target of “Postdoctoral Fellowships for Foreign Researchers to study in Japan “is the young foreign researcher (post-docs) who wish to research in universities or public research institutes in Japan. In resent, the target of “Postdoctoral Fellowships for Foreign Researchers to study in Japan “is extended to the foreign students who will soon get the PhD degree in Japanese universities.

- Creation of special positions at universities or public research centres;

By the university reform in 2004 April, national university became an independent organization from government. As a result, every post, including the university president and deans of faculty, in “national university corporations” is now open to foreigners. In fact, one of public universities hired a foreign president.

- 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:

While the relation between S&T and society become more deepened and diversified, it is growing the importance to utilize human resources having speciality (such as PhD holders) outside universities and public research institutes. For this, MEXT launched “Promote Diversification of HRST's Career Field” program, since FY2006. In this program, MEXT supports the consortium which would try to promote the diversification of HRST's through their organizational effort (such as career-guidance, arranging meeting between private firms and young researchers, internship programs). It is expected that the consortium consists of university, private firm, NPO and so on.

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.

Response:

Japan is encountering the era population decreasing. In this era, it is recognized that the key factor to ensure the competitiveness of Japan is to keep and elevate the quantity/quality of HRSTs. In the “Third Science and Technology Basic Plan”, HRST issue is positioned as one of most important policy agenda. Under that recognition, MEXT compiled the required emergent actions as “Comprehensive Plan for HRST 2006”. Based on this plan, MEXT is implementing various kinds of policies such as the aeration of research environment where diverse researchers (young, female, foreign and so on) do not feel uneasy, the further focus on societal needs in the process of fostering HRSTs, the promotion of science education with high quality. The target of this plan covers from primary school pupils to research/engineer. This consistency is necessary to solve the HRST policy issues.

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:

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:

Since 2004 April, a new evaluation system for university has been introduced, which requires all national, public and private universities, junior colleges, and colleges of technology to undergo periodic evaluation by an evaluation organization which has been certified by the Minister of Education, Culture, Sports, Science and Technology (MEXT). Under this system, the evaluation organizations publicly disclose the evaluation results and this encourages universities, etc. to undergo evaluation by society and make their own improvements based on the evaluation results. This new system secures the quality of higher education along with the prior and existing establishment approval system for universities (The procedure for examination has been simplified stepwise and from FY2003, a notification is all that is necessary in a greater case of reorganization of departments or faculties, allowing universities to flexibly proceed with organizational restructuring.) .

“Independent administrative institution” is a newly introduced organizational status in Japan (firstly introduced in 1999). The basic aim of “Independent administrative institution” is to offer an efficient service by giving the legal status of independent entity to an organization in the governmental sector. Thus, in the scheme of “Independent administrative institution”, the commitment or regulation of government is for as little as possible, and the after-check is rather involved in the scheme. This is believed to ensure the flexible and efficient management. While “Independent administrative institution” is given such an autonomy, their performance is strictly evaluated based on their mid-term goal set by government. “Evaluation Committee”, which consists of the experts outside ministry, is established in each ministry. The committee implements the evaluation regularly. Especially at the end of mid-term period, the responsible minister hears the opinion of committee, judges whether they should continue their activity further, and decides the future of the “Independent administrative institution”, including the abolishment, privatization, and so on.

Based on the recommendation by Council of Science and Technology, on September 26, 2005, MEXT decided “Guideline for Evaluation of Research and Development in MEXT” This guideline sets out the basic approach for conducting evaluations of R&D, that fall under MEXT’s jurisdiction. Internal divisions of MEXT will conduct evaluations based on the General Guideline and this guideline, means while each R&D institute should perform appropriate evaluations using this guideline.

The revision was based on the following three directions of reform:

- ① Implementing evaluations that encourage innovative researchers and identify, promote and develop outstanding R&D activities.
- ② Acquiring adequate resources and strengthening the support systems necessary for evaluations.

③Reforming aimed at effective and efficient evaluation systems.

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:

Reference;

Since the National Guidelines for Evaluating Government Funded Research and Development were drawn up in 2001, reform of the evaluation system in Japan has advanced; impartial, transparent evaluations are being carried out, and the attitudes of those on the front lines of research and development concerning the importance of a results-oriented approach are changing. That reform remains incomplete, however, and new issues are emerging as these evaluations are carried out, including inhibiting researchers from exploring daring, and the reduction of those evaluations to a formality. Thus, CSTP conducted follow-up on the status of implementation of research and development evaluation, and offered its opinions to related ministers. Further, in March, 2005, the national guidelines were revised by Cabinet Office, so that it will lead to improved research and development and the achievement of outstanding results.

Attached paper: “National Guidelines for Evaluating Government Funded R&D”