

European Innovation

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Putting knowledge into practice

A broad-based innovation strategy for the EU

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DIRECTORATE-GENERAL FOR ENTERPRISE AND INDUSTRY

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Editorial

This special edition of *European Innovation* presents the full text of the Commission's Communication 'Putting knowledge into practice: A broad-based innovation strategy for the EU'. At the heart of the Communication is the conviction that innovation is for everybody. Our quality of life will improve through innovation, but citizens, academia and governments alike need to be more supportive of European industry's efforts to innovate. In short, that requires breaking down barriers to create better connections across society – and specifically to ensure that knowledge flows more freely to anyone that may have a use for it.

The strategy to be implemented by the EU and Member States must be broad-based. There are no magic buttons. Ten particularly important measures are set out in the following pages. Each has value on its own, but only if they are all fully implemented will the big steps necessary to make Europe more innovation-friendly be achieved. The strategy aims to secure the political commitment to deliver them, which has been lacking up to now in too many Member States.

European Innovation

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We cannot afford not to deliver on innovation



People across Europe are growing fearful of the many challenges we face. Young and old alike rightly worry about the possible impact in their lives of complex issues like globalisation, climate change, the ageing of our populations, security threats from terrorism, and societal pressures from migration. Because there are no simple solutions to any of these challenges, leaders across the globe struggle to find the policies to address them, and to explain them to citizens. Today's world is very different from that of just 20 years ago, and our economic environment will continue to change rapidly in the foreseeable future.

As a consequence, European firms and their workers face ever-increasing competition – often from parts of the world that all too recently were simply not a force in economic terms. We cannot hope to compete with them on cost. Indeed trying to do so would require the social security structures at the heart of today's European societies to be swept away, which is not an option if we are to maintain the values for which Europe stands out in the world. But where we can compete is in introducing new technologies, new methods, new materials; producing goods and services of higher value than our competitors. In short, our future prosperity depends on our being more innovative than in the past, and spreading innovation throughout Europe more quickly.

Of course, the need for more innovation in Europe to boost our economic competitiveness is well known, and the points above are hardly new. The Commission has been arguing for years in favour of the structural changes – both major and minor – which will make the business

environment in Europe more favourable to innovation. However the past year or two has seen Member States, at the highest political levels, strengthening their commitments to fostering innovation. At the same time, there has been widespread realisation of the urgency of the tasks we face. The challenge now is to convert those commitments into action. All stakeholders – the Union, Member States, regional authorities, industry, academia and individual citizens – need to be convinced of the need for them to contribute to making Europe more innovative, and encouraged to deliver.

This new Communication sets out ten actions which, with the EU and Member States each playing their complementary roles, will create better conditions for innovation to flourish in Europe. But we should not forget that innovation is the job of industry. The actions of governments and public authorities, beyond intervening where the market is failing to provide necessary innovation-support services, must focus on removing the barriers which discourage firms from innovating.

One of the key planks of our strategy is to improve education systems, not only schools and tertiary education at the start of lives, but continuing education. We need curricula and courses that encourage citizens to be open to innovation, to be supportive of innovation, and to have the courage to innovate themselves. The knowledge of our citizens is central to our success as an innovative economy, and we need education systems which value the application of knowledge outside the walls of their institutions. But citizens will not lose their fear of change and innovation if we do not channel it to solve the problems that most concern them. We have to focus our efforts on addressing these issues, and by solving them, we will raise support for innovation across Europe. And of course, European solutions to global problems will help our firms establish leading positions in the global market place.

The action plan set out in the following pages is all about delivering on political commitments already made. We do not have any time to waste. The Commission is already working to do its share in implementing these actions, but we need Member States to do their bit too.

Heinz Zourek
*Director-General for Enterprise and Industry,
European Commission*

Our future depends on innovation

In a remarkably short period of time, economic globalisation has changed the world economic order, bringing new opportunities and new challenges. In this new economic order, Europe cannot compete unless it becomes more inventive, reacts better to consumer needs and preferences and innovates more.



Photo: Glynnis Ritchie

Europe's citizens are concerned by important issues ranging from climate change and the depletion of non-renewable resources to demographic change and emerging security needs, which call for collective action to safeguard the European way of life that combines economic prosperity with solidarity. These legitimate concerns must be turned into an opportunity to enhance Europe's global economic **competitiveness**. The quicker it can react, the higher the chance of success and the greater prospect that its approach will serve as a global model. From the protection of the environment through eco-innovation to the improvement of individual well-being through more intelligent infrastructure provision, the Commission is convinced that innovation in a broad sense is one of the main answers to citizens' material concerns about their future.

The European Union has an extraordinary innovation potential. Europe has a long-standing tradition of breakthrough inventions. It has a wealth of creative people and can build on its cultural diversity. It has laid the basis for one of the largest single markets in the world, where

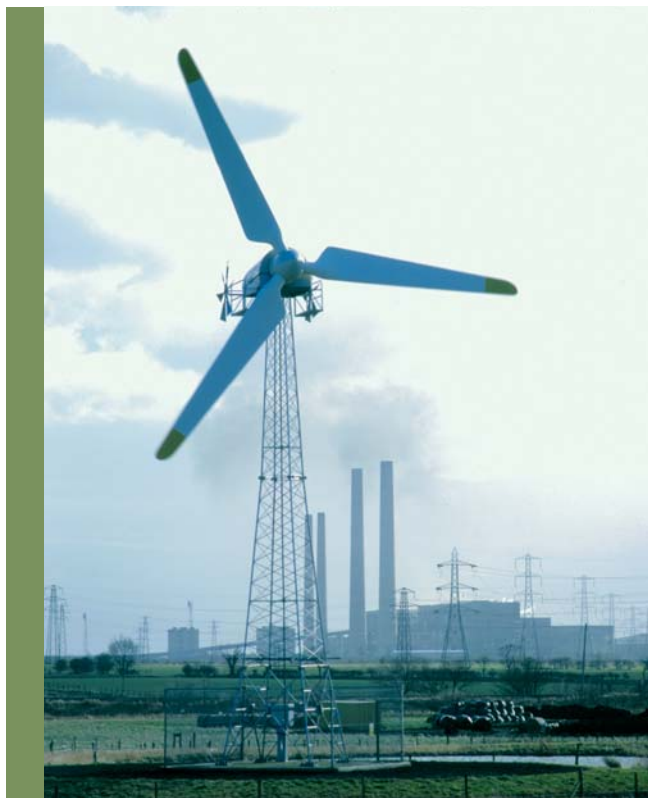
innovative products and services can be commercialised on a large scale. It also has a tradition of a strong and responsible public sector, which should be capitalised on.

Many major measures for the modernisation of the EU economy have already been taken. The **Lisbon Strategy for Growth and Jobs⁽¹⁾** launched in 2005 sets a comprehensive array of policies and reforms designed to make Europe's regulatory and economic framework more innovation-friendly. This includes the crucial objective of increasing research and development spending to 3% of GDP. The agreement on the new Financial Framework, including cohesion policy, the Seventh Research and Development Framework Programme, and the Competitiveness and Innovation Framework Programme, provide significant financial envelopes targeted at innovation. The **Commission's Communication 'More research and innovation'⁽²⁾ of October 2005** sets out a programme of 19 fields of action for both the Community and the Member States, which are being implemented as planned.

Member States are taking action in favour of innovation in the framework of the **National Reform Programmes**, based on the Integrated Guidelines of the renewed Lisbon Strategy for Growth and Jobs. The European Trend Chart on Innovation⁽³⁾ has given a clear picture of our innovation performance and of the national innovation systems of the EU Member States and of their strengths and weaknesses. It enables progress to be closely monitored.

The European Union has an extraordinary innovation potential.

Despite this already strong policy focus on innovation, the EU deficiencies have not been sufficiently tackled and its economy has not yet become the comprehensively innovative economy that it needs to be. The report on 'Creating an innovative Europe'⁽⁴⁾ (the Aho Report)



identified the main reasons explaining why this potential has so far not been fully exploited and called for urgent action “before it is too late”. It identified the **need to make the business environment more innovation-friendly** as a core concern.

Markets where consumer confidence is high are easier to enter for new entrants with innovative products.

The Commission is convinced that even more is needed – Europe has to become a truly knowledge-based and **innovation-friendly society** where innovation is not feared by the public but welcomed, is not hindered but encouraged, and where it is part of the core societal values and understood to work for the benefit of all its citizens. That is why the Spring European Council called on the European Commission to present “**a broad based innovation strategy for Europe** that translates investments in knowledge into products and services”.

This framework Communication presents such a strategy, in particular by responding to the recommendations contained in the Aho report. It presents a framework to take innovation forward bringing together different policy areas which have a bearing on innovation. It is intended to frame policy discussions on innovation at national and European levels. It outlines the most important planned or on-going initiatives, identifies new areas for action, and in particular introduces a more focussed strategy to facilitate the creation and marketing of new innovative products and services in promising areas – the ‘lead markets’. To implement this broad agenda, the Communication does not propose to create new structures, but instead it builds on the existing legal and institutional framework of the renewed Lisbon Partnership for Growth and Jobs, which has already established a political platform for partnership between the Member States and the Commission.

Today, Europe does not need new commitments; it needs **political leadership and decisive action**. Instead of preserving established structures, that have shown themselves unable to cope with the challenges of the 21st century, Member States must be ready to invest in anticipating and accompanying structural change. This requires in particular a reallocation of resources to education, ICT, research and to the creation of high-value jobs and growth. The new EU Financial Framework for the period 2007-2013 is a first step in this direction. The same change of priorities needs to be seen at national levels.





Photo: David Hunter

The EU can only become comprehensively innovative if all actors become involved and in particular if there is market demand for innovative products. This broad strategy needs to engage all parties – business, public sector and consumers. This is because the innovation process involves not only the business sector, but also public authorities at national, regional and local level, civil society organisations, trade unions and consumers. Such a wide partnership for innovation will create a virtuous circle, where supply of new ideas and demand for new solutions both push and pull innovation. Innovation depends on a strong demand from consumers and citizens for new and innovative products and services. Therefore, besides creating the optimal framework and possibilities to innovate, there must be an innovation friendly market and demand for the outputs. This, in particular requires consumer trust and confidence in these products and services not least in their (demonstrable)

safety. Consumer confidence in unknown products and services depends in part on the knowledge that robust systems of consumer protection exist. Markets where consumer confidence is high are also easier to enter for new entrants with innovative products.

All forms of innovation need to be promoted, for innovation comes in many forms other than technological innovation, including organisational innovation and innovation in services. In this context, while increased competition constitutes the most efficient instrument to stimulate innovation, policy measures and innovation support mechanisms may also have an important role to play.

The **importance of an even more comprehensive strategy** can be seen from the challenge of the EU 3% R&D objective. Significant steps have already been taken by Member States and the Community towards the public funding target of 1% of the GDP by 2010. The private sector contribution depends not just on this, but also on ensuring favourable prospects for a return on R&D investments in Europe. This in turn depends on demand for innovative products and services, the availability of people with the necessary skills and ambition to deliver these products and services to the market, and a regulatory framework that enables them to be speedily placed on the internal market.

(¹) 'Common actions for growth and employment: The Community Lisbon Programme' – COM(2005) 330, 20.7.2005.

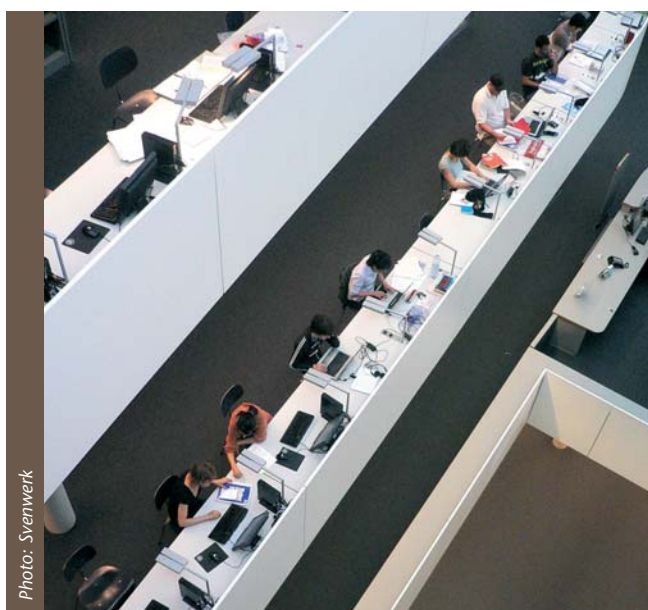
(²) 'More Research and Innovation – Investing for growth and employment: A Common Approach' – COM(2005) 488, 12.10.2005.

(³) Trend Chart – Innovation Policy in the EU – see <http://trendchart.cordis.lu/>

(⁴) 'Creating an Innovative Europe': report of the independent expert group on R&D and innovation appointed following the Hampton Court Summit and chaired by Mr Esko Aho.

Making the EU more innovation-friendly

One reason why the EU innovation potential has so far not been fully exploited lies in the persistent deficiencies in the framework conditions and in the persistent underestimation of innovation as an important value in the society. This is an area where public authorities at all levels can and should act very quickly. Overcoming these obstacles would allow us to make a decisive step towards creating a true European innovation space.



2.1. Education is a precondition

First and foremost, without **education** as a core policy, innovation will remain unsupported. It must promote talent and creativity from an early stage. In its Communication of 10 November 2005⁽¹⁾ the Commission has already identified the key competences necessary for living and working in a modern innovation-oriented society. These include entrepreneurial skills in the wider sense, as well as literacy, scientific and mathematical competence, languages, learning-to-learn skills and social and cultural competences. They also include digital literacy, which is a *sine qua non* for a wider uptake of ICT and its innovation potential. Through the Open Method of Coordination the Commission will help to facilitate the modernisation and restructuring of education systems so that they provide these key competences.

Lack of appropriate skills, in particular in the field of science, engineering and ICT has been identified as a major challenge. According to Eurostat data on Human Resources in Science and Engineering, the EU has recently achieved an increase in the absolute number of maths, science and technology graduates⁽²⁾, but the overall share of science and engineering graduates continues to decline, aggravating an unfavourable age structure in these disciplines in some countries and risking undermining the future capacity of Europe to innovate. This is a problem not just for the majority of new Member States, but also for older Member States such as Austria, Germany, Italy, the Netherlands and Portugal (despite some improvement in the absolute numbers of science and engineering graduates over the past years).

The **Member States' education systems** should ensure that there is sufficient availability of key skills to support innovation. Education must move with the times. As already agreed within the Integrated Guidelines for Growth and Jobs, Member States are invited to set, as a matter of priority, ambitious targets in their National Reform Programmes that address weaknesses in these areas.

Mobility of researchers, both geographical and between sectors must be enhanced. From a point of view of acquiring new knowledge and skills and of finding new applications, both transnational mobility and structural mobility between academia and industry are essential. In this light, the implementation of a European strategy developed by both the Community and the Member States to create an open, single, and competitive labour market for researchers, with attractive career prospects, is therefore of outmost importance. Both must play their parts in its implementation, not least to ensure that researchers who leave a sector or country for a temporarily more attractive career are not lost forever.

*Education must move
with the times.*



2.2. Using the potential of the Internal Market

Barriers persist in the Internal Market. They continue to hamper mobility, depriving businesses of the necessary scale to capitalise on investments in research and innovation thereby hampering EU innovation potential. These barriers affect not only goods and services, and consumers seeking access to them, but also the mobility of workers and the availability of venture capital. If a European innovation space is to be created, these barriers need to be removed. This would also increase the level of competition – the main stimulus for innovation.

The Commission is currently carrying out a **review of the Internal Market** with a view to setting concrete priorities for future policies. The review will contribute to making the Internal Market more innovation-friendly.

If a European innovation space is to be created, barriers need to be removed.

Special attention needs to be paid to the **service sector**. This offers an important and under-exploited opportunity for innovation⁽³⁾. Not only does the service sector account for more than two-thirds of GDP and employment, but there are also many possible synergies with industrial innovation. Since much service innovation is primarily linked to the business model rather than to developing new technologies, it is often relatively accessible to less technologically developed regions. The entry into force of the Services Directive will be an important step towards creating a real Internal Market for services adding a strong stimulus to innovation. In order to fully exploit the services sector's innovation potential, special attention must be given to access to finance and to innovation management by SMEs. Within the Europe Innova initiative, the Commission will develop a more pro-active approach to the creation and support of young innovative SMEs in the service sector. In particular, it will support more efficient links between universities, entrepreneurship and finance, resulting in the creation of a pan European incubation platform in this sector.

It is also crucial to create the conditions that can bring returns to EU business worldwide in all markets where European exports and investments are currently under-performing, such as Asia. **Open markets around the world** are therefore important for encouraging innovation in the EU. In addition, the global promotion of EU norms and standards and innovative initiatives can give a decisive first mover advantage to European companies in the spirit of the lead market initiative presented below.



Photo: Anstide Guidotti

Photo: Gary Henderson



2.3. Enhancing the regulatory environment and ensuring an effective IPR framework

Innovation requires a regulatory environment that is predictable, accommodates and even encourages new developments in goods and services, protects intellectual property and provides open, interoperable standards. Progress has already been made on Better Regulation⁽⁴⁾ at both European and national level. Reducing the administrative cost of regulation of enterprises, will be a significant contribution to innovative activities. At the same time, the regulatory environment should also reinforce **consumer confidence by ensuring that protection measures** that exist are applied effectively to innovative products in the same way as to existing products.

Without adequate protection of inventions and creations, there is no motivation to invest in them.

The assessment of the impact of regulation on innovation needs to be enhanced. Regulation should be predictable, flexible, simple and effective. Regulations that focus on the policy goal, rather than on the technical solution through which it is achieved, leave space for innovative solutions. The Commission will continue to encourage this type of legislation, as it has done through its 'New approach' to product regulation. Furthermore, it will encourage the timely adoption of ambitious standards that focus on performance rather than technology.

The Commission will act to improve the institutional framework of **European standardisation**. In particular, it will seek to speed up the adoption of open, interoperable standards and to better integrate SMEs and consumers into the standards-setting process. In fast-moving technology fields, such as ICT, private company specifications can easily become *de facto* industry standards. If this happens, it is important that they should not become a barrier to market access. Further, as demonstrated in the area of mobile communications, the rapid setting of open, interoperable standards is key to global success for European companies. The Commission will continue to work with the European Standards Organisations and societal stakeholders to achieve this result. It will ensure that European legislation facilitates the use of such standards.

Protection of intellectual property is another *sine qua non* for innovation. Without adequate protection of inventions and creations, there is no motivation to invest in them. Furthermore, their use as an asset by their authors may be hampered. Establishing affordable patent procedures that balance cost with quality and legal certainty, accompanied by timely, cost-effective and predictable dispute resolution must be a priority, especially needed by SMEs. The Commission remains convinced that adoption of a 'cost-effective' **Community patent**



is the most important step. In the meantime, in order to lift a significant barrier to innovation, the Member States and Commission should together make the existing patent system more efficient by the ratification of the London Protocol and through progress on the European Patent Litigation Agreement, while ensuring their compatibility with Community law.

Following the conclusions of the Council⁽⁵⁾, and the public consultation carried out by the Commission on the future patent strategy, the Commission will present a new patent strategy before the end of 2006. In addition, it will work on a more comprehensive IPR strategy to foster circulation of innovative ideas. Such a strategy must be integrated and affordable. A bigger effort is needed to raise awareness of the practical aspects of intellectual property protection in the innovation community. SMEs and public research organisations in particular should be targeted by such efforts.

The suitability of existing IPR mechanisms to the service sector needs to be specifically addressed. A specific challenge is to ensure the suitability of existing mechanisms for copyright clearance for new digital services. The Commission is conducting an overall examination of the copyright *acquis* with a view to ensuring that both the legal framework and its application are conducive to the development of new products, services and business models and user driven refinement of their use, which may be offered across borders. In particular, the Commission intends bringing forward an initiative on 'copyright levies' before the end of the year.

Finally, better enforcement of IPR on foreign markets is crucial to protect European companies and the Commission will focus its efforts on a number of priority countries. More resources will be allocated to support right-holders, in particular SMEs, and to provide assistance on specific IPR problems in third countries.



Photo: Scott Jungling

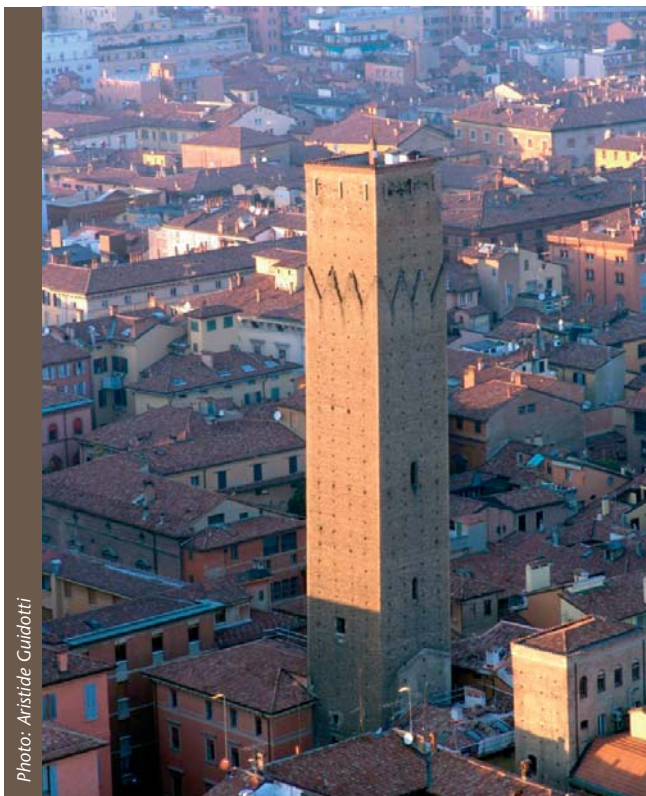


Photo: Aristide Guidotti

2.4. Promoting co-operation between stakeholders

Being part of a cluster is an important competitive strength for business. Clusters help to close the gap between business, research and resources, thereby bringing knowledge faster to the market. Successful clusters promote intense competition along with co-operation. They enhance productivity, attract investment, promote research, strengthen the industrial base, and develop specific products or services and become a focus for developing skills. World-class clusters attract brilliant minds that sustain innovation – Silicon Valley is the best-known example.

That is why 'cluster policy' has become an important element of Member States' innovation policies as reflected in the National Reform Programmes, and also why cluster policies are supported by Community instruments. The new generation of European regional policy programmes for 2007-2013 promotes an approach based on regional innovative clusters, not just in developed urban centres

but also in poorer or rural regions. It is at the level of the region that many businesses, especially SMEs, interact with one another and with centres of learning and technology. This makes proximity a key factor in the innovation process and increases the effectiveness of innovation policy if tailored to regional and local needs. The new State aid Framework for Research, Development and Innovation, to be adopted by the Commission before the end of this year, should help Member States better target their existing support budgets to promote, *inter alia*, innovative clusters.

At the same time, for Europe to tap the full potential of its clusters, they must also achieve a critical mass and strategic orientation through **more and better trans-national European cooperation**, across national borders. This raises the prospect of generating world-class European clusters. To support this process, the Commission will in particular map the strengths of national and cross-border clusters and stimulate practical cooperation between regional authorities and relevant economic actors or associations, supporting co-operation between cluster initiatives. The first results of this initiative will be presented in autumn 2007 at a Ministerial Conference, with a view to achieving a common cluster agenda for Europe.

The knowledge economy relies on the transfer of knowledge from those who generate it to those who use it and can build on it. The transfer of knowledge between public research organisations and third parties (including industry and civil society organisations) needs to improve and the Member States are invited to take this into account in their innovation policies. Doing so will help to build new market opportunities on research. Public research organisations, which account for about one third of the total R&D activity in Europe, have a particularly important role to play in this. All of the many forms of knowledge transfer – contract research, collaborative and co-operative research, licensing, publications and exchanges of skilled researchers between the public and private sectors – need to be further developed and better managed.

The Commission will present a Communication on improving **knowledge transfer** between the public research base and industry across Europe. This will provide guidance on how public authorities can address the main barriers which currently exist and how ownership



and exploitation of R&D results and associated intellectual property rights can be best combined with the fundamental missions of public research organisations.

Furthermore, the Commission will streamline its **business support and information networks**. This will encourage and facilitate the uptake of new ideas and their transformation into marketable products and services, especially by SMEs. In particular it will help ensure that the Innovation Relay Centres and Euro Info Centres provide top class business services to SMEs.

The **Communication 'Delivering on the modernisation agenda for universities'**⁽⁶⁾ already pointed to a number of important steps that could enable European universities to improve their performance, including by contributing more and more efficiently to the innovation process. Key to this is granting universities sufficient autonomy to develop their own strategies. Structured and strategic partnerships between business and universities need to be strengthened. This requires more possibilities of exchange of staff, teaching and encouragement of entrepreneurship in university and the establishment of science parks around universities, with adequate finance available to support research spin-offs. This will help bridge the cultural gap that so often separates university

World-class clusters attract brilliant minds that sustain innovation.

research from business needs. Development of links between universities and local civil society would also be conducive to a better uptake of innovation at local and regional levels.

In October this year, the Commission intends to put forward a proposal to establish a **European Institute of Technology (EIT)**⁽⁷⁾. It will be an integrated partnership of science, business and education, embodying excellence in all its initiatives. It is intended to be a key driver and a new model for innovation in strategic interdisciplinary areas, where there is the potential to generate innovative solutions and commercial advantages with a major impact on Europe's competitiveness. It will pool together the best European students and researchers to work side by side with leading edge business in the development and exploitation of knowledge and research, and to enhance research and innovation management skills.

Businesses will be fully integrated in the EIT, from membership of its Governing Board to involvement in all aspects of research and education, from the definition and implementation of training activities, to active participation in research.



Photo: Gary Jones



Photo: Mike Sandman

2.5. Financial boost to research and innovation

Innovation requires excellent research, planned and carried out in two-way communication between researchers and business. The European research activities have already become more focused through the **European Technology Platforms** which, led by industry, bring together stakeholders including the research community and the financial world. Although not an instrument of the Framework Programme for Research and Technological Development, the large majority of research agendas defined by the platforms have been taken into account in formulating the Commission's proposals for the Seventh Framework Programme. Also, at the European Council in March 2006, all Member States have set national targets for research which, if met, would raise the level of R&D investment in the European Union from 1.9% of GDP to 2.6% by 2010. This is a step in the right direction, but the key challenge now lies in creating an environment conducive to private investment in research, development and innovation.

The **Seventh Framework Programme** will boost the funding of collaborative research in Europe in the period 2007-2013, to be delivered through a mix of existing and new schemes. The establishment of the **European Research Council** will put a premium on competition for excellence by channelling funds at EU level for the best frontier research.

Joint Technology Initiatives, a new funding scheme under the Seventh Framework Programme, will offer a new framework for realising particularly ambitious research and technology agendas that require high public and private investment at European level. They will be initiatives whose scope and scale is such that existing funding schemes are not adequate to achieve the desired objectives. Bringing together stakeholders around commonly-agreed, industry-driven research agendas, Joint Technology Initiatives will accelerate the generation of new knowledge, enhance the uptake of the results of research into strategic technologies and foster the necessary specialisation in high-technology sectors which determine the EU's future industrial competitiveness. Potential Joint Technology Initiatives have initially been identified in six areas that offer significant potential for boosting Europe's innovative capacity. Further areas could be proposed in the future in the light of experience.

Member States have decided that the **new cohesion policy programmes for the period 2007-2013** should seek to ' earmark ' a large proportion of the total envelope of € 308 billion for investing in knowledge and innovation. All Member States and regions have been invited to set ambitious targets in this field. This is also in line with Community Strategic Guidelines for Cohesion Policy 2007-2013, which has called on the Member States and regions to make explicit provisions for experimentation and investment in innovation, based on national and regional innovation strategies. This will enable Member States to build up strong research and innovation systems across Europe, including systems supporting innovation at the regional level. Innovative actions will also be co-financed by the European Agricultural Fund for Rural Development to develop new high-quality and value-added products and to promote the sustainable use of natural resources. Better synergy needs to take place between national and Community efforts in support of innovation and all available Community instruments should be fully exploited to advance national innovation policy agendas.

In order to support innovation, the **Competitiveness and Innovation Programme (CIP)** brings together action in support of innovation including in energy, eco-innovation and ICT in close coordination with the



Seventh Framework Programme on Research and Development. The CIP in particular foresees an increase of 60% in the financial instruments in support of entrepreneurship and innovation. The recent Communication on 'Financing SME growth' pointed to further actions to improve access to finance, which could lead to the tripling of EU early-stage risk/venture capital investment by 2013.

In co-operation with the EIB, the Commission will launch a **Risk Sharing Finance Facility (RSFF)**, which will support investment in high-risk research, technological development and demonstration projects through loans and guarantees. The Community will contribute up to € 1 billion from selected themes and activities of the Seventh Framework Programme to RSFF with a matching allocation of up to € 1 billion from the EIB. By reinforcing the financing capacity of EIB in the area of research, the Community will mobilise efforts of a large number of European banks and financial institutions into research and innovation, thus increasing private investment and funding in this area.

As an additional step to improving access to finance for the development of businesses, including in services, the Commission and the European Investment Fund have launched an innovative initiative of using structural funds to provide access to finance by small businesses. This so-called **JEREMIE** (Joint European Resources for Micro-to-Medium Enterprises) initiative will work within the framework of cohesion policy programmes to support



Photo: Carlos Vieira

The CIP foresees an increase of 60% in the financial instruments in support of entrepreneurship and innovation.

Member States in developing well-designed financial instruments in favour of SMEs, where the EIF is ready to help programme managers in the complex task of developing the provision of different forms of risk capital according to regional needs and priorities. As an additional source of capital and expertise, Member States are invited to make full use of this initiative.

The Commission has recently adopted **new state aid guidelines** for risk capital⁽⁸⁾. A new Framework for state aid to research, development and innovation will be adopted by the Commission before the end of the year. Together, these will enable the Member States to better target state aid on market failures that prevent the provision of risk/venture capital and sufficient funding for research and innovation activities. In the framework for research, development and innovation the Commission intends to provide for enlarged R&D and innovation categories and is considering the inclusion of a number of targeted measures in support of innovation, such as aid for young innovative start-ups, advisory and support services, the loan of qualified personnel, process and organisational innovation, and innovation clusters. Member States should reorient their State aid budgets towards these measures in full respect of their commitment to "less and better targeted aid".

Tax incentives are also a potentially important policy instrument that Member States can use to stimulate more business research, innovation and private investment in full respect of Community law. Many Member States have recently introduced new incentives, or strengthened existing ones. Member States should also take account of good practices to improve the effectiveness of generally applicable tax incentives in favour of R&D and optimise their use. The Commission will present a Communication later in 2006 with detailed guidance on these issues which are relevant to the design and evaluation of generally applicable tax incentives for R&D.



Photo: Aristide Guidotti

2.6. Setting the example: the role of governments

The public sector itself must lead the way by adopting innovative approaches and exploiting new technologies and procedures in public administration. This will enable it to better address the needs of citizens and increase the quality of public service, including by improving productivity.

Information and communication technologies (ICT) are largely under-exploited in the EU as a whole, but in the public sector in particular. This is crucial for the development of public services: wider uptake and exploitation of ICT in public services (e.g. in the health sector) would not just improve the productivity of the public sector; it could open up large markets for innovative ICT products and services.

Improved **public procurement** practices can help foster market uptake of innovative products and services, while raising the quality of public services in markets where the public sector is a significant purchaser. The Contracting Authorities can do this by making sure that they describe their needs in a broad and performance based way, which allows the bidders to propose better and a wider variety of solutions to the problem to be solved. Public purchasers need to become 'intelligent customers', who plan what to buy, how to buy it and who will buy it. As suggested by the Aho report, they should also take into account costs incurred during the whole life of a product or service and not simply focus on the costs at the time of purchase. Public purchasers could also join forces to exchange expertise and ideas and to reach a critical size of the order. This would stimulate demand for innovation, while allowing public authorities to acquire higher quality products and services.

The so-called pre-commercial procurement is a yet untapped opportunity for public authorities in Europe. In the US for instance, it plays an important role in the economy not only for innovation related to defence, space and security but also in other public sectors such as transport, health, energy and ICT. Where no commercial solutions exist on the market, pre-commercial procurement can help public authorities to get technologically innovative solutions developed according to their needs. In pre-commercial procurement public procurers do not prescribe a specific R&D solution to be developed, but solicit alternative solutions that could address a problem of public interest.

*Public purchasers
need to become
'intelligent customers'.*





Photo: Paulo Alegria

Long-term plans that are communicated to the market and technical dialogue between purchasers and the market can help promote innovative solutions. The procurement Directives⁽⁹⁾ adopted in 2004 offer scope for innovation-oriented tendering. Furthermore, these Directives also include provisions expected to have a positive impact on facilitating the access and participation of SMEs in public procurement markets. Public entities should use these opportunities. Member States are also encouraged to take concrete measures to stimulate innovation and research through improved public procurement practices in their Lisbon National Reform Programmes, as proposed in the Integrated Guidelines for Growth and Jobs.

A Handbook on the possibilities the public procurement directives offer for commercial and pre-commercial innovation-oriented tendering is being prepared by the Commission services and is to be published later this year. This is an important step in the awareness raising process of the possibilities for Contracting Authorities to foster innovation.

- (¹) Proposal for a recommendation of the European Parliament and the Council on key competences for lifelong learning, European Commission – COM(2005) 548
- (²) Commission Staff Working Document SEC(2006) 639, p. 19, <http://ec.europa.eu/education/policies/2010/doc/progressreport06.pdf>
- (³) A Working Paper on 'Innovation in services' will be presented in November 2006.
- (⁴) Communication from the Commission to the European Parliament, the Council, the Economic and Social Committee and the Committee of the Regions – 'Implementing the Community Lisbon Programme: a strategy to simplify the regulatory environment' – COM(2005) 535, 19.10.2005.
- (⁵) Council Meeting on Competitiveness (Internal Market, Industry and Research), 29-30 May 2006, Conclusions 9334/06 (provisional version).
- (⁶) Communication from the Commission to the Council and the European Parliament – 'Delivering on the modernisation agenda for universities: Education, research and innovation' – COM(2006) 208, 10.5.2006.
- (⁷) The European Institute of Technology: further steps towards its creation – 'Communication from the Commission to the European Council' – COM(2006) 276, 8.6.2006.
- (⁸) Community Guidelines on state aid to support risk capital investments in SMEs of 19.7.2006, http://ec.europa.eu/comm/competition/state_aid/others/risk_capital_guidelines_en.pdf
- (⁹) Directives 2004/18/EC and 2004/17/EC.

Facilitating the emergence of innovation-driven lead-markets

More efficient and competitive framework conditions are a prerequisite for a successful uptake of innovation in the EU but they will not be enough to make up the EU's persistent innovation deficit vis-à-vis its major competitors. As the Aho report has rightly remarked, Europe must seek to develop innovation-friendly markets in a more targeted way creating conditions to facilitate the translation of technological and non-technological innovation into commercial products.



It is therefore proposed to launch a **new lead-market initiative** aiming at facilitating the creation and marketing of new innovative products and services in promising areas. The idea is to identify areas where the removal of barriers would essentially contribute to the competitive process and lead to the emergence of new markets. This mainly includes coordinated action that combines supply measures, such as research support, that will be provided under the Seventh Framework Programme, with actions aimed at understanding and stimulating competitive market demand for innovative products and services. Policy-makers can for example examine the regulatory environment, the setting of standards, make better use of the opportunities provided by procurement rules and improve the overall market environment to promote a more innovation friendly culture. Such an initiative will help to create dynamic virtuous circles of growing demand and innovation by facilitating early movers, without 'picking winners' or pushing specific technologies.

In concrete terms, a systematic and prospective approach should be used to look at all policy instruments available and using them in a combined way, in order to ensure the timely emergence of favourable, competitive market conditions for the deployment of new technologies. This would require a concerted approach between Member States and the Community, also taking due account of similar initiatives in Member States.

The identification of priority areas should be market-driven, in full respect of the need to preserve free and fair competition. Without excluding any areas from this initiative, there is a clear public interest in helping the emergence of solutions that would provide answers to citizens concerns. These would, in particular, be areas where public authorities play a critical role to eliminate existing barriers to market take-up of new products. However, this should not be at the expense of supporting innovation in more traditional sectors.

The Commission is convinced that, by showing that innovation can help to address these concerns, such an approach would be an essential contribution to the creation of an innovation-friendly society by increasing the trust of citizens in its merits.

Eco-innovation offers promising prospects for the emergence of an innovation-friendly lead-market.

In practical terms, the Commission can draw on the Technology Platforms and the Europe Innova Innovation Panels⁽¹⁾, which are well placed to identify obstacles and opportunities in relation to specific technological areas and sectors. In particular, the long-term strategic research agendas of the Technology Platforms constitute a good basis on which the need for further action can be assessed.





Photo: ESA – AOES Medialab

Eco-innovation is an area offering promising prospects for the emergence of an innovation-friendly lead-market. The pull of eco-innovation can be enhanced by environmental policy, notably through a well-designed regulation and the development of market-oriented instruments. For example, a mechanism could be put in place whereby the current ‘best performance’ in the market for a given set of products could become the reference standards within a certain time-frame to encourage other enterprises to adapt to it. Eco-innovation can also be promoted by fostering co-operation between research and enterprises in promising areas, such as construction, water-management, bio-industries, carbon capture and storage or recycling.

As part of eco-innovation, setting targets for improving energy efficiency can serve us as a model for other aspects of energy: the forthcoming action plan on this subject will contribute concretely to this objective. This should be seen in the broader context of the recent Green Paper⁽²⁾ on a European strategy for a sustainable, competitive and secure energy and the forthcoming European Strategic Energy review.

Other examples of such areas **include internal security and defence**, which have become a matter of global concern. Innovative approaches in areas such as public transport, the organisation of public space and the protection of borders can be envisaged. **Space** offers great scope for high-technology innovation over time (in particular public investors in the application of Galileo⁽³⁾

and GMES (Global Monitoring for Environment and Security), the Commission’s flagship space programmes. These need to share their knowledge of the system and its scope for business with potential downstream users in the space and non-space sectors, to raise their awareness

Example of a potential innovation-friendly lead-market: intelligent, near-zero energy building

The emergence of a lead-market for ‘Intelligent, near-zero energy buildings’ would secure new business opportunities (e.g. smart services, building units, components and materials, and new energy supply resources) and substantially contribute to alleviating Europe’s reliance on fossil energies and reducing the emission of greenhouse gas and other pollutants.

The concept of an ‘intelligent, near-zero energy, building’ offers the prospect of an entirely new technology intensive, European market with obvious world-wide export potential. The European Construction Technology Platform has already brought together, under industry leadership, a wide range of stakeholders (e.g. clients/users organisations, energy supply companies, local-regional authorities, materials producers, equipment manufacturers, architects, engineers and key technologists) to develop a Strategic Research Agenda. It is also looking into demand-side measures which could stimulate demand for innovative technologies and services, such as initiatives to promote energy efficiency in the public sector, improved public procurement structures and changes to the treatment of Intellectual Property Rights⁽⁴⁾.

A European policy agenda is needed to remove remaining obstacles and ensure diffusion and use of methods and performance assessment criteria, and to integrate in a consistent manner current regulation and initiatives, e.g. EU directives on construction and energy performance, EU action plans, national regulations, the green book on energy and Kyoto emissions commitments.

⁽⁴⁾ The construction sector does not currently rely strongly on formal means of protecting intellectual property and patenting.

Photo: Tim Thomson



patients and improve competitiveness), or **well-being and culture** (for instance creative content services, which gain a new dimension with the rollout of broadband networks, allowing citizens and businesses to access all kind of creative contents such as audiovisual, games, cultural information at home and in mobility) are examples of markets where the public sector has a role to play.

The Commission will conduct a detailed analysis based on information from a variety of sources, including a public consultation, to identify possible areas where a combination of supply and demand measures may help the emergence of innovation-friendly markets. An informal consultation of

of potential space-based solutions). **Transport**, where the demand for energy efficiency provides great opportunities. **Marine technologies and products allowing for new uses of the sea** such as deep sea drilling, blue biotech exploitation, offshore mariculture and renewable energies, ocean space monitoring and surveillance technologies offer promising scope. **Health**, which has a huge growth potential for innovative products and services (including in particular e-Health, and the provision of customised solutions to allow elderly people to continue to live independently, pharmaceuticals and medical devices where innovation can bring direct benefits to

the European Technology Platforms and the Europe Innova Innovation Panels has already been launched with this in mind. Based on the outcome of both consultations or possibly other useful inputs (such as from the regional innovation networks under the forthcoming Regions for Economic Change initiative) and of an analysis of the measures needed to help emergence of such lead markets and of their impact, the Commission will propose a comprehensive strategy. In doing so, it will also point to the expected positive impact on growth and jobs. As a first step, this concept will be tested in 2007 by applying it in a pilot phase to a limited number of areas.

The Commission intends to implement this innovation-friendly lead-market initiative within the existing legal and institutional framework. The decisive step that will make a real difference is the full political commitment from all relevant actors to help identify and remove potential barriers to the emergence of innovation-friendly markets. The Commission will steer this process and foster co-operation towards a common agenda.

Photo: Luke Robinson



(¹) See Europe Innova innovation panels at <http://www.europe-innova.org/index.jsp>

(²) *Green Paper on energy efficiency* – COM(2005) 265, 22.6.2005.

(³) With a view to fulfilling the requirements of the widest range of users, the idea of a competition for young inventors on future applications for the Galileo signal at EU level should be investigated, in coordination with already existing competitions.

A better European governance for innovation

To improve the EU's innovation performance will require long-term commitment to a broad policy framework. No single action or actor can deliver this result or the higher growth rate it will make possible. Only the combined efforts of all public and private stakeholders, pulling together where necessary, in competition where appropriate, will lead to the uptake of innovation in society in the way that is needed.



Photo: Aristide Guidotti

Political leadership is particularly necessary to manage the **structural change** that is inevitably linked with a knowledge-based and innovation-friendly society that this communication seeks to promote. Businesses must also play their part and demonstrate their sense of **corporate social responsibility** in facilitating the innovation uptake. An increased investment into research and innovation is the best means to enhance their competitiveness. At the same time, as part of a socially responsible behaviour, businesses should be aware, that rapid technological change can raise citizens' concerns. Helping citizens to address these concerns would promote their confidence in innovation. Innovation needs to be organised in a way that supports not only the acceptance of change but also provides opportunities in human resource management, leading to higher productivity.

At political level, innovation must continue to be recognised and consistently supported by the Member States as a **key priority within the existing Partnership for Growth and Jobs**. The 2005 and 2006 Spring European Council has endorsed this approach but more needs to be done to keep innovation visible and high on the European agenda. The Commission welcomes the Presidency's intention to discuss innovation at the informal meeting of the Heads of State and Government in Lahti on 20 October 2006. As a result of the Lahti Summit, the Commission hopes to see declarations in support for innovation translated into concrete action by Member States.

To implement the policy orientations put forward by this Communication, **an improved governance structure for innovation is necessary**. This should address innovation at all levels. The priority must be to establish strong innovation systems in all **Member States** that build upon all innovation drivers described in this communication, including education, research, knowledge transfer, entrepreneurship and finance. To this end, it is suggested that Member States use the National Coordinating mechanisms established under the Lisbon process to monitor the effective implementation of their innovation strategies.

Regions should be involved in the preparation and implementation of the National Reform Programmes.

The governance structure of the renewed Lisbon Strategy provides a forum for policy discussions and the exchange at the **EU level** of best practices on innovation in the

Photo: Aristide Guidotti



context of the treaty-based multilateral surveillance. The thematic discussions on innovation in various Council formations during the autumn of 2006 provide an opportunity to inform the Commission's 2007 Annual Progress Report and further Council discussions in spring 2007. In particular, the Commission will, when assessing the progress reports on the implementation of the National Reform Programmes – due by 15 October – assess carefully Member States' reforms and policies addressing the innovation system and report on this in the Annual Progress Report. In this context, the Competitiveness Council is invited to regularly assess the impact of national innovation policies on competitiveness.

The governance cycle of the renewed Lisbon Strategy envisages the adoption of Integrated Guidelines to guide the process over a three-year period. The next revision of the Integrated Guidelines in 2008 for a new three-year cycle will be an opportunity to reflect the experiences gained with the National Reform Programmes in the 2005-2008 governance cycle as well as the new policy orientations put forward in this communication. Impact assessments of Community legislation already explicitly require the effect of regulation on innovation to be taken into account: these provisions will be evaluated with a view to strengthening them in the context of the general review of the Commission's Impact Assessment Guidelines.

The main competence to foster innovation often lies at **regional level**. Regions should therefore be involved in the preparation and implementation of the National Reform Programmes, including by developing their own regional innovation strategies. Additional efforts need to be undertaken to facilitate policy learning and the diffusion of good practice across borders. In this respect, the Pro INNO Europe will offer a platform that brings together regional and national policymakers with a view to facilitating trans-national cooperation in areas of common interest. Industrial clusters are an outstanding example of this. As a complementary initiative, the Commission will bring forward proposals to the Member States for a Regions for Economic Change initiative

under the new cohesion policy programmes. This initiative will bring regions together in networks to develop best practice in key areas such as research and innovation and to encourage the transfer of new ideas into projects to be supported under the programmes.

Finally, **private stakeholders** are a vital element of an efficient innovation system and therefore need to be fully involved in political priority setting. Member States are invited to foster, where appropriate, public-private partnerships to better engage the private sector into education, research and finance.

A roadmap for a more innovative Europe

The shortcomings of the EU's innovation system can be summarised as deficiencies in innovative resources and capabilities, in the incentives for innovation and in the interaction between innovation actors.



In recent years, efforts to address these deficiencies have been undertaken at national and Community level. The 3% Action Plan⁽¹⁾ and the Commission's Communication 'More research and innovation' of October 2005 have been important milestones in this respect.

The present Communication puts these efforts in a **broader context**. It seeks to stimulate both the supply and the demand side of innovation. In doing so, it is responding to the recommendations of the Aho Report. It lays down the foundation for the broad-based innovation strategy requested by the Spring Council. As such its objectives can only be achieved by a broad based implementation at the level of the Community, its Member States and their regions. At the same time, not only are the public authorities required to act, but also the business sector and the civil society.

The following **ten actions** are of particularly high political priority as part of the Lisbon strategy for growth and jobs:

Action 1: Member States are invited to significantly increase the share of public expenditure devoted to education and to identify and to tackle obstacles in their **education systems** to promoting an innovation friendly

society. In particular, they should implement the recommendations included in the Communication 'Delivering on the modernisation agenda for universities'⁽²⁾ for better education and innovation skills.

Action 2: A **European Institute of Technology** should be established to help improve Europe's innovation capacity and performance. The Commission intends to put forward a proposal in October 2006 and the EIT should be operational by 2009.

Action 3: The Community and Member States should continue to develop and implement a strategy to create an open, single, and competitive European **labour market for researchers**, with attractive career prospects, including possible incentives for mobility.

Action 4: In order to address the poor up-take of research results in Europe, the Commission will adopt a Communication in 2006 – including voluntary guidelines and actions of Member States and concerned stakeholders – to promote **knowledge transfer between universities and other public research organisations** and industry.

Action 5: The EU's **cohesion policy** for the period 2007-2013 will be mobilised in support of regional innovation. All Member States should seek to earmark an ambitious proportion of the € 308 billion available for investing in knowledge and innovation.

Action 6: A new framework for **State aid** to research, development and innovation will be adopted by the Commission before the end of 2006, to help Member States better target State aid on market failures preventing research and innovation activities. Member States should re-orient their State aid budgets to target these objectives, in full respect of their overall commitment to "less and better targeted aid". The Commission will also present a communication later in 2006 with detailed guidance for the design and evaluation of generally applicable **tax incentives for R&D**.

Action 7: Drawing on the recent public consultation, the Commission will present a new **patent strategy** before the end of 2006 and prepare a more comprehensive **IPR strategy** in 2007, facilitating *inter alia* the circulation of innovative ideas.

Action 8: Building on its review of the copyright acquis, the Commission will continue its work to ensure that the legal framework and its application are conducive to the development of new **digital products, services and business models**. In particular, it will bring forward an initiative on 'copyright levies' before the end of 2006.

Action 9: The Commission will test in 2007 a strategy to facilitate the emergence of innovation-friendly **lead-markets**. In this context, it will conduct, after a public consultation including in particular the Technology Platforms and the Europe Innova innovation panels, a detailed analysis of potential barriers to the take-up of new technologies in a limited number of areas. In parallel, using this experience, the Commission will prepare a comprehensive lead-market strategy.

Action 10: The Commission will publish and distribute a handbook on how pre-commercial and commercial procurement can stimulate **innovation** by end 2006

to support Member States in availing themselves of the opportunities offered by the new procurement Directives.

The framework for the implementation of these actions is the renewed Lisbon Strategy for Growth and Jobs. This requires a commitment from all sides and in particular from the Member States to deliver on the structural reforms to foster innovation. The Commission will monitor the implementation of the road-map as part of the **Lisbon process**. Particular attention will be given to these areas in the forthcoming Annual Progress Report due in December 2006 and in the assessment of the National Reform Programmes.

(¹) Communication from the Commission – 'Investing in research: an action plan for Europe' – COM(2003) 226 final/2, 4.6.2003.

(²) 'Delivering on the modernisation agenda for universities: education, research and innovation' – COM(2006) 208, 10.5.2006.



Photo: Payal Vora

Information resources



Details of the EU's activities in support of innovation can be accessed through the CORDIS Innovation Portal. This key resource includes regularly updated news, details of current funding opportunities, and links to innovation policy background and EU-supported initiatives to help firms, organisations and regions strengthen their innovation performance.

<http://cordis.europa.eu/innovation/en/home.html>

The portal also provides direct access to 'Articles on Innovation', in which all articles from *European Innovation* and sister publication *Euroabstracts* may be consulted.

<http://aoi.cordis.europa.eu/>

EU policies and initiatives in the field of innovation are developed and implemented by the European Commission's Enterprise and Industry DG:

http://ec.europa.eu/enterprise/innovation/index_en.htm

The EU's main funding instrument in the period 2007-13 is the Competitiveness and Innovation Framework Programme (CIP). Further information on this programme is available at:

http://ec.europa.eu/enterprise/enterprise_policy/cip/index_en.htm

Amongst the major initiatives currently being supported by the Union is Europe Innova. This draws together innovation professionals from across Europe, encouraging networking and sharing ideas and experiences with the aim of identifying and implementing sector-specific approaches to fostering more innovation.

<http://www.europe-innova.org/index.jsp>

The EU supports a major exercise to develop understanding of the different innovation-support policies and measures in use across Europe, to share experiences of them, and measure their results. Further information on the European Trend Chart on Innovation, and the European Innovation Scoreboard, can be found at:

<http://trendchart.cordis.europa.eu/>

For practical information on participating in EU research and innovation activities, the CORDIS service provides a wealth of details, including all the documentation required to answer calls for proposals.

<http://cordis.europa.eu/>

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