

## **Evidence from the Engineering Council to the Independent review of Higher Education Funding and Student Finance**

### **Introduction**

This paper is submitted by the Engineering Council on behalf of itself, the Royal Academy of Engineering and the professional engineering institutions. The professional engineering community makes a particular contribution to the quality of teaching and learning in Higher Education, through its accreditation of degree programmes and through its support for innovative approaches. We have a vested interest in the quantity and quality of graduate engineers and would like to highlight some key points which may be helpful for the review panel to take into account as it develops proposals for the higher education sector as a whole.

### **Recruitment trends**

Engineering contributes significantly to the UK economy, for example manufacturing represents over 50% of our country's exports and the UK is the sixth largest manufacturing economy in the world<sup>1</sup>. UK exports of engineering services are valued at more than £4 billion per annum, making it one of the highest export earning sectors outside finance<sup>2</sup>. There is widespread acceptance that we will need more engineers to carry out significant infrastructure projects to face challenges in areas such as transport, power generation, and the transition to a low carbon economy.

In 2008/09 Engineering and Technology accounted for 10% of Higher Education FTE students (this figure includes subjects within Computer Science which represent approximately 4% FTE). Engineering and Technology excluding Computer Science is one of the Strategically Important and Vulnerable Subjects (SIVS) identified in the HEFCE advisory group 2005 report<sup>3</sup>.

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<sup>1</sup> Engineering UK 2009/10 Report. [www.engineeringuk.com](http://www.engineeringuk.com) (accessed April 2010)

<sup>2</sup> Office of National Statistics: UK Balance of Payments 2009, Chapter 3

<sup>3</sup> Strategically Important and Vulnerable Subjects. The HEFCE advisory group's report [www.hefce.ac.uk](http://www.hefce.ac.uk) (accessed April 2010)

Levels of student recruitment vary between engineering disciplines. While the number of FTE undergraduate students taking engineering fell by 4% between 1999-2000 and 2007-8, there is encouraging data from recent years showing that, for example, civil engineering and chemical engineering numbers have increased at a rate well beyond the average for all subjects; applicant figures for 2009 showed double-digit percentage increases in UK applications for most types of engineering degree; and even electrical and electronic engineering, which have had the most difficulty recruiting in recent years, showed increases of more than 7 per cent<sup>4</sup>.

Any new regime for HE funding and student finance must build on this welcome increase in engineering student recruitment and avoid introducing disincentives such as higher fees for subjects such as engineering, that risk un-doing the progress achieved so far.

### **Funding for part-time students and innovative provision**

Engineering is an expensive discipline to teach. A sustainable funding system must take account of this and ensure that UK engineering higher education is properly funded across all disciplines to ensure that it retains its high quality and attractiveness, including to non-UK students.

An area of concern is that the current funding arrangements treat part-time students unfairly compared to full-time students, and any funding proposal should seek to remove this unfairness. Removing disincentives to part-time students is especially important since, due to demographic trends, employer pressure and other factors, there is the emergence of innovative forms of degree provision that are designed to appeal to non-traditional students including those who are part-time, work-based or distance learners. The Higher Ambitions report<sup>5</sup> refers to the shift away from the 3 year full-time model of HE and the increasing number of mature entrants in the future.

It is therefore disappointing to note that the number of part-time students in engineering has shown a decline in recent years, at a time when the engineering profession has never been more open to innovative HE provision<sup>6</sup>. This is evident

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<sup>4</sup> Strategically Important and Vulnerable Subjects, op.cit

<sup>5</sup> <http://www.bis.gov.uk/higherambitions>

<sup>6</sup> Strategically Important and Vulnerable Subjects, op.cit

from the support for the Engineering Council's framework for work-based degrees<sup>7</sup>, developed as part of the 'Gateways to the Professions' initiative, and the support for the innovative approaches outlined in the Royal Academy of Engineering's report 'Engineering graduates for industry' (February 2010)<sup>8</sup>. It is imperative that any new funding regime builds on this momentum by ensuring sufficient support for all types of student. The type and nature of engineering provision will continue to adapt to meet the needs of an increasingly diverse student body, and whilst some of the associated costs are incurred during the set-up phase, a sustainable funding regime should take account of other associated and longer term costs.

The Academy's report concludes that experience-led teaching makes a valuable high impact contribution to the education of engineering undergraduates and supports a range of skills that industry needs. While this approach result produces graduates with a wider skill set, there are associated costs of capital investment as well as funding for recurrent costs. For six departments examined in the Academy's report, independent analysis showed the programmes were underfunded on average by 15%. In 2009, the government signalled its intention to find a mechanism to identify higher education programmes that 'make special contribution to meeting economic and social priorities' and to redeploy funds...to those institutions that are able and willing to develop new or expanded provision in such areas<sup>9</sup>.

The Engineering Graduates for Industry report calls on HEFCE to seize this opportunity for focused ring-fenced funding from which universities could enhance experience-led engineering degree courses. We reiterate this here.

The Professional Engineering Institutions make a particular contribution to the quality of engineering degree programmes through their accreditation processes, using standards developed by the Engineering Council which are based on outcomes. We are among the few groups who provide independent scrutiny and quality assurance of degree programmes across most universities in the sector. The review panel may wish to consider how similar accreditation mechanisms could be implemented across other subject areas.

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<sup>7</sup> <http://www.engc.org.uk/education--skills/engineering-gateways>

<sup>8</sup> [www.raeng.org.uk/news/publications/list/reports/Engineering\\_graduates\\_for\\_industry\\_report.pdf](http://www.raeng.org.uk/news/publications/list/reports/Engineering_graduates_for_industry_report.pdf)

<sup>9</sup> [www.hefce.ac.uk/news/HEFCE/2009/grant1011/letter.htm](http://www.hefce.ac.uk/news/HEFCE/2009/grant1011/letter.htm)

## **Tuition Fees**

Any departure from the current position where HE is free at the point of use, risks reducing access and is likely to be a barrier to widening participation. The present system of the fee loan being repayable following graduation carries fewer risks in this respect.

Engineering is by its nature an expensive discipline to teach and therefore the introduction of tuition fees that are discipline dependent would be likely to lead to a downturn in engineering applications. This is counter to the UK's skills need and we would caution against such a move.

We recognise that due to the rising cost of provision, it is likely that the current cap on tuition fees will have to be lifted. To counteract any negative impact of this on recruitment, there is an urgent need to ensure that universities, careers advisers and other bodies such as Engineering UK provide as much information to prospective students, their parents and advisers about sources of funding such as bursaries and about average earnings that they might expect after graduation.

The market alone cannot achieve all that is required to meet our skills needs so there will always be a role for public funding. However the contribution that employers could make should not be overlooked. Employers are able to recognise value in HE, and despite the difficult economic climate, where they see value for money they are willing to contribute to student fees especially where this will meet their business needs. Innovative funding regimes involving employers, that include recognition and reward for them, must be a part of the funding mix.

Modular provision is now common and presents the opportunity for a staged payment system that may facilitate more widespread uptake of part-time provision.

Any new HE funding regime should make it easier for universities to collaborate in offering an undergraduate programme where each institution contributes its own sub-discipline cutting-edge strengths. There are a few examples of this in engineering at master's level, with such provision being attractive to industry and to students. The widespread adoption of credit accumulation and transfer arrangements should strengthen a number of different approaches to collaboration between universities.

## **Widening Participation**

There is a worrying trend that over the last ten years the number of undergraduates studying engineering and technology subjects in Post-1992 HEIs has declined by 13% while over the same period there has been growth in student recruitment to Pre-1992 HEIs<sup>10</sup>. This is something of a concern, as Post-1992 universities are where widening participation has occurred most and efforts should be targeted to reverse the decline.

It is encouraging to note that following a dip in the earlier part of the decade, more students want to study science at school. These trends are very encouraging for areas of skills-needs such as engineering, and HEFCE's £30 million scheme to support universities in shifting the balance of their provision into STEM subjects is welcome. Whilst engineering may be a beneficiary of this approach, we recognise that this has negative impacts in other discipline areas.

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<sup>10</sup> Strategically Important and Vulnerable Subjects, op.cit