

# |the| technopolitan

The newsletter of Technopolis<sup>[group]</sup>

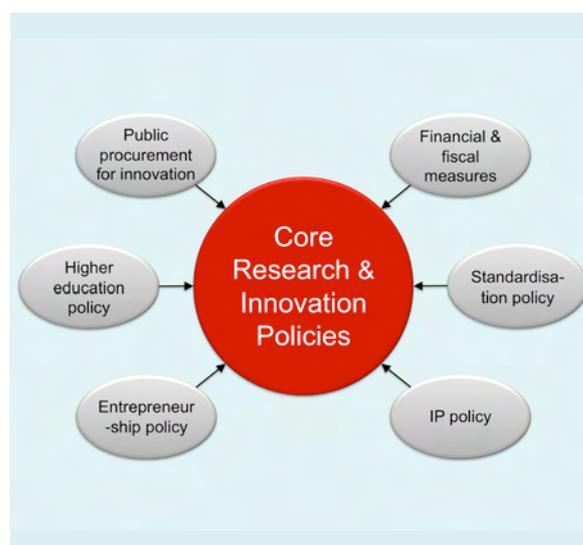
A European research business focusing on the evaluation and development of policy in the fields of research and innovation

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Special Edition  
Framework  
conditions for  
innovation





**E**ven the best-designed innovation policies will fail to deliver if the framework conditions for innovation are deficient.

In innovation policy, it is not the working of one particular policy instrument that matters. It is the wide mix of policies, instruments and institutional decisions, interacting with each other, which brings about an effective innovation policy. In the past, the academic and policy debate on the appropriate policy mix centred on the balance between measures that are indirect (e.g. fiscal schemes) or direct (e.g. grant schemes) to support private investment in R&D. Today more in-depth policy mix studies take a much wider view and include discussion on the impact of policies outside the core research and innovation instruments.

These studies also indicate that an appropriate policy mix is geared to the specific strengths and weaknesses of a national or regional innovation system, and that the policy mix addresses the particular bottlenecks in that system. So context matters. This also implies there is no one ideal blueprint for the perfect policy mix.

There is one set of policies that is always described as ‘essential’ but at the same time underexposed in the policy mix debates: the framework conditions for innovation. Framework conditions are key policies and regulations, outside the ‘core’ research and innovation policies, that affect the innovation performance of an economy. In principle this could include a wide set of policy areas including the environment, education, the market and so on. Each policy area employs a set of instruments and regulations to shape society and so affect the economy. In practice, the innovation community identifies a number of policy areas that have a significant (positive or negative) impact on the innovation performance of individuals and companies. Technopolis has expertise in the most essential of these framework conditions:

- Financial and fiscal regimes and measures that support the monetary investments needed for the start-up and growth of young high-tech firms, and additional R&D expenditures of existing firms
- Regulations which manage the dissemination of knowledge and in particular intellectual property rights
- Higher education policy which shapes skills development and human resources for innovation; in particular higher education affecting research, engineering and entrepreneurial skills
- The setting of standards for (innovative) products, processes and services
- The stimulation of innovation demand and in particular the public procurement for innovation
- All policies and regulations affecting entrepreneurship and particularly those enhancing the start-up and growth of innovative firms.

While there are other framework conditions for innovation, the six areas above have the closest connection with the core innovation policies and often lie within or close to the authority of innovation policy makers. Each specific technology field is shaped by regulations from various policy domains. New drug development, for instance, is highly dependent on international and national health regulations. Macro economic policy largely influences the propensity to start and grow businesses in a country. Nevertheless, in times of austerity a re-balance between mostly monetary measures in favour of non-monetary measures that influence the ‘market for innovation’ can be quite attractive for governments. In this edition of Technopolitan, we want to highlight our work on these essential framework conditions.

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# Financing Innovation

**The largest impediment to innovation is still lack of access to finance.** In recent years venture capital (VC) investment has been far below its 2007 pre-financial crisis level. More and more young technology-based companies report on their problems in attracting VC. At the same time governments in EU member states, and the European Commission, have started to stimulate the venture capital market. In various member states governments have launched VC funds that provide support for seed-finance. Other member states have established tax incentives to engage the interest of private investors in VC. Further support measures have been established to ease the access of early stage companies to debt financing. However, the European VC market is still very small compared to that in the United States, which puts Europe at a competitive disadvantage.

Several strategies prevail in innovation policy to address the finance problem:

- Some innovation programmes aim to ease access to equity. Here direct equity provision is established. Organisations like High-Tech Gründerfond (DE), CDC Entreprises (FR), European Investment Fund (EIF) and European Investment Bank (EIB) provide equity directly to young technology-based enterprises. Furthermore matching funds to private or governmental VCs are provided.
- Several programmes have been launched to provide improved access to debt financing. The EIB and, at national level, agencies such as the French OSEO and other institutions, provide subsidised loans (or guarantees) for young SMEs.

## Selected projects in this area:

- **BMWi (DE):** Evaluation of the Hightech Gründerfond
- **DATAR (FR):** Study on use and effectiveness of financial engineering tools
- **European Investment Fund (EU):** Assessment of SME financing gaps
- **European Commission (EU):** Funding Research and Innovation in the EU and Beyond: trends in 2010-2012
- **Ministry of Economic Affairs (NL):** International Benchmark of Fiscal Incentives for R&D

## Project Spotlight: Evaluation of the Hightech Gründerfonds

The Federal Ministry for Economics and Technology (DE) started jointly with partners from industry, a VC fund to invest in companies in the seed & early stages. The size of the fund was €250m. In 2012 a second similar fund was launched. In the evaluation, Technopolis analysed the impact of the fund on companies' access to VC and the effectiveness of the management of the funds. The evaluation found that support by the funds had a positive impact on the access of the target group to finance, and also had a positive effect on the ability of those companies to survive in the market.

- A relatively new approach is to think about strengthening the self-financing capacities of young enterprises by speeding up their access to the value chain. Here no specialised policy programmes have yet been put in place. However, various member states have, for example, attempted to use public procurement as a means to open up the value chain for young enterprises, or to catalyse demand for innovative products of SMEs. The Small Business Innovation Research programmes in the Netherlands and the UK have proved to be successful in this respect.
- The approach of direct government intervention in technological progress has been complemented by indirect means of support, such as R&D-tax schemes. Inspired for instance by experience in Canada, a growing number of EU member states have established R&D tax schemes to support innovation.

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# Intellectual Property Rights

**Intellectual Property Rights are an important means to commercialise and foster innovation activities.** In 2012, there were some 250,000 patent applications filed with the European Patent Office by around 30,000 applicants. This figure is about 50 per cent or so higher than 10 years ago, demonstrating the growing importance of patenting for R&D and innovation activities. However, IPR is not limited to patenting. Copyrights, trademarks, registered designs and more informal protection mechanisms such as trade secrets have grown in importance, too. Together, these instruments have driven a development that makes intellectual assets one of the major factors determining company value today. In 2009, 81 per cent (from only 17 per cent in 1975) of the market value of the S&P 500 firms can be attributed to intellectual assets. Technopolis has responded to the challenges arising from more widespread IPR usage by providing its customers with up-to-date advice for designing, monitoring and assessing IPR policies and strategies.

The IPR system comprises not only the patent system, but also trademarks, copyrights, designs or trade secrets. These instruments are used both for protective purposes and to create additional revenue (through licensing), for marketing purposes, for attracting investors and, even further, to create entirely new business models. Apple's success with the iPhone – based on patented technology, protected trademarks and designs, as well as novel services subject to copyright and licensing agreements – is just one case in point.

## Selected projects in this area:

- **European Commission, DG EAC:** Review of the IPR strategy of the three Knowledge Innovation Centres (KIC) of the European Institute of Innovation and Technology (EIT): ICT Labs, Climate and InnoEnergy
- **European Patent Office:** Assessment of the economic value of patents nominated for the European Inventor 2011 and the European Inventor 2012 Awards.
- **Swiss Federal Institute of Intellectual Property:** Facilitation of the development of new and improved support services in the domain of IPR for SMEs
- **CASIP-SMEs/Europe-Aid:** Assessment of existing and development of new IPR support services in Central Asia
- **European Commission, DG-RTD:** Assessment of the scope of patent licensing activities by businesses in Europe

However, while overall usage of IPR has increased, so have the challenges and the complexity in dealing with IPR both from a business perspective and a public policy point of view. Key issues arise for each IPR instrument:

- For patents, there are numerous such issues including: the costs of patenting, which are particularly high in Europe due to the lack of a true European patent; the question of patentability of certain types of inventions (gene patents, software patents); the misuse of the patent system through trivial patents of low quality which lead to extensive court battles, or the costly enforcement of patents, or the role of patents in trade with less-developed countries
- With respect to other types of IPR, similar challenges include: enforcement of copyrights and the directly related problem of online/digital piracy; the problem of counterfeiting in the case of trademarks; and little harmonisation in the area of copyright and trade secret law in Europe
- Overall, this situation puts firms and policy makers alike in a delicate position: how should firms and research organisations formulate a successful IPR strategy? How can policy makers ensure that the IPR system is working as intended and that there is no under-use and misuse of the IPR system?

There is substantial evidence that many firms do not use their intellectual assets to their full potential, just as there is evidence on the public policy side pointing to deficiencies in the legal framework and the support structures and policies in place in the IPR world.

There is a need for up-to-date intelligence and know-how regarding the design of IPR policies and strategies, from broad missions and clear goal setting to day-to-day activities such as the monitoring and management of IP portfolios. Technopolis has committed itself to being a prime supplier for such information.

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## Project Spotlight: Patent valuation for the European Patent Office

In 2011, and subsequently in 2012, Technopolis was contracted to assess the economic value of patented inventions which were nominated for the European Inventor Awards 2011 and 2012. Some 25 such patents were scrutinised in detail, and some further 40 analysed at the pre-finalist stage. The inventions stemmed from various technology fields. Common success factors and challenges were assessed and became the basis for internal assessment procedures as well as external communication to the media.

# Higher Education

## Higher Education is an engine for innovation.

Europe faces competitiveness challenges on a new scale in the 21st century. The capacity and potential of its Higher Education (HE) systems to support innovation and growth, and to provide highly skilled human talent is at the forefront of this challenge. It is estimated that there are 15,000 universities and Higher Education Institutions (HEI) in the world. The EU has 4,000 of them, or just over a quarter of the total, with around 20 million students and 1.5 million academics. In 2010, 26 per cent of the population in the EU-27 had a higher education qualification; the EU 2020 target is to raise this proportion to 40 per cent. This amounts to a very powerful potential for high level skills, and enterprise and innovation. The EU 2020 target to raise R&D and innovation spending to 3 per cent of GDP is also a target for HEIs, who are seen as central to EU innovation and global competitiveness. National governments remain responsible for higher education agendas, but the European Union policy supports national efforts through activities such as the university modernisation agenda, mobility programmes and, more recently, the European Institute for Innovation and Technology.

There are strong pressures on European Higher Education systems to live up to the innovation challenge. There are changing expectations, environments and new relationships with the economy. Technopolis deals with these challenging issues from various perspectives.

Key challenges shaping the Higher Education landscape include:

- The move to achieve widening participation in higher education
- The reduction in public funding, requiring universities to rethink their role, operations and strategic priorities and to adopt new funding models
- The expansion of the role of HEIs to include the socio-economic as well as research and educational functions, leading to new modes of interaction and partnership with a broader range of stakeholders
- The drive to become international, whilst remaining embedded in locality and region
- The pressure on performance – to score well on various university rankings and league tables in order to attract talent
- The new educational offer – the change in the nature of industry in Europe, with a shift towards more knowledge-based/intensive economies means universities need to adapt their offer to become providers of new skills and lifelong learning opportunities.

## Project Spotlight: Good practice in the Knowledge Triangle from the perspective of education

Technopolis produced 12 in-depth institutional case studies for the European Commission, focusing on the integration of education in the knowledge triangle.

The case studies provide a rich basis for understanding how the different operating environments of universities affect the level and quality of engagement across the education, research and business environments. Overall success is particularly linked to the central support structures and the management and strategic development which support the linking of education, research and business. Another key success factor is ensuring that the strategy becomes operational, thus facilitating the creation of an environment in which the different types of stakeholders can work together.

These challenges have led to a rethinking of university governance, structure and mission, and to the emergence of concepts such as the triple helix, the knowledge triangle, and the entrepreneurial university. Universities have to take on a new role in the innovation, research and education system. At the same time, there are still many barriers to change, including the significant issue of the autonomy of HEIs in adopting new strategies and missions.

Technopolis has a dedicated Higher Education Group which brings together national and international expertise from across all of our offices. Our clients include national and international organisations such as the European Commission, the OECD, national governments, individual universities and other organisations.

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# Standardisation

**Standards affect almost every facet of our lives, influencing the way we work, the way we communicate, the way we travel and countless other activities.** They also support industry competitiveness by assisting with the codification and dissemination of new knowledge and innovations, improving the quality of products and services, ensuring interoperability and enabling trade. Many thousands of new standards are developed globally each year, and economic studies suggest that growth of the standards catalogue may account for up to a quarter of productivity growth, contributing many billions of Euros to national economies. Standards are an essential business tool, and failure to make effective use of standards and participate in the standards-setting process can inhibit competitiveness at company, sectoral and regional levels.

Standards also deliver significant societal benefits by protecting the health and safety of workers & citizens, protecting the environment, and providing reassurance to consumers that the products and services they purchase are safe, fit for purpose and of a high quality.

Policymakers therefore have a keen interest in standards and seek to adopt policies that promote and enhance their development, dissemination and use. Policymakers typically provide financial assistance to the standards development bodies to ensure that they have the resources they need to operate high quality processes and procedures, and can deliver standards in a timely and cost-effective fashion. They also develop policies to identify where new standards are needed and to ensure that these are developed with inputs from all relevant stakeholders. Finally, policymakers provide support to improve the dissemination of information about standards, in order to promote their wide uptake and use.

In June 2011 the European Commission issued a press release that laid down the most important steps that it will take to strengthen the system of standard-setting in Europe, in order to implement the commitments of the Europe 2020 flagships, Industrial policy, Innovation Union, Digital Agenda and Internal Market Act. These steps include:

- Pushing for more international standards in those economic sectors where Europe is a global leader
- Promoting the development of more market-driven European standards for services, recognising that although there are many European standards for products, there are hardly any for services
- Proposing a light and fast way to recognise the

increasingly important ICT standards developed by global ICT standards development organisations, to be used in public procurement, EU policies and legislation

- Enhancing cooperation with the leading standardisation organisations in Europe (i.e. CEN, CENELEC and ETSI) so that their standards will be available more rapidly
- Ensuring that European standards will be drafted with the help of organisations representing those most affected, or most concerned – consumers, small businesses, and environmental and social organisations.

Corresponding to these efforts is a continuing need for policy-makers to study the impacts of standards – both positive and negative – and to evaluate the extent to which their policy measures in this area are achieving the desired effects.

Over the past seven years Technopolis has developed a thorough understanding of the standards development process, the benefits that standards generate and the role of public policy in supporting and influencing standardisation.

## **Project Spotlight: Study on the contribution of standardisation to innovation in EU-funded research**

In 2013 Technopolis undertook a study to assess the extent to which FP6 and FP7 projects are using standards to support their research and as a means to codify and disseminate project results. The study, carried out on behalf of CEN & CENELEC – the European standards bodies – involved database analyses and surveys to profile where and how standardisation is being used. A series of case studies were then developed to highlight the innovation benefits generated. The standardisation bodies and the European Commission plan to use the results to promote greater use of standardisation in FP projects.

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# Public Procurement for Innovation

**Public procurement can serve as a powerful tool to mobilise innovation.** In 2010 European public authorities purchased goods of approximately €2.1 trillion. Already a small percentage of this volume could provide a substantial stimulus for companies to develop innovative solutions in response to societal challenges. Public procurement of innovation (PPI) and pre-commercial procurement (PCP) are two potent means to stimulate innovative growth and to modernise public administration. Moreover, through the use of innovative tools, public authorities can significantly lower entry barriers for SMEs to public procurement. The United States has used public procurement as a tool to steer and foster innovation since the early 1980s. Since 2005 the UK and the Netherlands have run national schemes with great success, with other EU countries implementing or exploring similar opportunities.

Policymakers face three main challenges:

- In reaction to the financial crisis, many EU governments have reduced budgets for innovation support
- At the same time societal challenges such as climate change, an ageing society or civil security call upon public authorities to define problems and seek innovative solutions
- Meanwhile there is an unprecedented set of new ideas and potential solutions that still need to find their way to the market.

Public procurement policy and practice can play a pivotal role in addressing these challenges by directing public procurement budgets towards innovations. This requires the 'building of bridges' between policymakers in charge of innovation and various public procurers in many sectors and organisations.

Innovation traditionally has dedicated budgets at ministries and agencies for education, science, innovation and economic development. However, there is a huge financial pool that could be mobilised to fund the last stages of technological development of budding innovations. Public procurement can complement innovation policy, as it can help to pull potential innovations that have a societal impact through to the market. The public sector can act as the launching customer for innovations where markets are hesitant to invest, for instance due to technical risks.

A framework to seize these opportunities is in place:

- The EU has defined the legal boundaries in which public procurement can foster innovation without

infringing the rules for state aid and competition. The EU procurement law provides for a variety of measures that public contracting authorities can make use of for fostering innovation

- Instruments such as competitive dialogue or pre-commercial procurement allow public bodies to tap the vast pool of the innovative forces, especially of SMEs, and at the same time to limit their own risks through a competitive and step-by-step process.

Opportunities do not come without challenges. Political support to embark on this route off the beaten track of traditional grant schemes will be required. Public procurers might find it difficult to accommodate the uncertainty that comes with any innovation. Many procurement rules and organisational cultures are not geared towards risk taking. However, the new instruments provide for a measured approach that allows limiting risk and mobilising procurement expertise and funds for innovation.

In the EU, first successful initiatives have demonstrated the potential that public procurement harbours for innovation. Nevertheless many countries and regions, while embracing demand-driven innovation in principle, find it challenging to know where to start.

## Selected projects in this area:

- **Nordic Innovation Centre (NICe):** Study on how Public Procurement can stimulate innovative services
- **European Commission, DG Enterprise & Industry:** Feasibility study on a EU Small Business Innovation and Research (SBIR) programme
- **Dutch Ministry of Economic Affairs:** Evaluation of the Dutch SBIR programme.

Technopolis supports regional and national governments in the design phase of public procurement for innovation programmes and studies the impacts of current policies.

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# Entrepreneurship

**Entrepreneurs play a crucial role in the global economy and in solving major societal challenges.** Small and medium sized enterprises (SMEs) are the backbone of the European economy. According to the SME performance review, 85 per cent of new jobs in the EU between 2002 and 2010 were created by SMEs, annual SME job creation was 1.1 million, and SMEs represented two-thirds of total EU employment. Added to this, entrepreneurs and young and small companies are the drivers of innovation, acting as change agents to build a better tomorrow. However, SMEs are often also seen as being quite traditional. It is therefore a major objective of Science Technology and Innovation policy to increase SMEs' level of innovativeness. In reality, Europe today shows fairly low rates of new company formation, which is particularly the case for innovative new companies.

For decades various policies and instruments were put in place to ensure that entrepreneurs were given every opportunity to set up their businesses. Major elements lacking in many approaches were those aimed at supporting actual survival, and, more importantly, growth. Nowadays governments are focusing more and more on their role in supporting thriving young companies and make them partners in working towards sustainable societies.

From our experience over the years, we at Technopolis have learned that when it comes to public start-up support:

- There is a need for exchange of and learning from best practices
- No two regions are alike. Integration of local/regional strengths and idiosyncrasies in entrepreneurship policy is key

## Project Spotlight

TechnoPartner in Netherlands aimed to stimulate new start-ups particularly at universities and colleges. The programme focused on a number of bottlenecks, such as the lack of financing for high-tech start-ups, the lack of entrepreneurship within universities, the overall lack of entrepreneurial spirit (entrepreneurial culture) and the small number of patents at Dutch universities. Our recent evaluation showed that the programme contributed to cultural change in universities, the professionalisation of the technology transfer function at universities, and increased collaboration between universities and professionals.

- As a result of the entrepreneurship hype, many policies are focused only on specific stages of enterprise development and/or only on certain actors involved. A well-balanced policy mix that focuses on fostering entrepreneurship from a systems perspective, ensuring synergies between actors and initiatives, and flow between the various stages is essential. Policy designed to help start-ups survive and flourish needs to be well embedded in the overall entrepreneurship policy
- Until now, innovation policy and entrepreneurship policy have often been quite distinct policy areas, though the trend is to integrate the two. There is, however, still work to be done here. A strong link between actions aimed at supporting young companies and actions aimed at supporting innovation is crucial in creating networked innovation ecosystems.

## Selected projects in this area:

- **EC DG Research:** The role of Different Funding Models in Stimulating the Creation of Innovative New Companies
- **World Bank:** The assessment of the Regional Small Business Incubators managed by the SME Development Organisation (KOSGEB)
- **OECD:** Support for the OECD in an international review of High Growth programmes, particularly the Growth Accelerator Programme in The Netherlands

Technopolis has a great understanding of entrepreneurship and innovation processes in various sectors. We have wide experience in identifying best practices in public policy, mapping regional innovation and entrepreneurship ecosystems worldwide, and translating them into strategic plans and policy instruments. We work with clients to help design and implement policies in favour of start-up creation and growth that match particular regional and national contexts, ensuring efficiency and effectiveness. We take a holistic view and identify potential synergies with existing infrastructure and initiatives.

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