Energy Skills

The Role of Scotland’s Universities and Colleges

Thank you for your request for further information on skills which was discussed during the evidence session on 16th May. The following submission was compiled with assistance of my colleagues Dr Simon Puttock of the Energy Technology Partnership (ETP) and Jim Brown of the Energy Skills Partnership (ESP) who are working together to deliver the skills agenda.

The rapid growth in the Renewable and Low Carbon sectors and continued high levels of activity in Oil and Gas has placed a much greater emphasis on the skills agenda and the need to match up the demand-side from industry with the supply-side, as provided by our universities, colleges, schools and through transition from the existing workforce. This is complex, both in terms of understanding what companies need, now and in the future and also providing students with the skills and knowledge that will be valued by industry.

The development of Scottish partnerships in both the university and college sectors has enabled Scotland to take a leading role in coordinating the ‘supply-side’ aspects and also help facilitate demand side discussions with organisations such as Skills Development Scotland.

The Energy Technology Partnership (ETP) is an alliance of independent Scottish Universities, engaged in world class related energy Research, Development and Demonstration (RD&D). ETP is the largest power and energy research partnership in Europe and promotes greater levels of collaboration between universities and industry to deliver unparalleled energy RD&D capability across a spectrum of energy technologies.

The Energy Skills Partnership (ESP) is a collaboration of colleges across Scotland, comprising core members and supporting associates. It aims to establish a high performing energy community which can respond flexibly and be responsive to industry requirements. It aims to do this through pooling expertise and resources, and reducing unnecessary duplication.

The formation of ETP and ESP is enabling Scotland to respond in a coordinated and unprecedented way to the twin challenges of providing both the number and type of engineering /technical employees required by industry, spanning from doctorates through to technical/vocational and with outreach into our schools.

<table>
<thead>
<tr>
<th>Doctorate</th>
<th>Masters</th>
<th>Degree</th>
<th>HND/HNC</th>
<th>Technical / Vocational</th>
<th>Schools</th>
</tr>
</thead>
</table>

This coordinated action by Scotland’s universities and colleges also supports the delivery of Scotland’s Energy Skills Action Plan and the work of the Energy Skills Action Group, attended by ETP and ESP.
From an engineering and technical perspective, the table below gives an indication of the scale of UK and EU student numbers studying (2010-11) at Scotland’s universities and colleges.

<table>
<thead>
<tr>
<th></th>
<th>Research Post-graduate</th>
<th>Taught post-graduate</th>
<th>Undergraduate</th>
<th>Colleges</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Scotland</strong></td>
<td>921</td>
<td>2,530</td>
<td>12,515</td>
<td>28,265</td>
</tr>
</tbody>
</table>

In addition there are a large number of university and college students from non-engineering courses that will enter the energy sector (e.g. business, social science, environmental etc.). If the cap were raised on the number of undergraduate engineering students then the universities would be able to increase the number of graduate engineers which are much needed by the energy industries.

**Coordinated Action**

The demand for a skilled workforce is being informed by working with Skills Development Scotland and other skills bodies. From the supply side perspective, ETP and ESP are leading on a number of coordinated initiatives to help deliver ‘industry ready’ employees into the workforce. These are in addition to the many skills-related initiatives that are led from individual universities and colleges.

For example:
1. Wind Turbine Technician Modern Apprenticeship at the Whitlock Energy Collaboration Centre, Carnegie College
2. ASET International Oil and Gas Academy, Aberdeen College
3. Engineering Technology an Energy Centre, North Highland College
4. Ineos partnership with Forth Valley College and Opito
5. Future Skills Centre, Adam Smith College
6. Sustainable Industries Institute, Dundee College
7. Scottish Maritime Academy, Banff and Buchan College

**Doctorate Level**

Scotland has a number of prestigious energy-related programmes.
- ETP’s Energy Industry Doctorate programme been running for two years and currently supports 45 high quality PhD studentships, all with strong industry engagement. Funding is in place for a further 40 available in 2012-13
- The University of Strathclyde hosts the UK’s only Doctoral Training Centre in Wind Energy Systems (£6m investment) that has strong links to industry and will train 60 students
- The Universities of Edinburgh and Strathclyde lead the UK’s Industrial Doctoral Centre in Offshore Renewable Energy (£6m) training a further 60 students

The above programmes are in addition to the many hundreds of other high quality energy-related PhDs that are currently underway across Scotland.
**Masters Level**

ETP has mapped out (for the first time) the entirety of the energy-related Master training being provided across Scotland’s Universities. Around 70 courses have been identified, comprising more than 1500 students. This information will be used for a number of purposes; working with industry to assess the fit between demand and supply and identifying gaps; marketing the courses internationally; promoting collaboration between course providers to reduce duplication and share material where appropriate.

Work is also underway to consider launching an industry-focused programme for Research based Masters degree similar in format to ETP’s very successful Industry Doctorate programme, albeit with shorter timescales (6 month versus 3.5 year projects).

**Continuing Professional Development**

The ETP member universities have for many years been (independently) delivering energy-related Continuing Professional Development (CPD) training, targeted primarily at up-skilling the existing workforce, both from within the energy sector and also transition training for those outwith. During 2012, ETP has compiled and marketed the overall offering of CPD courses across all its universities and in addition has received funding to offer a 50% industry discount to further encourage take up. This trial has been successful and with further funding will be continued. In addition more work will be done on the demand side with industry to assess how well the current CPD provision meets needs and where additional training courses are required.

This activity has further developed links between ETP and ESP with College staff also participating in the ETP run CPD events.

**Degree- HNC/HND Articulation**

HNC/Ds have a significant role to play in supporting industry and prepare individuals well for the world of work. Many of these students also aspire to progress to university to extend their qualifications to degree level and beyond. In order to achieve this five articulation hubs are actively working across Scotland to establish articulation pathways for individuals to progress to universities.

ETP and ESP have identified this as a priority and plan to take forward a project to investigate the potential for a pan-Scotland approach for articulation and the potential for colleges to also support undergraduates in developing their skills sets (reverse articulation).

**Technical / Vocational**

Colleges have a strong history in delivering both technical and vocational programmes for school pupils through to HNC/Ds.
This takes many forms namely Skills for Work, NC/NQs, Scottish and National Vocational Qualifications and Modern Apprenticeships as well as HNC/Ds.

Most colleges have local arrangements with employers for pre-apprenticeship courses with industry recruiting their apprentices directly from these programmes.

The college network also work with industry to develop and deliver customised programmes and specialised technical training.

**Capability and Capacity building**

Both ETP and ESP acknowledge the need to ensure college staff have up to date industry knowledge and experience. The ESP has already taken action to ensure the college network have the relevant skills to support companies in their aspirations for micro-renewables and are also establishing a network of colleges to support the Green Deal programme which will launch later this year.

ETP and ESP are working together to develop a more robust scheme to ensure the education and skills sector are well placed to support the energy sector’s skills needs for the future.

Professor Paul Mitchell, University of Aberdeen and Energy Technology Partnership
Dr Simon Puttock, Energy Technology Partnership
Jim Brown, Energy Skills Partnership
8 June 2012