Organisation de Coopération et de Développement Economiques
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DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY
COMMITTEE FOR SCIENTIFIC AND TECHNOLOGICAL POLICY

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STI OUTLOOK 2004 -- POLICY QUESTIONNAIRE

10-12 December 2004, OECD Headquarters, Paris

Delegates will find attached the questionnaire to be used in the preparation of the Chapter devoted to the review of policy developments in the 2004 issue of the Science, Technology and Industry Outlook. Responses to the questions on policies to boost innovation in the service sector (Question 6) and evaluation (Question 7) will also be used in future work on these two topics. Preliminary drafts of this questionnaire were reviewed by CSTP and TIP delegates, and their comments have been taken into account in the present version.

Delegates are asked to return completed questionnaire to the Secretariat no later than 16 February 2004.

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STI OUTLOOK 2004 – POLICY QUESTIONNAIRE

Purpose

1. DSTI is preparing the 2004 edition of its biennial publication, *Science, Technology and Industry Outlook,* which will be issued in early Autumn 2004. 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. Questions related to public research, support for business R&D and collaboration among innovative organisations, for example, derive from recent OECD work on these topics and will contribute to monitoring the implementation of recommendations in these areas.[1] Questions related to human resources, the service sector and policy evaluation will contribute to planned work in these areas.

2. The OECD Secretariat will synthesise the information provided by Member countries in a summary document for comments and/or discussion by the Committee for Scientific and Technological Policy (CSTP) at its first regular session in 2004. The revised document will be used as a chapter of the 2004 *Outlook* that reviews main trends in science, technology and innovation policy. Some of the information gathered will be used in other chapters of the *Outlook* that focus on specific policy issues (*e.g.* human resources, innovation in services). The individual country responses will also be made available on the OECD's public Web site.

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 polices 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. 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 2002 and 2003 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 2004. The topics selected for the questionnaire reflect the subject of ongoing and anticipated work within DSTI. Countries need not provide information on all the topics indicated below, but should concentrate on those

1. Delegates may wish to refer to recent reports for additional guidance on the policies and practices of interest to this questionnaire: *Governance of Public Research: Toward Better Practices* (OECD, 2003); *Turning Science into Business* (OECD, 2003); *Science, Technology and Industry Outlook 2002* (OECD 2002); and *Benchmarking Industry Science Relationships* (OECD 2002).

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 listed areas 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)[2], and *4)* include supporting quantitative data where possible. A response of approximately 10-15 pages will provide a sufficient level of detail for most countries. For reference, the previous country responses for the 2002 edition of the *Outlook* may be consulted on the OECD Web site. (www.oecd.org/sti/sti-outlook)

6. Countries are kindly requested to submit their written responses, along with supporting material, *via e-mail*. 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. It is requested that countries' responses be submitted **no later than 16 February 2004** to allow the Secretariat sufficient time to clarify information and draft a summary document in time for the CSTP meeting in May. Responses should be sent to:

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7. 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.

2. References could be made to country responses to the 2002 *STI Outlook* questionnaire.

REQUEST FOR INFORMATION

8. Please provide a written response for Section 1 below, which addresses general science, technology and innovation policies, and for those topics identified in Sections 2 through 7 in which significant shifts in policy have been made or new initiatives launched in 2002 or 2003. Information on anticipated changes in 2004 (or beyond) should also be included, where possible.

1. General framework and trends in science, technology, and innovation policy

1.1. Please provide a brief overview of the main directions, objectives and elements of the country's policies for science, technology, and innovation. The overview should highlight the following topics:

- Main features of recent science, technology, and innovation policy developments and the rationale behind them, including new innovation strategies.

- Major changes in the legislative, administrative, organisational, institutional, or budgetary framework for the formulation and implementation of science, technology, and innovation policies. Please include efforts to increase the involvement of civil society, non-governmental organisations, or private sector advisory bodies or to better co-ordinate government activities across ministries, departments, or agencies.

- Major shifts or changes in the balance of the use of different types of policy instruments, and/or attention or support given to particular science, technology, and innovation policy areas.

- Future project or policy issues identified by technology foresight, forecasting or technology road mapping.

2. Public sector research and public research organisations

2.1. Please describe major policy changes related to R&D performed by public sector organisations (mainly universities and government laboratories), to include the following:

- Changes in overall levels of R&D funding for public research organisations.

- Shifts in the allocation of funding across: 1) different kinds of institutions (*e.g.* universities vs. public research organisations), 2) different kinds of R&D (*e.g.* basic vs. applied research), 3) different socio-economic objectives (*e.g.* general advancement of knowledge, health, national security, environment, energy), or 4) different fields of science and technology (*e.g.* information and communications technology (ICT), biotechnology, and nanotechnology.)

- 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).

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

- Initiatives to increase the flexibility and/or accountability of universities and public research organisations in responding to changing scientific opportunities or socio-economic needs (*e.g.* by granting more autonomy, adopting new funding instruments, relying more on contract-based funding).

- Changes in procedures for evaluating research results, researchers, or institutional performance; establishment of national criteria and priorities for government support.

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

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

2.3. Please describe major policies and government-sponsored programmes to foster international collaboration among researchers in universities and public research organisations, including programmes related to very large and smaller scale research equipment (*e.g.* synchrotrons, neutron sources, telescopes, high-intensity lasers) and research infrastructure, such as IT-based networks and scientific databases in natural and social sciences.

3. Government support for private-sector R&D and innovation

3.1. Please describe major policy changes in the individual instruments or in the mix of instruments used to provide public support for private sector R&D and innovation, including:

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

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

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

- Efforts to attract R&D investment by foreign-owned firms.

- Support for venture capital or other sources of private sector financing (*e.g.* foundations).

- 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).

- Other forms of public support for innovation that use instruments other than R&D (*e.g.* consulting services and extension programmes).

3.2. Please describe major changes in the balance and/or priority of public support of business R&D and innovation in terms of:

- Changes in emphasis of specific technological/industrial sectors, such as ICT, biotechnology, and knowledge-intensive services.

- Programmes to support R&D and innovation in SMEs and new technology-based firms.

4. Enhancing collaboration and networking among innovating organisations

4.1. 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).

4.2. Please describe major policy initiatives to promote stronger industry/science relations (*i.e.* linkages between industry and public research organisations), such as efforts to:

- Reform the 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.

- Enhance collaborative research through changes in regulations governing the types of agreements negotiated between universities/public research organisations and the private sector and their implications for access to and exploitation of research results.

- Increase the mobility of human resources between public and private sectors, *e.g.* by revising employment and financial rules governing public-sector scientists, engineers, and technicians 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.

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

- 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.

5. Human resources for S&T

5.1. Please provide recent statistics (if available) on science and engineering graduates from universities, and describe efforts to increase numbers of university graduates with science and engineering degrees, such as by:

- Improving public understanding of science.

- Revising higher education curricula and expanding interdisciplinary training.

- Reducing the gender gap in science education and enhancing incentives for PhD study and post-doctorate training.

5.2. Please describe policy initiatives taken to address perceived shortages of scientists and engineers in particular fields (or mismatches between supply and demand for scientists and engineers).

5.3. Please describe policy changes related to the international migration and mobility of scientific and high-skilled personnel (inward or outward mobility) including programmes to attract foreign students, researchers and skilled workers, to encourage students or workers to gain international experience, or to promote "return migration" of expatriate students, researchers and skilled scientists and engineers.

6. Policies to boost innovation in the service sector

6.1 Please describe policies to foster increased innovation and productivity growth in the service sector (both services in general and specific service-sector industries of interest, such as software, telecommunications, health care, education, business services, finance, etc.). Where possible, provide information on the results of any assessments or evaluations of the effectiveness of such policies. Consider such policies as:

- Efforts to encourage service-sector firms to undertake more innovation and/or R&D, such as through subsidies, tax incentives, public/private partnerships, networks and clusters.

- Efforts to encourage start-up firms in the service sector.

- Programmes to increase the uptake of knowledge-intensive service activities (KISA) by service-sector firms or to increase demand for such services in the manufacturing sector.

- Attempts to enhance diffusion of technology to service-sector firms whether via programmes aimed directly at services or by opening existing programmes to the service sector. Please consider policies to stimulate uptake and productive application of ICT (which could be related to general technology diffusion programmes above).

- Efforts to improve human capital and develop highly-skilled workers through new educational curricula, support for on-the-job training, *etc.*

- Deregulation, labour market reforms, support for standards (*e.g.* technical standards, interoperability standards), or other policies to enhance competitiveness in the service sector.

- Policies to enable service-sector firms to better protect, trade or value their intangible assets, including changing patentability criteria for service-sector inventions (such as software or business methods), changes in copyright, new accounting procedures, or support for technology markets and licensing.

- Policies to promote use of open standards via public procurement of open source software or by adjusting educational curricula to make greater use of open standards.

6.2 Please provide any available information or statistics on the participation of service-sector firms in innovation programmes that are not targeted specifically at the service sector, but are open to service sector firms. Please consider policy measures such as those listed in question 6.1.

7. Policy evaluation

7.1 Please describe recent changes in policies regarding the evaluation of innovation policy programmes or institutions. Please address the following elements:

- Legislative or regulatory changes requiring evaluation.

- Requirements for evaluation of different elements of innovation policy: researchers, institutions, programmes, overall policy directions, innovation system.

- Methodologies employed in evaluations at different levels, *e.g.* qualitative vs. quantitative, international perspectives.

- Institutional mechanism by introducing new evaluation organisations, rules, or compulsory regular evaluation.

- Efforts to ensure that results of evaluations feedback into policy development.

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