



**Unite the Union response to the Innovation, Universities, Science and Skills Committee, inquiry into Putting science and engineering at the heart of Government policy.**

**This response is submitted by Unite the Union. Unite is the UK's largest trade union with 2 million members across the private and public sectors. The union's members work in a range of industries including manufacturing, financial services, print, media, construction, transport and local government, education, health and not for profit sectors.**

### **Executive Summary**

- The potential growth of the UK manufacturing sector is predicated on a thriving and successful science and engineering research base.
- The future funding and investment in research centres and higher education institutions by government is vital to UK manufacturing innovation and research and development.
- Science and engineering policy must be viewed holistically, from education policy through to the successful financial exploitation of goods and services researched, designed and produced in the UK by UK workers.
- There is enormous potential in the purchasing power of government public procurement to stimulate innovation in its suppliers and manufacturing excellence and efficiency in the UK.
- Government must re-evaluate its laissez-faire attitude to UK manufacturing and its contribution to the UK economy by appointing an effective Minister for Manufacturing.

- Unite believes the creation of a Department for Science is a crucial step forward, especially as Lord Drayson is now the Minister for Science.
- There is overwhelming evidence that a national strategy for the teaching of science, technology, engineering and mathematics (STEM) subjects is required.
- Unite is clear that there needs to be a rigorous marketing campaign to encourage teachers and careers advisors to raise the profile of studying science and engineering and the career options available.
- The Haldane principle is fine in principle but the 25% claw back by government must be targeted at forwarding science and engineering research in the UK and ensuring there is a balance between academic institutions, the needs of UK industry and the wider international community.
- To ensure there is a growth in the development of new and innovative products and services in the Space sector, government must create a climate conducive to all stakeholders involved in the sector.

## **1.Introduction**

1.1Unite welcomes the opportunity to respond to this consultation. Unite represents thousands of members who work within a large number of industrial sectors that rely heavily on innovation and scientific research and development. These workers are crucial to manufacturing industry across the globe and it is the retention and promotion of UK scientists and engineers that is of vital importance to many of the most dynamic and progressive companies in the UK.

1.2Unite works extensively with employers across the manufacturing sector and a large number of them have consistently expressed concern about the systematic changes within science and engineering teaching, the quality of higher education provision, the loss of Physics grants across the UK and the ‘knock-on’ effect these have on the wider manufacturing sector and ultimately the UK economy.

1.3Government ignores at its peril the innovation and R&D requirements of new growth industries such as climate change objectives, research into new forms of energy, research which can be transferred into environmentally friendly products and services, the sheer growth of onward technological change required in the defence industry with the wars in Afghanistan and Iraq, Space innovation and how the world will feed itself in the future.

1.4It is clear that the potential for growth in the UK manufacturing sector is huge, but this growth is predicated on the science and engineering research base being well funded and important research centres being sufficiently resourced. To this end Unite believes that science and engineering policy cannot be seen in isolation but must be viewed holistically from education policy right through to the successful financial exploitation of products researched and designed in the UK by scientists and engineers working in the UK.

1.5Unite believes there is immense potential in using the enormous purchasing power of government public procurement to stimulate innovation amongst its suppliers. Procurement could be used to favour the brightest and best ideas in industry and assist in stimulating manufacturing excellence and efficiency in the UK.

## **2.Department for Science**

2.1Unite has consistently expressed concern that the present government does not take manufacturing seriously and has done little and achieved less in focussing on the role and contribution that manufacturing has to offer the UK economy.

2.2Unite believes that a Department for Science would be a step in the right direction; especially as Lord Drayson is now the Minister for Science, and could contribute greatly to a focus and strategic overview that is currently lacking. Unite would like to see a consistent, pragmatic approach to science and engineering policy in the UK. Unite has noted that too many Ministerial changes, the imposition of new education policies, the cuts in science funding coupled with the lack of a committed Minister for manufacturing has created a situation where UK industry is consistently falling behind in the global market.

2.3 The EU Lisbon Strategy which calls for a high value, highly skilled workforce is predicated on the production of a high number of highly educated, highly skilled workers being produced consistently in the UK. UK expenditure on research and development is currently 1.73% of GDP<sup>1</sup> which means the target of achieving R&D intensity of 3% of GDP for the whole of the European Union by 2010 is clearly unachievable and UK government and business must work together to improve this situation.

### **3. Education and training**

3.1 Unite believes there should be a national strategy for the teaching of science, technology, engineering and mathematics (STEM) subjects which needs to have a clear focus and objective and also to be free of over burdening bureaucratic involvement. The UK government has introduced a huge number of new education initiatives, which have yet to bed down and produce systematic positive results.

3.2 There also needs to be a clear delineation in the statistics around STEM subject degree qualifiers, how many are from UK students and how many from students from abroad but studying in the UK. The proportion of foreign PhD students is second only to the USA and this is especially true of engineering; 51% of engineering doctoral degrees from UK universities are awarded to overseas students.<sup>2</sup>

3.3 It is vital that new educational structures and further education training schemes are accountable and transparent. Unite works extensively with employers to ensure there is significant work place training for workers and in this way everyone can enjoy the benefits of a life-long learning agenda that in turn benefits UK business and the UK economy.

3.4 Unite has expressed serious concerns about the decline in the number of entrants to STEM subject A levels. This really does need to be addressed and it is vital that young people and their parents receive the correct information to allow them to make the right choices when choosing their subject choices. Unite also believes that the suggestion to increase the UCAS points value for STEM subjects could increase the value of these subjects to students and encourage more young people to opt for those subjects.

3.5 Teachers and careers advisors are in a position to highlight the benefits and the broad career choices that are available from studying science and engineering. It is clear that government policy which is forcing the closure of physics department across the UK must be addressed. Cutting grants at a time when government is saying that 'a high value, highly skilled workforce is the key to wealth creation in the future'<sup>3</sup>, is madness. There should be no further cuts in research grants to universities and Unite would want to see an increase to at least previous levels of funding for science and engineering.

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<sup>1</sup> Science, technology and innovation in Europe, Eurostat Pocket Book 2008 edition.

<sup>2</sup> Internationalisation of R&D in the UK: a review of the evidence, Arthur D. Little with Prof Reinilde Veugelers, November 2005.

<sup>3</sup> Prime Minister, the Rt Hon Gordon Brown MP.

#### **4.Haldane principle**

4.1 Unite believes that the Research Councils do an excellent job of supporting the balance required between industry and academia. The present set up where 25% of the funding for Research Councils is clawed back by government for specific research targets is fine as long as government uses the funding to forward science and engineering in the UK and works closely with industry to ensure research projects selected are strategic, pragmatic and innovative.

4.2 Unite would also like to see a specific link between certain research institutions and industry. In this way Unite believes that a greater balance will be achieved in ensuring that research undertaken by academic institutions is not purely done for the financial rewards but is balanced by the needs of UK industry and the wider international community.

4.3 Unite is clear that there should be a national science and engineering policy. There is scope for regional initiatives which could chime with key research work being undertaken by research institutions that may also be linked to local companies. Unite also recognises that the UK needs to be centre stage of any science or Space policy in Europe. The UK cannot afford to devolve satellite services and Space policy purely to Europe but it is imperative that the UK government when formulating policy does not work in isolation of what is happening in Europe and in the wider international community.

#### **5.Space**

5.1 The UK Space sector currently contributes around £7 billion to the UK economy<sup>4</sup>. Space is an excellent example of a sector that is providing world class research in astronomy, solar physics and planetary science, but suffers from haphazard policy decisions and a lack of commitment by government for strategic investment.

5.2 The sector has also achieved scientific excellence in Earth science, understanding climate change and world-class environment forecasting. This will not continue unless government commits fundamentally to the long term financial investment that is needed for a 'blue-sky' sector.

5.3 To ensure the development of new and innovative products and services, to increase the UK share of this growing international sector, government must create a climate where science and engineering policy encourages young people to study science and engineering and also brings together research institutions and industry to develop products and services that benefit the wider international community and the UK economy.

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<sup>4</sup> UK Civil Space Strategy 2008-2012 and beyond.

## **Unite Recommendations**

- Government must acknowledge the importance of manufacturing to the UK economy and appoint an effective Minister for Manufacturing.
- Government must ensure the relevant Research Councils are sufficiently funded to ensure that science and engineering receive the high profile they require and the consistent investment they need.
- Unite believes science and engineering policy should be viewed holistically, from education and training policy through to the successful exploitation of products and services.
- Unite believes government should be encouraging the use of public procurement to stimulate innovation amongst its suppliers.
- Unite believes research and development and launch aid investment should be linked and used to create and sustain manufacturing jobs in the UK.
- Unite believes there should be a Department for Science and this should include engineering and innovation.
- Unite believes government still has substantial work to do to achieve the goals set out in the EU Lisbon strategy for a high value, highly skilled workforce.
- Unite believes the trade union movement should have a substantial role in the development of skills and training within the workplace and a training levy should be introduced if employers consistently refuse to train their workers.
- Unite believes there should be a national strategy for the teaching and development of STEM subjects in the UK.
- Unite believes the profile of manufacturing and the career opportunities it offers needs to be developed and improved.
- Unite believes there should be a national science and engineering policy with scope for regional initiatives and opportunities.

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