

**BIS** | Department for Business  
Innovation & Skills

**BIS CARBON REDUCTION  
DELIVERY PLAN**

MARCH 2010

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## Foreword

I am delighted to endorse our first Carbon Reduction Delivery Plan.

Avoiding climate change is one of the greatest challenges we are likely to face in the coming years. We have already seen the effect of extreme weather events around the world and the evidence suggests we can expect more of the same. Unless we act now these changes will have a huge impact on our economy and on our businesses.

The 2008 Climate Change Act set us some very challenging targets to reduce our greenhouse gas emissions by at least 80 percent by 2050. We are already acting to address these targets. Last July, we published the UK Low Carbon Transition Plan which set out how the Government will reduce emissions through departmental carbon budgets.

The publication of this Plan is the next phase of our approach. All government departments are producing these plans which show how they will reduce emissions across their own estate as well as in the sectors of the economy where they have influence.

This is a world first and further demonstrates our commitment to addressing the issue of carbon reduction and climate change adaptation.

As the Secretary of State for BIS, I am proud that my Department is playing a vital part in this work and taken together with my Department's Climate Change Adaptation Plan - which we have also published today - these plans will cement our position further as a global low carbon leader.

And significantly, they will help us create the conditions for economic growth in a changing world that will help the UK thrive long into the future.

A handwritten signature in black ink that reads "Peter Mandelson". The signature is written in a cursive style.

**PETER MANDELSON**

# Executive Summary

(i) The UK Low Carbon Transition Plan, published in July 2009, set out the strategy for how Government will meet its first three carbon budget periods covering 2008-2022 – leading to a carbon<sup>1</sup> reduction of 34% (on 1990 levels). The first carbon budget period – 2008-2012 – has been designated a pilot phase.

(ii) This **Carbon Reduction Delivery Plan (CRDP)** aims to demonstrate how current BIS policies and activities could lead to a reduction in carbon emissions, across the UK economy and from its own estate.

(iii) BIS is committed to the continued promotion of economic growth<sup>2</sup> as well as a commitment to actively engage in the development of the carbon budgets agenda and that they can work hand-in-hand. Economic growth will act as a catalyst for the investment needed to develop new, innovative low carbon products/services and will create new opportunities for UK businesses.

## The BIS Share/Governance

(iv) BIS is not a lead department for any of the carbon budget sectors but it does have a percentage share in 5 of the 6 sector budgets<sup>3</sup>.

(v) Throughout 2010 and beyond, BIS will develop a robust internal governance structure to ensure that carbon budgeting is taken into account in future policy making and delivery. We will also work closely with lead departments, and our Non-Departmental Public Bodies to further ensure that BIS's allocated percentages appropriately reflect the level of BIS influence and to establish a process for carbon management and monitoring.

## Skills

(vi) An essential part of delivering a successful low carbon economy will come from fully integrating the skills agenda with our industrial strategy.

(vii) Through its work with the **Sector Skills Councils (SSCs)** and numerous initiatives such as **Low Carbon Economic Areas (LCEAs)**, BIS will promote and further develop the low carbon skills agenda. A key part of this work, going forward, will be the *Low Carbon and Resource Efficiency Strategy* in which a full strategy is due to be published by the end of the year.

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<sup>1</sup> 'Carbon' is used as shorthand for carbon dioxide and other green house gases such as methane, that are measured in terms of their carbon dioxide equivalent (CO<sub>2</sub>e).

<sup>2</sup> Going for Growth published in January 2010.

<sup>3</sup> Breakdown of BIS sector percentages for 2008-12 can be found in Figure 1.

## Homes and Communities Sector

(viii) The Department for Communities and Local Government (CLG) is the lead department for this sector. BIS currently owns a 9% share: Its policies and activities feed into two broad indicators of influence: **Industry Capacity and Competence** and the development of **Low Carbon Products**.

(ix) BIS policies and initiatives that contribute to this sector include the BIS funded **Technology Strategy Board (TSB)** which is investing over £50m in its Low Impact Buildings Innovation Platform which will stimulate development of new innovative ways to improve energy efficiency.

(x) The **Advanced Manufacturing Strategy** is another way in which BIS will help develop UK manufacturing in key areas such as **plastics and composites**, both of which could have an impact on lowering carbon in the construction industry.

(xi) BIS will work together with CLG to ensure joined-up delivery of emissions savings in this sector budget.

## Transport Sector

(xii) BIS currently has a 9% share of this Department for Transport (DfT) led sector budget. BIS contributes to this sector through its direct policies which **promote 'green' innovation** in the move to **low carbon vehicles**; its **close links** with the manufacturing sector and transport industries and finally its **influencing role in business travel behaviours**.

(xiii) **The Office for Low Emission Vehicles (OLEV)**, partly funded by BIS, is one way in which we are putting the UK at the forefront of the design, development, manufacture and use of ultra-low carbon vehicles.

(xiv) We are also working together with other Whitehall departments and key stakeholders to promote innovation, develop skills and best practice and help ensure that the UK Automotive, Aviation and Marine industries are better placed to take advantage of future business opportunities.

## Waste sector

(xv) BIS currently has a 15% share of the Defra led waste sector budget. Defra has focussed its indicators to reflect policies that reduce emissions from landfill, particularly methane emissions.

(xvi) BIS will contribute towards the reduction of methane emissions through its work on the **Sustainable Construction Strategy** which aims to reduce construction waste to landfill by 50% by 2012 and packaging regulations and requirements.

(xvii) A great deal of BIS's activities within the waste sector goes beyond the narrower remit of methane reduction by encouraging businesses to invest in greater resource efficiency and waste minimisation.

## Workplaces and Jobs Sector

(xviii) The Department for Energy and Climate Change (DECC) led Workplaces and Jobs sector has been divided into 2 sub-sectors. BIS currently has a 15% share of the Heating Workplaces sub-sector and a 19% share of the Industrial Processes sub-sector. Totalling, 15.5% of the overall Workplaces and Jobs sector budget.

(xix) BIS's significant share represents the high-level of influence it has as the department with overall sponsorship of the business sector. The majority of BIS policies, within this sector, fall into two broad themes: **Green Innovation** (particularly in construction) and the promotion of **Low Carbon Products**.

(xx) BIS activity within this area covers a wide breadth of policies and activities. This includes the work of **Research Councils** in supporting energy research and post-graduate training, The **Intellectual Property Office's**: Fast Track Green Patents project and the work of the **Advanced Manufacturing Strategy**.

## Agriculture, Forestry and Land Management (AFLM) Sector

(xxi) BIS currently holds a 2% stake of this sector budget based on its ability to influence innovation and promote low carbon behaviours throughout the supply chain.

(xxii) BIS does not have any direct policy levers within this sector. However, we will work closely with Defra – the lead department - to further define our role; as well as contributing to the sector through the work of **Research Councils** and its **Retail** policy initiatives.

## BIS Influence in the Power Sector

(xxiii) BIS does not own a share of this sector budget, as DECC holds responsibility for the full allocation. However, a number of our policies and strategies do impact on the Power sector and will lead to a reduction in emissions.

(xxiv) Examples of BIS influence in this sector include our supporting role of the **Civil Nuclear industry**, the various **TSB Low Energy R&D projects** and the important work of the **Research Councils**.

## BIS Operations/Estate

(xxv) The BIS estate, which currently includes central BIS and its Executive Agencies, has to date performed well in reducing the overall carbon footprint of its offices and road vehicles. Latest figures for 2008/09 show a **26% reduction** in carbon emissions from its administrative estate on 99/00 levels as well as a **44% reduction** from road based admin travel.

(xxvi) Many carbon reductions have been made, in part, by the introduction of new energy efficiency measures including the installation of **automated metering** and **low energy lighting**<sup>4</sup>. BIS were also the first Whitehall department to develop a flexible office workplace strategy which has further promoted flexible working for staff.

(xxvii) Going forward, BIS expects to make further progress, particularly in reducing total waste arising and water consumption.

(xxviii) Finally, from April 2010, responsibility for the **Further and Higher Education** sectors will come under BIS's annual reporting<sup>5</sup>.

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<sup>4</sup> Further measures can be found in Chapter 10.

<sup>5</sup> FE/HE targets and baselines can be found in Chapter 10.

# 1 Introduction

**1.1** The Climate Change Act 2008 created a new approach to managing and responding to climate change in the UK. The first of its kind anywhere in the world, the Act set not only a long-term target to reduce the UK's greenhouse gas emissions to at least 80 per cent below 1990 levels by 2050, but also a legally binding trajectory toward this target in the form of five year carbon budgets.

**1.2** At Budget 2009, the Government announced it was setting the first three carbon budgets – covering the period from 2008 – 2022 – at levels requiring a 34 percent reduction in emissions by 2020 compared to 1990 levels. These targets came into force on 1<sup>st</sup> June 2009. In the UK Low Carbon Transition Plan (UKLTP) published in July 2009, the Government set out its strategy to meet the budgets.

**1.3** At the same time the UK Low Carbon Transition Plan allocated UK Government departments their own departmental carbon budgets, in order to ensure that every part of Government will help to drive the transition to a low-carbon economy. These budgets reflect departments' influence on reducing emissions across the economy as well as emissions from their own estate and operations. All departments committed to producing a Carbon Reduction Delivery Plan (CRDP) by spring 2010, detailing how they will achieve their carbon budgets.

**1.4** BIS is not a lead department for any of the carbon budgets sectors but it does have a share in five of the six sector budgets -for non-traded emissions - and is also required to report on how it will meet the carbon budget for its own estate.

**1.5** Alongside its commitment to playing a full and proactive part in reducing carbon emissions across the UK economy, BIS will continue to promote economic growth in line with its Departmental Strategic Objectives (DSOs)<sup>6</sup> and the ambitions set out in the recently published 'Going for Growth' strategy. These agendas are complementary and mutually supporting.

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<sup>6</sup> For a full list of the Departmental Strategic Objectives please see Annex A.

**1.6** The pursuit of growth ensures that businesses across all sectors generate the investment that is needed in the new technologies, processes and skills that will underpin the UK's low carbon economy, as described in the Low Carbon Industrial Strategy. The advent of carbon budgets is expected to create new opportunities for low carbon partnerships with business and other Government departments, based on shared objectives and a common approach to defining and measuring success. Overseas markets also bring new opportunities for those UK businesses that have low carbon solutions and the UK Trade and Investment (UKTI) led UK Low Carbon International Marketing Strategy helps build the UK's low carbon reputation at home and overseas.

**1.7** This Plan aims to demonstrate BIS's commitment to deliver against its targets. It should be noted that this is the department's first CRDP and this first carbon budget period is a pilot phase. It aims to show there are many positive measures we have both already taken and are taking to reduce our carbon emissions both in-house, in the operations of the BIS estate, and across sectors of the economy. BIS are at the beginning of a journey and a move to a low carbon society will take time. By acting now and ensuring that carbon is central in ours and businesses' long-term thinking we are taking the next steps to ensure future success.

**1.8** One of the greatest challenges for BIS is that our sector allocations are based largely on indirect policy levers and our abilities to influence within the sectors. This makes it difficult to measure BIS performance against carbon budgets. The challenge will be considered in this pilot phase and during 2010 BIS will be working with DECC and other lead departments to further clarify the role that we can play.

**Figure 1**

Carbon Budget Sector <sup>7</sup> 2008-2012	BIS Allocation 2008-2012	
	%	MtCO <sub>2e</sub>
HOMES AND COMMUNITIES	9	37
TRANSPORT	9	58
WASTE	15	17
POWER AND HEAVY INDUSTRY *	0	0
WORKPLACES AND JOBS (1): INDUSTRIAL PROCESSES **	19	16
WORKPLACES AND JOBS (2): HEATING WORKPLACES **	15	68
AGRICULTURE, FARMING AND LAND MANAGEMENT	2	5
PUBLIC SECTOR	N/A	0.07
<b>Total</b>		201.18

\* Falls to DECC as they are sector lead – although BIS activity will have an impact on this sector. Chapter 9 sets out this activity.

\*\* Subset of the single sector Workplaces and Jobs

1.9 Although exact allocations across carbon budget sectors have not been distributed for the next two carbon budgets 2012-17 and 2018-2022, BIS's overall allocation of carbon for these periods is set out in the table below.

**Figure 2**

2013 – 2017 (MtCO <sub>2e</sub> )	2018 – 2022 (MtCO <sub>2e</sub> )
191.74	186.53

## **BIS's Overarching Contribution to delivering a Low Carbon Future**

1.10 BIS mainly contributes to a reduction in carbon through building skills<sup>8</sup> for a low carbon economy, green innovation; and in its influence to encourage business behaviour change and incentivise business innovation, particularly in the regions, through Regional Development Agencies (RDAs).

<sup>7</sup> For a diagram showing the Departmental share of each sector's emissions and the lead department for each please see Annex B.

<sup>8</sup> Please see Chapter 3 for more details.

**1.11** The following BIS strategies contribute to a reduction in carbon across individual carbon budget sectors.

**1.12** An initiative of the Low Carbon Industrial Strategy that contributes to Homes and Communities, Workplaces and Jobs, and Transport carbon budgets are **Low Carbon Economic Areas (LCEA)**. The initiative is not supported by Government funding. However, the designation can be used to coincide with a sectoral-based funding investment by BIS in order to add value. LCEAs aim to build on clear existing strengths in regions/sub-regions to catalyse the growth of key low carbon industry sectors by facilitating strategic alignment of programmes and investment within and across areas.

**1.13** The success of the initiative is expected to manifest in the form of an increased number of low carbon jobs, a larger pool of people with low carbon skills, an increased number of low carbon businesses and a growth in Gross Value Added (GVA) from low carbon outputs. This should create conditions that facilitate a reduction in the carbon footprint of the UK.

**1.14** For instance, the LCEA for built environment in Manchester has a clear focus on developing local building skills and capacity in low carbon construction and refurbishment of housing and other buildings. The LCEA will involve a five-year "retrofit" programme, which will be one of the largest initiatives of this type in the world - improving the insulation of thousands of homes and offices in Greater Manchester. Small-scale renewable energy technologies will also be installed and "smart meters" will be introduced so people can see how much energy they are using.

**1.15** There are currently 6 LCEAs on key carbon themes: hydrogen energy, wave and tidal energy, civil nuclear energy, automotive, ultra-low carbon vehicles and built environment.

**1.16** We will utilise the existing network of departmental Relationship Managers that falls under New Industry New Jobs (NINJ), using their strong links with sector companies. We will also anticipate taking advantage of our Relationship Managers' Forum grouping, which provides a means of highlighting specific business issues through a collective grouping.

## **Measurement of Carbon Reductions**

**1.17** The BIS indicators relevant to carbon emissions for each sector are set out in Annex C. Whilst BIS policies may have an influence on these high-level indicators, in most cases it will be difficult to quantify what the extent of this influence is. In addition, the precise impact of these indicators on carbon emissions are not well known. Thus, because of the indirect nature of their impact, it will be difficult to obtain a robust evaluation of BIS policies against overall trends in emissions.

**1.18** Low carbon products will result in the reduction of traded, as well as non-traded emissions. This split is difficult to observe in practice and thus to apportion achieved carbon savings between the Power Sector and the other sector budgets. In the absence of clear evidence on a traded/no-traded split and for the purpose of this CRDP, BIS will use the assumption of a 50:50 split where policies and strategies are also likely to cause a reduction in carbon in the Power Sector in addition to other sectors. BIS policies and strategies that also contribute to the power sector are noted as such in this Plan.

## 2 Governance, Responsibilities and Building Capacity

### Governance Structures

**2.1** The governance structures for the BIS CRDP will exist to support the Departmental Ministers, the Permanent Secretary and Director Generals to ensure the successful delivery of BIS's carbon reduction targets.

- Within BIS, the Director of Solutions for Business, Low Carbon and Services (Sfblcs) is Senior Responsible Owner for both the CRDP and the Climate Change Adaptation Plan. Carbon budgets will be represented at Management Board level by the Director General, Business Group (BG), who is also the Board Level Sustainability Champion.
- Director Sfblcs will be supported in this role by a **Climate Change Programme Board (CCPB)** and the Sustainable Development Team.
- The CCPB will be composed of key Deputy Directors, from across the department, who have an interest or stake in climate change, carbon reduction and adaptation.
- Members of the CCPB will also constitute a cross-BIS Champions' network (based on the Better Regulation Executive model).
- The Sustainable Development Team (SD Team) will act as secretariat to the Programme Board.

### Interdepartmental working

**2.2** The Sustainable Development Team will feed in to the departmental and BG Business Planning rounds to ensure carbon budgets and adaptation are covered as part of the business planning process.

**2.3** We will establish a working group of officials comprising policy leads for BIS priority sectors and key areas for carbon budgets. We would look to members of this group to facilitate engagement with both external stakeholders such as trade associations, business support organisations and local delivery partners and internal colleagues. The 'working lead' would be responsible for undertaking regular monitoring and reporting on delivery of the department's CRDP.

**2.4** The Better Regulation Executive (BRE) has worked closely with DECC to update the **Impact Assessment** template, guidance and toolkit to incorporate the need to measure a policy's carbon impact, with the intention that policy options consider the impact of absolute carbon emissions (in both the traded and non-traded sectors). The impact assessment template will also include a table of carbon savings over time. The outcome of embedding absolute carbon measurement into policy methodology should lead to a significant reduction in carbon emissions over the next three budget periods and beyond as policy practitioners consider the impact of their policy on carbon emissions.

## Reporting

**2.5** The CCPB will report internally to the Policy and Programme Board (PPB) which is made up of BIS's Permanent Secretary and Director Generals. Regular Ministerial updates will also be provided.

**2.6** Carbon budget activity will also be included in the departmental Annual Report and Autumn performance reports to Parliament.

**2.7** BIS will also contribute to DECC on its progress through the Government response to the Committee on Climate Change.

## Delivery Partners

**2.8** BIS are committed to working closely with its Non-Departmental Public Bodies (NDPBs) during 2010 through setting up sustainable development networks, meetings and workshops to raise awareness and engagement in carbon budgets so that NDPBs can be further included in future versions of our CRDP. This is in line with BIS's Sustainable Development Action Plan in which increasing staff capability and awareness in sustainability issues is a key action for 2010.

**2.9** RDAs and Local Authority Leaders' Boards have joint responsibility for Regional Strategies. BIS, together with CLG, have issued a policy statement and letter on Government policy expectations for Regional Strategies which makes clear that climate change and low carbon awareness should be built in.

**2.10** Going forward BIS will continue to work with RDAs and the bodies through which they act i.e. Government Offices (GOs) to ensure a joined-up approach.

**2.11** We will actively pursue further cross-departmental working by arranging meetings to address interdependencies and establish the part each of us plays in delivering the CRDP. Further to this we recognise that there is a need to explore the importance of skills to all departments and facilitate current cross-departmental working and possibilities.

## **Building Capacity**

**2.12** The SD Team recognises the importance of increasing the understanding of carbon budgets throughout the department. The SD Team will create a departmental-wide communications plan with the purpose of embedding 'carbon thinking' and accountability in all BIS policies and activities.

# 3 Skills

**3.1** Low carbon skills are a priority for BIS and for the whole economy. The skills agenda is wide ranging and varied and will impact on each sector of this CRDP.

**3.2** The creation of BIS has provided a strong platform for ensuring that the whole of the skills system, not just low carbon skills, is integrated with our industrial strategy.

## Low Carbon Skills - what's happening already?

**3.3** In July 2009 the *Low Carbon Industrial Strategy* (LCIS) described how the skills system would support our 'New Industry New Jobs' agenda, in which low carbon is central. The establishment of new **Low Carbon Economic Areas** – with skills demonstrators supporting technology demonstrators - is an integral part of that strategic effort. In November 2009 the skills strategy white paper *Skills for Growth* set out how the wider skills system would support the emerging low carbon economy by:

- Asking the UK Commission to produce an Annual Strategic Skills Audit as the basis for identifying national skills priorities to drive the behaviour of the skills system.
- Focusing more of the skills budget on areas of the economy which can do most to drive growth, like low carbon, and ceasing to fund training that contributes least to our strategic priorities.
- Giving a new strategy-setting role to the RDAs, and more closely aligning skills priorities with regional economic development through Skills Funding Agency (SFA) contracts with skills providers.
- Piloting a Joint Investment Programme in areas key to economic recovery, like low carbon, by re-prioritising funds within Train to Gain, with a cash match from employers.
- Reforming the network of employer-led Sector Skills Councils (SSCs) so that it strongly supports and aligns more closely to emerging sectors of the economy.
- Placing a new emphasis on skilled technician and associate professional skills at Levels 3 and 4, and delivering a further 20,000 apprenticeships through Government procurement.

## Sector Skills Councils

**3.4** BIS supports the industry-led **Sector Skills Councils (SSCs)** through the UK Commission for Employment and Skills. All SSCs have a role to play in taking the low carbon skills agenda forward. As the SSC re-licensing process draws to a close, BIS has asked the UK Commission to start work to help SSCs come forward with proposals, by September 2010, for consolidating into a substantially reduced number of bodies. The streamlined network of SSCs will need to achieve a better fit with the sector boundaries of the future, while still keeping employers at the heart of the skills system. A number of SSCs and other sector bodies have already started working collaboratively on low carbon skills. These employer-led initiatives begin to address some of the challenges identified in the Environmental Audit Committee's report:

- 11 SSCs and 1 Industry Training Board (ITB) have joined forces to deliver a Low Carbon Cluster Report to inform the UK Commission's first Strategic Skills Audit;
- All SSCs have come together under the joint leadership of Cogent and Energy and Utility Skills to coordinate the development of low carbon skills solutions across the economy;
- 8 SSCs and 1 ITB have come together to develop a Renewable Energy Skills Strategy;
- 4 SSCs and a range of third sector partners have come together to shape and support the delivery of the DECC Housing Energy Management Strategy.

## Employers

**3.5** BIS will work with employers to encourage them to take collective action themselves, with skills partners, on skills gaps and shortages and new qualifications – e.g. the **British Wind Energy Association**. And where employers spell out clearly what is needed in terms of new skills, we will ensure that the skills system gets behind that.

## What's next?

**3.6** BIS and DECC have published a consultation document in March 2010 on a Low Carbon and Resource Efficient Skills Strategy. This will take a close look at low carbon skills priorities, and blockages to progress, in each low carbon 'sector' across the economy. A full strategy will be published in autumn 2010, following the consultation period and any recommendations arising from it.

# 4 Homes and Communities Sector

**4.1** BIS has a 9% share of the Homes and Communities sector budget that is led by the Department for Communities and Local Government (DCLG) which has a 27% share and lead responsibility for the sector as the Department that is responsible for housing and communities. DECC has a 63% share of the budget to reflect the number of policies that it leads which impact on the sector and Defra a 1% share.

## Industry Capacity and Competency

**4.2** BIS contribute to this indicator through two broad areas of influence: skills for low carbon (to bring about a 'green' workforce skilled in the production of low carbon products and services) and process innovation. BIS support for the construction industry is particularly relevant in this regard as the sector is a means by which energy saving and micro-generation technologies can be delivered to ensure compliance with increasingly demanding low carbon regulation. The benefits from such industry support will be felt across all carbon budget sectors, not just in Homes and Communities.

**4.3** BIS provides industry support through: the encouragement of innovation (process and product); developing skills strategies for a new low carbon economy; developing and sharing knowledge and experience; the development of standards by BSI, supporting the gathering of data underpinning the industry's benchmarking Key Performance Indicators (KPIs) and using our close links to the construction industry to develop commitment and clear targets to a low carbon future.

**4.4** The **Technology Strategy Board** is investing over £50m to stimulate business innovation through its Low Impact Buildings Innovation Platform, developed in partnership with DCLG. The Innovation Platform seeks to assist business in harnessing the growing market for environmentally sustainable new buildings (created by the Code for Sustainable Homes and Zero Carbon Homes policy) and to stimulate the development of innovative solutions to improve the energy efficiency and environmental performance of existing buildings. The Innovation Platform will invest jointly with industry and other funders in projects to bring innovative solutions to these growing markets, and to overcome barriers to wider use of existing solutions. Recent investments include;

- Support for the AIMC4 consortium of major house-builders to construct twelve energy efficient new homes, within standard developments, that achieve Code for Sustainable Homes level 4 using fabric and primary building services alone. This supports DCLG's work to reduce carbon emissions in new build. The homes will be sold to consumers, monitored and evaluated to increase understanding of fabric performance, emission levels and to gain valuable customer feedback.
- The “**retrofit for the future**” Small Business Research Initiative (SBRI) competition, run in partnership with the Housing Communities Agency, that will fund 87 demonstration, whole-house retrofit solutions within the existing social housing stock with the aim of making deep cuts in carbon emissions. Suppliers for each project were selected on the basis of demonstrating cost-effective carbon reductions with potential widespread applicability. Designs will be made available to the wider industry and solutions will be subject to post occupancy evaluation to confirm the extent to which design expectations are realized.
- Furthermore, through its investment in the **Modern Built Environment Knowledge Transfer Network**, it will aim to improve the UK's innovation performance by bringing together people from businesses, universities, research, finance and technology organisations to improve business competitiveness and productivity through better sharing of knowledge and the use of technology and skills.

**4.5** BIS also provides direct financial support to the **British Standards Institute** (BSI) to support a prioritised work programme for **standards** developed by the members of BSI's technical committees. British Standards are increasingly being developed and revised to assist the construction industry in meeting its sustainability, including low carbon, ambitions.

**4.6** BIS works closely with the construction industry, sponsoring and supporting it to develop its own low carbon commitments. Activities include: joint industry activities such as the **Strategy for Sustainable Construction** and the **Low Carbon Construction Innovation and Growth Team (IGT)** (please see overleaf).

- The **IGT** was commissioned to review the industry to ensure it was “fit for purpose” for delivering a low carbon future. It will assess the strengths of and opportunities for the UK construction industry in a low carbon economy. A report reviewing the enablers and barriers to the UK Construction Industry taking forward the low carbon agenda will be released by the IGT with recommendations on how the construction industry can rise to the challenge of the low carbon agenda. The IGT includes industry work groups examining Housing, Buildings, Infrastructure and Major projects as well as a group of 18 ‘Young Professionals’ drawn from across the built environment spectrum.

- The **Low Carbon Construction IGT Housing group** includes industry experts representing home builders, home refurbishment, construction products, energy providers, social housing policy and academia. The group is examining the opportunities and key challenges created by the requirement on the industry to deliver both lower carbon new homes, and in the context of DECC's HEM strategy, refurbished, residential buildings.
- The **TAHI (The Application Home Initiative) Industry Sector groups on Energy Management and Sustainability and Smart Buildings are actively engaged on the LCIS.** The Better Regulation Executive (BRE) leads the Smart Buildings work and is developing an Energy Zone project, supported by industry and the Technology Strategy Board (TSB), based at its Innovation Park. This demonstration activity combined with TAHI's work on smart home standards is likely to increase the number of smart energy systems deployed in the home leading to reduced domestic energy consumption and a consequent carbon reduction. Through BRE's strong links into the construction industry this work should also lead to improved energy efficiency in new build construction and refurbishments.

## The Low Carbon Industrial Strategy (LCIS)

4.7 The Low Carbon Industrial Strategy was launched in July 2009

- As part of the LCIS strategy, Manchester was announced as the first **Low Carbon Economic Area** for built environment. The Manchester LCEA has a clear focus on developing local building skills and capacity in low carbon construction and refurbishment of housing and other buildings.
- Also, in support of the Low Carbon Industrial Strategy is the New Industry New Job's (NINJ) Relationship Management network, which should contribute to sector efforts to reduce carbon emissions particularly through innovations in telecoms infrastructure, communications devices, PCs and peripherals.<sup>9</sup>

## Research Councils

4.8 BIS Science & Research Budget provides funds for the Research Councils which support a range of research and related postgraduate training with relevance to the low carbon built environment. This includes investments in aspects of the cross-Council programmes (please see overleaf):

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<sup>9</sup> For more information on NINJ's Relationship Management to improve business sectors, Whitehall, EU and international organisations productivity and sustainable performance in the UK, please see the Workplaces and Jobs Sector Chapter.

- **Research Councils Energy Programme** (especially through initiatives such as the 'People, Energy and Buildings' or the 'Transforming Energy Demand through Digital Innovation'),
- **“Living With Environmental Change Programme”** (elements of which should aid communities in being better prepared to be able to invest in lower carbon lifestyles),
- As well as individual Research Council programmes, such as **Engineering & Physical Sciences Research Council (EPSRC)**, via four of the EPSRC Innovative Manufacturing Research Centres which focus on construction outcomes and the **Sustainable Urban Environment (SUE) Programme**. For example LED technology developed with EPSRC funding could help to cut carbon emissions by 23 million tonnes and reduce household lighting bills by 25 per cent; the “40% House” project shows it is possible to cut residential energy use by 60%; and the development of a new fuel cell combined heat and power (CHP) unit could be generating cheap, reliable and low carbon electricity in UK homes by 2011).

**4.9** BIS Research Base also supports **The Science & Society initiative, Sciencewise Expert Resource Centre (ERC) with funding for Low Carbon Communities Challenge**. The Sciencewise ERC for Public Dialogue in Science and Technology is part-funding the public dialogue element of DECC’s Low Carbon Communities Challenge to work with twenty local communities across the UK to enable them to test options for the delivery of low carbon lifestyles. BIS programme spend is £250,000 and the Challenge should deliver a better understanding of the scale of reduction in carbon emissions and energy demand that can be achieved within communities from the development and testing of community support packages. The Challenge itself has been shaped by the Sciencewise funded public dialogue, the Big Energy Shift.

**4.10** Sciencewise is also supporting a NERC-led public dialogue on geo-engineering, and have previously led a project on industrial biotechnology.

**4.11** BIS also supports the industry-led **Sector Skills Councils**. The construction-related skills councils are critical in ensuring the promotion and development of professional and specialist skills for Low Carbon, including the necessary qualifications regimes. Construction Industry Training Board (CITB)/Construction Skills, Asset Skills, Summit Skills and Energy and Utility Skills are actively engaged in the development of a renewable energy skills strategy, reviewing skills for energy efficiency and retrofit and carbon reduction in social housing through the Homes and Communities Agency (HCA). The Sector Skills Councils also provide funding support for low carbon centres of excellence such as Suscon in the Thames Gateway, INet in the East Midlands (with East Midlands Development Agency) and Innovation in Sustainable Construction in West Nottinghamshire.

**Figure 3: BIS Policies and Strategies that increase Competency and Capacity for Low Carbon and Carbon Reductions in Homes and Communities Sector.**

<b>Policy</b>	<b>Key Dates</b>	<b>Outputs</b>
<b>Technology Strategy Board (TSB): Low Impact Buildings Innovation Platform</b>	Funding for new research projects initially until 2012, with activity continuing beyond that.	Investing jointly with industry and other funders in projects that help to bring innovative solutions to the market, and to overcome barriers to the wider use of existing solutions.
<b>Retrofit for the Future</b>	Demonstrators selected Jan 2010. Retrofits concluded within 1 year, monitoring of solutions until 2013.	87 demonstration, whole-house retrofit solutions. Post occupancy evaluation.
<b>Strategy for Sustainable Construction</b>	A second progress report due to be published in 2011.	Shared Industry and Government strategy to deliver monitored targets for improved construction sustainability.
<b>Low Carbon Construction Innovation and Growth Team (IGT) – including Housing and Young Professionals groups.</b>	Interim IGT published March 2010, Full report due end 2010.	A report reviewing the enablers and barriers to the UK Construction Industry to taking forward the low carbon agenda
<b>TAHI Energy Management and Sustainability Smart Building Sector Groups/BRE Energy Zone</b>	Ongoing	Increase in number of Smart Meters in UK homes. Improved energy efficiency in new build construction and refurbishments.
<b>NINJ Relationship Management</b>	Ongoing	Reduce carbon emissions particularly through ICT technologies.* Also contributes to Workplaces and Jobs Sector.
<b>Research Councils: Programmes including Research Councils Energy Programme; Living with Environmental Change (LWEC); Engineering and Physical sciences Research Council</b>	Ongoing	Investments in research projects and programmes which will provide novel technologies and solutions, better understanding, for use in policy and practise, and high quality researchers & engineers  <b>* Also contributes to Transport, Power and Workplaces &amp; Jobs sectors.</b>
<b>Sciencewise Expert Resource Centre (ERC) funding for Low Carbon Communities.</b>		Better understanding of <ul style="list-style-type: none"> <li>• the scale of reduction in carbon emissions and energy demand that can be achieved within communities;</li> <li>• the nature of the blueprint or support packages required to achieve these reductions;</li> <li>• broader social and economic impacts of these community support packages.</li> </ul>

**Figure 3 cont'd**

Policy	Key Dates	Outputs
Sector Skills Councils	Ongoing	Ensuring the promotion and development of professional and specialist skills for Low Carbon.

## Low Carbon Products

**4.12** Low carbon products can help reduce emissions in homes and communities in a number of ways. They can induce energy savings by inducing behavioural change e.g. through the use of SMART meters, or by improving insulation or energy harvesting, from the use of advanced materials. In addition to funding for innovation through the TSB and Research Council programmes, BIS has the following policies that contribute to the Low Carbon Products Indicator:

**4.13 Advanced Manufacturing Strategy:** The strategies to advance UK manufacturing in key areas such as plastics and composites could impact hugely in key areas impacting directly on the construction sector. These areas could include developments in materials with higher load bearing, durability and insulating properties or reduced weight, the latter enabling key processes such as offsite construction allowing structures such as bridges to be installed quickly with minimal environmental impact.

**4.14 Plastic Electronics: UK Strategy for Success:** Plastic Electronics is an emerging sector with great long-term potential. It makes it possible to produce a wide range of innovative products more cheaply and efficiently than previously viable, ranging from ultra-efficient lighting to low-cost building integrated solar cells. The UK is among the world leaders in this sector, with great strengths in our science and skills base, and with key businesses throughout the embryonic supply chain. Our vision is for the UK to build on that potential and exploit the opportunities for UK manufacturing as demand for plastic electronics rapidly grows. To hasten the application of plastic electronics, BIS is providing £12m through the Strategic Investment Fund to a £20.5 million expansion of the Printable Electronics Technology Centre (PETEC) at Sedgefield.

**4.15 Digital Switchover Programme:** From 2008-2012 the analogue television signal will be switched off TV region by TV region and the digital terrestrial signal will be boosted. Whilst the programme is almost entirely funded by broadcasters (approximately £1.2 billion), BIS funding has been £800K - £1million per annum. The Regulatory and Environmental Impact Assessment produced in 2005 by Government estimated a 0.37% increase in domestic energy consumption for completing digital switchover in 2012. This will be partly offset by savings in energy used by the transmission networks as the fully rolled out digital network will use a fraction of the power that the older analogue networks use. The increase is also expected to peak during the switchover process itself and then tail down to a more neutral level within a few years of switchover being completed.

**4.16 EU Commission Recommendation on mobilising ICT to facilitate the transition to low carbon economy.** The ICT industry contributes 2% of the UK's carbon emissions and whilst the Commission recommendation is not legally binding this does hold political force. The recommendation states that the ICT sector should help to improve the energy efficiency of the construction and buildings sector by encouraging them to work in partnership with ICT providers. This should have a positive impact on the built environment including domestic buildings and should reduce carbon emissions in this area.

**Figure 4: BIS policies and Strategies that relate to Low Carbon Products**

<b>Policy</b>	<b>Key Dates</b>	<b>Outputs</b>
<b>Plastic Electronics: UK Strategy for Success</b>	2011 for completion of facility	Facility should lead to development of prototypes and manufacturing processes for ultra-efficient lighting and pv solar cells.  <b>*Also contributes to Power and Workplace &amp; Jobs sector</b>
<b>Digital Television Switchover</b>	Any positive decrease in power consumption in transmission networks will be post-2012: Second Carbon Budget.	A fully rolled-out digital network is likely to use less power than the older analogue networks used.  <b>* Also contributes to Power Sector</b>
<b>EU Commission Recommendation on mobilising ICT to facilitate the transition to low carbon economy</b>	Ongoing	Reduction in Carbon emissions from the domestic built environment.  <b>* Also contributes to Power Sector</b>

# 5 Transport Sector

**5.1** BIS has a 9% share of the Department for Transport (DfT) led Transport sector carbon budget. Our degree of influence on the reduction of emissions in the transport sector is based firstly on our current direct policies which support and promote green innovation in the move to low carbon vehicles; secondly through 'Relationship Management' of the manufacturing sector where we can help influence the direction the industry is taking; and finally through its sponsorship role to influence business travel behaviours and business related freight movement.

## Automotive

**5.2** BIS Automotive Unit helps the UK Automotive Industry succeed, by encouraging the spread of best practice in design and manufacture, supporting and encouraging inward investment and influencing the design of regulations and Government policy so competing policy aims are balanced, burdens on industry are minimised, and where possible policy/regulations reflect the best interests of the sector. The Unit works closely with key automotive firms through its network of Business Relationship Managers and policy experts whose job it is to ensure that they build and maintain a comprehensive understanding of the main issues that affect the industry's productivity and competitiveness. The technology team also works with the Technology Strategy Board (TSB) and DfT to influence the scope of R&D programmes and customer incentive packages, whilst the Policy team works with UKREP to influence EU policies to ensure that UK firms are not disadvantaged.

## Aviation

**5.3** Aviation is a strategic industry, and there is a significant role for Government in the development and management of the industry. BIS has a specific role in interfacing with the UK aerospace industry, a key player in the world market and a major contributor to the UK economy through manufacturing and research into new technologies. We promote competitiveness and productivity within the sector. BIS Relationship Managers work together with key industry players in order to develop a detailed understanding of these issues. We also work closely with other key stakeholders to best identify how to remove barriers and unlock the potential for development of new technologies as well as influence the scope of R&T programmes both within the UK and in Europe. Further to this we work closely with DfT, who lead on aviation policy, to ensure that UK industry is not disadvantaged within a global market.

## International and Europe

**5.3** The aviation sector operates across international borders and serves global markets and consequently action to reduce environmental impacts is best taken at international level. The UK Government plays a strong role in the International Civil Aviation Organization - the global forum for civil aviation - in formulating new policies and adopting new standards on aircraft noise and aircraft engine emissions, ensuring that the UK industry can continue to operate competitively. Environmental issues are also addressed by the Committee on Aviation Environmental Protection (CAEP) where BIS provides support to the Department for Transport (DfT).

**5.4** The future CAEP work programme cycle includes development of a CO<sub>2</sub> standard and the establishment of technology goals for fuel burn. Both of these have a key role to play in policy development - standards are a regulatory instrument, which set a minimum level of environmental performance, and goals provide a forward view on what technology might be able to deliver in terms of emissions mitigation over the goal-setting period set against foreseen (or quantified) environmental need.

**5.5** The Advisory Council for Aeronautics Research in Europe (ACARE) has a vision for the European aerospace and air transport industries with a set of targets for 2020. Aerospace companies in Europe have adopted these environmental targets, and will aim to deliver technologies to allow CO<sub>2</sub> emissions reductions of 50% (per passenger per kilometre) for new aircraft produced from 2020 compared to those produced in 2000.

**5.6** BIS and the Department for Transport share responsibility for our work in Europe in relation to collaborative research through the European Commission's Transport Programme Committee. Industry has embraced these targets, and is working towards their achievement through advances in technology and improved air traffic management and operations. The European Commission has largely focused its collaborative research funding based on the ACARE targets, which is being delivered through the Framework Programme, Clean Sky Joint Technology Initiative and SESAR.

## UK

**5.7** In 2009, the Government announced a target to limit UK CO<sub>2</sub> emissions from aviation to below 2005 levels by 2050, designed to set a clear long-term framework that will focus and shape long-term investment decisions made by the aeronautics and air transport industries. The Committee on Climate Change has recently published a report which indicates that, in the 'likely' case, the target can be achieved assuming that capacity is limited to 60% growth in passenger numbers. If fuel efficiency gains greater than those assumed in the 'likely' case can be delivered, then the 'headroom' to grow could be increased. The challenge for industry is to bring to market technology that safely delivers further efficiency savings, ensuring we can continue to gain the social and economic benefits of aviation while addressing the environmental impacts.

## Marine

**5.8** BIS and the Department for Transport share responsibility for influencing Europe in respect of marine and maritime transport-related research. The European Commission's transport technology platform "Waterborne" is supported by its collaborative research "Framework Programme". One of the research priorities of the Waterborne Technology Platform is the consideration of climate change with respect to infrastructure and technical requirements of vessels.

**5.9** BIS has worked with the marine industries to develop a Marine Industries Strategic Framework, which will be launched in March 2010. The Strategic Framework will be the focus for our cross government activities in influencing environmental legislation and will help develop a technology roadmap to deliver more collaborative research in all aspects of marine technologies, including the reduction of emissions such as carbon dioxide.

## Green Innovation -Shift to Low Carbon Products

**5.10** BIS contributes to the reduction in carbon emissions from transport by supporting a shift to new technologies and green innovation in transport.

## Automotive

**5.11 The Office for Low Emission Vehicles (OLEV)** - announced in the Low Carbon Industrial Strategy in 2009 – is a new cross-Whitehall office involving BIS, DfT and DECC and is charged with ensuring “Britain gets the greatest environmental and economic benefit from the move to ultra-low carbon vehicles”. OLEV oversees the delivery of Government policies aimed at putting the UK at the forefront of the design, development, manufacture and use of ultra-low carbon vehicles. Through its involvement in OLEV, and working with colleagues in DfT and DECC and through our delivery partner the TSB, BIS is continuing to promote and influence Government policy to ensure a wide range of ultra-low carbon vehicles will be supported and that the UK seizes this opportunity to bring new low carbon industries, jobs and investment to the UK.

**5.12** In addition the BIS funded TSB along with DfT, the Engineering and Physical Sciences Research Council (EPSRC) and some RDAs are providing over £160m for the Low Carbon Vehicle Innovation Platform which will support Automotive technology R&D and Demonstration projects over the next 5 years. The Ultra-Low carbon car Demonstration Project, one of the biggest projects of its kind, will also see over 340 ultra low carbon vehicles being trialed on UK roads over the next 18 months.

**5.13** The recently established **UK Automotive Council** brings together leaders of the automotive industry and related sectors to enhance strategic dialogue with Government. The goals of the Council are to create a transformed business environment in the UK for the automotive sector; further develop existing low carbon technology road maps; promote the UK as a strong candidate to develop low carbon and other automotive technologies; and develop a stronger and more competitive automotive supply chain. The Council will work jointly with Government to inform priorities and address strategic issues facing the sector.

**5.14** The **Automotive Assistance Programme (AAP)** aims to support the UK automotive sector's continued investment in the development of more advanced green technologies that can contribute to CO<sub>2</sub> reduction and a low carbon future for the industry. AAP support is provided under the EU Temporary Framework for State Aids and will be available until the framework ends (31 December 2010) or until the budgetary cover is exhausted - but the substantial pipeline of identified projects will deliver positive effects that will last over several years with the new technologies and innovations contributing to reduced carbon emissions over the life cycle of the vehicles.

**5.15** In Budget 2009, the Chancellor announced the vehicle **scrappage scheme**. The scheme has been aimed at providing a short term boost to the UK car industry and stimulating consumer demand in the wake of falling sales. However, the scheme has also got older vehicles off the road and encouraged consumers to invest in new, safer and potentially more environmentally-friendly models. On average, new cars bought under the scrappage scheme currently have CO<sub>2</sub> emissions that are 25% lower than the cars scrapped. Moreover, the typical car bought under the scrappage scheme is 15% less polluting than those bought in 2008.

## Research Council

**5.16** Research Councils also support a range of research and related postgraduate training with relevance to low carbon transport. This includes investments in aspects of the Research Councils Energy Programme, including bio-energy research. For example, the Biotechnology and Biological Sciences' Sustainable Bio-energy Centre (BSBEC), a £27M investment with industrial partners addressing sustainable biochemical routes to biofuels. There are also broader investments in aerospace and automotive related research such as EPSRC funded research to reduce emissions from cars (through, for example, developing a new engine which boosts fuel efficiency, replacing copper wiring with printed flexible circuits which has reduced car weights by 40-70kg) and improving efficiency in catalysts to streamline clean biodiesel production from naturally occurring plant oils.

**5.17** The Energy Technologies Institute (ETI) (a partnership between BIS and leading energy and engineering companies) is investing up to £11m in projects (announced as part of the Low Carbon Industrial Strategy) to provide an evaluation of the consumer response to plug-in vehicles and the supporting infrastructure, working closely with OLEV and TSB.

## Aviation

**5.18** Technology has a vital role to play in improving aviation's environmental performance and reducing carbon emissions. The Government, through the **Technology Strategy Board (TSB)** and the regions, has invested over £300 million since 2004 for the **National Aerospace Technology Strategy (NATS)**, which has been match-funded by industry. The strategy includes a series of technology roadmaps, delivered via collaborative research and development programmes, and includes industry, government and universities. NATS addresses the critical aerospace technologies required to ensure UK competitiveness in the foreseeable global aerospace markets, and help industry to meet the ambitious environmental performance targets of aviation. The strategy's objective is to ensure that the technology generated by the UK science base flows through to industry for commercial exploitation.

**5.19** Aerospace manufacturers can also take advantage of tax credits, which provide between 130% and 175% Corporation Tax relief on research and development investment in Britain.

**5.20** The Government also provides, subject to strict criteria, access to finance for the civil aerospace sector through **Repayable Launch Investment** towards the production of large new aircraft and engines. More widely, aerospace companies are supported through the Regional Development Agencies, the Technology Strategy Board and Business Links via the range of simplified 'Solutions for Business' support initiatives, and through similar support products in the Devolved Administrations.

**5.21** The Government is working closely with the industry to ensure it has the skill requirements essential to deliver low carbon technology advances through the **Sector Skills Council for Science, Engineering and Manufacturing Technologies (SEMTEA)**, and the **National Skills Academy for Manufacturing**. **SEMTEA** is taking a leading role in delivery of £100 million of funding through a compact to support training and skills development.

**5.22** In addition, the **Aerospace Defence & Securities Industries** trade association is developing a Skills Roadmap, which will identify the key skills required, aligned with the NATS Technology Roadmap, so that government resources and skills provision can be aligned to real demand.

**5.23** Achieving supply chain improvement is also critical to the future success of the UK aerospace industry. The Government is therefore supporting the industry-led **Supply Chains for the 21st Century initiative (SC21)** – a change programme designed to accelerate competitiveness by raising the performance of aerospace supply chains. This will also increase the ability of companies to work together to design, develop and deliver more environmentally efficient aerospace products.

**Figure 5 shows BIS funded policies and deliverables that should support a reduction in carbon emissions over the next three budget periods.**

<b>Policy</b>	<b>Key dates</b>	<b>Output indicator</b>
<b>Low emission vehicle charging infrastructure “Plugged-in Places” (UK Low Carbon Industrial Strategy)</b>	Launched 19 Nov 2009 1 <sup>st</sup> round application period closed 31/1/2010 First successful bidders to be announced March 2010	Up to £30 million to support the trialling and deployment of electric vehicle charging infrastructure in around 3-6 lead cities and regions across the UK. This will bring together consortia of cities and companies to start the process of deployment. The funding will be made available between FY2010/11 and FY2012/13.
<b>Low Carbon Vehicle Innovation Platform</b>	Announced May 2007	5 year programme to support low & ultra low carbon R&D
<b>Ultra-low carbon vehicle demonstrator (TSB)</b>	Launched – June 2009  First cars on road – Dec 2009	More than 340 vehicles will be trialled in several UK regions over the next 12-18 months, and this is a critical first step in helping position the UK as a major force in the development and understanding of the potential market for electric and plug-in hybrid vehicles
<b>Low Carbon Vehicle Partnership</b>	Ongoing	For example – Environmental information label for new and used cars.

**Figure 5 cont'd**

<b>Policy</b>	<b>Key dates</b>	<b>Output indicator</b>
<b>Centre of Excellence for intelligent transport systems and sustainable mobility (innovITS).</b>	Ongoing	Includes £200k Sentience project; technology through use of GPS and view horizon ahead allows the engine management system to adjust driving style to meet road conditions ahead. Early indications are that CO <sub>2</sub> reductions between 5%-20% are achievable using Sentience.
<b>innovITS Advance</b>	Ongoing	The facility will enable customers from the automotive, telecommunications and electronics industries to develop, test and validate future transport technologies. innovITS – ADVANCE aims to reduce accidents, improve environmental efficiency and help to alleviate traffic congestion through the efficient and intelligent interaction of vehicles and highway infrastructure.
<b>Continued implementation of the National Aerospace Technology Strategy</b>	Ongoing	Key research & technology projects initiated to assist UK industry seize opportunities, both to retain existing as well as increase their market share, through exploitation of new growth opportunities and deliver significant environmental improvements.  Contribute to wider Government policies to support sustainable growth of aviation.
<b>Ongoing business support for UK aerospace industry to remove barriers and unlock the potential for development of new technologies</b>	Ongoing	£95M funding announced in 2009 from the Strategic Investment Fund for low carbon research to be delivered through the TSB, to support vital research into future advanced wing and propulsion programmes, led by Airbus and Rolls-Royce respectively.  Repayable launch investment announced in 2009 for support for Airbus (for A350 development), GKN (for A350 composite wing components) and Bombardier (for CSeries composite wing development).
<b>Intelligent Transport Systems and Services (ITSS) Innovation Platform (TSB)</b>	Launched 2005	The Intelligent Transport Systems and Services (ITSS) Innovation Platform helps UK businesses develop innovative products and services in response to new market opportunities that may result from government interventions in transport. Through a series of strategic interventions, it will encourage private-sector R&D with the potential to improve efficiencies in the overall transport network and/or promote lower-carbon travel choices.

**Figure 5 cont'd**

<b>Policy</b>	<b>Key dates</b>	<b>Output indicator</b>
<b>Research Councils Energy programme (RCEP):</b>	Ongoing	Number of Programmes and research projects funded. Potential novel technologies, solutions and approaches to sustainable energy. Capacity building - Skilled researchers and engineers with relevant expertise. Evidence and advice feeding into policy and practice  <b>* Also contributes to Power sector, Homes &amp; Communities and Workplaces &amp; Jobs</b>
<b>UK Composites Strategy</b>		Establishment of consortium leading work on recycling processes and applications for recycle. New centre set up and Grand Challenge competition to develop rapid techniques for composites. Light-weight materials such as composites can reduce carbon footprint of sectors including transport by cutting weight and fuel consumption.

## **BIS influencing of the delivery of low carbon solutions**

**5.24** BIS has been instrumental in driving forward the interaction between TSB and industry through the relevant Innovation Platforms.

**5.25** The Low Carbon Vehicles Innovation Platform aims to maximise the benefit to UK-based businesses of the rapidly-developing low carbon vehicles market, and to help accelerate the adoption of low carbon vehicles in the UK.

## **Uptake of Intelligent Transport Systems and Services**

**5.26** The **Intelligent Transport Systems and Services (ITSS) Innovation Platform**, a TSB activity, was launched as a pilot Innovation Platform in November 2005 with a broad remit around the reduction of road congestion. It was originally aligned with the DfT's Road Pricing Trial Demonstration Programme.

**5.27** The ITSS IP's strategy now focuses on how to address congestion effectively by "thinking outside of the vehicle" and asking the broader question "how can we move people and goods more intelligently?" i.e. achieving the optimum balance between human behaviours and technology. The Innovation Platform supports UK businesses in developing innovative products and services in response to new market opportunities that may result from government interventions in transport.

Key deliverables are to:

- Improve the operation and capacity of networks and services through more effective use of technology and by providing better information to users;

- Reduce the environmental impact of transport through effective use of technology and the provision of customer information;
- Plan and manage the above in such a way that the outcomes can contribute to the longer term goal of “seamless travel” in an integrated transport system.

**5.28** Working together with BIS, the DfT provides leadership across the transport sector to achieve its objectives, working with regional, local and private sector partners to deliver many of the services. Additionally, working with BIS offers strengths with the automotive sector, and other areas of industry in the UK such as ICT (Information, Communications, Telecommunications), electronics and the IP. DfT will work with BIS to take advantage of the opportunities to drive product solutions through these related industries.

## Composites Strategy

**5.29** The wider use of light-weight higher performance materials such as composites by industry will play a key role in moving the UK to a low carbon economy. Using composites could reduce the carbon footprint of sectors such as transport, by cutting weight and fuel consumption. Composites will also play an important role in the development of green energy sources such as wind turbines (larger composite blades) and tidal energy (anti-corrosion). These latter benefits will largely be picked up in the power sector carbon budget. This strategy will result in the establishment of a consortium of Government, business and other stakeholders leading work on sustainability, improving recycling processes and applications for recycle. It will also lead to the establishment of a National Composite Centre and a Grand Challenge competition to develop cost-effective, rapid production techniques for composites. These will all have positive impacts on the reduction of carbon emissions.

## Freight Tonnage by Commodity

**5.30** BIS will continue to work closely with DfT to improve the efficiency of freight transportation, encourage transport of freight in the most energy efficient way in the future and utilise existing DfT freight commodity data to track progress.

## Low Carbon Industrial Strategy

**5.31** As part of the Low Carbon Industrial Strategy, BIS is producing “*Running a Successful Business in the Low-carbon Economy: A Practical Guide*”. The Guide gives advice on three key actions businesses can take to lower their transport carbon and save money through being more efficient: Increased use of teleconferencing, car-share, and localisation (investing in UK-based raw materials, local goods and services that also reduce carbon emissions).

**Figure 6 shows BIS funded policies and activities show the BIS influence in the delivery of low carbon solutions**

Policy	Key dates	Outputs
Climate & Environment Retail Action Plan		Retail contracts are a significant proportion of the logistics industry in the UK. Ensuring linkage between supply and demand sides will enable a more joined-up industry approach to low carbon logistics.
Low Carbon Industrial Strategy	Ongoing	<i>Running a Successful Business in the Low-carbon Economy: A Practical Guide</i> .

## Business Travel<sup>10</sup>

**5.32** BIS and DfT will work together during 2010 to explore ways in which we can use our engagement with stakeholders to encourage businesses to adopt smarter and greener travel choices.

**5.33** BIS can use its existing network of contacts within business, industry and trade associations to encourage, where possible, the uptake of DfT's initiatives aimed at encouraging transport users to choose the greener modes of transport, and to minimise carbon emissions.

**5.34** Business Link, the Government-funded business advisory service, could also be a suitable vehicle to promote the benefits of business travel plans.

**5.35** DfT-held 'journey purpose' data will play an essential part in monitoring progress within this area.

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<sup>10</sup> DfT holds journey purpose data and freight data by commodity. This data is classed as contextual data in that it provides an explanatory value for transport sector greenhouse gas emissions and provides context to indicators in their Transport Plan.

## 6 Waste Sector

**6.1** BIS currently have a 15% share of the Defra-led waste carbon budget. As a department we have a natural focus on helping industry reduce its waste and move to a greater resource efficiency.

**6.2** The Waste Chapter of the UK Low Carbon Transition Plan focussed entirely on reducing emissions from landfill, particularly methane emissions. Methane is produced by bio-degradable waste decomposing. The main bio-degradable materials that BIS has influence over are paper from packaging and wood from construction. We will continue to work closely with Defra on the delivery of packaging recycling targets and the reduction of the amount of construction waste being sent to landfill.

**6.3** There are however other areas within waste that BIS are involved in where carbon savings can be made, particularly in the reduction of commercial and industrial waste going to landfill and by encouraging higher rates of recycling. This can present savings from virgin material use. BIS's main focus is to encourage business to become more resource efficient and thus reduce the amount of waste it produces.

### Construction

**6.4** BIS is a key signatory of the joint-government Sustainable Construction Strategy, which contains an overarching target that by 2012 there will be a 50% reduction of construction, demolition and excavation (CD&E) waste to landfill compared to 2008. This target is being facilitated by the Waste Resources Action Programme (WRAP). In order to meet the challenging target of halving CD&E waste to landfill by 2012 (as a result of reduction, reuse, recycling and recovery) complementary, action by industry will be needed through all elements of the supply chain and BIS has a key role in encouraging industry to sign up to this agenda. In addition, some companies have already set their own challenging waste targets based on a clearly demonstrated business case<sup>11</sup>.

**6.5** WRAP is working with industry to help them reduce the amount of waste they send to landfill. Wood is used extensively by the construction industry and is a key material that they are working to keep out of landfill because of its potential methane emissions.

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<sup>11</sup> An update on progress of the strategy can be found at <http://www.berr.gov.uk/files/file52843.pdf>

## Packaging Regulations (shared with Defra): Packaging Strategy

**6.6** The Packaging and Packaging Waste Directive is concerned with minimising the creation of packaging waste material and promoting energy recovery, re-use and recycling of packaging. The Directive has both single market and environmental goals. BIS leads on the Directive, its essential requirements and single market issues. The Directive includes recycling and recovery targets and deadlines. Key measures set for 2008 and maintained thereafter are:

- 60% recovery or incineration with energy recovery;
- 55% recycling of all packaging put on the UK market;
- Material specific recycling targets by weight of 15% wood, 22.5% plastic, 50% metals, 60% paper and board, 60% glass.

**6.7** The UK's packaging policy is set out in the Government's paper *Making the Most of Packaging – A strategy for a low-carbon economy (2009)*<sup>12</sup> To date we have made good progress on increasing the recycling of packaging.

- Packaging waste recycling has gone from 30% in 1997 to 61.7% in 2008. In 2008, the UK recovered 65.7% of packaging waste.
- Since the Producer Responsibility Obligations came into force, the total amount of packaging waste recovered and recycled has increased from 3.3 million tonnes in 1998 to 6.8 million tonnes in 2007, from an estimated total of 10.6 million in 2007.
- Business has helped the UK achieve the Packaging Directive targets of 60% recovery and 55% recycling of packaging waste.
- Companies are taking active steps to reduce their packaging.

**Figure 8 shows the BIS policies that will contribute to its share of the Waste Sector**

Policy	Outline	Key Dates	Outputs
<b>Sustainable Construction Strategy</b>	Reduction of waste going to landfill  Voluntary agreement with industry	Published in Review and progress against targets	50% Reduction of waste going to landfill by 2012
<b>Producer Responsibility Packaging Regulations (Defra-led)</b>	Reduces the amount of packaging used and thus waste, and encourages recycling and recovery	Targets to be met by 2008 and maintained after that.	60% recovery or incineration with energy recovery  55% recycling of all packaging [put on the UK market]

<sup>12</sup> <http://www.defra.gov.uk/environment/waste/producer/packaging/documents/full-packaging-strategy.pdf>

<b>Packaging Essential Requirements</b>	Requires the minimisation of packaging, design for recovery/reuse and limits to heavy metals.	Ongoing  2010-2012	New guidance on minimisation of packaging /packaging waste.  Enforcement fighting fund (combined with Consumer legislation <sup>13</sup> ).  Key actions from the Packaging Strategy <sup>14</sup> on eco-design and use of Standards for packaging reduction.

<sup>13</sup> <http://www.berr.gov.uk/whatwedo/consumers/enforcement/trading-standards/fightingfund/page54407.html>

<sup>14</sup> <http://www.defra.gov.uk/environment/waste/producer/packaging/documents/full-packaging-strategy.pdf>

## Commercial and Industrial Waste

**6.8** Defra leads on most areas of waste policy, and thus an important part of BIS's role is to work jointly with Defra in areas such as Commercial and Industrial Waste, particularly on the work that will flow out of their Commercial and Industrial Waste Statement of Aims and Actions<sup>15</sup>.

**6.9** In particular we are working with Defra on:

- Action 5 - Resource efficiency and co-publishing the 'Saving Money it is your Business' with Defra.
- Action 6 - Identifying with Defra new business opportunities in managing commercial and industrial waste in innovative ways to bring both environmental and economic benefits.
- Action 10 - Taking forward work done by BSI on waste minimisation standards with stakeholders.
- Action 11 – Promoting sustainable event management.

## Encouraging Resource Efficiency and Waste Minimisation

**6.10** At BIS we are particularly keen to make business aware of the amount of waste that they produce and the benefits to be gained from increased resource efficiency in terms of cost savings from reduced resource use and disposal costs of waste. BIS, with Defra, launched the leaflet 'Saving Money, it's your Business' last autumn to help raise awareness. This will be followed up by a practical guide 'Running a Successful Business in the Low Carbon Economy: a guide for SMEs' to help businesses identify and adopt water, energy and resource efficiency measures.

**6.11** Later this year we will be supplementing the information on Business Link on resource efficiency with case studies. These will provide a quick and easy way that businesses can grasp the range of resource efficiency measures available. Further analysis is being done to quantify the possible resource savings and their cost in a report to be published later this year, to encourage business to take up these measures.

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<sup>15</sup> For more information on Defra's Commercial and Industrial Waste Statement of Aims and Actions please see <http://www.defra.gov.uk/environment/waste/topics/documents/commercial-industrial-waste-aims-actions-091013.pdf>

**6.12** The Low Carbon Industrial Strategy promotes and maps out a path to a low carbon economy. As part of their work they have undertaken work with the Better Regulation Executive to look at the regulatory barriers that are in place which prevent Businesses adopting resource efficiency. Their report 'Green Light: A review of regulatory barriers to small businesses' resource and energy efficiency', was published in February and we will work with other government departments towards taking the recommendations to remove the barriers to resource efficiency forward<sup>16</sup>.

**6.13** The revised Waste Framework Directive 2008 which comes into force in 2010 places a much greater emphasis on waste prevention and minimisation, and this is a key message that we need to get across to business. Recently, jointly with Defra we commissioned some research to see what waste minimisation standards existed and what role they might play in helping business to reduce their waste. Emerging conclusions suggested that a benchmarking tool that could help business to monitor their waste and compare it with other businesses in their sector would be useful. This would act to increase business awareness of the waste that they produce and how they can reduce it. We are hoping to take this work further with Defra later in the year<sup>17</sup>.

**6.14** BIS supported the work on the Sustainable Management Standard BSI 8901 and its practical application at the Manchester International Festival in 2009. An important aspect of the Standard is to minimise waste that is produced during an event. We will continue to work with them to see how work can be taken forward from this and promoted in other events, particularly in the 2012 Olympics.

## Regulatory Work

**6.15** BIS is responsible for a number of the producer responsibility directives, some of which are jointly shared with Defra. Many of these directives already have targets for recycling in them, which helps to divert materials from landfill and save the use of virgin materials thus saving Carbon. We monitor progress against these targets, and work to ensure that the regulations are working properly.

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<sup>16</sup> To read 'Green Light 'A review of regulatory barriers to small businesses' please go to <http://www.berr.gov.uk/files/file54466.pdf>

<sup>17</sup> To see the findings for what waste minimization standards exist, please see [http://randd.defra.gov.uk/Document.aspx?Document=WR1401\\_8670\\_FRP.pdf](http://randd.defra.gov.uk/Document.aspx?Document=WR1401_8670_FRP.pdf)

## Collaborative Working

**6.16** A key role for BIS is its ability to work with and influence industry and the rest of government. This involves presenting business views to other government departments and working with industry to help them understand what our policies are trying to do, and get their help in identifying practical areas that need to be taken into consideration.

# 7 Workplaces and Jobs Sector

**7.1** BIS has a 15% share of the Heating Workplaces sub-sector (68MtCO<sub>2e</sub>) and a 19% (16 MTCO<sub>2e</sub>) share of the Industrial Processes sub-sector that both fall into the Workplaces and Jobs Sector, giving BIS a 15.5% share of this sector overall. The Workplaces and Jobs sector, led by DECC, covers the following three areas:

- Industrial/business combustion – that is, the energy used to create heat in industrial activity, as well as the heat used to warm places of work;
- other ‘non-heat’ emissions from industrial processes, such as those created by chemical reactions as a result of manufacturing and industrial activity;
- emissions resulting from the production and use of other gases in the workplace, such as Fluorinated gases used for air conditioning and refrigeration.

**7.2** BIS has a significant share as the department with overall sponsorship for the business sector. A number of measures launched by BIS in 2009 support manufacturing and the drive to a low carbon economy and are helping companies improve their efficiency as well as their productivity resulting in a number of policies which will reduce emissions from industrial activity and in heating workplaces. As with other sectors there is difficulty in some policies to separate out emissions that contribute to the Power sector and those other ‘heat’ emissions used to warm workplaces as well as industrial heat e.g. heat used for manufacturing. Whilst recognising the importance of the lead department’s wish not to double count, all policy measures have been included in this Plan at this stage.

**7.3** BIS contributes to two of DECC’s tier 3 indicators through strategies and policies that promote green innovation and efficient products and processes. The first tier 3 indicator is “the improvement to energy efficiency of non domestic buildings”. BIS contributes mainly through influence in green innovation<sup>18</sup> in construction and ICT .The second tier 3 indicator is “improvement to energy efficiency of industrial activity processes”. Here BIS contributes a number of policies linked to green innovation and energy efficient processes in manufacturing in areas such as use of Composites, plastic electronics and other forms of advanced manufacturing.

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<sup>18</sup> BIS contributes through the tier 4 indicator Green Innovation.

## Green Innovation

**7.4** BIS contributes the following strategies and policy outcomes to this indicator:

**7.5** Many of the themes and policy initiatives contained within the Homes and Communities Chapter apply equally to the drive to reduce carbon while providing comfortable workplaces. These include the work of the Construction Innovation and Growth Team, the LCEA for the Built Environment and support for innovation, standards and skills development, for example the TSB's Low Impact Buildings innovation Platform.

**7.6 TSB Thematic Competitions:** In addition to the Innovation Platform, TSB thematic competitions have supported the development of low carbon energy efficient materials, both in production and in end-use that will lead to reductions in carbon emissions in the Workplaces. The Technology Strategy Board also supports the Modern Built Environment Knowledge Transfer Network which aims to improve the UK's innovation performance through better sharing of knowledge and the use of technology and skills.

**7.7 Tees Valley Investment Programme:** This Programme provides £20 million in SIF funding for new projects in the chemical sector and related process industry supply chains in the Tees Valley. The measures will support the asset base of the area's chemical sector (primarily the Wilton complex) and the process industry in general, including investment in low carbon and energy efficiency measures. Funding will be allocated based on improving the competitiveness of the chemical and related process industries through energy efficiency and carbon reduction measures.

**7.8 EU Commission Recommendation on mobilising ICT to facilitate the transition to Low Carbon Economy:** As mentioned in the Homes and Communities chapter the ICT industry contributes 2% of the UK's carbon emissions. The Commission recommendation is not legally binding but does hold political force. The recommendation states that the ICT sector should help to improve the energy efficiency of the construction and buildings sector by encouraging them to work in partnership with ICT providers. This should have a positive impact on the built environment including domestic buildings and should reduce carbon emissions in this area.

**7.9 Intellectual Property Offices (IPO): Fast Track Green Patents:** Patents in Europe currently take an average of up to 7 years to grant and sometimes longer elsewhere. Delays hinder the diffusion of technologies and this issue is most pressing in addressing the challenges of climate change. From May 12 2009, one of BIS's Agencies, the IPO has offered applicants the possibility to request accelerated search or examination or both, if they indicate that their application relates to a "green" or environmentally- friendly technology. This includes:

- A fast-track to grant for any patent application where the invention is of benefit to the environment;
- Available if the applicant makes a reasonable assertion that the invention is "green";
- No fast-tracking an application unless the applicant wants it.

So far they have had a total of 91 requests since May 2009 (with 2 refusals) which averages 3 applications per week. In particular, applications have been received for inventions including: energy saving devices, technology for harnessing water, wind and solar power, low carbon vehicle technology and recycling.

The popularity of the scheme and favourable publicity has also helped to spread the message that patents can be of assistance in dealing with the challenges of climate change.

The 'Fast track green patents' scheme has also been recognised worldwide. Since the launch in the UK, the following countries have followed suit: US, Japan, South Korea, and Australia. China, Brazil and Canada are all in the process of setting up their own schemes.

## **Digital Britain Portfolio**

**7.10 Transformational ICT Regional Pilots:** These pilots are part of the Solutions for Business Portfolio included in the Digital Britain Report. BIS is providing £50K of funding to Regional Development Agencies who are running 3-year pilots to test the value of ICT in improving business processes, for example, in terms of productivity, competitiveness, market access or carbon neutrality. Carbon neutrality could be in terms of reductions in use of paper, in waste generally, lower transport or energy use & costs. Data will be collected through the monitoring & evaluation framework to assess the contribution through the pilot to a range of possible outcomes including carbon neutrality.

**7.11 Next Generation Access (NGA) & the Universal Service Commitment (USC):** The Government is committed to ensuring the UK has a first class digital infrastructure. The USC will deliver universally available broadband at 2Mbps for the UK. The Next Generation Fund will incentivise the market to deliver NGA, or super-fast broadband, to 90% of the country, allowing for applications and services which may serve to reduce carbon emissions through greater use of tele-working, tele-health and therefore a reduction in carbon intensive travel. NGA also enables the development and use of more energy efficient and low carbon technologies, for example, the shift in computing to central servers and the internet, which could also have an impact in lowering emissions.

### **Advanced Manufacturing Strategy Portfolio**

**7.12 Industrial Biotechnology Demonstrator and Fund Projects (AMI Strategy):** BIS is providing £14m funding for constructing a facility to primarily allow biotechnology and chemicals businesses to test and develop more energy efficient and lower carbon manufacturing processes. In also demonstrating what will not work when up-scaled, the facility will also avoid nugatory investment and therefore further help reduce carbon emissions. Grants will also be provided for biotechnology-related research, promoting innovation in more energy-efficient and lower carbon manufacturing processes.

**7.13 Manufacturing Advisory Service (MAS):** MAS has been very successful at raising productivity levels in manufacturing clients by introducing “lean manufacturing” techniques to reduce all aspects of “waste” in the production process including reducing carbon emissions. Total BIS programme spend is £8m over 2 years (09/10, 10/11 with £4m for low carbon advice) from the Strategic Investment Fund (SIF). However, the majority of MAS funding is from the RDA single programme and European Regional Development fund. Figures for advice given for low carbon will be recorded by the MAS administrator and in the yearly review. However, carbon emissions are not yet routinely recorded by MAS administrators.

**7.14 UK Composites Strategy:** This strategy sits within the Advanced Manufacturing Strategy and sets out how a co-ordinated approach bringing together Government, the regions, industry, research institutes and academia will provide the focus needed to take full advantage of the commercial opportunities provided by the shift to lightweight materials such as composites.

**7.15** The wider use of light-weight higher performance materials such as composites by industry will play a key role in moving the UK to a low carbon economy. Using composites could reduce the carbon footprint of sectors such as transport, by cutting weight and fuel consumption. Composites will also play an important role in the development of green energy sources such as wind turbines (larger composite blades) and tidal energy (anti-corrosion). These latter benefits will largely be picked up in the power sector carbon budget. This strategy will result in the establishment of a consortium of Government, business and other stakeholders leading work on sustainability, improving recycling processes and applications for recycle. It will also lead to the establishment of a National Composite Centre and a Grand Challenge competition to develop cost-effective, rapid production techniques for composites. These will all have positive impacts on the reduction of carbon emissions.

**7.16** As part of the Composites Strategy, the Cogent and Semta Sector Skills Councils are working in partnership to establish an infrastructure and capacity for skills development needed to address the critical skills needed in the development of these low carbon promoting materials. This partnership will address workforce development, industry attraction, higher education and continuous professional development needs. As part of a wider representative group, Cogent and Semta will lead an action plan to address key issues.

**7.17 Plastic Electronics: UK Strategy for Success:** This strategy covers the expansion of the capacity and capability of the Printable Electronics Technology Centre (PETEC), developing it into a global centre of excellence for advanced manufacturing of plastic electronics, including next generation ultra-efficient lighting and photovoltaic solar cells that will reduce carbon. This will also result in a reduction in materials wastage and lower temperature processing with a lower impact environmental footprint. Some of these carbon savings may be picked up in the Power sector and Homes & Communities sector.

**7.18 UK International Low Carbon Marketing Strategy:** This UKTI-led Strategy's objective is to maximise business opportunities from the transition to a global low carbon economy and to promote the UK's reputation in low carbon goods and services. Such opportunities will be available for those companies who have embraced carbon reduction and therefore should help towards such take-up in the UK.

**7.19 Relationship Management:** This is a New Industry New Jobs (NINJ) led initiative in support of the LCIS, in which key business sector contacts will use their sectoral knowledge, reach, expertise and analytical capability to influence key business sectors, Whitehall, EU and international organisations to improve the productivity and sustainable performance of the UK. Relationship Management should contribute to sector efforts to reduce carbon emissions particularly through innovations in data centres, telecoms infrastructure, communications, devices, PCs and peripherals. A Carbon Trust ICT Forum that promotes carbon reduction and its potential benefits for innovation, growth and job creation in a low carbon economy will contribute to the objectives of the Low Carbon Industrial Strategy.

## Research Councils

**7.20** BIS Science & Research Budget provides funds for the Research Councils which support a range of research and related postgraduate training with relevance to the transition to a low carbon economy. This includes aspects of key cross-Council programmes, which will help to provide relevant technologies, process and understanding:

**7.21 Living With Environmental Change Programme** - an interdisciplinary research and policy partnership programme to increase resilience to – and reduce costs of - environmental change, addressing the associated pressures on natural resources, ecosystem services, economic growth and social progress. LWEC was launched in June 2008. 18 programmes involving 20 partners were launched in June 2009 addressing aspects of environmental change. This Programme will make a significant contribution to the UK ability to adapt to climate change and address impacts on natural resources.

**7.22 Digital Economy Programme**, which is investing £120m in research exploring the design or use of information and communications technologies for transforming the lives of individuals, society and business – with research hubs covering transport, creative industries, rural and social inclusion.

**7.23** As well as investments by individual Research Councils. For example, further EPSRC investment in new Innovative Manufacturing Research Centres announced in January included: Photonics (using optical fibres to revolutionise the internet and telecommunications), Regenerative Medicine and Liquid Metal Engineering (developing innovative technologies for the reuse and recycling of metal).

## SME Support in the move to a Low Carbon Economy

**7.24** This is a package of support to help SMEs better understand and respond to the opportunities and risks posed by the move to a low carbon economy that forms part of the Low Carbon Industrial Strategy. The support has four elements (please see overleaf):

- A campaign to facilitate a commitment from large businesses to work with their supply chains to increase awareness of opportunities and risks and action they can take in the transition to a low carbon economy.
- A Tomorrow's Company practical business guide for SMEs on the uptake, development and marketing of low carbon solutions.
- A Better Regulation Executive review of regulatory barriers to the uptake of low carbon solutions by British-based SMEs.
- An examination of the merits of a low carbon product under the Solutions for Business portfolio.

**7.25** Success will be measured by the number of businesses that engage in the programme and actions they take; completion of the business guide review and the case for a low carbon product; and the reception that they receive. These actions should increase and aid the move to a low carbon economy by Small and Medium Enterprises (SMEs).

### **TAHI Energy Management and Sustainability and Smart Building Sector Groups**

**7.26** The TAHI Energy Management & Sustainability Industry Sector Group continues to act as an industry focus for those interested in the ERA and DECC Smart Metering plans. The TAHI Smart Buildings Group is led by BRE. The Energy Zone project at BRE's Innovation Park is attracting UK and inward investors. These activities should result in an increase in numbers of smart energy systems deployed in UK homes/SME businesses and reduced energy consumption. Strong links with the construction sector should also lead to improved energy efficiency in new-build construction and refurbishments.

**The following programmes and policies will impact on the power sector<sup>19</sup> that is led by DECC in addition to falling within the Workplaces and Jobs Sector.**

**7.27 Research Councils Energy Programme (RCEP):** This programme brings together Research Council activities in energy research and related postgraduate training. £300M is being committed over 2008-11 to support a full spectrum of speculative and directed research related to energy, and for working in partnership to contribute to the research and postgraduate training needs of energy-related businesses and others. It brings together engineers and scientists to tackle the research challenges involved in creating new energy technologies and solutions, and understanding their environmental, social and economic implications.

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<sup>19</sup> At present, the assumption of a 50:50 split between carbon reduction in the Workplaces and Industry sector and Power sector is being used due to the difficulty in measuring accurately where carbon savings are accruing from policies at present. BIS will look further into how to more accurately measure this from 2010 onwards.

**7.28 Research Councils: Nanoscience Through Engineering to Application programme:** which can provide novel solutions to a variety of societal issues such as climate change, where investments include £6.5m on projects to improve solar energy harvesting, through photovoltaic applications and water splitting, and improving human health.

**7.29 Energy Technologies Institute:** established in 2007 as a 50:50 Public:Private partnership between BIS and leading energy and engineering companies (BP, EDF, ECONUK, Caterpillar, Shell and Rolls Royce) to invest in the development of low carbon energy technologies and solutions. The institute aims to demonstrate technologies, develop knowledge, skills and supply-chains, inform the development of regulation, standards and policy, and so help to accelerate the deployment of affordable, secure low-carbon energy systems from 2020 to 2050. Current Technology Programmes include Off-Shore Wind, Marine Energy, Distributed Energy Generation, Carbon Capture & Storage, Transport, Energy Storage & Distribution and Bio-energy.

**7.30 Support for Offshore Wind Energy:** BIS and DECC are providing funding to support a step change in investment in the development of the offshore wind industry, including funding for new offshore wind energy manufacturing facilities in the UK and funding for large-scale demonstration of next-generation and near-market offshore wind technologies, along with dedicated national offshore wind testing facilities. This should help grow the sector and increase in the number of skilled jobs created in the UK.

**7.31 Support for the Marine Energy Industry:** This support comes from the Low Carbon Industrial Strategy and provides investment in marine testing and demonstration to consolidate Britain's position as the global lead. The support includes the construction of Wave Hub, a demonstration and testing facility off the Cornish coast and investment in marine energy industry infrastructure in the South West Low Carbon Economic Area, in addition to providing marine drive testing facilities at the New and Renewable Energy Centre.

**7.32 Support for the Civil Nuclear Industry** This support comes from the Low Carbon Industrial Strategy and provides funding for the establishment of the Nuclear Advanced Manufacturing Research Centre (NAMRC) to enable around 30 companies to work together on the development of processes for the manufacture of nuclear components & assemblies and an expansion of the nuclear laboratories at Manchester University.

**7.33 Technology Strategy Board (TSB) Low Carbon Energy R&D Projects:** The BIS sponsored TSB's portfolio of support for low Carbon energy R&D projects that were live in March 2009 is worth of the order £60m. It includes carbon abatement technologies at £5m; intelligent grid management at £6m; Fuel cells and hydrogen at £13m; Bio-energy at £5m; Microgeneration and photovoltaics at £6m; Wave energy and tidal stream at £20m; and Offshore wind at £7m. When business contributions are included, the value of this portfolio is of the order of £150m.

**7.34** The Technology Strategy Board has also committed nearly £9m in new projects in fuel cells and hydrogen and nearly £5m in new R&D to fund innovative technology solutions to help in maximising recovery of the UK's hydrocarbon. Finally, a new Knowledge Transfer Network in energy generation and supply has also been launched.

**Figure 9: BIS policies and Strategies that contribute to Green Innovation and Skills in the Workplaces and Jobs Sector.**

<b>Policy</b>	<b>Key Dates</b>	<b>Outputs</b>
<b>TSB Thematic Competitions</b>	Ongoing	Thematic competitions have supported the development of low carbon energy efficient materials, both in production and in end-use.
<b>Tees Valley investment Programme</b>	Ongoing	Programme will improve energy efficiency and carbon reduction measures in Tees Valley.
<b>EU Commission Recommendation on mobilising ICT to facilitate the transition to Low Carbon Economy</b>	Started October 2009 Establish targets by 2011 in energy efficiency that aim to exceed the EU2020 targets by 2015.	Increased energy efficiency (and reduced carbon emissions) of construction, buildings and transport logistics sector through partnerships with ICT providers.  Reduction in carbon emissions of ICT sector.
<b>Intellectual Property Office: Fast Track Green Patents</b>	Programme started in May 2009.	So far they have had a total of 84 requests since May 2009.  Favourable publicity helps to spread the message that patents can be of assistance in dealing with the challenges of climate change.  Since the launch in the UK, the following countries have followed suit: US, Japan, South Korea, and Australia. China, Brazil and Canada.
<b>Transformational ICT Regional Pilots</b>	2009-2012	Data will be collected through the monitoring and evaluation framework to assess the contribution through the pilot to a range of possible outcomes including less waste and carbon neutrality, although this is likely to be measured in terms of profitability and productivity.
<b>Next generation Access (NGA) &amp; the Universal Service Commitment (USC)</b>	Ongoing	Commitment could play enabling role in development of distance communication, with associated reduction in carbon-intensive travel.  Enable the development and use of more energy efficient and low carbon technologies. For example, the shift in computing to central servers and the internet, which could have an impact in lowering emissions.

Figure 9 cont'd

Policy	Key Dates	Output
Industrial Biotechnology Demonstrator and Fund Projects (AMI)	Ongoing	Completed Bio-tech facility.  Total number of grant-funded Bio-tech research projects.
Manufacturing Advisory Service	Ongoing	Figures for advice given for low carbon will be recorded by the MAS administrator and in the yearly review however, carbon emissions are not yet routinely recorded by MAS administrators.
UK Composites Strategy	Ongoing	Establishment of a consortium of Government, business and other stakeholders leading work on sustainability, improving recycling processes and applications for recycle.  Establish new National Composite Centre and run Grand Challenge competition to develop rapid production techniques for composites.  Cogent and Semta Sector Skills Councils are working in partnership to establish an infrastructure and capacity for skills development.  <b>*Also contributes to Transport Sector</b>
Plastic Electronics: UK Strategy for Success	2011 for completion of facility	Facility should lead to development of prototypes and manufacturing processes for ultra-efficient lighting and pv solar cells.  <b>*Also contributes to Power and Homes and Communities sector</b>
UK International Low Carbon Marketing Strategy	Ongoing	UK having a reputation as a hub for low carbon goods and services and UK companies helping increase supply of low carbon solutions across the world.
Relationship Management	Ongoing	Contributes to sector efforts to reduce carbon emissions particularly through innovations in data centres, telecoms infrastructure and devices and PCs and peripherals.  ITEC enables carbon reduction in other sectors particularly vehicles, buildings and the SMART grid.  Carbon Trust ICT Forum that promotes carbon reduction in the sector and its potential benefits for innovation, growth and job creation in a low carbon economy.
Living With Environmental Change (Research Council led)	2008-onwards	Number of Programmes and research projects funded.  Evidence and advice feeding into policy and practice

Figure 9 cont'd

Policy	Key Dates	Output
SME Support in the move to a Low Carbon Economy	Ongoing	Number of large companies engaged; number of SMEs reached and the actions they take;  Outcomes of review to inform future SME policy  Number of SMEs receiving the guide or downloading it from the website
TAHI Energy Management and Sustainability and Smart Building Sector Groups	Ongoing	Numbers of smart energy systems deployed in UK homes/SME businesses.  Reduced domestic energy consumption.  Improved energy efficiency in new build construction and refurbishments.  <b>*Also contributes to Homes and Communities</b>
Research Councils Energy programme (RCEP):	Ongoing	Number of Programmes and research projects funded. Potential novel technologies, solutions and approaches to sustainable energy. Capacity building - Skilled researchers and engineers with relevant expertise. Evidence and advice feeding into policy and practice  <b>* Also contributes to Power sector, Transport and Homes &amp; Communities</b>
Research Councils - Nanoscience Through Engineering to Application	Ongoing	Projects to improve solar energy harvesting - through photovoltaic applications and water splitting
Energy Technologies Institute:	Fully established in 2008	Number of Technology programmes and projects. Evidence and advice feeding into policy and practice  <b>Also contributes to Power sector and aspects of Transport, and Homes &amp; Communities</b>
Support for Offshore Wind Energy	Ongoing	New test facilities complete. Number of companies using facilities.  Number of demonstration projects funded.  UK based manufacturing activity. Increased supply chain activity in the UK.  <b>* Also contributes to power sector</b>
Support for the Marine Energy Industry	Ongoing	Completion of Wave Hub. Number of companies using the facility.  Completion of marine testing facility at NaREC.; Number of companies using the new facility.  Completion of additional marine projects in the south west. Number of companies using facilities  <b>* Also contributes to power sector</b>

**Figure 9 cont'd**

Policy	Key Dates	Output
<p><b>Support for the Civil Nuclear Industry</b></p>	<p>Ongoing</p>	<p>Completed NAMRC; number of projects; number of companies using the Centre</p> <p>Laboratory facilities expanded at Manchester University and used to support work at NAMRC.</p> <p><b>* Also contributes to power sector</b></p>
<p><b>Technology Strategy Board (TSB) Low Carbon Energy R&amp;D Projects</b></p>	<p>Started March 2009</p>	<p>Support for low Carbon energy R&amp;D projects is worth of the order £60m, incentivising business innovation that will lead to new products and processes for low carbon energy generation and supply.</p> <p>The Technology Strategy Board has also committed nearly £9m in new projects in fuel cells and hydrogen.</p> <p><b>* Also contributes to power sector</b></p>

# 8

## Agriculture, Forestry and Land Management

**8.1** BIS has a **2% share of the Agriculture, Forestry and Land Management (AFLM) sector** based on its ability to influence innovation in this area. BIS can also influence potential low carbon behaviours along supply chains down, in some cases, to primary products. At present BIS does not have any direct policy levers for this area but will continue to work with the lead department Defra to further define the way in which we can support them in this sector during 2010. The following BIS strategies and policies contribute to carbon reduction in this sector.

**8.2 The Foresight Land Use Futures Project:** The Project explored how land use could change over the next 50 years and what society's needs and values in respect of land use might be, over the whole landscape, covering both urban and rural contexts. The project's work includes climate change, energy and creating sustainable communities. The project reported its findings in February 2010 after which time Foresight will be working with stakeholders within and outside Government to translate the findings into action. This Project is likely to lead to land use management which is more sympathetic to climate change and that incorporates low carbon lifestyles which in turn should lead to a reduction in carbon emitted.

**8.3 Research Councils** support a range of research and related postgraduate training with relevance to agriculture and land use. This includes investments in aspects of the "Living With Environmental Change Programme" (for example providing data on carbon emissions from land use, land use change and forestry; understanding the impact of management of peat land on carbon; and the Insect Pollinators Initiative (IPI) aimed at understanding and mitigating the biological and environmental factors that adversely affect insect pollination); as well as "Rural Economy & Land Use" Programme and Biotechnology and Biological Sciences Research Council (BBSRC) investments in research on crop science and food security (for example understanding how plant roots respond to drying, which has led to a novel method of irrigation that both maintains crop productivity and quality at greatly reduced amounts of water; and developing high sugar grasses which can help to reduce greenhouse gas emissions from livestock).

**8.4 Climate & Environment Retail Action Plan.** The BIS Retail Unit is producing the Climate & Environment Retail Action Plan (CERAP). This Action Plan builds on the recognition by retailers of the need to address the threats of climate change by reducing carbon emissions not just within their own operations but by supporting suppliers down the supply chain, in some cases down to primary products and customers in reducing their carbon emissions.

**8.5** These actions will also complement the EU Retailers Environmental Action Programme (REAP).

**8.6** The Climate & Environment Retail Action Plan will explore the barriers and levers and will identify innovative solutions, better regulation, or simplification across government that can support industry in achieving national carbon targets.

**Figure 10 shows the BIS policies and activities that will help deliver our 2% share of AFLM**

<b>Policy</b>	<b>Key Dates</b>	<b>Outputs</b>
<b>The Foresight Land Use Futures Project</b>	Ongoing	This Project is likely to lead to land use management which is more sympathetic to climate change and that incorporates low carbon lifestyles which in turn should lead to a reduction in carbon emitted.
<b>Research Councils programmes , including Living with Environmental Change (LWEC)</b>	Ongoing	Should lead to evidence and advice feeding into policy and practice on environmental change including a move to low carbon land-use; new understanding, technologies and approaches for application in agriculture and land use.
<b>Climate &amp; Environment Retail Action Plan</b>	Ongoing	Will support industry in achieving national carbon targets.

# 9 BIS's influence on the Power Sector

**9.1** Whilst DECC has full responsibility for lowering carbon emissions in the power sector, BIS has many policies and strategies that do influence carbon emissions in this area. BIS policies feed into the Power sector through the Homes and Communities sector indicator: **Low Carbon Products** that may feed into both traded and non-traded power<sup>20</sup> and through **Green Innovation and Product Policy** in the Workplaces and Jobs Sector through low carbon technologies.

**9.2** These strategies and policies have already been covered in the Homes and Communities Chapter and the Workplaces and Industry Chapter. However, the assumption, until better measurement is in place, is that they equally contribute to the Power sector through their potential to decrease carbon emissions in this area. A summary of BIS policies that contribute to the power sector are set out below:

**Figure 11 shows our policies and influence that promote Low Carbon Products in the Power sector**

Policy	Key Dates	Outputs
<b>Digital Television Switchover</b>	Any positive decrease in power consumption in transmission networks will be post-2012: Second Carbon Budget.	A fully rolled out digital network is likely to use less power than the older analogue networks used.  <b>* Also contributes to Homes and Communities Sector</b>
<b>EU Commission Recommendation on mobilising ICT to facilitate the transition to low carbon economy</b>	Ongoing	Reduction in carbon emissions from the domestic built environment.  <b>* Also contributes to Homes and Communities Sector</b>

<sup>20</sup> The Power Sector is largely a traded sector that falls into the EU Emissions Trading Scheme (see DECC's Carbon Reduction Delivery Plan for more details). Traded carbon does not fall under carbon budgets to prevent double counting.

**Figure 12 shows the BIS policies and activities on Green Innovation and Product Policy in the Power sector**

<b>Policy</b>	<b>Key Dates</b>	<b>Outputs</b>
<b>Research Councils Energy programme (RCEP)</b>	Ongoing	Number of Programmes and research projects funded. Potential novel technologies, solutions and approaches to sustainable energy. Capacity building - Skilled researchers and engineers with relevant expertise. Evidence and advice feeding into policy and practice * <b>Also contributes to Workplaces and Jobs, Homes &amp; Communities and Transport sectors</b>
<b>Energy Technologies Institute:</b>	Fully established in 2008	Number of Technology programmes and projects. Evidence and advice feeding into policy and practice * <b>Also contributes to Workplaces and Jobs, Homes &amp; Communities and Transport sectors</b>
<b>Support for Offshore Wind Energy</b>	Ongoing	New test facilities complete. Number of companies using facilities.  Number of demonstration projects funded.  UK based manufacturing activity. Increased supply chain activity in the UK.  * <b>Also contributes to Workplaces and Jobs sector</b>
<b>Support for the Marine Energy Industry</b>	Ongoing	Completion of Wave Hub. Number of companies using the facility.  Completion of marine testing facility at NaREC. Number of companies using the new facility.  Completion of additional marine projects in the south west. Number of companies using facilities  * <b>Also contributes to Workplaces and Jobs sector</b>
<b>Support for the Civil Nuclear Industry</b>	Ongoing	Completed NAMRC; number of projects; number of companies using the Centre  Laboratory facilities expanded at Manchester University and used to support work at NAMRC.  * <b>Also contributes to Workplaces and Jobs sector</b>
<b>Technology Strategy Board (TSB) Low Carbon Energy R&amp;D Projects</b>	Started March 2009	Support for low Carbon energy R&D projects is worth of the order £60m, incentivising business innovation that will lead to new products and processes for low carbon energy generation and supply.  The Technology Strategy Board has also committed nearly £9m in new projects in fuel cells and hydrogen.

# 10 BIS Operations/Estate

## Overview

**10.1** BIS was created in June 2009 and brings together two former departments: The Department for Business, Enterprise and Regulatory Reform (BERR) and the Department for Innovation, Universities and Skills (DIUS). We are now the fourth largest department in terms of size and property costs. Two thirds of our property assets are specialist research laboratories.

**10.2** This plan is based on the current scope of the SOGE targets and the department's current carbon budget, which includes the office estate, and owned administrative transport emissions. As the details of the new SOGE framework are built into the carbon budget allocation from Carbon Budget period 2 (2013) onwards, we will work across our estate and wider departmental family to ensure that we monitor and report against, and then meet, the broader and more challenging targets. These reductions in public sector carbon emissions will also deliver financial savings, contributing to Government's aim of releasing £300m in energy bill savings by 2012/13 through greater energy efficiency. The CRDP is expected to be reviewed and updated in the next 18 months in order to present the department's new share of the public sector Carbon Budget, and the revised set of measures being planned to secure both carbon and financial savings.

**10.3** BIS has made good progress during 08/09 on CO<sub>2</sub> reduction from Offices, CO<sub>2</sub> from road vehicles and on recycling which is well ahead of the 2010/11 target. We would expect to see an even stronger picture for the whole BIS Family in the 09/10 return. Sustainable Operations in the Government Estate (SOGE) reporting includes the BIS family Executive Agencies, but does not currently include the NDPBs.

**10.4** This Chapter also contains two further sections on the aspirations for carbon reduction in both Further and Higher education estate which will come under the wider BIS estate from April 2010.

## Headline Figures

- 26.0% reduction in carbon emissions from its administrative Estate office compared to baseline levels (99/00).
- A decrease of 44.2% Carbon emissions from road based administrative travel.
- BIS received the 'Carbon Trust Standard' certification for its 1 Victoria Street Headquarters in July 2008.
- Recycling rates also increased to 59.5% of the total waste tonnage; the remaining waste went to 'energy from waste' generation. Since implementation of 'Recycle Plus' waste recycling has increased to 61% on the Core estate.
- BIS Core recycled 540.91 tonnes of its waste in 2008/09. By recycling this material a saving of 457.22 tonnes of Carbon was achieved.
- Waste arisings rose by 15.6% to 911.7 tonnes in 08/09; this was due largely to Machinery of Government (MOG) changes.

## Specific Measures taken to improve energy efficiency<sup>21</sup>

**10.5** New energy efficiency measures recently implemented including: installation of automated metering & targeting systems, more low energy & LED lighting and microgeneration (Solar/PV), on the estate, should all help to give significant improvements in operational performance in coming years.

**10.6** The water savings made to date have been achieved through the plant upgrades that have been implemented over the past 4 years and education through poster campaigns. This included installation of waterless urinals and 'Hippo' devices in cisterns. Unfortunately, 'leakages' from water towers at Kingsgate House temporarily reversed this situation in 08/09.

**10.7** BIS Core estate currently has no designated Sites of Special Scientific Interest (SSSI) or other types of biodiversity site. However, BIS was an active participant in the SOGE II Consultation and will be drawing up a Biodiversity Action Plan for the estate, to identify how and in which locations biodiversity features could be encouraged.

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<sup>21</sup> Further information on action taken by BIS executive agencies can be found at Annex D.

## Measures to improve our DEC ratings on the BIS estate

**10.8** The installation of new building management control systems at 1 Victoria Street, (involving investment of in excess of £1 million), together with the recent installation of automated metering and targeting systems should help to improve energy efficiency on the BIS Core estate.

*\*\*further information on the DEC ratings for buildings on the BIS Core estate can be found at Annex E*

## Next Steps

**10.9** Going forward we anticipate making further progress on reducing total waste arisings and on water consumption in relation to the SOGE baseline years. Vacating Kingsgate House (in March 2012) should have a substantial impact on reducing BIS's overall energy and water consumption.

**10.10** A particular challenge is set by some of the unique properties the BIS family utilises for its business, which include specialist research laboratories for medical and other scientific purposes. The department has, in collaboration with the private sector, taken steps to develop a framework and key performance indicators to identify what improvements can be made in terms of cost and space utilisation and environmental performance of this estate.

**10.11** The bulk of our SOGE analysis for 08/09 falls with the former BERR as this had the majority of our Administrative-Office Estate captured under the current SOGE targets (to 2011). The former DIUS (created mid-07/08) was comprised mainly of non-administrative research and education facilities not reportable under SOGE, and so is only covered in a footnote here. Together with OGC we are currently examining ways of benchmarking these properties and are the first in Whitehall to attempt this as unfortunately DIUS did not have a previous baseline.

**10.12** As part of this collaborative work with DECC and the TSB on the Energy Efficient Whitehall programme, an energy efficiency study is currently being carried out to identify further potential savings on the BIS Core estate.

**10.13** We expect continued improvement on reducing CO<sub>2</sub> from Transport.

**10.14** Continued good progress is expected as recycling has increased since the last SOGE report to 66.6% on BIS Core Estate.

## Measures to improve space utilisation on the BIS estate and lower carbon emissions

**10.15** The Department was the first in Whitehall to develop a flexible office workspace strategy which has been acknowledged by both Office of Government Commerce and National Audit Office. BIS Core has reduced the size of its London estate from 8 to 2 buildings in the last 7 years.

**10.16** The strategy has been to introduce flexible working in Central London and the buildings have been rationalised extensively allowing rental income to grow through sub-letting. Flexible working has also been introduced in our Glasgow property and will be done in St Paul's Place, Sheffield (which is shared with DCSF).

**10.17** The Department has developed a system known as Remote IT environment (RITe) using CITRIX technology. This allows an individual to log into any computer and turn this PC into their work desktop, provided there is a broadband connection.

**10.18** Under the Operational Efficiency Review BIS will review FM procurements contracts to see what further savings can be made.

### Space Utilisation / Efficiency (OGC/IPD 08/09)

**10.19** Each year OGC requires departments to carry out a review of administrative properties over 500m<sup>2</sup> and compare key metrics with private sector benchmarks. 76 properties on the BIS estate were benchmarked for 08/09, including 6 on the administrative office core estate. Results show that the BIS family is performing ahead of benchmark in terms of cost per full-time equivalent (FTE), m<sup>2</sup> per FTE, cost per m<sup>2</sup> and on environmental sustainability.

**Figure 13: Table of Key metrics**

Key Metrics	Central Civil Estate (£)	BIS (including departmental family) (£)
Cost per FTE	£4,177	£4,543
Cost m <sup>2</sup>	£319	£372
M <sup>2</sup> per FTE	13.1m <sup>2</sup>	12.2m <sup>2</sup>
Environmental Sustainability	Score 97	Score 118
Environmental impact	92	112
Management Practices	117	142

## Key data from the exercise and comparison with the Central Civil Estate Results show:

**10.20** 73% of space occupied by the BIS family achieves the 12m<sup>2</sup> Government workspace standard set out by the OGC.

**10.21** 79% of BIS family space benchmarked reports an energy consumption per m<sup>2</sup> which is at least 10% better than benchmark.

**10.22** 73% of BIS family space benchmarked reports a carbon dioxide/FTE ratio which is better than benchmark.

**10.23** 56% of BIS family space benchmarked currently reports an average level of water consumption per FTE of at least 10% better than benchmark.

**10.24** 62% of BIS family space benchmarked is performing better than benchmark regarding waste recycled.

**10.25** The high cost per FTE is due to the higher % of BIS offices in London.

## Longer-term strategy for reducing the size of BIS's carbon footprint

### Transport

**10.26** Alternatives to travel will continue to be promoted and staff will be encouraged to only travel when it is really necessary. Where it is possible, an increased use of tele-conferencing and video conferencing will be the first consideration instead of face-to-face meetings. Work should be planned in advance to combine as many tasks as possible into one journey and resources such as online journey planners should be used. More sustainable means of transport such as walking, cycling or public transport should be used where possible.

### Procurement

**10.27** Our departmental procurement team is committed to working closely with colleagues within BIS and OGC/Defra in implementing the guidance contained in "Adapting to Climate Change through Public Procurement". Core-BIS as a policy department with a small estate has limited construction/refurbishment requirements but will incorporate the central guidance in applicable projects. The OGC/Defra guidance will also be shared with our Agency/NDPB delivery partners.

**10.28** BIS, in common with other central departments is subject to ongoing SOGE improvement/reporting regimes which complement the climate adaptation initiative.

**10.29** BIS has also demonstrated its commitment to carbon reduction in its supply chain through participation in the 2009 cross-government Carbon Disclosure Programme co-ordinated by OGC-CESP. Through a collaborative departmental approach key suppliers to government were identified and approached to voluntarily disclose their greenhouse gas emissions/plans for emissions management going forward. The Programme was shortlisted for the 2009 Civil Service Award for Sustainability.

## **Estate**

**10.30** The Victoria Investment Programme (VIP) is aimed at refurbishing the 1 Victoria Street HQ building to accommodate substantial elements of BIS's outlying staff from, for example, Kingsgate House to facilitate exit by the 2011 lease expiry and to incorporate staff from the newly formed Skills Funding Agency as current organisations merge (e.g Learning & Skills Council and Young People's Learning Agency). BIS is well linked in to OGC's high performing property strategy for delivering efficiencies across the BIS family estate.

## **High-level action plan on estates management to deliver year-on-year carbon reduction**

**10.31** BIS's broad approach is essentially set out in the BIS Property Asset Management (PAM) Plan which is regularly updated for the OGC. It is looking to adopt a space utilisation of 10-12m<sup>2</sup> across the BIS family estate. Increasingly BIS is seeking to coordinate estate rationalisation on a regional basis by bringing together elements of its NDPBs, particularly the research councils into shared properties; for example NERC, ESRC, EPSRC, STFC. BBSRC and BNSC jointly occupy Polaris House at Swindon and will be joined by AHRC and a proportion of MRC. Elements of UK Trade & Investment are co-located with the Regional Development Agencies. Similarly, opportunities are being sought to share properties with other government departments; for example with DCSF at St Pauls, Sheffield where BIS staff will be relocated when they vacate the Moorfoot building in Sheffield in June 2010.

## **Planned and current IT initiatives which could deliver significant carbon savings from ICT footprint**

**10.32** BIS has significantly reduced its HQ office storage space through increased use of the Matrix paperless filing system. The number of 'drop-down' workstation spaces for laptop PC usage has also been increased in the past couple of years and this programme will continue. Also, there is now much greater scope for staff to participate in remote 'flexible working' through linkage of home PCs to office servers via 'RITE' tokens, (BIS has now issued 2,103 of these), and use of technologies such as palm-held 'blackberry' and FCP laptops.

## Higher Education Carbon Reduction Targets

**10.33** The higher education sector in England comprises 130 publicly-funded universities and higher education colleges. It comprises a diverse estate including offices, teaching and research facilities and on-campus halls of residence. The sector has experienced a considerable period of growth since 1990, with new universities being created and many existing institutions being expanded. Total sector carbon emissions have been estimated at 2.548 million tonnes of carbon dioxide (MtCO<sub>2</sub>) in 1990, whereas in 2006 this was measured as being 3.361 MtCO<sub>2</sub> – an apparent rise of 32 per cent. This gives some indication of the scale of the challenge. However, the sector is committed to addressing carbon reduction.

**10.34** For the purposes of carbon budgets, the sector has agreed a target to reduce its own *'operational'* emissions (i.e. scope 1 and 2 [building-energy emissions]) by at least 34 per cent by 2020 against a 2005 baseline. Given the growth in the sector since 1990 this target is ambitious and will require creativity, commitment and investment.

**10.35** As set out in the recently published 'Carbon Reduction Target & Strategy for Higher Education in England' (HEFCE 2010/01), in June 2010 all higher education institutions will be asked to confirm that they have carbon management plans which meet HEFCE requirements. The plans must include a carbon management policy or strategy which sets targets up to 2020 against the 2005 baseline for scope 1 and 2 emissions and are publically available. The plan must include a commitment to monitor progress towards targets regularly and report annually. From 2011 HEFCE capital allocations will be linked to carbon reduction. Annual reporting through the Higher Education Statistics Agency will include carbon emissions.

**10.36** Many institutions are already reducing their own carbon footprint through energy efficiency, increasing use of sustainable goods and services, and better environmental management. Institutions will be further encouraged to deliver carbon reductions through measures such as:

- HEFCE issuing a deadline-constrained invitation to bid for funding from the Leadership, Governance and Management Fund for projects that support the implementation of the UUK/GuildHE statement of intent on sustainable development
- Support in commissioning work to produce a range of scenarios for how different levels of emission reductions can be achieved
- Investigating with stakeholders, for example the Association of Managers in Higher Education Colleges (AMHEC), the development of a shared service to provide carbon expertise to small institutions

## Further Education Carbon Reduction Targets

**10.37** The further education (FE) sector in England is very diverse and includes a wide range of organisations providing training to young people and adults. The bulk of Government funding to support development of the estate has focused on Further Education colleges (of which there are around 360) and the data gathered by the Learning and Skills Council (LSC) relating to carbon emissions has, similarly, been focused on colleges. As a result of the focus on FE colleges, we are only in a position to assess the carbon emissions for this part of the total sector. In addition, sponsorship for the around 100 Sixth Form Colleges within the FE college sector has moved to the Department for Children, Schools and Families, leaving BIS responsible for sponsoring the remaining 260 General FE Colleges.

**10.38** Since 2001 700 projects, at nearly 330 colleges, have been funded – transforming the Further Education estate for learners. In the last spending review, colleges realised £48 million of efficiency savings from the more effective running and maintenance of its estate – which included lowered energy costs. While Government's investment in Further Education has expanded year on year over this period, an increasing proportion of the delivery has been in learners' workplace and focused on courses leading to full qualifications. This has been associated with a reduction in part-time and evening courses delivered in colleges, themselves.

**10.39** The total FE college sector carbon emissions have been estimated at 0.743 million tonnes of carbon dioxide (MtCO<sub>2</sub>) in 1999. This rose to an estimated 0.861 million tonnes by 2005. However, since then, as a result of the capital investment combined with the above changes in the delivery of FE, it reduced dramatically to 2008 when data collected from colleges indicates it to have been 0.544 MtCO<sub>2</sub> (a 37% reduction against 2005 levels).

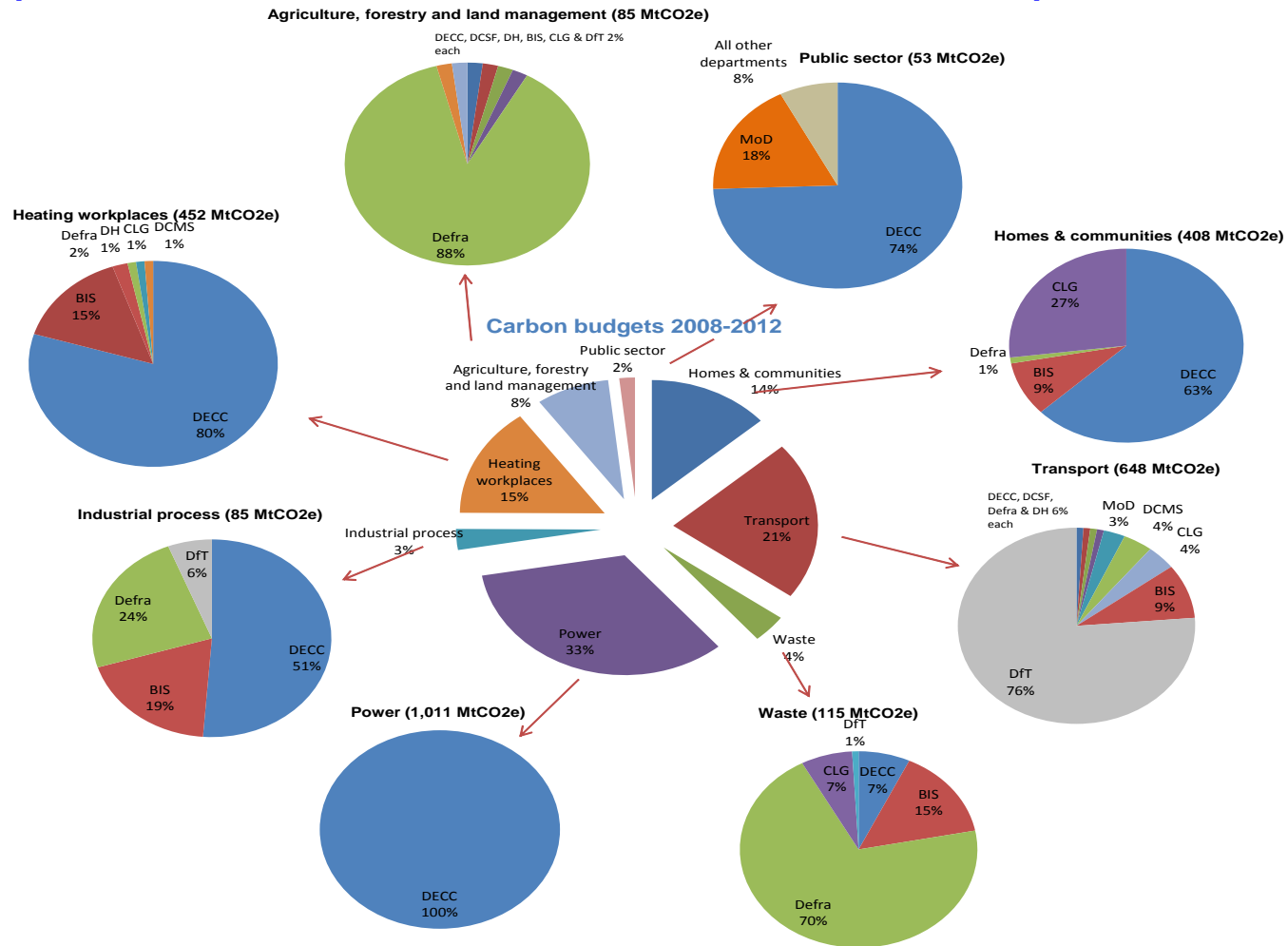
**10.40** We are committed to build on the progress already achieved and will work with the FE college sector to achieve a minimum of a 43% reduction in scope 1 and 2 (building-energy emissions) carbon emissions against a 2005 baseline by 2020. Given the remaining capital investment programme for the FE college sector we believe this target to be realistic. We will consult the entire FE sector during summer 2010 on the strategy for carbon reduction and expect to find the sector committed to working with Government to achieve a level of emissions reduction that goes significantly beyond that minimum.

**10.41** Linked to this investment in new, more energy efficient buildings is the growing work of the FE sector in providing leadership through the delivery of skills for a low carbon economy. We will be consulting further on the nature of these skills and the infrastructure needed to support this shortly, and expect to see a growing synergy between these agendas.

## Annex A: BIS Departmental Strategic Objectives

BIS DSOs						
<b>DSO 1:</b> Science & Research Foster a world-class science and knowledge base and promote the commercial exploitation of knowledge, global excellence in research and better use of science in Government	<b>DSO 2:</b> Innovation, Enterprise & Business Increase innovation, enterprise and the growth of business, with a focus on new industrial opportunities and bringing benefits to all regions	<b>DSO 3:</b> Fair Markets Deliver free and fair markets, with greater competition	<b>DSO 4:</b> Better Regulation Ensure that Government departments & agencies deliver better regulation	<b>DSO 5:</b> Universities & Skills Improve the skills of the population through excellent further education and world-class universities, to build a more economically competitive, socially mobile and cohesive society	<b>DSO 6:</b> Capability Provide the professional support, capability and infrastructure needed to deliver our objectives and programmes, working effectively with our partner organisations to deliver public service excellence	<b>DSO 7:</b> Government as a shareholder Ensure that Government acts as an effective & intelligent shareholder, and provide excellent corporate finance expertise within Government

## Annex B: Departmental share of each sector's emissions and the lead department for each sector



## Annex C: BIS Sector Indicators

Sector that policy milestones and indicators contribute to: Homes and Communities						
Name of policy / Measure	Policy milestones	Indicator	Desired trend	Source of data	Frequency of data	Owner
Low Carbon Products	N/A	Level of economic activity in the emerging low carbon goods; energy management and building technologies sectors	Upward	BIS Survey	Annual	BIS
Low Carbon Products	N/A	Number of green or environmentally friendly patents fast tracked	Upward	IPO <sup>22</sup>	Annual	BIS
Industry Capacity and Competence	N/A	Level of qualifications within house building (Skills)	Up	Labour Force Survey	Quarterly	BIS
Industry Capacity and Competence	N/A	Level of process innovation in construction (Proxy for green innovation)	Up	CIS <sup>23</sup>	Biennial	BIS

<sup>22</sup> Intellectual Property Office

<sup>23</sup> Construction Industry Survey

Sector that policy milestones and indicators contribute to: Transport						
Name of policy / Measure	Policy / Milestones	Indicator	Desired trend	Source of data	Frequency of data	Owner
Green Innovation	N/A	Expenditure on UK based Aerospace Research and Development	Upward	BERD	Annual	BIS
Green Innovation	N/A	Expenditure on UK based Automotive Research and Development	Upward	BERD	Annual	BIS
Green Innovation	N/A	Level of Economic Activity in the Alternative Fuel Vehicles Sector	Upward	BIS Survey	Annual	BIS
Low Carbon Products	N/A	Number of Green or Environmentally friendly patents fast tracked	Upward	IPO	Annual	IPO
Low Carbon Products	N/A	Number of electric vehicle charging points in the UK	Upward	OLEV <sup>24</sup>	Annual	BIS/DFT
Low Carbon Products	N/A	Number of electric vehicles trialled	Upward	OLEV	Annual	BIS/DFT

<sup>24</sup> Office for Low Emission Vehicles

Sector that policy milestones and indicators contribute to: Waste						
Name of policy / Measure	Policy / Milestones	Indicator	Desired trend	Source of data	Frequency of data	Owner
Recycling Levels	N/A	C&I recycling rate	Upward	To be determined		Defra & BIS
Industry Voluntary Agreements	<ul style="list-style-type: none"> <li>• Courtauld Commitment - Phase II due to be launched in March 2010. Waste reduction targets to be achieved by April 2012.</li> <li>• Strategy for Sustainable Construction – target to reduce halve construction waste to landfill to be achieved by 2012.</li> <li>• Home Improvement Sector Commitment – Waste reduction and landfill diversion targets to be achieved by 2012.</li> </ul>	Measure of success of the following agreements – precise indicators to be determined: <ul style="list-style-type: none"> <li>• Courtauld Commitment</li> <li>• Strategy for Sustainable Construction</li> <li>• Home Improvement Sector Commitment</li> </ul>	Upward	WRAP	Annual	Defra & BIS
Consumer & SME attitudes	N/A	The percentage of respondents to the survey who are taking action to: <ul style="list-style-type: none"> <li>• Recycle their business waste</li> <li>• Cut down their business waste</li> </ul>	Upward	EA: NetRegs SME Environment Survey	Biennial	Defra & BIS
Low Carbon Products	N/A	Number of Green or Environmentally friendly patents fast tracked	Upward	IPO	Annual	IPO

Sector that policy milestones and indicators contribute to: Workplaces and Jobs						
Name of policy / Measure	Policy milestones	Indicator	Desired trend	Source of data	Frequency of data	Owner
Low Carbon Products	N/A	Number of Green or Environmentally friendly patents fast tracked	Upward	IPO	Annual	IPO
Low Carbon Products	N/A	Level of economic activity in the emerging low carbon goods; energy management and building technologies sectors	Upward	BIS Survey	Annual	BIS
Green Innovation	N/A	Expenditure on UK based Chemicals Research and Development	Upward	BERD <sup>25</sup>	Annual	BIS
Green Innovation	N/A	Expenditure on UK based Mechanical Engineering Research and Development	Upward	BERD	Annual	BIS
Green Innovation	N/A	Number of companies who have received low carbon advice from the Manufacturing Advisory Service	Upward	BIS	Annual	BIS

<sup>25</sup> Business Enterprise Research and Development

Sector that policy milestones and indicators contribute to: Power						
Name of policy / Measure	Policy milestones	Indicator	Desired trend	Source of data	Frequency of data	Owner
Low Carbon Products	N/A	Economic Activity in the UK Wind Sector	Upward	BIS Survey	Annual	BIS
Low Carbon Products	N/A	Economic Activity in the UK Wave and Tidal Sector	Upward	BIS Survey	Annual	BIS
Low Carbon Products	N/A	Number of Green or Environmentally friendly patents fast tracked	Upward	IPO	Annual	IPO

## **Annex D: Contributions from the Property Estate Teams of the Executive Agencies**

### **Companies House**

Companies House has been proactive in reducing the amount of carbon it produces for a number of years such as:-

- Retrofitting T8 lamps with high efficiency T5 lamps - Approximately 1000 lamps have been retrofitted.
- 30% of our Crown Way office accommodation has SMART lighting which incorporates day light sensors and movement sensors.
- At Crown Way all our windows have been upgraded to double glazed and our roof has had an additional 90mm of insulation installed. This has meant that our current gas consumption is 70% better than best practice and our DEC rating of an E should be reduced to a D in the forth coming months. This is fairly impressive considering that Crown Way is nearly 40 years old.
- Movement sensors have been installed in all our toilets to switch off lights when unoccupied.
- All our hot water boilers have timers installed to switch off out of hours.
- We have installed a comprehensive sub-metering system which is real time; all our server farms, car parks, floors have been broken down for us to target and reduce our carbon demand.
- Companies House has been accredited ISO14001 since 2002: over 95% of our staff fall under this accreditation. The environmental management System has been an effective management tool for CH to identify and target areas for carbon reduction.
- Crown Way site has been a binless office for two years and the Nantgarw site for one.

We are currently looking into the feasibility of introducing a biomass boiler which would make a large reduction in CO<sup>2</sup> emissions.

All future initiatives will have to have a proven financial case and available funds. As an Executive Agency however, funds are only available from our charging mechanism. The Government has dictated that fees cannot be increased during this current financial situation.

## **National Measurement Office**

A programme of works is underway on the Department's Teddington Estate (location of the National Physical Laboratory and the National Measurement Office) to improve the operation of the heating and cooling systems in the main National Physical Laboratory building where defective valves are leading to inefficient operation. Other projects include night-time set-back of temperature control, relaxation of humidity control to less critical laboratories, set-back of ventilation rates out of working hours and reconfiguration of systems to utilise air handling unit free cooling.

The installation of Smart meters is being investigated across the estate to make it easier to assess where energy is being consumed. In addition, a study is underway on replacing the current lighting system with lower energy consuming devices as part of the general asset renewal process.

## **Intellectual Property Office**

Our M&E engineers have been working on modifications to the heating system at Concept House. These include a reduction in the temperature of the primary circuit and reducing the season in which the heating is turned on. We estimate that these measures alone will save approximately 47 tonnes of carbon per year.

We invited the Carbon Trust to conduct an energy survey of Concept House and are currently taking forward their recommendations to reduce the temperature and amount of domestic hot water stored. We are also procuring a Powerperfector unit which will allow our on-site equipment to run more efficiently and consume less power.

On the IT side we are continuing with a programme that will virtualise many of the IT servers.

Longer term we will replace the main boilers in Concept House within the next 5 years and will soon be looking at options for energy efficient solutions.

## **Insolvency Service**

The Insolvency Service saw the completion of a major refresh of the IT equipment used throughout its 36 offices last year. Amongst other changes this saw the replacement of a desktop PC on every desk with a 'thin client' (a much smaller device) which links directly with a remote server. This is significantly more energy-efficient, substantially reducing our electricity consumption. The system will also be the foundation for a series of future developments. These include a substantial increase in the extent of flexible working for Insolvency Service staff, cutting down the amount of travel undertaken. In addition it will facilitate the move towards the paperless office, reducing the space and resources required for hardcopy documents.

The agency has continued to make good progress in a number of SOGE target areas. For the last reporting year these included a 5.8% improvement in energy efficiency and a 6.89% reduction in water consumption (where we are able to collect data). While these do not appear particularly significant improvements in themselves, it should be remembered that in the context of the current financial situation the Insolvency Service has seen a significant increase in staff numbers.

We have also implemented a number of measures to reduce the amount of waste going to landfill. Under-desk bins have been removed at our London, Birmingham and Manchester premises. This largely eliminated the plastic bin liners previously used each day. In addition it has encouraged staff to increase the amount of waste that is recycled, and reduced the amount going to landfill from those offices by around two-thirds. The programme will be extended to other offices in the coming year.

The Insolvency Service will continue to improve the efficiency of its use of space. At present this equates to 10m<sup>2</sup> per person.

We have also begun to improve the environmental character of our portfolio of offices, relocating four of them (including the 2<sup>nd</sup> and 3<sup>rd</sup> largest) to BREEAM 'Excellent' and EPC 'C' rated buildings.

The Insolvency Service, together with the Office of Government Commerce (OGC), is playing a leading role in the Government's 'green lease' programme. This entails the development of closer relationships with landlords, and our offices in Reading and Exeter are piloting this initiative. We have concluded a Memorandum of Understanding with the landlords, tasking us both with taking the sustainability agenda forward in partnership. These pilots will form the basis for a move towards green leases across the Government estate.

The agency is currently considering a service transformation strategy, one element of which will be an accommodation strategy. The details of these are still being developed, so it would be premature to predict any conclusions. They have the potential however to significantly alter the nature of The Insolvency Service's estate, the way it operates, its impact on the environment, and therefore its carbon footprint.

## **Annex E: DEC ratings for buildings on the BIS Core estate**

### **Buildings occupied by BIS staff**

1 Victoria Street, London, SW1 – **previously F rated (score 130), was given an improved ‘E’ rating (score 107) in September 2009**

Kingsgate House, London, SW1 – still **G rated, but improved from score 221 to 204**

St Mary’s House, Sheffield - Improved its operational rating from 106 (**E**) to 86 (**D**)

### **Buildings leased by BIS but rented to other Government Departments**

10 Victoria Street, London, SW1 – **E rating**

151 Buckingham Palace Road, London, SW1 – **G rating**

4 Abbey Orchard Street, London, SW1 – **G rating (BIS has no operational control of the building)**

**\* The reason why our ratings are poor is because the buildings are older (mid 60s) and present particular energy efficiency challenges.**

### **Measures to improve our DEC ratings on the BIS estate**

The installation of new building management control systems at 1 Victoria Street, (involving investment of in excess of £1 million), together with the recent installation of automated metering and targeting systems should help to improve energy efficiency on the BIS Core estate.

