Advisory Group
Social Sciences and Humanities in the European Research Area

Follow-up Report on the European and Scientific Agendas (FR2)

Knowledge-based Economy and Competitiveness

September 2004

Contents

Social sciences and humanities can make a relevant contribution to the construction of Europe by identifying possible answers to some of its main challenges: achieving enlargement, enhancing competitiveness with social cohesion, fostering sustainable development and quality of life, combining European with national identities, enhancing the role of Europe in international governance, reforming political institutions at European and national levels.

In order to enhance the strategic monitoring of FP6, the European Commission – DG Research has created an Advisory Group on "Social Sciences and Humanities in the European Research Area" (SSH-ERA).

The Advisory Group on Social Sciences and Humanities should give advice to the European Commission and stimulate the European research community regarding the following objectives:

a/ Identifying the research priorities in the thematic priority 7;
b/ Enhancing the interface between SSH and the other thematic priorities;
c/ Developing the interfaces between SSH and Community policies;
d/ Anticipating new problems and scientific and technological needs;
e/ Exploring a SSH approach on Research and Innovation;
f/ Defining the strategy to build the European Research Area.

The present project - SSHERA - is designed to provide tools to explore the development of the research agenda.

In order to underpin the general development of this project, it is important to carry out a regular follow-up of the scientific agenda and the European agenda, with the aim of fostering their interaction. The central purpose of this Follow-up Report will be to provide general background information on a concrete theme which might be useful for researchers who are focusing on European issues.

Introduction

This Follow-up Report will deal with the issues of a knowledge-based economy and competitiveness, and with the policies for the information society, innovation, enterprise and industry. These issues and policies have been placed at the heart of the European agenda by the strategic goal set in Lisbon, in 2000: '*to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion*'[1]. The main aim is, as with the first Follow-up Report, to sum up the state of the art of these policies and their possible implications for the scientific agenda.

The crucial role of knowledge as a driver to the dynamics of the modern economy has been increasingly acknowledged from the mid and late 1990s on. Although the definition of the concepts of knowledge-based or knowledge-driven economy is not very clear, both concepts are linked to the significant importance of knowledge as an input to the economy. The central role of information and communication technology (ICT) to this process should not be forgotten either.

Innovation is considered an essential element of the Lisbon strategic goal, being a central element of economic performance and a core feature of the knowledge-based economy. Innovation, in its various dimensions, is at the same time a facilitator and an element of change for the knowledge-based economy.

We will start with a presentation of the most relevant and updated bibliography on these issues, gathering relevant official publications, at both European and national levels.

Secondly, we will present some quotations of these documents or of relevant European news agencies concerning these issues.

Thirdly, we will introduce major indicators in these fields.

Fourthly, we will identify some recent academic references which might be relevant to illustrate the new trends in the scientific agenda.

Finally, we will suggest some key-issues for possible interactions between the European policy and scientific agendas.

[1] Lisbon European Council, *Presidency Conclusions*, Par. 5, SN 100/00.

1. Sources

1.1. Information Society

EU Information Society Portal
http://europa.eu.int/information_society/index_en.htm

Information Society Programmes
http://europa.eu.int/information_society/programmes/research/index_en.htm

Knowledge Connections
http://www.skyrme.com/

1.2. Innovation

Innovation – European Commission, Enterprise Directorate-General
http://europa.eu.int/comm/enterprise/innovation/index.htm

Innovation Portal
http://www.cordis.lu/innovation/en/home.html

Regional innovation and technology transfer
http://www.rinno.com/

1.3. Enterprise, competitiveness and industrial policy

Enterprise Policy
http://europa.eu.int/comm/enterprise/enterprise_policy/index.htm

Industrial Policy
http://europa.eu.int/comm/enterprise/enterprise_policy/industry/index.htm

Competitiveness
http://europa.eu.int/comm/enterprise/enterprise_policy/competitiveness/index.htm

1.4. National Programmes and initiatives
Ireland

Irish Council for Science, Technology and Innovation (ICSTI)
http://www.forfas.ie/icsti

National Competitiveness Council
http://www.forfas.ie/ncc/index.html

Forfás (National Board responsible for providing policy advice to Government on enterprise, trade, science, technology and innovation)
www.forfas.ie

Enterprise Ireland
http://www.enterprise-ireland.com/

Latvia

State Chancellery
http://www.mk.gov.lv/index.php/en/?id=1258

Ministry of Economics
http://www.em.gov.lv/em/2nd/?cat=137

The Netherlands

Dutch government portal
http://www.government.nl/index.jsp

Ministry of economic affairs
http://www.ez.nl/content.jsp?objectid=22106

1.5. News Agencies

Agence Europe
http://www.agenceeurope.com

Euractiv
http://www.euractiv.com/cgi-bin/cgint.exe?1&1000=1&tmpl=index

EU Observer
http://www.euobserver.com/index.phtml

Sources d'Europe
http://www.info-europe.fr/

1.6. Benchmarking and Indicators

Trend Chart on innovation
http://trendchart.cordis.lu/

European Innovation Scoreboard
http://www.cordis.lu/scoreboard/

Innobarometer
http://www.cordis.lu/innovation-smes/src/innobarometer.htm

Eurostat
http://europa.eu.int/comm/eurostat/Public/datashop/print-product/EN?catalogue=Eurostat&product=struct-EN&mode=download

Organisation for Economic Co-operation and Development
http://www.oecd.org

UNESCO Observatory on the Information Society
http://portal.unesco.org/ci/ev.php?URL_ID=7277&URL_DO=DO_TOPIC&URL_SECTION=201&reload=1048272936

2. References concerning the European agenda

2.1. European Union – recent official publications

Information Society

European Commission, *eEurope an Information Society for all –Progress Report*, Ref. COM (2000) 130 final, 08.05.2000

European Commission, *eEurope 2002 An Information Society for all, Action Plan prepared for Feira European Council*, 14.06.2000

European Commission, *Communication: eEurope2002 – Impact and Priorities*, *Ref. COM (2001) 140 final*, 13.03.2001

European Commission, *eEurope 2005: An information society for all – Action Plan to be presented in view of the Sevilla European Council*, *Ref. COM (2002) 263 final*, 28.05.2002

European Commission, *eEurope 2002 Final Report*, Ref. COM (2003) 66 final, 11.02.2003

European Commission, *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and The Committee of the Regions: the Role of eGovernment for Europe's Future*, Ref. COM (2003) 567, 01.10.2003

European Commission, *eEurope 2005 Mid-term Review*, COM (2004) 108 final, 18.2.2004.

Innovation

European Commission, *Communication from the Commission Innovation Policy: Updating the Union's Approach in the Context of the Lisbon Strategy*, COM (2003) 112 final, 11.03.2003.

European Commission, *Commission Staff Working Paper: 2003 European Innovation Scoreboard,* SEC (2003) 1255, 10.11.2003.

European Commission - Enterprise Directorate- General, *Innobarometer 2003*, February 2004

European Commission, *"Innovate for a Competitive Europe" - A new Action plan for innovation*, 02.04.2004.

European Commission - DG Enterprise, Newsletter Innovation & Technology Transfer, May 2004, No.3/04. Available at: http://www.cordis.lu/itt/itt-en/04-3/index.htm

European Commission - DG Enterprise, Newsletter Innovation & Technology Transfer, July 2004, No. 4/04. Available at: http://www.cordis.lu/itt/itt-en/04-4/index.htm

Enterprise and industrial policy

European Commission, *Towards Enterprise Europe – Work Programme for enterprise policy 2000-2005*, Ref. SEC (2000) 771, 08.05.2000

European Commission, *Communication from the Commission Challenges for Enterprise policy in the knowledge-based economy, Proposal for a Council Decision on a multiannual Programme for Enterprise and Entrepreneurship (2001-2005)*, Ref. COM (2000)256 final, 26.04.2000

European Commission, *Benchmarking Enterprise Policy*, 05.05.2000

European Commission, *European Charter for Small Enterprises*, Ref. Council of the European Union 9331/00, 09.06.2000

European Commission, *Benchmarking Enterprise Policy – First results from the Scoreboard*, Ref. SEC (2000) 1842, 27.10.00

European Commission (2002), *Communication from the Commission: Industrial Policy in an Enlarged Europe*, COM (2002) 714 final, 11.12.2002.

European Commission, *Green Paper on Entrepreneurship in Europe*, COM (2003) 27 final, 21.01.2003

European Commission, *Communication - Action Plan: The European agenda for Entrepreneurship*, COM (2004) 70 final, 11.02.2004

European Commission, *Fostering structural change: an industrial policy for an enlarged Europe*, COM(2004) 274 final, 20.4.2004

Competitiveness

European Commission, *European competitiveness report 2003*, Ref. SEC (2003) 1299, 12.11.2003.

European Commission, *Some Key Issues in Europe's Competitiveness – Towards an Integrated Approach*, COM (2003) 704 final, 21.11.2003

2.2. National documents

Irish Council for Science, Technology and Innovation (ICSTI), *Statement on State Expenditure Priorities for 2005,* 09.09.2004.

National Competitiveness Council, *Competitiveness through Innovation A Submission by the National Competitiveness Council to the Enterprise Strategy Group*, February 2004

Building Ireland's Knowledge Economy, The Irish Action Plan For Promoting Investment in R&D to 2010 Report to the Inter Departmental Committee on Science, Technology and Innovation, July 2004

Forfás, Innovation Networks, 24.06.2004

National Competitiveness Council, The Competitiveness Challenge 2003, November 2003

Latvian Ministry of Economics, *Report: Economic Development of Latvia*, June 2004

Latvian Government, *National Innovation Programme 2003-2006,* 01.04.2003

Latvian State Chancellery, "On medium-term budget objectives and priority lines of development", 26.09.2001

Dutch Ministry of Economic Affairs, *Action for innovation – Tackling the Lisbon ambition*, June 2004

Dutch, Ministry of Economic Affairs, *Innovation Research and Innovation Policy – usual suspects, hidden treasures, unmet wants and black boxes*, 15.07.2003

2.3. News Agencies

Agence Europe, "(EU) EU/ENVIRONMENT: Informal Maastricht Council puts its money on ecotechnologies to boost Lisbon strategy - Outlets must be created for green innovation market", 19.07.2004

Agence Europe, "(EU) EU/COMPETITIVENESS: Dutch presidency thinks EU should highlight areas for knowledge and innovation", 07.07.2004

Euractiv, Dossier 'Entrepreneurship in Europe'

Euractiv, "MIT Professor challenges perceptions of US vs EU productivity", 25.06.2004.

3. Quotations

3.1. EU official publications

eEurope2005

"At mid-term of the eEurope 2005 Action Plan important progress has been made. The eEurope 2005 targets remain valid, in the context of the enlargement of the EU to 25 members and the consultation revealed that it has acted as a stimulus to many national and regional efforts. Significant developments in the areas of broadband and e-government have been supported by increased political support at the national and EU levels.
Specific areas that require greater focus and will be important in the revision of the action plan are:
• Interoperability, standards and multi-platform access emerged in all areas as requiring greater focus. In many cases the key requirement is not technical solutions but the setting up of multi-party or institutional agreements.
• Reinforcement of the pan-European dimension. Most initiatives remain nationally or regionally focused. The possibilities for cross-border learning and exchange are widely recognised but less often acted upon. Difficulties of interoperability persist or are even multiplied by the profusion of efforts. Opportunities to close the gap between leaders and followers through a more effective exchange of practices are missed.
• A move to a demand-driven approach that emphasises service delivery, end-user value for all and functionality. In e-business, e-government, e-health and e-learning it is clear that there are many good initiatives, but so far the ways to bring really effective services online or their adequacy to the end-user are not fully understood.
• A prerequisite for further development of broadband is a greater availability of attractive content. This requires attention to the protection of copyrighted content and the implementation of interoperable DRM solutions, whilst respecting the legitimate expectations of users.
• Experimentation with new business and service delivery models that get more value out of the shift to e-services. e-Services generally yield more productivity and efficiency gains when embedded in effective re-organisation of processes and service delivery.
• Respond to the need for greater monitoring and quantification of e-inclusion, especially in order to assess the extent of regional imbalances, the potential for and the potential for multiplatform delivery of e-services to widen accessibility.
• Finally, the impact of e-services in terms of efficiency or productivity gains and quality of work and life should be measured, taking into account effects on citizenship and governance. In particular, there is a need for structured analyses of lessons to develop complementary quantitative and qualitative indicators as part of the benchmarking exercise. Common work is required to identify the obstacles to progress and guidance on implementation. Also needed are more evaluations of initiatives so that policy can be guided by evidence.

The Commission recommends the continuation of the existing lines of the 2005 Action Plan. The review found that the existing goals are still valid and that the Acceding Countries are open to accepting them. Furthermore, it is to be expected that the 6th Framework Programme for Research & Development will contribute to the implementation of the eEurope Action Plan mainly through the Information Society Technologies part of the Programme."

In European Commission, eEurope 2005 Mid-term Review

Competitiveness

"On the basis of available data, there is, at the moment, no compelling evidence that Europe is undergoing de-industrialisation in an absolute sense. Nevertheless, the on-going structural adjustment of our economies is causing hardship in local economies even if the national

economy is better off from improving resource allocation. To ease this process and increase employment creation it is essential to raise our productivity potential and to boost our competitiveness. To this end, investments in research, innovation, training and ICT as well as re-organisation of work constitute key ingredients of the transition process. Finally, it is essential to anticipate and to better prepare for these adjustment challenges."

In European Commission, Some Key Issues in Europe's Competitiveness – Towards an Integrated Approach

Industrial Policy

"Using knowledge for the benefit of businesses
For industry to be competitive, better use must be made of knowledge: this requires measures on research, innovation, workforce training, ICT and a competition policy that takes this dimension into account.
In its recent proposals for the financial perspectives for 2007-2013, the Commission led the way by planning to more than double the EU's research budget. The EU will need to concentrate its actions on a number of major themes which have a direct bearing on industrial competitiveness, such as pan-European partnerships between the public and private sectors, with a view to bolstering technological research, research infrastructures, human resources, the dynamism and productivity of European research, the creation of poles of excellence and the coordination of national and regional research programmes and policies.
Of the initiatives provided for in the action plan, the technology platforms merit particular attention. They will help to mobilise the research and innovation effort and facilitate the emergence of "lead markets" in Europe. By defining common research agendas, they will provide an impulse for Europe's potential in advanced technologies (e.g. nano-technology and hydrogen technology), and in traditional sectors which face particular challenges. They could make a major contribution to improving competitiveness. For example, research into new materials or production processes will be one of the fields of action to be explored and developed in the context of the technology platform for the textile and clothing sector.
European technology platforms should also help establish effective public-private relations between researchers, industry, the financial community and policy makers. In particular, the participation of representatives from the private sector will ensure that technology platforms take full account of the needs and expectations of the future potential market in the fields in question."

In European Commission, Fostering structural change: an industrial policy for an enlarged Europe

Innovation policy

"Objective 1 – Innovate everywhere

Objective 2 – Get innovation on the market

Objective 3 – Knowledge everywhere
Make the most of intellectual property opportunities
Enhance knowledge transfer and absorption
An R&D Framework Programme active for innovation

Objective 4 – Invest in innovation
Mobilise European Financial Instruments
Gear the European Structural Funds towards Innovation
Proactive State Aid Policies for Innovation

Objective 5 – Skills for innovation
To become more innovative, companies must absorb knowledge and turn it into action. Their capacity to do so depends to a large extent on the accumulated knowledge and skills in the company and on the extent to which innovation is perceived as the responsibility of everyone in a business, rather than just a research department.
The quality of a region's human resources is crucial for attracting new businesses and revitalising its economic fabric.

Objective 6 – Efficient innovation governance
The European Council has recognised the need for co-ordinated action, to define common objectives to increase innovation, and to set up an assessment mechanism for taking stock of the progress achieved.

PROPOSED COMMON OBJECTIVES AND POSSIBLE FOLLOW-UP INDICATORS

Objective 1 - Promote innovation in enterprises and spread innovation excellence: *Promote innovation management in SMEs (emphasis on linking technological and non-technological aspects: organisational, presentational, marketing innovation, etc). Promote young innovative enterprises. Increase added value in EU production.*
Examples of possible follow-up indicators/targets:
• Scoreboard indicators on enterprise innovation;
• Scoreboard indicators on business demography ("company churning");
• Indicators on the application of innovative management techniques (scattered survey data
• Indicators on "knowledge and innovation spending" (R&D, training, staff expenditure on engineers, researchers and innovation-related activities, design, trademarks and patenting costs) compared to turnover per sector and enterprise size (to be developed)
• Indicators on "value-added" compared to turnover as a proxy for a result of innovation, per sector and enterprise size (to be developed)

Objective 2 - Get Innovation on the Market
Market acceptance and favourable framework conditions for innovation: *Enhance consumer confidence in innovative products and services and design innovation-friendly*
Examples of possible follow-up indicators/targets:
• Duration of conformity checks for innovative products (to be developed);
• Bureaucratic burden caused by conformity checks (to be developed);
• Innovation-friendly taxation system (composite qualitative indicator to be developed);
• Indicators on market response and the spread of innovation (under development);

A dynamic knowledge market: *Stimulate the development and unlocking of innovative clusters and regional innovation systems. Encourage transnational innovation networks.*
Facilitate knowledge flows between science and industry. Promote knowledge sharing.
Facilitate the use of and access to IP by enterprises.
Examples of possible follow-up indicators/targets:
• Scoreboard indicators on regional innovation;
• Scoreboard indicator on collaborative innovation (3.2);
• Scoreboard composite indicator on "openness" (under development);
• Indicators on transnational collaborative innovation (to be developed).
• Indicators on the gap between costs of filing patents, trade marks and designs in the EU
• Participation rate of SMEs in research programmes (to be explored).

Objective 4: Invest in innovation
Mobilise private and public resources for innovation. *Seed and early-stage capital for new technology-based firms and start-up companies. Public-private partnerships for financing innovation. Support business angels and venture capitalists. Proactive State Aid Policies for Innovation.*

Examples of possible follow-up indicators/targets:
• Scoreboard indicators on innovation finance (4.1, 4.2);
• Indicators on VC, business angels etc (to be explored);
• Indicator on regional investments in innovation (to be developed);

Objective 5: Skills for Innovation
Improve human capital for innovation: *Adapt education and training systems to the innovation needs of companies. Life-long learning for innovation. Tackle skills shortages.*
Promote creativity and the international mobility of knowledge workers. Promote innovative professions.
Examples of possible follow-up indicators/targets:
• Scoreboard indicators on human capital;
• Scoreboard composite indicator on "life-long learning";
• Scoreboard composite indicator on "receptivity to new ideas" (under development);
• Scoreboard composite indicator on "social equity" (under development);
• Mobility of the highly skilled (to be developed on basis of OECD work);
• Share of foreigners in workforce with tertiary education (to be developed).

Objective 6 - Efficient innovation governance
Mobilise Member States and improve innovation governance: *Create and reinforce "National Innovation Councils" and other innovation governance mechanisms. Foster*
efficient policy coordination and stakeholder involvement. Activate the public sector as an innovation driver.
Examples of possible follow-up indicators/targets:
• Some qualitative indicators could be developed (existence of certain governance instruments).

In European Commission, "Innovate for a Competitive Europe" - A new Action plan for innovation.

"Building the knowledge-based economy
Medium-term growth performance in Europe depends on tapping new sources of growth. Efficient and increasing public and private investment in all areas of the knowledge chain is a key factor in creating the skilled labour force and the innovation needed to underpin competitiveness. The momentum behind the European Area of Research and Innovation and the information society should be maintained. (§32)

Against this background, the European Council urges Member States to take concrete action, on the basis of the Commission's forthcoming R&D Action Plan, to promote increased business investment in R&D and innovation, moving towards the Barcelona objective of approaching 3% of GDP. (§33)

The European Council calls for the European Research and Innovation Area to be strengthened to the benefit of all in the enlarged EU by:
- the application of the open method of coordination in support of research and innovation policy in areas such as action pursuing the 3% of GDP target for R&D investment or developing human resources in science and technology, and the setting up a mechanism for taking stock of the progress achieved and assessing its efficiency;
- creating European technology platforms bringing together technological know-how, industry, regulators and financial institutions to develop a strategic agenda for leading technologies, in areas such as plant genomics or the transition to hydrogen as a fuel;
- fully utilising the potential of the 6th Framework Programme and of national programmes in support of the European Research and Innovation Area, with particular attention for the cooperation with European intergovernmental research organizations and activities to enhance participation of SME's in research and innovation. (§34)

The European Council recognises the importance of innovation in developing new products, services and ways of doing business; calls upon Member States and the Commission to take further action in order to create the conditions in which business innovates, in particular, by bringing together research, financial and business expertise; and urges that a framework of common objectives for strengthening innovation in the EU should be set up, including an assessment mechanism for taking stock of the progress achieved. (§36)

Investing in human capital is a prerequisite for the promotion of European competitiveness, for achieving high rates in growth and employment and moving to a knowledge-based economy. (§40)"

In Presidency Conclusions, Brussels European Council, 20-21 March 2003

"Competitiveness And Innovation -Council Conclusions
The Council of the European Union,

1. In the light of recent analyses and policy recommendations provided by the Commission1 and of subsequent comment;
2. Notes the Commission's view that there is no evidence, at this stage, that a general process of deindustrialisation has been taking place in the European Union but that this gives no grounds for complacency; also notes the Commission's view that weak productivity growth, insufficient innovation and investment in R&D, in a context of intensifying international competition and delocalisation are challenging trends which, if sustained, could severely undermine the competitiveness of industry with serious consequences for the EU;
3. Acknowledges the opportunities for industry created by enlargement to strengthen its value-chain across the entire EU;
4. Recognises the need to solve the problems of weak growth and persistent unemployment in the European Union; and that a better operating environment for business will help to stimulate and encourage economic activity leading to economic growth, enabling European firms to become global players, creating jobs and prosperity of European Union citizens; and that an open European trade policy shall not prevent the EU from using existing mechanisms to maintain a level playing field;
5. Considers that actions which boost competitiveness and innovation, entrepreneurship and small firms and increased investment in research in a barrier-free internal market, and which facilitate and encourage necessary structural change are now imperative;
6. Stresses the continued need for an integrated policy approach and supporting structure to give priority to the implementation of the competitiveness agenda in order to achieve the Lisbon objectives of sustainable growth during the second phase of the process;
7. Values the expected benefits of the pro-active approach to competition policy enforcement, which will see both Commission and Member States work together to implement and enforce competition rules to ensure a level playing field for all economic operators in the European Union and encourage more competition in the Internal Market;
8. Considers that life sciences and biotechnology are important for the development of a knowledge-based economy and as key enabling technologies for future industrial development and innovation, and recognises the importance of effective governance, the need for strengthened collaboration between Member States and the Commission, continuous dialogue between the relevant stakeholders, and the need for full commitment of all to proactively support evolving actions under the EU Life Sciences and Biotechnology Strategy, as set out in the Commission's progress report;

Calls on the Commission and Member States within their respective competencies to

9. Improve the coherence between policies having an impact on enterprise competitiveness and exploit the synergies between policies, thereby better directing legislation and future policies;

10. Take into account the diverse characteristics of individual sectors, to anticipate and facilitate potential structural changes and to identify the best policy mix to strengthen sectoral competitiveness, without prejudice to the horizontal nature of industrial policy;
11. Avoid and remove unnecessary regulation and administrative burdens, and exploit egovernment and one stop shops, having regard to the cumulative impact of legislation;
12. While remaining focussed on the objective of reducing the overall level of state aid, continue efforts to simplify and modernise the state aid framework in order to contribute to the objective of reorienting aid towards horizontal objectives, in particular innovation as well as research and development;
13. Implement by the due date and enforce effectively legislation, which is necessary to create a legally predictable operating environment for business;
14. Implement the legislative framework for GMOs and pharmaceuticals now in place and to implement intellectual property legislation where this has not yet been done;
15. Identify and take appropriate action in those sectors of the economy, including services, where the absence of effective competition is hampering innovation and curbing business competitiveness;
16. Put in place policies and measures, which could include public-private partnerships, to encourage innovation, to stimulate private investment in research, to strengthen excellence in public research, to increase the supply of skilled human resources, and to stimulate and enable enterprises to network with universities, in order to fully exploit the economic benefits of knowledge;

Commits itself to:

17. Promoting appropriate regulation which stimulates economic activity and does not hamper it; examining existing regulation in the light of the principles of better lawmaking, within a clear timetable; and considering, where appropriate, alternatives to regulation;
18. Ensuring that the important internal market legislative decisions aimed at improving the protection of intellectual property rights, implementing an effective internal market in services and developing a single European Union capital market are adopted without delay so that the strengths of the European Union in innovative and technology-based enterprises can be fully exploited;
19. To further examine the analysis and policy recommendations provided by the Commission in order to decide what further steps need to be taken, and to set out priorities on these at its meeting in September."

Competitiveness (Internal Market, Industry and Research) Council Conclusions, 17-18May 2004

3.2. National official publications

Ireland

"In the context of the long-term development nature of investment in R&D, the Irish Council for Science, Technology and Innovation (ICSTI) recommends that future prioritisation of public investment in R&D should be based on achieving:

- Sustainability of research funding. A new, longer-term multi-annual outlook and budgeting approach should be adopted for public R&D investment that guarantees funding and provides stability to the research system;
- A competitive mix of R&D support for enterprise. The promotion of a dynamic knowledge-intensive enterprise base, with world-class, innovation-driven, small and medium enterprises (SMEs) will require the continued development of a competitive mix of fiscal incentives and grant supports for promoting enterprise R&D, particularly for the SMEs.

(...)

Public-Private Partnerships for Research and Innovation

Throughout Europe, there is growing recognition of the need for improved linkages between third level institutions and industry, and SMEs in particular. Over the last two years, along with a stronger focus upon the contribution to commercial outputs, existing partnership programmes were expanded, for example, in Australia and the UK. Some OECD countries also introduced new schemes and networks.
These networks are to promote long-term collaborative partnerships between different stakeholders such as business enterprises, universities, government research institutions, approved technology service institutes, centres for tertiary education and others.
In Ireland, the Business Expansion (BES)/Seed Capital Scheme (SCS) has provided a valuable source of public-private funding for technology start-up companies in recent years. ICSTI welcomes the extension of these schemes, and the increased company limit from Euro 750,000 to Euro 1 million, as announced in the Budget for 2004."

In Irish Council for Science, Technology and Innovation (ICSTI), Statement on State Expenditure Priorities for 2005" 09.09.2004.

"While recognising that innovation stems from a number of factors, such as competition, education and a deep understanding of international markets and customer needs, the Council believes that three challenges for policy makers stand out in the Irish context:

- allocating adequate resources and ensuring coherence in public investments in research;
- providing the right environment for business investment in research and development;
- and improving research collaboration between universities and industry.

Embedding a "technology foresight" process in public policy making process will be crucial in these areas. "

In National Competitiveness Council, The Competitiveness Challenge 2003, November 2003

"Recommendations in relation to the development of Innovation Networks:
Government should focus on inter-firm networks as a key building block for the development of the innovation capacity of Irish manufacturing and internationally traded services. Inter-firm networks should be regarded as a means for the creation of enhanced knowledge linkages initially between companies themselves, and then using that platform for the development of knowledge flows between companies and knowledge generators i.e. the third level institutions. Developing inter-firm networks is an important precursor to the formulation of policies in relation to clusters and a successful National Innovation System. State intervention should be in the form of encouragement. The establishment of such networks should be demand-driven, with the state acting as a catalyst, providing encouragement and initial financial support.
Programmes for the development of enabling/facilitating networks should include evaluation of the outputs of such networks. Where state financial support is provided, it should be for a defined initial period. The continued operation of a network after the end of the funded period could be seen as a success indicator.
It is recommended that all support measures designed to encourage the creation and sustainability of networks should include a skills development component."

In Forfás, Innovation Networks, 24.06.2004

Latvia

The Government of Latvia has launched a ***National Innovation Concept****, which is being translated into a National Programme on Innovation by the Ministry of Economic Affairs. The new pro-active innovation policy is based on a method tested in a pilot project aimed at identifying potential* ***industrial clusters****. The project focused upon four potential clusters in the areas of forestry, information systems development and application services, composite materials and opticals. Actions were initially orientated towards potential participants in a cluster, and later broadened to include a more strategic approach. The government has put early efforts into the development*

of the technology infrastructure. Three main innovation support institutions have been set up: the ***Latvia Technology Park*** *(LTP), the* ***Latvian Technological Centre*** *(LTC) and the* ***Latvian Centre of Electronics Industry Business and Innovations*** *(LEPBIC). Their role is to promote technology transfers and co-operation between research institutions and enterprises as well as to serve as incubators for knowledge-based firms and organise the participation in international co-operation projects.*

"1.To set the following medium-term budget objectives and the necessary priority lines of development (hereinafter referred to as budget priorities) for the period 2002 – 2006:

1.1. external security and sovereignty of the state. In order to achieve this objective to set the following budget priorities:

1.1.1. institutional readiness for membership in the European Union;

1.1.2. guarantees of state's long-term security through participation in NATO;

1.2. formation of knowledge-based society. In order to achieve this objective to set the following budget priority – quality education and its correspondence to the labour market requirements;

1.3. balanced regional development. In order to achieve this objective to set the following budget priorities:

1.3.1. development of infrastructure in regions;

1.3.2. enhancement of entrepreneurship and employment in different regions;

In State Chancellery, "On medium-term budget objectives and priority lines of development", 26.09.2001

"Priorities of the development plan

Financing from the Structural Funds will be granted for the implementation of priorities set out under the Development Plan:

Priority 1 – promotion of balanced development (269 million euros), which includes the following measures:

1.1. improvement of environmental and tourism infrastructure;

1.2. development of accessibility and transport system;

1.3. development of information and communications technologies;

1.4. development of education, health care and social infrastructure.

Priority 2 – promotion of business activity and innovations (209 million euros), which includes the following measures:

2.1. support to development of innovations;

2.2. business infrastructure development;

2.3. enhancing business support measures for small and medium sized enterprises;

2.4. access to financing for small and medium-sized enterprises;

2.5. development of public research."

In Latvian Ministry of Economics, Report: Economic Development of Latvia.

Netherlands

"Innovation must become the most important cornerstone of our future growth in prosperity. The government's ambition is to turn the Netherlands into one of the most dynamic and competitive knowledge economies of Europe. This requires a structural modernisation of the Dutch innovation system, also in a social and cultural sense."

(…)"The innovation policy forms an important part of the policy focusing on the knowledge economy. The government is firmly committing itself to the knowledge economy. In the meantime the Innovation Platform has been set up to draw up plans and develop a vision to give impetus to innovation in the Netherlands as the driving force for growth in productivity and economic development. In these times of limited budgets, the government is intensifying the budget for

education, research and innovation. Euro 800 million has been set aside for this, of which Euro 185 million is earmarked for priorities in the area of research and innovation. The Innovation Platform will advise on how to use the resources from this available budget destined for research and innovation. In addition, Euro 100 million has been set aside for the WBSO (Promotion of Research and Development Act)."

The core of the new innovation policy has three main themes:

1. Strengthening the climate for innovation
2. Dynamism: towards more companies that innovate
3. Taking advantage of opportunities for innovation by opting for strategic areas".

In Ministry of Economic Affairs (Netherlands), Action for innovation – Tackling the Lisbon ambition, June 2004

"*The understanding of innovation (processes) and how it affects economic performance is still partial at best*

Notwithstanding the considerable innovation research community the understanding of innovation and innovation processes and how it affects economic performance is still partial at best. Additionally, in most of the studies analysed topics such as innovation in services, innovation in 'low-tech' industries or public sectors are identified as in need of additional research. This also applies to what seems sometimes to be taken for granted as positive e.g. co-operation in R&D and innovation. With the rise of the innovation systems approach, cooperation between the various actors is seen as vital and the topic of co-operation in innovation is seen as a central element in innovation research. Co-operation is mostly seen as positive whereas we hardly know the influence of co-operation on company performance, neither the precise ways and forms in which knowledge is diffused most efficiently or the 'distributive capacity of knowledge networks', nor the negative effects of co-operation in innovation.

There is a clear and logical trend of broadening empirical innovation research and innovation policy-making which stretches the research agenda constantly further

A plea for (further) broadening empirical innovation research can be noticed, for example:

- the call to dig deeper into the theme of non-technological forms of innovations such as organisational innovation, innovation in services (including non-market service sectors like health, education), innovation in low tech industries and even institutional innovation;
- the interest in the role of R&D in human and social sciences and their role in (service) innovation;
- the attention for the broader notions of learning and knowledge/skills acquisition. How do companies, knowledge institutions, people (in companies, in policy, at the individual level) learn and take care of their learning capability;
- (related to the foregoing) a rise in the interest for the link between human resources and human resources management practices and innovation, including the mobility of (mostly) highly educated and trained workforce;
- the type of notions entering the innovation discussion such as trust, social capital, innovation governance and policy learning point at the need to further look at the functioning of institutions and the steering or governance of systems.

In a similar vein, we see a trend of broadening in innovation policy-making. This broadening is envisioned differently by the various scholars. Some take knowledge and learning as the major policy objective to which innovation policy must contribute. Others seem to emphasize especially the need to co-ordinate the various policies that affect innovation, including noninnovation policies.

The interface between innovation research and innovation policy is suboptimal resulting in too many (respectively) 'hidden treasures' and 'unmet policy wants'.

Innovation research, both pure academic as well as policy-oriented work, has boomed the last decade alongside a maturing policy field such as innovation policy-making. This has resulted in fast growing communities of innovation researchers and innovation policy-makers. In the Dutch

context these two communities are not well enough connected. Innovation researchers are not always adequately aware of the more immediate unmet wants and the related research needs of policy-makers. On the other hand, policy-makers are generally not well enough connected to and informed about the innovation research that is already performed. Especially policy-makers should be aware of what has been phrased as the 'hidden treasures' of innovation research. The above in the first place requires a more structural dialogue between the Dutch community of innovation researchers and innovation policy-makers and a better structured interface.
Secondly, linking in into and benefiting from the results of international policy-relevant innovation research is needed."

In Ministry of Economic Affairs, Innovation Research and Innovation Policy – Usual suspects, hidden treasures, unmet wants and black boxes

3.3. News Agencies

"Informal Maastricht Council puts its money on ecotechnologies to boost Lisbon strategy - Outlets must be created for green innovation market, Agence Europe, 19.07.2004
Presidency's conclusions from this informal Environment Council of Ministers of the EU:
Europe could increase its competitiveness if it used more innovations efficiently for an environmental point of view and thus become the most eco-efficient economy in the world. this would enable it to not only avoid very high social and environmental costs of inaction but also to capitalise on these benefits in terms of economy of costs, new markets, quality and eco-efficiency of products as a label.
This message is expected to constitute an essential part of the Environment Council's contribution to the revision of the Lisbon Process. The increasing recognition of the Lisbon goals of making Europe the most efficient knowledge-based economy in the world from an environmental point of view is already a driving force for innovations likely to help attain the Lisbon objective.
R&D efforts targeted on the long term are crucial for stimulating new innovations.
Joint efforts are needed with the business communities for taking full advantage of opportunities offered by eco-efficient innovations, as well as continued dialogue with industry and other actors."

"Dutch presidency thinks EU should highlight areas for knowledge and innovation, Agence Europe, 07/07/2004.
In order to highlight the areas of knowledge and innovation, Europe has to create an excellent investment climate for innovative companies, underlined the presidency after the Council. In order to achieve this, we first need simpler rules and procedures, especially for small and medium sized enterprises". He also added that the Council had also agreed to increased co-operation between universities, technical colleges and knowledge intensive companies. "We want more funds for research and innovation. There is consensus on the importance of the European Technology Platforms, in which private companies work together with universities, polytechnics and government agencies. We want a limited number of platforms for precisely those areas I which Europe is successful, such as nanotechnology and wind power".
The Dutch minister for the economy also declared that although the EU had fallen behind the USA somewhat since the European Council of Lisbon, the objective to make Europe the most competitive and dynamic knowledge based economy in the world was not "outdated". Nevertheless, he added that, "We now really have to work on implementing what was agreed". "

4. Indicators

Information Society

Internet Access - Enterprises

	2000	2001	2002	2003
EU (15 countries)	:	70.3	79.7	84.2
Belgium	:	79 (i)	:	92
Czech Republic	:	:	:	:
Denmark	:	86.6	94.8	97.6
Germany	:	82.8	83.9	:
Estonia	:	:	:	:
Greece	:	50.6	64.4	:
Spain	:	67.0	82.5	83.8
France	:	58 (i)	:	:
Ireland	:	77 (i)	82.8	86.2
Italy	:	66	74.3	83
Cyprus	63	:	:	88.0
Latvia	45.6	45.6	50.9	60.0
Lithuania	:	58.6	65.5	68.5
Luxembourg	:	54.6	78.2	:
Hungary	:	:	:	:
Malta	:	:	:	:
Netherlands	:	79	85.5	86.1
Austria	:	76.5	84.9	90.3
Poland	40.4 (i)	74.2 (i)	:	:
Portugal	:	71.8	68.7	:
Slovenia	88 (i)	:	:	:
Finland	:	90.8	96	97.8
Sweden	:	89.9	95.2	95.2
United Kingdom	:	63.4	74	80.6
Iceland	:	:	:	75
Norway	:	73.2	82.4	87.7
Japan	:	45	:	:

: - Not available
Source: Eurostat, *Structural Indicators – Research and Innovation*

ICT expenditure: IT expenditure (*Expenditure on Information Technology as a percentage of GDP)*

	2000	2001	2002	2003
EU (15 countries)	3.3 (i)	3.2 (i)	3.0 (i)	3.0 (i)
Euro-zone	3.0 (i)	2.9 (i)	2.7 (i)	2.7 (i)
Belgium	3.3 (i)	3.3 (i)	3.1 (i)	3.0 (i)
Czech Republic	3.3	3.4	3.7	3.8
Denmark	4.0	3.7	3.5	3.4
Germany	3.4	3.3	3.1	3.0
Estonia	3.7	3.5	3.5	3.4
Greece	1.6	1.5	1.3	1.2
Spain	1.8	1.8	1.6	1.6
France	3.4	3.4	3.3	3.3
Ireland	2.5	2.1	1.8	1.8
Italy	2.0	2.0	2.0	1.9
Cyprus	:	:	:	:
Latvia	2.4	2.4	2.5	2.4
Lithuania	1.6	1.7	1.8	1.9
Luxembourg	5.0 (i)	4.9 (i)	4.5 (i)	:
Hungary	3.2	3.1	2.9	2.9
Malta	:	:	:	:
Netherlands	4.2	3.9	3.7	3.7
Austria	3.1	3.1	2.9	2.9
Poland	1.8	1.9	1.9	2.2
Portugal	2.1	2.1	1.9	1.9
Slovenia	2.2	2.1	2.1	2.1
Slovakia	2.6	2.8	2.9	2.8
Finland	3.7	3.6	3.5	3.4
Sweden	4.8	4.8	4.6	4.4
United Kingdom	4.2	4.0	3.8	4.0
Bulgaria	1.9	1.9	1.9	2.0
Romania	1.5	1.3	1.2	1.1
Turkey	3.4	1.3	1.0	0.8
Norway	3.3	3.2	3.1	3.3
Japan	2.5	2.6	2.6	2.7
United States	4.2	3.9	3.5	3.6
Source: Eurostat, *Structural Indicators – Research and Innovation*				

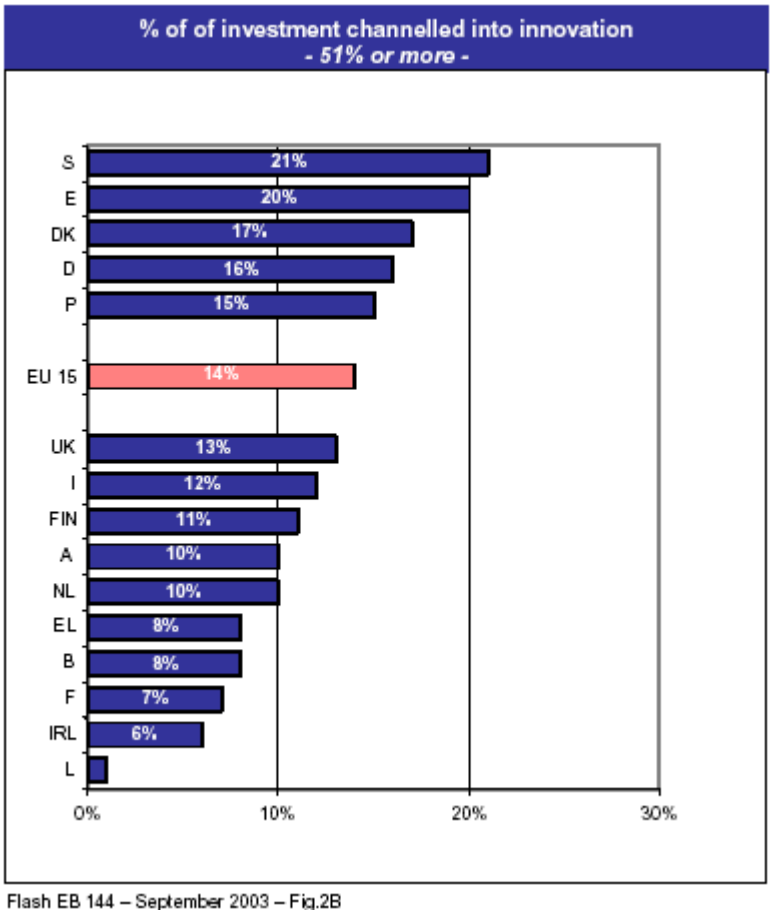
Notes: Belgium: figures include Luxembourg's IT expenditures (EITO); Luxembourg: figures provided by the National Statistical Institute (Statec); The European Union (EU15) and the Euro-zone (EUROZONE) average figures are calculated using the Belgium/Luxembourg aggregated figures of EITO. The acceding countries (ACC) and candidate countries (CC13) average figures do not include Cyprus or Malta.

Annex Table B: European Innovation Scoreboard 2003 – Member States, US and Japan [1]

		EU15 [2]	BE	DK	DE	EL	ES	FR	IE	IT	LU	NL	AT	PT	FI	SE	UK	US	JP
1.1	S&E grads	11.3	10.1	11.1	8.0	..	11.3	19.6	21.7	5.7	1.8	6.1	7.2	6.4	16.0	12.4	19.5	10.2	..
1.2	Work pop w 3rd educ	21.5	28.1	27.4	22.3	17.6	24.4	23.5	25.4	10.4	18.6	24.9	16.9	9.4	32.4	26.4	29.4	37.2	33.8
1.3	Lifelong learning	8.4	6.5	18.4	5.2	1.2	5.0	2.7	7.7	4.6	5.3	16.4	7.5	2.9	18.9	18.4	22.3	..	..
1.4	Emp h-tech manuf	7.41	6.59	6.33	11.36	2.20	5.35	6.82	6.89	7.37	2.03	4.49	6.59	3.33	7.39	7.28	6.72	..	..
1.5	Emp h-tech services	3.57	3.77	4.74	3.33	1.76	2.50	4.06	4.30	3.02	2.66	4.40	3.47	1.45	4.74	5.23	4.47	..	..
2.1	Public R&D exp	0.69	0.57	0.75	0.73	0.48	0.46	0.83	0.37	0.54	0.13	0.83	0.65	0.57	1.02	0.96	0.65	0.76	0.81
2.2	Business R&D exp	1.30	1.60	1.65	1.76	0.19	0.50	1.37	0.87	0.56	1.58	1.08	1.13	0.27	2.47	3.31	1.19	2.04	2.28
2.3.1	EPO h-tech pats	31.6	23.4	42.1	48.8	2.1	3.6	30.3	30.7	6.5	10.9	68.8	18.8	0.7	136.1	100.9	35.6	57.0	44.9
2.3.2	USPTO h-tech pats	12.4	13.9	22.7	16.4	0.4	1.4	14.0	6.1	4.1	4.6	18.6	8.1	0.1	41.6	47.3	15.1	91.9	80.0
2.4.1	EPO patents	161.1	151.8	211.0	309.9	7.7	24.1	145.3	85.6	74.7	211.3	242.7	174.2	5.5	337.8	366.6	133.5	169.8	174.7
2.4.2	USPTO patents	80.1	93.3	106.0	147.4	3.4	8.7	76.5	49.1	32.7	115.6	98.5	82.6	1.9	156.1	213.7	77.2	322.5	265.2
3.1	SMEs innov in-hse manuf	37.4	46.2	16.7	55.1	16.8	29.1	33.5	..	34.9	38.8	42.5	35.5	35.5	40.9	35.5	24.8	..	..
3.1	SMEs innov in-hse serv	28.0	31.8	15.4	43.9	21.3	16.6	23.9	..	20.0	39.6	28.1	36.4	37.6	34.9	35.6	18.7	..	..
3.2	SMEs innov co-op manuf	9.4	11.7	18.9	10.9	4.9	3.2	12.3	..	2.8	..	11.1	7.4	6.1	22.0	14.1	9.6	..	..
3.2	SMEs innov co-op serv	7.1	7.7	12.7	8.4	12.4	1.9	5.4	..	3.5	..	8.5	10.1	9.2	18.3	12.8	7.6	..	..
3.3	Innov exp manuf	3.45	4.92	0.95	4.71	2.22	1.87	3.08	..	2.96	2.08	3.07	2.83	2.86	3.91	6.42	2.96	..	..
3.3	Innov exp serv	1.83	0.92	0.36	1.64	1.60	0.65	1.57	..	0.84	1.18	0.79	0.92	2.66	0.96	19.11	1.39	..	..
4.1	Hi-tech VC	45.4	53.5	31.0	..	27.9	30.2	70.7	54.1	71.2	..	35.1	55.7	45.9	57.5	44.2	30.5	..	..
4.2	Early stage VC	0.037	0.041	0.080	0.042	0.017	0.016	0.035	0.027	0.015	..	0.044	0.017	0.011	0.087	0.098	0.047	0.218	..
4.3.1	New-to-mark prods manuf	10.5	6.9	14.3	7.1	4.4	11.9	9.5	..	18.7	..	..	8.4	16.0	27.2	3.5	9.5	..	..
4.3.1	New-to-mark prods serv	7.4	7.4	7.5	3.7	17.9	13.7	5.5	..	11.6	2.7	..	4.3	9.5	12.2	9.3	..	..	..
4.3.2	New-to-firm prods manuf	28.6	15.8	24.2	40.3	18.4	25.8	17.5	..	30.1	13.6	23.8	23.1	21.6	31.1	32.1	..	..	..
4.3.2	New-to-firm prods serv	18.8	23.5	18.4	16.4	37.1	26.4	17.1	..	20.5	9.0	13.9	12.8	16.1	18.8	23.7	..	..	..
4.4	Internet access/use	0.51	0.58	0.93	0.66	0.05	0.25	0.50	0.55	0.38	0.59	0.74	0.68	0.25	0.76	0.97	0.53	0.73	0.88
4.5	ICT expenditures	7.0	7.3	7.4	6.9	5.1	4.4	7.4	5.3	5.2	8.0	8.3	6.3	5.4	6.8	9.8	8.6	8.2	9.0
4.6	VA h-tech manuf	14.1	13.1	15.0	11.9	6.3	6.5	18.3	30.6	9.9	3.2	12.1	11.5	6.5	24.9	15.9	18.8	23.0	18.7
4.7	Volatility manuf	12.7	10.7	12.7	..	..	14.2	..	..	12.8	12.8	12.8	..	13.3	12.5	10.3	16.0	..	..
4.7	Volatility serv	16.6	16.8	20.4	..	..	17.1	..	..	17.2	..	18.5	..	14.7	15.8	13.2	20.2	..	..

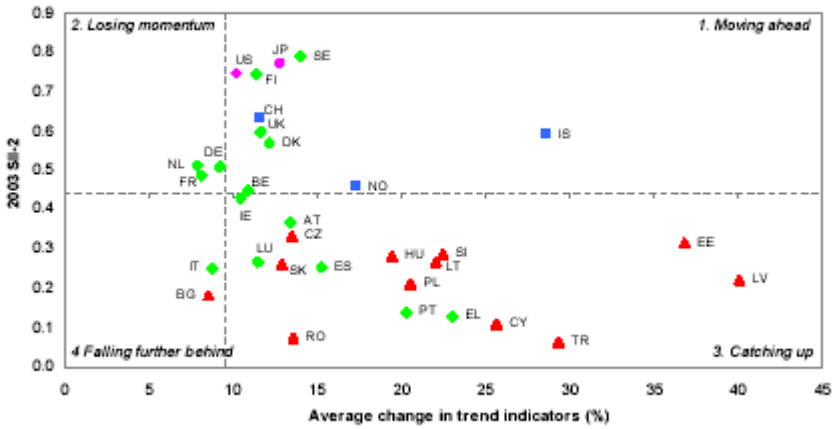
[1] Data in italics are not directly comparable with those originating from Eurostat as these were either taken from national sources or due to (small) differences in definitions. Technical Paper No 2 provides more details. [2] For indicator 1.1 the EU mean is calculated as a weighted average using population shares of 20-29 years of age. For the CIS-indicators the EU mean is calculated as a weighted average using GDP shares.

Source: *2003 European Innovation Scoreboard*



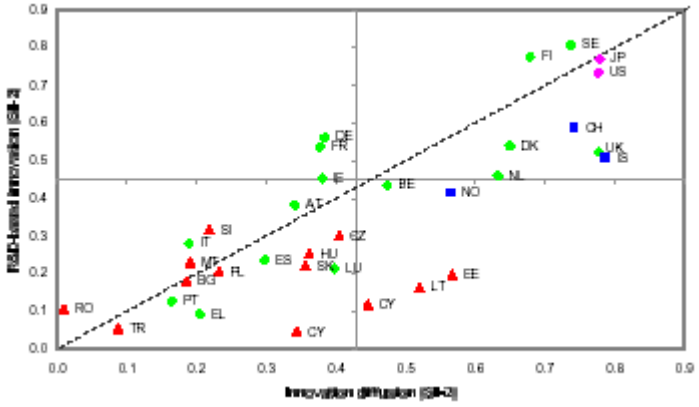
Source: European Commission, *Innobarometer 2003*.

Figure 5. Overall country trend by SII-2



Source: *2003 European Innovation Scoreboard: Technical Paper No 2: Analysis of national performances*

R&D based innovation compared to innovation diffusion



Source: *2003 European Innovation Scoreboard*

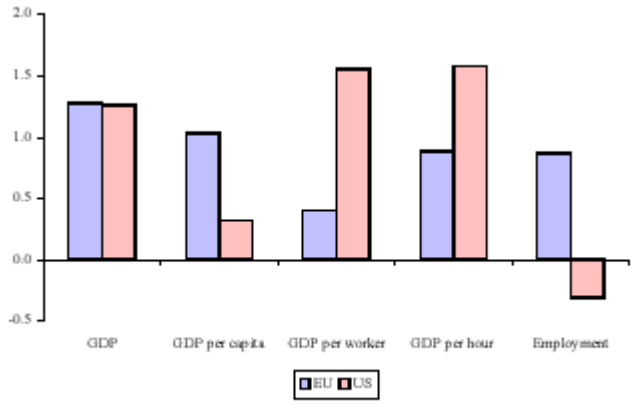
Patents EPO

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
EU (25 countries)	:	:	69.81	72.09	:	81.44	96.34	109.18	118.33	133.61	141.96 (s)	133.59 (ps)
EU (15 countries)	79.76	83.72	83.44	86.13	92.09	97.13	114.85	130.02	140.95	158.72	168.33 (s)	158.46 (ps)
Euro-zone (12 countries)	78.54	83.67	82.68	85.11	91.03	95.90	114.72	130.34	141.41	158.03	166.95 (s)	158.83 (ps)
Belgium	61.30	74.51	88.07	90.05	93.96	94.24	112.46	140.03	145.07	157.69	160.92	148.08 (p)
Czech Republic	0.10	0.48	3.58	3.19	4.26	4.65	7.27	9.70	9.81	13.51	11.39	10.88 (ep)
Denmark	89.99	91.35	103.55	113.63	119.95	130.08	144.24	139.71	168.46	199.30	225.74	214.82 (p)
Germany	144.81	154.74	152.89	156.54	169.65	177.93	220.95	247.59	273.48	305.14	320.36	300.95 (p)
Estonia	:	1.29	1.99	2.04	1.37	4.22	6.42	5.02	5.79	11.65 (p)	12.41 (p)	8.86 (ps)
Greece	3.30	4.25	4.33	3.36	4.09	4.56	5.28	7.09	8.12	6.06	8.27	8.11 (ip)
Spain	8.55	9.13	9.63	11.80	12.14	13.01	16.71	21.03	23.31 (e)	24.89 (e)	28.75	25.46 (p)
France	92.39	95.68	89.93	91.37	96.70	99.64	110.41	125.65	131.03	144.39	150.18 (e)	147.24 (ep)
Ireland	19.50	24.75	31.09	25.77	36.87	39.34	43.66	55.21	69.87 (e)	95.40 (ep)	92.93 (ep)	89.85 (p)
Italy	40.10	46.26	42.98	44.44	46.01	50.66	56.83	64.40	68.06	76.82	80.60 (e)	74.73 (ip)
Cyprus	8.52	9.88	6.46	4.72	6.18	3.05	3.00	13.33	13.18	10.12	20.04	9.91 (p)
Latvia	:	0.37	1.91	0.78	0.40	3.19	3.63	4.47	4.91	3.78	7.58	5.95 (p)
Lithuania	:	:	0.26	0.27	0.80	1.62	2.15	1.08	0.55	1.35	2.58 (bp)	2.59 (p)
Luxembourg	104.40	90.02	61.16	103.42	72.26	100.78	138.61	143.47	200.51 (e)	198.74 (e)	216.59 (be)	201.33 (ep)
Hungary	9.25	8.57	10.71	8.88	9.31	10.83	11.16	13.33	13.44	18.27	20.86	18.27 (p)
Malta	:	13.96	10.96	8.19	:	5.39	5.35	7.91	10.57	18.39	12.75 (e)	17.69 (ep)
Netherlands	108.22	108.86	109.74	112.86	117.31	136.11	164.96	178.27	197.33	228.78	255.43	278.86 (p)
Austria	90.98	92.06	88.49	94.16	100.40	98.48	111.27	142.30	140.33	158.43	180.31	174.84 (p)
Poland	1.15	0.94	0.94	1.12	2.18	0.83	1.47	1.98	1.47	3.05	3.20	2.72 (p)
Portugal	0.89	1.30	1.57	2.22	1.59	1.51	2.65	2.38	4.65	4.01	6.53 (e)	4.26 (p)
Slovenia	1.50	2.00	9.02	20.07	17.60	20.84	20.10	17.13	25.73	25.14	43.68	32.75 (p)
Slovakia	:	:	1.69	1.49	2.42	5.02	3.71	5.94	4.26	6.84	7.05	4.27 (bp)
Finland	117.03	108.68	144.16	155.34	175.10	174.11	214.41	260.18	294.18	343.69	377.43	310.92 (p)
Sweden	140.85	143.29	152.39	165.84	199.70	218.02	264.43	306.96	308.49	361.50	382.98	311.51 (p)
United Kingdom	75.94	74.40	75.21	76.95	78.79	82.27	90.41	100.99	111.19	128.43	138.35 (e)	128.70 (ip)
Bulgaria	0.81	0.70	1.65	1.41	1.54	2.26	2.03	3.14	3.04	4.15	2.64	3.67 (p)
Romania	0.13	0.35	0.35	0.26	0.79	0.75	0.40	1.33	0.98	1.11	1.20	0.85 (ip)
Turkey	0.12 (i)	0.10 (i)	0.08 (i)	0.20 (i)	0.13 (i)	0.29 (i)	0.63 (i)	0.65 (i)	1.12 (i)	1.21 (i)	1.34 (i)	1.00 (ip)
Iceland	27.48	42.04	19.06	26.41	31.88	30.08	62.84	84.77	109.61	114.03	117.94	121.75 (p)
Liechtenstein	1170.78	1256.38	701.08	924.78	817.53	971.12	1539.67	1306.51	1514.60	1063.04	900.71 (e)	1142.13 (p)
Norway	51.75	64.67	67.60	59.44	70.25	87.05	104.71	118.11	121.46	136.21	156.14	131.33 (p)
Switzerland	286.74	286.32	307.94	295.77	313.96	336.84	396.82	437.69	445.91	488.13	512.12	460.05 (p)
Canada	26.58	30.15	29.52	34.24	36.50	40.17	47.71	58.02	64.23 (i)	78.56 (i)	85.69 (i)	82.71 (ip)
Japan	105.98	96.60	89.01	89.71	88.27	100.72	115.06	122.91	131.66	159.54 (i)	186.89 (i)	166.66 (ip)
United States	81.51	86.25	87.85	91.13	96.47	106.49	117.17	130.19	141.93	162.26 (i)	177.28 (i)	154.51 (ip)

Source: Eurostat, *Structural Indicators – Research and Innovation*

Competitiveness

Growth of real output and productivity, EU and US
(Average annual increase in percent, 2001-2002)



Source: WIFO calculations using data from the Groningen Growth and Development Centre.

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	Growth of					
	real GDP	GDP per capita	productivity per worker	productivity per hour	real GDP	
	2001/2002				1991/1995	1996/2000
Belgium	0.85	0.68	0.36	0.43	1.60	2.81
Denmark	1.07	0.76	0.86	1.60	1.97	2.66
Germany	0.48	0.38	0.67	1.18	2.05	1.79
Greece	3.82	3.61	4.10	4.10	1.25	3.42
Spain	2.28	2.10	-0.51	-0.56	1.51	3.80
France	1.42	0.96	0.53	2.41	1.06	2.68
Ireland	4.72	3.55	2.79	3.28	4.70	9.89
Italy	1.04	0.85	-0.62	-0.12	1.27	1.87
Luxembourg	0.99	0.33	-2.02	-1.96	3.93	6.76
Netherlands	0.61	0.06	-0.42	0.87	2.13	3.68
Austria	0.87	0.63	0.85	0.85	2.05	2.57
Portugal	1.03	0.84	-0.08	-0.08	1.70	3.81
Finland	1.16	1.00	0.45	1.25	-0.67	5.05
Sweden	1.45	1.43	0.49	1.18	0.59	2.96
UK	1.85	1.52	1.07	0.98	1.76	2.83
EU	1.29	1.03	0.40	0.88	1.59	2.66
US	1.27	0.33	1.58	1.59	2.39	4.04

Note: GGDC does not include Luxembourg so OECD data are used for this country.
Source: WIFO calculations using data from Groningen Growth and Development Centre.

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6. Some Key-issues at European level

The development of the information society and the knowledge-driven economy has opened new prospects for more innovation and research, as well as for jobs creation and destruction. Information technologies should be envisaged as tools for improving knowledge creation, diffusion and use by several actors, aiming at more competitiveness and also social cohesion. Nevertheless, the risk of segmentation among citizens, companies and regions, remains particularly high, but it is also particularly dependent on effective learning processes. How should this learning process be rendered more effective?

Innovation policy is at the core of the Lisbon strategy as it is a kind of catalyst to speed up the transition to a knowledge-based economy. More general framework conditions for the success of this innovation policy are pointed out by the overall Lisbon strategy. This is the case, for instance, of the policies for education and training, for the modernisation of the financial markets and for the reorientation of the European research policy. Innovation policy is a very specific policy because it works with the interfaces of the other policies focusing the crucial points of the innovation system, fostering not only technological but social innovation. Therefore, taking this specificity into account, some key issues for further development should be underlined:

- improving the methods for learning and competence building in education institutions, companies, etc, as a basic condition for innovation;
- improving the different forms of networking, clustering as a basic device for innovation;
- developing new types of enterprise as the key actor of a knowledge-based economy;
- developing and sophisticating the knowledge-intensive services, and markets for knowledge as a main driver of innovation;
- improving the governance of the innovation systems and namely the coordination of public policies at regional, national and European levels.

Finally, all these issues raise a broader one concerning not only the EU's role in the European knowledge governance system, but also its role in defining the global governance of the interdependent cyberspace.