

The Sainsbury Review of Science and Innovation Policies of Government. Submission by Universities UK

Executive summary

Universities UK is pleased to present evidence to the Review of Science and Innovation Policies of Government, being taken forward by Lord Sainsbury.

Key issues from the submission we would like to emphasise include:

- **R&D tax credits**- we have welcomed the existing successful incentives provided by Government to promote research and development, notably the R&D tax credit initiative. We believe the guidelines for R&D tax credits should be revised to encompass the creative sector and other growth industries, such as financial services and business consultancy.
- **Technology Strategy Board**- we support the creation of the new business-led Technology Strategy Board (TSB) and look forward to engaging with the new TSB as it develops. As the role of the Board is enhanced, it is vital that the focus on technology does not exclude key areas of innovation, such as the creative industries, and that the concept of industry is widened to reach beyond the large multinationals.
- **Public investment in R&D**- the UK continues to spend less on R&D than many of its competitors. It is therefore crucial that public investment in R&D continues to grow in importance within the context of government priority setting.
- **Definition of R&D**- traditional conceptions of research activity (e.g. 'basic' and 'applied') may no longer always be relevant both for scientists and policy makers in a complex innovation system, not least because innovation does not follow a linear model due to the number of knowledge and funding linkages between academia, industry and government. A fresh look at the assumptions and definitions that underpin decision-making, and how they relate to modern innovation systems, may therefore be needed. The Review could play a key role in stimulating this debate.
- **Higher Education Innovation Fund (HEIF)**- appropriate funding for HEIF (which we recommend should be increased to £150million per annum) is essential if knowledge transfer activity in HEIs is to further expand and develop. It is also important that any new metrics for HEIF do not introduce unnecessary complications in data collection and reflect the diversity of knowledge exchange in HEIs and support capacity building in new and emerging areas.
- **Knowledge Transfer Partnerships**- the government's flagship Knowledge Transfer Partnerships (KTPs) have been extremely valuable to supporting collaborative activity and we would support the introduction of 'mini-KTPs' to suit different kinds of partnerships, including shorter-term projects of 3-12 months duration.
- **Regional Development Agencies**- support from RDAs, whilst largely welcomed by HEIs, is often seen as patchy and area dependant. Any expansion to the role of RDAs would therefore need to be given serious consideration, as not all RDAs are sufficiently



networked with universities. It is also critical that RDAs strengthen their capacity to collaborate across regions in support of R&D.

- **SMEs-** SMEs, by their very nature, often have little money to invest in research and innovation. Universities would welcome further support for SMEs, who might seek to progress along the 'innovation escalator' through increased interaction with universities, starting with the employment of graduates and moving towards increased engagement in R&D activity.
- **Skills-** whilst we support the principle of co-funded provision with employers to deliver the highly skilled workforce that the economy needs, serious questions remain about the extent of employers' willingness to pay for higher level skills provision. We would recommend that the government and the Funding Councils provide additional long-term financial support to institutions to cushion the risk involved in developing new, employer-led provision.
- **International collaboration-** there is a need for improved cooperation at a strategic level between UK's national funding bodies and their counterparts abroad. More international bilateral agreements and understandings are needed to overcome barriers to collaboration.

1. Introduction

1. Science research and innovation are crucial to the UK's economy and competitiveness. UK universities underpin this in many different ways, both through producing and acting as a magnet for the best knowledge and talent.
2. The UK's research performance is exceptionally strong. Despite representing only 1% of the global population, the UK produces 9% of the world's scientific publications and a citation share of 12%, second only to the US¹. The UK HE sector also produces a high rate of PhDs per unit of investment.
3. Universities produce around 260 000 graduates a year and equip them with the skills they need to perform successfully in an increasingly competitive workplace. This includes both specific and generic, transferable skills such as creative thinking, problem solving and the ability to analyse complex information. There are also many examples of where universities are embedding enterprise into degree programmes² as well as seeking input from employers on curriculum design and delivery. There has been a long history of successful collaboration through work placements as part of undergraduate and professional programmes.

¹ *PSA target metrics for the UK research base*, DTI, March 2007

² Examples include: Module in scientific enterprise at University of Durham to enhance enterprise skills and knowledge; "Entrepreneurship and New Ventures" which is offered through the [Imperial College Entrepreneurship Centre](#); The University of Newcastle-upon-Tyne Bioscience module titled "[Business for the Bioscientist](#)". The two enterprise Centres for Excellence in Teaching and Learning funded by HEFCE, the [Institute for Enterprise](#), and the [White Rose Centre for Excellence in the Teaching and Learning of Enterprise](#) support and promote enterprise within existing degree curricula and in new courses.

4. It is also worth remembering that universities are also major employers in their own right with around 350 000 employees, and are often one of the two largest employers in many UK cities. Universities also play a key role in UK economy, generating £45 billion of output per year, which is larger than either the UK pharmaceutical industry or aircraft industry.
5. Business-university collaboration brings much-needed added value to the economy and enterprise is now firmly embedded into HEIs' activities. For example, the most recent UNICO survey of university commercialisation (from the financial year 2003-4) showed that in the past two years alone, 20 spin-out companies from UK universities have floated on the stock market with a combined value of over £1billion³. The most recent Higher Education-Business and Community Interaction (HE-BCI) survey⁴ published by HEFCE in 2006 has demonstrated a continuing upward trend in business-university interaction.
6. Despite this success current levels of investment – public and private – in higher education represent a major challenge. 1.1% of GDP is spent on HE in the UK, which is on a par with Japan, but below the levels of key competitors such as Australia (1.5%), Canada (2.5%), the US (2.7%), and South Korea (2.7%). This is not just a UK problem; the European Commission has estimated that to close the investment gap with the US, Europe would need to invest an additional €150 billion per year. The UK also spends less on R&D as a percentage of GDP than its comparators (currently 1.8%). The UK is 18th in relation to the 21 OSI comparator nations for which data are available and 7th amongst G8 nations.
7. HE is a global activity, which means that talented people can move around easily. Without increased investment it will become harder for the UK's universities to compete internationally and retain talent. Recent OECD projections show that China will this year, for the first time, spend more on research and development than Japan and so become the world's second highest investor in R&D after the United States. China's spending on R&D as a percentage of GDP has more than doubled from 0.6% of GDP in 1995 to just over 1.2% in 2004. In current prices, this represents an increase from just over USD 17 billion in 1995 to USD 94 billion in 2004. It is growing even faster than the economy, which is up by between 9 and 10% a year.
8. In order for the UK to remain competitive it is expected that additional investment from employers and private sources will play a key role alongside sustained growth in public investment. New forms of Government investment, incentive or concession will be necessary. This document is structured around the high level areas identified in the review's term of reference and focuses on the key issues that are relevant to higher education. Our submission analyses the current funding and policy environment in those areas and makes key points and recommendation on what needs to be done to help enhance and maximise the already substantial contribution that universities make to wealth creation and the UK's international competitiveness.

³ UK University Commercialisation survey: financial year 2004, UNICO, 2004

9. We note that the review covers areas that are devolved (e.g. economic regeneration and skills) and areas that are not (e.g. science and KTPs). This creates risks that an integrated and coherent set of recommendations for England will lead to changes in UK wide policies that will have implications for the other countries. We would urge the review to consider cross border issues where appropriate.

2. Industry R&D and investment in innovation

2.1. R&D Tax credits

10. Universities UK supports:

- The existing successful incentives provided by Government to promote industry research and development (R&D), notably the R&D tax credits initiative.
- The Government's commitment in Budget 2007 to extend the higher rate of the R&D tax credit to companies with between 250 and 500 employees.
- The DTI's rationalisation of Business Support Schemes.

11. We would like to make the following key points and recommendations:

- We have noted a relatively low take up of the scheme by business, so it would benefit from more effective marketing. Bureaucracy and local IR office interpretation have also acted as a barrier to the scheme working to good effect.
- A culture change is required by HM Revenue and Customs so that they are not perceived by SMEs to be making it difficult for them to take advantage of such schemes.
- Guidelines for R&D tax credits currently exclude activity in the creative and other growing sectors, such as financial services and business consultancy. Restrictive guidelines mean that the R&D tax credit simply does not work for many companies trying to innovate new services rather than new physical products, because their 'R&D' is not sufficiently compliant with standard *Frascati*⁵ definitions of science. We would recommend that the current definitions of R&D, which underpin government support for research and innovation, should be revised to take account of growing and emerging industries.
- Further work is also needed to gain a better understanding of the R&D dynamics operating within the growth sectors as detailed above.
- We would further recommend that consideration be given to a tax credit regime, as well as the exploration of other financial incentives, that encompasses innovation and not just R&D.

12. It is also important to recognise that research in universities often involves synergies between different sources of funding (including both charitable and commercial sources).

⁴ *Higher Education Business and Community Interaction Survey*, HEFCE, July 2006

⁵ Please see 2002 OECD *Frascati Manual*, which outlines the proposed standard practice for surveys of research and development.

However, it is noted that current VAT regulations do not recognise this and can act as an inhibitor to collaborative research. Universities UK would suggest that the review consider how the current rules on VAT, as they relate to R&D activity, could be rationalised.

2.2. Technology Strategy Board

13. Universities UK supports:

- The creation of the new business-led Technology Strategy Board (TSB) that will operate at arms' length from government.
- TSB's commitment to promoting business engagement with universities and its aim of focusing Government funding on strategically important research.

14. We would like to make the following key points and recommendations:

- As the role of the Board is enhanced, it is vital that the focus on technology does not exclude key areas of innovation, such as the creative industries, and that the concept of industry is widened to reach beyond the large multinationals.
- There remain some doubts as to how well the conceptual base of the TSB's work can adapt to embrace the needs, and the relationship to technology, of the creative economy.
- In an increasingly global economy, universities are concerned about the DTI's narrow definition of 'Britishness' in business terms in order to benefit from funding.
- There is a need for a national technology plan on which a UK-wide strategy for the new TSB might be developed. This would require careful liaison with other government agencies and Research Councils in its development and implementation.

3. Publicly funded R&D.

3.1. Public investment in universities

15. Universities UK supports:

- The stability and growth in public investment that has been provided by the *10-year Science and Innovation Framework* and the subsequent *Next Steps* document. The importance of strategic investment in the science base is clearly recognised by government.
- The government's continued support for the dual support system.
- The government's commitment to secure financial sustainability in universities, through supporting a greater percentage of the full economic costs of Research Council projects, without building volume.
- The government's substantial investment in university research infrastructure to help address the historic backlog.

16. We would like to make the following key points and recommendations:

- The UK continues to spend less on R&D than many of its competitors. It is therefore crucial that public investment in R&D continues to grow in importance within the context of government priority setting.
- The dual support system has helped to create a healthy and dynamic research base in universities. A strategic overview should be taken of the current reforms being undertaken of the assessment and funding processes under each arm of the dual support system (RAE and Research Council peer review) to ensure that dual support it is not inadvertently undermined.
- Continued growth in Quality Related (QR) research funding is a key priority. QR plays a key role in ensuring universities have the flexibility and freedom to respond to new research challenges, develop new areas- such as interdisciplinary research- and support more risky and innovative research.
- The current level of concentration of public research funding in the sector is about as far as it should go and any further radical concentration would be detrimental to the health of UK research, particularly the ability to support new and emerging areas.
- Traditional conceptions of research activity (e.g. 'basic' and 'applied') may no longer always be relevant both for scientists and policy makers in a complex innovation system, not least because innovation does not follow a linear model due to the number of knowledge and funding linkages between academia, industry and government. A fresh look at the assumptions and definitions which underpin decision making, and how they relate to modern innovation systems, may therefore be needed. The review could play a key role in stimulating a debate around this issue.

3.2. Public investment in research infrastructure

17. Universities UK supports:

- The significant progress that has been made to address the historic infrastructure backlog identified in the university research base through the Science Research Investment Fund (SRIF). A recent report by JM Consulting for the Office of Science and Innovation (OSI) has shown that this has come down from £3.54 billion to the region of £1-2 billion and will have fallen to manageable proportions by the end of the current spending round.
- The need to review how the current SRIF arrangements could develop in the medium to long term to ensure a more permanent and predictable infrastructure investment stream in research.

18. We would like to make the following key points and recommendations:

- Investment in research infrastructure from the Education Departments and OSI should continue to be delivered through HE funding bodies, so that it can be integrated with capital investment frameworks and recognise the integration between teaching and research.

- Once the identified backlog is at a manageable level adequate transition arrangements would need to be developed to move to a more permanent and predictable investment stream.
- It will be important that there is no net loss of investment.
- Significant research capital funding will still be needed to ensure that historic problems do not recur and to enable infrastructure investment to move to a more 'prospective' basis so that the UK has the most up-to-date facilities and infrastructure required for it to remain a world research power. There will also be capital investment needs that are generic, not research-specific, in particular, the need to move towards an HE estate comprised of high performance, carbon-neutral buildings. This could require significant initial investment to kick start the process.

4. Knowledge exchanges between universities and business, including examining progress made since the Lambert Review

19. UK Universities have been very successful in collaborating with business and increasingly so since the publication of the Lambert Review in 2003. Universities offer a range of services that can be utilised by industry. These include research facilities, research expertise, consultancy and CPD. Relationships between a business and a university often start from an initial contact in one area and develop in depth as each comes to understand the full range of the other's needs and capacities. Much of this progress is evidenced in the HE-BCI survey.⁶

4.1 Higher Education Innovation Fund (HEIF)

20. Universities UK supports:

- The government's commitment to a permanent source of third stream funding, through the Higher Education Innovation Fund (HEIF), which has been extremely successful in stimulating knowledge transfer, business links and other forms of employer engagement such as continuing professional education.
- The move to formula funding for HEIF in the 2004 Spending Review. This has delivered more consistent and predictable funding for HEIs in this area. Formula funding has encouraged many HEIs to offer career track positions to knowledge exchange staff for the first time, which has made an important contribution to the changing culture in HEIs.

21. We would like to make the following key points and recommendations:

- Appropriate funding is essential if knowledge transfer activity in HEIs is to further expand and develop. We recommend that HEIF should now be funded at the levels suggested in the Lambert Report i.e. £150 million per annum.
- It is important that the formula element is maintained under future HEIF funds in order to allow HEIs to continue to plan their knowledge exchange activity effectively.

- Any new metrics used for the allocation of HEIF funds should not introduce unnecessary complications in data collection and should reflect the diversity of knowledge exchange in HEIs. Particular regard should be given to how technology transfer in the public sector can be strengthened. Metrics should also support capacity building and emergence of new areas; it will be important that metrics do not just support areas where there is already a strong record of activity.
- Any change to the current HEIF formula should satisfy the following broad principles:
 - The model should reflect mission diversity.
 - While having a clear focus on economic impact, it should not be over-focused in this respect against other important issues and should therefore also consider social and environmental impact.
 - It should be efficient and effective (use of public funds) and not too burdensome on HEIs in terms of data collection.
 - The model should be transparent and consistent with easily auditable data.
 - The behavioural impact of any funding model should be monitored carefully so as not to distort activity and lead to income chasing.
- Mechanisms for fostering collaboration have had a beneficial effect for the sector and the competitive element of HEIF has been important in terms of encouraging this activity.
- In order to improve competitiveness and wealth creation, universities would further welcome an increased emphasis on the value and importance of introducing enterprise learning into the curriculum with the appropriate funding to support this activity.

4.2. Support from Regional Development Agencies (RDAs)

22. Universities UK supports:

- The role of the Regional Development Agencies which can, in some cases, play a distinctive role in working with business, especially SMEs, to encourage increasing access to the research base of universities.
- The added value that the RDAs can bring in many regions in the area of knowledge transfer. Through their understanding of the company base, RDAs can play an important role in facilitating, encouraging and supporting relationships between universities and business.

23. We would like to make the following key points and recommendations:

- The bureaucracy involved in submitting funding applications to RDAs presents a serious barrier for universities and may serve to prevent further RDA engagement.
- Support from RDAs has been found to be often patchy and area dependant. Any expansion to the role of RDAs should therefore be given serious consideration, as not all RDAs are sufficiently networked with universities.
- There is a clear need for more effective co-ordination of regional and national strategies toward innovation and R&D. Currently, there are numerous and potentially competing

⁶ Ibid

national and regional initiatives and there is a need for these to be brought together within a more coherent framework.

- Universities have pervasive impacts across regional boundaries, it is therefore crucial that the regional framework does not act as a barrier to the enhancement of science and innovation. RDAs need to strengthen their capability to cooperate and collaborate across regions in support of R&D.
- Universities would support a more co-ordinated approach from the DTI, Regional Development Agencies, Research Councils, HE Funding Councils and the Devolved Administrations so that the government's objectives of meeting national research innovation needs can be addressed in a more holistic manner. There is also a need to ensure support for the regions provided through the EU is coordinated with a strategic approach.
- Regional Science and Industry Councils, with appropriate representation from industry, universities, regional government and research sponsors as well as appropriate levels of funding from the RDA, may be a logical mechanism by which to achieve greater co-ordination of activity. It is important that such mechanism seek to embrace all industries and sectors, including the growth industries.

4.3 Links with SMEs

24. Many universities have made excellent progress in developing and exploiting links with SMEs and public and voluntary organisations. Universities UK would like to make the following key points and recommendations:

- SMEs, by their very nature, often have little money to invest in research and innovation. Transaction costs for collaborations with SMEs are often costly and are usually heavily reliant on public sector funding.
- Universities would welcome further support for SMEs who might seek to progress along the 'innovation escalator' through their increased interaction with universities, starting with the employment of graduates and moving towards increased engagement in R&D activity.
- Business organisations and intermediaries (such as Business Links, Chambers of Commerce, Sector Skills Councils and the professional bodies) also have a key role in articulating and focusing business needs – SMEs in particular – towards what HEIs can offer.
- Due to the difficulties for HEIs in engaging with SMEs, we would recommend that such collaborations should be specifically rewarded and funded.
- Some concern has been raised that the move to Full Economic Costing (fEC) may have implications for university-business links, particularly links with SMEs. However, a recent UUK survey, which explored these issues, has demonstrated that HEIs are taking sensible and informed strategic approaches to pricing post-fEC, balancing factors such as: the cost of the project; the need to ensure sustainability across all activities; the strategic worth of the project to the university (both financially and non-financially the relationship and contract with the university in a pre-fEC regime; the perceived value of the work; and the university's market position.

4.4. Knowledge Transfer Partnerships

25. Universities UK supports:

- The government's flagship Knowledge Transfer Partnerships (KTPs) which have been extremely valuable to supporting collaborative activity. The scheme is widely acknowledged to be successful by both the business and university communities. Universities would welcome its expansion.
- One of the key reasons for the success of KTPs schemes is its staff-oriented approach.
- Research Councils' Fellowships that enable academic researchers to work in and with businesses have been viewed as extremely useful by universities and should continue.
- The recently established Institute of Knowledge Transfer, which is expected to provide a valuable opportunity to develop the expertise and standing of knowledge transfer professionals.

26. We would like to make the following key points and recommendations:

- We would join the CBI, UNICO and others in proposing the introduction of a "mini-KTP" which would suit different kinds of partnerships and provide support for shorter-term projects, for example those running from between 3-12 months. These more flexible KTP arrangements would be particularly attractive to SMEs.
- In recognition of their value in fostering business-university links, an increase in the budget for KTPs would also be welcome, so that they can be properly funded.
- As Lambert emphasised in his review on business-university collaboration, it is people that count in business and successful knowledge transfer occurs mainly through the transfer of people. More needs to be done to encourage the two-way flow between universities and business, for example through initial short internships and work placements.
- RDAs should set up regional knowledge transfer fellowships and exchange schemes. Other links, for example involving PhD students, also need support, as do innovative research projects that might otherwise remain unfunded.

5. The supply of skilled people

5.1. Leitch Review on Skills

27. Universities UK welcome the final Report of the Leitch Review of Skills *Prosperity for all in the global economy – world class skills*.

28. Universities UK supports:

- The report's recognition of the central importance of the role in HE in up-skilling the workforce and contributing to a strong economy.

- The emphasis on co-funding, with employers, learners and government sharing the costs of provision at level four and above (i.e. HE level qualifications),
- The 40% attainment target for qualifications at level 4 and above in the workforce. Whilst this target is ambitious, it is helpful to go beyond the Government's current focus on 18-30 year olds, as this recognises that lifelong learning and older learners will play an important part in achieving the highly skilled workforce needed if we are to maintain our position and remain a competitive global economy.

29. We would like to make the following key points and points recommendations:

- Universities are increasingly working with employers to deliver the skills they need and value, as demonstrated in Universities UK's report *Higher level learning: universities and employers working together*⁷. As well as academic attainment, employers are increasingly seeking graduates with generic employability skills, such as communication skills, team working, problem solving and creative thinking.
- Universities UK believes that 'economically valuable skills' as referred to in the Leitch report should be explicitly defined to include the generic transferable skills that graduates gain through their degree programmes and wider higher education experience - both vocationally focused and otherwise - which are clearly valued by employers.
- Serious questions remain about the extent of employers' willingness to pay for higher-level skills provision. For institutions, there is financial risk associated with developing new provision in collaboration with employers where it is not certain that there will be either student demand or long-term demand from the employer side. This currently presents a serious barrier to the development of such provision.
- We would recommend that the government and Funding Councils provide additional and long-term financial support to institutions to cushion the risk involved in developing new, employer-led provision.
- The Leitch Report places Sector Skills Councils (SSCs) at the heart of its vision of a future employer-led training system. Universities recognise that SSCs can play a key role in the development of programmes. However, we would challenge the notion that SSCs are the only – or even in some cases the best – way to find out what employers want. Universities work well with SSCs, professional and statutory bodies and individual employers as appropriate and, in our view, it is important that Government policy in this area does not unintentionally drive out the non-SSC collaboration.
- Moreover, there are substantial concerns in the HE sector about the level of experience and expertise within SSCs, which have been described as variable, and their level of HE representation. Universities UK notes that whilst virtually all HEIs have employers – in many cases forming a majority - on their Governing Councils, currently just 7 of the 25 Sector Skills Councils have HE representation on their boards.
- The new Commission for Employment and Skills, proposed by the Report and accepted by Government, should have a clear responsibility to increase the level of consistency with

⁷ *Higher Level Learning: Universities and employers working together* highlights university and business collaboration to develop new courses to deliver skills for specific employment opportunities. It can be found at: http://bookshop.universitiesuk.ac.uk/downloads/higher_level_learning.pdf

which SSCs interact with and involve the HE sector in order to effectively articulate the HE offer.

- Part-time higher education plays an important role in providing learning opportunities for those already in the workplace, and the contribution this mode of study could make to employer engagement should not be under-estimated. In our Spending Review Submission, Universities UK calls for an extra £160m per annum to support part time learning and we are encouraged that HEFCE's review of the funding methodology for teaching in HE is to consider this issue.
- It is also essential that the higher education sector continues to be involved in vocational/ professional/ technical curriculum development below Level 4, including the development of 14-19 Diplomas, to ensure qualifications articulate with, and facilitate progression to, HE.

5.2 STEM Skills

30. Universities UK supports:

- The government's focus on improving the supply of people with STEM skills, as outlined in the Government's recently published *Science and Innovation Framework: Next Steps* document.
- HEFCE's substantial support, in collaboration with the learned and professional societies, for pilot projects to stimulate demand in Physics, Chemistry, Mathematics and Computer Science.

31. We would like to make the following key points and recommendations:

- The recent CIHE report on the STEM skills supply chain⁸ highlights the importance of employer involvement in the development and delivery of the STEM curriculum, and of greater support from employers and the professional bodies for career guidance across schools and universities.
- The CIHE report also emphasised the importance of employers and professional bodies working to emphasise the career benefits of studying STEM subjects and suggested that there should be further initiatives to emphasise the attractiveness of STEM careers to secondary students.
- The government may wish to keep the STEM curriculum in schools under review, in conjunction with employers and the professional bodies, to address supply and demand issues.
- There is a need for rationalisation and better coordination of the various STEM initiatives within the education system.
- It is important that the value of studying for a science degree, outside of the 'traditional' disciplines, is recognised. Universities produce scientifically literate people who go on to

⁸ *STEM: the Science, Technology, Engineering, Maths Supply Chain*, CIHE, April 2007

play key roles in the economy and society, even where this is not directly related to area of studied.

5.3. Skills at Levels 5 and above

32. Skills up to and including Masters and Doctoral level programme are a key driver of innovation, entrepreneurship and creativity within the economy, and are critically important for our competitiveness in the global knowledge economy, in which emerging economies are increasingly knowledge-based and are investing in their own higher education. Professional Masters and Doctoral Programmes in particular provide a mixed university-business environment for the acquisition of high-level, specialist skills that are vital for innovation and competitiveness.
33. We would like to make the following key points and recommendations:
- Many modern and emerging industries require staff with high level, specialist skills, which could ideally be acquired in a mixed university – business environment. In this, as in other areas, it will be important to secure increased employer support in terms of meeting the costs of postgraduate level CPD, particularly that which is developed on a bespoke basis for specific employers or sectors.
 - Employers must become even more engaged in the education and training system, continuing to invest in training and using the skills of their workforce productively. We would welcome further incentives to encourage engagement with HE from individuals and business.
 - Universities have been working hard to ensure that researchers are equipped to be adaptable and flexible for career paths in academia and industry. Significant progress has been made through the Roberts' and Research Careers Initiatives⁹. Work is underway to revise the current Research Careers Concordat further strengthening the attractiveness and sustainability of research careers and embedding skills training. We would urge the government to continue to support this work.
 - At the EU level the European Code and Charter for researchers is a positive step, and the UK has shown it is already aligned with its objectives.

6. Patents, measurement system and Standards

34. Universities UK supports:

- Andrew Gowers' recommendation, in his *Report on Intellectual Property*, for a reduction of patent costs, as an encouraging and positive move.
- Gowers' recommendation that the new UK Intellectual Property Office (UKIPO) should build stronger links in general with universities, including through secondments, to ensure Patent Examiners are aware of recent technology developments. We look forward to working with the UKIPO to implement this recommendation.

⁹ *The Research Careers Initiative: Final Report 1997-2002*, DTI & Universities UK, June 2003

35. We would like to make the following key points and recommendations:

- International differences in Grace Period policy limits currently limit the potential for work sharing, as recommended Review. Universities UK would therefore support the current initiatives, as backed by UNICO, to harmonise Grace Periods.
- The complexity involved in obtaining and enforcing IP rights often as a barrier to university-business collaboration and remains an area where improvement is needed (beyond the IP model contracts which were developed following Lambert).
- Many HEIs struggle to pay for IP protection and enforcement is even more of a problem. The various time limits, deadlines and formalities mean that the system is accessible to those with the resource and know-how to satisfy the requirements, but acts as a barrier to others.
- Removal of these barriers would encourage investment in university research and start-up companies, and stimulate economic growth. If UK Plc is to become more competitive, incentives within the fees structure are needed for those who have limited expertise and resources available to them.

7. International science and technology collaboration

36. Universities have been, and continue to be, international organisations with a diverse staff and student body. They have links, partnership and collaborations with universities, business and other organisations around the world. This is supported in many ways through the Research Councils and other government agencies.

37. Universities UK supports:

- The Global Science & Innovation Forum (GISF) and the development of a strategic approach to improve the UK efforts in international science and innovation collaboration.
- The UK Trade and Investment (UKTI) intention to implement an international five-year Research and Development strategy to attract more business R&D to the UK, and to promote Britain's innovative firms abroad.

38. We would like to make the following key points and recommendations:

- Although the UK funds 5% of the world's science, 95% is funded elsewhere. It is therefore important to further increase the attraction of the UK for inward investors and potential partners.
- More initiatives that fund and foster international research collaborations on a large scale will benefit UK universities and the economy as a whole.
- Better cross government coordination of policies is still needed, particularly in those departments that may not have a direct responsibility for R&D, but are making policy decisions that could have a significant impact. For example, work by the member

organisations of GISF to enhance the attractiveness of the UK may be hindered by the development of over stringent visa and vetting requirements from other parts of Whitehall.

- There is a need for improved cooperation at a strategic level between UK's national funding bodies and their counterparts abroad. An increase in joint funding initiatives and bilateral agreements with target organisations and governments within other countries, to support collaborative research programmes will help develop strategic links and enhance our engagement internationally. This will also help overcome barriers to collaboration, such as the double jeopardy problem¹⁰.
- We would encourage UKTI to develop an understanding of the sector's research and teaching expertise/capabilities to ensure that academic institutions, as well as companies, are promoted abroad.
- The £9m marketing budget for the UKTI's internationalisation strategy will need to be enhanced. If this were spread across the devolved administrations and over the 5-year life of the strategy more funding would be needed. It will also be essential to ensure that the strategy has the necessary buy-in and support from the UK's scientific community in order to succeed.

7.1 Europe

39. Universities UK supports:

- The creation of a European Research Council (ERC) that will provide badly needed investment to support excellent research wherever it is found. This signals a significant and positive shift in the rationale of EU funding.
- An increased budget for Framework Programme 7 (FP7) with a greater focus on mobility and enhancing links between universities and industry. Framework funding also promotes research across disciplines and can lead to enhanced capability in key areas that may not be possible at a national level.

40. We would like to make the following key points and recommendations:

- There are important challenges within the context of full economic costing. Significantly, with the introduction of full economic costing in the UK, the relatively low recovery for Framework Programme projects (though improved in FP7) raises questions as to how sustainable this activity is in the long term within the dual support system. Universities will need to understand why they are doing EU work, and have a view of its place in their research strategy, and the particular benefits it brings, but also, policy makers can do a lot to influence this process depending on the way that policy initiatives on research funding and sustainability are taken forward.
- It will be important to gain a better understanding and communicate the implications for the competitiveness of UK research of the EU Services Directive, as well as the implications of

¹⁰ Double jeopardy is where a project runs the risk of not being funded because it needs to be agreed by two or more separate funding agencies running separate review processes.

the way in which other European countries currently use public investment to attract business.

- The European Commission have recently published a Green Paper on the future of the European Research Area. This covers a broad range of research and innovation policies. It will be important that the UK government seek to understand the implications of the proposals in the Green Paper mean for UK R&D and knowledge transfer policies.