

STI OUTLOOK 2006 – POLICY QUESTIONNAIRE

Purpose

1. DSTI is preparing the 2006 edition of its biennial publication, *Science, Technology and Industry Outlook*, which will be issued in the Autumn of 2006. The document will contain a chapter reviewing national science, technology, and industry policies in OECD countries. The enclosed questionnaire is intended to compile information on science, technology and innovation policies that are being developed, were recently implemented, or were recently evaluated by Member countries. The topics addressed in the questionnaire relate to areas of ongoing or future interest to the CSTP and its working parties, including policy mixes, globalisation of innovation and human resources for S&T, and will contribute to monitoring the implementation of previous recommendations and development of further policy recommendations.

2. The OECD Secretariat intends to synthesise the information provided by Member countries in a summary document for comment and/or discussion by the Committee for Scientific and Technological Policy (CSTP) at its first regular session in 2006. The revised document will form the basis of a chapter of the 2006 *Outlook* that reviews main trends in science, technology and innovation policy. Some of the information gathered through the questionnaire will be incorporated into other chapters of the *Outlook* that focus on specific policy issues. The individual country responses will also be made available on the OECD's public Web site, www.oecd.org/sti/sti-outlook.

3. The success of this exercise is directly dependent on the quality of information provided by Member countries, and the Secretariat appreciates the comprehensive responses provided by many countries for previous *Outlooks*. In addition to providing information for the *Outlook*, this exercise provides Delegations with a framework to compare their experiences, exchange views on the effectiveness of different policies and discuss the international implications of recent trends in science, technology and industry policies. It also helps the CSTP identify future projects and issues for investigation.

Guidelines

4. In completing this questionnaire, countries are requested to provide a general overview of the science, technology, and innovation policies implemented in their countries and to provide information on major changes that took place in 2004 and 2005 in specific policy areas listed below. Delegates will have an opportunity to update this information prior to publication in order to incorporate information on policies introduced in early 2006. Countries need not provide information on all the topics indicated below, but should concentrate on those areas in which the most significant policy developments have occurred. They may draw upon existing policy documents where possible and are encouraged to submit additional supporting materials and links to relevant Web sites along with their written responses.

5. The responses to this survey need not be excessively long, but because they will provide the primary material for the Secretariat's report, they should at minimum: 1) highlight significant policy changes in the areas listed and outline the background and rationale of these policy changes (such as assessments of previous policy initiatives), 2) indicate and describe the new programmes and measures that reflect these policy changes and how they differ from past policies, 3) briefly recall ongoing programmes or measures that remain in place (indicating changes in implementation conditions that may have

occurred)¹, and 4) include supporting quantitative data where possible. For reference, the previous country responses for the 2004 edition of the Outlook may be consulted on the OECD Web site. (www.oecd.org/sti/sti-outlook)

6. In terms of its content, this questionnaire differs from previous Outlook questionnaires in two important ways:

It includes more questions regarding perceived changes in policies and priorities and the balance among them, as well as expectations regarding future priorities. These are intended to help identify important trends in policy development and implementation.

It also requests more quantitative information about programmes and policy instruments (such as levels of financing, numbers of participants) to enable more direct comparison among national policies.

7. In addition, Delegates will this year have two options for completing the questionnaire. As in the past, they may insert responses into the electronic version (MS Word version) of the questionnaire and send it to the Secretariat via email. In addition, the Secretariat is developing a dedicated Web site that will permit Delegates to insert responses directly into a Web-based form. Further information on the Web site will be made available in a separate Room Document and on the Outlook Web page [www.oecd.org/sti/sti-outlook]. Delegates wishing to use the Web-base system may also contact the Secretariat directly for information [Mr. Byung-Seon Jeong].

8. It is requested that countries' responses be submitted to the Secretariat **no later than 15 January 2006** to allow the Secretariat sufficient time to clarify information and draft a summary document for the CSTP meeting in March. Additional background material such as white papers (in English or French) may be sent by regular mail if they are not readily available in electronic format. Email responses should be sent to:

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9. In completing the Questionnaire, CSTP delegates are encouraged to consult with delegates to CSTP working parties (TIP, WPB, NESTI) as appropriate. Nevertheless, country delegations are requested to designate a **primary contact person** with whom Secretariat staff can communicate regarding the survey responses.

¹. References could be made to country responses to the 2004 *STI Outlook* questionnaire.

REQUEST FOR INFORMATION

10. 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:

Research Infrastructure

Research Infrastructure Advisory Group

The New Zealand Government has been investigating support for research infrastructure. The Ministry of Research, Science and Technology (MoRST) has established a Research Infrastructure Advisory Group (RIAG). The purpose of RIAG is to provide advice to MoRST on the scientific merit and the strategic impact of investing in particular items of research infrastructure. MoRST has also developed a policy statement setting out key policy and operational principles for RIAG.

Two recent investment cases have informed this policy: (i) access to the Australian Synchrotron and (ii) New Zealand's Advanced Communications Network for Research and Education.

Synchrotron Access

New Zealand has made an in principle agreement to contribute AUD\$5 million to the Australian Synchrotron which will contribute to construction of beamlines.

The investment is the result of a joint commitment by the New Zealand Government and a consortium including universities and Crown Research Institutes.

The New Zealand RS&T sector began exploring the merits of investing in the Australian Synchrotron in mid-2003 and the agreement to invest was announced on 12 August 2004.

The basis for New Zealand's investment in the synchrotron was set out in the business case below, prepared by MoRST for potential New Zealand stakeholders in May 2004.

[The Australian Synchrotron, Business Case for New Zealand Research Providers \(file size 329KB, PDF\)](#)

Advanced Network

The New Zealand Government has committed to the development and construction of an Advanced Network (AN) for New Zealand. The AN is designed to provide extremely high speed connectivity between research and education users. AN users will benefit from being able to share resources and exchange data in a virtual multimedia interactive environment linking many locations together in real time – such as through access grids. The AN will deliver at least 1 Gbit/sec to larger research institutions. The AN backbone is expected to enable speeds in excess of 40 Gbit/sec within a few years.

<http://www.morst.govt.nz/?CHANNEL=IT+INFRASTRUCTURE&PAGE=IT+Infrastructure>

Technology Transfer Programme

New Zealand is piloting a technology transfer programme on the model of the Danish Technology Institute. It is a service programme designed to identify the technical requirements of firm, especially SMEs, and to provide suitable sources of technology and knowledge.

Co-ordinated Business R&D Services

Public agencies delivering support for (i) research and (ii) growth and development to firms are coordinating activities. Commencing with a group of fast growing and export focused SMEs, this co-ordinated approach is expected to be extended to businesses with low and medium technology capability by 2006.

Science Roadmaps

MoRST is collaborating with *i*) the science sector, *ii*) users of science and *iii*) public sector purchasers of R&D to produce documents describing *i*) overviews of science areas important to New Zealand and *ii*) the desired directions for these areas.

Biotechnology Futurewatch

New Zealand government agencies have provided a summary report on the future impact of biotechnology. It gives an overview of global trends in biotechnology. It focuses on developments in biotechnology for health, primary production, industrial, environmental and defence applications.

Capability Fund for Crown Research Institutes

MoRST policy identified a need to reform the existing “Non-Specific Output Fund” (NSOF) for Crown Research Institute (CRI) research. Previously NSOF provided CRIs with a level of continued funding to complement periodic contestable funding rounds. Now, NSOF has been renamed the “Capability Fund” and has been given a specified aim - to strengthen institutional capabilities. This reform gives greater support for the long-term research of CRIs in key areas that underpin more diverse research areas.

Seed Co-Investment Fund

The New Zealand Government has established the “Seed Co-Investment Fund” to overcome an identified barrier to the growth of new innovative businesses, particularly in the technology sector –

namely a lack of capital. This fund is managed by the New Zealand Venture Investment Fund and is designed to encourage angel investment in these firms. Government investment is up to 50 percent for each venture with the balance being private equity investment.

- 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:

- 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:

3. Please describe the primary challenges that are expected to be addressed in future innovation policy initiatives (*i.e.*, in the 2007-08 timeframe).

Response:

MoRST is currently developing a strategic plan, whose key actions are intended to enhance the contribution research, science and technology makes to New Zealanders. These key actions - together entitled "Picking Up the Pace" - draw together existing policy initiatives and proposed new initiatives.

Currently, these actions are:

- i. setting clearer directions for research, science and technology in New Zealand;
- ii. creating a more stable funding environment;
- iii. accelerating commercialisation of research;
- iv. supporting long-term sustainable investment in research, science and technology;
- v. supporting high performers;
- vi. supporting the engagement of New Zealanders with research, science and technology; and
- vii. supporting the development of skills for the future.

The Ministry of Economic Development (MED) has identified five key priority areas considered to be the most important areas for the Ministry to focus on over the next three to five years. These are:

- i. leading a whole of government approach to economic development;
- ii. improving the international linkages that allow firms to benefit from trade, knowledge transfer and investment;

- iii. fostering entrepreneurship and innovation in New Zealand firms;
- iv. strengthening the growth focus in the regulatory environment for business; and
- v. improving the quality and reliability of key infrastructure services.

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: Provided is total public sector funding for Crown Research Institutes.

If funding data is available, please provide it below:

Year	2003	2004	2005	2006(forecast)	2007(forecast)
R&D funding (Unit: \$,000)	372,391	386,208	421,227	453,666	n/a

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

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

see

<http://www.morst.govt.nz/uploadedfiles/Documents/Publications/stats%20and%20evaluations/VitalStatistics.pdf>

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.

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 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); vi) changing guidelines for ownership and management of IPR; and vii) implementing new evaluation procedures).

Response:

Capability Fund for Crown Research Institutes

MoRST policy identified a need to reform the existing “Non-Specific Output Fund” (NSOF) for Crown Research Institute (CRI) research. Previously NSOF provided CRIs with a level of continued funding to complement periodic contestable funding rounds. Now, NSOF has been renamed the “Capability Fund” and has been given a specified aim - to strengthen institutional capabilities. This reform gives greater support for the long-term research of CRIs in key areas that underpin more diverse research areas.

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.²

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:

- 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:

- 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:

² Delegates may wish to consult with experts participating in the electronic discussion group to develop OECD guidelines for access to research data.

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.

Response:

Seed Co-Investment Fund

The New Zealand Government has established the “Seed Co-Investment Fund” to overcome an identified barrier to the growth of new innovative businesses, particularly in the technology sector – namely a lack of capital. This fund is managed by the New Zealand Venture Investment Fund and is designed to encourage angel investment in these firms. Government investment is up to 50 percent for each venture with the balance being private equity investment.

Section D: Enhancing collaboration and networking among innovating organisations

1. Please describe major initiatives to promote collaboration and networking among private 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:

Technology Transfer Programme

New Zealand is piloting a technology transfer programme on the model of the Danish Technology Institute. It is a service programme designed to identify the technical requirements of firm, especially SMEs, and to provide suitable sources of technology and knowledge.

- Others:

Response:

Section E: Globalisation³

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

Response:

Technology Transfer Programme

New Zealand is piloting a technology transfer programme on the model of the Danish Technology Institute. It is a service programme designed to identify the technical requirements of firm, especially SMEs, and to provide suitable sources of technology and knowledge. Under the technology transfer programme, New Zealand technology institutes and firms will be able to join up to the DTI's extensive database of international technology suppliers.

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:

³ 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.

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 resources⁴

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
- 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:

⁴ 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.

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; etc.

Response:

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: In 2003 New Zealand ran its first innovation survey. The survey has been repeated in 2005. The results will be available in August 2006.

The survey collects data regarding the number of innovation active firms – and other questions in-line with the OECD Oslo Manual. New Zealand used the expanded definition of innovation in this survey – including product, process, marketing and managerial innovation.

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: None.

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.

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

<http://www.morst.govt.nz/?CHANNEL=STATISTICS+AND+EVALUATIONS&PAGE=Statistics+and+evaluations#stats>

Response: