

Innovation is essential to the UK's future economic prosperity and quality of life. To raise productivity, foster competitive businesses, meet the challenges of globalisation and to live within our environmental and demographic limits, the UK must excel at all types of innovation.

This will mean harnessing ideas from the public and private sectors, users and professionals to create more effective products, services, processes and methods of public service delivery. The UK must unlock the talent of all of its people and become an Innovation Nation.

Government cannot and should not accomplish this task alone. The Department of Innovation, Universities and Skills' role is to champion innovation across the board, working with partners across and outside government. Building on the Government's knowledge economy programme, the 2004 Science and Innovation Investment Framework and Lord Sainsbury's recent Review as well as the 2008 Enterprise Strategy, DIUS has sought advice from leading thinkers and practitioners to develop this White Paper to promote innovation across the UK's society and economy.

The UK has a number of strengths: a leading position in scientific research, a number of highly competitive business sectors, a stable and supportive macroeconomic climate and flexible product and labour market regulation. The UK also excels at "hidden innovation" – in its leading services sectors and creative industries.

However, there are a number of areas in which the UK must improve. The UK's productivity performance has been improving steadily since 1997 but still lags some leading international competitors. Moreover, there remain long-

standing weaknesses in the skills base and in the number of employers investing in training.

The Government's aim is to make the UK the leading place in the world which to be an innovative business, public service or third sector organisation. We aim to build an Innovation Nation in which innovation thrives at all levels – individuals, communities and regions.

### **The Changing Face of Innovation**

In the past, innovation was thought of as a simple process of investment in fundamental research leading to commercialisation by far-sighted management in industry. This process has traditionally been supported by supply-side policy initiatives.

However, innovation draws on a wide variety of sources and is driven as much by demand as by supply. The insights generated by basic science are critical to long-term innovation performance but the path they follow from the laboratory to the marketplace is long, complex and uncertain.

Other sources of innovation include the creative application of tried-and-tested technologies and the role of design in developing innovative products and services. Innovation is also not restricted to the private sector – increasingly the public sector is called upon (often in partnership with the private and third sectors) to innovate in the design and delivery of public services.

Enabled and accelerated by new technologies, innovation is becoming more open. Organisations are increasingly reaching outside their walls to find ideas – to universities, other companies, suppliers and even competitors. Users are also increasingly innovating independently or in collaboration with businesses or in the co-creation of public services.

Government policy needs to recognise these new sources of innovation and, in particular, develop new instruments that drive demand for innovation as well as its supply.

### **Government Creates the Conditions for Innovation to Flourish**

Government creates the conditions for innovation by ensuring macroeconomic stability and open and competitive markets. In many sectors of the economy, maintaining this framework and investing in people and knowledge are sufficient for innovation to flourish. In some specific areas, government can provide more direct support using regulation, public procurement and public services to shape the market for innovative solutions. Innovation is also essential to meeting some of the biggest challenges facing our society, like global warming and sustainable development. Our policies must similarly build the capabilities of British business and the British people to benefit from the new opportunities that will be created.

This White Paper includes new proposals about how Government can use procurement and regulation to promote innovation in business as well what it can do to make the public sector and public services more innovative. Working through institutions like the Technology Strategy Board (TSB), our aim should be to bring everyone together, from designers to manufacturers and from providers to customers and users, to understand and take advantage of these opportunities.

### **Demanding Innovation**

Demand drives innovation by encouraging innovators to meet new, advanced needs. Early users, whether they be individuals, businesses or Government itself, shape innovations in their most important phase of development and provide critical early revenue. Regulation can help or hinder innovation by setting stretching standards for new technologies or constricting freedom to innovate. If the UK is to become an Innovation Nation, it must complement the supply-side innovation measures with demand-side policies.

To drive increased demand for innovative products and services:

- Each Government Department will include an Innovation Procurement Plan as part of its commercial strategy, setting out how it will drive innovation through procurement and use innovative procurement practices.
- DIUS will reform the Small Business Research Initiative, refocused on technology based research, prototyping this with the Ministry of Defence and the Department of Health and will extend the revised SBRI to all participating Departments by April 2009.
- DIUS and the CBI will facilitate the interchange of innovation expertise between the public and private sector, including the secondment of private sector experts into the public sector for the purpose of mentoring in pro-innovation procurement.
- DIUS and the Better Regulation Executive in the Department of Business, Enterprise and Regulatory Reform (BERR) will work with the Business Council for Britain and others to identify how regulation may promote or hinder innovation.

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- DIUS and the Better Regulation Executive in BERR will use existing regulators' fora to share experience on how their activities could promote innovation.
- DIUS will publish a Science & Society Strategy in the Autumn, along with an implementation and delivery plan.

### Supporting Business Innovation

Business is an engine of innovation, a generator of wealth and a driver of improved living standards. Government plays a critical role in guaranteeing the framework in which businesses can innovate and in providing direct support where the market fails.

The UK has significant strengths across all sectors of its economy and innovation performance is on an upwards trend. Strategic organisations like the Technology Strategy Board, Regional Development Agencies, Devolved Administrations, UK Intellectual Property Office, Energy Technologies Institute (ETI) and National Endowment for Science, Technology and the Arts (NESTA) play important roles in driving innovation and coordinating government effort.

To make the UK the best place in the world to be an innovative business:

- The Technology Strategy Board will bring forward 5 new Innovation Platforms over the next 3 years, including developing technology demonstrators to show innovative solutions in action.
- Over the English regions, at least 500 businesses will be given an innovation voucher to work with a knowledge base institution of their choice, with the aspiration that this would increase to at least 1000 per year by 2011 as the vouchers were demonstrated to be effective for businesses. This is expected to mean an investment of at least £3 million to initiate collaborations between SMEs and the knowledge base.
- DIUS will work to ensure appropriate finance is available for all innovative businesses at all stages of their growth. This will be set out clearly in a "guide to innovation finance" based on the "No Nonsense Guide" on access to finance.
- DIUS will take forward the Sainsbury Review recommendation to develop a national Proof of Concept specification to be delivered by the RDAs, which will provide access to facilities and have a strong focus on investor readiness.
- DIUS and the Technology Strategy Board working with partners will take forward the Sainsbury recommendation to double the number of Knowledge Transfer Partnerships, increasing their flexibility and applicability to a range of educational institutions including FE colleges.
- DIUS will continue to work with BERR, Technology Strategy Board and NESTA to investigate innovation in service sectors.
- The UK-IPO will examine whether there is a role for Government in helping small firms obtain investment through better reporting of their intangible assets, by the end of 2008.
- By the summer of 2009 all UKTI export and Business Link advisors will receive training from the UK-IPO in advising businesses on IP management. UK-IPO will provide online support to help small business exploit their IP through licensing and other means which are increasingly important to innovative business. This network will be used to promote an awareness-raising programme on the importance and changing nature of intellectual property.

## **A Strong and Innovative Research Base**

The UK's world-class research base is an important component of its innovation ecosystem.

Alongside other sources of knowledge like large companies, SMEs and users, it drives the creation of new ideas, some of which have potential to deliver significant economic and social benefits.

Working with the Research Councils and the Technology Strategy Board, DIUS will build on the UK's current impressive performance on research and broaden the traditional knowledge exchange agenda to encompass new disciplines, new sectors, new businesses and those who work in the development and delivery of public services.

To maintain and improve the UK's standing in research:

- DIUS will maintain the growing investment in UK science and will broaden knowledge exchange between the research base and businesses into the arts and humanities and service sectors such as the creative industries.
- The UK-IPO will continue to develop the 'Lambert' online toolkit of model university-business licensing agreements, which cuts the cost and complexity of IP transactions.
- DIUS has commissioned a study to look at how universities should manage IP for their own benefit and for the benefit of the wider economy.
- NESTA will develop a new Innovation Index to measure the UK's performance as an Innovation Nation, drawing on input and expertise from partners such as the ONS, DIUS, BERR, TSB, Advanced Institute of Management (AIM), the Design Council, CBI and others. A pilot index will be published in 2009 with a fuller system in place by 2010.

- A new Innovation Research Centre will be established by DIUS, NESTA, Economic and Social Research Council (ESRC) and the Technology Strategy Board to ensure a steady supply of high quality innovation research into the UK innovation policy community.

## **International Innovation**

Innovation is increasingly an international endeavour. Businesses are internationalising their R&D, supply chains and customer bases and adopting "open innovation" models. Like the ideas that they create and use, the people who drive innovation are also increasingly mobile, as is the finance that support innovators.

The Government is committed to making the UK one of the most attractive places in the world for mobile R&D-intensive businesses to invest. Its research base promotes collaboration for excellence irrespective of national borders and our open economy facilitates the internationalisation of high-tech businesses. However, international innovation competition is intensifying, spurred on by increasing investment by emerging economies.

To ensure that the UK is the most attractive location for innovative businesses, individuals, and organisations:

- DIUS will assume responsibility for leading and managing the FCO Science and Innovation Network (SIN). In the future, DIUS and FCO will co-fund this network and DIUS will host a management team of DIUS and FCO staff to oversee the network's operation.
- During 2008, DIUS will produce an international strategy, which will draw together inter-related policies within DIUS' remit, encompassing higher and further education, skills, research and innovation.

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- The Technology Strategy Board will develop, as part of its international strategy, a marketing plan to help deliver a step change in the ability of UK business to compete for grants in EU Framework Programme 7.
- DIUS will work with BERR on implementing the European Commission's lead market initiative so that the UK's most innovative businesses can take advantage of the European single market and of new technology-driven global markets.
- The Technology Strategy Board will advise Government on the opportunities which may arise from the adoption of EU regulations to stimulate business innovation including, where appropriate, building these into the design of Technology Strategy Board programmes.

### Innovative People

Most new ideas do not come as a flash of inspiration to a lone genius inventor; they come from how people create, combine and share their ideas. The UK's capacity to unlock and harness the talent, energy and imagination of all individuals is crucial to making innovation stronger and more sustainable.

The effects of innovative people are self-reinforcing: innovative businesses are attracted to highly skilled and creative workforces and, in turn, innovative people are drawn towards exciting and challenging career opportunities. Furthermore, innovative people generate new ideas that require skilled people to implement and exploit them.

To maximise the innovative capacity of the UK's people:

- DIUS will drive implementation of the Leitch Review of Skills to raise the nation's skill levels and enhance opportunities for innovation, building implementation of the Sainsbury review recommendations into its wider strategies for FE reform.
- DIUS will pilot a revenue based FE Specialisation and Innovation Fund to build the capacity of the FE sector to support businesses to raise their innovation potential. Through a small number of targeted pathfinder projects, DIUS will seek to unlock the talent of the FE workforce to drive business innovation through partnership and knowledge exchange.
- Resources permitting, DIUS will establish at least one National Skills Academy (NSA) in every major sector of the economy, and is actively encouraging bids from innovative industries, space and the environment. Government is interested in seeing plans for a National Enterprise Academy and a NSA for the Environment develop. Government is working with Peter Jones to develop plans for a National Enterprise Academy and with James Dyson to launch the Dyson School for Design Innovation.
- DIUS will shortly publish a Higher Level Skills Strategy. This will provide the overall framework for driving up the higher level skills that contribute to innovation in business.
- Government will continue to grow the Train to Gain programme and the Apprenticeship programme.
- Reformed Sector Skills Councils will look to identify skills gaps which inhibit innovation.
- The new UK Commission for Employment and Skills will pursue work on High Performance Working practices to increase value added in business.
- The Government will develop a framework for the further expansion and development of Higher Education and has asked the Higher Education Funding Council for England (HEFCE) to consult on how the 20 new HE centres can unlock human potential and drive regeneration.

- DIUS will work with BERR and the National Council of Graduate Entrepreneurship to develop regionally-based University Enterprise Networks.
- DIUS will work with the Department for Children, Schools and Families (DCSF) to promote greater take-up of STEM subjects at school, college and university
- DIUS will lead a cross- Government project on labour market needs for STEM skills and adjust policies in the light of its findings.

### **Innovation in Public Services**

Innovation in public services will be essential to the UK's ability to meet the economic and social challenges of the 21st century. Education, law, health and transport provide the underpinnings for all innovative activity. They must be delivered efficiently and imaginatively to take account of increased and more complex demands from public service users.

The Government is uniquely placed to drive innovation in public services, through allocating resources and structuring incentives. Major forces such as attitudes to risk, budgeting, audit, performance measurement and recruitment must be aligned to support innovation. Together, and with effective leadership, these will progressively overcome existing cultural and incentive barriers. Those responsible for public service delivery must also learn the lessons of open innovation and adopt innovative solutions from the private and third sectors.

To ensure that the UK's public services are the most innovative in the world:

- In order to assist policy makers in understanding the acceptable levels of risk in pursuing innovative policies, the NAO will conduct a study that will explore the role of risk in stimulating or stifling innovation in the public sector.
- The Sunningdale Institute will work with partners to create a Whitehall Innovation Hub, a new partnership of organisations to capture and disseminate learning about public sector innovation.
- NESTA will establish a Public Services Innovation Laboratory. Working as appropriate with partners such as the Young Foundation, The Innovation Unit, IDeA, Design Council and Innovation Exchange, the Laboratory will trial new methods for uncovering, stimulating, incubating and evaluating the most radical and compelling innovations in public services.
- DIUS will convene a Network of Whitehall Innovators to demonstrate commitment at a senior level of Government.
- The Design Council will develop and trial an innovation-enabling programme of designing demand for practitioners in the public sector, along the lines of the existing private sector model.
- DIUS will consider, with the Cabinet office, the value of an extended "power to innovate", enabling front line staff to explore new ways of delivering high quality services.

### **Innovative Places**

Despite the spread of global communications, innovation still tends to cluster in particular locations, whether they be urban, rural, regional or national. Not all knowledge can be codified, and innovators are helped by interaction that thrives on trust and proximity. Aside from helping the supply of knowledge, clusters mean that innovative organisations can be close to their market and thereby able to anticipate future demands.

In the UK, innovation performance varies considerably from place to place. It reflects sectoral specialisation and history. Traditionally, the UK's innovation policy has been concentrated on high-tech manufacturing and this will remain vitally important. However, in the future, spatial innovation strategies must build on each region's distinctiveness. Moreover, because of the internationalisation of knowledge production, many UK regions will increasingly depend not on the creation of knowledge but on its absorption from elsewhere.

To recognise the spatial properties of innovation and to ensure that the benefits of innovation reach all areas of the UK:

- DIUS will sponsor New Partnerships for Innovation that will bring together venture capital, universities, business and regional government to align efforts and develop innovative solutions to local and regional challenges. DIUS will publish a prospectus for New Partnerships in Autumn 2008
- The Technology Strategy Board and RDAs will work to align their strategies and funding for technological research, demonstrators and Innovation Platforms and achieve the £180m aligned funding commitment.
- As part of its work to develop an Innovation Index, NESTA will work with RDAs and DAs and the Innovation Research Centre to explore the scope for regional or sub-national innovation measures that capture spatial innovation patterns.
- DIUS and BERR will build on the success of the National Council for Graduate Entrepreneurship by establishing a regional network which DIUS will co-fund.
- DIUS will work with RDAs, the Technology Strategy Board, the Devolved Administrations, local authorities and other partners including business and universities to align national and regional innovation programmes and, where appropriate, to use multi-area agreements to promote innovation across the administrative boundaries of local authorities.

### Next Steps and Tracking Progress

This White Paper sets out an ambitious aim for the UK's innovation policy, of building an Innovation Nation in which innovation thrives at all levels. Implementing this will be challenging and require DIUS to build new partnerships with stakeholders in the public sector, business, HE, FE and the third sector.

To monitor progress:

- DIUS will lead the production of a cross-Government Annual Innovation Report in Autumn 2008, to review progress across all aspects of government activity relevant to innovation.
- NESTA will develop a new Innovation Index to measure the UK's performance as an Innovation Nation, drawing on input and expertise from partners such as the ONS, DIUS, BERR, TSB, AIM, the Design Council, CBI and others. A pilot index will be published in 2009 with a fuller system in place by 2010.
- A new Innovation Research Centre will be established by DIUS, NESTA, ESRC and the Technology Strategy Board to ensure a steady supply of high quality innovation research into the UK innovation policy community.

