

# The Role of Universities in the Europe of Knowledge

Response from Scotland Europa to the European Union Consultation

May 2003

**Networking Scotland in Europe**

SCOTLAND EUROPA ★

[www.scotlandeuropa.com](http://www.scotlandeuropa.com)

# THE ROLE OF THE UNIVERSITIES IN THE EUROPE OF KNOWLEDGE

## RESPONSE FROM SCOTLAND EUROPA TO THE EUROPEAN UNION CONSULTATION

MAY 2003

### Contents

	Page
Foreword	2
Introduction to Higher Education in Scotland	3
Analysis of EU Communication 'The role of universities in the Europe of knowledge'	14
Joint response to EU Consultation on the future role of universities in the Europe of knowledge	19
Submissions of Scottish organizations contributing to the joint response	39
References	63
About Scotland Europa and its Research, Education and Training Group	64

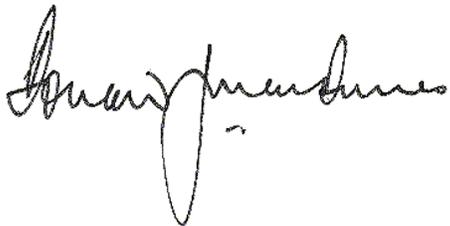
# FOREWORD

Scotland punches well above its weight in terms of Higher Education, and the statistics prove it. With only 8.6% of the UK population, Scottish Higher Education Institutions win 12% of total research funding available in Britain, while the country ranks third in the world in terms of research publications per capita. The strength of university teaching in Scotland is equally reflected by world-leading rates of course completion and high international demand for university places in Scotland.

However, universities in Scotland are well aware of the challenges facing Higher Education across Europe. As the core generators and disseminators of knowledge, the economic impact of universities will be put increasingly into the spotlight as the EU seeks to meet the Lisbon targets by 2010. Competition for both public and private sector funding is also becoming more intense.

The membership of Scotland Europa includes 8 Higher Education Institutions and several other major stakeholders with close links to the sector. Scotland Europa is also part of the International Operations division of Scottish Enterprise, the main economic development agency for Scotland. It therefore seems opportune for Scotland Europa to make a submission to the EU consultation on the future role of universities in the society of knowledge. We have presented this in the form of a Scotland Europa Paper drawing out the common themes of the individual submissions made by participating Scottish stakeholders both within and beyond the membership.

This paper illustrates that Scottish universities place importance upon their relationships with other key players both within Scotland and beyond. It also seeks to make a contribution to the broader European debate on the future role of universities based on experiences within Scotland.

A handwritten signature in black ink, appearing to read 'Donald MacInnes', with a large, stylized flourish extending downwards from the end of the signature.

Donald MacInnes

Chief Executive, Scotland Europa

# INTRODUCTION TO HIGHER EDUCATION IN SCOTLAND

*This section is an abridged version of the 'Higher Education in a Changing World' chapter of the 'A Framework for Higher Education. Higher Education Review: Phase 2' document published by the Scottish Executive in March 2003.*

*Reproduced with the permission of the Scottish Executive.*

## **THE SCOTTISH CONTEXT**

Lifelong learning policy in Scotland is about personal fulfillment and enterprise; employability and adaptability; active citizenship and social inclusion to build a Scotland where people have the confidence, enterprise, knowledge, creativity and skills they need to participate in economic, social and civic life. Higher Education (HE) and the Higher Education sector have a crucial role to play in fostering this lifelong learning culture for Scotland and developing the skills and knowledge for a smart, successful Scotland.

Lifelong learning and Higher Education have had a high profile in Scotland since devolution.

The *Life Through Learning; Learning Through Life* document provides the overarching strategy for lifelong learning in Scotland within which Higher Education has an important role to play in delivering the desired outcomes.

The Executive's *Science Strategy for Scotland*, published August 2001, looks to Higher Education to deliver many of its objectives.

All three of the core objectives of the Executive's enterprise strategy in *A Smart, Successful Scotland: Ambitions for the Enterprise Networks* are significantly dependent on the activities of our Higher Education sector. Growing businesses, better skills and global connections all benefit from Higher Education activity.

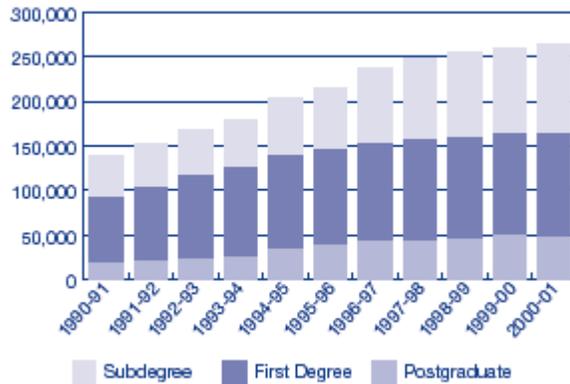
*A Framework for Higher Education. Higher Education Review: Phase 2* brings together the conclusions of an eighteen-month programme of consultation and dialogue on the future of Higher Education in Scotland. It defines the priorities and objectives for the next decade, focusing on the key themes of teaching and learning, research and knowledge transfer, and governance and management.

Links to all of these documents can be found in the References section of this paper.

## **WHERE ARE WE NOW: TEACHING AND LEARNING**

There has been a significant increase in participation in post-compulsory education in Scotland and, within that, those undertaking Higher Education courses. The increase in Higher Education is only partially fuelled by those taking degrees. The bulk of recent expansion has in fact been in people taking Higher National Certificates and Diplomas (HNC/D), mainly at further education (FE) colleges, which has increased more than threefold since 1986/87.

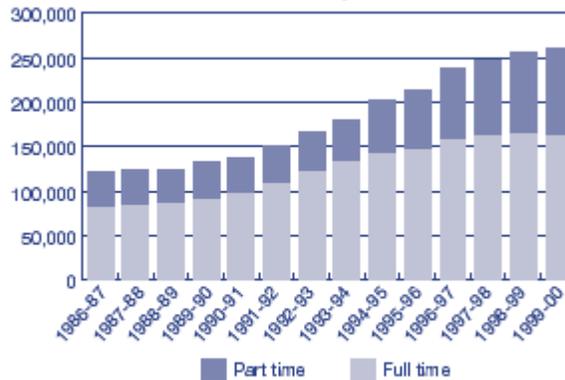
**Students in Higher Education (HEIs and FECs)  
by Type of Qualification in Scotland  
1990/91 to 2000-01**



Source: Higher Education Statistics Agency and the Scottish Further Education Funding Council

Within this increase there is a significant growth in the number of people studying on a part-time basis.

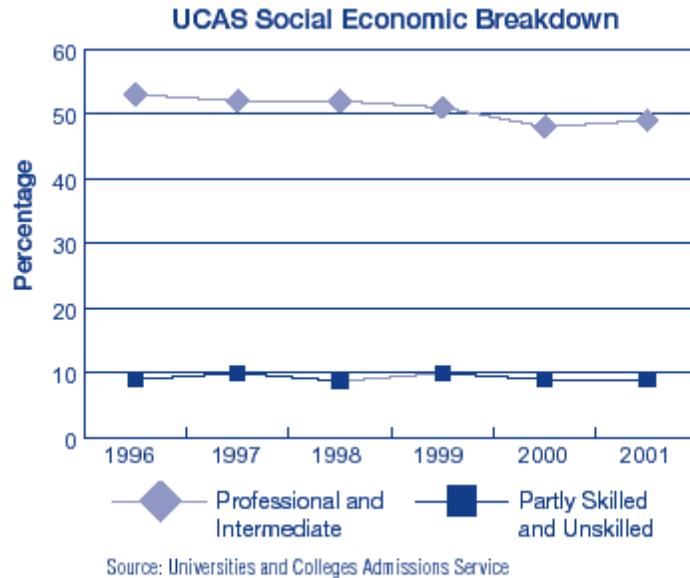
**Number of Higher Education Students  
in Scotland by Mode**



Source: Higher Education Statistics Agency.

**Participation:** again, a major element of that increase is the expansion in the numbers of people taking HE courses at our FE colleges - now accounting for around a quarter of all Higher Education undertaken in Scotland.

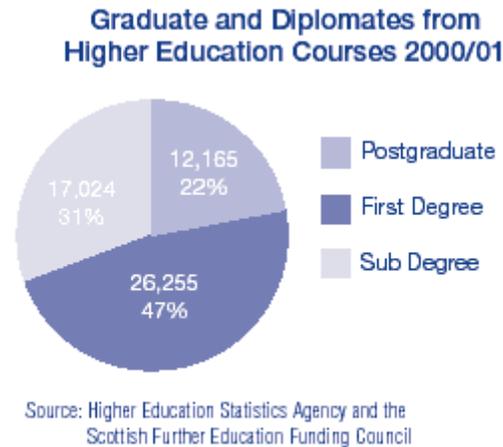
**Participation by socio-economic groups:** despite the increasing numbers of those taking Higher Education in Higher Education Institutions (HEIs), including those taking full-time undergraduate courses, the proportion of those entering HE from more and less-skilled socio-economic groups has not changed in recent years.



As would be expected, this expansion has led to an increase in the **numbers of graduates and diplomates**.

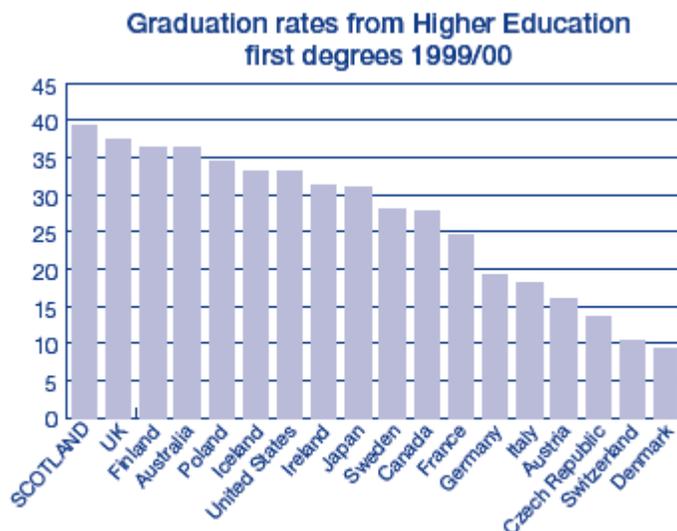
Compared with 1986/87, the numbers of students gaining:

- **HNC/D and equivalent** qualifications have increased more than threefold
- **first degrees** have doubled
- **postgraduate** qualifications have nearly doubled.



Compared with OECD countries, at 39.2%, Scotland had a **graduation rate** from first degrees\* above that of **all** OECD countries for which data are available, the average being 25.9%.

\* The gross graduation rate is defined as the number of people graduating from Higher Education first degrees during the year as a percentage of the population at the typical age of graduation.



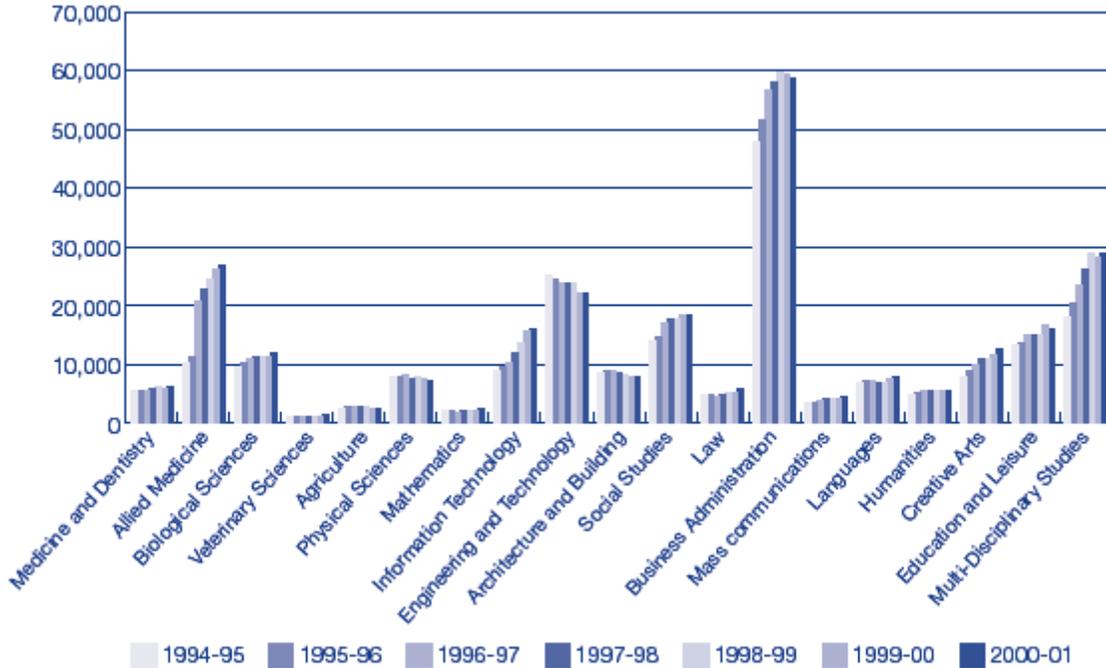
Overall, retention in the UK, and Scotland, is significantly higher than in other OECD countries where the average drop-out rate is around 40%.

#### Retention Rates\* in Higher Education

	1996-97	1997-98	1998-99	1999-00
<b>Total UK</b>	<b>85</b>	<b>85</b>	<b>85</b>	<b>84</b>
Scotland	81	84	84	84
England	85	85	85	84

Source: UK Funding Councils' Performance Indicators on Higher Education

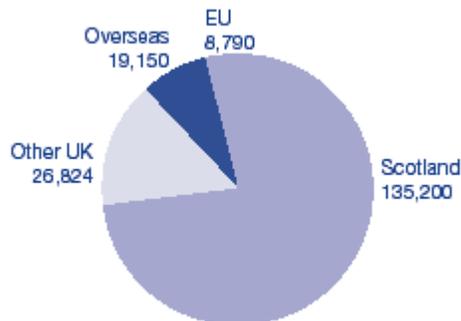
### Students in Higher Education (HEIs and FECs) by Year and Subject Group



Source: Higher Education Statistics Agency and the Scottish Further Education Funding Council

The overall distribution of Higher Education qualifications by **subject category** in Scotland is not dissimilar from the OECD average. The largest concentration of qualifications are awarded in the fields of social sciences, business and law with an average (across the OECD and in Scotland) of every third graduate obtaining a degree in this area. The subjects where Scotland has a higher proportion of graduates are life and physical sciences, maths and computer science.

### Number of HE Students in HEIs by Domicile 2000-01

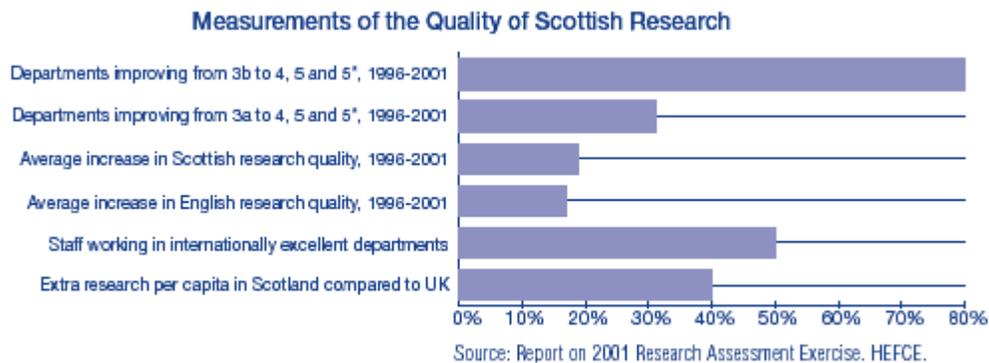


Source: Higher Education Statistics Agency

Around 10% of students in HEIs are non-EU international students. As well as enriching the student experience and offering international links for the future, these students contribute fees to institutions and their additional expenditure benefits the economy more widely.

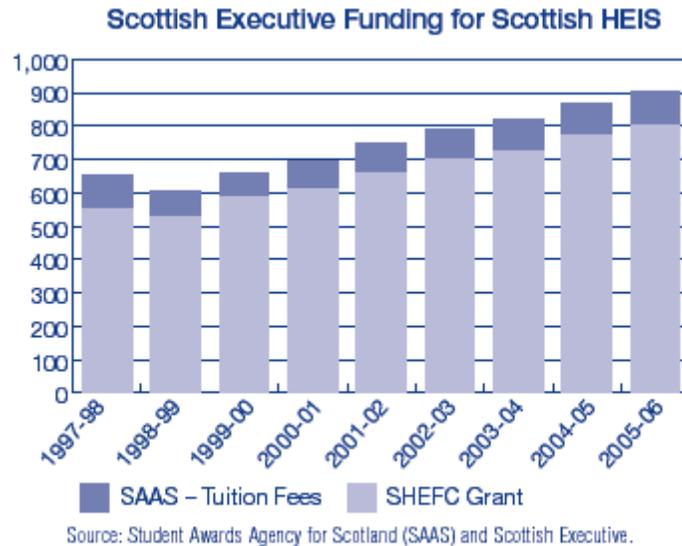
## WHERE ARE WE NOW: RESEARCH AND KNOWLEDGE TRANSFER

Relative to its size, Scotland has a strong, diverse research base producing 1% of the world's published research with less than 0.1% of the world's population. The results of the 2001 UK Research Assessment Exercise (RAE) demonstrated that Scottish Higher Education institutions have responded effectively to the challenges and incentives it set with a rate of improvement in average rating between 1996 and 2001 that is faster than in the other parts of the UK. The RAE has encouraged departments to think strategically about their research visions, objectives and resources and emphasised merit assessed by peer reviewed published work.



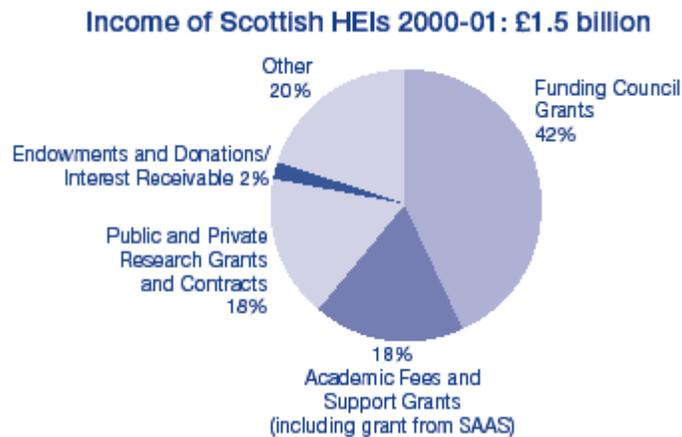
## WHERE WE ARE NOW: OVERALL FUNDING

The largest single source of funding for the sector is from the Scottish Executive via the Scottish Higher Education Funding Council (SHEFC). The Executive plans to increase the funding to SHEFC by over £100 million (140 million Euro) over 3 years - just under 7% in real terms. This will take the level of funding the sector receives via SHEFC from over £700 million (976 million Euro) to over £800 million (1.15 billion Euro). In addition, HEIs will receive tuition fees from the Student Awards Agency for Scottish (SAAS) and EU students which amounted to almost £90 million (125 million Euro) in 2001-02.



Higher Education institutions are funded from a variety of sources and have proven adept at diversifying their income base. On average, public funding accounts for about 56% of their income - a proportion which has been decreasing as the value of income from other sources has grown significantly in real terms. This varies significantly from institution to institution.

Public funding includes SHEFC grants, UK Research Council grants and payments from SAAS.

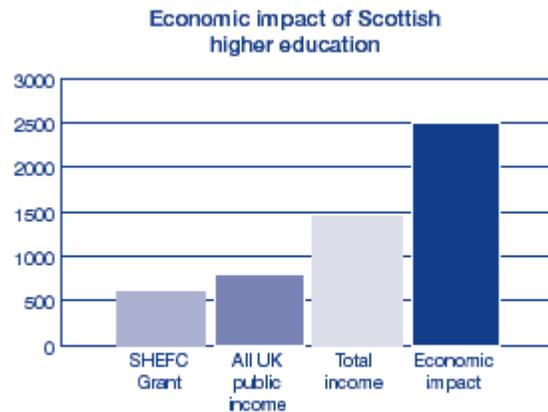


This graph gives an indication of the overall income of Scottish HEIs and the sources from which this is secured.

## SUMMARY

Overall, from a SHEFC grant of £609 million (849 million Euro) in 2000-01, Higher Education was estimated to be worth more than £2.5 billion (3.5 billion Euro) to the

Scottish economy - and of every £5 (7 Euro) Higher Education spends, £4 (5.60 Euro) of that is spent in Scotland.



Source: Scottish Higher Education Funding Council 2001, Economic Aspects of Scottish Higher Education Institutes (COSHEP) McNicol, Kelly and McLellan 1999.

In summary, the Scottish Higher Education sector is already performing strongly in many important areas:

- At 50%, **participation by young people** in Higher Education, whether in Higher Education institutions or further education colleges, is at its highest ever.
- **Teaching Quality** assessments indicate that over three quarters of teaching is rated as Excellent or Highly Satisfactory.
- We attract more than our share of **international students**.
- Our **diverse research base** produces 1% of the world's published research with less than 0.1% of the world's population.
- The average increase in Scottish **research quality** in the 2001 Research Assessment Exercise was greater than for other parts of the UK.
- Scotland's HEIs secure some 12% of the UK Research Council funding, 14% of UK Government Departments' **research funding**, 14% of EU research budgets for the UK and 35% of UK universities' **royalty income** for Intellectual Property with 9% of the UK population.

## THE WIDER CONTEXT

Scottish Higher Education is a system in transition. The **external challenges** to be met, and not exclusively by Higher Education, are well recognised - demographic changes, responding to the informed learner, changes in demand for learning and when and how this is accessed, and new developments in teaching and technology. The momentum of the internationalisation of education and research is speeded up by the new information and communication technologies and has increased competition: between HEIs, between countries and commercial and other organisations, both for students and for those who work in Higher Education. The competition to attract and retain talented researchers and research funding in this international marketplace is growing ever more fierce.

**Bodies and processes beyond Scotland with which we need to continue to keep in touch, and seek to influence, currently include:**

**The Prime Minister's Initiative (PMI):** to attract more non-EU overseas students to the UK to generate additional income for our institutions and to boost trade and diplomatic links. The Scottish Executive has contributed towards the funding and strategic development of PMI since its inception in 1996.

**General Agreement on Trade in Services (GATS):** to facilitate progressive liberalisation of trade among the various members of the World Trade Organisation (WTO). The overarching aim is to achieve non-discriminatory market access for service suppliers to boost international trade. Negotiations are conducted by a series of requests and offers facilitated by the WTO. The target date for completion of the current round is 1st January 2005. The UK Government leads, but works closely with the Executive on issues concerning education, including Higher Education.

**Bologna Process:** The Bologna Declaration, signed in May 2001, is a commitment in principle and practice to create a comparable and increasingly converged system of graduate and post-graduate education across Europe, in order to maximise transferability and mobility within Europe. Governments, institutions and other stakeholders are currently working on the necessary detail to achieve these objectives. The process is expected to be completed by 2010. The Executive is working with the UK government to take this forward.

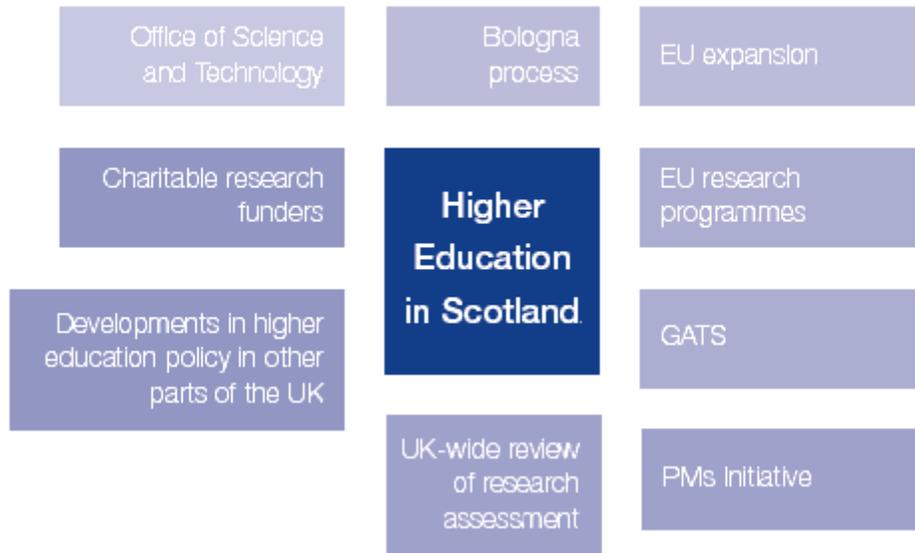
**OST:** The UK Department of Trade and Industry's Office of Science and Technology (OST) funds the seven UK Research Councils, which provide funding for particular research projects and postgraduate research studentships across the UK. The OST also funds the larger share of the Science Research Investment Fund (SRIF), a joint programme with the HE funding bodies, including SHEFC, for developing science research infrastructure in HEIs.

**EU Research Programmes:** The Sixth Framework Programme (FP6) is the European Union's main instrument for the funding of research in Europe. The main focus of FP6 is the creation of a European Research Area which will foster scientific excellence and improve competitiveness and innovation through increased co-operation, complementarity and co-ordination.

**UK-wide review of research assessment:** Sir Gareth Roberts, at the request of the four UK HE funding bodies, including SHEFC, is leading a review into the means by which research at UK Higher Education institutions is assessed.

**Charitable research funders:** research charities are now major funders of the science and engineering base, spending over £600 million (836 million Euro) a year on scientific research across the UK. In 1999-2000 the Wellcome Trust alone spent around £350 million (488 million Euro) on science research across the UK.

**Bodies and processes beyond Scotland with which we need to continue to keep in touch, and seek to influence, currently include:**



**ANALYSIS OF EU  
COMMUNICATION 'THE ROLE OF  
THE UNIVERSITIES IN THE  
EUROPE OF KNOWLEDGE'**

## **ENSURING THAT UNIVERSITIES HAVE SUFFICIENT AND SUSTAINABLE RESOURCES**

### ***Replacing additional public funding***

The level of funding of universities is generally accepted at present to be insufficient for the results that universities are expected to deliver. Institutions now face a range of policy imperatives including widening access, ensuring excellence, and maximising the commercialisation of knowledge. These objectives are set by public authorities and the income that results from their achievement in many cases cannot be expected to compensate for the expenditure accrued. It therefore follows that as long as core university targets are set by public authorities, public funding will inevitably remain the major income source for universities.

### ***The 'booming market in services'?***

The assumption that the demand for research and learning will inevitably increase in a European society based on knowledge does not reflect current experience. New 'flexible' research and training services are not presently a significant income stream for universities and require significant initial investment in infrastructure and marketing. Furthermore, demand for these services will not simply result from the policy decision of establishing a knowledge-based society. Effective demand for university services will only increase when structural issues such as employee capacity to pursue lifelong learning or greater business investment in innovation are addressed.

### ***The 'raison d'être' of universities***

The Commission Communication gives a particularly 'market-focused' definition of the core role of universities in terms of providing visible returns to the groups that fund them. However, the nature of knowledge and learning mean that such an 'economic' definition is perhaps inappropriate. The services that universities provide to their stakeholders and wider society require creativity and experimentation in order to produce core knowledge. The dissemination and application of this knowledge is of course essential. However, actions to ensure efficiency in these two areas must not impinge upon the conditions required for the generation of knowledge.

### ***Universities and skills shortages***

Universities are often the final providers of non job-specific training to those entering professions of which some are affected by skills shortages. However, labour market skills deficiencies should not be a benchmark upon which to judge the efficiency of universities. Skill shortages are caused by a range of factors, including a lack of work-based training provision. The expectation that graduates have been taught all the skills necessary for the world of work reflects a misunderstanding of the mission of university training that is to instill academic excellence and an appreciation of the value of learning. These skills are an essential foundation for professional training, but not a substitute for it.

### ***European standardisation of course duration***

The duration of courses is determined by several factors, including the prior knowledge of students and the standard of attainment upon completion. Trans-European validation of attainment by professional bodies will clearly lead to some convergence in course content and assessment levels. However, certain longer courses, often using innovative

techniques or engaging students requiring more extensive training, and accordingly highly valued by industry, should not be regarded as inefficient.

***‘Spin-off’ company formation: costs and benefits to universities***

As the main text of this response describes, there are a relatively high number of methods for universities to transfer knowledge, each with different levels of economic return to the institution. The formation of companies to commercialise research results has become one of the most visible forms of knowledge transfer as shown by the science parks and business incubators established by many universities in recent years. However, there are several challenges that can reduce the profitability of this method of technology transfer to universities, such as the distribution of equity and the investment required in training academics in commercialisation issues. If national and European policy prioritises ‘spin-off’ company formation as the preferred method of technology transfer, measures should be taken to ensure that this is economically viable and attractive for universities.

***Intellectual property ownership and research commercialisation***

The more speculative but potentially most lucrative forms of knowledge transfer are the commercial licensing of knowledge and the formation of ‘spin-off’ companies. The potential of the university to exploit Intellectual Property (IP) is crucial to the success of both of these activities .

As the Commission Communication states, universities require the flexibility to protect and use their IP as they see fit. However, as the Technology Ventures Scotland report ‘Bridging the Gap’ illustrates<sup>1</sup>, this is not the only condition for successful IP exploitation. Licensing IP implies protecting it with a patent, which represents a cost. It is only economical for universities to incur this cost if there is demand for IP from businesses. This demand will only be present if companies have the capacity to exploit IP to make a profitable product.

If the supply of IP generated by universities outstrips the demand for it from known businesses with the capacity to innovate, the ‘surplus’ IP is unlikely to be patented by the university and therefore remains unexploited within the institution. This so-called ‘orphan IP’ is effectively a net loss to an economy based upon knowledge. However, orphan IP is potentially of value in other research fields or to Small and Medium-sized Enterprises (SMEs), but the transfer of this knowledge requires a diverse range of technology-focused enterprises to be in close contact with the university. In addition, an entrepreneurial outlook from the managers of the IP portfolio of universities is necessary to allow the exploitation rights of IP to be sold to SMEs that are in a position to gain returns from that knowledge.

**CONSOLIDATING THE EXCELLENCE OF EUROPEAN UNIVERSITIES**

***Autonomy and accountability in the management of universities***

Although universities require high calibre top level management with core control of strategy and budget, the next echelon of senior management at faculty and department level is also crucial. Managers at this level require a level of budgetary autonomy to support the pursuit of excellence in research and teaching, including the ability to take

---

<sup>1</sup> Technology Ventures Scotland, ‘Bridging the Gap: A Discussion Paper on Knowledge Transfer in Scotland’, March 2003

risks. Excessive centralisation in terms of both institutional management structures and performance targets set by governments could hinder the 'bottom-up' flow of creativity.

### ***Interdisciplinary working***

Interdisciplinary working should be considered as an available option to pursue as appropriate, rather than a pre-conceived condition for excellence. However, interdisciplinary working will be limited if the assessment and funding of research is based upon categorisation.

### ***Specialisation for excellence?***

Excellence within universities must clearly be fostered and assessed on the basis of peer review with a clear international dimension. However, a comparative recognition of excellence between departments within universities should not necessarily lead to specialisation that implies a long-term redistribution of resources. Scientific needs and technological opportunities are constantly evolving, and it is the capacity to apply excellence to these questions that will maximise the socio-economic impact of universities. A landscape of specialised universities across Europe would be likely to lead to convergence through competition for research funding and an eventual narrowing of the research spectrum of the continent. This would imply little support for other work that may have key future importance, as well as a decreased likelihood of interdisciplinary working.

### ***The number of researchers in Europe***

The key focus of EU policy in terms of human resources in research is to address the relatively low proportion of researchers employed by businesses in Europe. The core cause of this shortfall is likely to be associated with low R&D investment by European companies that lead to poor conditions for researchers, be they male or female, as well as limitations on the funding available for the pursuit of their work. This issue is not likely to be resolved by an increase in researcher mobility other than the temporary benefits of EU funding through the Marie Curie scheme. It should also be highlighted that any increase in demand for research employees by firms would place increased pressures on universities already facing difficulties in providing salaries that retain research staff. Furthermore, university researchers working in companies represent a cost to institutions if a replacement with the equivalent specialist skills cannot be recruited.

### ***The regional dimension of university activity***

This section of the Communication makes a number of assertions of the inevitable rise of the regional dimension of universities without clear justification. Universities are under pressure and cannot subscribe to abstract notions without a clear understanding of the costs and benefits. Universities naturally understand that they will gain in the long-term from a strong regional economy, but their significant capacity to contribute to this is generally unrecognised in the funding that they receive.

Universities have been shown to be drivers for the formation of successful local economic 'clusters', such as the case of the computer games industry formed around the universities in Dundee. They therefore have much to contribute to the debate on expanding innovation and lifelong learning across Europe. However, despite a willingness in many cases to participate in projects and networks funded by the EU, the complexity of applications and administrative procedures remains a considerable disincentive. In particular, the high cost of proposal preparation combined with the low rate of reimbursement available for 'overheads' (indirect costs) in the Sixth EU Research

Framework Programme act as a barrier to university participation, especially as a lead partner. The accessibility of EU funding instruments should be a key issue in reviews of research, education/training and regional cohesion programmes.

# **JOINT RESPONSE TO THE EU COMMUNICATION ‘THE ROLE OF THE UNIVERSITIES IN THE EUROPE OF KNOWLEDGE’**

*The items in bold in the text are described more fully in the grey boxes at the end of each section.*

## **ENSURING THAT THE EUROPEAN UNIVERSITIES HAVE SUFFICIENT AND SUSTAINABLE RESOURCES**

### **INCREASING AND DIVERSIFYING UNIVERSITIES' INCOME**

Despite moves to increase income from private sources, experience has shown that this can only provide less than half of university resource needs. Tuition fees have been ruled politically unacceptable and cultural differences limit alumni donations on US levels. Therefore public funding will continue to be the main income source for universities.

Increasing the flexibility of service provision to businesses and learners has not as yet generated profitable returns. These new forms of learning and research services also have considerable start-up costs and less scope for economies of scale meaning that they are unlikely to be economical for universities to initiate without public sector financial support.

Universities in Scotland are already using entrepreneurial revenue to fund teaching and non-commercial research. This latter activity is also often cross-subsidised from revenue allocated for teaching. Underfunding these activities puts mechanisms for knowledge generation and transfer at risk.

Governments and the public increasingly expect universities to fulfill missions in addition to research and teaching. Many institutions in Scotland already devote considerable resources to commercialisation and widening access to HE with much success. Public funding mechanisms should be flexible enough to support the realisation of all of these objectives within institutions while giving scope for each one to focus on particular deliverables. In this respect credit-based funding reflecting the cost of providing different forms of Higher Education may be worthy of exploration, particularly as it complements the ethos of transferability necessary for lifelong learning.

## USING THE AVAILABLE FINANCIAL RESOURCES MORE EFFECTIVELY

Although Scottish universities perform well by international standards in terms of course completion, it is recognised that work remains to be done. A key factor is the availability of courses that reflect the aptitudes and aspirations of students. However, this will require full recognition by employers and students as well as society as a whole of the value of higher vocational qualifications to the skills base of the knowledge-based economy.

Course completion rates have also been brought into focus by moves in Scotland to open the possibility of Higher Education to those confronted by socio-economic and geographical barriers. The costs of the support required, such as technology enhanced learning, to ensure that such students enjoy successful university careers should be properly compensated.

Individual universities cannot practically base their course provision on fluctuations in the labour market. They rather can make a contribution to the skills base of Scotland as a whole. This level of medium-term labour market intelligence is being delivered by **Futureskills Scotland**, which has established links with the Higher Education sector, especially with the Association of Graduate Careers Advisory Services in Scotland and the **Scottish Higher Education Funding Council (SHEFC)**. Futureskills Scotland is currently working with these organisations and other sector partners on a study into the feasibility of improving the tracking of graduates and their destinations through a long-term longitudinal survey. The aim is to substantially improve the tracking of graduate destinations and further the understanding of the graduate labour market. This includes investigating the feasibility of improving the information gathered on employment, unemployment, wages, and career development amongst graduates in the long-term.

Although Futureskills Scotland provides analysis on the labour market as a whole, a key focus will be addressing gaps in understanding of graduate employment patterns. One area for further research is the notion that universities can contribute most effectively to the functioning of the labour market by integrating the teaching of transferable skills across their portfolio of courses. This reflects the recent findings of Futureskills Scotland that employers are demanding employees with generic teamworking and communications skills in addition to technical knowledge.

In addition, it is important to highlight that public funding arrangements oblige universities to base their course provision fundamentally on student demand. This is influenced not just by pay and conditions in the graduate professions but also by experiences and knowledge gained within the school system. Skills shortages in science and engineering for example are issues that need to be addressed more broadly than simply in the Higher Education sector.

As the European Commission Communication implies, the assessment of real costs to universities of teaching a degree and fulfilling research contracts is difficult to quantify. However, an increase in the costs faced by institutions in recent years has outstripped the Retail Price Index (RPI), leading to a reduction of public funding in real terms. This can be explained by a variety of factors such as increased expectations among students for the latest equipment and the need to compete with salaries in the private sector. **Universities Scotland** has called for a Higher Education RPI reflecting these costs

upon which public funding could be based. Such work would imply a detailed investigation of the costs faced by universities.

Universities in Scotland must already provide an annual breakdown of their core costs following a methodology for transparency established by the UK government. However, further measures to increase cost transparency such as timesheets etc. would imply an increased administrative burden on departments. Furthermore, indirect research costs are becoming increasingly significant. The level of public subsidy received for these can vary significantly between EU Member States, with consequent effects on European competition for research contracts.

### **Futureskills Scotland**

Futureskills Scotland is a pan-Scotland unit hosted by Scottish Enterprise and Highlands & Islands Enterprise. It seeks to help people, employers and others to make decisions using labour market intelligence.

Futureskills Scotland will:

- analyse the Scottish labour market
- provide evidence to help develop policies
- improve the availability, quality and consistency of labour market information
- promote the proper and effective use of labour market information and intelligence
- work closely with partner organisations to provide information and services to support their strategy development and operations

### **Products and Services**

In its first year Futureskills Scotland:

- produced The Scottish Labour Market 2002, a compendium of labour market intelligence and a commentary on the main issues facing Scotland over the next few years.
- developed the Futureskills Scotland website <http://www.futureskillsscotland.org.uk>. A main feature of the website is the Labour Market Intelligence Toolkit which allows users to access and analyse labour market information at various levels.
- undertaken the Scottish Employer Skills Survey, the first analysis of which has been published as Skills in Scotland 2002.
- developed a series of Local Economic Forum labour market profiles.
- undertaken policy-relevant research into employability issues.
- produced a number of industry profiles

### **Scottish Higher Education Funding Council (SHEFC)**

The Scottish Higher Education Funding Council (SHEFC) distributes more than £700 million (967 million Euro) each year to the Higher Education sector, to provide support for teaching, research and associated activities.

The main functions of the Council, established in 1992, are to:

- distribute funds to support teaching and research in Higher Education
- ensure the quality of Higher Education
- provide the Scottish Executive with information and advice relating to all aspects of Higher Education in Scotland, including the sector's financial needs.

#### **Mission and aims**

SHEFC's current Corporate Plan defines the Council's mission as: 'to support the maintenance and further development of Scotland's world-class Higher Education system'.

'The Council seeks to make effective use of public funds in helping Scottish Higher Education institutions to increase and communicate knowledge and skills that will enrich society, allow individuals to realise their potential and make a major contribution to the country's prosperity.'

The Corporate Plan outlines four aims for the Council in allocating public funds, developing policies and providing advice to the Government:

- to encourage institutions to pursue continuous quality improvement and build on their distinctive strengths in teaching and research, promoting diversity of provision and beneficial collaboration;
- to help the sector address the needs of students, employers and society across local, national and international communities;
- to work towards equal opportunity of access to high quality Higher Education
- to achieve value for public money by seeking to make the best use of available resources and securing accountability while recognising institutional autonomy.

### **Universities Scotland**

Universities Scotland is the autonomous voice of the Higher Education sector in Scotland. It is a membership organisation, funded by the 21 Scottish universities and colleges of Higher Education to support and promote them. Member institutions are diverse in character, enabling them to meet a wide range of needs. Universities Scotland exists to:

- Promote the work of its members
- Argue for the public support needed to maintain and build on the achievements of its members
- Provide and disseminate essential information
- Develop policy on sector-wide issues
- Bring together stakeholders in Scotland to share knowledge and good practice

## APPLYING SCIENTIFIC RESEARCH RESULTS MORE EFFECTIVELY

Innovation presupposes a base of fundamental non-commercial research that can be subsequently applied. There are many examples from Scotland of successful commercialisation resulting from 'blue-skies' research in the preceding years (e.g. the Hepatitis B Vaccine developed at the University of Edinburgh). Furthermore, the growing creative industries sector in Scotland makes full use of the arts research base of the universities. Public funding for curiosity-driven and creative research is therefore fully justified in potential economic development terms.

Fundamental research implies financial risk, and universities should accordingly not be penalised for outcomes that are not immediately viable as commercial propositions. Public funding for fundamental research should therefore be based on the quality of the process rather than the value of the outcome. The **Proof of Concept Fund** run by Scottish Enterprise, the main economic development agency for Scotland, has proved a successful example of this, leading to 19 patents filed and eight pending in the three years of its existence.

Universities in Scotland acknowledge that fundamental research undertaken with academic freedom and adequate funding is likely to produce the high quality research results upon which successful innovation is based. However, universities require a well-developed knowledge transfer structure that can link outcomes to the areas in which they have most impact. A Task Force on research and knowledge transfer in Scotland recommended that universities should have a separate funding stream for knowledge transfer activities in order to preserve fundamental research budgets<sup>2</sup>. The Knowledge Transfer Grant created by SHEFC in 2001 represents the initial realization of this principle.

It is important to recognise that the transfer of knowledge can take a variety of forms. These include consultancy, industrial training and the licensing of technology in addition to formation of 'spin-off' companies. Each activity has different costs to universities, such as hiring commercial management expertise from the private sector for 'spin-offs', or the loss of members of staff to company placements. There are also risks involved, such as potential income loss from the early release of intellectual property to embryonic businesses.

The University of Glasgow<sup>3</sup> has developed a typology of knowledge transfer activities based upon their costs and benefits to HEIs. Certain knowledge transfer operations are undertaken by universities despite there being no direct financial incentive. This reflects the experience of US institutions showing that even successful commercialisation is not a large generator of revenue. These "outreach" activities, such as the **Scottish Institute for Enterprise** and **Enterprise Fellowships**, presuppose a broader economic development interest and therefore an ongoing stream of public funding. Conversely, actions contributing to economic development that represent investment for a potentially higher return (such as licensing or company formation) should receive a degree of public support linked to viability as an entrepreneurial incentive to universities.

---

<sup>2</sup> SHEFC-Scottish Enterprise report "Research and Knowledge Transfer in Scotland", March 2002

<sup>3</sup> Dr Kevin Cullen, "Submission to the Enterprise and Lifelong learning Committee of the Scottish Parliament", February 2003

Successful knowledge valorisation requires action at the macroeconomic level. Firms must be able to 'pull-through' and invest in innovation opportunities emanating from universities. Human resources issues are evident barriers here. Many SMEs do not have the resources to analyse their technological needs, a problem compounded by a lack of university staff with the capacity to interact with businesses in this manner. Scottish Enterprise has recently embarked upon the establishment of three **Intermediary Technology Institutes** (ITIs) with the objective of increasing the development of new high growth technology companies and the future development of existing companies in Scotland. This will help address the relative poor performance in levels of business R&D and increase the demand for strategic market aligned research.

#### **Proof of Concept Fund**

The £33 million (45.5 million Euro) Proof of Concept Fund was set up to address the pre-seed funding gap which is restricting the flow of technology from the laboratories to the market place. The core objective, on which the Proof of Concept Fund is based, is to improve the level and quality of commercialisation through the provision of Proof of Concept funding for early stage development activity within Scotland's Universities and Research Institutes. As a Ministerial priority, the project is one of the most significant economic development initiatives operating in Scotland.

The Fund provides grants of up to £200 000 (276 000 Euro) to assist researchers in commercialising their ideas. 19 Universities and Research Institutes from all over Scotland are currently engaged on projects with the Proof of Concept Fund, leading to the creation of over 280 posts. Scottish Enterprise assists in the recruitment of these staff and also provides a strategic website link to all the Institutions involved with the Fund.

As well as providing financial and recruitment support, a representative from Scottish Enterprise is assigned to each project team to support them in the route to commercialisation. Scottish Enterprise is also actively engaged with the staff working on these projects through regular management meetings and also via various seminars and training initiatives.

### **Scottish Institute for Enterprise**

The Scottish Institute for Enterprise (SIE) was created to encourage a greater number of business start-ups from within Scotland's universities. It assists students and researchers to set up in business, avoiding the common pitfalls faced by start-ups, and build links with the Scottish business community,

The Institute has the aim of boosting the commercial potential of university science and technology research. SIE is represented in all 13 Scottish Universities, and is backed by an expert pool of leading Scottish entrepreneurs. It seeks to enhance, encourage and develop entrepreneurship education, and to improve the network of support for commercialisation which exists across Scotland's university science, engineering and technology base.

SIE's role is to stimulate a spirit of enterprise and collaboration between Scottish universities and the enterprise community. Success will be measured by the creation of a pro-enterprise culture and a steady increase in the number of technology start-ups achieved within Scottish universities.

SIE was launched formally by the Scottish Executive in March 2000, with £4 million (5.5 million Euro) of funding from the UK government Office of Science and Technology (OST), which enabled the participation of five universities: Dundee, Edinburgh, Glasgow, Heriot Watt and Strathclyde.

A second funding round awarded in late 2001 enabled the participation of eight more universities. SIE has appointed commercialisation managers in all 13 Scottish universities as part of that planned expansion.

### **Scottish Enterprise/Royal Society of Edinburgh Enterprise Fellowships**

The Scottish Enterprise/Royal Society of Edinburgh Enterprise Fellowships Programme addresses the need to commercialise the output of leading research conducted within Scotland's universities and public research institutes. Post-doctoral researchers are at a stage in their careers where they both have significant achievements behind them and also may be facing a decision on whether or not to continue in academic research. Enterprise Fellowships make the spin-out route a more feasible option for candidates who can bring forward suitable projects.

Set up in 1996/97, thirty three Enterprise Fellowships had been awarded by December 2002 in the fields of opto-electronics, biotechnology, micro-electronics, communications technology, creative industries/digital media, software and energy. The awards are made through a rigorous, competitive selection process and have in the main been won by post doctoral scientists and engineers.

The award enables each Fellow to concentrate for a year on developing the commercial opportunity with a view to founding a company. The programme also provides structured business training, a peer group of very able people with similar goals, introductions to business and investor networks and access to intensive coaching. Fellows are encouraged to form mentoring relationships with business people from the industry they are seeking to enter.

Programme outcomes to date are very good. Of the twenty four awards completed by December 2002, no less than eighteen Enterprise Fellows had gone on to become Chief Executive, Technical Director or a member of the start up team of a new technology oriented firm. While some companies are still very new, others have achieved modest early growth and four have raised significant venture capital.

### **Intermediary Technology Institutes**

The Intermediary Technology Institutes (ITIs) are a £450 million (628 million Euro) 10 year project to increase the development of new high growth technology companies, and the development of existing companies in Scotland.

Three Intermediary Technology Institutes are being established in Scotland as centres or 'hubs' for identifying, commissioning and diffusing pre-competitive research into companies. The ITIs will build on 3 of the major growth sectors in the global economy, market areas where Scotland has renowned company and research strengths, in Life sciences, Energy and Communications Technologies & Digital Media. The activity of the ITIs will be driven by new, emerging global market opportunities. Companies, through membership, will be able to help define, access and build upon these opportunities - the market focused technology platforms developed by the ITIs - to enable them to plan and realise their future commercial growth.

At a strategic level the ITIs are designed to improve and strengthen the future enterprise environment and provide for new market area combinations of knowledge production and exploitation targeted at key market areas and will facilitate greater entrepreneurial dynamism and creativity.

At an operational level, companies will be able to access market oriented technology platforms which will enable them to more rapidly commercialise their research to develop new products & processes, resulting in more internationally competitive Scottish Companies and will ensure increased commercialisation of research and innovation.

This research will be commissioned from the most appropriate sources including the Scottish HE sector to the value of £45million (63 million Euro) per annum.

# **CONSOLIDATING THE EXCELLENCE OF EUROPEAN UNIVERSITIES**

## **CREATING THE RIGHT CONDITIONS FOR ACHIEVING EXCELLENCE**

Universities in Scotland agree that longer-term funding horizons are the key to enabling more effective planning in support of continued excellence. It would however be necessary to declare a 'minimum' level of public support that can be expected over three or four years without prejudice to future additional funding. A longer funding timescale recognises that many costs incurred by universities are at least medium term, such as the additional support required by some students for the duration of their studies.

Excellent research results require the recruitment of world-class individuals to research teams, a process that necessitates time and resources allocated over a period. Moreover, those researchers must have the financial backing to complete their work; it is a question of quality rather than the quantity of researchers. In addition, it has already been noted that research that is not guaranteed to produce an immediately commercialisable output requires a long-term investment by a university over several years.

The management and governance structures of universities in Scotland already draw on the expertise of a wide-range of individuals from both within and outside of the institutions. The key to maintaining this approach is to ensure that the Higher Education system does not in any way provide a disincentive to those from outside the sector who are willing to give their time to manage a university. It is equally necessary to provide training opportunities for academics to move into university management. Universities Scotland and SHEFC are developing a joint initiative on this, while the University of Strathclyde is working with the European Consortium of Innovative Universities on a common management development programme.

Interdisciplinary work within universities reflects the need for flexible funding and accountability structures that allow academics to pursue innovative work that risks unsuccessful outputs. Experience in Scotland shows that interdisciplinary working is relatively widespread but is most effective through interpersonal links leading to 'bottom-up' collaboration.

## **EXCELLENCE IN HUMAN RESOURCES**

It is clear that increasing the demand for postgraduate research opportunities would be beneficial to universities, industry, and society as a whole. However, the current incentives for young graduates to pursue a research career are clearly not sufficient. There are several perceived disadvantages, many of which affect the study of science even within the school system. A rewarding career clearly implies the opportunity for progression between projects, types of employer and different places of work. The resources must also be in place to support personal development through excellent and creative research. The image of science amongst society at large is an additional factor.

European fellowships along the lines of successful models such as the UK Royal Society University Fellowships are one method of ensuring recognition of expertise across borders. However, these must guarantee full research funding and a competitive salary over at least five years as well as providing assistance with relocation and family arrangements. Furthermore, career development training should form a part of doctoral studies to ensure full awareness of commercial as well as academic opportunities. Finally, transitional grants should be considered as a mechanism for researchers to pursue the most appropriate career paths.

Remuneration will always be key to the attractiveness of any profession. At present, researchers suffer from relatively low paid opportunities within the university sector and a lack of research posts within industry, as shown by the relative weakness of private sector R&D expenditure in Europe. These issues can only be fundamentally resolved by national policy makers in terms of financial allocations to universities and measures to increase R&D investment by industry.

The issues described above are clearly relevant to both male and female researchers, and it is hard to see more women entering scientific professions while the current difficulties remain. There are however certain relatively obvious steps that could be taken to raise the proportion of women in research positions. These include true equality of pay scales, crèches in all universities and financial incentives to return to work as well as more flexibility for career breaks and job sharing etc.

## **DEVELOPING EUROPEAN CENTRES AND NETWORKS OF EXCELLENCE**

Universities in Scotland would question the premise that world-class research presupposes a concentration of resources in physical 'centres of excellence'. The key to excellence is the flexibility and networking of a research base that can respond to market and policy demands. Central planning of research centres based on foresight is a risky approach and implies time lags. Scotland would therefore advocate an approach in which all institutions strive to pursue and are funded for high quality research, not least because of the clear link between excellence between research and teaching. Networks of researchers (preferably multidisciplinary and transnational) should be supported in order to develop excellence based on and recruiting from a broad framework of institutions.

Scotland has overlaid its broad, autonomous and networked research base with three Intermediary Technology Institutes. These centres will capitalise on the diverse research base across Scotland to commission applied pre-competitive research in areas, often multidisciplinary, demanded by hi-tech businesses. They will also allow researchers to contribute to the economy while remaining within academic institutions, thus maintaining the resources of universities for the generation of knowledge.

From the Scottish perspective, it is urgently required to address pay differentials between the private and academic sectors if sufficiently-skilled staff are to be retained. Furthermore, universities are currently constrained by annual funding arrangements and cannot therefore offer the conditions that promote the retention of staff. A key element here is continuous professional development, the provision of which must be increased if universities are to fulfill their role in the knowledge society as well as retain both their academic and technical employees. A funding structure that encompasses academic innovation would also provide an additional incentive.

# **BROADENING THE PERSPECTIVE OF EUROPEAN UNIVERSITIES**

## **A BROADER INTERNATIONAL PERSPECTIVE**

All stakeholders agree that the reputation of HE in Scotland is held in high esteem internationally, with many potential students and researchers wishing to come to the country. While it is agreed that there should be consistency in the messages delivered by Scottish business and cultural networks worldwide, it is important that each institution can 'market the difference' using its own global contacts.

Scotland is undertaking several measures to attract and retain overseas students and researchers. These include the **Education UK Scotland** and **Scottish Networks International** initiatives. Scotland also has the additional resource of **globalscot**, an international network of influential people in international business, government and the academic world who have an affiliation for Scotland and who want to contribute to and share in its economic success. EU action to support the exchange of best practice in promoting HE at the global level would be valuable, since on average every three overseas students coming to Scotland creates one job.

All aspects of university activity have been in the vanguard of globalisation and institutions are particularly experienced in cross-border operation. This is clearly linked to the use of information and communication technologies to deliver distance learning and share knowledge for research or commercialisation. Universities in Scotland accept that while collaboration within Scotland can be of benefit, it is important not to place artificial territorial boundaries on networking.

In terms of promoting Higher Education abroad, Scotland has recognised that cultural factors and reputation are essential considerations. Creating the perception of Europe as a continent that attaches importance to creative thinking can be achieved relatively easily by events and networks elsewhere in the world. The diversity of nations and cultures in Europe should be marketed as a unique experience, one that could perhaps be enriched through limited permission to work on a student visa.

### **Education UK Scotland**

Education UK Scotland was established in December 1996 (originally as Scottish Education + Training) to co-ordinate the promotion of Scottish education and training overseas. Education UK Scotland currently focuses on 6 priority markets: USA, China, Russia, India, Mexico and Vietnam with activity in the Middle East and Kenya being rolled out over the next two years.

Education UK Scotland works with Scottish higher and further education institutions, independent schools and the English Language Teaching sector.

Education UK Scotland's sector-led approach is ensured by regular input from its committee members.

#### **Aim**

Education UK Scotland aims to assist Scottish education providers to maximise their earnings from the overseas education market in three key areas:

- the delivery overseas of education and training, whether through direct delivery or through franchising
- the commercialised application of Scottish education and training in overseas projects including joint research and consultancy work
- the recruitment of students to Scotland.

#### **Approach**

Education UK Scotland works to support these aims in a number of ways that ensure maximum impact from public sector resources. It works with other bodies e.g. the British Council and Scottish Development International, to ensure that new market focused initiatives are developed, co-ordinated and tailored effectively to the needs of the sector in order to deliver new initiatives in partnership with existing bodies.

#### **Benefits from Education UK Scotland**

- A single point of contact for education enquiries and dissemination of market information to institutions and other bodies
- Representation at Education Exhibitions
- The Education UK Scotland Website - [www.educationukscotland.org](http://www.educationukscotland.org)
- Raised awareness of Scottish education capability in international markets and within the UK
- Production of market specific generic information about Scottish education and training
- Market research in selected markets
- Subsidised outward and inward education missions
- Identifying international opportunities through analysis of both the external and internal capabilities in education
- Opportunities for the Education sector in Scotland to share knowledge and experience in target markets through working groups.

### **Scottish Networks International**

Scottish Networks International is a programme managed by the British Council in partnership with Scottish Development International. The programme aims to enhance the educational experience of carefully selected international postgraduates and broaden their experience of Scotland while bringing international expertise and knowledge to Scottish companies and organisations.

Each year Scottish Networks International selects about 80 high calibre international postgraduates studying at universities in Scotland to become Associates of the programme. The aim is to link Associates with companies and organisations in Scotland with a view to facilitating work experience placements after their studies are completed.

Scottish Networks International:

- organises a business networking programme introducing Associates to business people and professionals in their field of interest.
- locates and facilitates management placements in organisations and companies in Scotland, giving Associates the opportunity to gain valuable international work experience before returning home.
- manages an international business network, giving Associates links to over 800 Alumni of Scottish Networks International living in 89 countries around the world.

For further information about Scottish Networks International, please visit: <http://www.scottishni.org>

### **globalscot**

Since its launch in November 2001, the globalscot network has grown to a membership of almost 600 members based internationally. Members are Scots or people with a strong affinity to Scotland who are influential in sectors which are important to Scotland's economy (e.g. life sciences, financial services, software and energy) and are willing to contribute to, and share in, the success of the Scottish economy.

The globalscot network has already started to deliver economic benefit to Scotland through a range of activities. In addition to providing market and technology intelligence to Scottish Enterprise and partners, the network has been closely involved in working with Scottish companies and schools. Globalscots have worked with almost fifty Scottish companies to give them advice and support ranging from how to secure business in overseas markets to how to negotiate contracts with large multinationals.

Following discussions with the First Minister, a number of globalscots have become involved in a programme which encourages globalscots to 'adopt' a school and contribute by presenting and conferencing with school groups; supporting enterprise related projects; and advising on curricula development. The aim of the programme is to provide Scottish students with an international role model on the theme of enterprise & entrepreneurship.

Over the next year the globalscot team will continue to build the network and to enable the existing members to become increasingly involved in Scotland's economic success.

## LOCAL AND REGIONAL DEVELOPMENT

Universities are in a somewhat paradoxical situation in which they are required on one hand to compete with other institutions for students and research funding, while they are encouraged to maximise excellence and research commercialisation through collaboration. Joint working between universities in Scotland has several forms. At the policy level, all are members of Universities Scotland. On the ground, there are a myriad of research networks and joint institutes. The networking of research teams is supported by the Scottish Research Information System ([www.scottishresearch.com](http://www.scottishresearch.com)). Universities in Scotland are generally satisfied with this environment that supports collaboration where beneficial but does not force it when inefficient, given the potential costs incurred. Furthermore, the question of regional links between universities and other scientific institutions should not be overlooked. This could for example lead to economies scale in terms of providing joint resources for commercialisation support.

The relationship between universities and their surrounding business community is multi-faceted. It relies upon an assurance of quality in research results and graduates emerging from institutions in which business has the confidence to invest. Scotland has a pro-active approach to quality in education and training through the benchmarking of professional qualifications in fields such as Initial Teacher Education and Nursing to ensure the demands of the sectors are met. A new Quality Assurance framework has just been introduced for Higher Education in Scotland following a review, and the Scottish Executive is seeking to ensure transparent principles for quality assessment across all fields of lifelong learning<sup>4</sup>.

Although much attention is paid to the question of entrepreneurial uptake of knowledge emerging from universities, the potential for personnel development services that universities can deliver is perhaps underestimated. Universities are well placed to deliver continuous professional development as the leading edge knowledge that they generate often subsequently influences professional practice. Many post-qualification and qualification conversion courses are already provided by universities in Scotland. Futureskills Scotland will provide an important indicator of further skills needs that can be delivered by HEIs to employees on a fee-paying basis.

Knowledge transfer to policy-makers can be as valuable as that to industry. Difficulties with reliable foresight place importance on a diverse fundamental research base that can be utilised by policy-makers, rather than the selection of research priorities for their immediate policy relevance. There are already many networks of social science researchers in Scotland that have strong links with policy-makers, such as the **Innogen Centre** examining the social impact of genomics. These could perhaps be extended and maintained in more speculative subject areas in order to build ongoing relations with policy-makers and provide an easily accessible source of expertise for decision-making.

Many universities in Scotland have strong links with other community actors beyond the Higher Education, business and government sectors. Colleges for Further Education in Scotland deliver Higher National Certificates and Diplomas that have Higher Education credit status. The **Scottish Credit and Qualifications Framework** also provides a mechanism for a smooth transition for students between Further Education and HE. Furthermore, the **Chrichton University Campus, Dumfries** and the **UHI Millennium**

---

<sup>4</sup> Scottish Executive, "The Lifelong Learning Strategy for Scotland", February 2003

**Institute** represent innovative partnerships between Colleges and Universities for the benefit of the communities that they serve.

The European added-value in promoting a regional dimension to research, education and training activities has sharply focused parameters. Many of the key processes are dependent on region-specific conditions. However, the formation and outward interconnectedness of knowledge clusters as well as the distribution of economic development experience and analysis are activities in which a European dimension would be of clear value.

#### **Innogen Centre**

The life sciences have the potential to transform health care and food production systems in developed and developing countries and to provide one of the main platforms of economic growth and global competitiveness in the 21st century. Rapid developments in life sciences also challenge our existing regulatory systems and raise new ethical and social issues.

Innogen, the Economic and Social Research Council (ESRC) Centre for Social and Economic Research on Innovation in Genomics, is part of the ESRC Genomics Network, three Centres across the UK studying the evolution of genomics and life sciences and their far-reaching social and economic implications. Innogen is based at the University of Edinburgh in collaboration with the Open University.

The researchers working at the Innogen Centre include:

- social scientists
- economists
- lawyers

The Centre will also engage with a wide range of stakeholders, nationally and internationally, including:

- scientists
- industry and private interest groups
- policy makers and regulators
- citizens and public interest groups

Innogen's research will provide a sound base for decision-making in science, industry, policy and public arenas and will improve our understanding of each of these groups and their interactions.

### **Scottish Credit and Qualifications Framework**

The origins of the Scottish Credit and Qualifications Framework (SCQF) were in the Scottish Credit Accumulation and Transfer (SCOTCAT) scheme, agreed by all Scottish HEI's and FE colleges in 1992. The development of a Framework was recommended by the Garrick Report (1997) and also in the Scottish Executive's Green Paper on Lifelong Learning, Opportunity Scotland (1998). Since then the SCQF has been developed and is being implemented across Scotland's education and training sectors under the partnership of the Scottish Executive, Scottish Qualifications Authority (SQA), the Scottish Office of the Quality Assurance Agency for Higher Education (QAA), and Universities Scotland. The SCQF is a world leader in the field of credit and qualifications frameworks.

The Framework currently incorporates all the mainstream Scottish qualifications awarded and accredited by the SQA and Scottish HEIs, from Access Qualifications on Level 1 to Doctorates on Level 12. It includes both academic and vocational qualifications provided in schools, further education, Higher Education, and the workplace.

Most of the qualifications in the Framework are allocated SCOTCAT credit points and placed on one of the 12 levels within the framework. Individual qualifications are credit-rated according to their "size" in terms of notional learning hours (1 credit point for a notional 10 hours of required learning).

The SCQF is designed to make the Scottish qualifications system easier to understand for learners, employees, employers and education and training providers and demonstrates the relationships between qualifications. It supports learners in planning progression routes towards their learning and career goals; and supports the transfer of credits from one qualification towards another in relevant subjects and therefore avoid unnecessary repetition of learning.

Future SCQF developments include extending the Framework to include qualifications of professional bodies and other appropriate bodies into the Framework. Consideration will also be given to how all forms of learning, provided there is a quality assured system of assessing it, can be included in the Framework. For more general information on the SCQF visit the website on [www.scqf.org.uk](http://www.scqf.org.uk)

### **Crichton University Campus, Dumfries**

The University of Glasgow shares the beautiful Crichton Campus with the University of Paisley, Bell College and Dumfries and Galloway College. The unique multi-institutional campus in the rural South of Scotland is widening educational opportunities for all students.

Students of the University of Glasgow and the University of Paisley share the library, as well as information technology and student support services. By 2005 it is envisaged that there will be around 1500 students on the campus. For further information please see <http://www.crichton.ac.uk/>.

### **UHI Millennium Institute**

UHI Millennium Institute (UHI) provides university-level courses and research opportunities throughout the Highlands & Islands of Scotland. In April 2001, the Scottish Executive designated UHI as a Higher Education Institution. The UHI mission is to create a University of the Highlands and Islands, and it has set itself the target of achieving this in the year 2007.

UHI is a distinctive educational partnership of colleges and research institutions, along with a network of over 50 outreach learning centres, providing access to university-level courses throughout the Highlands & Islands of Scotland. In so doing, UHI is widely recognised as a leading institution in harnessing new technologies, but also maintaining an individual and supportive approach to student learning.

UHI students are based at one of the UHI academic partner locations, or at an associated learning centre, benefiting from the facilities and support provided at that location. This offers the opportunity to be part of a large organisation that provides courses comparable in standard and quality to those offered by other Higher Education institutions and universities in Scotland and elsewhere, but also to live and study in locations throughout the Highlands & Islands.

Currently over 5500 students are studying on university-level courses with UHI. Courses vary from Higher National Certificates and Diplomas through undergraduate degree courses (BA and BSc – some with honours), to post graduate qualifications such as MA and MSc. UHI degree courses are developed and taught by staff from within the UHI partnership, and are independently validated by Open University Validation Services (OUVS).

# **SUBMISSIONS OF SCOTTISH ORGANIZATIONS CONTRIBUTING TO THE JOINT RESPONSE**

	<b>Page</b>
<b>Royal Society of Edinburgh</b>	<b>40</b>
<b>University of Highlands and Islands</b>	<b>51</b>
<b>Millennium Institute</b>	
<b>Universities Scotland</b>	<b>53</b>

## **ROYAL SOCIETY OF EDINBURGH**

### **The Role of the Universities in the Europe of knowledge**

The Royal Society of Edinburgh (RSE) is pleased to comment on the European Commission's Communication on the role of the universities in the Europe of knowledge. This response has been compiled by the General Secretary, Professor Andrew Miller and the Research Officer, Dr Marc Rands, with the assistance of a number of Fellows with extensive experience in this area.

This is an interesting Paper that asks some very penetrating questions about the nature of universities. The document makes clear the ever increasing demands on universities, not only from increase in student numbers, but also in terms of research, consultancy, economic regeneration and growth, and social and cultural activity.

### **THE EUROPEAN UNIVERSITIES TODAY**

In a world where new ideas, new processes and new technologies can be communicated and implemented with unprecedented speed, the capacity of a society both to create and introduce beneficial innovation is vital to its economic success and its social and cultural vitality. Most of this innovative capacity is derived from research, which is primarily transmitted into society by graduates, Ph.D. students and post-doctoral research associates (who not only carry on the business of society in industry, government, finance and the professions) as well as through spin-out companies and direct links with industry. A society that fails to create new intellectual capital through basic research will be a derivative society, dependent upon inspiration from elsewhere and unable to play a leading role in global development. Europe should not submit itself to that fate.

Successful research, whether in the sciences, humanities or social sciences, depends upon a culture that values curiosity, scepticism, serendipity, creativity and genius. Without individuals with those values and the potential to embody them, internationally competitive research will not develop. The co-location of research and teaching in the same institution is essential. Students need to develop these values and capabilities during their education. They can only be acquired if the educational environment itself is one that embodies them through deep familiarity with the practice of research that addresses the boundaries of human knowledge.

Research-based universities are now universally regarded as important drivers of economic development. Although they are most effective in this where there are mature R&D-based industries able to “pull” on the research base, the example of the USA demonstrates that research/university “push” can also be a powerful driver of regional development and the creation of R&D based industry. It is primarily for these reasons that the USA continues to allocate about 2.5% of GDP to support tertiary education and 2.7% of GDP to support research, and why other countries (e.g. China, Singapore, India) are committing major sums to enhance universities and their research roles. In contrast, European investment in Tertiary education is an average of 1.2% of GDP, and 1.93% of GDP in research. It makes little sense to speak of a “Europe of Knowledge” unless there is a change in the level of investment.

The great days of European research and European universities were through the 19th century until the mid-20th century. Since then, almost any indicator of research and university excellence shows that they have been in relative decline. This is not because of the democratic extension of the opportunity for university education to an increasing proportion of the population, which has been a universal phenomenon, but because European governments have permitted funding per student to fall to pay for the increase in numbers. Research funding has also grown at rates less than that of our competitors, and the financial flexibility/viability of the universities has been severely eroded.

In the 20th century, governments world-wide recognised the value of universities in satisfying a diversity of social needs: as providers of trained personnel and creators of useful knowledge in supporting what came to be termed “the knowledge economy”; in providing credible credentials; in promoting mobility and social justice; and in supporting cultural engagement. This recognition has led national and regional governments to become the principal funders of universities, often associated with demands for accountability through processes of quality assurance that have been demanding and bureaucratic, and requirements for universities to respond to specific political imperatives.

The diversity of roles that universities are now called upon to play requires a dynamic and flexible university system, in which all institutions have generic attributes, but which individually focus their activities in different parts of the Higher Education spectrum, and are able to collaborate effectively across it. They must also be funded in such a way that they can effectively carry out their particular role. The concepts of the European Higher Education Area and the European Research Area cannot be effectively developed without articulating the desirable spectrum of university roles in Europe. The two end-points and the intervening mid-point of such a spectrum might be:

- a) Universities that offer highly vocational education in restricted or broadly-defined fields supported by appropriate applied research and with strong links to industry, commerce and the public sector in its region.
- b) Universities specialising in undergraduate and taught masters education but with some doctoral research, that sustain a sufficiently broad disciplinary range to permit curricular flexibility and evolution, and with a commitment to scholarship that ensures that teaching is based on experience and not second hand knowledge;
- c) Universities that are major contributors (in some cases, the major contributor) to national research efforts, with a very high proportion of taught postgraduate and doctoral training, and that aspire to the very highest international standards of research and research-based teaching.

These are all vital roles. They must not be seen as part of a hierarchy of excellence but as a system of excellence in diversity.

## **ENSURING THAT THE EUROPEAN UNIVERSITIES HAVE SUFFICIENT AND SUSTAINABLE RESOURCES**

### **Increasing and diversifying universities' income**

*How can adequate public funding of universities be secured, given the budgetary constraints and the need to ensure democratic access?*

Issues of funding continue to dominate the discussion in Europe as a whole. The primary funding in Europe still comes from the public purse, and there needs to be a debate, ideally informed by recent economic data from Australia, Scotland and elsewhere, on the relative advantages of Higher Education to society as a whole and to the individual. The Royal Society of Edinburgh believes society benefits from the graduates produced through Higher Education, not only in terms of technological and professional skills but also in having a well informed and critical population. In the modern competitive world a large graduate population is essential for economic survival. Nevertheless, there is a case for making students contribute financially towards their Higher Education, when their annual income allows them to do so, principally because it is an investment from which they can expect to benefit financially in future.

*How can private donations be made more attractive, particularly from a tax and legal point of view?*

The building up of endowments will be difficult for the great majority of universities in Europe. Although many universities have made strenuous and professional efforts over recent years to attract such funds from alumni, success has been modest and even the wealthiest universities have limited resources of this kind. Private donations could be made more attractive, however, by the removal of taxes on gifts.

*How can universities be given the necessary flexibility to allow them to take greater advantage of the booming market in services?*

For many years now, the UK Government has promoted a change in culture within the university community, encouraging greater dialogue, partnership and collaboration with business and industry, and the Royal Society of Edinburgh has played a role in supporting this. Most attention has been focused on the transfer of technology and knowledge out of universities, with less being done on the transfer into companies and innovation within companies. The response of industry has been patchy: for example, small to medium-size enterprises (SMEs) have not sought to take as much advantage of links with academia as might be hoped. In many of these SMEs the barrier to knowledge uptake is that the companies are not able to analyse their business process in a way that allows them to envisage technological solutions. Moreover, there is a paucity of university staff with the knowledge, ability and time to undertake the kind of business or process analysis required to interact successfully with these companies.

### **Using the available financial resources more effectively**

*How can the maintenance of democratic access to Higher Education be combined with a reduction in failure and dropout rates among students?*

The UK has a relatively small drop-out rate, however, post-18 education has become increasingly focused on a traditional university model, leading to a serious loss in diversity of provision in terms of the duration and style of study and subject matter, and the traditional degree has become the only acceptable qualification. The imposition of “one style fits all” has made it more difficult to match students aptitudes and aspirations with appropriate courses.

With 40% of the new jobs in the present decade likely to be in the associate professional and higher technical echelons, the development of work-focused vocational qualifications should be an important component of the process of expansion. Nonetheless, for these vocational qualifications to be fully effective, society will have to change its attitude to such vocational programmes and not only recognise the enhanced status of these qualifications but reward the graduates accordingly. Employers will have a key role in this process.

*How can a better match be achieved between supply of and demand for university qualifications on the labour market, through better guidance?*

Guidance to students about the range of opportunities in the job market is vital, but manpower planning has a history of failure. It must not be assumed that university education is generally for a specific job. It is designed to develop capacities that are of wide applicability.

In addition, prospective students are far more intelligent and far-seeing than they are normally given credit for, and they do understand that poorly paid employment in science and engineering-based industries, requiring years of intensive and difficult study, is not intrinsically attractive. This, coupled with poor school teaching, especially in mathematics and physics, is leading to a major crisis in all developed countries. The economic solution: far better pay for scarcity-subject teachers and far higher salary levels in the science and engineering-based industries appears to offer political and commercial problems that have proved insoluble hitherto. Unless they are solved, universities will continue to abandon core science subjects, as many already have, and move into areas where they can be sure of filling their places.

*Is there a case for levelling out the duration of courses for identical qualifications?*

The standard of attainment must be the yardstick for an award, not the period of study. This question also pre-supposes that the starting point for the students is the same. In the case of England, student 'A' levels were seen as having a level of specialism equivalent to first-year study in many European universities, and the normal length of study in England for Chartered Engineer status through an M.Eng. degree is four years. However, in Scotland, with its separate education system, it is five years, and students from such courses are highly valued by industry. There is, however, in this context a clear role for professional bodies to organise trans-Europe validation. Some attempts are being made in this area in some subjects, for example in chemistry via "Eurochemist" designation and the Tuning Project and the Eurobachelor concept and agreed syllabus

*How can the transparency of research costs in the universities be enhanced?*

A lot of work has been done in the UK on the real costs of research by the UK treasury transparency review ([http://www.hm-treasury.gov.uk/media//3A7B0/science\\_crosscutter.pdf](http://www.hm-treasury.gov.uk/media//3A7B0/science_crosscutter.pdf)), and this work needs urgently to be extended to the rest of Europe in order to understand the extent of hidden subsidy. This is a real problem. European universities increasingly compete for research contracts on a Europe-wide basis, and countries such as the UK, where there is far less subsidy for indirect costs, are seriously disadvantaged.

**Applying scientific research results more effectively**

*How could it be made easier for universities and researchers to set up companies to apply the results of their research and to reap the benefits?*

Commercialisation of research covers a multitude of processes itself, including the encouragement of start-up companies with concomitant entrepreneurial training for both students and staff, university spin-outs by staff who have originated potentially valuable intellectual property, licensing of university Intellectual Property Rights (IPR) to third parties, pull-out activity by external entrepreneurs, the formation of intermediate institutions designed to facilitate communication between business and university researchers, SME interactions and consultancy work. It is frequently not obvious, in any given case, which will be the most effective way of commercialising university discoveries, and spin-out companies are usually only one option. In general, universities in Scotland will only seriously explore this option with the member(s) of staff concerned if such staff are clearly prepared to put substantial efforts into the company, and that these efforts are compatible with the other objectives of the department, such as success in the UK Research Assessment Exercise. The fundamental requirements for success in a spin-out are: high-quality technology; a good business plan; high-quality management and, above all, the passion to make a success of the venture on the part of the staff.

Issues of IP are often difficult to resolve. Universities seek to recover the often onerous direct and indirect costs associated with the development of IP and its protection through patenting or other means. In addition, given that not all investment in IP is successful, universities frequently seek an element of risk-related profit as well. However, universities also recognise that they are usually not the most effective vehicle for exploitation of IP. They will wish to own the research (for publications, RAE ratings and further research) but will normally wish to have agreements on the exploitation of IPR with commercial partners in which the interests of all parties (the university itself, the academic staff involved in the invention and the commercial vehicle) can be fairly accommodated. This position is now common amongst universities in the UK, though skill in handling IP certainly varies across institutions. However, in continental Europe the situation is much more complex, and IP is still guarded far too jealously for sensible and fair agreements to be possible. Further information on these issues can be found in the joint Scottish Higher Education Funding Council/Scottish Enterprise report on Knowledge Transfer (<http://www.shefc.ac.uk/library/06854fc203db2fbd000000f527623199/report.pdf>) and in the Technology Ventures Scotland report "Bridging the Gap" ([http://www.technologyscotland.org/news/pdf/btg\\_2003.pdf](http://www.technologyscotland.org/news/pdf/btg_2003.pdf)).

*Is there a way of encouraging the universities and researchers to identify, manage and make best use of the commercial potential of their research?*

Whilst some leading research workers may excel at knowledge transfer, this is the exception rather than the rule, and is likely to remain so, with few academic staff having skills in knowledge transfer. There is, therefore, a need to recruit/train a cohort of people who regard technology transfer as a significant part of their job purpose and who have the required skill and ability to work with industry. That will not (and perhaps may never be) the prime driver of university staff who are rewarded and applauded professionally for their skills in research and teaching. It should also be appreciated that the majority of knowledge transfer is undertaken through teaching graduates who then take up jobs in industry and other organisations. Similarly, it should be recognised that enhanced

engagement is a two-way process and the business community should also be encouraged to engage with the university sector.

Appropriate infrastructure and personnel in commercialisation departments is another important issue. There is anecdotal evidence of a linear relationship between the volume of research and benchmarks used to measure a university's commercialisation success. Therefore small universities need to be exceptionally lucky to get enough financial reward to justify the financing of a technology transfer office, unless they share the cost of commercialisation. It is the size of the research base rather than the quality of the technology transfer office that is the primary factor (for example, experience from the large universities has been that most royalties came from 1 or 2 products.) At present, each university in Scotland has its own industrial opportunities team. Consideration should be given to the possibilities of collaboration.

The RSE in partnership with Scottish Enterprise has also run a successful series of Enterprise Fellowships since 1997. These one-year Enterprise Fellowships have equipped post-doctoral researchers, or younger lecturers, with the hands-on business knowledge to enhance the commercialisation potential of their own research. They encourage the establishment of new start-up companies and allow young researchers to devote time to develop their research from a commercial perspective. In Spring 2001, Scottish Enterprise commissioned SQW Ltd to carry out an independent review and evaluation of the 13 Enterprise Fellowships that had been completed at that point. Its report concluded that: *"The Enterprise Fellowship programme is shaping up to be an excellent contributor to economic development in Scotland. It is enabling progress to be made in the commercialisation of university research and the establishment of technology-oriented new businesses."* The companies which these Enterprise Fellows have created to date include: Intense Photonics, Microemissive Displays, Surfactant Solutions, Edinburgh Biocomputing Solutions, Photonic Materials, Kymata and Intrallect. In recognition of this, Scottish Enterprise announced this year a major expansion in the number of Enterprise Fellowships to be run by the RSE, with funding of £5.5 million for a further 80 new Enterprise Fellowships in Scotland.

## **CONSOLIDATING THE EXCELLENCE OF EUROPEAN UNIVERSITIES**

### **Creating the right conditions for achieving excellence**

*How can the consensus be strengthened around the need to promote excellence in the universities in conditions which make it possible to combine autonomy and management efficiency?*

There is rarely any real difficulty, at least in UK universities, in attracting very high calibre staff to the most senior management positions, since such positions offer considerable potential for developing universities in clear and strategic ways. However, the position of Head of Department, and to some extent that of Dean as well, is one that is poorly rewarded and increasingly onerous. Different universities will approach this in different ways, but a reduction in the number of departments, methods for pre-identifying and pre-training new Heads of Department, and continuous professional development, especially in newer areas such as risk management, coupled with significantly better pay, are going to be essential components.

Of course, this pre-supposes that highly decentralised models will become the norm in European Universities. This is likely to happen, simply because the complexity even of

purely departmental activity is now such that centrally administered systems are bound to fail, probably in the shorter rather than the longer term. Industry tends to see strong management as good management, however, in great universities, ideas and creativity flow upwards and the role of managers is to ensure that finances are sound and to help when they can.

*Is there a way of encouraging the universities to manage themselves as efficiently as possible while taking due account simultaneously of their own requirements and the legitimate expectations of society in their regard?*

Guardians of public funds demand strong accountability, not only for outcomes but also, wrongly, for processes. Autonomy is vital if a university is to play a strong role in society and the economy. A consensus is needed about accountability that focuses on outputs and judges universities by their results.

*What are the steps which would make it possible to encourage an interdisciplinary approach in university work, and who should take them?*

Teachers, researchers, students and academic managers are the best judge of the utility of inter-disciplinary work and can develop where it has value. It is however important that assessment regimes and research councils do not create structures that inhibit such work. For example, the Research Assessment Exercise in the UK was judged through conventional disciplinary categories, which inhibited evolution of academic activity. Similarly, the availability of funding for interest driven basic research seems to be necessary to foster such activity. The more directed and focused funding for research becomes the less likely interdisciplinary work is to thrive.

### **Developing European centres and networks of excellence**

*How can providers of university funds be encouraged to concentrate their efforts on excellence, particularly in the area of research, so as to attain a European critical mass which can remain competitive in the international league?*

The funding of research infrastructure does require substantial resources and not all universities can aspire to the same model. Evidence from competing countries also suggests that size matters and that bigger and more professionally managed organisations appear to produce better results and play an important role in economic development. For example, in an extremely short space of time Dundee University have gained world recognition and attracted some of the worlds leading authorities in the biomedical field.

However, the notion of "European critical mass" in an area of research needs to be treated with some caution and it would be a mistake to imagine that a small number of quite large institutions of very high quality can exist in isolation. They need to rest on a base of institutions, perhaps less prestigious, but where capable staff can do valuable work and in which new staff can make a reputation and possibly be recruited to the top establishments.

*How should this excellence be organised and disseminated, whilst managing the impact of the steps taken on all institutions and research teams?*

A healthy system must be dynamic and flexible. Depending upon the regional distribution of concentrated specialist institutions could limit the expectations for regional economic growth and cause further imbalance in demographics between regions. Too much concentration also runs the risk of an overly great focus of people and resources into a narrow range of topic areas. This may be good for the research output but will have detrimental effects on the range of available knowledge and skills to the economy. In the UK, increasing research selectivity may also have developed a pattern of research that owes more to very high levels of scholarship and 'safe' research than to highly innovative and imaginative, but risky research, with its longer term benefits. Evidence for this can be found in the recent "Chemistry at the Centre" report commissioned by Engineering and Physical Sciences Research Council and the Royal Society of Chemistry in the UK ([http://www.rsc.org/pdf/lap/chemistryatthecentre\\_full.pdf](http://www.rsc.org/pdf/lap/chemistryatthecentre_full.pdf)), with increasing evidence that high-risk areas of interdisciplinary research, such as chemical biology and materials chemistry, are being neglected.

Nevertheless, there should be continuing examples of the kind provided by CERN, ESRF and ILL where a major facility can only be funded by a truly co-operative effort. However, even there it is the case that data produced in large facilities can be exploited by small groups of researchers distributed around Europe, i.e. there is a combination of a very large facility with substantial sized groups able to exploit it on site, and small groups or even individuals who are able to apply their own skills to data collected in such a facility. Wherever it is the case that individuals do not need access to large pieces of sophisticated equipment, it should be possible for critical mass to be achieved in a distributed fashion so long as adequate opportunities exist for bringing together researchers to debate and discuss their work at regular intervals.

### **Excellence in human resources**

It is vital that research careers are made more attractive to bright young graduates. In the US, the prospect of postgraduate research is a positive one for young graduates. Research careers are seen as exciting and stimulating, largely because of the strong support for basic research, which permits young US researchers to take on the most demanding research challenges that are often beyond the resources available to even the most seasoned researchers elsewhere, and because of the climate of confidence based on past success which encourages them to do so.

Europe needs fellowship programmes and it needs to ensure that a research career is attractive because of the research opportunities it offers. This means that the level of funding of the projects on which such careers are built needs to be increased. In relation to efforts to persuade heads of government to commit to raising R&D expenditure to 3% of GDP, a calculation has been made of a pro-rata increase in the number of researchers required. This is a mistaken approach. There must be an increase in the expenditure per researcher, which in Europe is very low compared with our competitors. In relation to fellowships, the model of the UK Royal Society University Research Fellowships is advocated. They are prestigious fellowships, keenly sought, with a long tenure (5 years renewable to 8 or 10 years), good salaries, strong research support, and flexibility for family and natal arrangements. They are creating a new cohort of highly professional and creative researchers.

The point is also made in the Paper that there are fewer posts for researchers in Europe, particularly in the private sector, than in the USA or Japan, but it then suggests that this

issue might be addressed by recruitment of more women into Science and Engineering professions. If these posts are unattractive and few in number, then it is hard to see why they should be attractive to women any more than to men. The problems identified in this section are as much associated with low innovation and R&D spend by European companies as anything else and attempts to address this type of issue by increasing European mobility is to confuse ends with means. Scientific and technical careers will be more attractive where those entering them can see the prospects of continuity of funding. Mechanisms to support researchers in stepping from one project to another are still in short supply and a system of transition grants could be useful in facilitating this; these should include the opportunities for further development of skills for researchers during the course of their careers.

## **BROADENING THE PERSPECTIVES OF EUROPEAN UNIVERSITIES**

### **A broader international perspective**

*How can European universities be made more attractive to the best students and researchers from all over the world?*

Movement of university scientists from country to country depends on a number of factors including salary, facilities and conditions of employment. Domestic considerations and family, however, are also major considerations. UK universities find it easier to attract scholars in Arts and Social Sciences from abroad than they do scientists and engineers as the resource demands are much more easily satisfied for non-scientists.

*In a context of increasing internationalisation of teaching and research, and of accreditation for professional purposes, how should the structures, study programmes and management methods of European universities be changed to help them retain or recover their competitiveness?*

The main issues currently are language and cultural ones. There is little appetite overseas for learning one of the many European languages, with the notable exceptions of Spanish and English, which are seen, with Mandarin and Arabic, as the primary languages of commerce and economic development in the future. Universities in Scotland are working with colleagues in other European universities to devise courses that will be primarily given in English, but which will involve residence in more than one European country. We believe that such courses may well be attractive to those from overseas, but we are also conscious that European heterogeneity, enormously valued as it is within the EU, remains something of a barrier for overseas students from many (though not all) parts of the world.

### **Local and regional development**

*In what areas and how could the universities contribute more to local and regional development?*

Universities can play a number of key roles in regional development:

- Excellence in the research base and its spin-off activity can attract R&D intensive companies, possibly with a manufacturing base in the region, to create their own R&D capability. Such activity can snowball and it is important that regional development agencies and universities develop shared strategies to achieve this

outcome. This is one of the key points of modern economic geography, as exemplified in Richard Florida's recent book: 'The Rise of the Creative Class'. Companies are no longer interested primarily in tax breaks or regional subsidies: they are primarily interested in being in areas where there are substantial numbers of creative people, and many of these areas are clustered around successful universities, already major employers of creative and innovative staff.

- Universities, sometimes acting as consortia, can be very effective in providing access to technologies and know-how to indigenous SMEs. To make this effective requires a knowledgeable interface body, which should be funded through a regional development body or regional development aid.
- Masters programmes in key technologies can kick-start activity in a region, acting as a beacon for attraction of companies whose principal problem lies in manpower supply in the technology.
- Continuing investment in upgrading people's skills and regional knowledge resources to provide a well-educated and trained work-force.

*What ways are there of strengthening the development of centres of knowledge bringing together at regional level the various players involved in the production and transfer of knowledge?*

Engaging with industry is, inevitably, an interactive process: the simple linear models of innovation have long been discredited. Instead, universities have been active, with research councils, regional development agencies and other funders in developing forums in which not only two partnerships between HE and industry are forged, but three-way partnerships in which regional government is also active as a player. This model is more common in countries such as Germany, where the Länder have seen this as a key weapon in regional competitiveness, and is becoming the norm in countries such as Scotland, where Scottish Enterprise is becoming increasingly active in promoting such partnerships, most recently through the planned Intermediary Technology Initiative. There are also a great variety of institutions, besides the universities that are able contribute to the transfer of knowledge. Places like Research Institutes and botanical gardens already work closely with universities, and can contribute to addressing the increasing demand for Higher Education in Europe. Therefore, mechanisms to support the strengthening of ties between universities and other academic institutions similarly need to be developed at a regional level.

An important requirement is to develop a shared understanding of the way in which "centres of knowledge" can contribute to economic development. There are numerous research studies which demonstrate the efficacy of the research base in areas where there is R&D intensive business able to "pull" research findings out of the research base. But increasingly, there is awareness of the way in which areas that lack such "pull" (and Scotland is one), that the "push" of such ideas from the research base can be important in promoting development. It is vital, however, that this is done sustainably. A wholesale shift from basic to strategic/applied research could be damaging (e.g. as was tried in Norway) to the maintenance of innovative capacity. A creative balance between them is vital. Once a shared understanding of the process has been developed, politicians, development agencies and consortia of universities can be readily persuaded that such initiatives are in their mutual interest.

*How can greater account be taken of the regional dimension in European research, education and training projects and programmes?*

Subsidiarity suggests that the EU is too high level a body to be involved in fine tuning regional processes, particularly as many problems are not generic but specific to regions. However, support for the development of knowledge clusters as part of regional economic aid, particularly around major research universities, would be appropriate. The EU could also play a significant role in developing and publicising economic development data and models.

### **Additional Information**

In responding to this consultation the Society would like to draw attention to the following Royal Society of Edinburgh responses which are of relevance to this subject: *Commercialisation Enquiry: Final Report* (1996); *Devolution and Science* (April 1999); *The Independent Committee of Inquiry into Student Finance* (September 1999); *A Framework for Economic Development* (March 2000); *A Science Strategy for Scotland* (July 2000); *Review of the supply of scientists and engineers* (August 2001); *Research and Knowledge Transfer in Scotland* (September 2002); *Review of Research Assessment* (December 2002) and *The Future of Higher Education* (May 2003).

Copies of this response and of the above publications are available from the Research Officer, Dr Marc Rands (email: [mrands@royalsoced.org.uk](mailto:mrands@royalsoced.org.uk)) and from the RSE web site ([www.royalsoced.org.uk](http://www.royalsoced.org.uk)).

May 2003

## **THE ROLE OF UNIVERSITIES IN THE EUROPE OF KNOWLEDGE**

Communication & Consultation from the European Commission

### **RESPONSE FROM UHI MILLENNIUM INSTITUTE**

UHI Millennium Institute (UHI) supports the general comments in response to this Consultation submitted by Scotland Europa. In addition, we would wish to highlight some specific issues relating to universities in remote, sparsely populated areas.

The development of UHI over the past 12 years has involved considerable debate on the role of a university in a rural region, much of which is relevant to the current consultation. UHI is a unique institution – a partnership of 15 colleges and research institutions, delivering degree and higher national programmes, continuing professional development and lifelong learning, research programmes and research activities. Students may also have access to a network of over 60 learning centres, some located in the most remote communities. The partners are located across the Highlands and Islands of Scotland, a region larger than Belgium with a population density of 9.2 per sq km, typified by a mountainous terrain and over 90 inhabited islands.

The UHI project was set in motion in 1992, with the primary objective of establishing a University of the Highlands and Islands. The project sought to draw on the distinctive cultures and characteristics of the region to provide enhanced opportunities for access to Higher Education across a range of subjects, to contribute to the economic development and to help the area it serves. Since the project began, it has attracted nearly £100m in funding, including over £15m from European Union Structural Funds. These funds have been used to enhance provision in the partner colleges and to build the academic, administrative and electronic infrastructure to work towards meeting the very high expectations of UHI in the diverse and various communities of the Highlands & Islands. Central to the impetus was the clearly defined need for a university institution to help generate and reinvigorate the economic, social and cultural development and enhancement of the communities served by UHI.

UHI is an evolving institution, harnessing existing provision, both in terms of the physical estate and the staff of colleges and institutes, to build and grow a university that seeks to join up tertiary sector provision. Instead of building and staffing a university alongside existing further education provision, UHI delivers Higher Education and training utilising the existing infrastructure, allowing a seamless transition from further education to Higher Education and providing integrated and articulated learning opportunities throughout this vast area of the UK.

UHI was designated as a Higher Education Institution in April 2001, enabling further development of university-level programmes. Degree courses are currently validated by the Open University Validation Services and at present there are over 5500 students studying on university-level courses with UHI.

The stated aims are to achieve university status in 2007 and to be recognised as a major contributor and innovator in the development of tertiary education; a real rather than a

virtual institution, harnessing the best of new learning technologies to support learning opportunities for both the population centres and the more scattered communities of the Highlands & Islands.

Thus, UHI is addressing the demand for Higher Education in a remote, sparsely populated area, working in partnership to overcome the geographical barriers and diseconomies of scale as well as the challenges highlighted in the Commission communication. The key to our success to date has been the will to work in partnership – partnership amongst the component partners and with the economic and social drivers of the region (economic development agencies, local authorities, business and voluntary sectors).

One further element is the partnership work undertaken with other universities in similar circumstances, particularly in northern Scandinavia (including those in the Akademi Norr network in Sweden, Lapland, Bodo and Akureyri Universities). The INTERREG III Programme has supported valuable work with these partners, from comparative studies of Higher Education provision in northern periphery areas to joint provision of modules in Remote Learning and Nordic Studies, through the development of a ‘virtual learning community’.

Already, there is evidence of increased access through UHI provision, extending opportunities for lifelong learning – often to people who have previously been excluded from Higher Education.

As we address common challenges to universities in creating the Europe of Knowledge, there is a need to ensure that the remaining barriers to participation are addressed; these must include geographical location as well as socio-economic circumstances. The higher unit costs of delivery in remote, sparsely populated areas, including technology enhanced learning, should be properly compensated and commitment given to the participation of those operating in remote and peripheral locations.

To achieve the targets of the Bologna Process and create an inclusive European Area of Higher Education, it is crucial that such areas are fully addressed.

Linda Stewart  
European Initiatives Co-ordinator  
24 May 2003

## **Universities Scotland response to the Commission of the European Communities on 'The role of the universities in the Europe of knowledge'**

### **Context**

Universities Scotland is the autonomous voice of the higher education sector in Scotland. It is a membership organisation, funded by the 21 Scottish universities and colleges of higher education to support and promote them. All our members provide essentially degree-level education and in total 15 of them (14 universities and one university college) have the powers to award taught and research degrees. A further two have the power to award taught degrees and the remainder have all their degrees accredited by universities. Our response should therefore be taken in general to refer to all our member institutions, who all undertake teaching and research and whose qualifications are overwhelmingly first and second-cycle qualifications within the definitions of the Bologna process. For the sake of accuracy, we tend to use the term higher education institutions.

Our member institutions are diverse in character, enabling them to meet a wide range of needs. Universities Scotland exists to promote their good work, to argue for the public support needed to maintain and build on their achievements, and to develop policy on Scottish higher education issues.

### **General comments**

Universities Scotland welcomes this consultation and the opportunity to respond to it. We believe that universities and our other higher education institutions are central to the development of the knowledge society and economy and we warmly welcome the fact that this is recognised in the consultation document. There is considerable diversity both within and between the higher education systems of EC member states and this is likely to increase with the accession of new member states. For this reason it is difficult to give full and/or precise answers to the questions posed in the consultation. For this reason, it is important to avoid generalising and making statements about higher education institutions or universities across Europe which might not be accurate for the whole of Europe.

### **Consultation Questions**

#### **1. How can adequate public funding of universities be secured, given the budgetary constraints and the need to ensure democratic access?**

This is a crucial question and one which most member states are currently finding difficult. In Scotland, the system of funding by the then Scottish Office through the Scottish Higher Education Funding Council and from students through tuition fees was changed when tuition fees were abolished and a limited amount of financial support was restored to students from the poorest backgrounds through non-repayable bursaries. Although tuition fees were abolished, the shortfall is made good by the Scottish Executive. Students now also pay a Graduate Endowment, which is not a fee payable to the universities, but a contribution which helps to pay for bursaries for students from the least well-off backgrounds. Universities Scotland broadly supports the new system of

funding. However, it is worth noting that this system has not secured adequate public funding for our universities.

It is difficult to find a system which would find support across Europe, but we offer the following principles for a system of funding:

There should be a contribution made towards some of the costs of the provision of higher education by the main beneficiaries. This includes governments, students and employers.

'Up-front' contributions by students should be avoided. Any form of financial contribution should be made by graduates once they are in employment, not by students while undertaking their studies.

A mixed system of loans (available to all) and targeted bursaries/grants (available to the least well-off) should be available to provide financial support to students while undertaking their studies.

Governments should provide some funding to universities to assist them in commercialising their research and related activities.

## **2. How can private donations be made more attractive, particularly from a tax and legal point of view?**

Lessons could be drawn from the system in the United States of America, where there is a well-established and highly successful culture of private donations to higher education institutions. Good practice across Europe and in other countries could be shared and perhaps drawn on. Tax incentives for donations would be a useful starting point. In the United Kingdom, universities are increasingly seeking to diversify their income sources by establishing or developing their Alumni and/or Development Campaigns. However, there is no significant established culture of private donations to HEIs and it is therefore necessary to find other means of making such donations more attractive.

## **3. How can universities be given the necessary flexibility to allow them to take greater advantage of the booming market in services?**

It is difficult to answer this question without having more information about what lies behind it and in particular without knowing what the spread of practice is across Europe. However, it is worth noting that 27% of the income of Scottish higher education institutions comes from wholly private sources.

## **4. How can the maintenance of democratic access to higher education be combined with a reduction in failure and dropout rates among students?**

This is a difficult issue to address, partly because the terms 'democratic access', 'failure' and 'dropout' do not always mean the same thing to all people. There appears to be an assumption underlying this question that 'democratic access' implies an increase in failure/drop-out rates. Scotland has a high age participation rate in higher education, now marginally over 50%, combined with a non-completion rate of only 16%. Scotland's HEIs continue to seek to improve access to higher education to students from non-traditional backgrounds, from less well-off backgrounds and 'first generation' students (where there is no family history of higher education). While experience is mixed, it is

often reported by institutions that some of their best and most highly motivated students are their 'wider access' students. It is important that there are support structures and mechanisms which are appropriate for the increasingly diverse student population. As diversity of the student population and of the modes of attendance/delivery of provision increases, so the need for additional investment and resource to provide appropriate support will also increase.

**5. How can a better match be achieved between supply of and demand for university qualifications on the labour market, through better guidance?**

Again, it is difficult to answer this question in a way that would be useful across Europe. In Scotland, there are mixed means of seeking to address these issues. Nonetheless, students are, and we believe should remain, free to choose the programmes of learning they wish to undertake and institutions are generally free to teach the subjects they wish to teach. Overall publicly funded student numbers are controlled and there are some subjects where numbers are either strictly controlled (such as Medicine and Teacher Education) or where there are incentives to recruit more students (such as Engineering or some Sciences). In Scotland, the recently formed FutureSkills Scotland is intended to help improve available intelligence on labour market needs, current and future and to help disseminate information to key stakeholders, including education and training providers. Links and communications between universities and employers can always be improved, although Universities Scotland continues to seek to improve our dialogue with employers and their representatives.

**6. Is there a case for levelling out the duration of courses for identical qualifications?**

No. Universities Scotland notes the assertion contained in the document that the 'differences in duration, even between countries who mutually recognise their qualifications, are striking when one considers that there is widespread support for the Bologna process...'. There appear to be some underlying assumptions here which might usefully be tested. Firstly, the Bologna process is about creating a European Area for Higher Education, but not about creating uniformity – either between, or within countries. The outcomes of a number of Bologna Seminars do not indicate that signatory countries wish to reduce significantly the diversity of European higher education. Secondly, qualifications at the same level within a qualifications framework or even with the same title, may have different volumes of learning, different pedagogical approaches and different requirements in terms of aspects such as assimilation, maturity, etc.. Similarly, different modes of delivery or attendance are likely to result in differing durations of courses, even for so-called 'identical' qualifications. Our experience of developing the Scottish Credit and Qualifications Framework (which brings together qualifications from four different sectors of education and training, including higher education) indicates the importance of considering outputs of learning, rather than inputs, when seeking to compare qualifications and levels of learning. As the importance of and emphasis on lifelong learning increases across Europe, the notion of seeking to level out the duration of courses for similar or identical courses is likely to be increasingly less attractive or logical.

## **7. How can the transparency of research costs in the universities be enhanced?**

Since January 2002, higher education institutions have been required by the UK government to report annually on the costs of research via the Transparent Approach to Costing (TRAC) system. This system of financial management was developed by the Joint Costing and pricing Steering Group. The TRAC methodology is used by institutions to report costs for teaching, research and other primary activities to their funding councils: in Scotland's case institutions report to the Scottish Higher Education Funding Council (SHEFC). It may, therefore, be possible to adapt this approach to suit the needs of a European research area.

There are a number of standard mechanisms which can be applied to make research costs more transparent. However, all of these demand a more managerial approach to research, increased resource for administration and management and more time applied by academic and research staff to record keeping. For example, cost ledgers, timesheets, activity-based costing would all make research costs more transparent. However, these would all be relatively resource-intensive and, within a finite budget, there is a danger that the costs of transparency would subtract from the resources available for research. The fundamental balance between volume of research and transparency of costs is a high-level policy issue.

## **8. How could it be made easier for universities and researchers to set up companies to apply the results of their research and to reap the benefits?**

The more fundamental question needs to be addressed, as to what are the benefits and how does company creation fit with institutions' strategic direction and core mission? The ease with which universities can set up companies is often constrained by internal practices, due in part to differing missions and the particular culture of each university. This makes it difficult to adopt common practices. There are a number of initiatives in Scotland which are having, or beginning to have an impact on this process such as the Scottish Enterprise Proof of Concept Fund, student incubators – small units for students to test out an idea, the Scottish Institute for Enterprise (SIE) which aims to foster a more entrepreneurial culture in Scotland's graduates. In addition, many universities have innovation parks, with business incubators.

At institutional level, there needs to be the correct internal support infrastructure with the appropriate skill sets and financial backing to allow this to happen. However, it is vital to ensure that the companies that have been created are truly the appropriate vehicles for effective exploitation of the technology and there should be very clear arrangements in place to cover issues such as allocation of equity and conflict of interests.

Current funding levels for commercialisation/innovation offices reflect the relative priority that institutions attach to commercialisation. In order to shift commercialisation higher up the priority agenda for institutions increased **additional** resources are required to do this. Funding is needed to help universities replace the expertise they lose when an inventor spins out and more business management expertise and training is needed to guide academic entrepreneurs through the learning curve to commercialise.

More early stage Venture Capital funding is needed – government needs to provide incentive to Venture Capitalists to take the risk.

**9. Is there a way of encouraging the universities and researchers to identify, manage and make the best of the commercial potential of their research?**

The reasons for engaging in the whole knowledge transfer agenda are wide and varied. There is no simple model. Correspondingly, a wide and varied set of incentives and mechanisms needs to be developed to accommodate this.

Individual universities will need to be very clear as to what is the balance of the drivers that are appropriate for their particular institution to engage in commercialisation between driving financial benefit, generating societal benefit and generating economic benefit. Universities Scotland has developed a framework for recording the wide range of knowledge transfer activities undertaken by the higher education institutions in Scotland. As a result of this work, Universities Scotland has been, and still is, in discussion with SHEFC as to how the full range of knowledge transfer activities can be recognised and supported through allocation of the Knowledge Transfer Grant from academic year 2004-05 onwards.

The university 'commercialisation' offices and their staff are key catalysts in this process: advising academics on the best method to exploit their discoveries and brokering the most appropriate deal for the technology or know-how with industry. However, most commercialisation offices in universities are under-resourced and need increased resources if this activity is to be ramped-up. As stated in the previous question, to move commercialisation up the priority agenda for institutions additional resources need to be made available to make it a core part of an institution's strategic objectives.

**10. What are the obstacles which today limit the realisation of this potential, whether legislative in nature or as regards intellectual property rights? How can they be overcome, particularly in countries where the university is funded almost exclusively from the public purse?**

The lack of a Community-wide patent makes protection expensive, both for universities and SMEs. Not having a single European patent on a cost basis equivalent to the US is undoubtedly a barrier but not one which is insurmountable. A key issue is that the universities have to be prepared to invest a percentage of their overall research activity and undertaking this type of activity over an extended period of time.

Given that a commercialisation office is a relatively high overhead then there are clearly opportunities for partnerships between larger universities and smaller research institutions or between consortia of smaller research institutions in a given geographical area. However, this process needs to be managed by the universities themselves not by third parties such as economic development agencies.

Academics cannot easily be seconded to industry to gain a commercial perspective as they are usually hard to replace due to their specialism and the lack of funding to cover finding and employing a suitable replacement.

Perhaps industry could be brought to the universities – make it easy for companies to second their staff into academia at no cost to academia. This would give academia the benefit of commercial perspective.

**11. How can the consensus be strengthened around the need to promote excellence in the universities in conditions which make it possible to combine autonomy and management efficiency?**

The fundamental question is a philosophical and/or political one and there is a division on thinking on this. A market approach can lead to excellence, but also to closure of institutions and narrowing of focus. We believe that excellence should be supported and promoted. However, in a situation of limited resource, further support for excellence means less support for non-excellence. A free-market approach would undoubtedly lead to excellence in the universities which survived, but would mean that some universities would fail. Therefore, there may be some benefits in adopting a market approach, but this should be tempered with a desire to retain breadth and diversity of provision: in both subject and geographical location terms.

**12. Is there a way of encouraging the universities to manage themselves as efficiently as possible while taking due account simultaneously of their own requirements and the legitimate expectations of society in their regard?**

There are a variety of ways of encouraging better or more efficient management, but these will and must vary between sectors and their national, legal and governance contexts. In Scotland, the Scottish Higher Education Funding Council acts as a 'buffer' body between the Scottish Executive and the higher education institutions. The Council receives a 'letter of guidance' every year from the Minister for Enterprise and Lifelong Learning, and the Council is expected, in consultation with HEIs and in particular with Universities Scotland, to find ways of ensuring that the legitimate expectations of society are met, in ways which do not stifle the creativity and autonomy which are characteristics of higher education institutions in Scotland. This appears generally to work well in our context.

**13. What are the steps which would make it possible to encourage interdisciplinary approach in university work and who should take them?**

There is an underlying assumption that interdisciplinary research is a good thing and an end in itself. The more fundamental question should address the benefits and objectives of interdisciplinary research as a prerequisite to convincing institutions to change institutional objectives. Once these are identified it becomes possible to define the mechanisms to achieve them. In many cases, initiatives will only work on a 'bottom-up' approach, i.e. where academics generally want to work together rather than a desire to foster interdisciplinary collaboration from on high. During the last UK Research Assessment Exercise in 2001, there was a wide-spread perception that interdisciplinary research was not reviewed as equitably as single units of assessment and that this was therefore discouraging.

It must be remembered that universities are competitors. Collaboration will occur, but there is inherent competition between institutions and it therefore it may not necessarily always be in their best interests to collaborate. Institutions will continue to work together only when a clear 'win-win' situation has been identified.

However, Universities Scotland believes that there is already considerable interdisciplinary teaching and research across the Scottish higher education sector and funding streams for this should continue. And, it is equally important that individual innovators should be allowed and supported to flourish.

**14. How can providers of university funds be encouraged to concentrate their efforts on excellence, particularly in the area of research, so as to attain a European critical mass which can remain competitive in the international league?**

Universities Scotland supports the principle that excellent research, at international and national levels, should be supported wherever it is found. However, funding excellence should not occur at the expense of 'choking-off' new and emerging areas of activity. It is important not simply to adopt the 'selectivity' approach, particularly given the close link between teaching and research. It is vital to stimulate research in new areas and to pump-prime areas which are not currently in the international top league, but show potential for development.

The risk is that innovation and commercial application are stifled. We need an entrepreneurial research culture, which values innovation and risk-taking.

**15. How should this excellence be organised and disseminated, whilst managing the impact of the steps taken on all institutions and research teams?**

There is no short or easy answer to this question. Framework 6 paves the way but will undoubtedly cause great difficulties too as the legal management of interdisciplinary/international collaborations is very costly.

Priority should be given to funding training and dissemination activities to underpin and further develop the research undertaken by institutions. This research must be fed into policy areas, in order to optimise the overall benefit.

**16. How can the European Union contribute more and better to the development and maintenance of academic excellence in Europe?**

It is not necessarily appropriate that all potential areas of excellence are centrally identified. Collaboration at all levels can only be successful when it is developed by those directly involved with the teaching/research activities. Therefore, a 'bottom-up' approach rather than a central Directive is likely to be more beneficial. Within the allocation of finite resources, the Commission will have to encourage better networking between the Centres of Excellence which should not seek to direct research being carried out by the national Research Councils.

**17. What steps could be taken to make scientific and technical studies and careers more attractive, and to strengthen the presence of women in research?**

Any effective action needs to start long before a student enters higher education. The decline of interest in science amongst young people and its perceived unattractiveness to women is a reflection of changes in society at large. More steps should be undertaken at the primary/secondary school level to present science as an attractive career option. The key will be to alter the attitudes of schoolteachers and to change the presentation of science in the popular media. In addition, making such careers better rewarded and more highly valued will have a strong influence on the current and later generations. More work by professional bodies is perhaps also needed to attract youths to science.

Incentives to attract more woman into research in higher education could include: an equal pay proofed payscale; crèches in all universities; financial incentives to return to work; financial disincentives to universities if the percentage of female research staffing drops too low. It is also important to address the lack of opportunities in the private sector for female scientists, for example, opportunities for retraining, returning after career breaks, greater use of job-sharing, amongst others.

**18. How – and by whom – should the task of career development opportunities following doctoral studies be addressed in Europe, and how could the independence of researchers in carrying out their tasks be fostered? What efforts could universities make in this regard, taking particular account of the needs of Europe as a whole?**

Lack of career development following doctoral studies concerns both national/regional governments, the EU, private (particularly large companies and their representatives such as employer federations), public sector including Local Enterprise Companies, Trade Unions and universities.

Transferable skills are commonly taught on UK PhD programmes and form part of initiatives such as the Research Councils' UKGrad programme, a programme developed in response to national concerns about the 'fitness for employment' of UK doctoral graduates.

**19. What ways are there of helping European universities to gain access to a pool of resources (students, teachers and researchers) having a European dimension, by removing obstacles to mobility?**

Obstacles to mobility of both students and staff could be reduced by increasing the level of funding. Students require larger grants as an incentive to study abroad and staff require support for relocation. In addition, in the case of single parents or mature students, support for dependents of staff and students may be required.

In addition to the costs of replacing staff, one of the main obstacles for institutions associated with the mobility of their academic staff is the difficult to replace specialist knowledge of their academics.

**20. How can European universities be made more attractive to the best students and researchers from all over the world?**

In research terms, this means competitive salaries and the overall quality of the research infrastructure available. Unless more funding is made available, quality of the facilities in Europe will fall behind those of our peer groups in the US and in Japan making Europe a less attractive proposition. Paying the full economic costs of research to ensure infrastructure is attractive will depend largely on public resources being adequate. Also important are: attracting and retaining researchers with international reputation, which will in turn attract new staff; the level of support, such as pastoral care (e.g. accommodation, putting in touch with fellow compatriots, support for family); language training; and continuing training.

More could also be done to market effectively the quality of life aspects and the historical and cultural experience of working in Europe. Through coming to Europe to work,

individuals can be given the opportunity to experience working in several countries during a single visit. This is a genuine competitive advantage that Europe can offer over the US which is not effectively marketed currently.

The relaxation of visa legislation to allow for a limited amount of working would be beneficial.

**21. In a context of increasing internationalisation of teaching and research and of accreditation for professional purposes, how should the structures, study programmes and management methods of European universities be changed to help them retain or recover their competitiveness?**

Management methods require the accommodation of a range of different cultural approaches and contexts. Universities are generally in competition with each other and it is difficult to see how shared management methods would apply across the whole of Europe. The development of ECTS and of national qualifications frameworks might be helpful in this regard, however.

**22. In what areas, and how, could the universities contribute more to local and regional development?**

The universities have a key role to play in local and regional economic development. And in Scotland, our higher education institutions are already making significant contributions. But, it depends on the university and its location as to what is the right amount. Areas where universities contribute include: social policy; economic development; urban planning; housing; cultural development; contribution to national agendas such as fisheries and agriculture, which clearly have a regional impact; and Continuing Professional Development (CPD) for many sectors in the economy is also important. And more often than not, universities are major employers in a particular area.

In Scotland the LECs, Scottish Enterprise and the Regional Economic Forums are all seeking ways to encourage engagement in the local economy, and there are many indications of response by universities. This could be reinforced by staff secondments to regional agencies, and vice versa.

Innovation arises from the research activities of higher education institutions. However the biggest challenge faced in Scotland is how to exploit these discoveries in Scotland. The industry base in Scotland is predominantly comprised of SMEs which have a history of not being proactive about interacting with universities and Scottish companies invest significantly less in Research and Development (R & D) than their counterparts in the rest of the UK. Indeed, Scottish companies invest less than half the national average in R & D activity, which in turn invests less than half that of the top seven OECD countries. SMEs should be incentivised to interact more with universities and their facilities.

**23. What ways are there of strengthening the development of centres of knowledge bringing together at regional level the various players involved in the production and transfer of knowledge?**

Once again, the centres of knowledge transfer can only be developed and strengthened if the objectives are clear. Knowledge Transfer is not an end in itself, but a means to an

end. There are many ends to choose from (financial return, SME competitiveness, student employability to name but a few). These are not entirely complementary and it is essential that the fundamental objectives are defined before the mechanisms can be optimised.

The main funding streams that institutions have access to support teaching and research. It is only in recent years that funding mechanisms to address other priorities have been introduced, for example University Challenge Fund and Science Enterprise Challenge and in Scotland, the Scottish Enterprise Proof of Concept Fund and SHEFC's Knowledge Transfer Grant. Scottish Enterprise is also creating three Intermediary Technology Institutes (ITIs) which aim to play a key role in the creation of a vibrant Scottish sector in three market areas – Life Sciences, Energy and Communications Technologies & Digital Media.

The Scottish Institute for Enterprise (SIE) is another development in Scotland which although not fully yet effective, is a good basis for the future. SIE's work embraces two key areas of activity: Culture Change and Knowledge Transfer. Its vision is to promote and strengthen the enterprise culture that is already strong in Scotland's universities. Through developing and delivering entrepreneurship education programmes which help student entrepreneurs achieve their aims.

Scotland enjoys an exceptionally strong enterprise culture, with many start-ups and spin-outs achieved over the last decade. The challenge today is to increase both the volume of start-ups and their quality. Student entrepreneurs need practical business knowledge and the support which will help them identify market opportunities for their original ideas. SIE exists also to enhance and increase the transfer of knowledge between business and academia, and to convert the commercial potential of university research into real economic advantage for Scotland.

#### **24. How can greater account be taken of the regional dimension in European research, education and training projects and programmes?**

Once again this comes down to funding. ESF and ERDF are useful, but are only applicable to certain regions, and are regarded as overly bureaucratic in operation. Real costs are ignored and schemes are only part-funded. Universities often reject such funding sources because of this, but their aim is exactly that of the question. Reform of the process and alignment to university procedures and different contexts would help greatly.

# REFERENCES

SHEFC-Scottish Enterprise report, "Research and Knowledge Transfer in Scotland", March 2002,  
<http://www.shefc.ac.uk/content/library/consult/2002/hec0302/Task%20Group%20Report%20-%20pdf.pdf>

Scottish Executive, "The Lifelong Learning Strategy for Scotland", February 2003,  
<http://www.scotland.gov.uk/library5/lifelong/lism-00.asp>

Scottish Executive, "A Smart, Successful Scotland: Ambitions for the Enterprise Networks", October 2001, <http://www.scotland.gov.uk/library3/enterprise/sss-00.asp>

Scottish Executive, "A Science Strategy for Scotland", January 2001,  
<http://www.scotland.gov.uk/library3/education/ssfs-oo.asp>

Scottish Executive, "A Framework for Higher Education. Higher Education Review: Phase 2", March 2003, <http://www.scotland.gov.uk/library5/lifelong/herp2-00.asp>

Technology Ventures Scotland, 'Bridging the Gap: A Discussion Paper on Knowledge Transfer in Scotland', March 2003,  
[http://www.technologyscotland.org/news/pdf/btg\\_2003.pdf?NewsRelevTop](http://www.technologyscotland.org/news/pdf/btg_2003.pdf?NewsRelevTop)

# **ABOUT SCOTLAND EUROPA AND ITS RESEARCH EDUCATION AND TRAINING GROUP**

## **SCOTLAND EUROPA**

Scotland Europa, in Brussels, is an alliance of public, private and civil society bodies networking Scotland in Europe. It was launched in May 1992 and in July 1999 joined forces with the Scottish Executive in "Scotland House." Its aim is to promote Scotland's interests to the key institutions of the European Union and to the regions of the EU and beyond.

A subsidiary of Scottish Enterprise (the primary economic development agency for Scotland), it is a joint venture with approximately 60 members representing Scotland's public, business, educational, local government, trade union and voluntary sectors such as VisitScotland, Scottish Natural Heritage, the Universities, CoSLA (local government), Scottish Financial Enterprise, Scotch Whisky Association, STUC (trade unions), British Energy etc..

Following the creation of the Scottish Parliament, Scotland Europa opened Scotland House in the heart of Brussels' EU district as a focal point for Scottish interests in the city. As well as Scotland Europa's own offices, Scotland House also hosts the Scottish Executive EU Office, the Scottish Parliament, CoSLA, the Highlands and Islands European Partnership, some key industry associations, the Eurodesk Brussels Link and some partner regions from other member states: The Czech Republic, East Finland and the Dublin Regional Authority.

Scotland House includes a well equipped modern Conference / Seminar / Reception facility for up to 150 guests and is available for hire, with priority given to Scottish interests.

Scotland Europa services to members include:

- EU intelligence, including the Scotland Europa Report (an up-to-the-minute overview and analysis of current EU issues);
- Analysis, interpretation and briefings on EU policy developments;
- EU funding advice;
- Members' Groups: Research, Education and Training, Environment & Energy and an 'e-Group';
- Regional cooperation including sourcing transnational partners;
- Fostering contacts with the EU institutions;
- Conference facilities, meeting rooms and desk space in Brussels.

**Scotland Europa, Scotland House, RP Schuman 6, Brussels, B 1040**  
**Tel 00 3 22 282 8315. E-mail; [information.desk@scotent.co.uk](mailto:information.desk@scotent.co.uk)**  
**See our website at [www.scotlandeuropa.com](http://www.scotlandeuropa.com)**

## RESEARCH, EDUCATION AND TRAINING GROUP

The Scotland Europa Research, Education & Training Group was established to promote the interests of Scottish education in Europe and to offer strategic and practical help to the education sector in building European partnerships and in accessing EU programmes.

The Group comprises seven of Scotland's universities, the UHI Millennium Institute, Universities Scotland, the Royal Society of Edinburgh, the Association of Scottish Colleges, the West of Scotland Colleges' Partnership and the Scottish Qualifications Authority.

Scotland Europa actively carries out a variety of support measures, including disseminating information about education, training and research developments across the EU, maintaining and developing links with other European regions and organisations working in the field of education and advising on policy, legislation and funding opportunities at European level.

Scotland Europa provides an important link between education establishments in Scotland and the European institutions. This is important in raising the profile of Scottish education, research and training, influencing the EU's decision-making process and optimising the potential benefits of EU policies and programmes in this field.

In 2001 Scotland Europa established a European BioRegions Network to promote the biotech industry within the EU, contribute to the development of EU policy with an appropriate regional focus and to access EU R&D funding. The European Bioregions Network is an open coalition of regional biotechnology groups that aims to develop closer interregional co-operation and build stronger networks of biotechnology clusters across Europe.

More recently, the Group has focused on developing capacity to access the funding available in the 2002-6 EU Sixth Research Framework Programme, including the production of a CD-ROM in advance of the launch of the programme. Furthermore, the Group has held a series of useful meetings on key issues including the new generation Community education and training programmes in the context of developing lifelong learning in Scotland. It has also produced several Scotland Europa papers in addition to the joint response to the EU consultation on the future role of universities (May 2003) :

Paper No. 21: March 2001

**Glasgow the Learning City: Lifelong Learning & Regeneration**

Jonathan Clark, Scottish Enterprise Glasgow

Paper No. 20: March 2001

**A New Institute for the New Economy: The Institute for the Knowledge Economy**

R. Nigel Kay, Deputy Director Information Strategy, University of Strathclyde

Paper No. 17: June 1999

**The European Employment Strategy: Implications for Scotland**

Kirsty Macdonald, Development Executive, Scotland Europa

Special Paper: April 1996

**Learning From Scotland:** The Scotland Europa Education and Training Group

## MEMBERS OF THE RESEARCH, EDUCATION AND TRAINING GROUP

Association of Scottish Colleges	<a href="http://www.ascol.org.uk/">http://www.ascol.org.uk/</a>
Royal Society of Edinburgh	<a href="http://www.royalsoced.org.uk/">http://www.royalsoced.org.uk/</a>
Scottish Crop Research Institute (SCRI)	<a href="http://www.scri.sari.ac.uk/">http://www.scri.sari.ac.uk/</a>
Scottish Qualifications Authority	<a href="http://www.sqa.org.uk/">http://www.sqa.org.uk/</a>
The Robert Gordon University	<a href="http://www.rgu.ac.uk/">http://www.rgu.ac.uk/</a>
UHI Millennium Institute	<a href="http://www.uhi.ac.uk/">http://www.uhi.ac.uk/</a>
Universities Scotland	<a href="http://www.universities-scotland.ac.uk/">http://www.universities-scotland.ac.uk/</a>
University of Abertay Dundee	<a href="http://www.abertay.ac.uk/">http://www.abertay.ac.uk/</a>
University of Edinburgh	<a href="http://www.ed.ac.uk/">http://www.ed.ac.uk/</a>
University of Glasgow	<a href="http://www.gla.ac.uk/">http://www.gla.ac.uk/</a>
University of Paisley	<a href="http://www.paisley.ac.uk/">http://www.paisley.ac.uk/</a>
University of Stirling	<a href="http://www.stir.ac.uk/">http://www.stir.ac.uk/</a>
University of Strathclyde	<a href="http://www.strath.ac.uk/departments/">http://www.strath.ac.uk/departments/</a>
West of Scotland Colleges' Partnership	<a href="http://www.woscop.co.uk/">http://www.woscop.co.uk/</a>

**For further information on the Research, Education and Training Group please contact:**

**Paul Harris  
Scotland Europa  
Scotland House  
RP Schuman 6  
1040 Brussels  
Belgium**

**Tel: +32 2 282 8303**

**Fax: +32 2 282 8318**

**[paul.harris@scotent.co.uk](mailto:paul.harris@scotent.co.uk)**

SCOTLAND EUROPA ★

Scotland House Rond-Point Schuman 6 B-1040 Brussels T +32 (0)2 282 8315 F +32 (0)2 282 8300

Also at: Scottish Enterprise 5 Atlantic Quay 150 Broomielaw Glasgow G2 8LU T +44 (0) 141 248 2700 F +44 (0) 141 228 2114

W [www.scotlandeuropa.com](http://www.scotlandeuropa.com) E [information.desk@scotent.co.uk](mailto:information.desk@scotent.co.uk)