

**NEW SKILLS AT WORK**

JPMORGAN CHASE & Co.

IPPR

# EUROPEAN CASE STUDY

## Low-carbon skills development in the UK: the approach of Liverpool City Region



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IPPR

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## 1. Introduction

This case study focuses on a particular, growing sector (or part) of the UK economy: low carbon. Whether this is thought of as an independent sector or a component of other existing sectors, is not important. What is important is that it has proven to be resilient to economic challenges over the years since 2008 and continues to present good growth potential.

The case study identifies the particular types of skills that are important for the sector and then looks in detail at the growth strategy – and particular the skills development strategy – adopted by one UK Local Enterprise Partnership, the Liverpool City Region.

## 2. Context

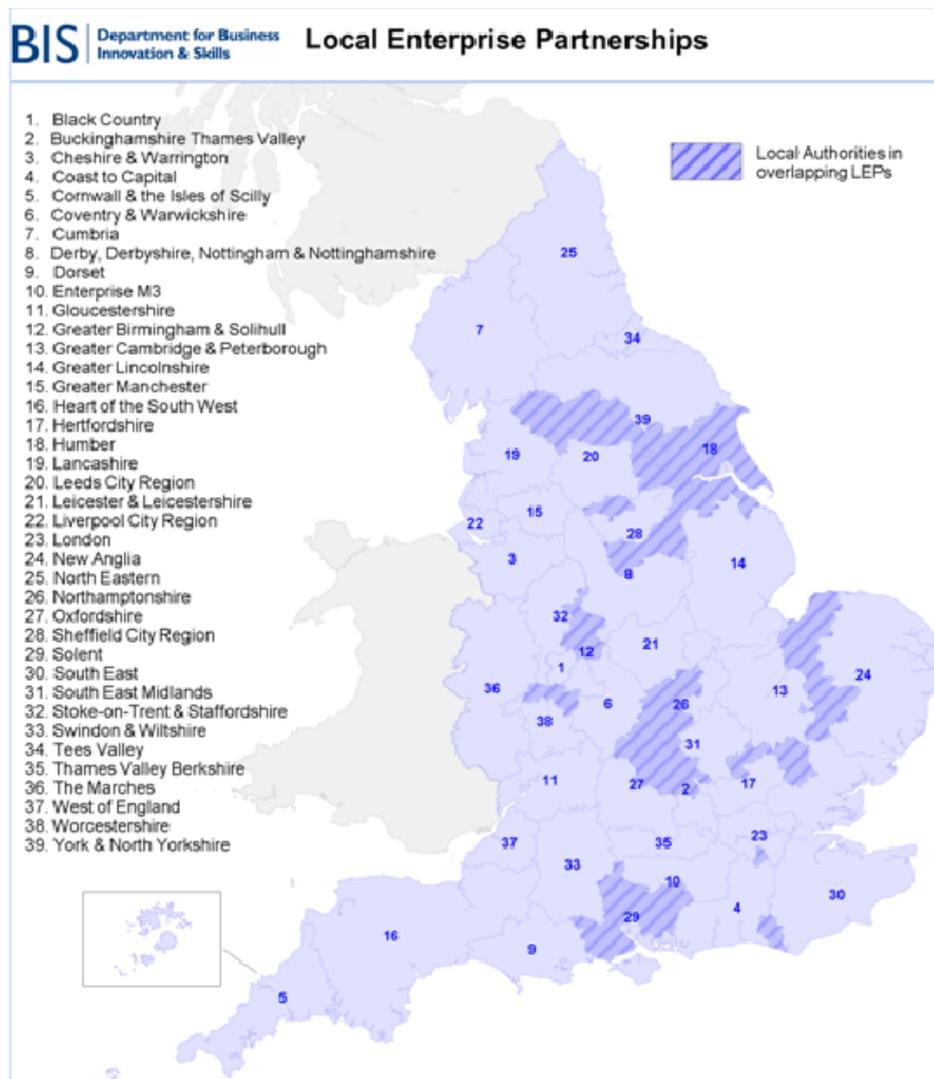
England's industrial structure, as with many European economies, has changed dramatically over recent decades. There has been a marked shift away from manufacturing towards services, both in terms of output and employment. Service-sector employment is loosely polarised between low-skilled customer service work and high-skilled 'knowledge' occupations. There are far fewer roles requiring mid-level skills.

At the same time, young people are finding it increasingly hard to get a foothold in the labour market, and the proportion of the workforce employed on full-time, permanent contracts has shrunk. The youth unemployment rate (16-24 year olds) now stands at 14.2 per cent and 6.3 per cent of the workforce remain on temporary contracts, of whom 34 per cent state they are in temporary employment because they could not find full-time work. This is partly cyclical, the result of recession followed by a stuttering recovery. The rise in temporary work, for example, might be expected to recede when the economy is again growing strongly enough to bring unemployment down to its pre-recession level of 5.2 per cent (ONS, 2015). Other changes, however, are the result of broader structural forces operating in the global economy: the rapid pace of technological innovation, globalisation and demographic change. These forces are likely to continue to cause dislocation and disruption to the UK labour market for the foreseeable future (Dolphin, 2015).

Given this, in order to ensure that the workforce can take advantage of the UK's return to economic growth, policymakers must emphasise the creation of quality jobs in this dynamic and global context. One of the most significant recent developments in employment, skills and economic development policies has been institutional changes, not least the abolition of Regional Development Agencies (RDAs). The Coalition government made a formal announcement of its intention to abolish RDAs shortly after taking office in May 2010 and the closure was finalised in 2012. Eight RDAs had been introduced in 1999 with a wide range of

responsibilities related to developing the economic prosperity of particular regions of England. These included promoting employment and enhancing the development and application of skills relevant to employment.

Some responsibilities of RDAs were passed upwards to the national tier and some were passed downwards to the local tier, to newly-established Local Enterprise Partnerships (LEPs). These were set up by the Government to drive the growth agenda at the local level. They cover 24 natural economic areas; these are often larger than local authority districts and counties but smaller than former RDA areas. They were intended to be constructed from the bottom up, through voluntary agreements between local businesses and other partners; they therefore vary in size and shape and even overlap in some cases (Cox et al. 2014). A map of all LEPs in England is included below.



Source: Department for Business, Innovation and Skills

The introduction of the LEPs is symptomatic of a wider move to shift employment and skills development from a centrally-driven supply-side focus - with the underpinning rationale being to raise skills levels as a means to achieve higher levels of employment, productivity and prosperity – to a demand-led system with greater input from employers and learners into its design and delivery. Employer engagement at the local level can help to improve the linkages between the education system and the world of work. The government has recognised this by moving towards a system where businesses have a greater voice in directing and delivering skills development opportunities.

In addition to the shift towards a more demand-led system, the wider process of devolution and city deals is opening up the possibility for local employment and training agencies to take a leadership role in developing employment and skills policies and also for adjusting programmes to local labour market conditions, which differ across England. LEPs, councils and local agencies have sought to build on the potential within their locality for opportunities within growing sectors.

One sector that has grown rapidly in recent years is the low-carbon sector: during the UK recession its annual turnover grew from £116bn (2008) to £128bn (2014). In response, many local employment programmes have been introduced to explicitly develop the skills required to capitalise on the low-carbon economy. The following section describes the low-carbon sector and the reasons why it has become a particularly attractive focus for employment policy.

### **3. Low-carbon sector development**

The creation of a low-carbon economy is now well established as an international goal through multilateral agreements to reduce the emission of greenhouse gases. This has created a \$3.2 trillion dollar market place for goods and services (Bowen and Kuralbayeva, 2015). Leaders of the United Nations Framework Convention on Climate Change secretariat and the International Labour Organization have argued that taking action to mitigate climate change can create high quality employment (Figueres and Ryder, 2014). Equally, the United Nations Environment Programme (UNEP) have claimed that the greening of economies is a net generator of decent jobs – good jobs that offer adequate wages, safe working conditions, job security, reasonable career prospects and worker rights (Bowen and Kuralbayeva, 2015).

In the UK, recent work by the Department for Business, Innovation and Skills (BIS) has attempted to quantify the size and performance of the low-carbon sector which it defines as

the 'activities which generate products or services which themselves deliver low-carbon outputs. It does not include the economic activity from the use of these goods and services, except where this represents the primary revenue stream of the operator. Only the portion of a firm's economic activity relating to low-carbon goods and services is included' (BIS, 2015). They break the sector down into six groupings and 24 low-carbon sub-sectors. These are shown in Table 1 below.

**Table 1: Low-carbon groupings in the UK economy**

<b>Grouping</b>	<b>Sectors</b>
<b>Low-carbon electricity</b>	Onshore wind Offshore wind Nuclear energy Hydroelectric energy Marine energy Solar photovoltaic (PV) Carbon capture and storage
<b>Low-carbon heat</b>	Geothermal heat Heat pumps Solar thermal Heat networks
<b>Waste processing, energy from waste and biomass</b>	Recycling Generation of energy from waste and biomass Alternative fuels Biomass equipment
<b>Energy efficiency products</b>	Energy-efficient lighting Insulation Energy efficiency windows and doors Heat recovery and ventilation Energy controls and control systems Sustainable architecture and buildings
<b>Low-carbon services</b>	Low-carbon advisory Low-carbon finance
<b>Other low carbon</b>	Low emission vehicles

Source: BIS 2015

The UK's low-carbon sector employs a total of 460,600 people, which represents 1.6 per cent of the total UK workforce. 85 per cent of this employment is in England (comparable to the overall proportion of England employment in the UK, so there is no major imbalance here). Across the UK in 2013 there were 11,550 firms in the low-carbon sector with an annual turnover £121.7bn.

The most notable finding from BIS's study is the pace with which the sector is growing. In employment terms, the low-carbon economy grew by 12 per cent between 2010-2013, with a compound annual growth rate of 3.8 per cent. Over the same period turnover has increased 24.7 per cent with a compound annual growth rate of 7.6 per cent (BIS, 2015). This rate of increase is significantly above inflation and suggests substantial and sustained growth within the sector.

Gross Value Added (GVA) has increased by 28.4 per cent, with a compound annual growth rate of 8.7 per cent and now stands at £44.9 billion (ibid). This is almost nine times larger than aerospace, four times larger than chemicals, and 1.7 times larger than the food and drink sector.

The low-carbon sector has clearly performed well over recent years, and is likely to continue expanding as the UK responds to its own legally binding targets for carbon reduction and low-carbon deployment. The Climate Change Act 2008 commits the UK to reducing emissions by at least 80 per cent in 2050 from 1990 levels. 2014 figures showed a 36 per cent decrease in emissions compared to 1990 levels which is good progress. However, the Committee on Climate Change, the government's statutory advisors, warned that very steep reductions will still be required, particularly from 2023 onwards. This will involve very significant deployment of low-carbon electricity capacity before 2030 and then an unprecedented overhaul of the heat, transport, industry, and waste sectors out to 2050 (CCC, 2013). This scale of change in the UK economy will entail huge levels of investment and presents a very large economic and industrial opportunity.

However, although rapidly growing and sizable, the global low-carbon sector is highly complex and competitive, with rapidly changing regulations and standards being applied as new markets emerge and new industries mature. A key challenge for UK business and government (both national and local) is to build the capabilities required to maintain a leading edge in the development and application of technology. Central to this is improving the underlying labour market through the development of a skilled workforce capable of supporting growth in the sector (Liverpool City Region Labour Market Information Service, 2014). If such a workforce can be successfully developed, the UK could be a global leader in the rapidly expanding low-carbon sector.

## Skills required for the low-carbon sector

A government study from 2011 collated the evidence of employer demand for skills related to the low-carbon sector. These are summarised in Table 2 below.

**Table 2: Skills required for a low-carbon economy**

Skills for a green economy	Skills needs
<b>Skills supporting resource efficiency</b>	All businesses need generic or light green skills including: <ul style="list-style-type: none"><li>• Strategic business management to build resource-efficient business models leading to bottom line benefits and in preparation for new regulations</li><li>• Business/financial accounting services around carbon and natural environment accounting</li><li>• Skills to design and adopt technologies, products and processes increasing resource efficiency, including lean manufacturing</li><li>• Project management skills with clear understanding of resource efficiency</li><li>• Operator level actions to maximise resource efficiency (e.g. reducing waste in production).</li></ul>
<b>Skills supporting low-carbon industry</b>	Low-carbon industry focuses on energy generation and industry with high energy requirements. Skills include: <ul style="list-style-type: none"><li>• Scientists and engineers with training or transferable knowledge for nuclear and renewable energy (including wind and marine)</li><li>• Technicians with training or transferable knowledge to install energy efficiency measures and retrofit at a household and business premises level</li><li>• Skills to design and adopt technologies, products and processes to minimise carbon emissions</li><li>• Operator level actions to minimise carbon emissions (e.g. driving in a fuel efficient manner).</li></ul>
<b>Skills supporting climate resilience</b>	Business requires the capacity to adapt to changes in climate. The necessary skills include: <ul style="list-style-type: none"><li>• Scientific and technical skills such as modelling and</li></ul>

interpreting climate change projections

- Risk management such as assessments of future resource availability
- Skills to design and adopt technologies, products and processes to improve climate resilience
- Operator level actions to improve climate resilience (e.g. retrofitting water efficient technologies in households and business premises).

**Skills to manage natural assets**

Natural assets underpin all business practice. Skills to protect and manage them include:

- Accounting services for the natural environment
- Understanding of environmental impact assessments
- Understanding and interpretation of environmental legislation targets, ecosystem services design and management and land use planning
- Skills to design and adopt technologies, products and processes to manage natural assets.

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(HMG, 2011)

The overarching finding from the government's study is that the level of economy-wide demand for green skills does not correspond with expected growth towards a low-carbon economy and that there is a mismatch between demand and the skills needs that must be developed. The government study suggests that this is occurring for a number of reasons:

1. Organisational risk aversion is a significant barrier to investment in up-skilling the workforce. Firms do not have sufficient confidence in the policy framework surrounding the low-carbon sector to enable them to invest in skills development. For example, with long lead times through training to competence in the power sector, typically two to five years, decisions and commitment need to be made early to ensure a supply of future skills. However, confidence in the timing of demand for these skills is too low to justify investment and much more certainty is needed about the size and timing of future investment programmes driven by policy.
2. The short termism of many firms means the long-term investment in skills for a green economy has not been kick-started in time to ensure the desired workforce is in place now.
3. There is often an over-reliance on the existing workforce (both skills and supply) rather than longer term investment in recruits. As a result, many of the industries that are key to the low-carbon economy appear to be reliant on an ageing workforce. This issue is particularly concerning in areas where engineering is a core skill such as conventional, renewable and nuclear power generation and water management. These are forecasting large percentages of their workforce retiring over the course of the next ten to 15 years (HMG, 2011).

If the demand from business for low-carbon skills is not sufficient now to prepare the labour market for the levels of sector growth that are expected later, then additional policy interventions may be required. As discussed above, skills policy across England and the UK is following a wider trend of devolution that is allowing greater flexibility for local agencies to develop employment and skills policies and adjust programmes to local labour market conditions. LEPs, councils and local agencies have sought to build on the potential within their areas and this has led some towards the low-carbon sector.

## **4. Case Study: Liverpool City Region Skills for low-carbon growth**

The following section sets out the approach being taken by the Liverpool City Region (LCR) LEP to develop low-carbon skills in the region. A strategic approach has been adopted, with some success: this illustrates the constructive role that an LEP can play.

To identify and analyse the LCR's work, this study included a desk-based evaluation of the published materials relating to the low-carbon sector in Liverpool and the LCR's approach to maximising the opportunities it offers. We also conducted a number of interviews with key actors within the LEP, Liverpool City Council, and local low-carbon businesses.

### *The low-carbon sector in Liverpool*

There are 1,280 companies in the low-carbon sector across the Liverpool City Region, employing 23,400 people. These businesses generate approximately £2.7 billion GVA annually to the national economy. The sector in the region has experienced sales growth of around 4 per cent per annum between 2008 and 2013. This is expected to continue over the medium term with estimates of a 4.8 per cent growth rate in 2014/15 (Liverpool City Region Labour Market Information Service, 2014). This growth has been particularly strong compared to the UK average. There are estimated to be an additional 4,000 companies across Liverpool in the engineering, manufacturing, process and professional services sectors identified as having the potential to diversify into the low-carbon sector.

For these reasons, the LCR has identified the sector as being a key priority for job creation and economic growth (ibid). It has developed a Low Carbon Economy Action Plan and a Sustainable Energy Action Plan. Together, these documents set out a co-ordinated programme to ensure the region is at the forefront of the transition to a low-carbon economy. They recognise that the low-carbon sector will draw heavily on the existing skills and business base, but will also require new skills and, in particular, up-skilling of existing workers. As is the situation nationally, a central challenge for the region is to create a labour

market able to meet the anticipated demands of low-carbon employers and investors. This not only impacts existing vocational and higher education training providers but also creates a requirement for in-work up-skilling so that existing jobs can be safeguarded through training.

#### *The Liverpool City Region's approach to low-carbon skills development*

To coordinate this skills development across Liverpool the LCR has also produced a standalone Low Carbon Skills for Growth Agreement (Liverpool City Region Labour Market Information Service, 2014). It evaluates the current and potential contribution of the low-carbon sector, identifies the sector skills that are required by local businesses and the gaps that are creating barriers to sector growth, and commits to a number of actions that the LCR, and the city, should take to up-skill local workers and maximise potential within the sector.

The Agreement recommends three key actions:

1. Skills providers need to support employers to upskill their existing workforce to adapt to new market requirements. Top-up training needs to be flexible and delivered in the workplace. It should be shaped around low-carbon products and business processes.
2. Skills providers should define a low-carbon offer to make it easier for employers and job seekers to understand the full range of provision available in the region. To achieve this they should:
  - a. Work with the National Skills Academies and other partners to raise awareness of the training on offer for the sector.
  - b. Utilise greater employer ownership of skills funding through the Liverpool City Region Skills for Growth Bank which would raise capacity within the region for employer-led training provision.
  - c. Embed basic conversational and technical foreign language skills into appropriate low-carbon course content.
3. The sector overall and the importance of Science, Technology, Engineering and Mathematics (STEM) skills should be promoted to students in the region.

James Johnson, Sustainable Energy Projects manager at the LCR described two approaches that have been taken, consecutively, to develop skills for the low-carbon sector.

The first approach set up training and skills programmes within further education colleges and university programmes. The aim was to directly teach skills relevant to particular parts of the low-carbon sector. However, it was noted by both the LCR and Liverpool City Council that predictions about where low-carbon jobs were likely to emerge in the future often turned

out to be wrong. As a result, many of the specialised syllabuses that had been set up with low-carbon designations were not teaching the skills most in demand from employers.

Therefore, the Council and the LEP both shifted their approach to one that aims to embed low-carbon principles and practices within other sectors, and promote the skills training required to achieve that. This approach treats low carbon not as an independent sector, but as a sub-sector of existing industries such as transport and construction. James Johnson described the current approach as ‘the strategic co-ordination of, and support for, innovations within the private sector, responding to and seeking to anticipate future demand for skills as industries diversify into the low-carbon sector’.

Liverpool’s LEP is larger than most, having grown out of the private-sector organisation ‘Merseyside Partnership’. The LEP consists of the board, which makes collective recommendations to the Combined Authority, and a series of sub-committees. There are two relevant committees here, the ‘Low Carbon Committee’ and the ‘Employment and Skills Committee’, both of which are drawn from the public, private and third-sectors. The Low Carbon Committee works with a number of other committees, on the basis that low carbon is a theme that cuts across sectors, one of which is the development of skills for employment.

Our interviewees described two cases in which the LEP has co-ordinated skills development in response to demand from companies in the low-carbon sector. The first was in offshore wind. Liverpool’s LEP hopes to capture the middle and lower tiers of the supply chain – in the production of goods such as diving equipment to install the turbines – for the local economy. However, there was a strong demand for a range of skills required to boost the growth of companies in the middle rung of the supply chain for actual offshore wind development. In response, the LEP worked to co-ordinate the skills training in higher education colleges with the demands of companies producing products required for offshore wind development.

The second illustration relates to Scottish Power, whose central UK-office is based in Liverpool. Scottish Power informed the LEP of an imminent shortage of workers trained to deliver products in the low-carbon sector. As the BIS report also identified, Scottish Power explained that they were reliant on an ageing workforce and lacked recently-trained apprentices. Their main demand was for engineers, particularly mechanical engineers. In response, the LEP is creating a strategy both to help up skill the existing workforce, but also to train new engineers in response to this demand, using the opportunity to focus on developing skills relevant to the aspects of Scottish Power’s work that relate to the low-carbon sector.

## Findings

The evidence from Liverpool suggests that LEPs can act as an effective local co-ordinator to ensure that skills development is relevant to the most immediate and local demands from the low-carbon sector. At its best, an approach such as this can foster strong links between education and employment in a demand-led, locally-driven process, given strategic direction by effective LEP leadership. However, the study highlighted the central challenge that Liverpool's LEP has faced, one that many projects that aim to develop skills for the low-carbon sector are likely to face. That is consistency, in terms of both policy and demand.

Many **firms lack confidence in the extent to which future government policy and funding will support investment in the low-carbon sector**. This constrains the development of skills programmes, which take a considerable length of time to create and put into effect.

Another challenge is that **the time horizon over which firms tend to demand new skills for the low-carbon sector leaves insufficient time for the LEP to respond**. Demands tend to be erratic and immediate, rather than consistent with an approach that looks five or ten years into the future.

The two are linked: with consistency of government policy and funding, consistency of local demand for low-carbon skills can be expected to follow. This would enable LEPs like Liverpool's to plan for the future and develop effective strategies for co-ordinating long-term plans for the supply of skills that meet local demand in the low-carbon sector.

## 5. Conclusion

The Liverpool City Region has taken an innovative and proactive approach to developing low-carbon skills across Liverpool's labour market. Following a strategic decision to focus on the sector due to its potential contribution to economic growth and job creation, the Local Enterprise Partnership has created a coordinated plan for developing the local skills base. It is hoped that this could lead to the creation of 12,000 additional high quality jobs and bring significant GVA to the region. Other LEPs should follow this lead and develop clear strategies.

There are clear and significant opportunities for skills policy to focus on the low-carbon sector. However, as the LCR case study illustrates, the sector is at present extremely vulnerable to changes in policy. The crucial factor, above all others, is consistency and predictability of government policy and funding, to which demand in the private low-carbon sector responds.

There are also clear lessons to be drawn about collaboration and co-ordination between partners in skills projects. As both the Council and LEP explained, co-ordination between these two bodies has been highly effective, both in the initial stage of designing low-carbon skills programmes in further education colleges and universities, but also later in a co-ordinated response to demand for up-skilling existing workers from the low-carbon sector.

However, there is a need for more effective communication and strategic planning between public and private partners. In particular, they must work together to assess the probable type of skills likely to be required in the future; so that the training of new workers coincides with industry demand and that the types of skills in which those workers are trained closely match the demands of low-carbon sectors.

With close collaboration between councils and LEPs, along with more effective and continuous co-ordination between innovation in the low-carbon sector and strategic skills planning within LEPs, successful skills programmes can contribute to and support rapid growth in the low-carbon sector.

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