

BIS | Department for Business
Innovation & Skills

**BIS CLIMATE CHANGE
ADAPTATION PLAN**

MARCH 2010

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Foreword

I am delighted to endorse BIS's first Departmental Climate Change Adaptation Plan. Our climate is already changing, in the UK and around the world. In the UK, as shown by the UK Climate Change Projections 2009, we are likely to face an increase in extreme weather events, hotter drier summers, warmer wetter winters and a rise in sea levels. I know some companies may well view climate change as a longer-term issue and one for the future, but we have already seen the damage that extreme weather brings. Whether it is the summer floods of 2007 or the floods last year in Cumbria, climate change is happening and we need to act now. This action needs to address both adaptation and reducing carbon emissions to lessen the severity of the change in future years.

That is why, in 2008, we became the first country in the world to introduce a Climate Change Act – which introduced a framework for adaptation and a long-term legally binding framework to reduce greenhouse gas emissions.

Climate change is a huge challenge. It has the potential to disrupt our infrastructure, our water supply and our energy sources as well as our supply of products, raw materials and natural resources. It is potentially a threat to the stability of individuals, businesses and the economy as a whole. However, it is not only the risks we should think about, but the opportunities - in terms of new markets and products and services. We must take advantage of the opportunities as well as act to protect ourselves from the negative impacts.

Our Adaptation Plan spells out what we are doing on a number of key fronts to adapt to climate change:

First and foremost it is about engaging with our stakeholders, ensuring we communicate the research on risks and opportunities as it becomes available. Success will hinge on collaborations at all levels - locally, regionally, nationally.

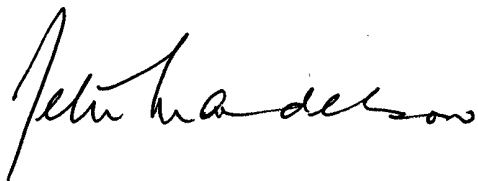
Second, it is about addressing our initial priority actions in sectors such as retail and construction and resilience. As far as possible we are positioning our work on adaptation alongside our work on low carbon and reducing emissions.

Third, it is about encouraging innovation, with climate change adaptation driving demand for innovative technological and alternative business practices. With this in mind, we are backing green innovation by using the Intellectual Property Office to speed up the patent process for environmentally- friendly technology. We are also using our Research Councils to understand more about how we adapt to climate change, and the Technology Strategy Board is already delivering key programmes with an emphasis on adapting to future climate.

Fourth, we are taking action on skills. The greater the demand for innovation, the greater the need for people with the right skills. So we are addressing some of the basic issues around skills development in the UK, the creation of a new technician class, and where adaptation can be specifically addressed alongside mitigation in skills strategies. We will need to increase the supply of Science, Technology, Engineering and Mathematics (STEM) skills at all levels and develop mechanisms for transferring them to new industrial contexts to ensure we have more people with the necessary environmental expertise.

But this Plan is just part of the action Government is taking to address our climate change commitments. That is why I have also endorsed the Department's Carbon Reduction Delivery Plan.

Together I believe these documents will help us ensure that our businesses and our economy can successfully adapt to the challenges to come.

A handwritten signature in black ink, reading "Peter Mandelson". The signature is written in a cursive style with a large initial 'P'.

LORD MANDELSON

Executive Summary

BIS's Climate Change Adaptation Plan sets out how BIS will begin to address the challenges of the impacts of climate change. The opening chapters consider the UK Climate Change Projections launched in 2009 and how we will engage with Defra and the Defra-led "Adapting to Climate Change Programme" during 2010/11 to develop the evidence base to translate climate change projections into tangible risks and opportunities. We will also consider BIS's role in a Government-wide strategy for adaptation, and specific actions linked to adaptation measures and the impact of climate change on business clusters.

Engaging with business and building adaptive capacity and capability.

A key role for BIS will be to engage with business and organisations on adaptation and to facilitate the provision of up-to-date information that will help businesses to embed adaptation considerations into their decision making process and develop their adaptive capacity. The planned governance structure for adaptation in this Plan aims to build adaptation capability and understanding across the wider department, which will in turn improve how effectively we engage with business and stakeholders on climate change. We will work closely with other government departments, the RDAs and other delivery partners to ensure we get the messages on adaptation out to business, institutions and within our own estate.

Risks, opportunities and priorities

An initial assessment of potential high-level risks and opportunities in relation to the Department's Strategic Objectives (DSOs) is made in this Plan. This assessment identified several priority sectors or areas of work on which we should focus. These are addressed in this Plan and include the construction, retail and service economy sectors, as well as, critical infrastructure, trade and investment and resilience work undertaken by BIS.

Skills

All Government departments have identified skills as key to their climate change adaptation work and see skills as fundamental to the UK successfully adapting to the impacts of climate change. We explored some of the work underway in BIS to develop skills and the steps BIS is taking to ensure skills for adapting to climate change are identified and considered alongside our work on skills for a low carbon economy.

The importance of innovation and science

Future innovation and technology is also a key driver in increasing UK adaptive capacity and will have the potential to reduce the cost of adaptive measures as part of Government's overall adaptation strategy. We explain the role of innovation in adaptation, its relationship with competition -a BIS priority –and we outline how BIS creates the conditions for innovation. The final section looks at the specific actions by BIS and its delivery bodies on adaptation and the work of the Government Office (GO) of Science.

1 Introduction

1.1 Greenhouse gas emissions are projected to cause a rise in the temperature of the UK over the 21st century, impacting on the physical and built environment. Businesses and consumers will need to adapt to the new circumstances and alter their behaviour accordingly. Early action can reduce future costs and exploit opportunities from climate change adaptation.

1.2 The Department for Business Innovation & Skills (BIS) fully recognises the challenges of climate change and the need to move not only towards a low carbon economy but also to take early action to build the UK's adaptive capacity¹ in preparation for the potential impacts of climate change over future years. The UK Climate Projections (UKCP09) released in early 2009 by the Department for Environment, Food and Rural Affairs (Defra) provide information on how the UK's climate is likely to change in the 21st century as it responds to rising levels of greenhouse gases in the atmosphere. In addition, the Climate Change Risk Assessment and accompanying work (due in 2012) will provide evidence and analysis which will enable all UK Administrations to (1) understand the level of risk posed by climate change, (2) compare the risk of a changing climate with other pressures on the Government, (3) prioritise adaptation policy geographically and by sector, and (4) assess the costs and benefits of adaptation actions and support the case for resources for these².

1.3 This is the first Climate Change Adaptation Plan for BIS. It sets out how BIS and its delivery partners will address the challenges and use the emerging evidence for current and future policy and strategy decisions. It explains where BIS action is already under way on climate change adaptation, including extensive research supporting cross-departmental work on adaptation. It sets out the initial framework and first steps for the way ahead, addressing both the potential key risks of climate change impacts and some of the opportunities which may be seized which could lead to future growth.

1.4 Central to the success of the delivery Plan is its governance structure. The Plan sets out the role of a BIS Climate Change Programme Board in supporting the effective delivery of both the Department's Adaptation Plan and its Carbon Reduction Delivery Plan which is being published simultaneously.

1.5 Specific actions within this Report are listed in [Annex A](#).

¹ Adaptive capacity is the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences (IPCC, 2007).

² For more information on the Climate Change Risk Assessment and its accompanying work please see: <http://www.defra.gov.uk/environment/climate/adaptation/assess-risk.htm>

2 Translating climate change projections into tangible risks & opportunities

This chapter addresses the UK Climate Projections (UKP09), how evidence relating to risks and opportunities is being developed, the most efficient Adaptation Strategy for the UK and BIS's role within overall Government intervention.

Climate change predictions and emissions' assumptions

2.1 The Stern review concluded that climate change was the greatest market failure the world has seen and even with successful mitigation measures, the climate is predicted to change within the 21st century. The Inter-governmental Panel on Climate Change (IPCC) reports there will be at least 30 years of unavoidable climate change.³ Below we summarise the climate change assumptions based on the latest UK data.

2.2 We have used the latest Climate Change Projections (UKCP09)⁴ as the foundation for describing those climatic changes that are likely to occur in the UK. These include projections for changes in temperature, precipitation and sea levels. The headline changes are:

- Warmer, wetter winters
- Hotter, drier summers
- Increases in sea levels

2.3 The UKCP09 show that, over the course of the 21st century, all areas of the UK are expected to get warmer, especially in summer (Figure 1). There will not be significant change in the amount of annual precipitation, but it is likely that more of it will fall in the winter, with drier summers, for much of the UK. Sea levels will rise, to a greater degree in the south of the UK than the north. There will be increased incidences of extreme weather events such as floods and heat waves⁵.

³ (IPCC, 2007):

http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_wg2_report_impacts_adaptation_and_vulnerability.htm

⁴ <http://ukclimateprojections.defra.gov.uk/>

⁵ For more information the the UKCP09, please see:

<http://ukclimateprojections.defra.gov.uk/content/view/982/527/>

Timescale

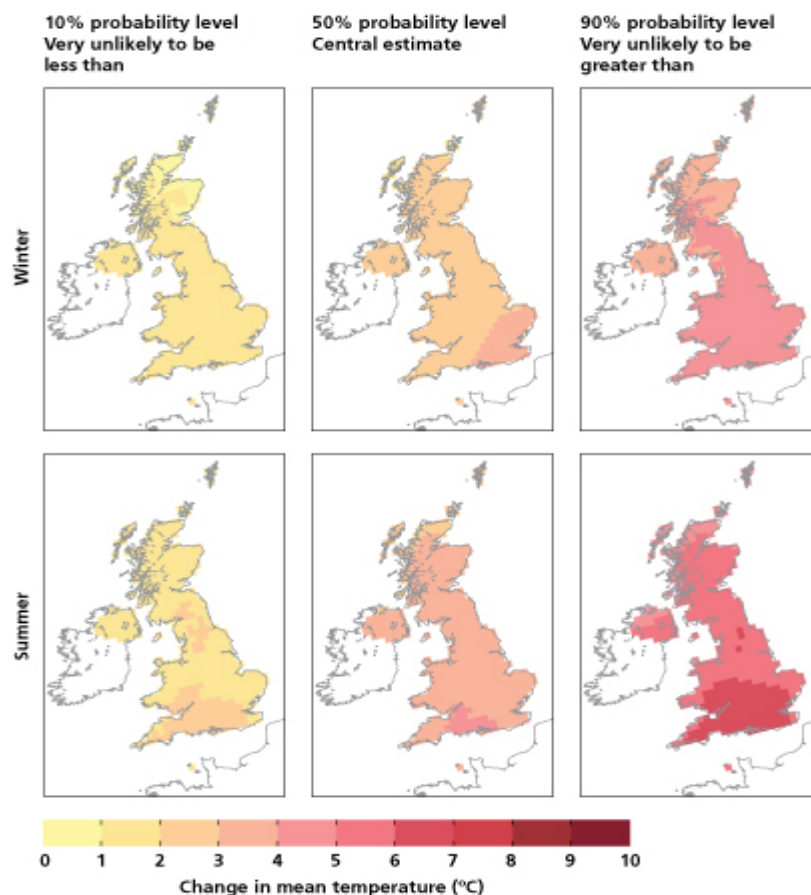
2.4 We have considered the same time periods as those used by UKCIP in their latest projections which go to the end of the century in 30 year periods:

- 2030s (2020 - 2049)
- 2050s (2040 - 2069)
- 2080s (2070 - 2099)

Emissions scenarios

2.5 The emission scenarios provided in UKCP09 give three possible future pathways for emissions that do not include planned mitigation measures, though they do include technological and economic change that has an impact on levels of emissions. The three pathways can be summarised as high, medium and low, to show how different emission pathways affect future climate.

Figure 1: UKCP09 Medium emission scenario. Change in winter mean temperature (°C) - 10, 50 and 90% probability levels (top row, left to right) and change in summer mean temperature (°C) – 10, 50 and 90% probability levels (bottom row, left to right), 2080s

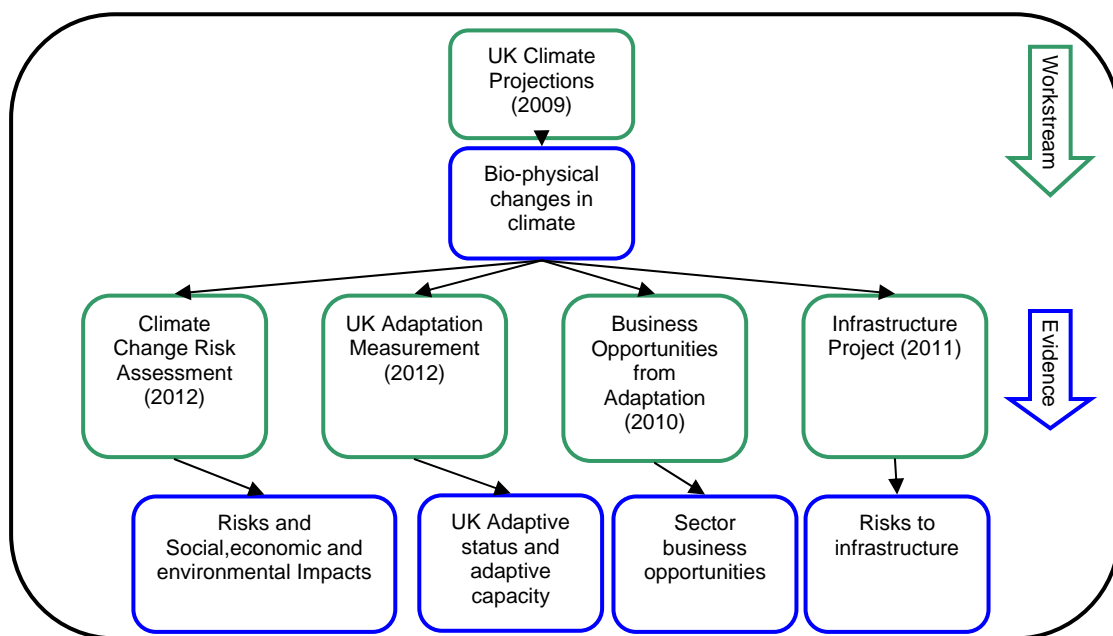


Uncertainty and risk

2.6 The climate change projections and emissions assumptions above (Figure 1) have informed the initial work undertaken by BIS to identify risks and opportunities as well as priorities for action which are addressed in Chapter 4 and 5. However, work is still ongoing in the translation of projected change in climate temperature into social, economic and environmental impacts as part of the Adapting to Climate Change Programme (led by Defra). Within this growing body of work, the major challenge remains of working with incomplete and uncertain information, some of which is inherent within climate projections.

2.7 BIS has collaborated extensively with Defra on the Adapting to Climate Change Programme. The diagram (Figure 2) below illustrates Defra's projects and deliverables that are of specific interest to BIS:

Figure 2: Defra's projects and deliverables in the Adapting to Climate Change Programme of specific interest to BIS.



2.8 This Defra-led Programme brings together work from other Government departments and the wider public sector on adaptation. It will build on the existing evidence base and establish indicators to measure UK progress on adaptation. The Programme is expected to report to Parliament in January 2012 following the publication of the UK's first Climate Change Risk Assessment (CCRA).

2.9 BIS has been engaged throughout the Adapting to Climate Change team's work, adding its Departmental expertise. BIS's involvement and its intended use of the evidence and analysis created within the Programme is given in Chapter 5 (paragraphs 5.3 -5.6).

BIS's role in adaptation intervention

2.10 Sustainable economic growth and creating the right conditions for business success is a priority for BIS. The physical impacts of climate change on natural and man-made capital will affect all levels of the economy from individual businesses to overall growth.

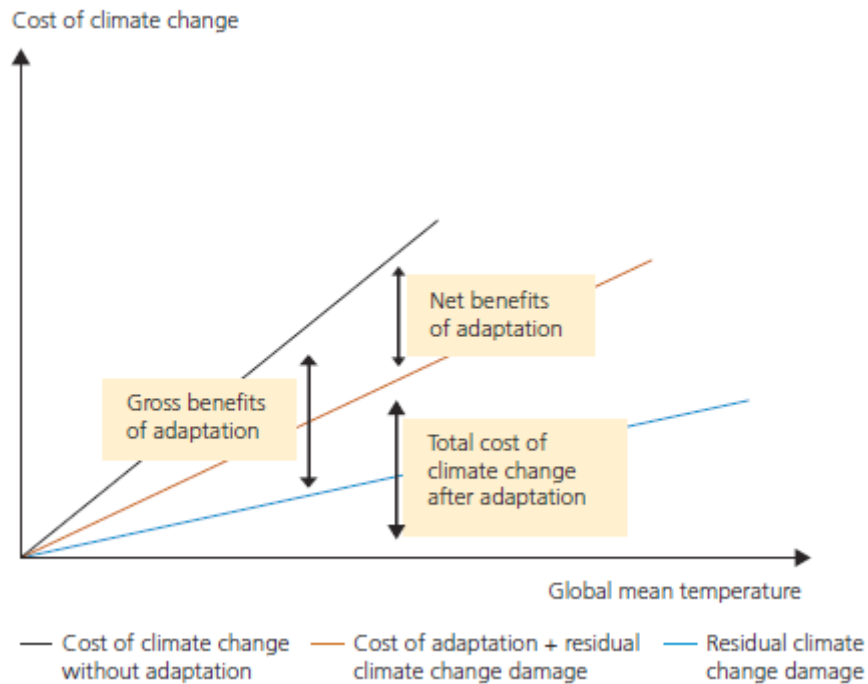
2.11 This section draws on the analysis and evidence in Defra's 'Adapting to Climate Change: Analysing the Role of Government' paper: The paper examines the role of Government and helps to outline the most efficient strategy for addressing adaptation and BIS's role within a Government-wide strategy.⁶

An efficient strategy: Minimising the total cost of climate change damage and adaptation measures and taking advantage of opportunities

2.12 The most efficient adaptation strategy is to minimise the total cost of both climate change damages and the costs of adaptation (Figure 3). The cost of adaptation can include investments, which anticipate new climate risks, as well as building in the capacity to adapt in the future. This latter action will include economy-wide decisions, such as UK skills provision. An efficient strategy will also seek to take advantage of opportunities from climate change, such as the creation of new markets and shifts in consumer behaviour. In addition to promoting the most efficient strategy, Government will also consider distributional issues from adaptation. This will include the ability of, and cost to, different sections of society and industry to adapt, as well as the physical distribution of climate change impacts.

⁶ DEFRA (2010) Available at: <http://www.defra.gov.uk/environment/climate/documents/analysing-role-government.pdf>

Figure 3: Efficient adaptation strategy: minimising the residual cost of climate damage plus the cost of adaptation - Stern (2006)



Informed decisions and addressing market failure

2.13 The majority of adaptation decisions will be taken by private individuals and firms. Some decisions will be directly based on climate projections, whilst the majority will be based on signals, such as insurance premiums. Government's role is to ensure that market failures do not distort those signals and robust evidence on future climate change impacts is used to inform Government, businesses and consumers' actions. Due to the interdependencies, where an adaptive measure by one business will influence the need for adaptation of the next, the market, without further Government action, may not achieve the socially-optimal level of adaptation. Therefore, Government should also be pro-active in building resilience and capacity in the economy to adapt to the changing physical conditions and challenges that climate change poses. This could occur through public goods, such as flood defences and activities with high spill-overs and economy wide impacts, such as skills development and innovation.

Essential infrastructure

2.14 Damage to infrastructure can disturb the normal functioning of the economy and business continuity. Essential infrastructure, such as transport networks or IT infrastructure enables the normal functioning of business and there is evidence that losses from reduced output are larger than direct losses from climate change induced damages.⁷ Therefore, Government has a role in ensuring the continuity of essential infrastructure with large economy wide spill-over impacts.

Initial work has begun with the Department for Transport (DfT) and Defra-led infrastructure steering group to identify the long-term risks to infrastructure from climate change impacts and to find solutions that improve the long-term resilience of new and existing Infrastructure to future climate change. (paragraphs 5.37-5.38).

Communicating risk through a well functioning Insurance market

2.15 The insurance market also has a crucial role in transmitting the risks of climate change through the price mechanism for households and businesses both for the UK's Built Environment and in mitigating risks to areas of business vulnerable to weather events, such as crops in countries at greater risk to climate change. This has two main functions with regards to UK adaptation: spreading the losses and risks, and premiums which provide incentives to adapt. However, the sector will have to respond to new challenges, some of which are already inherent in the insurance industry including:

- **Increased uncertainty:** of future weather events, as the changing climate renders past weather events less accurate in predicting the future
- **Adverse selection⁸:** The insurer needs to be able to differentiate between different risk categories of individuals and businesses, as well as addressing issues of moral hazard⁹. This will include developing new tools to ensure successful adaptation measures can be better reflected in the price premium.

⁷ DEFRA 'Analysing the role of Government' Economics Paper (2010)

⁸ Adverse selection is where insurers cannot price insurance to reflect the risks of the buyers of insurance, assuming demand for insurance is positively correlated with risk. So, an example in adaptation would be where insurers price premiums more highly for a group who is at less risk than a group who is at more risk.

⁹ Moral hazard is where someone behaves differently due to being insured against risk. For example in Adaptation, someone who is insured against flooding may not invest in flood defences, which they would have done in the absence of insurance.

- **Covariate risks:** Climatic events are likely to increase payout spikes as it will trigger payouts in a wide range of insurance products in comparison to other specific forms of insurance, such as car insurance, which could cause liquidity issues. These risks and risks from inter-dependencies in insurance will need to be reflected in price premiums.

2.16 The UK insurance sector is well developed and already covers many of the major climate risks, such as flooding. It is a key potential risk that the insurance sector might not be able to transmit the risks of adaptation through the price premium to allow businesses to make informed decisions.

2.17 Government may also need to address distributional issues in insurance provision. The Association of British Insurers (2007) reported that many businesses, particularly Small and Medium Enterprises (SMEs), did not have adequate flooding or business interruption insurance prior to the floods of summer 2007.¹⁰ BIS will continue to work with businesses that are encountering issues relating to insurance to climate change such as access and availability.

Reducing uncertainty for businesses

2.18 Adaptation decisions frequently involve an individual or firm incurring upfront costs to avoid an uncertain future cost. Businesses are more likely to invest to minimise costs given greater certainty of future climate change events and potential costs. BIS can play a role in reducing uncertainty and provide clear information and guidance to help translate climate change projections into tangible risks for businesses, which can inform decision-making. Reduced uncertainty can also lead to increased business opportunities as firms and individuals make more informed choices about mitigating the risks they face. This may lead to an increase in adaptation products and services.

¹⁰ ABI (2007b). *Summer floods 2007: learning the lesson* November 2007

3 Embedding adaptation across BIS: Governance & Building Capability

Governance and leadership

3.1 The governance structures for the BIS Climate Change Adaptation Plan will exist to support the department's Ministers, Permanent Secretary and Director Generals to ensure the successful delivery of the Plan. These structures are as follows:

- Within BIS, the Director of Solutions for Business, Low Carbon and Services (Sfblcs) is Senior Responsible Owner for both the Adaptation Plan and the Carbon Reduction Delivery Plan (CRDP). Adaptation will be represented at Management Board level by the Director General, Business Group who is also the Board Level Sustainability Champion.
- The Director Sfblcs will be supported in this role by the **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, adaptation and carbon reduction.
- Members of the CCPB will also constitute a cross-BIS Champions' network (based on the Better Regulation Executive model).
- The CCPB will report internally to the Policy and Programme Board (PPB) which is made up of the BIS Permanent Secretary and Director Generals. Regular Ministerial updates will also be provided.
- The Sustainable Development Team will act as secretariat to the Programme Board.

People

3.2 As working lead for climate change adaptation within BIS, the Sustainable Development (SD) Team recognises the importance of increasing the understanding of adaptation throughout the department.

3.3 Under the leadership of SfBlcs's Deputy Director the SD Team will create and roll-out a departmental-wide Communications Plan with the purpose of embedding understanding of both adaptation and carbon budget "thinking" in BIS policies and activities, and with the added aim of developing new networks. The Sustainable Development Team will also feed into both the departmental and Business Group's business planning rounds to ensure adaptation is captured in the business planning process.

3.4 We will aim to establish firm links with the existing network of departmental Relationship Managers, utilising their strong links with sector companies, in order to get messages on adaptation out to business. 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.

Process

3.5 A working group of officials comprising policy leads for BIS priority sectors and key areas for adaptation as well as BIS economists will 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 Adaptation Plan.

3.6 BIS is already represented on both Defra's cross-Whitehall Adaptation Programme Board and Adapting Public Services Working Group.

3.7 We will actively pursue further cross-departmental working by arranging meetings to address interdependencies. In this regard, we recognise that there is a need to explore the importance of skills to all departments and facilitate current cross-departmental working and possibilities.

3.8 The working lead will explore with individual priority area owners the identification of any training and skills needs in their respective areas and consider the issue of building adaptation competencies into staff objectives. The working lead will embrace adaptation communications among staff under the aegis of the proposed Communications Plan mentioned in paragraph 3.3.

Reporting under the Climate Change Act 2008

3.9 The Climate Change Act gave the Government a power to ask public sector organisations and statutory undertakers to report on the work they are doing to adapt to climate change. These reporting authorities have to report on their assessment of the risks climate change poses to them and the actions they are taking or going to take in response.

3.10 The Government's strategy for using the power, statutory guidance for the reporting authorities, and the list of organisations being asked to report were laid before Parliament on 26 November 2009. Directions were issued in February 2010 and organisations have been given deadlines to submit their reports (deadlines range between July 2010 and September 2011). BIS will work closely with the relevant sector organisations listed as reporting authorities.

Policy

Better Regulation and Government policy evaluation

3.11 The Better Regulation Executive (BRE) produces the impact assessment template used in Government appraisal. The supplementary guidance on adaptation produced by Defra and HMT is a policy-making tool to ensure departments take account of adaptation-related costs and benefits in appraising and evaluating policies, projects and programmes. BIS will use the criteria from the supplementary guidance to identify future policies that need to account for the effects of climate change in their appraisal. These are:

- Policy has elements affected by the weather (including extremes) and assumes a stable climate
- Policy has long-term cost-benefit realisation with significant investment or high value at stake
- Decisions will have significant irreversible impacts and interdependencies
- Critical national infrastructure is impacted
- Contingency planning or business continuity needs to form part of the policy objective

Procurement

3.12 The public sector has significant buying power. This relates to adaptation through demand for adaptation goods and services and capital expenditure. Public procurement in the UK is estimated at £220 billion a year¹¹. Government can therefore help develop future markets and provide certainty through its purchasing power. However, it must avoid crowding out private investment and consider adaptation amongst its other competing priorities to ensure value for money.

3.13 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 as they arise. The OGC/Defra guidance will also be shared with our Agency/NDPB delivery partners.

Delivery partners

3.14 BIS is committed to working closely with its Non- Departmental Public Bodies (NDPBs) during 2010/11 through sustainable development networks, meetings and workshops to raise awareness and engagement in adaptation. This is in line with BIS's Sustainable Development Action Plan in which increasing staff capability and awareness in sustainability issues such as climate change is a key action for development in 2010.

3.15 As experts on England's regional economies, Regional Development Agencies (RDAs) recognise the importance of preparing for the long-term resilience implications as well as the business opportunities that climate change may bring. For many years, the RDAs have been working hard with our national and regional partners on tackling climate change and have emphasised the importance of having a regional overview of adaptation to climate change activity. The RDAs believe that the single regional strategies should be the main strategy for addressing adaptation.

3.16 All RDAs are undertaking a variety of activities within their current Corporate Plans which includes supporting and working with regional climate change partnerships; developing innovative research and regional intelligence; regenerating places with sustainable design and construction at the core; linking researchers with businesses to develop new products; supporting businesses to develop innovative technologies to help with climate change adaptation; and ensuring businesses receive the right support to help them to manage these new risks and threats. The RDAs are also working with BIS on the New Industry New Jobs agenda, helping to identify and prepare for greater investment in emerging sectors to drive the economy out of recession.

¹¹ OGC press release from 2010: www.ogc.gov.uk/About_OGC_news_9922.asp

3.17 In order to assist understanding of the role of climate change adaptation in regional strategies, Defra held a workshop in autumn 2009 for practitioners, to which RDAs were invited, and where BIS did a joint presentation with CLG.

4 Sustainable economic growth and climate change

Risks, opportunities and priorities – an initial BIS assessment

4.1 As reported in Chapter 2 (para 2.6) the UK Climate Change Projections (UKCP09) informed BIS's initial thinking concerning the risks and opportunities climate change impacts might pose in the future for BIS targets and its Departmental Strategic Objectives. This chapter aims to set out the high level risk to BIS and generic risks to business and institutional continuity (eg universities). Further to this we have articulated the risks and opportunities to the individual DSOs and set out the areas of priority work and actions underway to address the key DSOs which will be affected. Each of these priorities is addressed in more detail in subsequent chapters¹².

High-level risks and opportunities

4.2 An initial assessment suggests the high level risks and opportunities for BIS and the delivery of its DSOs are:

- Negative impacts of climate change affecting productivity of UK economy, through business or institutional disruption as well as insufficient future planning. This could hinder the successful performance of UK competitiveness and key supporting establishments such as Research Councils, FE & HE colleges.
- Impacts of climate change may adversely effect inward investment decisions of overseas companies.
- The need to adapt to the impacts of climate change can create opportunities for UK businesses in terms of innovative ideas, products, processes and services either for the UK market or overseas. Businesses may not have the information available to take advantage of the opportunities and mitigate the risks presented by climate change.
- There is also scope for developing skills across sectors in respect of adaptation as well as mitigation.

¹² For a diagram of BIS's PSAs and DSOs please see Annex B.

Generic risks to business and institutional continuity

4.3 These include:

- Flooding of premises, and a resulting inability to carry out core functions at site locations;
- Damage to major infrastructure disrupts business or institutional continuity. In terms of rail and road infrastructure it can lead to disruption of supply chains and supply of materials or products for production;
- Loss of or reduced availability of mains water, possibly due to reductions in rainfall and river flows as a result of hotter and drier summers, including implications for sewerage and contamination of water supplies;
- Extreme weather events could result in disruption to energy sources and the supply of products, raw materials and natural resources vital to manufacturing production and processes.
- Temperature increases could enhance the spread of viruses resulting in sickness in the workplace which could impact on productivity;
- Climate change impacts on the performance of BIS and its ability to deliver a service to stakeholders and customers. eg as happened in the floods of 2007 the Department was inundated with enquiries seeking assistance.

DSOs - Risks and opportunities

Figure 4 The table below also gives a summary of how BIS is addressing these.

Departmental Strategic Objective	Potential risk from climate change impacts to delivery of DSO.	Potential Opportunity from climate change impacts.	Role for BIS in addressing risks and opportunities.
DSO 1* Fostering world-class science + knowledge base.	Costs of maintaining key research sites may make them unsustainable.	World class science and research base could attract significant inward investment.	BIS's funding support through Research Councils and the Technology Strategy Board will be crucial to our science and research base as will the role that UK Trade & Investment can play in marketing UK's strengths, expertise, products and services to address adaptation needs globally. See Chapter 7 + Chapter 4. BIS will communicate with Research Councils on both risks and opportunities.
DSO 2* Increase innovation, enterprise and growth of business	Businesses may not build climate change risks into their business plans and their ability to develop new products, processes and technologies may be hindered. Extreme weather events may cause disruption to infrastructure, water supply, energy sources, the supply of products, raw materials and natural resources vital to manufacturing processes.	The need to adapt to climate change impacts can lead to new products and services and the creation of new markets.	BIS will engage with stakeholders and businesses on adaptation, communicating and disseminating the latest research and evidence of climate change risks and opportunities. Initial priority areas of work across key sectors have been identified and actions planned. See Chapters 2, 4 and 5. Science and innovation will provide some of the solutions to adapting to climate change. See Chapter 7
DSO 3 Deliver free and fair markets with competition	Climate change impacts could reduce the competitiveness of markets by reducing number of available suppliers or creating barriers to entry into markets	Delivering fair and competitive markets will create the conditions for increased innovation, both technological and alternative business practices, which will be key to minimising the cost of the new challenges posed by climate change. Climate change will also change consumer demand, viability of production and business location, which will influence markets.	BIS will continue to deliver free and competitive markets in these new conditions, ensuring the new markets take advantage of the opportunities afforded by climate change as well as managing risks to competition through reduced supplier viability or barriers to market resulting from climate change

Figure 4 Cont'd

Departmental Strategic Objective	Potential risk from climate change impacts to delivery of DSO.	Potential Opportunity from climate change impacts.	Role for BIS in addressing risks and opportunities.
<p>DSO 4 Ensure that Government Departments and agencies deliver better regulation.</p>	<p>Regulation may seek to mitigate or provide adaptive capacity to climate change in an overly costly or burdensome way.</p> <p>This could decrease the effectiveness of wider environmental policy objectives across government and increase the regulatory burden on UK businesses.</p>	<p>Improve strategic policy making to ensure that regulatory responses to future climate change are well designed and minimise the administrative and policy burdens. This should improve regulatory outcomes and ensure that Government policies are more likely to achieve their goals</p>	<p>More widely, BRE will scrutinise regulatory responses designed to mitigate or adapt to climate change across Government to ensure that they are well designed and minimise administrative and other burdens</p>
<p>DSO 5 * Improve the skills of the population through excellent further education and world class universities</p>	<p>Insufficient accounting of skills needed to adapt and take advantage of future climate change opportunities. This may reduce the ability of the future UK's skills base to provide for the UK economy's needs.</p>	<p>UK has the opportunity to position adaptation alongside low carbon and to develop and broaden skills in respect of adaptation as well as low carbon.</p>	<p>BIS is consulting on skill requirements for adaptation. See Chapter 6</p>
<p>DSO 6* Provide the capability and infrastructure needed to deliver BIS objectives and programmes objectives</p>	<p>Understanding of adaptation not fully embedded across the department.</p> <p>Climate impacts disrupt BIS's ability to deliver its service.</p>	<p>Enhanced capability of staff will develop BIS drive to embed understanding of adaptation across business.</p>	<p>BIS developing a Communications Plan to build capability and embed understanding across the department. See Chapter 3 BIS actively engages with Cabinet Office in developing its business continuity planning. See Chapter 8</p>

Figure 4 cont'd

Departmental Strategic Objective	Potential risk from climate change impacts to delivery of DSO.	Potential Opportunity from climate change impacts.	Role for BIS in addressing risks and opportunities.
<p>DSO 7 (Government as a shareholder): BIS has responsibility for managing shareholdings in those businesses Government has a financial interest in through its Shareholder Executive. It is important the Dept leads by example and that climate change opportunities and research are communicated to the portfolio businesses.”</p>	<p>Adaptation to climate change will not be taken into account by those organisations in which Government has a financial interest</p>	<p>BIS can communicate the latest evidence concerning risks and opportunities of climate change impacts.</p>	<p>It is important that the Department is seen to be leading by example and that climate change opportunities and research are communicated to the portfolio businesses.</p>

*BIS's role in respect of these key DSOs is addressed in the chapters indicated.

BIS Priorities

4.4 Overall, a priority for BIS is to try to ensure that the challenges of climate change are understood by Business sectors and across HE/FE. Looking specifically at the risks and opportunities to key DSOs, BIS has at this early stage identified several priority areas of work:-

- **The Built Environment /Construction sector;**
- **Retail sector** (comprising inter alia supply chains, transport/logistics, major employers);
- **Service Economy** (particularly around roadmapping the opportunities for business and professional services and as a feature of the “2020 Vision” project);
- **Critical Infrastructure;**
- **Trade & Investment** (promoting UK reputation in low-carbon/climate change. Solutions and opportunities in trade, and for the UK to become a hub for inward investors);.
- **Innovation, work of Research Councils and TSB;**

- **BIS Resilience work.**

5 Engaging with businesses on adaptation

5.1 BIS has a key role to play in engaging with business on climate change adaptation. Although the majority of actions for UK adaptation will originate from businesses and private individuals, BIS has a role to ensure market failures do not distort market signals, leading to poor decisions and increasing the cost to industry. This could include price signals, such as the insurance premium for climate influenced events (paragraphs 2.15-2.17 refer) or information failure and uncertainty which is inherent in future climatic predictions.

5.2 As part of this role BIS will input into and disseminate the latest research and evidence to businesses and will take forward priority actions as identified in chapter 2.

Communicating Climate change risks and opportunities to UK businesses

5.3 As outlined in chapter 2, evidence needs to be presented in a format that can be integrated into Government and business decision-making. Many small/young firms can lack the requisite management, risk assessment, finance, marketing skills and experience needed to integrate climate change risks into decision making. Presenting the information in an accessible format will help reduce analysis costs and remove barriers for smaller businesses who have limited adaptation capacity.

5.4 BIS will therefore provide and facilitate the provision of relevant, up to date robust information that will help businesses embed adaptation considerations into their decision-making process.

5.5 The physical impacts of climate change are uncertain due to the sensitivity of emissions assumptions and uncertainty inherent in climate projections. Businesses may be reluctant to commit funds or investment in adaptation because of uncertainty in future climate projections and unproven adaptation technologies, especially for low-risk, high-impact events. Behavioural barriers to early/pre-emptive adaptation measures also include high search costs for information, particularly in the case of small firms.

5.6 The adaptive capacity of young or smaller businesses and the behavioural barriers identified above can be addressed to some extent through the dissemination and provision of information in a format applicable to business decision making.

Action: BIS will consider through its network of business Relationship Managers and with Defra, further work on a dissemination plan for the UK Climate Projections and for future evidence from the Climate Change Risk Assessment. Following this work, BIS will draw upon its expertise within sector teams to further develop the key risks and opportunities from climate change to feed into Defra's Adaptation report to Parliament in 2012

UK Climate Projections 2009

5.7 Details on the outputs of this project are addressed in chapter 2. Work is ongoing to interpret the bio-physical changes in climate and how this is likely to translate into weather conditions and physical environmental changes. The Climate projections will inform the remaining research and adaptation programmes.

5.8 Climate change will have different impacts across sectors and regions. Adaptation measures may be underprovided by the market. In order to address this possible gap Government may have to intervene by providing funding, direct provision or regulation¹³. According to the IPCC 3rd assessment report, vulnerability of a group or sector to climate change is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its adaptive capacity. Therefore the vulnerability of a system to climate change is not uniform across the country and differs according to geography, demographics and socio-economic indicators¹⁴. It is therefore necessary to assess costs and benefits of adaptation at a local level.

5.9 BIS will begin using the UK Climate Projections (UKCP09) in the actions identified below.

Impact on UK business clusters

5.10 Clusters have been defined as geographic concentrations of interconnected companies, specialised suppliers, service providers, firms in related industries and associated institutions in particular fields that compete but also co-operate¹⁵.

¹³ DEFRA (2010). *Adapting to climate change: Analysing the role of Government*.

¹⁴ METROECONOMICA (2006). Costing the local and regional impacts of climate change using the UKCIP costing methodology.

¹⁵ Porter (1998) *On Competition*, Harvard Business School Press, Cambridge

5.11 According to an extensive body of literature¹⁶, clusters lead to higher growth in three main ways:

- They raise productivity by allowing access to specialised inputs and employees, enhancing access to information, institutions and public goods and facilitating complementarities.
- They increase firms' capacity for innovation by diffusing technological knowledge and innovations more rapidly.
- Clusters stimulate higher rates of new business formation, as employees become entrepreneurs in spin-off ventures.

5.12 It is estimated that in the UK there were 154 clusters in 1999¹⁷. More recent research shows evidence of clustering across different sectors¹⁸. In 2005 the majority of clusters was in the service sector and geographically concentrated in London. Some of the most agglomerated industries are extraction industries, where geographic clustering is driven by access to specific natural resources, such as North Sea oil and gas.

5.13 There are also examples of clusters in the manufacturing sectors. These are typically industries that have been clustered historically, such as cutlery in Sheffield, ceramics in Stoke on Trent, lace in Nottingham and jewellery in Birmingham. Overall current research shows persistence over time in the degree to which industries are agglomerated.

5.14 Sudden shifts in climate and the rising costs of extreme weather will affect UK industrial clusters and will pose serious policy dilemmas. According to the Stern Review, infrastructure damage from flooding and storms is expected to increase substantially, particularly in coastal areas.

5.15 Some specific risks to UK business clusters can be identified:

- **Physical risks:** London, the UK services' sector hub, is located in a floodplain. The insurance industry estimates that in London alone at least £125 billion of assets lie in the floodplain¹⁹.
- **Insurance coverage:** clusters located in areas at risk of flooding might face restrictions in insurance coverage. Increasing costs of extreme weather will also raise insurance premiums in those areas.

¹⁶ Examples include: Porter, M. (1990) *The Competitive Advantage of Nations*; Krugman, P. (1991), *Geography and Trade*.

¹⁷ Business clusters in the UK – A first assessment (2001) DTI

¹⁸ An analysis of industrial clustering in the Great Britain (Simpson, 2007)

¹⁹ Association of British Insurers (2005b).

- **Spillover risks:** In future, if rising weather risks cause insurance to become even less available in high-risk areas like the coast, this could be severely disruptive for other parts of the economy. Banks, for example, may be unable to offer finance where insurance is required as part of the collateral package for mortgages or loans.

Action: BIS economists will use current research on clustering together with UKCIP09 projections to potentially identify the clusters most at risk from climate change related events. This will be carried out to feed into the Climate Change Risk Assessment work commissioned by Defra due in 2012.

Measuring adaptation to climate change - Adaptation Indicators

5.16 A set of adaptation measures will inform UK progress in adapting to its changing climate and capacity for future climate change through regular snapshots of its “adaptation status”. This will also provide evidence and allow the evaluation of national policy aimed at improving the adaptive status of the UK.

5.17 BIS has been working closely with other Government departments to define the principles and framework for measuring adaptation status in the UK. Future work will involve the development of indicators and BIS will conduct an internal review of existing datastreams and identify data enhancement potential to provide indicators for the measures.

Action: BIS economists will feed back suggested adaptation measures to the cross-departmental working group for adaptation measurement for a report due to be published in 2012.

Trade and Investment- Business opportunities from adaptation

5.18 Trade and foreign direct investments play a fundamental part in the success of the British economy. UKTI helps UK-based companies to succeed in an increasingly competitive global economy. Its network, which includes staff across the UK and in British Embassies and other diplomatic posts around the world, provides companies with knowledge, advice and practical support. UKTI also helps overseas companies bring high-quality investment to the UK’s economy.

5.19 Climate change impacts pose risks to UK businesses but also offer new markets and opportunities. Science and innovation drive our economic prosperity and will provide some of the solutions to adapting to climate change, leading to new markets and opportunities. The shared BIS and FCO science network can strengthen the UK's innovation capacity through international research and development (R&D) investment, R&D partnerships and technology transfer. Global adaptation to climate change will create a large market in adaptation goods and services that UK businesses can exploit.

5.20 BIS economists, trade specialists and sector teams have participated in the Defra-led project on Business Opportunities from Adaptation. This evidence will be used to inform future sectoral engagement, and BIS/UKTI work with businesses to identify new markets and promote the UK's expertise. In the short-term we will disseminate the information to businesses through the Government's central business information hub: Business Link.

Actions:

1. Publish the final report and sector specific studies through Business Link following the publication of the report in May 2010.
2. Global Business Opportunities identified for adaptation goods and services will be incorporated into UKTI marketing by 2011/12.

Climate change risk assessment (CCRA)

5.21 The Climate Change Risk Assessment will set out the magnitudes of the risks from climate change, as well as Government options for intervention. It will also produce evidence on the social, economic and environmental risks and impacts of climate change, with the intention that this evidence can be integrated directly into decision-making. BIS inputs into this work through its membership of the Cross-Departmental Steering Board for the Climate Change Risk Assessment.

5.22 The Climate Change Risk Assessment evidence will help inform the potential impacts that businesses may face and hence future sectoral and regional engagement. In addition, the CCRA will look to value the identified risks and evaluate a number of broad adaptation options, providing further evidence to inform future risks, priority research areas and business opportunities.

Actions:

1. On the basis of the CCRA evidence BIS will review existing action to embed adaptation in departmental and BIS-influenced decision making and actions to build the UK's adaptive capacity. The conclusion of this assessment will be fed back through the Departmental Adaptation Plan when it is reviewed circa 2011-2012
2. BIS will expand on existing work to identify at risk business clusters and explore the variation in regional impacts of climate change following the publication of the CCRA in January 2012.

Supporting Business through Solutions for Business Products

5.23 Solutions for Business (SfB) is the Government's long-term support offer to business (currently 29 products) and is accessed primarily through Business Link, which provides an impartial gateway to all business advice and help available in a region. The products offer differentiated support to companies of all sizes, stages and sectors with common business issues such as getting started, growing, finance, export, skills, innovation, sustainable working and the environment.

5.24 Several SfB products can assist businesses in adapting to climate change, for example '**Improving Your Resource Efficiency (IYRE)**' which can offer advice, guidance and support to help businesses become more resource efficient: reducing their costs, carbon footprint, potentially reducing vulnerability to climate impacts (e.g. reduced water availability) and increasing their competitiveness.

Action: The Solutions for Business team in BIS will work with Defra's Adapting to Climate Change (ACC) and Sustainable Business and Resource Efficiency (SBRE) teams to ensure that the Business Link advice fact sheet for the IYRE Product is updated to reflect its relevance to adaptation and to explore the relevance of other SfB products in support of this agenda.

Working with the Forum for a Just Transition

5.25 Businesses will need to adapt to the consequences of climate change which will affect different regions and sectors of society in different ways. It is crucial that the Government does all it can to ensure that there is a fair distribution of costs and benefits across the economy from such a transition, For this reason the Government created the Forum for a Just Transition in respect of the transition to a low carbon economy. The Forum allows for discussion across a broad range of representatives from central Government, national regional and local bodies, Trade Unions, business organisations and third sector bodies and as such has the ability to extend its work to consider the impacts of climate change and adaptation on society.

Action BIS will invite the Forum to consider the outcome of BIS's research on at-risk business clusters and will explore the variation in regional impacts of climate change following the publication of the CCRA in 2012.

Addressing our sector priorities

5.26 In Chapter 4 we highlighted our priorities - based on our initial assessment of the Climate Change Projections - for addressing our key risks and opportunities. Action is underway as follows.

Construction & the Built Environment

5.27 The Construction Sector Unit (CSU) in BIS is already undertaking work on adaptation in the following ways:

Strategy for Sustainable Construction

5.28 The CSU has led the production and implementation of the joint industry/Government Strategy for Sustainable Construction. The Strategy, published in June 2008, recognises the importance of climate change adaptation by including a chapter specifically on the subject and highlights the importance of adaptation to the construction industry. It also informs the industry of Government's measures in tackling adaptation, encourages industry to be proactive and advises on the various sources of available help.

5.29 Since the Strategy's publication, this work has been driven forward by a programme of information awareness events, provision of further industry guidance and the publication of a Progress Report in September 2009.

Low Carbon Construction Innovation & Growth Team

5.30 In September 2009, Lord Mandelson launched a Low Carbon Construction Review led by an industry Innovation and Growth Team (IGT). The Low Carbon Construction IGT (CIGT) is assessing the strengths of and opportunities for the UK construction industry in a low carbon economy and considering how the UK can be a world leader in this sector. The focus of the CIGT is on mitigation and how the construction industry can contribute to the carbon reduction targets set out in the Low Carbon Transition Plan.

However, it is already clear that there will be:

- Challenges/opportunities for the industry in adaptation mirroring those in Mitigation (but without detail regarding precise scope, scale, etc). This will include skills, capacity/fitness of the supply chain
- The need to synchronise adaptation and mitigation measures both at the strategic/design level (neighbourhood approaches to both) and in execution (so that work on site for either/both purposes is coordinated as far as possible, rather than becoming a series of disruptive interventions)

- The need to avoid unintended consequences, where mitigation measures might actually exacerbate the adaptation problem or where a focus on carbon might militate against other important measures of sustainability.

5.31 Bovis Lend Lease (BLL) has been tasked by the CIGT to explore with Defra how the challenges of adaptation to climate change may relate back to the CIGT. Paul Toyne (BLL) is due to report back to the Steering Group in March 2010.

Retail Sector

5.32 Climate change adaptation is one of the key work streams in the BIS-led Climate & Environment Retail Action Plan (CERAP). The steering board for the Action Plan incorporates BIS, the British Retail Consortium, the Association of Convenience Stores, Defra and DECC.

5.33 CERAP has three aims in its adaptation strand: to educate retailers of all sizes of the challenges and business opportunities of adaptation; to monitor progress on adaptation amongst retailers on an ongoing basis; to provide input to other Government departments' adaptation plans, looking at both the potential role of retail in delivery and consumer education, and ensuring the potential impacts of other activities and policies upon retail are fully considered.

Actions:

1. The British Retail Consortium is publishing a guide to adaptation for retailers, including both risk management and business opportunities, drawing on Government expertise and advice. This guidance will be aimed at large corporate members and is due to be published by summer 2010. The information and guidance will then be re-purposed and targeted towards specific retail sub-sectors and SMEs. The guidance will also be disseminated through Business Link and other appropriate channels by the end of 2010.
2. CERAP is working to develop a mechanism for retailer input and feedback to non-BIS DAPs, which will be in place in spring 2010.
3. The Action Plan will continue to monitor adaptation activity in the Retail sector.
4. The Action Plan will input to other Government departments' Adaptation Plans looking at both the potential role of retail in delivery and consumer education, and ensuring the potential impacts of other activities and policies on retail are fully considered.
5. BIS retail team in conjunction with Communities and Local Government (CLG) will work with home improvement retailers on how best to advise customers on adaptation issues, including relevant planning restrictions.

Service Economy

5.34 BIS is strengthening its engagement with the business and professional services sector. This sector, broadly defined, contributes approximately 20% of GVA and employment in the UK. “Going for Growth: Our Future Prosperity”, published by BIS in January 2010, announced that BIS had established a new services policy unit to act as a main point of contact for this sector. It is now working with the industry to develop a strategy to ensure that it is well-placed to meet future challenges, with initial findings to be reported by March 2010. The objective of this initial project is to work with business and thought leaders to ensure the UK builds on its position as a world leading supplier of innovative business and professional services up to 2020 and beyond.

5.35 BIS conducted a set of workshops for this project in late January 2010 to roadmap with business policy challenges, a discussion of the risks and opportunities of a transition to a low-carbon, resource efficient economy. An initial project output report is on track for March 2010 and will be offered for further, wider business discussion and validation.

5.36 BIS’s service policy team is also working to support the Cabinet Office-led project “Making public data public”, which aims to open up public sector information in order to contribute to economic growth through the creation of new business information services, as shown in the US and Canada. This initiative could include spatial data from, for example the Environment Agency, relevant to climate and environment which would impact on planning/risk/insurance and related business information services – discussions are ongoing.

Action: BIS will continue to take account of adaptation to the impacts of climate change, alongside mitigation, in its work with industry to promote market opportunities for business and professional services.

Identifying the impacts of climate change on critical infrastructure

5.37 BIS is represented on the high-level steering group of the cross-departmental Infrastructure and Adaptation Project, tasked with identifying the long-term risks to infrastructure from climate change impacts and solutions that improve the long-term resilience of new and existing infrastructure to future climate change. This work is led by Defra and DfT but BIS is inputting through working groups.

5.38 The BIS Chief Scientific Adviser is leading a workstream on engaging the engineering sector with this agenda with the primary aim of building their capacity for adaptation. A conference was held in December 2009 to bring together key representatives.

Action: The first output of the work is a review of long-term risks to infrastructure from climate change impacts, which will report at the end of January 2010. The full project will report by March 2011 and BIS will undertake further specific action which may arise from its findings.

6 Skills

Identifying the skills to adapt

6.1 All Government departments have identified skills as key to their work on climate change adaptation and see skills as fundamental to the UK successfully adapting to the impacts of climate change.

6.2 The skills-base of the workforce directly affects how well an economy adapts to changing conditions and new challenges and hence its productivity over the longer-term. Skilled workers are better able to embed new technologies and identify market opportunities and thus directly contribute to the competitive position of their business.

6.3 The correct skills mix will increase the UK's adaptive capacity. Although there is uncertainty about the most efficient way of adapting to the impacts of climate change, we know that future innovation, technology and skills capacity will all need to be responsive to the needs of businesses, in order to minimise the burden of adaptation.

BIS actions on skills

6.4 BIS recognises the increasing need for a robust and responsive skills system. As climate change presents new challenges to all parts of the economy, workforces in all sectors and industries will need new sets of skills, capabilities and knowledge to deal effectively with them.

6.5 It is clear that we need to address some of the basic issues around skills development in the UK, the creation of a new technician class, and where adaptation can be specifically addressed alongside mitigation in skills strategies. The exact types of skill required to adapt to climate change and the level of demand for these skills is unclear. However many of the skills needed are not new. For example, we will need to increase the supply of Science Technology Engineering and Mathematics (STEM) skills at all levels and develop mechanisms for transferring them to new industrial contexts. BIS funds STEMNET to enthuse all young people about the possibilities of STEM. Their STEM Ambassadors programme has over 19,000 individuals from STEM companies or academia working as role models in schools across the UK. That number is targeted to increase to 27,000 by March 2011. Well over 1 million young people have been reached by this scheme so far.

6.6 We have also positioned our work on Skills for Adaptation within our wider work on skills for a Low Carbon economy.

6.7 The first ever national skills audit, developed by the UK Commission for Employment and Skills, will be published shortly. It confirms the focus of *Skills for Growth* on action to promote the skills that matter most for economic prosperity, particularly on the importance of horizontal skills such as technical and managerial skills, and helps identify which specific sectors and occupations should be priorities. We will be working with UKCES on a programme to ensure this information is made available to providers and funders and is well used to support careers guidance at every level – including in schools, further and higher education.

6.8 A new Joint Investment Programme (JIP) in areas key to economic recovery, including a cash match from employers. The SFA will seek expressions of interest. It will match-fund selected Sector Skills Councils' (SSC) and Industry Training Boards' proposals to tackle specific technical skills needs in areas key to economic recovery. We expect low carbon skills and skills for adaptation to feature strongly among the bids, and hopefully among the supported proposals. It will promote collective action by employers and providers to develop skills solutions cutting across traditional sector boundaries, and will place special emphasis on skills organisations working collectively together.

6.9 As the Sector Skills Council 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 select committee' report:

- 11 SSCs and 1 Industry Training Board 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 3rd sector partners have come together to shape and support the delivery of the DECC Housing Energy Management Strategy

6.10 Building on the *Low Carbon Industrial Strategy and Skills for Growth* White Paper, BIS and DECC are leading new cross-Government work to develop a Low Carbon Skills and Resource Efficiency Strategy. In furtherance of this, we will be publishing a consultation document alongside the Budget in March 2010, with a view to completing a formal public consultation over the summer and publishing a full Strategy later in the year. Adaptation has been positioned into this consultation to try to identify what skills are needed to build adaptive capacity and to enable organisations to minimise risks and make the most of the opportunities that the impacts of climate change will create. The formal consultation process will draw on input from expert groups such as the Department for Energy and Climate Change (DECC) Household Energy Management (HEM) skills working group.

6.11 The Construction Sector Unit (CSU) is working with the Sector Skills Councils relevant to the Built Environment to help ensure that the skills required for the Construction industry, including those which are required for Climate Change Adaptation, are provided.

Further Education Capital

6.12 From an FE capital perspective, BIS would have an interest in ensuring college facilities were adapted to future climate conditions. In summary:

- The Learning and Skills Council (LSC) is currently consulting on what a future FE capital investment programme will look like, ensuring that future funds will be allocated to achieve the best value for money and with bureaucracy kept to a minimum.
- As part of this process and as part of the work to transition the current programme across to the new Skills Funding Agency - work is underway to revise and update policy expectations, including the need to ensure that pan-Government agendas are properly addressed.
- College capital projects are already expected to satisfy the highest environmental standards, and in light of the recent Climate Change Act, new standards and measures will be considered in order to support the sector in achieving a much reduced carbon footprint.

Higher Education

6.13 The Higher Education Funding Council for England (HEFCE) published a *Carbon Reduction Target and Strategy for Higher Education in England* in January 2010²⁰. This will feature an entry (paragraph 92) advocating that HE institutions in England start thinking about incorporating climate change impacts into existing planning and risk management processes.

²⁰ Available at www.hefce.ac.uk/pubs/hefce/2010/10_01/.

6.14 In conclusion, although the Department has and is already doing a great deal on skills, we intend that the DAP process provides a spur to further thinking on Skills needs and opportunities around adaptation.

7 Innovation and science:

Their importance to adaptation

7.1 Future innovation and technology is also a key driver in increasing UK adaptive capacity and will have the potential to reduce the cost of adaptive measures as part of Government's overall adaptation strategy. In this chapter we explain the role of Innovation in adaptation, its relationship with competition -a BIS priority –and we outline how BIS creates the conditions for Innovation. The final section looks at the specific actions by BIS and its delivery bodies on adaptation and the work of the Government Office for (GO) Science.

7.2 Innovation refers to the creation and successful exploitation of new ideas. This includes new technologies, products, the opening of new markets and methods of working and processes. Innovation can provide benefits in businesses achieving cost-savings or new market opportunities in climate change adaptation. The Low Carbon Industrial Strategy Economics Paper distinguishes between incremental and radical innovation, which can be usefully applied to adaptation to understand business strategy in response to adaptation:²¹

- **Incremental Adaptation Innovation** - A steady stream of improvements to an established product, process or technology which does not change its fundamental character. Examples of incremental adaptation innovation are new flood defence systems surrounding an existing factory.
- **Radical Adaptation Innovation** - Alters the technological profile of the economic system. Examples of radical adaptation innovation could be new production processes and products, which take advantage of climate change.

7.3 Both forms of innovation will be critical for ameliorating the UK's adaptive capacity. Incremental adaptation measures are likely to be undertaken by a large number of businesses whilst radical innovation has large cost-saving potential but requires greater shifts in business behaviour and whole system reform.

²¹ BIS economics paper 'Towards a Low Carbon economy – economic analysis and evidence for a low carbon industrial strategy' (2009)

Creating the conditions for Innovation

7.4 The vast majority of innovative activity will occur in the private sector in reacting to climate change. The primary role of Government is therefore to create the conditions for innovation to take place through the maintenance and operation of competitive markets. Evidence suggests competition has a positive impact on innovation by lowering the barriers to market entry and increasing market pressure on existing and incumbent businesses to innovate.²² Conversely, innovation can create competitive pressure, for example through the entry of innovative product into an existing market. Creating the conditions for innovation in climate change adaptation meets our commitment under DSO 3.

7.5 Government also influences the innovation system through the institutional framework. The diagram below provides an “institutional map” of the UK Innovation System:

Figure 5



Source: DTI Economics Paper No. 7 (2003);
Note: areas where Government has influence are shaded.

²² Ibid: For example, Blundell et al (1999)

7.6 BIS will continue to ensure the delivery of competitive and fair markets, which will inevitably be influenced by climate change to create the conditions for adaptation innovation. BIS is also committed to removing barriers or bottlenecks, which could delay or inhibit adaptation innovation within the UK innovation system. A successful scheme launched by the Intellectual Property Office (IPO) is designed to fast-track patents with environmental benefits.

Intellectual Property Rights system: Fast tracking green patents

Intellectual Property Rights green policy

7.7 Patents in Europe currently take an average of up to seven 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.

7.8 From May 2009, the Intellectual Property Office (IPO) have 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. Key aspects of this are:

- A fast-track to grants 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.

7.9 So far we have had a total of 84 requests since May 2009 (we've allowed 82 and refused 2) which averages 3 applications per week and 1% of normal workload. This is a level which we can manage within our current examining capacity. In addition, we have received favourable publicity, not only from users but also in the media, which helps to spread the message that patents can be of assistance in dealing with the challenge of climate change.

7.10 Since launching the 'Fast track green patents' scheme it has achieved a great deal of traction, with an average of 3 applications per week. Following the launch in 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.

7.11 Technology is one form of innovation, which will be particularly important in climate change adaptation, since many of the climate abatement actions will be on existing building and capital stock. The promotion of technology and application of innovative solutions to climate adaptation problems can reduce the costs to businesses and build UK adaptive capacity.

BIS action on Innovation: Research Councils and the Technology Strategy Board (TSB)

7.12 The section above describes BIS's role in creating the conditions for Innovation and below are specific research programmes on adaptation from the Technology Strategy Board and Research Councils.

Technology Strategy Board

7.13 The Technology Strategy Board operates to stimulate innovation across sectors of the UK, which offer the greatest scope for boosting UK growth and productivity. Investments in key programmes are shaped by the need to adapt to future climate, including:

- Low Impact Buildings
- Detection and Identification of Infectious Agents
- Sustainable Agriculture and Food

7.14 The Technology Strategy Board has also recently worked with the Natural Environment Research Council (NERC) to launch a *Design for Climate Change* initiative and will launch a collaborative R&D competition focused on this theme under its Low Impact Buildings Innovation Platform in spring 2010. The competition is planned to design buildings for comfort, quality of life and low-environmental impact, meeting current targets but also addressing the UK Climate Impacts Programme's (UKCIP) best predictions of climate in 2050. The initiative will also link closely with the Living with Environmental Change (LWEC) programme below.

Action: TSB to deliver *Design for Climate Change* initiative and launch competition focused on this theme under its Low Impact Buildings Innovation Platform in spring 2010.

Research Councils

7.15 Priority is given within the BIS Science & Research Budget, which provides funds for the Research Councils, to address issues of climate change, including adaptation. The seven Research Councils, which collectively receive some £3.5bn annually, support basic, strategic and applied research and related postgraduate training across the sciences, arts and humanities. They fund a variety of research work, both individually and through Cross-Council programmes, which have the potential to impact on a broad range of sectors both nationally and internationally. UK scientists are at the forefront of climate change science and the application of this basic knowledge to understand the challenges the UK will face in mitigating or responding to the impacts of climate change. The Nobel Peace Prize was awarded to the UN's Inter-governmental Panel on Climate Change (IPCC), for which Research Council-funded researchers provided a significant proportion of the evidence.

7.16 Research Councils individually support a range of research which will help to impact on issues around adaptation and assist the understanding of and response to climate change. This research includes:

7.17 Biotechnology and Biological Sciences Research Council (BBSRC): BBSRC's research priority areas cover lifelong health and wellbeing; bio-energy; living with environmental change; and crop science (food security). Their research committee B concentrates on plants, microbes, food and sustainability. For example, Scientists at the John Innes Centre have identified several genes in cereal crops that offer breeders opportunities to develop varieties in which flowering and maturity occur earlier, avoiding the worst effects of heat stress, and yield is maintained.

7.18 Engineering & Physical Sciences Research Council (EPSRC): Relevant investments by EPSRC include those under "Infrastructure and Environment", which supports research focusing on the goal of a sustainable future society and includes the "Sustainable Urban Environment Programme", and elements of its programmes which support "Engineering" and "Innovative Manufacturing". For example, EPSRC is funding research that is exploring what the nature of the UK transport system will be in 2050, including its usage and physical characteristics, to understand what sort of network will be most resilient to climate change. EPSRC research is also developing tools to analyse adaptation options in urban areas to make them more comfortable to live and work in and reduce pollution and greenhouse gas emissions.

7.19 Economic & Social Research Council (ESRC): Amongst other areas, the ESRC focuses research on key strategic challenges that feed into social and environmental aspects of sustainable behaviour development including: Environment, Energy and Resilience; Understanding Individual Behaviour; Security, Conflict and Justice; Global Economic Performance, Policy and Management; and Social Diversity and Population Dynamic. For example, the ESRC Centre for Business Relationships, Accountability, Sustainability and Society is developing a “Food and Drink Strategy for Wales”. Working with the Welsh Government and Food and Drink Advisory Partnership, a 10 year strategy will be produced which will focus on building sustainability in the sector and promoting competitiveness among Welsh producers.

7.20 Medical Research Council (MRC): Relevant areas of investment by MRC include “Health Service and Public Health”; “Infections & Immunity”; and “Molecular & Cellular Medicine”.

7.21 Natural Environment Research Council (NERC): NERC’s strategy identifies seven themes: Climate system; Biodiversity; Sustainable use of natural resources; Natural hazards; Environment, pollution and human health; Earth system science; and Technologies. Most of the research funded by NERC contributes to improving understanding of the environment, and a number of research programmes are particularly focused on identifying approaches to adaptation, for example the “Ecosystems Services for Poverty Alleviation” (ESPA) Programme and the “Sustainable Marine Bio-resources” Programme. The Changing Water Cycle (CWC) programme will invest £10 million over the next five years on research that will help the UK to adapt to and mitigate the hydrological effects of climate change. NERC spends £40m a year on climate change research and advises the Inter-governmental Panel on Climate Change (IPCC).

7.22 As well as individual Research Councils’ activities, contributions from key cross-Council programmes include:

Living with Environmental Change initiative (LWEC)

7.23 LWEC is 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. The £1bn programme was launched in June 2008 by the Department of Innovation Universities and Skills (DIUS) and Defra Ministers. 18 programmes involving 20 partners were launched in June 2009 addressing aspects of environmental change and one is explicitly titled ‘Adaptation and Resilience in a Changing Climate’. The LWEC programme will make a significant contribution to the UK ability to adapt to climate change and address impacts on natural resources.

Action: The Research Councils are developing a detailed plan setting out how the evaluation of LWEC will be progressed.

Research Councils Energy Programme (RCEP)

7.24 This Programme brings together all Research Council activities in energy research and related training: expenditure has increased threefold since 2003 to ca £100m currently, supporting a broad range of speculative and directed research activities (and with a total commitment exceeding £300m over 2008-11).

7.25 The vision for the Programme is to bring together engineers with physical, natural environment, biological, social and economic scientists to tackle the research challenges involved in creating new energy technologies and understanding of the environmental, social and economic implications. Led by the Engineering and Physical Sciences Research Council (EPSRC), RCEP investments cover the whole energy system including renewables; fusion; improving conventional generation, and carbon capture and storage; distribution networks and energy storage; through to research to help to keep the nuclear option open. During 2009-2010, EPSRC will initiate an “International Review of UK Energy Research” to report in June 2010.

7.26 Given the nature of investments in research and their often unforeseen and unanticipated impacts, the extent of the effect of these two major initiatives in terms of specifically addressing adaptation is not quantifiable, and indeed could be categorised as encompassing sustainable development, climate change adaptation and climate change mitigation.

7.27 In addition to the above, are the following examples of specific contributions in respect of adaptation:

- The National Ecosystem Assessment, part of LWEC, is providing the first ever quantitative analysis of environmental benefits for society and the economy.
- The Joint Climate Research Programme is a Met Office/Research Council UK (RCUK) initiative to strengthen the UK's world-leading reputation in climate science through a number of projects about how we adapt to the effects of climate change, directly addressing critical UK policy needs.
- The Tyndall Centre for Climate Change's Greenhouse Gas Regional Inventory Protocol (GRIP) is helping cities take action on climate change by producing energy scenarios which lead to the formulation of policy. GRIP has been used in every English region, by each devolved administration and by 10 European capital cities. Demand is outstripping supply to the extent that a spin-out company has been set up.
- The Tyndall Centre's Norfolk Coast Simulator is informing long-term decisions by local councils on adapting to climate change by providing simulations of the coast under different scenarios including erosion, wave movement, sea level rise and accretion. In the Norfolk region

- EPSRC funded electrical engineers have developed high performance filters, which will be used by the European Space Agency to develop more accurate weather forecasts and gain a better understanding of climate change.
- Research at the University of Lancaster into how plant roots respond to drying has led to a novel method of irrigation that maintains crop productivity and quality at greatly reduced amounts of water, and which is now being applied to a range of field and glasshouse crops.
- Scientists at the John Innes Centre have identified several genes in cereal crops that offer breeders opportunities to develop varieties in which flowering and maturity occur earlier, avoiding the worst effects of heat stress, and yield is maintained.
- High sugar grasses developed from research at the Institute of Biological, Environmental and Rural Sciences, Aberystwyth can help to reduce greenhouse gas emissions from livestock.

GO Science Foresight Projects

7.28 The Foresight Programme is delivered by the Government Office for Science (GO-Science) and helps Government and other decision makers to think systematically about the future. Foresight projects are major, in-depth studies that examine key issues looking as far as eighty years into the future and their findings are of relevance to business, industry groups and a wide range of other stakeholders.

7.29 There are a number of Foresight projects in various states of development for which adaptation to climate change is a key aspect and which will help ensure that policy development and decisions on adaptation are underpinned by strong scientific and engineering advice and long-term thinking. Current projects of relevance are:

- **International Dimensions of Climate Change (IDCC):** aims to improve our understanding of how climate change in other parts of the world could impact the UK. This will include identifying possible opportunities and threats for UK businesses that may result from the effects of climate change overseas. Due to report in Autumn 2010, the IDCC project will augment the evidence base for the UK Climate Change Risk Assessment
- **Foresight Land Use Futures:** this project reported findings on 25 February 2010. It provides a detailed analysis of the challenges and opportunities for UK land use over the next 50 years, including how land use and land management will need to change to respond to major drivers of change such as an increasing population, changing consumption patterns, the drive to low carbon, and adaptation to climate change. It concludes that sustainable land use will require a new perspective in government which considers the interaction of objectives in all major land sectors and whether these "add up", and what capacity land has in different locations to deliver greater value for society. Overarching strategic objectives for land use across the urban and rural domains are needed.
- **Global Food and Farming Futures:** this project is considering the challenge of how a future global population of 9 billion people can all be fed healthily and sustainably. The project will also look ahead to 2050 and take a global view of the food system; considering issues of demand, production and supply as well as broader environmental issues such as the effects of climate change on agriculture and marine production. The project's findings are due to be launched in October 2010.

- **Global Environmental Migration:** This project, due to report in October 2011, will look at global migration due to environmental change and will provide the Government with a better understanding of any long-term impacts on migration, the challenges and opportunities it could bring, and how these might be addressed. The project is currently scoping the extent to which it will look at issues that affect businesses, such as the location of potential employees and labour, and the effects that environmental change may have on the business environment.

7.30 In addition, the Government Office for Science works in a number of other ways to ensure that policies on adaptation are underpinned by sound scientific evidence. For example, it led an independent challenge review of the underpinning science for UK Climate Projections '09 before these were launched, and the Government Chief Scientific Adviser is leading a cross-Government review of the future role, resourcing and governance of the Met Office Hadley Centre, which provides key information for adaptation planning. GO-Science is also a member of the programme board for the UK Climate Change Risk Assessment.

8

BIS Resilience and Protecting our Estate

External resilience

8.1 BIS specifically leads on the telecoms (landline, mobile and Internet Service Providers (ISPs)) and postal sectors (communications is one of the nine national infrastructure sectors. The one remaining element of communications is broadcasting, which is a DCMS lead).

8.2 BIS is involved with cross-Whitehall resilience work including the National Risk Assessment. It is also working closely with the Natural Hazards Team (NHT), part of the Cabinet Office's Civil Contingencies Secretariat. The NHT was established in May 2009 in response to Sir Michael Pitt's review of the summer 2007 floods with the core recommendation that Government puts in place a systematic, coordinated, cross-sector campaign to reduce the disruption caused by natural events to critical infrastructure and essential services.

8.3 BIS acts as secretariat for the Electronics Communications – Resilience and Response Group (EC-RRG), an industry-chaired forum consisting of all the mobile and fixed telecommunications companies. The objective of this group is to enhance resilience of the UK telecommunications infrastructure.

8.4 Through this and other fora, as well as bilaterally the communications sector works closely with the Government to build resilience into their networks and collaborates on the protection required for those parts of the communication sector classed as critical national infrastructure.

8.5 Looking to the future of communications, a fundamental element of the Digital Britain White Paper²³ proposition was that Ofcom should have a duty to report to the Secretary of State on the development of the UK communications market, including infrastructure. It is logical that issues concerning the resilience of networks should feature in that report and in this context resilience should encompass the entire spectrum of challenges to the continued availability of electronic communication networks and services.

8.6 In the light of the vital importance of communications networks and services, we should expect the sector to be able to offer assurance that it will meet the challenge of adapting to climate change. The proposed requirement for Ofcom to report on the communications market and infrastructure set out in the Digital Economy Bill provides a vehicle for such assurance. The

²³ The Digital Britain White paper can be found at:
<http://www.culture.gov.uk/images/publications/digitalbritain-finalreport-jun09.pdf>

Department for Business Innovation and Skills will request that Ofcom factor in climate change adaptation to their proposals for meeting this requirement. Officials in BIS and DEFRA will work with the industry to promote a greater understanding of the challenges of climate change.

Internal resilience

8.7 Working within Whitehall, the BIS internal Resilience team is actively engaged with the Cabinet Office in developing its business continuity planning to mitigate risks and adapt its response to disruptive incidents affecting the Department's business.

8.8 The annual iteration of the Cabinet Office National Risk Assessment and National Planning Assumptions provides the basis to review the Department's future planning and adapt its business continuity responses with internal stakeholders such as the Estates team (e.g. denial of access to key sites due to a major flooding event). The BIS internal Resilience team is therefore already involved in a cycle of business continuity planning.

Adaptation and the BIS estate

8.9 All of BIS' recent initiatives - improved Automated Meter Reading (AMR), Building Management Systems/Controls, installation of Chiller Units, Solar Film on windows, etc. - have been aimed at enabling 1 Victoria Street to cope with increasing summer and winter temperature variances and these naturally run well beyond the original design specifications of our HQ building. Without substantial additional investment we will be unable to make significant further improvements to the energy efficiency and 'weather durability' of our buildings. Our Executive Agencies, namely Companies House, Intellectual Property Office, Insolvency Service and National Measurement Office (NMO) have been encouraged to take similar action.

8.10 Further new initiatives are largely dependent on availability of external funding sources, e.g. via the Carbon Trust. We have just received Salix grant funding approval for a Voltage reduction project which should give at least 10% energy efficiency savings on 1 Victoria Street and this work will be carried out during 2010. It will be extremely difficult to fund further initiatives and find additional savings beyond this date.

Sustainable Operations of the Government Estate (SOGE) & High Performing Property (HPP) Programme reporting

8.11 BIS is fully engaged in the SOGE/HPP framework. The position on environmental reporting however is not straightforward given the split between ex-BERR and ex-DIUS, and nothing has therefore been reported under 'BIS' as that Department did not exist at the time (i.e. before 5 June 2009). BIS and its NDPBs have a policy of only acquiring 'BRE Environmental Assessment Method (BREEAM) Excellent' buildings or refurbishing to a minimum of 'BREEAM Very Good' standard in existing buildings, which is in

line with the Office of Government Commerce guidance²⁴. This should help with adaptation.

Risk Assessment

8.12 Any risk assessment is likely to be limited given the size of the estate (one building beyond 2012).

Retrofitting the BIS estate

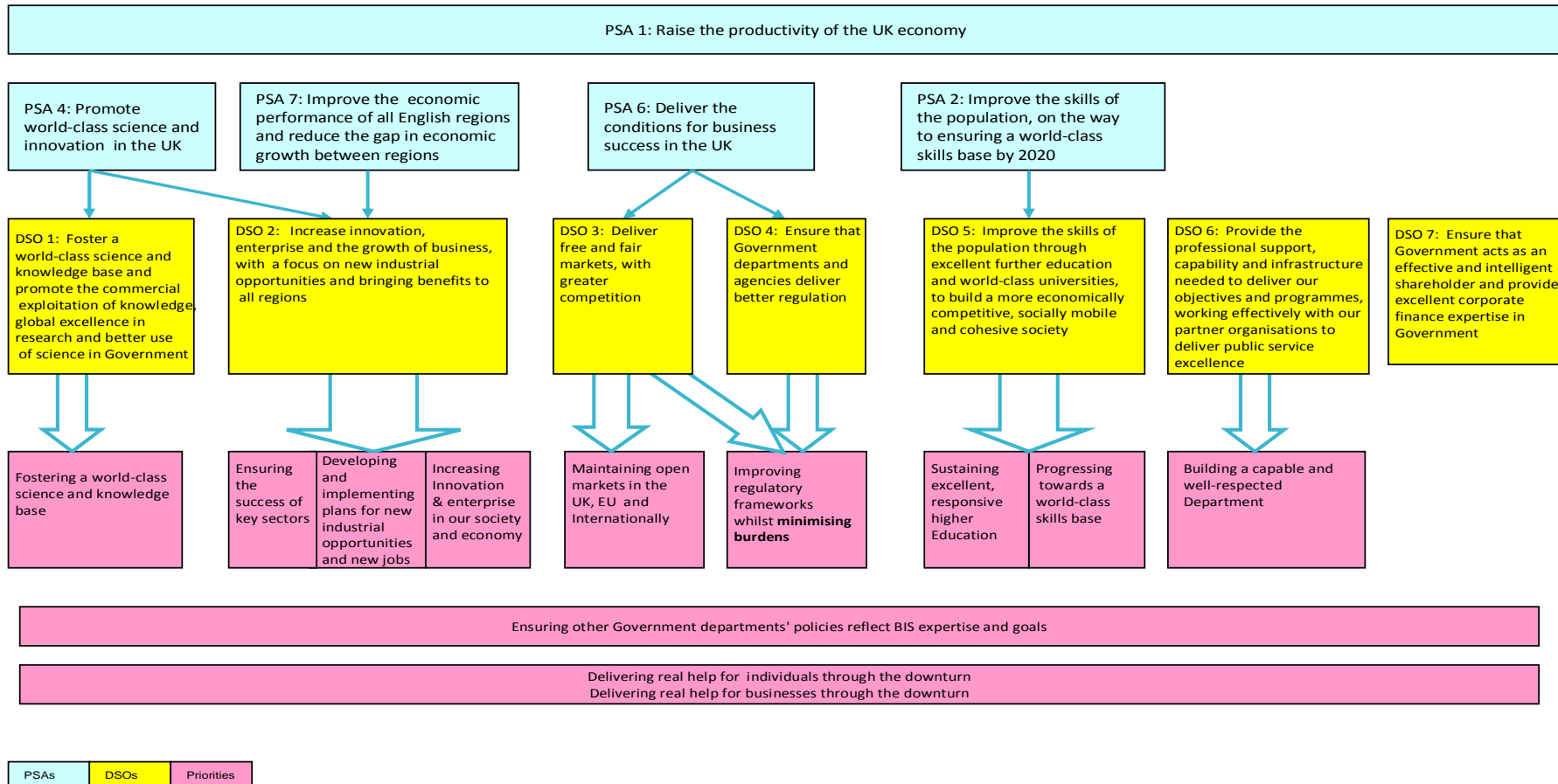
8.13 BIS has been fully engaged with the Retrofit programme initiated by OGC in August 2009. This work was taken on jointly by DECC and the Technology Strategy Board under the title 'Energy Efficient Whitehall – Retrofit Programme' to develop new technologies and to bring these forward for the Government estate. 1 Victoria Street has been put up as one of the four 'Iconic'/'Landmark' buildings for study. A consultant has now undertaken an energy efficiency study on the HQ building.

8.14 The Department has not thus far been involved in the Department for Communities and Local Government's Retrofit Consortium given our engagement in the existing OGC work.

²⁴ Guidance entitled: Common Minimum Standards: for the Procurement of Built Environments in the Public Sector.

Annex A: Mapping BIS's PSAs and DSOs

How It All Fits Together: mapping our PSAs, DSOs & priorities



Annex B

Specific Adaptation Actions

DSO/Sector/Theme	Action planned or commenced	Start date	Target date for completion
DSO 2	BIS will consider through its network of Business Relationship Managers and with Defra further work on a dissemination plan for the UK Climate Projections and for future evidence from the Climate Change Risk Assessment. Following this work, BIS will draw upon its expertise within sector teams to further develop the key risks and opportunities from climate change to feed into Defra's Adaptation report to Parliament in 2012.	Ongoing	2012
DSO 2	BIS economists will use current research on clustering together with UKCIP09 projections to potentially identify the clusters most at risk from climate change related events. This will be carried out to feed into the Climate Change Risk Assessment work commissioned by Defra due in 2012.	Ongoing	2012
DSO 2	BIS economists will feedback suggested adaptation measures to the cross-departmental working group for adaptation measurement for a report due to be published in 2012.	Ongoing	2012
DSO 2	Publish the final report and sector specific studies through Business Link following the publication of the report in May 2010.	Ongoing	May 2010 for Publication
DSO2	Global business opportunities identified for adaptation good and services will be incorporated in to the UKTI marketing by 2011/2012	Ongoing	20/11/12

Annex B cont'd

DSO/Sector/Theme	Action planned or commenced	Start date	Target date for completion
DSO2 and DSO6	On the basis fo the CCRA evidence BIS will review existing action to embed adaptation in departmental and BIS-influenced decision making and actions to build the UK's adaptive capacity. The conclusion of this assessment will be fedback through the Departmental Adaptation Plan when it is reviewed circa 2011-2012 check date.	Ongoing	2011 and 2012
DSO2 and DSO6	BIS will expand on existing work to identify at risk business clusters and explore the variation in regional impacts of climate change following the publication of the CCRA in January 2012.	2012 onwards	2012
DSO2, DSO 6, DSO 7	The Solutions for Business team in BIS will work with Defra's Adapting to Climate Change (ACC) and Sustainable Business and Resource Efficiency (SBRE) teams to ensure that the Business Link adviser fact sheet for the IYRE Product is updated to reflect its relevance to adaptation and to explore the relevance of other SfB products in support of this agenda.	Ongoing	December 2010
DSO2	BIS will invite the Forum to consider the outcome of BIS's research on at risk business clusters and will explore the variation in regional impacts of climate change following th publication of the CCRA in 2012	Ongoing	2012

Annex B cont'd

DSO/Sector/Theme	Action planned or commenced	Start date	Target date for completion
<p>DSO2, DSO6, DSO7</p>	<p>1) The British Retail Consortium is publishing a guide to adaptation for retailers, including both risk management and business opportunities, drawing on Government expertise and advice. This guidance will be aimed at large corporate members and is due to be published by summer 2010. The information and guidance will then be re-purposed and targeted towards specific retail sub-sectors and SMEs. The guidance will also be disseminated through Business Link and other appropriate channels by the end of 2010.</p> <p>2) CERAP is working to develop a mechanism for retailer input and feedback to non-BIS DAPs, which will be in place in autumn 2010.</p> <p>3) The Action Plan will continue to monitor adaptation activity in the Retail sector.</p> <p>4) The Action Plan will input to Other Government Departments' Adaptation Plans looking at both the potential role of Retail in delivery and consumer education, and ensuring the potential impacts of other activities and policies on Retail are fully considered.</p> <p>5) BIS retail team in conjunction with Communities and Local Government (CLG) will work with home improvement retailers on how best to advise customers on adaptation issues, including relevant planning restrictions.</p>	<p>2010</p>	<p>2012</p>

Annex B cont'd

DSO/Sector/Theme	Action planned or commenced	Start date	Target date for completion
DSO2 and DSO6	BIS will continue to take account of adaptation to the impacts of climate change, alongside mitigation, in its work with industry to promote market opportunities for business and professional services.	Ongoing	2012
DSO2	The first output of the Infrastructure and Adaptation Project is a review of long-term risks to infrastructure from climate change impacts, which will report at the end of January 2010.	Ongoing	2012
DSO2 and DSO5	TSB to deliver <i>Design for Climate Change</i> initiative and launch competition focused on this theme under its Low Impact Buildings Innovation Platform in Spring 2010.	Spring 2010	2012
DSO1	The Research Councils are developing a detailed plan setting out how the evaluation of LWEC will be progressed.	Spring 2010	

