



# HM Government

Department for Business, Enterprise and Regulatory Reform  
Department of Energy and Climate Change  
Department for Innovation, Universities and Skills



## Investing in a Low Carbon Britain

Building  
Britain's Future 



The UK has begun the transition to a low carbon economy. The transition will change every aspect of our lives, our work, and our society.

Building on the Government's vision for a Low Carbon Industrial Strategy published earlier this year, this document sets out a programme of targeted investment to provide real help now for businesses and households, creating and sustaining the jobs that will contribute to the UK's prosperity in a new low carbon world.

# Foreword

The world is beginning to make the transition to a new low carbon economy, as governments around the globe put in place the frameworks needed to tackle climate change. This transition will change every aspect of our society, and alter the way we live and work. We will see it in the cars we drive; the homes we live in; the skills we need and the jobs we do. This green industrial revolution will be seen in the UK and across the world, creating a huge demand for the technologies, goods and services that will allow us to meet our climate change goals.

The global market for low carbon and environmental goods and services is already worth £3 trillion. The UK has led the way in taking the opportunities that this market presents, and by the middle of the next decade over a million people in this country could be employed in the low carbon and green manufacturing sectors. Our strong regulatory framework already makes the UK a leading destination for green investment which coupled with a tradition of innovation,

world leading universities and a skilled workforce gives us the potential to lead the world as a low carbon economy.

However, other countries are also moving to take advantage of the opportunities created by this green industrial revolution, and there will be global competition to lead in these future industries. So we will need to increase our efforts if the UK is to maintain its strong position, while also playing our part in the global effort to develop the technologies necessary to tackle climate change.

This is particularly important in the current economic circumstances. The world will emerge from the present downturn with the economy changed in fundamental ways. That will be a challenge, but also an opportunity if we position our economy strategically and take the action needed. In *Building Britain's Future: New Industry, New Jobs*, published on 20 April, we set out a commitment to a new activism from Government, working to complement the market and position the UK to take full

advantage of our competitive strengths. Underlying this strategy of activism is a core judgment that, despite the tough times, it is better to keep investing in growth and jobs so as to speed recovery and build the manufacturing industries and services we need for the future.

In this document we lay out our green investment plans. It builds on the vision of Britain's Low Carbon Industrial Strategy published on 6 March by setting out targeted investment announced in the 2009 Budget – the first steps towards putting our vision into practice. We will be undertaking further work to build on our framework and implement the policies set out while continuing to engage with stakeholders. We will come forward with further detail to develop this approach later in the year.

in the Budget, we are committing an additional £1.4 billion of targeted support for the low carbon economy. Together with announcements made since last Autumn, these measures will enable an additional £10.4 billion of low carbon and energy investment over the next three years.

Becoming a low carbon economy will not only deliver our climate change goals, it will be the engine that drives our economic growth. The investment set out in this document, delivered through a new activism at the heart of Government, is an important step in helping us to take the opportunities of the new low carbon world. A step towards an exciting and prosperous future.



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**Ed Miliband**



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**Peter Mandelson**



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**John Denham**



# Contents

- 06** Executive summary
- 12** Opportunities from the global low carbon economy
- 20** New industries, new jobs
- 26** New strategic industries in a low carbon economy
- 36** A systemic approach to energy demand and efficiency
- 44** Conclusion

# Executive summary

## The opportunities from the green manufacturing and the wider low carbon economy

One of the most important areas of opportunity for the UK's future economic growth is the low carbon sector. The world is making the transition to a low carbon future, as national and international efforts to tackle climate change lead to fundamental change in the global economy. Already the global market for low carbon goods and services is worth £3 trillion, and this is projected to grow to over £4.3 trillion by 2015<sup>1</sup>.

This document builds on the vision of Britain's Low Carbon Industrial Strategy published on 6 March by setting out more detail arising from Budget 2009. We will be undertaking further work to build on our framework and implement the policies set out while continuing to engage with stakeholders.

The Government has already put in place a framework of measures in the UK to secure investment in the new low carbon economy. Around 880,000 people in the UK are employed in the green sector. The policies announced in Budget 2009 provide over £1.4 billion additional targeted support for the low carbon economy. These, together with announcements made since last Autumn, will enable an additional £10.4 billion of low carbon and energy investment over the next three years. This will employ around 20,000 people in construction and installation in the

short term and provide the foundations for strong growth of the green sector in the future.

However, other countries are also seeking to take advantage of the opportunities created by the move to the low carbon economy, and there will be global competition to lead in these future industries. In particular, we propose to focus on key sectors where the UK has the potential to take a leading global role, because of our natural resources, strong tradition, skills base or other advantages. These include:

- Carbon capture and storage
- Offshore wind generation
- Marine energy
- Nuclear energy
- Low carbon vehicles



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<sup>1</sup> Innovas (2009) Low carbon and environmental goods and services: an industry analysis





Other low carbon sub-sectors also have significant potential for growth, including solar power, building technologies, geothermal and carbon finance. We should recognise the need to focus our activity wherever there is growth potential, and to ensure that we identify and address the barriers to seizing the opportunities that exist.

This document sets out how Government will drive progress in these sectors and more widely as part of a new activism, building on our broader strategy of using carbon pricing, support for key technologies and influencing

the behaviour of businesses and individuals to help us make the transition to a low carbon economy.

### **Taking our opportunities – a new activism**

In *Building Britain's Future: New Industry, New Jobs* the Government set out a new approach to building and supporting world-beating businesses. The approach recognises that the actions of Government inevitably affect the climate in which business operates, and that Government needs to take an

active role in addressing market failures. The policy response has several elements, including:

- Enabling competitiveness through policies in cross-cutting areas, including through ensuring access to finance for viable businesses, supporting innovation (for example by funding demonstrations of innovative technologies), helping secure additional or improved infrastructure and responding to needs for new technical skills.
- Using Government's role in the market more strategically.

- Targeted interventions in high potential industries to remove the barriers to their growth.

This new approach sets the framework for our plans to enable the development of a low carbon economy in the UK. We are putting in place a series of cross-cutting policies to implement a new activism in the low carbon sector:

- Supporting innovation and demonstration in priority industries such as carbon capture and storage and bringing research through to the market.



- Creating the infrastructure, incentives and support required to develop a new, more systemic approach to saving energy across the economy: in businesses, homes, schools, hospitals and other public buildings.
- Supporting skills development in those low carbon industries, occupations and technologies that will drive economic growth and enable the UK to come through stronger, as set out in *Building Britain's Future: New Industry, New Jobs*.
- Targeted interventions in priority low carbon industries, through a new £405 million Low Carbon Investment Fund (LCIF) that will enable UK businesses to compete globally.

## Activism delivering for key low carbon sectors

These cross-cutting policies will enable us to make a major difference to the sectors to date identified as offering important opportunities for the UK.

## New low carbon energy sectors

A trinity of low carbon energy sectors – clean coal through CCS, renewables and nuclear – is essential to the UK meeting its climate change targets and will also offer us major economic opportunities.

- Carbon capture and storage – the Government intends to put in place a levy mechanism to deliver up to four CCS demonstration projects, including both pre- and post- combustion coal. This will make a very major contribution to driving the technology towards wide commercial deployment as fast as possible, and will ensure UK industry is in a prime position to take the lead in developing the necessary expertise. We will encourage clusters of CCS infrastructure and expertise, renewing the value of our offshore industries as fossil fuel production declines and focusing on key regions such as Yorkshire and the Humber, the Thames Estuary, the Firth of Forth and Tyne/Tees, bringing major employment and regeneration benefits.
- Offshore wind, marine and other renewables – we are announcing an early review of the support level for offshore wind under the Renewables Obligation, in order to ensure that the economic opportunities offshore wind offers to the UK are not lost and projects receive the correct level of stimulus they need. Proposals to increase ROCs for offshore wind could be worth some £2-3.5 billion to the offshore wind sector. LCIF will enable both the demonstration of new close-to-market technologies and inward investment in more mature industries. The LCIF will also support the Office for Renewable Energy Deployment, to co-ordinate government action, bring down barriers to deployment and stimulate investment in renewables and their supply chain.
- Nuclear – the Government is creating the framework to allow private sector energy companies to build, operate and decommission new nuclear power plants as part of the low carbon electricity infrastructure we require for the future. The nuclear renaissance taking place not

just in the UK, but globally, represents a multi-billion pound opportunity for the UK economy in terms of job creation and supply chain opportunities.

## Low carbon vehicles

*Ultra-Low Carbon Vehicles in the UK*, published on 16 April 2009, set out how the Government will help to make the UK a global leader in the development and production of electric cars and other ultra-low carbon vehicles. Its key elements follow the same principles of strategic intervention as for the other key low carbon industries, including:

- Targeted investment delivering access to finance in the current economic climate, through a £2.3 billion package that will support development of green technologies and solutions for carbon reduction.
- Supporting innovation, through the Technology Strategy Board's Low Carbon Vehicles Innovation Platform.
- Demonstrating public sector leadership by strategically driving the market through the Department for Transport's £20 million Low Carbon Vehicle Procurement Programme.
- Supporting the development of infrastructure by providing up to £20 million for lead cities and regions.
- Creating incentives for consumers by reducing the costs of ultra-low carbon vehicles, to kick-start demand – a new scheme will reduce the price of electric and plug-in hybrid cars by up to £5000.

## A systemic approach to energy demand and efficiency

Across the economy, our ability to compete in a low carbon world relies on freeing up resources from energy spend for more productive investments. For example, UK businesses could save £3.3 billion a year on their energy bills<sup>2</sup>. In order to achieve this, we need to take two steps: to move to a more systemic approach to increasing efficiency through investment in new infrastructure; and to step up existing support and incentives for businesses, consumers and the public sector to improve their energy efficiency.

We are investing in infrastructure through:

- Electricity – developing a smarter grid, where new smart meters and more active network management can help deliver an electricity system that efficiently integrates generation and demand. We have already announced that we intend to mandate the roll out of smart meters to all homes in Great Britain together with an indicative target for completion of end 2020. In addition, the Low Carbon Investment Fund could be used to stimulate new investment in smart grids.
- Heating – a major increase in combined generation of electricity and heat through: extending the Combined Heat and Power (CHP) exemption from the climate change levy to 2023, which will unlock £2.5 billion new investment in this sector. We will also provide £25 million to fund 10 new schemes to provide low carbon heat to entire communities.

<sup>2</sup> Oakdene Hollins & Grant Thornton (2007). Quantification of the Business Benefits of Resource Efficiency

We already have schemes in place to support businesses, households and the public sector in taking the opportunities to save energy, by providing financial incentives and advice. These have been very successful. The consultation on a new Heat and Energy Saving Strategy, published in February 2009, signalled a further increase in ambition. We are now committed to providing even more financial assistance in the immediate term, by delivering:

- £100 million of new funding for loans for small and medium companies to invest in energy efficiency
- £65 million of new investment in schools, hospitals and other public buildings to improve their energy efficiency
- £100 million of new investment in measures to reduce the fuel bills faced by vulnerable people in social housing
- We also need to make a step change in our efficient use of other resources, and are investing £10 million in waste processing.



Across the economy, our ability to compete in a low carbon world relies on freeing up resources from energy spend for more productive investments.



# 1 Opportunities from the global low carbon economy

The world is already beginning the move to a low carbon economy, as Governments around the globe put in place the frameworks needed to tackle climate change. Globally, CO<sub>2</sub> emissions will need to fall substantially to avoid the worst effects of climate change, and governments are already responding with emissions reductions targets. If the world is to reduce emissions by 50% from current levels by 2050, the total investment required to achieve this represents around \$1.1 trillion per year – an average of 1.1% of global GDP each year from now until 2050<sup>3</sup>.

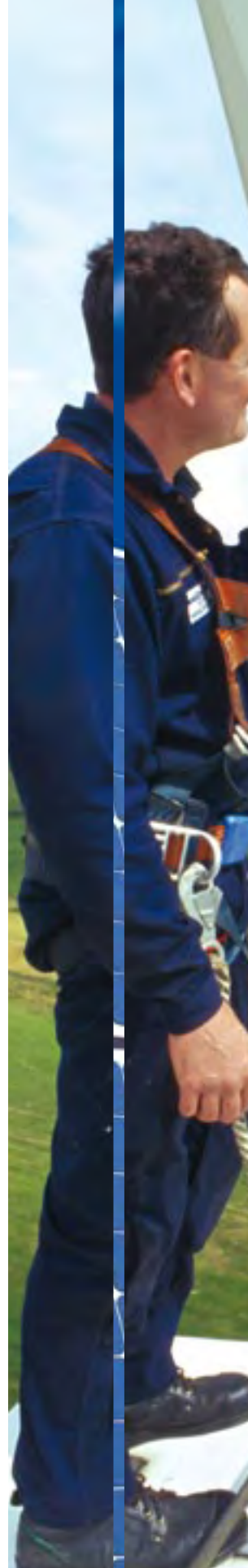
With the start of this fundamental change in the global economy, the demand for low carbon and environmental goods and services has already built a £3 trillion global market, which could grow to over £4.3 trillion by 2015<sup>4</sup>.

The UK is already a leader in many low carbon and resource efficient services, technologies and processes. However we need to ensure that the UK maintains and grows its competitive position.

When similar economic shifts have occurred in the past, governments and businesses with the foresight to take opportunities early have succeeded in creating substantial growth and jobs into the long term. Examples include the development of the UK North Sea oil industry in the 1970s and Denmark's onshore wind programme. Other countries and regions are already moving to take advantage of the development of the low carbon economy (Box A).

<sup>3</sup> OECD/IEA (2008)

<sup>4</sup> Innovas (2009). Low carbon and environmental goods and services: an industry analysis



\* **£4.3<sup>TN</sup>**

The global market for low carbon goods could grow to over £4.3 trillion by 2015.



## Box A: Historical market developments

### Exploiting previous change – North Sea oil

The Offshore Supplies Office (OSO), created by the UK Government in 1973, had the role of developing the ability of UK suppliers to meet the needs of offshore operators both in the UK and throughout the rest of the world. The UK's oil reserves in the North Sea were developed from the mid 1970s onwards. The growth of the UK's offshore supplies industry was substantial, in no small part due to the work of the OSO, with nearly three quarters of North Sea supplies met from the UK by 1985. Today, the UK industry is a global leader in offshore and subsea engineering, with supply chain exports worth around £4-5 billion per year, and employing an estimated 100,000 workers.

### Low carbon early movers – Denmark

The wind industry has been a strong driver of growth and jobs in Denmark. The Danish government became a pioneer in developing commercial onshore wind power during the 1970 and 1980s, and

through strategic decisions to foster the early development of the industry, Denmark has now become a world leader. Wind power provided almost 20% of Denmark's electricity in 2007<sup>5</sup> and the number of people employed directly and indirectly in wind turbine manufacturing increased from about 2,900 in 1991 to 21,000 by 2002<sup>6</sup>. Furthermore, in recent years Denmark has used its first mover advantage to supply a growing overseas market, and almost half of the world's wind turbines are produced by Danish manufacturers.

### Current initiatives – low carbon growth in Silicon Valley

Local government and businesses in Silicon Valley are focusing on low carbon technologies as the future growth area. Venture capital investment in clean technology totalled nearly \$1.9 billion in 2008<sup>7</sup>. Information technology firms such as Cisco and Google are exploring ways to support clean energy markets and promote energy efficiency.

## UK competitive advantage

As set out in *New Industry, New Jobs*, low carbon is a sector with large potential opportunities for UK economic growth. The UK already holds a 3.5% share of the global market for low carbon and environmental goods and services, worth around £107 billion and employing 880,000 people in this country, with significant potential for that to grow. Current projections suggest that by

2014/15 the low carbon and environmental goods and services (LGEES) sector in the UK could be worth as much as £150 billion<sup>8</sup>.

To take these opportunities we need to understand clearly where we have particular advantages, and to target those sectors with the greatest potential where there are market failures. Where the UK can gain from particular advantages in the low carbon sector will depend on a range of factors:

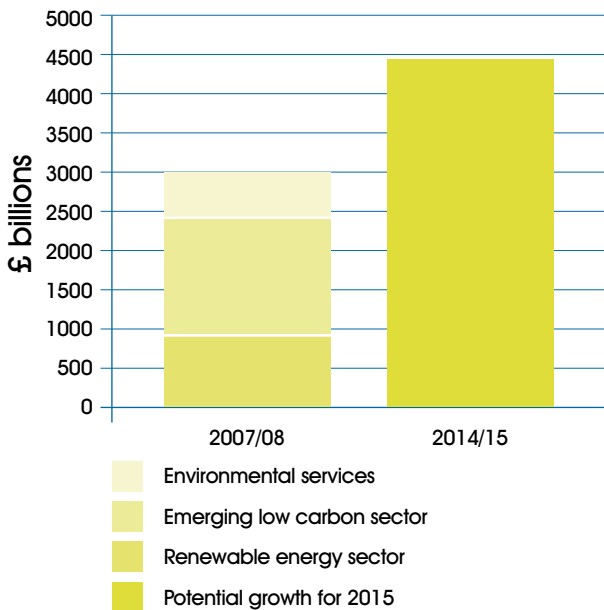
<sup>5</sup> Aruvian Research (2008). Analyzing the Wind Power Industry in Denmark.

<sup>6</sup> The European Wind Energy Association (2004). The current status of the wind industry.

<sup>7</sup> Joint Venture (2009). Climate Prosperity: A Greenprint for Silicon Valley.

<sup>8</sup> Innovas (2009). Low carbon and environmental goods and services: an industry analysis



**Figure 1: Global size of green sector**

- Competition – Who are the key players in this sector and what investment have other countries made?
- Value added – Is this sector likely to add high value or jobs to our economy if it expanded?
- Global demand – Is global demand for this sector likely to rise?
- UK demand – Is UK demand for this sector likely to rise?
- Supply chain – Do we currently have the supply chain and infrastructure to enable us to expand in this sector, or could we develop this capability?

- Skills base – Do we currently have the skills base and infrastructure to enable us to expand in this sector?
- Natural resources/geography – Do our natural resources and geographical position affect our competitive advantage?

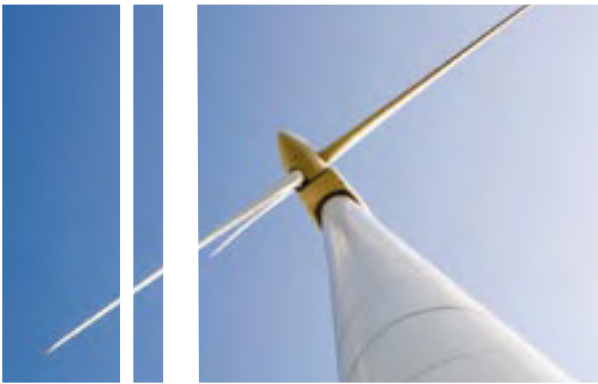
Based on these criteria, a number of sectors show strong growth potential.

### Clean coal through carbon capture and storage

Carbon capture and storage (CCS) technology involves capturing CO<sub>2</sub>, and transporting and storing CO<sub>2</sub> securely in sub-surface geological formations such as depleted oil and gas reservoirs or deep saline aquifers. It has the potential to remove around 90% of the CO<sub>2</sub> emitted by burning fossil fuels – coal, oil and gas. As announced in Budget 2009, the Government intends to put in place a levy mechanism to deliver up to four CCS demonstration projects, including both pre- and post-combustion coal. This will make a major contribution to driving the technology towards wide commercial deployment as quickly as possible, and will ensure UK industry is in a prime position to



take the lead in developing the necessary expertise. As part of our strategy for rolling out CCS in the UK we will work with the regional authorities to consider clusters of CCS infrastructure and expertise based on the areas of the UK with major emissions of CO<sub>2</sub> from fossil fuels. These could include Yorkshire and the Humber, the Thames Estuary, the Firth of Forth and Tyne/Tees.



## Renewables – expanding offshore wind

The UK is currently the world's largest market in offshore wind, and has a considerable potential advantage. The experience gained through our oil and gas exploration means we have the specialised engineering and marine operational skill base necessary for offshore wind deployment, established technology developers operating in the UK, and we have an abundant natural resource off our coasts.

- The UK is currently first in the world for operating offshore windfarms, with 598MW capacity. On average, 10 full-time jobs are sustained per MW installed.
- Seven offshore windfarms are fully operational, along with two demonstration sites.



The UK already holds a 3.5% share of the global market for low carbon and environmental goods and services, worth around £107 billion and employing 880,000 people.



- The Carbon Trust has estimated that the offshore wind sector could create up to 70,000 jobs in the UK and up to £8 million in annual revenues by 2020.

We are currently amongst the world leaders in offshore wind development and deployment and are well placed to exploit what promises to be a significant international market, but we will need to continue to invest if we are to maintain our leading position.



## Renewables – harnessing marine energy

The marine energy industry is currently not as advanced as the wind sector. However, the wave power market has the potential to grow in the UK by almost 60% over the next seven years<sup>9</sup>. The UK is strongly positioned to

<sup>9</sup> Innovas (2009). Low carbon and environmental goods and services: an industry analysis

lead in the development of the wave and tidal power industry. For example, Wave Hub is a groundbreaking £28 million project off the North Cornwall coast to create the world's first large-scale wave energy demonstration centre.

The project is being supported with £4.5 million from the Department of Energy and Climate Change and led by the South West RDA. It will create a giant 'socket' on the seabed that will be connected to the National Grid and will allow wave device developers to test their devices on a scale not seen before. Wave Hub, which is expected to be operational in 2010, could create 1,800 jobs and inject £560 million into the UK economy over the next 25 years.



## New nuclear energy

Utility companies have publicly stated their intentions to build at least 12GW of new nuclear capacity in the UK in the short to medium term and more could be built in the longer term. It is estimated that 1,000 companies in East Anglia received orders from the construction of the last nuclear power station built in the UK (Sizewell B).

We estimate that the potential benefit to the UK per twin reactor station could be around £2 billion in terms of job creation and investment, and the UK manufacturing industry already has many of the capabilities required to deliver a new nuclear programme.

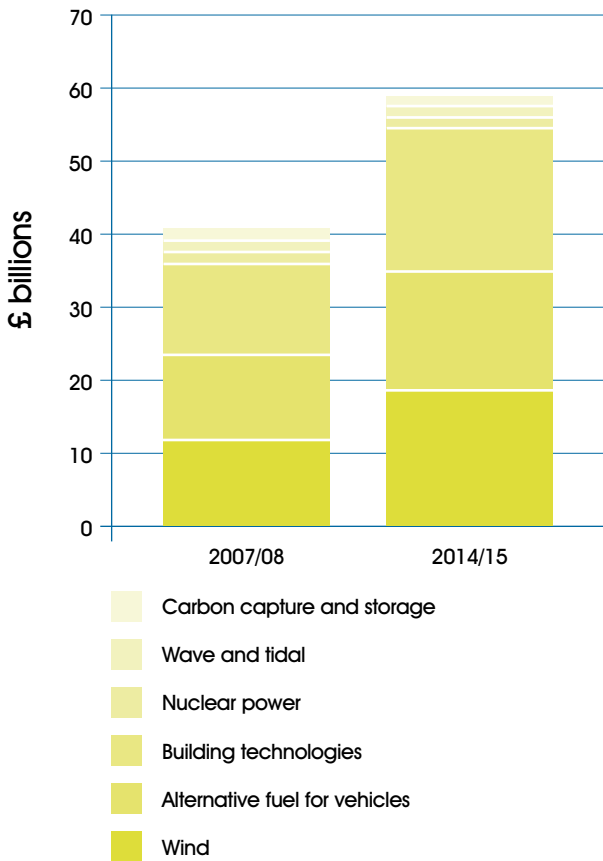


## Low carbon vehicles

The automotive industry is a pivotal part of the UK manufacturing sector, adding value of £9.5 billion to the UK economy and directly employing around 180,000 people<sup>10</sup>. This includes around 74,000 people in vehicle and engine manufacturing, and 106,000 people in the automotive supply chain. By acting now there is real potential for the UK to take a lead in this sector. While there is a great deal of investment globally in low carbon technologies such as hybrid cars, the market for the next generation of ultra-low carbon cars remains wide open. If UK firms and workers can adapt to the shift in production to ultra-low carbon vehicles, the potential market in the UK and abroad is huge.

<sup>10</sup> ONS ABI 2007 data (November 2008)

**Figure 2: Size of UK sub-sectors**



a fast-moving, dynamic market place and new services, technologies and products will emerge that are difficult to predict. Providing an investment environment that promotes the UK's innovation, creativity and entrepreneurship will be crucial in taking advantage of these emerging trends and opportunities. International competition in solar power is substantial. Nevertheless, global demand for solar is strong and the UK has particular research strengths such as in third generation photovoltaics. The construction sector is one the UK's largest employers, with over 3 million workers employed on site, in material supply and professional services. In 2005 the industry was worth over £100 billion per year. A global drive to meet challenging targets for emissions reductions in the buildings sector will put a premium on low carbon products and services in future decades.

### Other low carbon and green sectors

Other green sectors also have significant potential for growth. These include solar, biomass, hydro, waste management, geothermal, recovery and recycling, hydrogen and fuel cells, carbon finance and other environmental industries. This is



## Realising benefits across the economy through energy and resource efficiency

As well as developing competitive advantage in key sectors, all parts of the economy can benefit by taking action to free up spending from energy and other environmental resources to use on productive investments. It is estimated, for example, that UK businesses could save £3.3 billion a year on their energy bills through energy efficiency measures<sup>11</sup>, which is equivalent to the salaries of more than 135,000 people on an average wage<sup>12</sup>. We have already taken a range of actions to increase energy efficiency, and in Budget 2009 we announced a series of further measures to help businesses, households, schools, hospitals and other public institutions make substantial energy savings (see Chapter 4). As well as freeing up resources, action in the UK to

increase energy efficiency is creating demand for low carbon goods and services which UK manufacturing and construction sectors are well placed to supply.

Other countries have demonstrated what can be achieved. For example, following the implementation of energy efficiency standards and policies in California 30 years ago, residents and businesses had saved \$56 billion by 2003 and it is estimated that they will save another \$23 billion by 2013<sup>13</sup>.

In the UK we are taking action to realise the gains a low carbon economy can bring. The policies announced in Budget 2009, together with announcements made since last autumn, will enable an additional £10.4 billion of low carbon and energy investment over the next three years.



It is estimated that UK businesses could save £3.3 billion a year on their energy bills through energy efficiency measures, equivalent to the salaries of more than 135,000 people on an average wage.



<sup>11</sup> Oakdene Hollins and Grant Thornton (2007). Quantification of the Business Benefits of Resource Efficiency

<sup>12</sup> Department of Energy and Climate Change analysis

<sup>13</sup> California Energy Commission (2005). Global Climate Change. In support of the 2005 Integrated Energy Policy Report.

## 2 | New industries, new jobs

Chapter 1 set out our assessment of the key areas where the UK may have a potential competitive advantage as we move towards a low carbon economy. In *Building Britain's Future: New Industry, New Jobs*, the Government set out a framework for a new activism which will shape our approach to supporting the low carbon economy.

### **Creating the right regulatory framework**

The economic shift to low carbon is a fundamental one that will take time. We already have a clear policy framework. The Climate Change Act sets a long term and legally binding framework of targets for reducing emissions. Our policies to meet these reductions cover providing finance (for example for vulnerable households, through Warm Front); strategic regulation (such as through the Renewables Obligation, Carbon Reduction Commitment and the CERT energy efficiency programme); and market mechanisms (such as the EU Emissions Trading Scheme). In addition, we need to provide targeted short term support where needed to help businesses and households through the economic downturn.

Building on this framework, we are now implementing a series of cross-

cutting policies that employ a new activism to drive low carbon growth in the UK.

### **Access to finance – helping high potential projects**

The first task for government is to ensure that essential investment in energy is able to survive the current constraints in the credit markets. The credit crunch is stalling otherwise good projects.

In Budget 2009 we announced that UK renewable and energy projects stand to benefit from up to £4 billion of new capital from the European Investment Bank (EIB) through direct lending to energy projects and intermediated lending to banks. The Government will bring together the EIB, banks and developers, to ensure this new framework lending and other products deliver rapid and sustained investment for UK renewable energy. The Government believes that this



\* **£4<sup>BN</sup>**

Up to £4 billion of new capital from the EIB for energy projects.



initiative can bring forward £1 billion worth of consented small and medium sized UK renewables projects to deployment.

## Targeted intervention – a new Low Carbon Investment Fund

To capitalise on the growth opportunities that a move to a low carbon economy will bring, we must create the conditions for the UK to be – and be recognised as – the leading location in the world for growing an innovative low carbon business and developing new low carbon products and services.

We are announcing a new Low Carbon Investment Fund to deliver targeted support for sectors with high growth potential. Low

carbon businesses are deciding now where to base their facilities and supply chains. We want to bring these businesses and jobs to the UK and increase our capability and productivity in low carbon sectors. Our investment will provide support for demonstrating innovative technologies that are close to market. It will also support more mature industries to locate in the UK. In total this new fund will provide £405 million to support key sectors in the UK, as set out in more detail in Chapter 3.

## Supporting innovation

To capitalise on the growth opportunities created by the move to a low carbon economy, we must create the conditions

### Box B: New industry, new jobs

*Building Britain's Future: New Industry, New Jobs* set out a strategic vision for Britain's economic recovery. This is about Government's role in ensuring British firms and workers can compete successfully for the jobs of the future – benefiting employees and their families. This is crucial if we are to generate the wealth that is essential to achieve our wider social and environmental objectives.

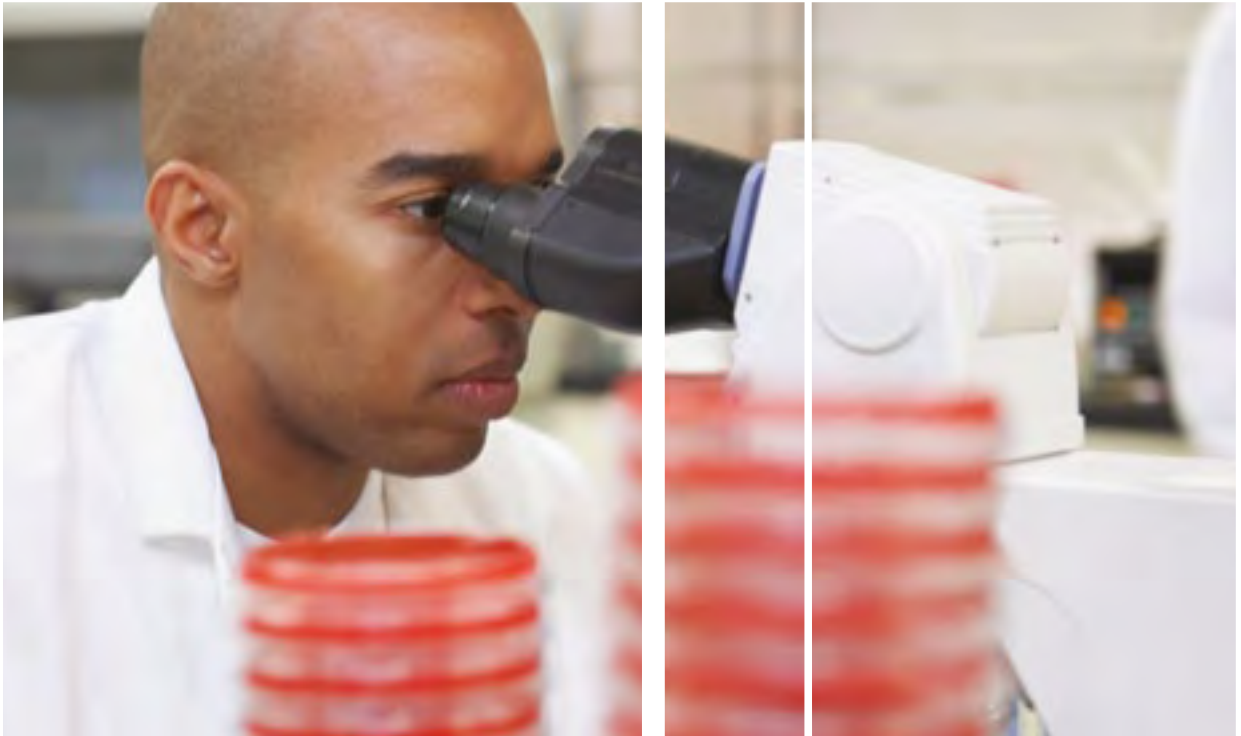
Our vision shows how government will work hand in hand with business to deliver a strong UK economy coming out of the downturn, building on the opportunities presented in particular by new technologies, rising incomes overseas, an ageing

population and the need to move to a low carbon economy.

*New Industry, New Jobs* sets out four immediate priority areas for action and reform in Britain: **innovation, skills, finance** and **infrastructure**. We must also continue to ensure that British businesses are able to access growing global markets.

It also highlights how Government can promote investment, growth and jobs in Britain through more consistency across departments, greater regulatory certainty, smarter public procurement and a readiness to deliver targeted interventions where necessary to supplement – but not substitute for – the market.





for the UK to be the leading place in the world in which to be an innovative business and to develop new products and services. Government alone cannot achieve our climate change goals, and we need to harness and promote the ideas and capabilities of business to create a prosperous low carbon society.

Over the last decade sustained investment has given Britain one of the strongest science and research bases in the world. Britain is now acknowledged as world class in science, research and development, including in areas crucial to the development of low carbon technologies.

We have also established the business-led Technology Strategy Board to drive business innovation in areas where there are opportunities for future growth; established the Energy Technologies Institute (ETI) as a unique private/public partnership to invest in the development of low carbon energy technologies and solutions; operated a successful R&D tax credit scheme; funded the Carbon Trust to support the development and deployment of new and emerging low carbon technologies; and invested in the UK's innovation infrastructure, notably intellectual property systems and procedures, standards and the National Measurement System and its facilities to facilitate greater business innovation.



In addition, the UK Environmental Transformation Fund (ETF) was set up to bring greater coherence to Government's support for the demonstration and pre-commercial deployment phases of bringing low carbon technologies to market, aiming to accelerate commercialisation of new low carbon energy and energy efficiency technologies in the UK. The first year of ETF has seen significant support for microgeneration and bioenergy deployments, grant funding for fuel cells and offshore wind and a range of support funding, via the Carbon Trust, for low carbon business development. In addition new calls

have been launched in areas such as clean coal, anaerobic digestion and offshore wind.

However, as set out in the Innovation Nation White Paper, catalysing business innovation where there are UK strengths and global market opportunities will require strategic action to align demand side measures such as the power of public procurement, public policy, and the regulatory environment with support for supply side measures such as research and development and access to finance.

In addition Budget 2009 announced increased funding for the Technology

Strategy Board, which will enable it to build on its investments to date to stimulate technological innovation, in areas such as those covered by its Low Carbon Vehicle and Low Impact Buildings Innovation Platforms.

To progress towards our low carbon society we will work collaboratively with our partners, including the research community and business, to develop a shared vision of the potential technology and infrastructure requirements for 2050; the critical pathways and decision points for getting there; key risks and potential areas where further innovation could significantly improve outcomes and reduce costs; and then map opportunities and gaps.

To enhance our leadership in the low carbon energy generation sector, we are focusing on how the Government could increase support to business in order to accelerate the development of low carbon energy generating technologies by improving the customer journey, coordination of funding and policy measures, and collaboration between developers and investors.

## Energy infrastructure

Technology and innovation will be fundamental drivers of the move to low carbon, and the UK is well-placed to play a leading role.

Investing in new infrastructure will be key to increasing efficiency in a low carbon economy as well as attracting and enabling development of new low carbon energy sectors. In addition there are major savings, both financial and in carbon emissions, that can be realised by action on energy

efficiency. More detail on the actions we will be implementing to deliver greater energy efficiency, through infrastructure, incentives and support, are set out in Chapter 4.

## Skills development

The transition to a low carbon economy will affect our nation's skills needs and the jobs market in major ways. In reforming the skills system we need to ensure that it meets tomorrow's as well as today's skills needs. Later this year we will publish an 'active skills' paper, detailing how the skills system in England as a whole will support these developing policies.

Key elements of this work will include developing the practical and analytical capability to collect, process and deploy intelligence on skills needs in key sectors and markets quickly and effectively; a new Skills Funding Agency to ensure that the skills system delivers the skills we need, including low carbon; developing a rapid, more responsive approach to the development of new qualifications and apprenticeship frameworks; ensuring our universities are incentivised to respond quickly to support areas of potential growth; and the new adult advancement and careers service and new skills accounts which will support people to get jobs in low carbon and other key emerging markets.

In the next chapter we set out more detail on how all of the cross-cutting policies described in this chapter will operate, and what this will mean for the key sectors identified above.

# 3 New strategic industries in a low carbon economy

The previous chapter set out the cross-cutting actions we are taking, in line with the principles of new activism, in order to support the move to a low carbon economy. This chapter and the following one set out in more detail how those interventions will operate, and in particular how they will support the sectors which initial analysis has identified as offering a potential competitive advantage for the UK.

A focus on key sectors lies at the heart of our strategy for making the UK a world leading low carbon economy. If we are to succeed in a low carbon future, we will need to recognise the industries where our greatest potential lies and make the UK the natural home for investment in those industries by identifying and addressing the barriers that business faces.

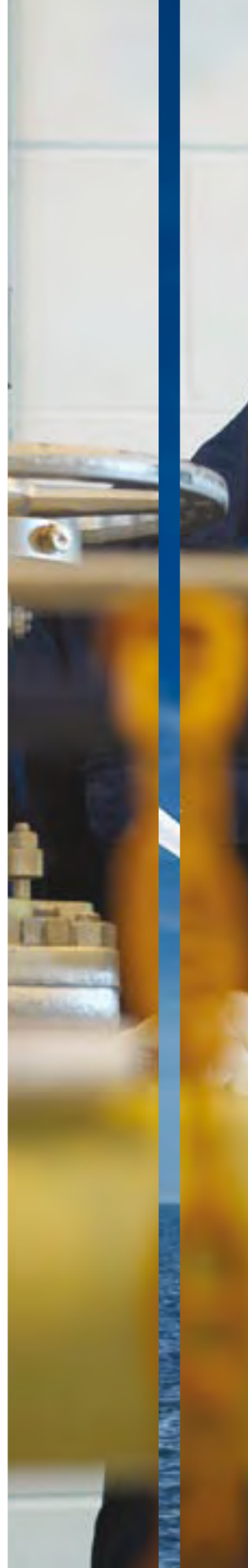
## New low carbon energy sectors

Energy is the engine of our society and our economy. Since the industrial revolution, the world has been dependent on high carbon fossil fuels for its energy needs. That will change dramatically in a low carbon economy. In the years ahead we will be transforming our electricity generation and energy grid to deliver

power more efficiently and to adapt to new forms of power generation. In the future a far greater proportion of the world's energy will come from low carbon sources. The trinity of clean coal through carbon capture and storage (CCS), renewable energy and new nuclear power will form the bedrock of that new energy. The UK has potential competitive advantages in aspects of all of these areas. Our challenge now is to work to secure the supply chain for these growing industries to help us benefit economically from their growth both in the UK and overseas.

## Clean coal through carbon capture and storage

CCS provides a considerable opportunity for UK business both here and abroad. The benefits for the UK economy from new advanced



\* **£405M**

to support the development  
of a world-leading low carbon  
energy and advanced green  
manufacturing sector in the UK



coal-fired power generation plant, including that fitted or retrofitted with CCS, could be significant in terms of Gross Value Added – £1-2 billion a year by 2020 and £2-4 billion a year by 2030 – if the uptake for CCS and the UK share of global markets are as predicted<sup>14</sup>.

At the EU level, we took the lead in last year's negotiations on the 2020 EU Energy and Climate Change package to secure a deal worth billions of Euros to fund demonstration of CCS and innovative renewable energy technologies. The European Economic Recovery Plan currently under negotiation also proposes just over €1 billion for CCS demonstrations.

At the UK level we are committed to early demonstration of CCS technology, and will implement this through a major roll-out of CCS technology. In Budget 2009 we announced that it is the Government's intention to put in place a mechanism to deliver up to four CCS demonstration plants, including both pre-and post-combustion coal projects. We will encourage clusters of CCS infrastructure and expertise, renewing the value of the North Sea as fossil fuel production declines, and focusing on key regions such as Yorkshire and the Humber, the Thames Estuary, the Firth of Forth and Tyne/Tees, bringing major employment and regeneration benefits.

Since the UK is very well placed for storing CO<sub>2</sub> offshore, developing CCS offers the opportunity to renew our offshore industries as oil and gas production declines. A study for Yorkshire Forward estimated that a CCS network in the Humber area could reduce the UK's annual CO<sub>2</sub> emissions by 10% by 2040.

## Renewable energy

Renewable energy will be an essential part of the world's future energy infrastructure. Renewable technologies are at different stages of development and deployment, and we know that the sector is one in which the UK has especially great potential to compete. As Chapter 1 set out, we are likely to have or be able to acquire a competitive advantage in certain areas, including in particular offshore wind and marine energy.

The Renewable Energy Strategy consultation published last year set out a range of proposals to drive a major increase in the sector, leading to total investment in the order of £100 billion up to 2020. Since then we have made further progress towards our target of sourcing 15% of our energy from renewables by this date and intend to publish our final Renewable Energy Strategy in the coming months. Alongside the Renewables Obligation, the Energy Act 2008 provides powers to introduce Feed-In Tariffs (FITs) for



The Renewable Energy Strategy consultation set out a range of proposals to drive a major increase in the sector, leading to total investment in the order of £100 billion up to 2020.



<sup>14</sup> DECC/AEA (2008). Future value of coal carbon abatement technologies to UK industry



small-scale electricity generation. We will consult on the detail of the FIT plans in summer 2009 and are committed to having the FITs in place in April 2010. In addition, we have announced the creation of a Renewable Heat Incentive (RHI). We will be consulting on the detail of the RHI throughout 2009, and expect the RHI to be in place by April 2011.

If renewable industries are to establish successfully in the UK, we need to address the issues they face now in accessing finance during the downturn. We will take action to provide targeted help now for companies faced with these issues, as set out in chapter

2. For other parts of the renewable energy sector, and particularly for some offshore wind projects, the issue is not just one of access to finance but also of project economics. The market alone will not drive the scale of investment needed for the industry to become established. The Renewables Obligation is helping to ensure that investment in many projects continues, and the reforms to the Renewables Obligation, which took effect on 1 April this year, provide an increased level of support for offshore wind, which now receives 1.5 Renewable Obligation Certificates for every MWh of generation (compared to the previous 1 ROC/MWh).



However, since the legislation bringing in this increased support was finalised, we have been provided with evidence that costs have risen markedly due to a combination of supply chain issues and the difficult financial climate. This places at least 1.3 GW of offshore wind projects in jeopardy. The consequences of such a large amount of capacity not going ahead would risk undermining our renewable energy goals and ability to develop a domestic offshore wind industry. Accordingly we are announcing an early review of the banding

for offshore wind, in order to ensure that the opportunities offshore wind offers to the UK are not lost and projects receive the correct level of stimulus they need.

If the new costs analysis is borne out in the review, we will consult on amendments to the Renewables Obligation so that those offshore wind projects which sign contracts between 23 April 2009 and 31 March 2010 confirming that the project will go ahead and which start offshore works before the end of 2011 will qualify for 2 ROC/MWh (subject to Parliamentary and State Aids approval).



Again subject to the result of the review, consultation and Parliamentary and State Aids approval we will consider allowing projects which sign contracts between 1 April 2010 and 31 March 2011 and start offshore works before the end of 2012 to qualify for 1.75 ROC/MWh. These proposals should apply to up to 3 GW of planned capacity and be worth some £2-£3.5 billion to the offshore wind sector.

Targeted help is also needed to ensure that the industry is prepared in advance for the major opportunities that will be created by the RHI and Feed-in Tariffs. Therefore, to ensure immediate support for the industry, we are committing £45 million to encourage the public and domestic sector to invest in small scale renewable energy technologies,

and support the emerging UK renewable industry.

All of this, alongside our natural advantages, will help make the UK the natural home for investment. But we are also committed to doing more than this to support investment in both offshore wind and other renewable energy technologies.

The Low Carbon Investment Fund described in Chapter 2 will provide targeted investment of £405 million to:

- Fund delivery of demonstration and other projects to make the UK a world centre of excellence in close-to-market innovation in technologies such as offshore wind, wave and tidal energy.

### Box C: Expanding the renewable energy industry through a Low Carbon Investment Fund

The Low Carbon Investment Fund will help make the UK a world centre for new low carbon energy industries. It will provide industry with the facilities it needs to develop and demonstrate technologies such as offshore wind and marine energy, and help business to establish its manufacturing and supply chains in the UK. In the renewable energy sphere alone, we expect this new package to support delivery of a range of key outcomes, for example:

- Multiple user test sites for new wind turbine technology, helping new and established turbine manufacturers to bring their products to market
- Building the UK's marine energy infrastructure through targeted investment to expand our wave and tidal testing facilities, enhancing the UK's position as a world leading centre for development and demonstration of this emerging technology
- Developing our port infrastructure to provide the deepwater quayside access needed to make the UK a natural home for large-scale offshore wind component manufacture and supply
- Complementing infrastructure projects by providing innovation and other support to business for the development and demonstration of key technologies such as offshore wind turbine components.

- Work in partnership with mature industries to remove barriers to investment in the UK such as developing our port infrastructure to facilitate the development of the offshore wind supply chain.
- Funding will be delivered through existing programmes such as the Environmental Transformation Fund, and as part of the Strategic Investment Fund, as set out in Budget 2009.

These proposals, taken together, will give a major new boost to the renewable energy industry in the UK. They operate at different levels to support each stage of the industry's development and supply chain. To ensure that all of this support is effectively co-ordinated, the Government has announced its intention to create the Office for Renewable Energy Deployment (ORED). Through the Budget, we will be increasing funding for ORED, to support its role as a focal point to co-ordinate action across Government both to remove barriers and stimulate investment, working in partnership with industry to ensure that Government action complements the working of the market.

### New nuclear power

Nuclear power has an important role in the UK and other global markets in order to ensure affordable low carbon energy, as well as contributing to security and diversity of supply. Utility companies have publicly stated their intentions to build at least 12GW of new nuclear capacity in the UK in the short to medium term and more could be built in

the longer term. This domestic UK nuclear revival provides substantial business opportunities, both directly and for those industries involved in the supply of goods and services required for the construction, operation and maintenance, and decommissioning of nuclear power stations. The creation of a strong domestic market in Britain will enable new market entrants to build a strong product base and expertise supplying the home market from which they can look to export.

Nuclear power has been part of the UK's energy mix for the past five decades. There are currently ten power stations operating across England, Scotland and Wales, supplying around 16% of the electricity generated in the UK in 2007.

Civil nuclear power generation is set to grow globally, with 34 reactors already under construction according to the International Atomic Energy Agency. Deutsche Bank research suggests this is set to continue. Nuclear build forecasts have been rapidly revised upwards over the last 22 months and there are now 99 reactors being planned, and proposals for a further 232. This creates a multi-billion pound opportunity for the UK economy in terms of job creation and supply chain opportunities.

As set out in the 2008 Manufacturing Strategy, the Office for Nuclear Development (OND) in DECC, with UKTI and BERR, will work with the supply chain and nuclear reactor vendors and operators to help create and support a globally competitive supply chain.



In order to ensure UK industry is best placed to capitalise on these growing opportunities both domestically and internationally the Government will:

- Work to support strategic investment in developing our capability in the production of specialist equipment needed by the civil nuclear industry. This strategic investment will help to provide a hub around which other nuclear supply chain industries could congregate and send a clear signal to UK companies that the UK is part of the global nuclear supply chain.
- Work to promote the huge potential opportunities afforded by new nuclear to existing and potential supply chain companies and help them understand the quality standards they need to comply with.



We are committing £45 million to encourage the public and domestic sector to invest in small scale renewable energy technologies, and support the emerging UK renewable industry.



### **A sustainable future for transport**

Our transport system is fundamental to our economic strength, connecting people to



The automotive industry is a pivotal part of the UK manufacturing sector, adding value of £9.5 billion to the UK economy and directly employing around 180,000 people.



places and businesses to markets. However, the only sustainable future for transportation lies in a wholesale shift to low carbon. Our ambition is for the UK to be a world leader in low carbon transport, and at the forefront of the development and manufacture of low carbon automotive technology in particular.

We are well placed to do this. The automotive industry is a pivotal part of the UK manufacturing sector, adding value of £9.5 billion to the UK economy and directly employing around 180,000 people. In addition, it is estimated that a further 200,000 people are employed in the supply chain in metal forming, plastics manufacture and other manufacturing industries<sup>15</sup>. We need to ensure that this strength is translated into global leadership in the development and manufacture of ultra-low carbon automotive technology such as hydrogen powered, plug-in hybrid and fully electric vehicles.

We are taking decisive action to make the UK a world centre for the development and manufacture of low carbon vehicles, as set out in last week's vision to promote ultra low carbon transport over the next five years<sup>16</sup>.

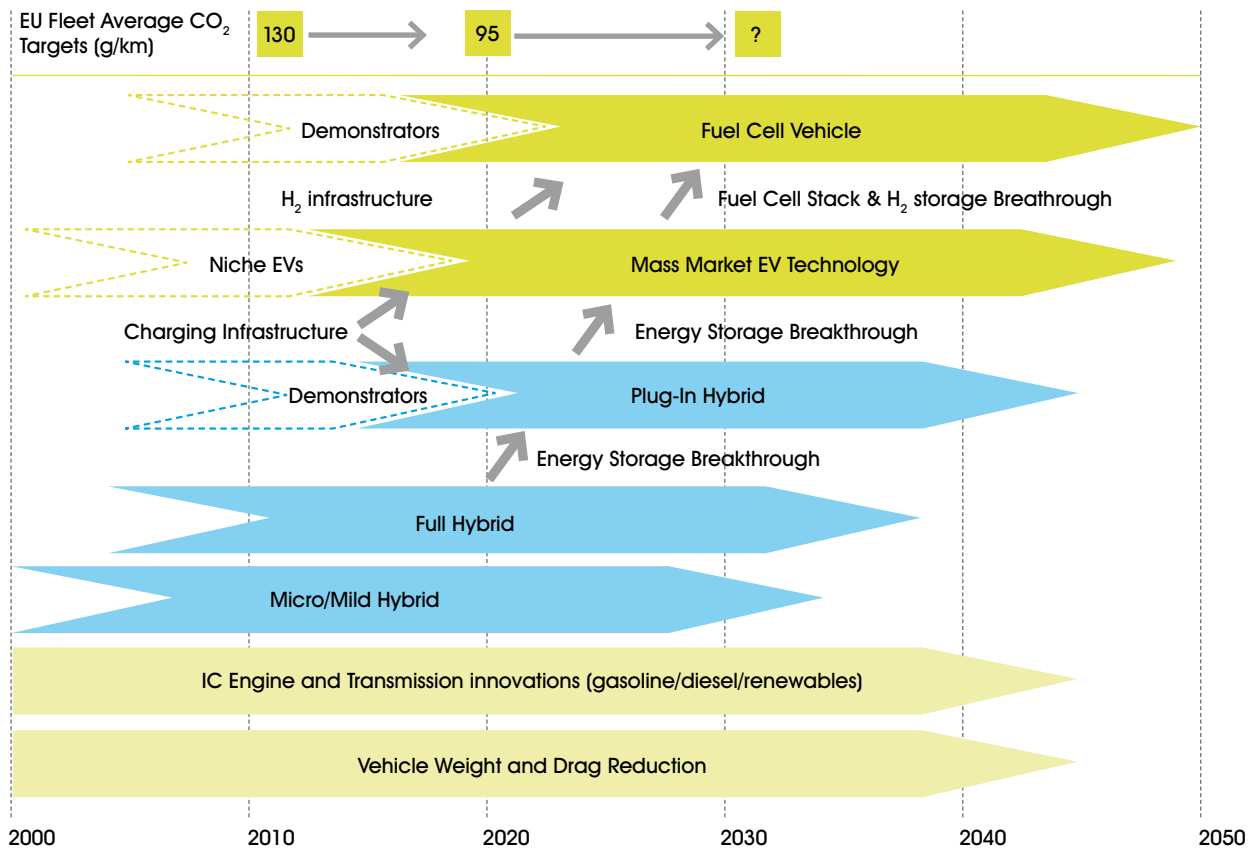
We are putting in place a range of policies covering the key elements of our new activist approach. These include:

- A £250 million scheme to deliver a green motoring transformation for consumer incentives and infrastructure to support the take-up of electric vehicles. The majority of this will be used to create a scheme to reduce the price of electric and plug-in hybrid cars by around £2000-£5000. We are also providing access to seed money worth up to £20 million to those consortia of cities and companies committed to establishing themselves at the heart of the low carbon vehicle market in the UK.
- A £2.3 billion package of support for the automotive sector in the downturn, which includes support for the development of green technologies to reduce carbon.
- Scaling up of the Technology Strategy Board's ultra-low carbon vehicle demonstration competition, more than doubling the planned 100 vehicles.
- Showing public sector leadership in our procurement decision to help demonstrate the potential of electric and low carbon vehicles, for example through the DfT's £20 million Low Carbon Vehicle Procurement Programme, which currently focuses on vans. The winning companies will be announced in May.

This action will sit alongside the measures we are setting in place to de-carbonise the UK's electricity supply, making electric vehicles a lower carbon choice with each passing year. Moving forward, our vision is of the UK leading the world as a producer and user of ultra-low

<sup>15</sup> HMG (2009): Ultra-Low Carbon Vehicles in the UK

<sup>16</sup> Ibid.

**Figure 3: A high level technology roadmap for the UK's de-carbonisation of road transport**

carbon vehicles. The New Automotive Innovation and Growth team, which will publish its report in the coming weeks, has set out a pathway to achieving this with a technological roadmap from now to 2050 (see Figure 3).

It may take some years before we see ultra-low carbon vehicles being used on a large scale but automotive firms are deciding now where to locate their production and are looking for clear Government leadership and a potentially strong domestic market. Now is the right time for us to take bold action,

beginning with the steps we set out here and in *Ultra-Low Carbon Vehicles in the UK*.

Our demonstration projects will put hundreds of ultra-low carbon vehicles on the UK's roads over the next year. We expect vehicle numbers to rise to the thousands in the early part of the next decade, with ultra-low carbon cars being a common sight on our roads by the end of the decade. Over the longer term, these vehicles have the potential to provide the dominant form of road passenger transport as we move to a radically lower carbon transport system.

# 4 | A systemic approach to energy demand and efficiency

Improving energy and resource efficiency gives companies, consumers and public sector organisations right across the economy the opportunity to free up resources through cutting costs.

Better efficiency also brings benefits including reduced exposure to volatile fossil fuel prices, and will help meet our carbon reduction targets across the economy at the lowest possible cost. As well as freeing up resources to use on productive investments, taking action on energy efficiency will create demand for low carbon goods and services which UK manufacturing and construction sectors are well placed to supply. For example, thousands of plumbers have already begun to capitalise on the growing market for advice on designing and installing the latest low carbon technologies such as efficient boilers, solar water heaters and heat pumps.

In order to deliver the change required, we need to move to a system wide approach to reducing demand and increasing efficiency, through investment in new infrastructure.

## **New system infrastructure – electricity**

By 2030 we are likely to have a significantly changed electricity generation mix, with much larger amounts of large and smaller scale renewable energy (including variable wind, wave and tidal) combined with low carbon nuclear and cleaner fossil fuel technologies. This may also be accompanied by changes in the pattern of electricity demand due to increased use of electric heat technologies and electric vehicles.

We will need an expanded and reinforced electricity network. In the medium to longer term, technologies such as smart meters and responsive appliances that react to changes in generation and demand will have an important part to play together with smarter network communication and control technologies to ensure that the whole system operates in the most efficient way.



\* **£365M**

We will invest £365 million in energy savings for businesses, the public sector and households.



Smart meters allow energy suppliers to communicate directly with their customers. This removes the need for meter readings, ensures accurate bills and provides customers with accurate information about their energy use so that they can manage it more actively and efficiently. Government has already taken the decision to roll out advanced metering to medium and large businesses over the next five years, and has set out an indicative target of the end of 2020 for the completion of roll-out of smart meters to all households in Great Britain.

The new investment described earlier in this document could help stimulate the development and early take up of smart grid technologies in the UK by 2015, providing the platform for the creation of a significant market over the next two decades. The

future large-scale deployment of these technologies will attract inward investment, safeguard existing jobs in the UK and generate substantial new employment. There is an opportunity for the UK to become a centre of excellence, well placed to exploit overseas markets in the area of smart grids.

### **New system infrastructure – heat**

Investment in new infrastructure will also deliver major improvements in heating efficiency and we have already put a range of regulatory and fiscal measures in place to promote this. There are two major areas where we are planning new investment to improve the efficiency of heating systems: Combined Heat and Power and community heating.





## Combined Heat and Power (CHP)

Electricity generation and many industrial processes generate lots of 'waste' heat. In many cases, this could be used in secondary industrial processes or to heat water or buildings. The Government has already put in place incentive structures to encourage partnerships between compatible heat generators and users. Since 2001 CHP providers have enjoyed an exemption from the climate change levy on the fuel inputs to the plant, along with the electricity outputs used either on-site or by known end-users. In 2003, this was extended to include electricity outputs that were exported to the grid, via a state aid exemption. This latter incentive has helped to support the development of large-scale CHP projects, and now we intend to do more.

In Budget 2009 we announced that the current exemption from the climate change levy for indirect sales of CHP electricity will be extended by a further decade until 2023, subject to State aid approval. This move alone is estimated to help unlock investment in an additional £2.5 billion worth of Good Quality CHP capacity.

## Community heating

Community heating technology involves generating heat centrally in communities and piping it into people's homes. There are many ways of generating the heat, including via different sizes of low carbon or renewable CHP plants, by collecting 'waste' heat from power stations, or by using the heat from incinerating domestic waste. Modern schemes of the kind now widespread in Denmark use 'heat exchanger' technology



Smart meters allow energy suppliers to communicate directly with their customers. This removes the need for meter readings, ensures accurate bills and provides customers with accurate information about their energy use.



which allows the householder control over the heat level. Community heating technologies can be more reliable than conventional household boiler systems; can offer substantial reductions on heating bills; cut carbon emissions; and set households free from the expense and disruption associated with purchasing and maintaining their own boiler.

In Budget 2009, the Chancellor announced a £25 million package of support to encourage the deployment of community heating infrastructure across the UK over the next two years. This will be used by the Homes and Communities Agency to support exemplar low carbon energy infrastructure schemes which support housing development.

## Support for investment in energy efficiency

As well as making system wide changes to infrastructure, we also need to support businesses, individuals and the public sector to make the changes now that will save on



We are investing an additional £365 million to facilitate a step change in the efficiency of schools, hospitals and other public sector organisations.



their energy bills in the longer term. There are significant barriers that may prevent efficiencies from being fully realised.

- Making long term cost savings by investing in efficient technologies often relies on the availability of upfront capital. Businesses, consumers and the public sector may all experience difficulty accessing capital. Access to this capital is a particular challenge in the current economic climate, especially for the small and medium sized businesses which together account for 9% of the UK's CO<sub>2</sub> emissions<sup>17</sup>.
- People may lack information on the benefits of greater efficiency and what technologies are available, lack confidence that these technologies will actually save money, or give energy efficiency a low priority. This can be particularly challenging for small businesses, where the costs of searching for information and implementing actions may be prohibitive.

The Government has recognised that these barriers cannot be addressed without its support, and we have already taken important action to help businesses, households and the public sector overcome the challenges they face. This includes providing advice on improving energy and

resource efficiency to all sectors; regulating energy companies to install energy efficiency measures; providing financial support to some of the poorest households through programmes such as Warm Front and Decent Homes; and loans to the business and public sectors. We are also supporting development of innovative solutions to improve the energy efficiency of the UK's building stock through the Technology Strategy Board. Significant resources are now being devoted to energy efficiency: for example the CERT energy efficiency programme levers in total investment of some £1.5 billion per year. The consultation on a new Heat and Energy Saving Strategy, published earlier this year, set out the government's increased ambition in this area.

But we need to do more to achieve a step change in efficiency and will do this by a major expansion in our support for energy efficiency right across the economy.

### **Small and medium sized businesses**

We are investing an additional £100 million over the next two years to support around 3,500 small and medium businesses to invest in energy efficient equipment. Loans will be

<sup>17</sup> 'Advanced metering for SMEs: Carbon and cost savings', Carbon Trust (2007).



made available through the existing Carbon Trust scheme but with changes to allow more organisations to benefit. This action will help businesses to make £23 million of savings on bills and lead to CO<sub>2</sub> savings of up to 140,000 tCO<sub>2</sub> per year.

### Public sector

We are investing an additional £65 million over the next year to facilitate a step change in the energy efficiency of around 3,000 schools, hospitals and other public sector institutions. All public sector organisations will be eligible to apply for loans to install energy efficient technologies as well as some

support to drive projects forward. This action will help save £18 million and 100,000 tCO<sub>2</sub> a year.

### Domestic sector

In Budget 2009 we announced that we will invest £100 million over the next two years to help more vulnerable people living in social homes to save money on their energy bills now, when they most need it. The funding will be used to ramp up delivery of cavity wall insulation by 150,000 homes, saving their tenants £120 per year and supporting jobs in the insulation sector.

Budget 2009 also announced that £100 million, as part of the new housing package, for construction of new homes with higher efficiency standards. Tackling existing housing stock as well as new homes is critical, which is why the Government is implementing a major £6.9 billion Home Energy Saving Programme to retrofit the existing housing stock, including the £1 billion package of new measures announced last September. Our Heat and Energy Saving Strategy consultation sets out our ideas for taking further action on existing homes. Tackling the existing stock can provide job and training opportunities and drive innovative new products and ways of working.

### Wider resource efficiency

Businesses in all sectors have opportunities to adapt to a low carbon future by increasing efficiency in their use of resources as well as energy. A recent study<sup>18</sup> estimated the potential value of such savings to UK businesses at £6.4 billion a year. Minimising waste is a crucial part of this. Waste disposal costs businesses money and, if sent to landfill,

generates greenhouse gas emissions. The Government has been creating credible, long term market conditions, for example with a clear price for waste to landfill. The landfill tax has been very successful: the overall quantity of waste recorded at landfill sites registered for the tax has fallen by around 25 per cent since the introduction of the tax in 1996. We are also seeing greater investment in alternative waste management facilities.

At £40 per tonne in 2009-10, and following the announcement in Budget 2009 to continue to increase it by £8 per year until 2013, this tax is a powerful instrument in helping to bring about the changes needed to move away from landfill in favour of more sustainable alternatives such as re-use, recycling, composting and energy recovery.

There is an increasing demand for recycled materials, but at the moment we export much of the recycled material we collect in the UK, while our companies are using recycled materials sourced from abroad. We need to develop the infrastructure in the UK to manage waste closer to its source and to

<sup>18</sup> Quantification of the Business Benefits of Resource Efficiency, Oakdene Hollins & Grant Thornton, October 2007

develop the skills and infrastructure to capture a bigger slice of a growing global market. This is a key part of becoming a low carbon, resource efficient economy.

As announced in Budget 2009, the Government is investing an additional £10 million for capital grants to increase reprocessing infrastructure for food waste, providing additional support for anaerobic digestion and in-vessel composting. These proposals will support local authorities and businesses to save money on waste; safeguard and create jobs across the UK recycling industry; and help generate renewable energy and reduce carbon emissions.

As well as financial support, the Government already provides businesses, consumers and the public sector with a variety of advice on how to save money through better resource efficiency. For example our 'Real Help Now' for businesses campaign, provided by Businesslink.gov, Government's single portal for business advice, provided simple cost saving messages for businesses.

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Thousands of plumbers have already begun to capitalise on the growing market for advice on designing and installing the latest low carbon technologies such as efficient boilers, solar water heaters and heat pumps.

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# Conclusion

Our vision is of a prosperous Britain; one in which we meet the challenge of de-carbonising our economy and grasp the business opportunities created by doing so. It is a vision of the UK as a global hub for low carbon innovation and manufacturing, building on our strengths in areas such as offshore wind, marine and nuclear technology to supply both our own and the world's demand for low carbon goods and services.

The policies and the investment we have announced through this document will make a significant start on the road to a low carbon economy in the UK. They will form a central part of our overall strategy for the UK economy and for meeting our energy and climate change goals. We will come forward later in the year with further detail to develop this approach.

[www.hmg.gov.uk/lowcarbon](http://www.hmg.gov.uk/lowcarbon)



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