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:

> ***During the period under study, 2004 to 2005, the Finnish STI policies have been under a vigorous debate and a process of renewal is underway. The process started from the report 'Evaluation of the Finnish Innovation Support System' from 2003. In 2004, the Science and Technology Policy Council of Finland endorsed a stretegic document on the internationalisation of Finnish science and technology (12.11.2004).***
> *http://www.minedu.fi/tiede_ja_teknologianeuvosto/eng/reports/internationalisation.pdf*
>
> ***The S&T Policy Council also prepared a report on the structural development of the public research system. That led to a Government Resolution on the topic (7.4.2005). Structural challenges facing the systems level, institutions of higher education, ministries and government laboratories as well as various intermediaries at the boundary of the public R&D system and the economy are analysed and recommendations are given. Ministries are the responsible organisations as to the implementation of the resolution.***
> *http://www.minedu.fi/tiede_ja_teknologianeuvosto/eng/reports/resolution_2005.pdf*
>
> ***Other important documents behind the ongoing renewal process deal with the effects of globalisation. In 2004, an expert group appointed by the Prime Minister's office carried out the project 'Finland in the Global Economy'. Final report was published on 9.11.2004.***
> *http://www.valtioneuvosto.fi/tiedostot/pdf/en/91312.pdf*
>
> ***The reports have led to more studies and development activities. These include structural development of HE institutes, comprehensive ongoing work of the sectoral research, identification and processing of internationally competitive science and technology clusters as well as formulation of a national infrstructure strategy. The state of art of all these initiatives, will be summarised by the S&T Policy Council in the summer of 2006.***
>
> ***So far the actual changes are minor, and most issues are to be detailed and implemented during 2006 and the years to follow. The ones implemented already are mentioned below in the respective items. The STPC report from 2002 still covers the main development lines of the Finnish system.***
> *http://www.minedu.fi/tiede_ja_teknologianeuvosto/eng/publications/Review_2003.pdf*
>
> ***More details on the recent developments in the Finnish STI policy can be found on***
> *www.research.fi*

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):

> ***At systems level, actions have been taken to intensify horizontal cooperation and decision making between ministries. These include the development of the Science and Technology Policy Council (e.g. to strengthen the secretariat of the council; implemented in 2006) and establishment of the Government Foresight Network.***
>
> ***Legislative renewals include the new university law in 2005, which affects e.g. the overall definition of university tasks: the so-called 'third task' was added to the list of universities'***

basic tasks.. A new law concerning immaterial rights of universities and innovations made in universities is undergoing the parliamentary process.

In budgetary terms, as an addition to the framework decision made for 2003- 2007, the Government decided in 2005 an increase of 30m€ for Tekes and 20m€ for the Academy of Finland in 2006-2007, especially with the aim of strengthening Finnish competitiveness in the globalisation process. In 2006, this means an overall increase of government R&D funding by 83 M€ from 2005. Of this, the share of the Academy is 34 M€ and that of Tekes 30 M€, thus raising the share of competitive funding to 44 % of the government total.

New policy measures to foster increased innovation and productivity growth in the service sector (both services in general and specific service-sector, finance, etc.).

Government has launched a horizontal policy programme for entrepreneurship, with an important share of measures targeted to services. Tekes has also introduced an extensive new technology programme in the field of services in the beginning of 2006.

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).

Strengthening the science system in national policies means profilisation of research organisations, priorisation and focusing of activities and selective decision-making based on foresight. This is an ongoing structural development process within the public R&D system. The Ministry of Trade and Industry has prepared (2005) a new strategy for the financing and service system of innovative start-up companies. Linking science to innovation is promoted e.g. by strengthening the role of intermediaries. Development of human resources is a topical issue in many ways: improving doctoral education system in general, strengthening the national doctoral programmes, and creating real researcher careers have been under scrutiny (2004-2006); implementation phase is starting.

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).

The challenges mostly remain: globalisation and taking care of the competitiveness of our innovation environment, the quality and quantity of r&d and transferring the research results to successful innovations, alluring and keeping competent human (and financial) resources in the country. Also the more social challenges remain: the ageing of society, developing effective services etc.

As to policies, the challenges require formulating an integrated view on the development of contents, structural and financial issues as well as more selective decision-making. Internationalisation of Finnish STI is a strong priority. Another is strengthening social innovation and its integration with technological innovation.

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.

No major changes, slight increase has continued. See details on the Finnish STI indicators from http://www.research.fi and http://www.stat.fi/til/ttt_en.html, Funding data in Annex 1.

If funding data is available, please provide it below:

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

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)

No major changes; the share of the Academy of Finland (i.e. research councils) has steadily risen and is over 15 % of the government total in 2006.

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

No major changes.

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

No major changes in the allocation of funding. For details, please see the statistical sources mentioned above.

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?

Competitive funding is strongly prioritised (see A.1), the Academy of Finland and Tekes being the key organisations.

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).

The Finnish University System is undergoing a process of renewal that consists of a variety of studies and development projects to be finalised during this and next year (see the Government Resolution referred to in A.1).

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

There are many undertakings going on to develop the organisational structures and institutions performing r&d: The Science and Technology Policy Council has appointed a working party to develop ministries' research activities as a whole (by the end of 2006) and another one to develop Strategic Centers for STI (by mid-2006).

The organisational changes include the renewal of both Tekes (National Technology Agency of Finland) and VTT (Technical Research Centre of Finland), both from the beginning of 2006. Also the organisation of Employment and Economic Development Centres has changed from the beginning of 2006.

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

Technology foresight activities have been strengthened: in addition to the government foresight network, in 2005 Sitra has set up a National Foresight network, and Tekes and Academy of Finland are together carrying out a foresight project ‘FinnSight 2015’,

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:

The government has launched a proposal for a new law concerning innovations made in universities. The proposal is still in the Parliament

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).

As to funding, there is a clear policy shift towards increased P/P partnerships in big projects/programmes/infrastructures; pooling of resources is considered to be of great importance. Development of new evaluation procedures, especially impact analysis, is a joint task of the Academy and Tekes. As to other questions, see answers given above.

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.

In spring 2005, the Ministry of Education has published recommendations for the promotion of open access to scientific and scholarly publications in Finland.

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

The S&T Policy Council has issued a list of ten points. Among those are the need to develop world-class R&D in fields most relevant to the national economy, to societal development and to the citizens' well-being; to reach the 4 % level in national R&D funding; to decrease the fragmentation of R&D activities; to improve cooperation in horizontal networks; to improve the performance of the innovation system, especially as to the quality of research, scientific and social relevance, internationalisation, commercial utilisation, obstacles and incentives of entrepreneurship; and to foster intellectual resources. The new government programme (likely to cover 2007 – 1011) after the early 2007 Parliamentary election will be crucial.

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):

NONE

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

No major new measures worth mentioning

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

No major new measures worth mentioning

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):

NO CHANGES

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

No major new measures worth mentioning

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:

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

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

No major changes in programmes in the field of SMEs and new technology-based firms

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?

No major shifts of changes in the mix of instruments in this field

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).

Collaborating and networking remain as integral, central and inseparable dimensions of the innovation support system with no remarkable changes or novelties to be mentioned

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);

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.);

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

Others:

The Academy of Finland appointed a working group to prepare proposals in order to promote researcher training and basic research that serves industry and develop forms of cooperation between the Academy and industry and business. The report with the title "Long-term and dynamic partnerships" was published in 2005. See www.aka.fi/publications.

The Working Group on the development of researcher education by the Ministry of Education presented its proposals in February 2006. These proposals also emphasized the strengthening of the academy-industry linkage.

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.

The Act on Inventions made at higher educations institutions is currently in the Parliament. The Act is expected to be in force by the beginning of 2007.

A study on the intermediary organisations was also made in connection with the structural development of the public research system.

See references in Section A.

Section E: Globalisation

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.

In Finland, no significant changes since November 2004 in this field

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

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.)

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).

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.).

Section F: Human resources

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.

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:

During 2004 a National Science and Society Programme was launched, the aim of which was to maintain and increase the interest of young people in science. The Programme is being implemented and it includes measures to strengthen S & T education in schools, reinforcing the Science Centre Heureka, promoting S & T education, increasing teacher education in this field, strengthening the popularisation of science.

The Report on Developing Researcher Education includes proposals on improving the quality of researcher education and increasing the attractiveness of a research career.

The Report by the Working Group on Research Careers will be finalised in May 2006. The high-level Working Group preparing the Report was appointed by the Ministry of Education. The Report will i.a. include proposals on making research careers more attractive and predictable, clarification of job structures etc.

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:

***Making it easier to foreign researchers and experts to enter the country through the cooperation of different authorities and better information. Finland actively participates in the Connect project of the EU**.*

The international cooperation of graduate schools has been supported by Academy financing and international cooperation has been a selection criteria for graduate schools.

The Academy and Tekes have launched a Finland Distinguished Professors funding Programme (FiDiPro) in order to attract high-level experts to Finland.

See www.aka.fi.

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.

No major specific efforts in this field

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.

The Working Group on Developing Researcher Eduction emphasized the importance of these non-S & T skills (transferrable skills) in researcher education; according to the working group it is essential to develop them in order to increase the number of Ph.D's in industry.

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.

A Report on Research, Education and Employment has been prepared and it includes predictions on the need for highly qualified manpower till the year 2020.

The Working Group on Research Careers has also dealt with these questions; one important problem is the great number of Ph.D. level researchers occupying temporary positions; developing the structures of the research career does not necessarily solve the problem.

Section G: Policy evaluation

Answer for the whole section G: no major changes in the field of evaluation. The practical procedures of evaluation and practices used in ensuring the feed-back of evaluation results to future policy planning are, of course, being continuously developed throughout the innovation system.

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.

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.

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.