

LOW CARBON TASK FORCE – PROJECT ENERGISE



April 2010

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IT'S MORE THAN JUST CARBON

Task Force Report, April 2010

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The NEF is an educational charity and Think Tank that focuses on developing vocational education through:

- Instigating Research
- Supporting Professional Development
- Enabling Knowledge Transfer and Innovation

Our mission is to achieve measurable and visible improvement in vocational education through partnerships by:

- Enriching teaching and learning professionalism
- Enhancing capability of providers and industry
- Empowering individuals to embrace contemporary practice

Thereby, creating a positive impact on society.

We look forward to your participation and support of our activities so that together we can achieve significant improvement in our vocational system.



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Finally, we would also like to thank the New Engineering Foundation Advisory Panel¹ for their continued enthusiasm and effective involvement.

¹ The New Engineering Foundation Advisory Panel consists of representatives from the following organisations: London Development Agency; Higher Education Academy (Engineering Subject Centre and Physical Science Subject Centre); Learning and Skills Improvement Service; BASF; OFSTED; National Physical Laboratory; Procter & Gamble Pharmaceuticals (UK) Ltd; Royal Academy of Engineering; SEMTA; East of England Development Agency; Royal Society; Institute of Directors; Engineering Employers Federation; BBC; North West Regional Development Agency; PriceWaterhouseCoopers; Association of Colleges; Foundation Degree Forward; Bournemouth University; South West of England Regional Development Agency; Cogent Sector Skills Council; National Skills Academy Nuclear; Gatsby Charitable Foundation; The Wellcome Trust; Skills for Justice; Unilever



A LOW CARBON ECONOMY

Britain's low carbon skills base will be a determining factor in our ability to attract low carbon investment, successfully commercialise low carbon technologies, and innovate within companies. Increasingly every job in the British economy will require some understanding of energy or resource efficiency, or low carbon technologies and processes.

– The UK Low Carbon Industrial Strategy, 2009, DBIS



A coal burning power station at Ratcliffe-On-Soar, in Nottingham

1. INTRODUCTION



Cutting carbon emissions is a priority if we are to avoid making the problems of climate change worse. The UK through the Climate Change Act 2008 was the first country in the world to put in place a long-term and legally binding framework to cut carbon emissions.

The Government has subsequently put in place a number of strategies and incentives to drive forward the desired response – a response which involves the transition to a low carbon economy that addresses the challenges of climate change, environmental management and finite natural resources yet realises sustained economic growth.

In itself creating the policy environment will not be enough, a collective response involving individuals, families, communities, community organisations including for example hospitals, schools, FE and HE learning providers, and the public sector at the national, regional and local levels, is required. Widespread encouragement of carbon consumers to both understand the size of their carbon footprint, what this means, and how to reduce it is essential if we are to create a low carbon economy.

For businesses across all sectors it will require them to future-proof their strategy, innovate low-carbon products and services, and equip their workforces with the knowledge and skills they need to ensure their organisations are fit for the future. The ability to articulate the skills required for future success and then attract, develop and retain employees with those skills will be one of the determining factors for businesses in how they respond to the challenges now and in the future.

The low carbon economy is now much talked about, Government has set forth its strategies to make it happen, and businesses and educational providers alike are being galvanised to make it happen. With this in mind, NEF has established a Low Carbon Task Force, involving senior representatives from the business and education sectors.

1.1 Focus of the low carbon task force

The Low Carbon Task Force seeks to provide greater clarity on:

1. The practical implications of a low carbon transition for business and education;
2. The opportunities arising from this transition.

The Task Force will consider issues related to infrastructure, product and service development in strategic sectors as wide ranging as construction, food and agriculture, power generation, transport, and waste management.

In doing so, the Low Carbon Task Force through working with appropriate stakeholders, will look to:

- Identify areas of engagement and opportunity for business and education in developing a 'low carbon' capacity and capability;
- Support the development of 'low carbon' activities to enhance the professional competency of lecturing staff;
- Examine the current provision in the curriculum designed to meet the needs of low carbon sectors and support the development of new provision.

Through a series of facilitated events and supporting research, the Task Force will help to address the following key questions.

Q1. What matters most in supporting the move to a low carbon economy? And, why?

- a. Tackling energy security issues;
- b. Realising business opportunities;
- c. Achieving emission reductions;
- d. Maximising resource efficiencies.

Q2. What low carbon related skills will your sector need to develop to enable you to play your role in fully achieving your business objectives and support the UK's commitment to cut emissions by 34% by 2020?

Q3. What steps are you already undertaking, including the development and/or acquisition of new skills, to help you engage in the low carbon transition?

Q4. How can your business/sector work with Government and other agencies at the national, regional and local levels to take forward the low carbon agenda?

- a. How engaged are you at present?
- b. What will you do to increase your level of collaboration?
- c. What support do you require?

This report explores what is meant by the low carbon economy, identifies the opportunities and threats that the drive towards a 'low carbon economy' presents and provides an insight into how best to secure the involvement of a wide range of businesses and sectors in the low carbon economy.

2. A LOW CARBON ECONOMY



Addressing the global challenges of increasing demands from finite natural resources, climate change and environmental management has never been more important.

The transition towards a so called low carbon economy is a must if we are to mitigate the risks and maximise the opportunities stemming from the challenges we face. But what does a low carbon economy look and feel like?

LowCarbonEconomy.com indicates that in a low carbon economy:

- All waste should be minimised – reduce, reuse, recycle;
- Energy should be produced using low carbon energy sources and methods – renewable and alternative energy sources, fuels and sequestration;
- All resources (in particular energy) should be used efficiently – more efficient energy conversion devices, combined heat and power;
- Wherever practical local needs should be served by local production – food, materials, energy;
- There is high awareness and compliance with environmental and social responsibility initiatives – industry, commerce, communities and individuals.

The transition to a 'greener' economy, characterised by reduced levels of carbon emissions and an increased demand for low carbon goods and services, will therefore require individuals and organisations to better understand, measure, monitor and reduce their carbon footprint.

The response needs to be embedded in everything we do. It will involve a dynamic process which has the potential to positively impact on the triple bottom line – economic, social and environmental performance. A key driver will be sustainable development – finding ways to improve our quality of life while living within our environmental limits and ensuring a fair society.

In making the transition to a low carbon economy, the approach is likely to involve all of the following:

A reduction strategy (energy efficiency, capture and conservation measures)

- Transportation (hybrid and electric vehicles, bio-fuels, etc);
- Energy efficiency devices (sensors, monitors, batteries, etc);
- Nanotechnologies and bioengineering systems and structures.

A switching strategy (using alternatives to fossil based fuels)

- Renewables (wind, solar, wave, tidal, biomass, geothermal, etc);
- Nuclear (commissioning, generation and decommissioning, etc);
- Algae (as both a fuel source and a CO2 capture technique) .

An offsetting strategy (eco-monetary offsetting)

- Eco-towns and projects;
- Trading emissions;
- Environmental economics.

A limiting factor in achieving the changes required will be one of awareness and understanding about what individuals, communities and organisations in the public, private and voluntary sector can do to make a difference. It is therefore a long-term challenge – a challenge which involves transformational leadership to change behaviours in a positive way.

3. THE OPPORTUNITIES AND CHALLENGES FOR INDUSTRY



3.1 Key drivers for change

Taking action has the potential to deliver energy cost reductions, enhance reputation, increase employee and stakeholder satisfaction and motivation, ensure regulatory compliance, and achieve competitive edge through new business innovations.

Many large and small enterprises that have started on a low carbon journey are already realising benefits – new markets and customers, improved productivity and efficiency, reduced bills and risks, amongst others.

It is therefore clear that organisations are driven to engage in the low carbon transition in one or more of five ways:

- **Transition** (resource and energy efficiency and security – costs savings);
- **Opportunity** (new markets and new/enhanced products and services – profitability);
- **Ethical** (corporate social responsibility);
- **Sustainability** (sustainable development);
- **Regulatory** (compliance and measurement – carbon reduction).

The primacy of each of these drivers varies by organisation and by sector. However, to achieve engagement at any level, the business case needs to be made and the organisational as well as other stakeholder benefits illustrated. The benefit return is important, particularly as the cost of entry to the low carbon

economy can be significant.

In a recent Department for Business, Innovation & Skills (DBIS) consultation, the messages from many key employers included:

"Low carbon language was 'off-putting' and businesses relate better to the language of resource efficiency."

"...the workforce should 'own' the resource efficiency agenda and build their capability to make efficiency gains."

This shows that organisations want to engage, but want to determine their choice of how they engage. Given that every sector of the economy will be affected by the transition to low carbon, it is understandable that each will use the route to change most natural and comfortable to them.

3.2 How brave will industry be in this brave new world?

The transition to a low carbon economy, according to many, offers some of the greatest economic opportunities ever known – on a scale of those generated through the information revolution and the application of new information technologies. Realising these opportunities will require active leadership (clarity of vision, aligned investment), innovation in new technologies and processes (low carbon is a design determinant), systematic and integrated responses (operations, infrastructures), and a supportive political (global climate change agenda, domestic policy, regulation) and economic (tax incentives, carbon

trading) environment within which to operate over a sustained period of time.

The opportunities for industry, as noted earlier, include:

- the creation of new markets and customers;
- the preservation and/or expansion of existing markets;
- the development of new and/or enhanced products, services, processes and systems.

Exploiting the opportunities which exist now and in the future is likely to result in new business starts and business growth and sustainability. It is a relatively green-field market space with endless possibilities that over time will lead to more investment, the creation of more jobs and the demand for more training (upskilling, reskilling, and new skills development) to support new job requirements.

The low carbon concept and low carbon industry are relatively fresh concepts; consequently we have not yet identified the business models which will work best in enabling the start up and growth of businesses in a responsive way.

3.3 The skills challenge

Whether engagement is to maximise resource efficiency, exploit new opportunities, ensure an ethical approach, realise sustainability and/or comply with regulatory frameworks, one factor underpins success and that is ensuring the adequate supply of the 'right' skills at the 'right' time. Figure 1, to the right, provides a worked example of how a Government intervention – in this case the transition towards a low carbon economy – provides opportunities to industry to develop and apply emerging technologies to open up



existing and new market opportunities. The realisation of these opportunities will, however, be dependent on the 'skills pipeline' that is supported by education and training providers and, in particular, the HE and FE sectors.

In the case of transition or resource efficiency as being the driver to engage, organisations will need skills that help them make the move to adopting low carbon operations. A new set of skills will be needed to review and re-engineer existing business practices together with such skills as sustainable procurement, environmental management and risk management. Skills

focusing on full product life cycle analysis (cradle to grave) will deliver resource efficiency but may also assist organisations in identifying opportunities for development within a product's life cycle.

In the case of opportunity, organisations will need more specific scientific, technical and engineering-based skills to develop and produce low carbon goods and services. Many of the opportunities will be found through augmentation of an existing product using low carbon technologies and processes (composites are an example of this).

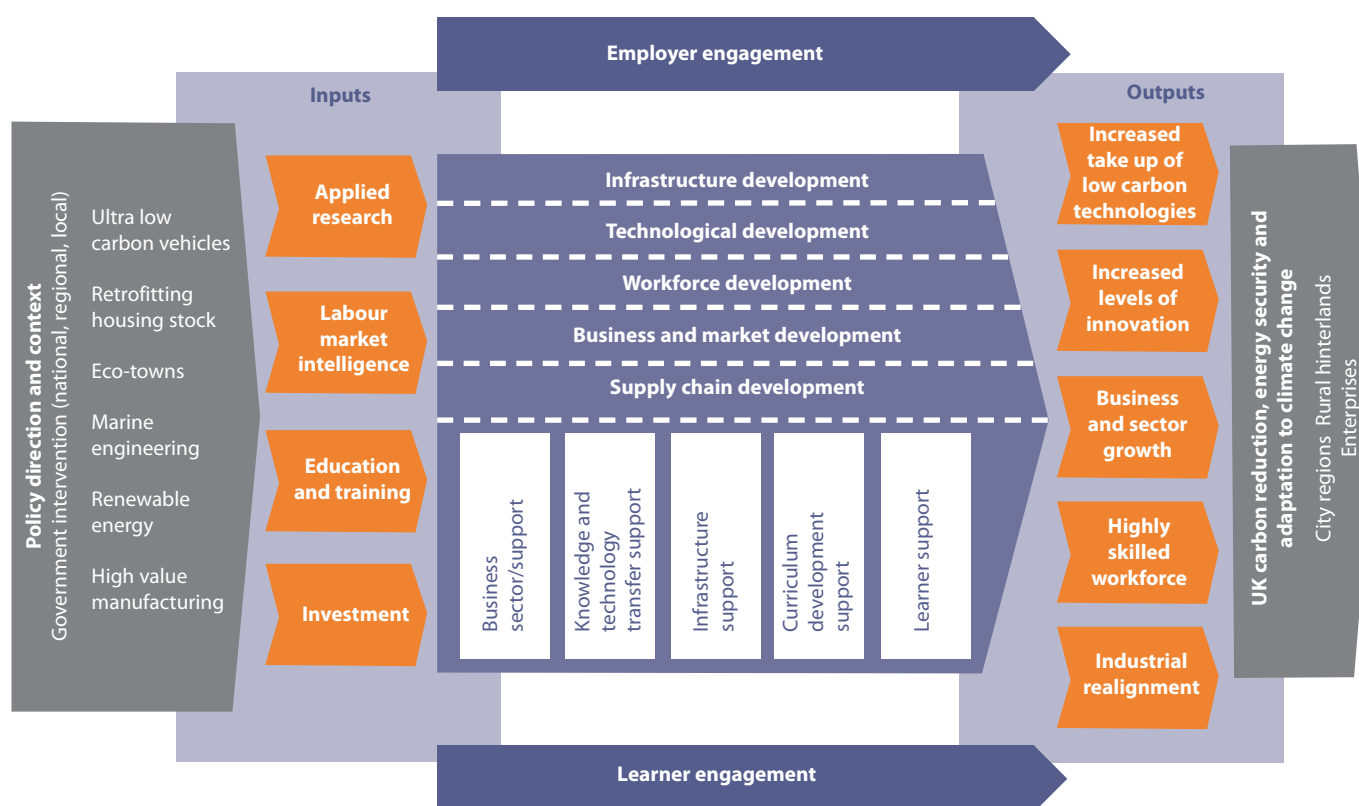


Figure 1
The skills dimension of a low carbon strategy

In the case of sustainability, organisations will need leaders and managers who understand and can apply the concept of sustainable development to inform working practices and to ensure a strong ethical emphasis on corporate social responsibility as a key driver for change. In addition, organisations will need access to a pool of talented individuals who have benefited from education and training that has given them the knowledge and skills they need to put sustainable development into practice in all aspects of their lives.

In the case of regulation, the introduction of the Carbon Reduction Commitment, for example, specific low carbon monitoring, measuring and auditing skills will be required in large organisations.

Developing the skills to support the transition to a low carbon economy will necessitate close collaboration between businesses at the forefront of low carbon developments and education and training providers. Such collaboration will ensure that the curriculum offer is redesigned and aligned to regional specialisms and identified need, and that the delivery capability and capacity exists.

It is true that the world of low carbon is still in its infancy, and applications are being discovered daily, but enough is currently known by organisations for them to articulate their skills needs. This is a critical step that must be undertaken to ensure the low carbon skills landscape is carved out to meet demand, support innovation and drive business growth in the UK.



4. SECURING THE INVOLVEMENT OF INDUSTRY



The widespread engagement of industry across all sectors is a prerequisite if the Government is to achieve its ambitions in relation to the low carbon agenda. Industry engagement will however be dependent on the conditions being 'right' and the level of benefit being commensurate with the investment required.

Creating the 'right' conditions will require Government to take a long-term view – the transition to a low carbon economy will take time and industry will require:

- **Clarity** about what we're really trying to achieve as a nation, community and species by switching to a low carbon economy;
- **Confidence** that the low carbon agenda is not just flavour of the month and it is here to stay well into the future;
- **Coherence** through an integrated long-term approach to national policy and strategy on low carbon and standardisation in the indicators used for carbon reporting;
- **Certainty** of business support and advice, longevity of funding streams to incentivise the response and the supply of the 'right' skills at the 'right' time and place to meet workforce need;
- **Compliance** to be a driver through regulatory frameworks that encourage the 'right' behaviours and the 'right' response as part of a sustained approach.

Aligned action on each of the five 'C's will help to ensure industry across the board accepts its responsibility in bringing about the necessary change. A number of large corporate organisations are, for example, already seeing it as part of their social responsibility to assist their supply chains in responding to the low carbon challenge.

ANNEX 1

Babcocks International
BAE systems
BT
Cambridge University – Millenium Maths Project
The Climate Group
Compass Group
Eaga
Energy Efficiency Partnership
Forum for the Future
Greenfield Holdings
International Power Plc
Middlesex University
Ocado
PriceWaterhouseCoopers
Proctor & Gamble Pharmaceutical
SJ Berwin LLP
Smith and Byford Limited
The Weir Group
WS Atkins

Additional discussions have also taken place with the following organisations:

British Sky Broadcasting Group
Carbon Disclosure Project
John Lewis
J Sainsbury
Persimmon Homes Ltd

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