

CCS Roadmap

Skills and supply chain

April 2012

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We are:

- undertaking more detailed **supply chain mapping** as the basis for future work connecting opportunities and weaknesses in the supply chain
- **working with and influencing key organisations** such as BIS, UKTI and the sector skills councils to ensure their programmes meet the requirement of the CCS industry
- **ensuring that lessons are learnt from more mature non carbon supply chains (e.g. wind and nuclear) and overseas activities**
- **undertaking research into the non-financial barriers facing CCS and the opportunities available to UK based suppliers**

Skills

- 1.1. It is important that companies within the CCS supply chain maintain a strong pool of skilled people for the successful development and deployment of CCS within the UK and abroad. Many of the skills needed are common with other, related industries including power generation, chemical and process engineering, pipelines, offshore engineering and geological exploration; however many of these sectors report shortages of skilled staff. Many of the issues faced in securing a trained workforce to meet the demands for CCS are identical to those of other sectors.
- 1.2. The “Meeting the Low Carbon Skills Challenge” consultation set out the Government’s views on the key skills-related priorities and challenges to be met to:
 - Enable British workers and businesses to take advantage of the opportunities in the sectors key to reducing carbon emissions;
 - Embed the necessary skills across all sectors to move the UK to a low carbon and resource efficient economy.
- 1.3. Several key themes were raised by consultees;
- 1.4. The **need for a more flexible and responsive skills delivery system** which better reflects current and future business needs. It was however, also noted that new low carbon businesses would benefit from placing more emphasis on highlighting the skills they require;
- 1.5. It stated that Government would need to find better ways to inform and stimulate demand if the UK are to have the skilled workforce we need in the numbers required;

- 1.6. **The need for more flexible, fundable qualifications which support work-based learning.** It was clear that many saw continuous career development as key to a more flexible and productive workforce, particularly where new combinations of skills are needed. Businesses and employees would also benefit from more emphasis on continuous skill development (which requires co-investment); and
- 1.7. The need for more support and promotion of **STEM skills** (science, technology, engineering and mathematics) to improve STEM skills development, and so that the UK workforce has a greater basic understanding of sciences and mathematics on which to build; STEM subjects again is a recurring theme and will remain so across the low carbon sector.
- 1.8. Furthermore, amongst those currently gaining STEM skills, we need to encourage them to take on engineering courses that will enable them to take on some of the specific post graduate CCS opportunities available.
- 1.9. **More recognition is required across the supply chain of the need for low carbon or resource efficiency skills**, meaning that there was likely to be a case for Government in supporting the industry in raising awareness and promoting the opportunities in both STEM skills generally and CCS in particular. Direct support for CCS specific master classes, academic courses and training programmes that have been created and are being delivered across the UK, would help to improve awareness within the supply chain.
- 1.10. **To meet the UK's climate targets will require a significant ramp-up of a range low-carbon technologies – all with significant requirements for the same STEM skills.** A skills bottle-neck will therefore be created and CCS will be one technology competing for these skills. There may be a role for Government to manage this skills bottleneck to ensure the appropriate mix of technologies can be brought forward in the right timeframe to meet targets.
- 1.11. For CCS the challenge is not to develop a work force with specific skills, but to expand the existing skills base to accommodate future demand. There is a challenge in bringing together three sectors traditionally regarded as separate – power generation, transport and offshore operations – into a new sector. This is, however, likely to increase the demand for manufacturing skills and those qualified in Science and Technology with industry meeting the demand for specific training of those individuals. The CBI have stated that skills associated with the CCS sector are “integral to success” in the global market place and require a greater take up of “STEM” subjects within schools, and further and higher education. It is also essential that we understand what is required to attract those with STEM skills into the sector.
- 1.12. There is also a timing challenge. There is no point preparing people for jobs in the CCS sector if those jobs do not materialise in line with expectations. Any action also has to recognise the ability of the labour market to meet demand without intervention, by individuals with relevant skills and experience transferring that experience to related areas as part of the normal cycle of labour movement. The Government is willing to work with the CCS industry to undertake an assessment of the skills needed in this sector, when they might be required and how they might be secured. For example, there may be a particular issue about certain specific skills such as offshore engineering or the need for specialised training provision to meet the emerging needs of the CCS industry.

Supply Chain

- 2.1. It is recognised that the supply chain for constructing an integrated CCS project will be complex and a range of business and contractual relationships will emerge as the sector matures. The Government has no role in dictating these arrangements, other than to ensure that the available public funding does not distort these normal commercial processes, as well as fulfilling the Government's strategy for public procurement to support business and stimulate growth.
- 2.2. A study carried out on behalf of DECC by AEA Technology (2010 – URN 09/738) suggested significant value added to the UK economy from CCS and related clean coal technologies, reaching £2 - 4 billion each year by 2030. Similarly, the report estimated that the level of CCS activity would sustain 70,000 - 100,000 jobs in the UK by 2030. Of this total about 50% will be in existing businesses activities (e.g. boiler and steam turbine design and manufacture), with the remaining 50% in new employment activities associated with CCS services (e.g. design and manufacture of capture, transport and storage facilities).
- 2.3. The CCS Commercialisation Programme will be crucial in the development of a UK CCS supply chain so that it can become a commercially viable low carbon technology by 2020. Early phase CCS projects will offer six types of opportunity to UK based businesses:
 - at the construction stage the opportunity to supply equipment and services
 - on-going services during operation
 - decommissioning
 - supply equipment and services to other countries.
 - supply storage capacity to other countries on the United Kingdom Continental Shelf (UKCS)
 - providing decommissioning services to other countries

Progress So Far

- 3.1. The approach for CCS will be consistent with the Government's wider approach to public procurement. It will aim to stimulate growth as well as deliver the programme outcomes.
- 3.2. BIS published the Skills for Sustainable Growth Strategy in November 2010. The main thrust of the Strategy was for the skills agenda to be "market led" rather than Government being prescriptive in how companies should address skills issues.
- 3.3. The Strategy provides a number of recommendations, including:

- expansion of the numbers of adult Apprenticeships available by up to 75,000 by 2014–15. There is an opportunity here for sector skills councils to include CCS specific content within apprenticeships with an intention to have a specific CCS strands available when required.
- support for employers in addressing their skills needs through a new Growth and Innovation Fund of up to £50 million. This provides an opportunity for developing transition training. For example, Cogent (a sector skills agency) have led a collaboration to develop a series of small, flexible qualifications to support resource efficiency and the intention is to develop further cross-sectoral qualifications to support sustainable business practice.
- Funding to support initiatives taken by employers to build modern high-performing workplaces. Organisations developing CCS capability should be looking to access this support.

Activities

- 4.1. DECC will continue to work closely with BIS and others to ensure that CCS companies gain benefit from the Skills and Sustainable Growth Strategy.
- 4.2. DECC will work closely with the Sector Skills Councils, the National Skills Academy for Power, Academic Institutions and the Carbon Capture and Storage Association to ensure that skills gaps are identified and addressed. The Research Councils have already established Doctorate Training Centres which contribute to postgraduate training in CCS. DECC will work with the Research Councils and the new UK CCS Research Centre to ensure wider training needs are met.
- 4.3. Also, given the importance of ensuring that no aspect of the supply chain acts as a barrier to the future deployment of CCS, DECC recently commissioned AEA Technology to examine the non-financial barriers to the commercial deployment of CCS within the UK power sector.
- 4.4. The study, which is due for completion in Spring 2012, will examine the ability of the UK supply chain to deliver the UK's CCS needs in the future. Engagement with stakeholders across the CCS supply chain, to determine their views on any barriers to the UK supply chain, will form a crucial part of this study.
- 4.5. This study, however, will not just be limited to identifying supply chain barriers; by looking at future needs, and ability of the UK to deliver those needs, the study will also highlight opportunities for future growth in UK supply chain following the roll out of commercial scale CCS within the UK
- 4.6. Emerging results from the study indicate that the UK supply chain has the necessary expertise and capability to deliver a major part of the demand during the early commercialisation phase. However, the CCS capacity and corresponding demand for CCS-related components, services and skills are expected to increase significantly after that, and so the UK supply chain needs to develop in parallel to fill the gap. This provides

an opportunity for existing UK companies to develop their businesses to capture a significant share of the domestic market and to expand globally.

- 4.7. One of the main issues highlighted by the study is an expected decline in the number of UK engineering specialists and experts in the coming decade (an issue also alluded to in the skills section above). However, greater demand for these skills following the commercial deployment of CCS (alongside other low carbon technologies) is opportunity to offset, an even reverse, this decline. But there is no room for complacency: ensuring enough skilled workers are available domestically, particularly when CCS will be in competition with other low carbon technology sectors, will be crucial to the successful roll out of commercial CCS.
- 4.8. Other than skills, the study indicates that the roll out of CCS will lead to a large increase in demand for CCS-related components and services. This also represents an opportunity for UK supply companies to grow to meet these future needs. Encouragingly, however, the study's emerging results suggest that there are no non-financial supply chain barriers that will act as an impediment to domestic supply chain growth.
- 4.9. DECC will carefully examine the study's eventual findings, and will consider ways of addressing any barriers the study identifies . It will also share the findings with the CCS Development Forum to fully understand the implications of any barriers identified, and their views on how to address them. If newly identified barriers emerge from the study that need to be tackled we will add them to the CCS Action Plan.

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