Engineering the Future response to the House of Lords Science and Technology Select Committee's call for evidence on "public procurement as a tool to stimulate innovation"

1. The role of public procurement as a tool for stimulating commercially valuable innovation within industry

1.1. The government intends to "rebalance" the economy, by which it means, *inter alia*, expanding the manufacturing and technology sectors.[1] In these sectors the UK can compete most effectively internationally at the high end of the value chain, so the key to rebalancing the economy is encouraging and enabling technological innovation.[2] One way of achieving this would be to increase public funding in relevant areas, such as education and science, but such a move has been ruled out for the foreseeable future. Thus the government must look for other approaches to encouraging innovation, for example introducing reforms which make existing public investment more effective. Whilst there may be some scope for continuing to improve the effectiveness of government investment in areas directly associated with innovation, incremental changes to a relatively small proportion of total government spending are unlikely to bring about a step change in the UK economy as a whole. Rather, if the government is serious about rebalancing the economy, it must seek to harness the £220 billion[3] currently deployed in public procurement.

1.2. It is worth noting that stimulating innovation through procurement would create two main benefits. The first, reinvigorating the manufacturing and technology sectors, appears to be the focus of the Select Committee. However, the second, improving public services at reduced long term costs, provides an equally compelling argument for bringing about change.

1.3. There are three main categories of public procurement:[4]

1.3.1. *Public procurement of goods and services.* For these types of procurement, the procurers can, where appropriate, stimulate innovation by specifying levels of performance that are not achievable with "off-the-shelf" solutions and hence require an innovative approach from suppliers. For this to be effective procurers must set outcome based purchasing specifications; that is, they must give potential suppliers the freedom to develop new means of meeting the desired end. Contrary to the common view, European Union procurement directives to do not preclude such an approach to public procurement.[5]

1.3.2. *Pre-commercial procurement*. This is procurement of research and development (R&D) towards the creation of new goods and services required by the private sector; it is procurement where the principal purpose is innovation. Typically, pre-commercial procurement will take place in a number of stages. The procurer will fund developers through a particular

[1] See for example the speech by the Prime Minister, "Transforming the British economy: Coalition strategy for economic growth", delivered on 28 May 2010
[2] *The Race to the top: a review of government's science and innovation policies* (HM Treasury, 2007)
[3] Figure from www.ogc.gov.uk (03/12/2010)
[4] Edler, Jakob et al (2005), *Innovation and Public Procurement – Review of Issues at Stake*, Study for the European Commission ENTR/03/04
[5] L. Georghiou, *Demanding Innovation: lead markets, public procurement and innovation* (Nesta, 2007)

stage (for example exploration and feasibility) and if that is successful provide additional funding for the next stage (for example prototyping). Each party benefits: the procurer stimulates development of products and services in which they are interested whilst the developer gets crucial access to funds and an intelligent lead customer to guide and validate the product development.

1.3.3. *Catalytic procurement.* This is where the government stimulates private demand by acting as launch customer for goods or products which are intended to be used more widely. This can be important for meeting national challenges which require changes across the economy, including in the private sector, for example the challenge of reducing carbon emissions. An example of a catalytic procurement in this area is the government's recent "retrofit the future" procurement[6], under which contractors designed and installed low carbon retrofits to social housing. The innovations developed through this procurement will later be available for use in other private sector projects.

2. The successes and failures of current public procurement processes, mechanisms and tools in stimulating innovation within industry

2.1. *Public procurement of goods and services.* The Office of Government Commerce (OGC) has put in place a number of services to help procurers operate best practice. For example, the OGC's Policy and Standards Framework is an online portal to guide public sector workers through the principles and processes of procurement. However, despite these efforts, public procurement of goods and services is not yet being used effectively to stimulate innovation. The National Audit Office reports that "government organisations are not systematically taking the opportunity to use suppliers to generate innovative ideas."[7]

2.2. Government procurers tend to buy well-tried, "off-the-shelf" products and services. They often base decisions on initial price, when they should be considering whole-life costs.[8] Procuring innovation requires government to be an "intelligent customer" with requisite technical expertise, but very often procurers do not possess technical expertise themselves nor do they have ready access to it.[9] Procurers in the public sector operate under a system whereby they face heavy criticism for procurements which end badly but gain little or no recognition for procurements which, through innovation, turn out better than would otherwise have been expected. This makes them risk averse.[10] Public procurers often buy new products and services wholesale, rather than understanding what they have already and how it can be maintained or updated by smaller, innovative procurements.

2.3. There are particular problems around access to public contracts for SMEs. Problems include SMEs not knowing where to find out what opportunities are

[6] http://www.innovateuk.org/competitions/retrofit-for-the-future.ashx
[7] *Innovation across central government* (NAO, 2009)
[8] *Costing the future: securing value for money through sustainable procurement* (WSBF, 2008)
[9] *Engineering: turning ideas into reality* (Innovation, Universities, Science and Skills Select Committee, 2009)
[10] As discussed at a recent conference in Brussels: http://www.euractiv.com/en/enterprise-jobs/innovation-hampered-risk-averse-public-authorities-news-373313

available and, if they do, finding they do not meet the necessary requirements to put in a bid. In 2005/6 only 16% of the total value of central government contracts was won by SMEs.[11] As SMEs tend to be particularly innovative, the barriers to their participation in public procurement are of great concern.

2.4. *Pre-commercial and catalytic procurement.* The UK's main vehicle for pre-commercial and catalytic procurement is the Small Business Research Initiative (SBRI), set up in 2001 with a view to fulfilling a similar role to the extremely successful SBIR programme in the United States. SBIR has been in place since the early 1980s and has had a huge impact. For example, SBIR schemes administered by the National Institutes of Health between 1992 and 2001 resulted in 666 new patents, 453 new copyrights and 322 new trademarks. Companies involved in SBIR schemes administered by the National Science Foundation generated cumulative total sales of $2.2 billion directly attributable to their involvement in SBIR, with another $6.9 billion indirectly related to SBIR research. It has been estimated that, as a source of early stage finance, SBIR is at least as important as venture capital to American companies.[12]

2.5. For a long time after its introduction in 2001, SBRI was ineffective, with few departments participating and the majority of grants going to policy studies or research grants rather than technology development. However, following recommendations by Lord Sainsbury, SBRI was reformed in 2008.[13] SBRI schemes now operate under a four stage process:

2.5.1. Government departments or agencies identify an operational or policy problem for which there may be a technological solution

2.5.2. After an open tender, companies with promising solutions are awarded R&D contracts to test the feasibility of their solutions

2.5.3. Companies which successfully demonstrate feasibility are then awarded further contracts to develop working prototypes

2.5.4. The public sector either procures the resultant technology (pre-commercial procurement) or the technology enters the open market (catalytic procurement)

2.6. Government departments and agencies are not required by statute to utilise SBRI, whereas US departments and agencies are required, by Act of Congress, to run SBIR schemes. SBRI therefore does not operate on the same scale as SBIR. Nonetheless, since the reform of SBRI the schemes which are being run have proved successful. In June 2010, a Nesta evaluation of the reformed SBRI was positive. The procuring departments and agencies say that many of the ideas that SBRI is generating have the potential to improve services. Companies that had secured contracts through SBRI say that the opportunity to work under contract to a customer with a clear idea of what they want aids the R&D process considerably.[14]

[11] *Accelerating the SME economic engine: through transparent, simple and strategic procurement* (HM Treasury, 2008)
[12] Statistics for the SBIR scheme from D. Connell, "*Secrets" of the world's largest seed capital fund* (2006)
[13] *The Race to the top: a review of government's science and innovation policies* (HM Treasury, 2007)
[14] *Buying Power? Is the Small Business Research Initiative for procuring R&D driving innovation in the UK?* (Nesta, 2010)

2.7. Alongside SBRI, Forward Commitment Procurement (FCP) is small in scale but has proved effective. Through FCP, government has created a credible procurement process to develop and buy innovative products and services which will reduce the negative environmental impact of various government programmes. The "zero mattress solution for prisons" is a good example of what can be achieved through FCP.[15]

2.8. *International comparisons.* Innovation is notoriously difficult to measure, and hence it is difficult to make international comparisons of how effectively public procurement is used to stimulate innovation. However, Nesta has attempted to do so using evidence from the *Global Competitive Report* published by the World Economic Forum (WEF). Respondents to WEF's Executive Opinion Survey reported to what extent they thought procurement decisions by their government resulted in technological innovation. The UK scored worse than the United States, Finland, Sweden, South Korea, Canada and the Netherlands, but slightly better than France and Germany.[16]

3. Potential mechanisms and processes for stimulating innovation in industry through public procurement

3.1. The great opportunity provided by public procurement derives from the fact that procurements take place across the whole of the public sector and the sums of money are so large. This, however, is also the reason why bringing about change will be such a challenge: responsibility lies not just with the department and agencies with direct responsibility for innovation, but with civil servants across government, for most of whom innovation is not their primary concern.

3.2. If badly managed, the current imperative to reduce public spending could be very damaging to the innovation agenda. The focus on reducing waste could make procurers even more risk averse than they have been in the past. They could come under more pressure to opt for contractors offering lowest initial price, rather than contractors offering lowest whole-life cost. However, if managed effectively, current policy imperatives could aid the innovation agenda. Civil servants must see their challenge as maintaining the quality of services at the same time as making long term cost savings. When the aim of policy is construed in this way, best practice procurement and innovation becomes, rather than a hindrance, a powerful tool. The Office of Government Commerce must make clear that best practice procurement is that which creates opportunities for innovation. To incentivise adoption of best practice, the government could create a central "invest to save" fund, managed by BIS or the TSB, which departments and agencies could apply to for additional funding for innovative procurements which will make long term savings.

3.3. Leadership from very senior levels of government will be important. The coalition government has set an "aspiration" to increase the proportion of government contracts that go to SMEs to 25%.[17] This is to welcome, but the aspiration will

[15] http://www.bis.gov.uk/assets/biscore/corporate/migratedd/publications/c/cs01_fcp.pdf
[16] *The wider conditions for innovation in the UK* (Nesta, 2009), p.60-1. For the original data see *The Global Competitive Report 2010-11* (WEF), p.492
[17] http://www.cabinetoffice.gov.uk/newsroom/news_releases/2010/101101-openup.aspx

only make a difference if its importance is continually reemphasised over a period of years. The Minister for Universities and Science will have an important role leading, enabling and advocating change, but it might be beneficial if a Minister in each department was given responsibility for ensuring - where possible - procurements within their department's remit serve to encourage innovation.

3.4. Specific actions are required to increase technical knowledge in the civil service and to reduce risk aversion amongst government procurers. More trained and experienced engineers should be recruited into all levels of the civil service, with the Engineering Fast Stream expanded and refined. Government should make full use of the expertise offered by the professional engineering community through Engineering the Future.[18]

3.5. SBRI has potential but it will only grow if government departments and agencies make use of the programme. If departments are looking to make minor reductions in immediate costs, they will be deterred from engaging with SBRI. However, if they are looking to make more dramatic savings in the medium and long terms, while at the same time improving services, engaging with SBRI will be extremely beneficial. Options for increasing the extent to which SBRI is utilised include ring fencing a proportion of departments' budget for investment in SBRI schemes and providing the TSB with a small additional fund of money so that it can co-fund SBRI competitions alongside the sponsoring department or agency.

3.6. For SBRI to grow, key procuring departments must engage with the programme, including the Department for Health (DH), Ministry of Defence (MoD) and Department for Transport (DfT). Since SBRI was reformed, a high proportion of the competitions which it has run have concerned public health, with Strategic Health Authorities, often working alongside Regional Development Agencies, serving as sponsors. The abolition of regional bodies could therefore damage SBRI, and the Department of Health must ensure that, following reorganisation, the NHS continues to engage with the programme. The Ministry of Defence has also made much use of SBRI and this must continue, as must the MoD's other effective procurement schemes such as the Centre for Defence Enterprise.

3.7. There are strong arguments for using EU investment, including Framework Programme 8, to support pre-commercial procurement programmes such as SBRI. The European Union's recent communication, *Innovation Union*, focused strongly on pre-commercial procurement. The communication stated: "Because public procurement markets remain fragmented across Europe, procurements often fail to achieve the critical scale needed to trigger innovative investments…[the Commission will] use the ongoing general evaluation of the current directives to examine the opportunity to introduce additional rules to make cross border joint procurements easier." BIS and the TSB should engage in this process.[19]

[18] *Engineering: turning ideas into reality* (Innovation, Universities, Science and Skills Select Committee, 2009); *Engineering the future: a vision for the future of UK engineering* (EtF, 2010), pp.11ff
[19] *Innovation Union* (EU, 2010), pp.16 - 17

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