

**EXTRACTS FROM EUROPEAN COMMISSION COMMUNICATIONS  
REGARDING TECHNOLOGY PLATFORMS**



COMMISSION OF THE EUROPEAN COMMUNITIES

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**COMMUNICATION FROM THE COMMISSION**

**Investing in research: an action plan for Europe**

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### 1. EXECUTIVE SUMMARY

The present action plan sets out initiatives required to give Europe a stronger public research base and to make it much more attractive to private investment in research and innovation. Carrying out these actions will allow the European Union to bridge the growing gap in the levels of research investment between Europe and its main trading partners, which is putting at risk our long term innovation, growth and employment potential. The objective is to reach the objective set by the March 2002 Barcelona European Council, to increase the average research investment level from 1.9% of GDP today to 3% of GDP by 2010, of which 2/3 should be funded by the private sector.

To reach the Barcelona objective, research investment in Europe should grow at an average rate of 8% every year, shared between a 6% growth rate for public expenditure and a 9% yearly growth rate for private investment. This is ambitious yet realistic given the strong support given to the objective.

The March 2003 European Council called for the Commission to present this action plan, which has been prepared on the basis of a wide consultation of European institutions, Member States, acceding and candidate countries, as well as stakeholders from industry; public research and finance. The consultation showed a very broad support for the 3% objective. It revealed that most countries are already taking measures to boost investment in research, and that many have set national targets in line with the European 3% objective.

The action plan aims at building on this momentum, ensuring that the necessary initiatives at European and national levels are sustained, mutually consistent and commensurate with the challenge of bringing radical improvements to the European system of research and technological innovation. Europe is facing a situation where the weakest link in the system risks discouraging investment – to give but a few examples: the shortcomings and rigidities of research careers, leading excellent human resources to move out of research or out of Europe; the dispersion and lack of visibility of Europe’s often excellent research; the difficulties encountered by technology-intensive SMEs to find financing for their research and innovation projects; or the lack of awareness of researchers and research managers regarding the protection and management of intellectual property.

The action plan complements a series of mutually reinforcing European initiatives aimed at boosting the Union’s competitiveness, notably in the fields of enterprise and innovation policy, and of structural reforms in the product, services, capital and labour markets. Together they form the Commission’s policy response to the March 2000 Lisbon European Council

objective to “make Europe the most competitive and dynamic knowledge-base economy by 2010”.

The action plan comprises four main sets of actions.

A first set of actions aims at supporting the steps taken by European countries and stakeholders, ensuring that they are mutually consistent and that they form an effective mix of policy measures. This includes a process of co-ordination with and between Member States and acceding countries. It also entails creating a number of “European technology platforms”, which will bring together the main stakeholders – research organisations, industry, regulators, user groups, etc. – around key technologies, in order to devise and implement a common strategy for the development, the deployment and the use of these technologies in Europe.

The second set of actions aims at improving considerably public support to research and technological innovation. In order to invest in research in Europe, enterprises need to find here abundant and excellent teams of researchers, a strong public research well articulated with industry, and effective public financial support, including through fiscal measures. The action plan focuses on actions to improve the career of researchers, to bring public research and industry closer together, and to develop and exploit fully the potential of European and national public financial instruments. For example, the action plan asks public authorities to eliminate by 2005 the current rules and practices, attached to many public funding schemes, which prevent trans-European cooperation and technology transfer and thus reduce considerably the research and innovation opportunities available to the beneficiaries.

A third set of actions addresses the necessary increase in the levels of public funding for research. Given the current economic downturn, it is all the more important to ensure that budgetary policies favour investments that will lead to higher sustainable growth in the future, among which research is a strong priority. Actions focus on encouraging and monitoring the redirection of public budgets, and on making full use of the possibilities for public support to industry offered by State aid rules and public procurement rules. For example, the action plan proposes to clarify and improve awareness of the types of public support that public authorities can use with no distortion to competition.

Lastly, a fourth set of actions aims at improving the environment of research and technological innovation in Europe: intellectual property protection, regulation of product markets and related standards, competition rules, financial markets, the fiscal environment, and the treatment of research in companies’ management and reporting practices. For example, the action plan sets the objective that every student in science, engineering and business should receive at least a basic training on intellectual property and technology transfer.

The action plan marks the start of a process. Progress will be monitored and the Commission and Council will give further orientations in the future, if appropriate, to keep the Union on track. However, there is little time to succeed and the gap is still growing rapidly between Europe and its major trading partners. Implementation must start immediately at all levels, and it must be driven with a clear vision that what is at stake is the success or failure of Europe’s ambition to become the most vibrant place for innovation-driven growth and employment creation.

## 2. A CALL FOR ACTION

## 3. PROGRESSING JOINTLY

Member States are well aware of the need to boost investment in research and they have started putting in place policies and measures to that end. A **European process of co-ordination** is important to ensure that Member States learn from each others' experience and take actions that are mutually consistent. Such a process will also ensure that the European Council can regularly follow the progress achieved towards the objectives it has set.

Sector-specific issues should be taken into account, including through setting specific objectives and milestones in some areas such as information and communication technologies. Increased coherence and co-ordination is needed at the level of the various stakeholders involved in the development and deployment of key technologies in Europe. This can be promoted by **European technology platforms**, bringing together the main stakeholders concerned, in order to set a common strategic agenda addressing research as well as, where appropriate, regulatory and standardisation issues.

Progressing jointly also means that **all regions should be enabled to benefit** from increased research and innovation. Differences and disparities between regions in the enlarged EU are considerable. While some are in a position to maintain or develop technological leadership, others should rather focus on developing the absorption capacities – including applied research and development activity – that will enable them to benefit from world-class research undertaken elsewhere in Europe. However, all regions would gain from more systematic mutual learning in defining their research strategies.

Lastly, administrations at all levels should **develop a systemic view of the various policy dimensions** that need to be mobilised in defining and implementing appropriate policy mixes to foster private investment in research and innovation. These policy mixes involve often different sectors of the public administration, between which co-ordination needs to be strengthened.

### 3.1. Fostering the coherent development of national and European policies

### 3.2. Shaping a common vision for the development and deployment of key technologies

In some domains research has a vital role to play in addressing major technological, economic, or societal challenges. Here, European technology platforms will provide a means to foster effective public-private partnerships involving as appropriate public research, industry, financial institutions, users, regulatory authorities and policy-makers, and this will deliver the impetus to mobilise the research and innovation effort and facilitate the emergence of “lead markets”<sup>1</sup> in Europe.

In essence, technology platforms will be mechanisms to bring together all interested stakeholders to develop a long-term vision, create a coherent, dynamic strategy to achieve that vision, and steer its implementation. A strategic research agenda will form a crucial part of the strategy to optimise the contribution of research to the process. Technology platforms

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<sup>1</sup> See Commission communication "Innovation policy : updating the Union's approach in the context of the Lisbon strategy", op. cit., for a discussion of "lead markets".

should also address both the technical and non-technical barriers to and requirements for the optimal development, deployment and use of technologies, such as regulations, standards, financial aspects, social acceptance, skills and training needs, etc., while taking into account the relevant Community policies.

Existing initiatives in areas such as aeronautics and rail transport offer elements of good practice and constitute in effect a first group of European technology platforms. The Commission is planning to set up with relevant stakeholders additional European technology platforms in key areas such as plant genomics, road and maritime transport, hydrogen, photovoltaics, areas of nanotechnologies and information and communication technologies, and steel technology.

#### **New actions**

- ✓ **Set up European technology platforms** on a number of key technologies, following the criteria and methodology indicated in the Commission staff working paper attached to the present communication (*Implementation: stakeholders, with support from the Commission; 2003*).



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**Investing in Research: an Action Plan for Europe**

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**COMMISSION STAFF WORKING PAPER**

**Investing in Research: an Action Plan for Europe**

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## INTRODUCTION

This working paper of the Commission services complements and supports the Communication “Investing in Research: an action plan for Europe”. It comprises 7 sections addressing the following topics:

- The importance of R&D<sup>2</sup> investment for growth
- Developments in national policies towards the Barcelona objective (Member States, Accessing and Candidate Countries)
- The positive response of the business sector to the first Commission Communication on the Barcelona objective
- The contributions of the 6<sup>th</sup> Framework Programme to the Barcelona objective
- The approach proposed for the application of the open method of co-ordination to the Barcelona objective
- European technology platforms
- Supply chain of human resources for R&D

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<sup>2</sup> Hereafter referred to in the text as "research" or “Research and Technological Development – (RTD)

1. INVESTMENT IN R&D AND GROWTH
2. NATIONAL POLICIES TOWARDS THE BARCELONA OBJECTIVE
3. RESPONSE OF THE BUSINESS SECTOR TO THE FIRST COMMUNICATION
4. CONTRIBUTIONS OF THE 6<sup>TH</sup> FP TO THE BARCELONA OBJECTIVE
5. NEED FOR AN OPEN METHOD OF CO-ORDINATION FOR THE “3% OBJECTIVE”
6. EUROPEAN TECHNOLOGY PLATFORMS

In domains where RTD has a vital role to play in addressing major economic, technological or societal challenges, and their interplay in a sustainable development perspective, European Technology Platforms can provide a means to foster effective public-private partnerships between the research community, industry and policy makers in order to deliver the impetus to mobilise the research and innovation effort towards achieving a common goal. The role of Technology Platforms in stimulating more effective RTD, particularly in the private sector, can contribute directly to achieving the Lisbon objectives, developing the European Research Area and increasing investment in R&D towards the 3% of GDP target.

In essence, a Technology Platform (TP) is a mechanism to bring together all interested stakeholders to develop a long-term vision to address a specific challenge, create a coherent, dynamic strategy to achieve that vision and steer the implementation of an action plan to deliver agreed programmes of activities and optimise the benefits for all parties. The elaboration and follow-up of a **Strategic Research Agenda** form a crucial part of the implementation strategy, to optimise the contribution of RTD to the process. In achieving its wider goals, a TP should, in a medium to long term perspective, generate sustainable competitiveness and world leadership for the EU in the field concerned, by stimulating increased and more effective investment in R&D, accelerating innovation and eliminating the barriers to the deployment and growth of new technologies.

The Commission plans to prepare a Communication on TP by the end of 2003.

#### **6.1 Criteria for establishment**

Although a flexible and adaptable concept, TPs will not be an appropriate mechanism in every sector of the economy and alternative pathways and solutions should always be investigated. For the credibility of the concept, the setting up of TPs should be limited, in the first instance, to areas for which clear and significant benefits can be established.

The driving forces for initiating a TP will vary according to the challenge to be addressed and the characteristics of the existing situation in the sector concerned. Even though traditional, established sectors (e.g. aero, rail, steel) will have very different characteristics and needs compared to new or emerging sectors (e.g. hydrogen, photovoltaics, plant genomics, several fields related to nanotechnology), the common thread should always be the potential strategic importance of the sector (in terms of major economic, technological or societal challenges),

the EU dimension and the importance of the role of RTD in fully achieving the potential benefits.

The main **drivers** likely to point towards potential candidates for a TP include:

- the need to maintain (or regain) world leadership and enhance competitiveness in the face of stiff global competition through the generation of new RTD (e.g. several fields of information and communication technology, aero, steel);
- the need to develop and assimilate new scientific knowledge and technologies to evolve towards a paradigm shift (e.g. rail);
- the need to reconcile different policy objectives with a view to a sustainable development of the sector;
- the need to renew, revive or restructure ailing industry sectors;
- the need to support development of new technology based public goods or services with high entry barriers, uncertain profitability, but high economic and social potential (e.g. medicines for paediatric or poverty-related diseases);
- the opportunity to fulfil the potential of new technologies which hold the promise of radical change in a sector, if developed and deployed appropriately and in time. Global competition may condition, accelerate or decelerate development and deployment and will ultimately translate into a struggle for huge (global as well as local) markets, with consequences for the economy, employment and social welfare (e.g. new applications of information and communication technology).

Aspects that need to be taken into account in the establishment of selection **criteria** are :

- the identification of a major economic, technological or societal challenge and the pivotal role that RTD can play in addressing that challenge;
- the need for the mobilisation and rapprochement of stakeholders to accelerate progress and optimise the efficient use of resources – particularly where relevant knowledge and activities are fragmented between different MSs and regions. In this respect it should be shown that existing instruments and structures are not capable of achieving the desired outcome;
- the current and projected levels of effort, especially in terms of R&D spending, in relation to the magnitude of the potential socio-economic benefits and the degree of disconnection between the stakeholders, which could benefit considerably from being brought together around a common vision;
- the maturity of the technology or the sector in question;
- the commitment of key players to contribute to the funding of the platform and become actively involved in its development and the execution of its action plan. An initiative coming from a particular sector, rather than from the Commission, could be a good indication of commitment.

## 6.2 Participation in a Technology Platform

Whilst the precise composition of a TP will vary according to the characteristics of the sector concerned, the principle of mobilising all interested stakeholders in an open and transparent process is paramount. The public-private partnership between the research community, industry and policy makers lies at the heart of a TP, but other actors also need to be drawn into the process for optimal success.

Participation in a TP may include, as appropriate :

- the **research community** – both public and private;
- **industry (including SMEs)** – embracing the whole production and supply chain (including component, equipment and sub-system suppliers and user industries). Actors involved in technology transfer and the commercial deployment of technologies could also be involved;
- **public authorities** – both in their roles of regulators and policy makers and promoters and consumers of technologies. Although policy measures and related initiatives, given their strategic global dimension, may be launched at the EU level, it is obvious that the national, regional and local levels will have to be associated when they are important initiators of policy and will bear the impact of any policy measures taken by the higher level administrations;
- the **financial community** – banks, including the EIB and EIF, venture capital, insurance etc;
- **users and consumers** – involving the customer base is crucial to channel the process and optimise the benefits of a TP. Products without markets are a waste of resources at all levels;
- **Civil society** organisations and NGOs – to ensure that public awareness and understanding of the technologies and challenges do not lag behind developments and act as a barrier to success.