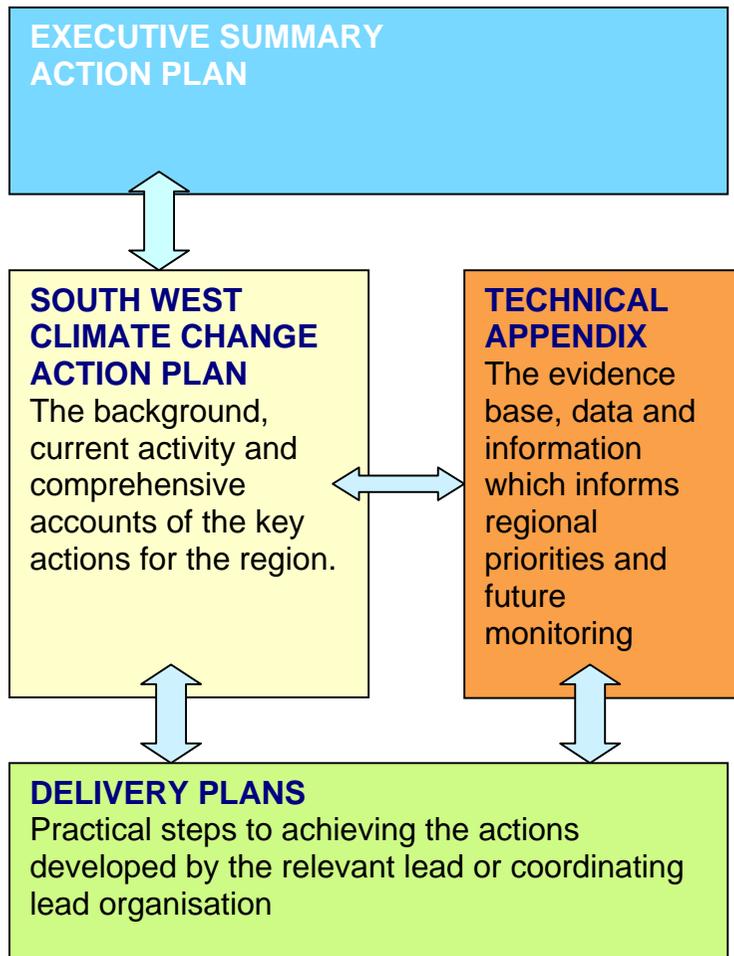


THE SOUTH WEST CLIMATE CHANGE ACTION PLAN FOR THE SOUTH WEST 2008 – 2010



Figure 1: The South West Climate Change Action Plan “family” of documents



The **South West Climate Change Action Plan** contains full details of the activities required to support the region in adapting to and mitigating the impacts of climate change, as well as a summary of the context and evidence behind the actions. It is complemented by: the **Executive Summary** which provides an overview of priority activity within the region; the **Technical Appendix** which holds the data and information sources pertinent to the choice of priorities and actions; and the associated **Delivery Plans** which set out how the actions will be delivered by the relevant lead organisation. The Executive Summary and Technical Appendix can be accessed through www.southwest-ra.gov.uk.

Web-links to information on policies and organisations have been embedded in the document and are marked in blue. Web-links are also listed out at the end of the document. Web-links are subject to change; those listed are correct as of August 2008.

Foreword: Our Ambition

Climate change is quite simply the greatest challenge of our time. Here in the South West we cannot insulate ourselves from the direct and indirect impacts of a changing climate, so we must prepare for them. We must make the transition to a low carbon society as quickly as possible, and where we can, take real advantage of the economic opportunities that will also arise. Our challenge is to be effective, responding with sufficient ambition and urgency.

This is the first South West Climate Change Action Plan, developed in partnership and informed by many stakeholders. In committing to it the regional partners are demonstrating their very serious intent to making the necessary step changes in direction and activity which will help the region meet the challenge of climate change.

The Plan focuses on the immediate practical, regional action up to 2010 that will be most effective in reducing our vulnerability to climate change and reducing our emissions. We are very aware that the choices we now make, as public sector, business and community leaders will determine our success. We have a collective imperative to avoid dangerous climate change and the time for us to take action is now.



Mark Robins
*Chair, Climate Change Action
Plan Task Group*



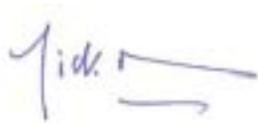
Sir Simon Day
*Chairman, South West
Regional Assembly*



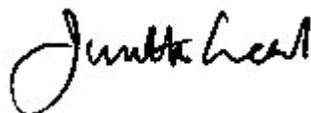
Richard Cresswell
*Regional Director,
Environment Agency*



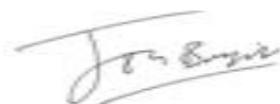
Ben Bradshaw
*Rt Hon Ben Bradshaw MP,
Regional Minister for the South
West*



Nick Buckland
*Deputy Chair, CCAP Task
Group, South West RDA Board*



Janette Ward
*Regional Director
Natural England*



Jon Bright
*Regional Director, Government
Office South West*

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Introduction

Ambition

We expect this to be the first of many editions of the South West Climate Change Action Plan. It aims to drive forward an integrated regional response to the challenges and opportunities of climate change through a tightly-drawn set of realistic actions, based on an initial analysis of the critical areas that need to be addressed. The actions focus on regional level activity, with some additional actions to lobby for national activity or support sub-regional activity. It has been developed by a wide range of regional stakeholders against a backdrop of rapidly increasing levels of adaptation and mitigation activity across the region, from regional plans down to local community-based initiatives. We know that the region has only just begun to make the transition to a low carbon economy and to become resilient to increasing climate change.

To ensure that the South West – through strong leadership, good planning and appropriate allocation of resources – takes significant action to reduce carbon emissions, adapt to climate change, and take the economic opportunities that arise.

Leadership and partnership

This plan will fail if, collectively, the region does not provide the highest levels of leadership, especially in being clear and realistic about what can be achieved and by leading by example within its organisations. There are examples already of strong leadership from a number of businesses and corporate bodies in the region. However, this needs to be far more widespread and reflect all sectors of regional activity. There are important developments emerging: for example the South West Regional Development Agency is preparing to launch its zero carbon annual investment port-folio; and in November 2008 the UK Climate Impacts Programme will publish the updated **UKCIPO8 scenarios** to provide much more detailed analysis of climate change projections. No single organisation alone – private, public or voluntary – can deliver the transformation that is needed. Delivering this Action Plan therefore also depends on securing a step change to the way we all work in partnership with one another to achieve our common goals.

This first edition of the Action Plan has a strong focus on the role of the public sector. Future editions will need to explain and outline the role of the private sector and voluntary and community sectors much more clearly. It is aimed principally at organisations which have a role to play in the actions detailed. It is not intended for the general public, though of course some of the actions address how organisations can support individuals and communities to take their own action.

Timescale of the Action Plan

The Plan contains a set of realistic, achievable actions for the period 2008-2010. The evidence, outputs and learning it generates will provide the foundation on which to build even more ambitious plans in the future. Some of the actions concentrate on achieving a step change in existing activity, some introduce new areas of action, whilst others aim to develop understanding and determine the most effective course of future action. The spread of activity is reflected by the highest priority objectives and actions, shown in bold in each chapter and listed below:

Adaptation - highest priority objectives for 2008-10

There are 15 actions identified in the Action Plan to help the region adapt to climate change. The priority objectives for adaptation action for 2008-10 are:

1. Identify the parts of the region most vulnerable to extreme weather events and undertake actions to increase resilience.
2. Increase business preparation for the opportunities and risks of climate change.
3. Ensure regional land-use practices take account of the impacts of climate change and promote adaptation responses.
4. Ensure that all relevant regional and sub-regional bodies understand the impacts of, and take action to respond to, increasing flood risk.

Mitigation - highest priority objectives for 2008-10

There are 38 actions identified in the Action Plan to help the region reduce CO2 emissions. The priority objectives for mitigation activity for 2008-10 are:

1. Accelerate the implementation of basic energy efficiency measures in all domestic properties as quickly as possible.
2. Embed long term carbon management and resource efficiency in business planning and investment and economic development.
3. Incorporate carbon reduction as a requirement of public sector investment decisions and procurement.
4. Undertake regional activity to support carbon reductions and demand management from regional and local multi-modal transport.
5. Stimulate the increased installation of renewable energy technologies in the region.
6. Provide support and coordination of activity to achieve low and zero carbon new development by 2016 (housing) and 2019 (non domestic sector).
7. Maximise the carbon storage capacity of the region's peatlands.

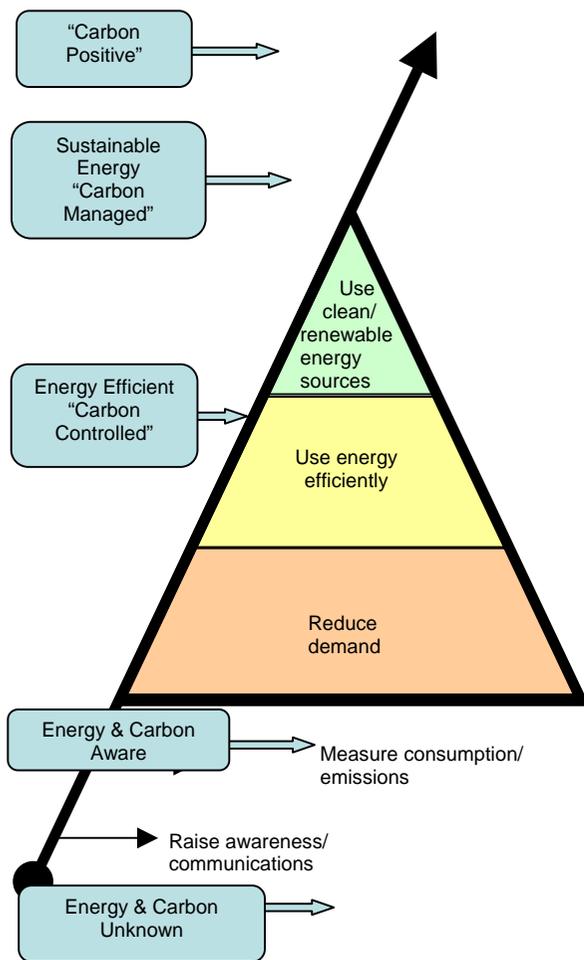


Figure 2: “Our Carbon Journey”

Challenges and opportunities

The Action Plan covers mitigation and adaptation activity, specific to the South West, which needs to take place at the regional level. One of the major challenges facing the region is to balance the need for continued growth (the population is forecast to increase by 750,000 in the next 20 years) with a regional aspiration to make a significant reduction in carbon emissions. Adapting to hotter drier summers and warmer wetter winters, and particularly the expected increased incidence of extreme weather and sea level rise, will also present challenges. At the same time the opportunities that climate change presents for South West businesses are also significant. The region is in a very strong position, for example, to exploit the potential of low carbon technology and renewable energy generation from wave, wind and tidal power. There are also opportunities presented by a warmer climate, which will need to be explored. The actions in the Plan reflect these challenges and opportunities.

Mitigation – scope of the Action Plan

Proposed mitigation action concentrates on helping the region along its ‘Carbon Journey’¹ to achieve a significant reduction in carbon emissions. Where possible it will follow the carbon management hierarchy of ‘reduce demand, increase efficiency, and switch to renewable energy’. The mitigation actions concentrate almost entirely on activity to reduce carbon dioxide. While there are more potent greenhouse gases, 84% of the region’s climate changing emissions relate to carbon dioxide released from fossil-fuel based energy consumption in the home, from businesses and from transport, and these are the areas the region has most influence over. No regional carbon emissions reduction target has been set. Whilst the national target of a 60% cut in CO2 emissions by 2050 (likely to be increased to 80% by 2050), provides the context for action, the region has limited control over the key elements of carbon emission generation and, realistically, can only contribute to these national targets by supporting national initiatives, setting regional policy and programmes, and

¹ Source: Carbon journey concept devised by Carbon Sense, (www.carbonsense.com). Carbon journey diagram devised by Devon County Council

providing support to the sub-region to play their part. However, the 60% target equates to a 3% year-on-year reduction which provides a guideline for all sectors to achieve. The Technical Appendix, published as a separate document, provides further details of possible trajectories within each sector.

The issue of waste as a source of emissions is not addressed by this edition of the Action Plan. Whilst the waste sector contributes 4% to total GHG emissions in England, and is the largest source (49%) of total methane emissions, current policies to reduce waste and emissions are already being implemented successfully. The **Regional Waste Strategy** (RWS), in tandem with the national waste strategy, seeks to reduce the landfill of wastes to 20% of current levels by 2020. In addition, the **SW Regional Improvement and Efficiency Partnership** (RIEP) has a strand supporting local authorities in delivering a reduction in landfilled waste as well as raising awareness of the environmental impact of different waste reduction and transportation technologies. As a result, including actions on waste in this edition of the Action Plan would duplicate existing, effective activity.

Emissions from aviation are also not included in this edition of the Action Plan for several reasons. Firstly, control of aviation emissions is largely a national issue, which the regional organisations have little influence over. There is also current concern voiced in the Sustainable Development Commission's 2008 report, **Breaking the Holding Pattern**, that the evidence base for making policy decisions on aviation needs to be thoroughly reviewed in order to find consensus on the impact of aviation in relation to greenhouse gases and the economy. In addition, aviation is currently understood to play a relatively small part in the region's total carbon emissions from transport, although this will increase dependent on the rate at which the region's airports are allowed to expand. As a result of these factors, the transport chapter prioritises actions relating to other modes of transport, as these are where the region can have real impact over the next three years. Future editions of the Action Plan will reconsider the issue of emissions from aviation in the region in the light of emerging evidence.

Adaptation – the scope of the Action Plan

Adaptation to climate change is defined by UKCIP as “changing behaviour, institutional arrangements or economic activity to adapt to either direct or indirect consequences of climate change”. The challenges of adaptation in the South West include understanding the likely impacts, identifying appropriate adaptation responses, and developing skills and capacity to adapt in all relevant sections of the economy, society and environment. There is still work needed to understand what the specific impacts of a changing climate will be and the severity of those impacts. The Action Plan focuses on the strategic regional activity that is needed. Adaptation is approached as an area of activity in its own right in a separate set of chapters though there are places in the document where mitigation and adaptation overlap (e.g. new buildings which need to both mitigate and adapt to climate change) and these will be cross-referenced wherever possible.

Adaptation action within this edition of the Plan focuses predominately on the primary, direct weather-related impacts of climate change. Secondary impacts such as climate related migration and the security of resource supplies (food, energy, water) will affect the South West increasingly in the future. These are not addressed directly within this edition of the Plan due to the need to focus on preparing for the most immediate primary impacts.

Cross-cutting issues

There are several cross-cutting issues, encompassing both mitigation and adaptation activity, which are of primary importance in successfully dealing with climate change in this region and are reflected in actions throughout the Plan.

1. Evidence, measurement and monitoring systems to inform decision making are an essential component of successful planning and management. Some sectors are more developed than others, but in all the need to become much more 'Climate Conscious' and 'Carbon Aware' requires better information collection and analysis to drive successful policy interventions and best practice delivery. In particular, the Action Plan is underpinned by a Technical Appendix that is an initial attempt to draw together the evidence on climate change. The continued development of this resource, as well as the creation of a monitoring framework for the Action Plan, will be led by the South West Climate Change Technical Group.
2. Co-ordinating communication and improving information systems is acknowledged as essential action if we are to ensure all stakeholders understand the priorities and their role in practical action. Many people, both public and professionals, are confused by the plethora of messages on climate change. Successful action both to mitigate and adapt to climate change will require good information and good communication of it. Although not described in the actions, a well supported output to follow on from this Plan is an agreed Communications Protocol setting out key terminology and definitions, referrals to "one stop shop" arrangements and consistent messages to key audiences on effective actions on climate change issues.
3. The public sector has a key role in delivering national and regional climate change policies, as well as supporting its communities in adapting to climate change and reducing carbon emissions. Many actions within the Plan will be delivered by, or in co-operation with, the public sector – most notably the unitary, county and district councils. The South West RIEP Climate Change programme is a new funding stream delivered through the RIEP to support local authorities to deliver against their climate change targets. The funding available will be used to support the priority skill and capacity gaps in local authorities, as identified through the Action Plan development process.
4. The need to support the increasing groundswell of community level action is important and a number of actions will indirectly provide initial support, although the Plan has not addressed this area in detail. The contribution of community

action should not be underestimated, particularly if partnerships can be built to maximise and help prioritise their contribution.

5. Skills and training to develop capability and capacity are needed at all levels of our economy and society. Helping professionals to keep up with a rapidly changing agenda is a key priority for this Action Plan.

Plan development and delivery

The Plan has been developed by a wide range of stakeholders in the region who are already involved in mitigation and adaptation actions either at the regional or sub-regional level. Many of them will now be involved in delivering elements of the Plan and/or will be able to use the Plan to influence their areas of work. Whilst the Plan focuses on regional level activity it is intended also to be a lobbying tool for national issues and a support for local activity. Action at sub-regional level is critical. Many South West localities have their own, impressive climate change mitigation and adaptation plans [see Technical Appendix], but the picture is not consistent across the region and the Action Plan aims to provide guidance and support to the key sub-regional partnerships, including local authorities and Local Strategic Partnerships, many of which are adopting climate change indicators within their emerging Local Area Agreements as a means of developing stronger community level action on climate change.

Costs

The process of developing the Action Plan has raised questions around how much we know and don't know about the short, medium and long term cost implications of adapting to and mitigating climate change. There are some delivery areas, such as housing or energy, where the cost/benefit analysis of specific actions can be relatively well evidenced and the funding to deliver the actions is both quantified and available. Conversely there are other actions which focus on lobbying, enabling or facilitating to which no carbon saving can be immediately attributed. The diversity of the actions also makes costing the implementation of the plan in any level of fine detail virtually impossible. However, in debates over the allocation of resources to tackle climate change, it should be remembered that the **Stern Review** warns that the cost of inaction on climate change is equivalent to losing at least 5% of global GDP each year, now and forever, compared with a cost of action to ensure that the worst impacts of climate change are avoided of around 1% of global GDP.

The Delivery Programmes that will follow on from the Action Plan, developed by the relevant lead or coordinating organisation, will provide more detail on the practical steps to achieving the actions. They will examine in more detail the specific costs and resource implications of each action. Where necessary, the delivery programmes will also explore where new resources need to be found and what activity is required to lever these resources into the South West.

Climate Change in the South West

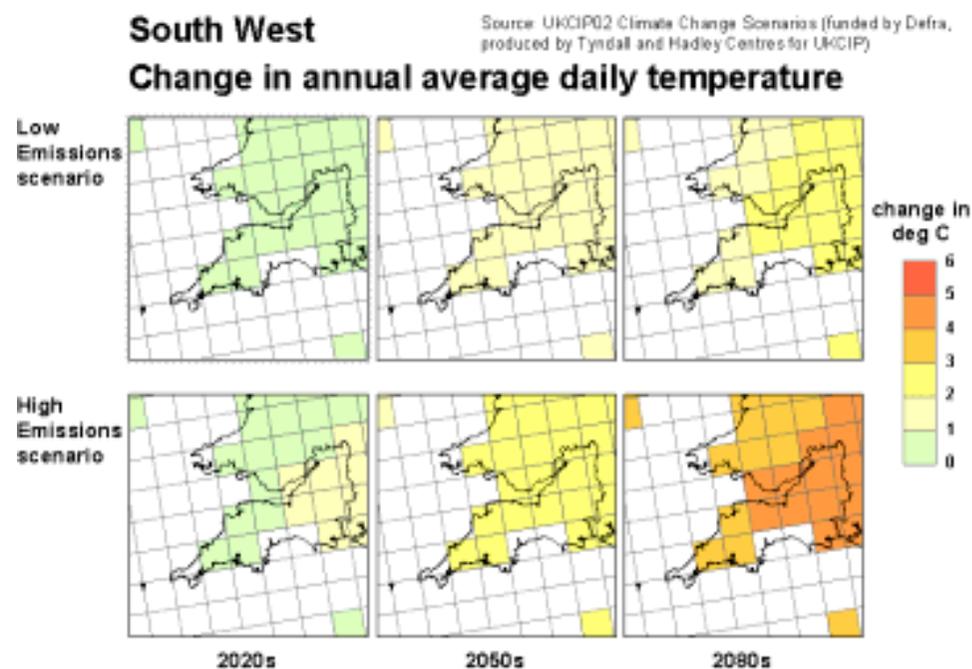
The following paragraphs provide a summary of the potential climate change impacts in the South West and the key sources of carbon emissions within the region. Further evidence supporting each chapter of the SWCCAP has been compiled in a separate document, the Technical Appendix. The Technical Appendix has been developed by a group of technical experts from the region's key organisations. Following publication of this first Action Plan, the Technical Group will turn its attention towards developing a monitoring and evaluation framework to support the Plan's delivery.

Becoming 'Climate Conscious'

Annual average daily temperature and rainfall predictions for the South West based on **UKCIP02 scenarios** suggest that, with a 'high emissions scenario', the South West needs to prepare for hotter drier summers and warmer wetter winters. The **UKCIP08 scenarios**, due out in November 2008, provide more detail on both the geographical scale and the levels of probability of these changes. The scenarios will allow the region to better understand what changes it can expect in the next few decades.

Greenhouse gases, such as carbon dioxide, have a relatively long lifespan in the atmosphere, so the climate system adjusts slowly to the increased concentrations of these gases, emitted increasingly from human activities. This means that most of the changes in climate that will happen over the next 30 to 40 years have already been determined by past emissions and no matter what actions we take now to reduce greenhouse gas emissions, some climate change is still inevitable, and will have implications for many aspects of the region's environment, society and economy. Recent events like the 2007 summer floods in Gloucestershire, though not specifically attributable to climate change, nevertheless provide a timely reminder of the region's vulnerability to extreme weather events. These events are predicted to become more frequent and more intense as a result of climate change. Climate change will also mean slow incremental changes to average temperatures and rainfall, changing the timings of natural cycles, and affecting the elements of our economy and society, such as agriculture and tourism, which are dependent on them.

Figure 3:



Becoming 'Carbon Aware'

Figures 4 and 5 provide a summary of the region's CO₂ emissions by source and in comparison with the UK's other regions. Statistics on carbon emissions are all based on estimates, worked out on a pro rata basis. The awareness of the source and quantity of carbon that is emitted by each element of our economy, society and environment is becoming better understood, but we still have some way to go to become fully 'Carbon Aware'.

Figure 4: SW CO₂ emissions by source

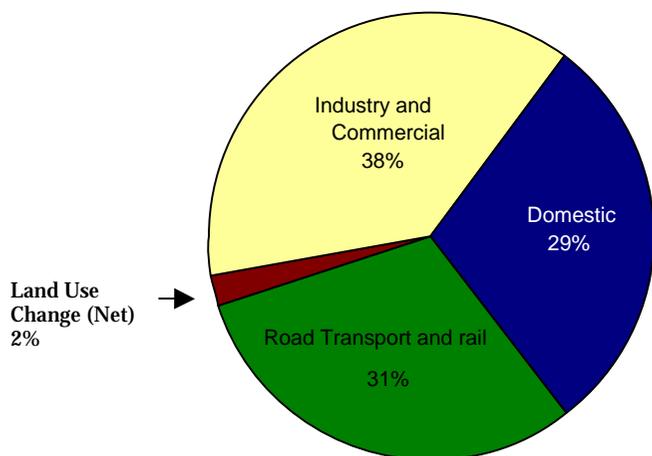
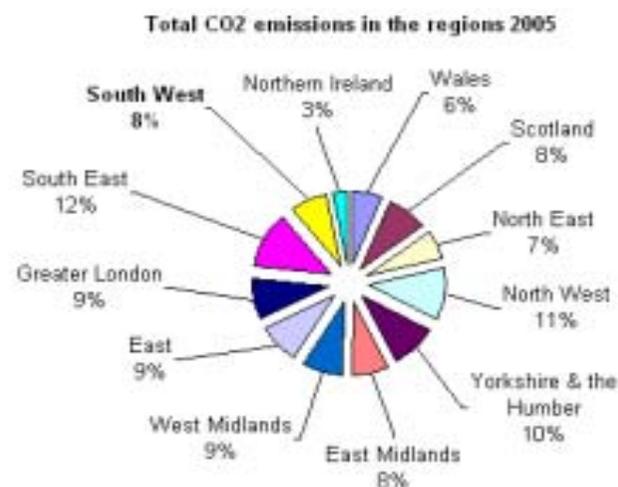


Figure 5: Total CO₂ emissions in the region 2005



Source for Figures 4 and 5: Defra Local & Regional CO₂ Emissions Estimates for 2005 (AEA Energy & Environment 2007)

The latest figures available on CO₂ emissions from DEFRA show that the South West region's CO₂ end user emissions in 2005 totalled 43 million tonnes (43,202 kt), representing 8% of the UK total of over 545 million tonnes (including unallocated consumption and large electrical users whose location is unknown). Of that 43 million tonnes, the source of emissions is divided between the domestic sector, responsible for 29%, industry and commerce which is responsible for 38% and transport (mostly road-based) causing 31% of CO₂ emissions. Further details are shown in the Technical Appendix. The mitigation actions in the SWCCAP reflect these emission sectors. These areas for action are well supported by the available evidence, which is presented in the Technical Appendix, as well as being consistent with the recent IPCC (2007) Report on *Mitigation of Climate Change*. The priorities expressed in this Action Plan are clearly aligned with the key mitigation technologies and practices which are currently available.

South West Action to Adapt to Climate Change

***'Adaptation is the only means to reduce
the now unavoidable costs of climate
change over the next few decades.'***

Stern Review, December 2006

Chapter 1: Adapting the region to the impacts of climate change

OUR AMBITION: To reduce regional vulnerability and increase regional resilience to the impacts of climate change.

What do we know and understand?

Coordination of much of the region's adaptation activity has been undertaken by the **South West Climate Change Impacts Partnership** (SWCCIP). Established in 2001, SWCCIP is made up of key regional stakeholders who work on both the policy and practice of adapting to climate change. Their mission is "to investigate, inform and advise on the environmental, social, and economic impacts of climate change in South West England and develop and promote sustainable adaptation responses". SWCCIP produced the regional climate change impacts scoping study **Warming to the Idea** in 2003, highlighting the likely impacts for the region across a number of climatic variables (based on UKCIP02 scenarios), as well as the threats and opportunities that climate change will bring across a number of different sectors. **UKCIP08**, a new package of information to be launched in autumn 2008, will provide more detail on potential climate change in the South West than has been previously available.

What is already in hand?

The **Regional Resilience Forum** and the Local Resilience Forums provide the strategic framework for emergency responses to large scale emergencies. They are aware of the increasing frequency and likelihood of extreme weather events and are taking steps, where feasible, to prepare for them. Utility companies have recognised their role in preparing for extreme weather and minimising the risk to their infrastructure. Other organisations and sectors have undertaken studies and work to prepare for extreme weather but there is a lack of inter and intra-sectoral coordination.

Future Water, the Government's water strategy for England was published early in 2008. It promotes the need for long term planning for water supply and includes visions and actions that will help address the effects of climate change. These include reductions in individual water consumption to 130 litres per head per day by 2030, together with reductions in leakage.

Water companies already prepare and publish Water Resources Management Plans that describe how they plan to maintain supplies to customers looking 25 years ahead. These plans should take into account the effect climate change on supplies and demands and set out appropriate demand management and resource development options to maintain reliable supplies that are resilient to these effects. Preparing for the impacts of climate change on water resources is, therefore, being addressed through the above strategies and plans and hence no additional actions are included within this edition of the plan.

SWCCIP and the SWRA have jointly commissioned a study to map vulnerability to extreme weather events in the South West. The final report, due in July 2008, aims to identify a coherent picture of currently identified vulnerabilities and to produce a methodology to enable localities to assess their vulnerability to extreme weather events and thereby develop and implement appropriate adaptive responses.

The **Climate Change Bill**, which will receive Royal Assent by summer 2008, will bring new responsibilities to ensure that the UK is adapting to the impacts of climate change. The Bill will require the government to assess the risks to the UK from the impacts of Climate Change and report progress to Parliament. The government will also be required to publish a programme setting out how it will address these likely impacts. Nine of the region's Strategic Authorities have included NI 188 on adapting to climate change in their new LAA and will be working towards stretch targets on its delivery. The remaining seven Strategic Authorities will have to report their performance on NI 188 as part of the Comprehensive Area Assessment.

What will need to be overcome?

Although we understand what the likely climate impacts are for the region and our priority sectors, there is uncertainty surrounding exactly how these impacts will affect us. We need to further our knowledge of the impacts of climate change and to ensure that vulnerable sectors, communities and areas in the region understand their vulnerability and have the capacity to take adaptive action to increase their resilience. Actions providing regional support for local authorities and sub-regional partners will help the region to deliver against the ambitions set out in the Climate Change Bill and NI 188.

What more do we need to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When		
			2008	2009	2010
Identify the parts of the region most vulnerable to extreme weather events and undertake actions to increase resilience.	1.1 Roll out vulnerability mapping methodology to the local level.	SWCCIP SWRA GOSW RRF / LRFs EA LAs			
All significant strategies and processes within the region to address the impacts of climate change.	1.2 Encourage regional bodies to make climate change adaptation a criteria for strategies, projects and programmes.	SWCCIP EA GOSW			
	1.3 Actively support all Local Authorities to deliver against the National Indicator 188 on adapting to climate change	GOSW SWCCIP UKCIP EA Natural England			
	1.4 Actively support LA Planning Officers to implement policy requirement for all development/new build to include measures to adapt to climate change impacts.	SWRA LAs			
	1.5 Target local authorities and Registered Social Landlords (RSLs) to take adaptation measures in their Housing Maintenance and Repair Programmes	SWCCIP Future Foundations LAs RSLs			

Chapter 2: Raising awareness of the impacts of climate change and the need for adaptation

OUR AMBITION: To be well informed about the specific impacts of climate change on the South West region in terms of our economy, population and environment.

What do we know and understand?

Warming to the Idea, SWCCIP's 2003 scoping report, highlights the potential impacts of climate change across a number of sectors. The region needs to be prepared for the social, economic and environmental impacts of climate change. Understanding the challenge of adaptation and raising awareness of the action required is key to improving the region's resilience and capacity to take advantage of the opportunities.

Businesses, organisations and individuals need to think about how they are, or could be, affected by climate change, for instance by extreme weather events, and use this to plan for the future, for example by developing Business Continuity Plans and obtaining insurance. While businesses and individuals can make choices to adapt to climate change, they need support and information from the public sector and other organisations to help inform their choices. Recent events (though not specifically linked to climate change) demonstrate that not all businesses are adequately prepared for the impacts of extreme weather. For example, the 2007 summer floods in Gloucestershire affected approximately 570 Gloucestershire business properties, 20% of which did not have adequate insurance. In addition approximately 30 businesses in Swindon were affected, with an estimated 50% not fully insured. The emergency repair and response costs for Gloucestershire businesses totalled around £14.3M.

What is already in hand?

The **Stern Review** (2006) estimated the costs and benefits of climate change and adaptation to the UK as a whole. The report has successfully raised the profile and understanding of climate change within the national context.

The South West **Regional Economic Strategy** (RES) recognises the importance of ensuring that businesses are aware of the impacts of climate change. SWCCIP is responsible for delivering against an action in the RES to ensure businesses have undertaken risk assessments of the impacts of climate change and are taking action to address the impacts identified.

What will need to be overcome?

In order for adaptation activity to be based on sound evidence, further investigation to comprehensively identify the gaps in the region’s knowledge and skills base needs to be undertaken. A Stern-style regional investigation of the costs and opportunities of climate change and adaptation would enable clear, hard-hitting South West messages to be developed to raise awareness of the potential impacts of climate change on the region.

Low profit margins and staffing numbers in the SME sector mean that their focus tends to be on the day-to-day process of income generation. Engaging SMEs in activity to address their vulnerability to climate change can therefore be difficult; overcoming the perception that there are always other more pressing issues is a challenge.

What more do we need to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When		
			2008	2009	2010
Improve the region’s understanding of and capacity to respond to the impacts of climate change	2.1 Identify and address regional knowledge gaps, including skills, and barriers on climate change adaptation across key sectors.	SWCCIP SWRDA UKCIP SW Tourism Prof bodies Trade Assoc & Universities			
	2.2 Investigate and evaluate the economic, social and environmental costs and opportunities of climate change and adaptation for key sectors in the South West.	SWCCIP			
Increase business preparation for climate change	2.3 Raise awareness in the business community of the risks and opportunities that climate change brings, and provide appropriate support.	SWRDA EA Business Link BitC LAs SWCCIP SW Tourism			

Chapter 3: Adapting land and marine management to the impacts of climate change

OUR AMBITION: To reduce regional vulnerability and increase regional resilience to the impacts of climate change through effective land and marine management.

What do we know and understand?

Climate change is projected to increase the frequency of extreme weather events, such as flash flooding from heavy rainfall, potentially increasing the loss of soil and nutrients from agricultural land. The soil and nutrients can damage groundwater quality, rivers and other wetlands. **Catchment Sensitive Farming** (CSF) improves soil husbandry and land management, reducing run-off and improving rain infiltration, reducing the risks of flash flooding. It can also save farmers money by ensuring soil and fertilizers are not wasted.

At present, coastal flooding in England and Wales is estimated to cause average annual damages of £0.5 billion, which is predicted to rise to between £1.0 and £13.5 billion if no adaptive measures are taken. Sea-level rise and storm surges will increase the severity of coastal flooding and reduce the amount of inter-tidal and coastal freshwater habitat that is vital for flood attenuation, wildlife, tourism and food. Many of these habitats are internationally important for wildlife and are protected under the **European Habitats Directive** as part of a network of '**Natura 2000**' sites. Innovative solutions will be needed to increase the overall quality and area of these habitats as part of the European network.

Limited knowledge about the seas severely hampers our ability to predict and therefore respond to the marine impacts of climate change. However, the **Marine Climate Change Impacts Partnership** produces evidence of climate impacts in an annual report. Whenever there is great uncertainty, our natural response is to insure against the risk; **Marine Protected Areas** are an 'insurance policy' for the sea. Within them, the aim is to reduce human impacts to a minimum in order to maximise resilience.

Scientists predict that the overwhelming effect of climate change upon wildlife will be damaging. The ways in which climate change will affect wildlife are quite complex and all of them interact, including impacts due to changes to 'climate space', the timing of seasons, community ecology and land use and management, as well as potentially more frequent extreme weather events.

What is already in hand?

A review of the £85m for green farming schemes in the South West is underway to help landowners lock in carbon, soak up excess rainwater and connect existing wildlife sites. The South West of England **Sustainable Farming & Food Delivery Plan 2008-2011** identifies a number of actions relevant to climate adaptation. Twelve Catchment Sensitive Farming projects are underway.

Defra's updated guidance for the emerging **Shoreline Management Plans** (SMPs), which are due for completion in March 2010, recommends that options (including managed realignment) should be appraised over a 100-year horizon, rather than 50 years as previously. The Environment Agency and Natural England have identified over 60 sites where managed realignment of coastal defence would be feasible. All will require the agreement of landowners and local authorities, and support from the local community. The Environment Agency have put 20 sites (where they have responsibility for defence structures) into a 10 year managed realignment programme, at a predicted cost of £25 million.

The establishment of the **Highly Protected Marine Reserve** at Lundy has demonstrated how food stocks and marine wildlife in general can be restored in the South West. A **Marine Bill** is under parliamentary scrutiny now and may give powers for the designation of Marine Protected Areas.

The **South West Nature Map** identifies Strategic Nature Areas with the greatest potential to support wildlife in future.

What will need to be overcome?

Existing programmes, such as green farming schemes and CSF, have the potential to support land managers across the region to adapt to the impacts of climate change. Support for the development and roll-out of these schemes is needed.

Although Shoreline Management Planning is a vehicle to bring stakeholders together, the Environment Agency have flagged up a shortage of mechanisms to raise awareness and share knowledge amongst stakeholders to support the implementation of SMP policies relating to land management. This will be particularly important in highly vulnerable areas, where many people are affected, and where there is no single lead agency or where, as is often the case, responsibility for maintaining coastal structures is shared by several agencies.

In the South West, a partnership of statutory agencies, local authorities and charities have come together to form '**Finding Sanctuary**'. The Alliance aims to engage stakeholders in debate about the location of Marine Protected Areas, a process supported by Defra. Regional support for the alliance and for the concept of Marine Protected Areas is needed.

At present, only 9.3% of the region supports semi-natural habitat. This needs to be increased to at least 20% (all land protected by law for its nature value, plus a similar amount to provide buffering and linkage) if nature is to survive and continue to provide essential services. Within the 'Strategic Nature Areas' on the Nature Map, habitats need to be developed and protected from damage, as well as supported to accommodate change by making it easier for wildlife to track suitable climate conditions and habitat through the countryside.

What more do we need to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When		
			2008	2009	2010
Ensure regional land-use practices take account of the impacts of climate change and promote adaptation responses	3.1 Improve soil husbandry and land management in sensitive catchments to improve rain infiltration and reduce run-off.	Natural England Forestry Commission EA			
	3.2 At three sites suitable for managed realignment of coastal defences, statutory agencies to work jointly with landowners and other stakeholders to identify and agree 100-year visions and, on one site, to create 100ha of new habitat.	EA			
	3.3 Establish a network of Marine Protected Areas.	Natural England Defra			
	3.4 Development of nature and protection of natural resources within 'Strategic Nature Areas' identified on the South West Nature Map	Natural England EA Forestry Commission National Trust RSPB Wildlife Trusts			

Chapter 4: Adapting to increasing flood risk

OUR AMBITION: To reduce regional vulnerability and increase regional resilience to increasing flood risk.

What do we know and understand?

Climate change will increase flood risk. A 20% increase in annual rainfall is anticipated by 2050 and up to 30% by 2100, thus increasing water volumes and velocity. As a result, an increase in flood storage will be required as well as relatively novel approaches to storage and slow release within the river catchment area. In addition, increased sea levels and wind velocities will reduce the current standards of protection along our coastlines putting people and property, including natural habitats and farmland, at an increasing risk of being inundated by floodwaters. Increase in rainfall intensity, perhaps by as much as 30% by the 2080s, will increase flooding in urban areas whose current drainage infrastructure will be overwhelmed due to inadequate capacity. Greater intensity over agricultural land will increase the risk of erosion with soil and nutrients being mobilised and polluting watercourses.

What is already in hand?

Defra's strategy '**Making Space for Water**' (Defra 2005) identified the need for a joined up, comprehensive strategy for the management of flood and coastal erosion risk in England for the next 20 years. In addition, the Environment Agency are producing **Catchment Flood Management Plans** (CFMPs), due for completion in December 2008. These plans will provide us with a vision on how we can best reduce flood risk to people and property over the next 50 to 100 years and seek ways in which we could increase biodiversity and habitat as well as meeting the aspirations of the **Water Framework Directive**.

Due to the flooding that occurred in 2007, the government commissioned Sir Michael Pitt to produce a report to examine both how to reduce the risk and impact of floods, and the emergency response to the floods in June and July of 2007. It sought views from those involved in the floods, including affected residents, the emergency services, business and professional associations. The full **Pitt Review** report was published in July 2008.

What will need to be overcome?

An improved response to flood risk is required as risks will increase due to climate change, economic development and deteriorating asset condition. Local authorities and other relevant bodies need to be aware of areas at risk of flooding to inform their service provision and delivery. Flooding events in Boscastle in 2004 demonstrated the need to determine which catchments react quickly to rainfall events, to determine the severity of the resultant flooding and to assess the impact of the predicted flooding on people and property. There are currently approximately 181,000 households and businesses at risk in Flood Zone 2 in the South West and this will increase with climate change. It is essential that awareness is raised for those at risk so that resilience to flood events can be increased.

What more do we need to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When?		
			08	09	10
Ensure that all relevant regional and sub-regional bodies understand the impacts of, and take action to respond to, increasing flood risk.	4.1 Promote and encourage relevant bodies and local authorities to utilise EA flood risk maps to inform service provision and delivery.	EA SWRA LAs Highways Agency Emergency services Utility companies			
	4.2 Identify geographical areas vulnerable to intense rainfall events e.g. Rapid Response Catchments (Catchments that respond rapidly to rainfall) and ensure the risks identified are incorporated into contingency plans.	EA LAs Emergency services			
	4.3 Raise level of awareness of householders and businesses in flood risk areas to the risks and possible adaptation measures.	EA LAs			

South West Action to Mitigate Climate Change

“What we do in the next 10 or 20 years can have a profound effect on the climate in the second half of this century and in the next.”

Stern Review, December 2006

Chapter 5: Carbon emissions from existing domestic stock

OUR AMBITION: to significantly improve the South West's housing stock in order to reduce carbon emissions and achieve the highest practical levels of energy efficiency.

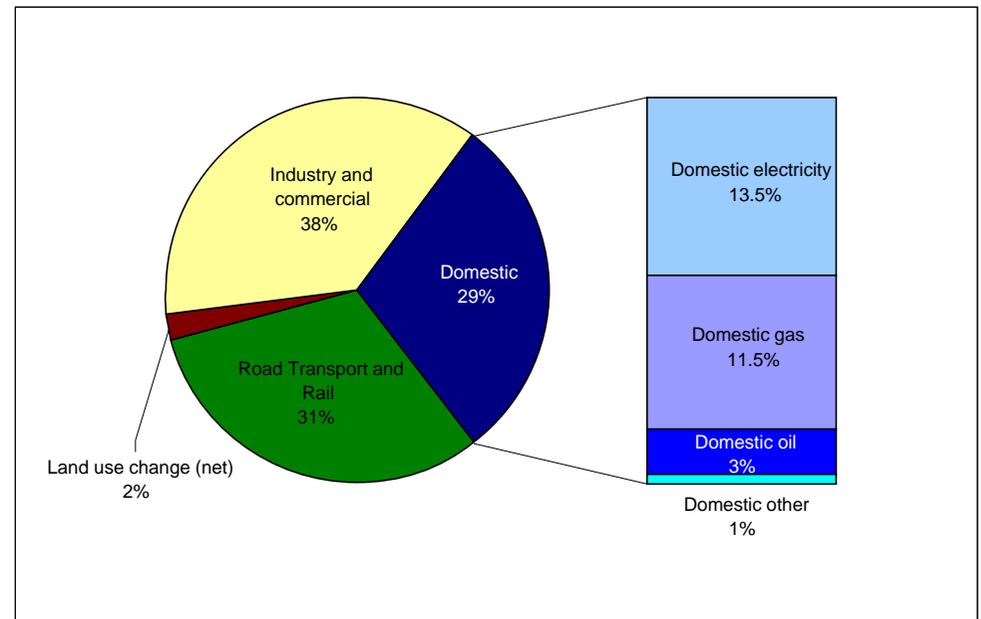
What do we know and understand?

The South West region has the least energy efficient housing of all the English regions (albeit by a small margin), the highest level of failures on thermal conditions within the **Decent Homes Standard** and a higher than average level of fuel poverty. Energy consumption, for space and water heating, lighting, and other appliances in our region's homes, create 12.5 Mt CO₂ per annum, representing 29% of the South West's emissions.

The 2006 **South West Low Carbon Housing and Fuel Poverty Strategy** suggested that in order for the region to contribute towards the government's carbon emission reduction targets the region will have to insulate 600,000 lofts and 600,000 cavities by 2010, this would equate to approximately a four-fold increase on the 2005 installation rates for these measures.

The same analysis highlighted that 20% of the region's properties will not be able to meet an acceptable standard of energy efficiency, even if all the basic cost effective measures were applied. Dealing with these particularly 'hard to treat' properties, will require more expensive solid wall insulation and greater uptake of on-site renewables. In addition there will need to be agreement on acceptable approaches to dealing with the region's protected buildings, either listed buildings or those in conservation areas (approx 6-7% of the region's properties).

Figure 6: Principal sources of carbon emissions from domestic properties in the South West



Source: Defra Local & Regional CO₂ Emissions Estimates for 2005 (AEA Energy & Environment 2007)

What is already in hand?

Domestic energy efficiency is already the focus of considerable effort and large scale investment and delivery programmes, with the energy efficiency sector employing 4,300 (full time equivalent) people in the region. From 2008-2011, the **Carbon Emissions Reduction Target** (CERT), previously the more tightly focused **Energy Efficiency Commitment** (EEC), will result in increased investment from energy utility companies in domestic energy efficiency. With an increased budget of £800M and expanded remit, including support for micro-generation and household behaviour change, CERT is expected to save 1.1 million tonnes of carbon per year. 40% of installations must be targeted to low income households, although there is a known problem due to data protection legislation preventing utility companies from identifying these households. The South West Low Carbon Housing and Fuel Poverty Strategy sets out the current position very comprehensively, though its actions are in need of updating.

The **Energy Saving Trust** has delivered significant CO₂ reductions through its national network of Energy Efficiency Advice Centres. These centres offered advice and guidance to over 84,000 households in 2005. From Autumn 2008, additional funding will provide a greatly enhanced service with the launch of the new South West Energy Saving Trust Advice Centre. Advice and guidance on carbon emissions reduction will be available to all households in the region, including energy efficiency, transport, waste, water and renewable energy. Energy Saving Trust and **Regen SW** are working closely together and Regen SW now supports the energy efficiency business sector alongside its renewable energy remit in its new role and designation as the **South West Sustainable Energy Agency**. The Energy Saving Trust Advice Centre will also provide significant strategic and practical support to local authorities in the region to help them reduce carbon emissions in their areas.

Regulation also plays its part and the **EU Directives on Performance of Buildings** and **Energy End Use and Efficiency** will sit alongside national legislation. **Home Information Packs** (HIPs) are now required at the point of sale of domestic property and the **Home Energy Conservation Act** has enabled local authorities to employ officers to draw on various national funding sources to make improvements to housing stock in their areas. However, the Action Plan development process has picked up issues with capacity in the region's local authorities to secure and spend all the resources available to the South West. Support for Local Authorities could come from the **South West Energy and Environment Group** (SWEEG), formed over 30 years ago, in a unique partnership that facilitates research and information sharing among local authorities in the region.

Local authorities can bid for Private Sector Renewal funding to improve housing through the **Regional Housing Pot**. The installation of energy efficiency measures is likely to be one of the criteria against which funding allocations will be determined, due to the influence of this Action Plan. Defra's **Community Energy Efficiency Fund** (CEEF) provided financial support areas to improve the effectiveness and coordination of fuel poverty initiatives, including funding available from **Warm Front** and the utility

companies CERT through an area based approach. The **Landlord Energy Savings Allocation** is also available, offering landlords a deduction for income tax purposes up to a maximum of £1,500 to make improvements to private rented stock.

What will need to be overcome?

Driving improved energy efficiency within the region's existing housing stock is widely agreed to be the most achievable and cost-effective option for immediate practical action on regional and local carbon reduction. A coordinated approach through a region wide campaign could enable the step change that is required to accelerate the implementation of energy efficiency measures. The South West's additional challenge is primarily associated with the 'hard to heat and treat' homes, including listed buildings and homes in conservation areas. There are large areas of housing which are off the mains gas grid and interrelationships between high emissions, fuel choice, fuel poverty and poor insulation. Overcoming the behavioural change barriers presented by homeowners in the "easy to treat" stock will need to be addressed, including the burden of cost to homeowners, public and private funding resource limitations and the multiplicity of schemes and consumer confusion.

Renewable energy installations are also facing a series of issues including, but not exclusively, gaining consent through planning approvals, streamlining the confusing array of consumer advice on available technologies, and limitations on grant aid for installations.

What more do we want to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When		
			08	09	10
Accelerate the implementation of basic energy efficiency measures in all domestic properties as quickly as possible.	5.1 Increase and coordinate the resources available to deliver domestic energy efficiency and emissions reduction.	EST LAs			
	5.2 Enable every Local Authority to access funding expertise to increase the amount being drawn down from national funds e.g. CERT.	SWRA/SW Councils LAs			
	5.3 Lobby government to provide a steady stream of CERT funding to stabilise cash flow for the energy efficiency installation industry.	SWRA			
	5.4 Apply the Private Sector Renewal Decent Homes Standard allocation in the Regional Housing Pot to increase installation of energy efficiency measures.	SWRA LAs			
Drive regionally specific and concerted programme of solutions and options for hard to heat and hard to treat properties.	5.5 Provide practical solutions and secure area based funding packages for hard to heat and hard to treat properties.	EST English Heritage National Trust			
<i>Actions link to adaptation activity to ensure housing is adapted to climate change. See action 1.5</i>					

CHAPTER 6: Carbon emissions from business and the public sector

OUR AMBITION: to significantly improve the carbon efficiency of South West business and public sector operations and premises.

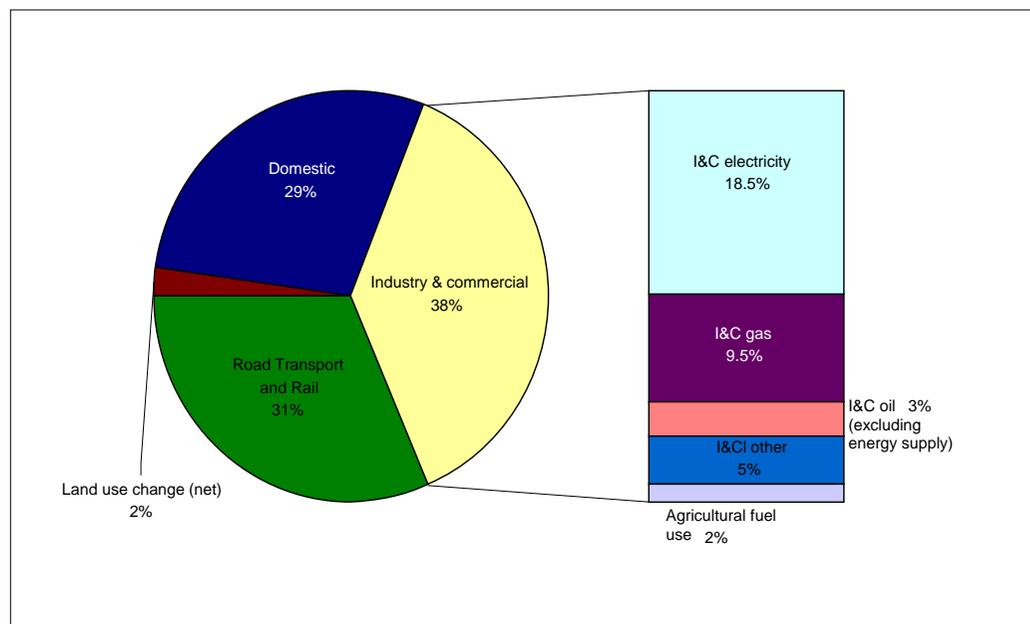
What do we know and understand?

In the South West, industrial and commercial activity, including the public sector, produces 16.5 Mt CO₂ per annum, representing 38%, the largest proportion, of the region's total emissions. Energy consumption forms the greatest proportion of CO₂ emitted from this sector, with almost 20% of the region's total CO₂ attributable to non-residential buildings.

Support for businesses to reduce their carbon footprint is fragmented across the region. There are over 50 business support organisations, networks and sources of information providing a range of support, from awareness-raising through to intensive support: helping business to implement resource efficiency changes.

The level and intensity of this support varies across the region, influenced more by the availability of funding rather than where there is greatest resource consumption. The penetration rate for take-up of the advice that is available is also low at approximately 1%. Large businesses are supported through the centrally run, nationally funded **Carbon Trust**. There is a need for enhanced support to target the South West's large emitters on a regional basis.

Figure 7: Principal sources of carbon emissions from industry and commerce in the South West



Source: Defra Local & Regional CO₂ Emissions Estimates for 2005 (AEA Energy & Environment 2007)

What is already in hand?

The public and private sectors are increasingly engaged in reducing carbon emissions from their operations, processes, supply chain, consumers and employees, with many large corporate bodies making public declarations on carbon emission reduction. The EU Emissions Trading Scheme and carbon trading will also financially motivate these larger organisations to reduce their emissions. The government has committed to a carbon neutral estate by 2012. Under the new Local Authority performance framework, NI 185, local authorities and LSP partners will be measured on the progress they make in reducing emissions from their own operations.

Forecasting of economic growth in the South West using the Regional Accounts has enabled advice to be targeted at key sectors, working with **Future Foundations**, **South West Food & Drink** and **South West Tourism** to jointly overcome the challenges ahead. The range of business support available from national delivery organisations is more coordinated and accessible and **Business Link**, as the primary route for business support, has incorporated resource efficiency into its core service with an extensive marketing campaign launched to increase awareness of the help that is available. Defra supports a programme in the South West to develop take up of wood-fuel as a carbon neutral source by SMEs and the public sector.

What will need to be overcome?

A particular problem in the South West is the gap in support for micro businesses/SMEs, which make up the vast majority of the South West business base, with current provision targeted at large businesses/resource users. The government's commitment to simplify all business support should help us achieve our ambition; however, recent decisions to reduce funding to the **BREW** national delivery bodies and increased emphasis on "one-to-many" rather than "one-to-one" business support is decreasing the availability of nationally funded support. Publicly funded support looks set to be reduced further due to the government's view that businesses are now aware of the financial and environmental benefits of improved resource efficiency and are consequently willing to pay for such support. Regional funders must therefore coordinate their efforts and pool resources to maximise the effectiveness of publicly funded support in the interim. In the private sector, increasing consumer demand and awareness is driving carbon reductions and efficiencies through supply chain management. However, the lack of a standard measurement to set production benchmarks and fluctuating values for the cost of carbon will pose particular challenges for the South West's SMEs.

Due to its size, the public sector in the South West has a huge potential to cascade carbon reduction practices through its supply chain to the private sector by applying sustainable procurement and investment criteria. Ensuring these procurement and investment practices are used as standard throughout the public sector presents a major challenge to the region.

What more needs to be done?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When		
			2008	2009	2010
Embed long term carbon management and resource efficiency in business planning and investment and economic development	6.1 Develop and implement a significantly enhanced resource efficiency support service to business and build capacity in the private and third sector to deliver resource efficiency support to business.	SWRDA Business Link SW Councils LAs Carbon Trust			
	6.2 Lobby government to provide regionally enhanced support to large energy users.	SWRDA EA SWRA Carbon Trust			
	6.3 All public sector bodies to implement sustainable procurement practices and include carbon reduction as an investment criteria.	SWRDA LSPs LAs / Schools NHS/PCTs			
Drive a reduction in emissions from the public sector	6.4 Government departments and Regional Agencies and LSPs to achieve year-on-year emission reductions in their own estates and operations	GOSW, SWRA SWRDA EA, LAs, NE Defence Estates Forestry Commission			
<p><i>Actions link to adaptation activity :</i></p> <ul style="list-style-type: none"> <i>to increase business preparation for climate change. See action 2.3</i> <i>to encourage regional bodies to make climate change adaptation a criteria for strategies, projects and programmes. See action 1.2</i> <i>to support local authorities to deliver NI188. See action 1.3</i> 					

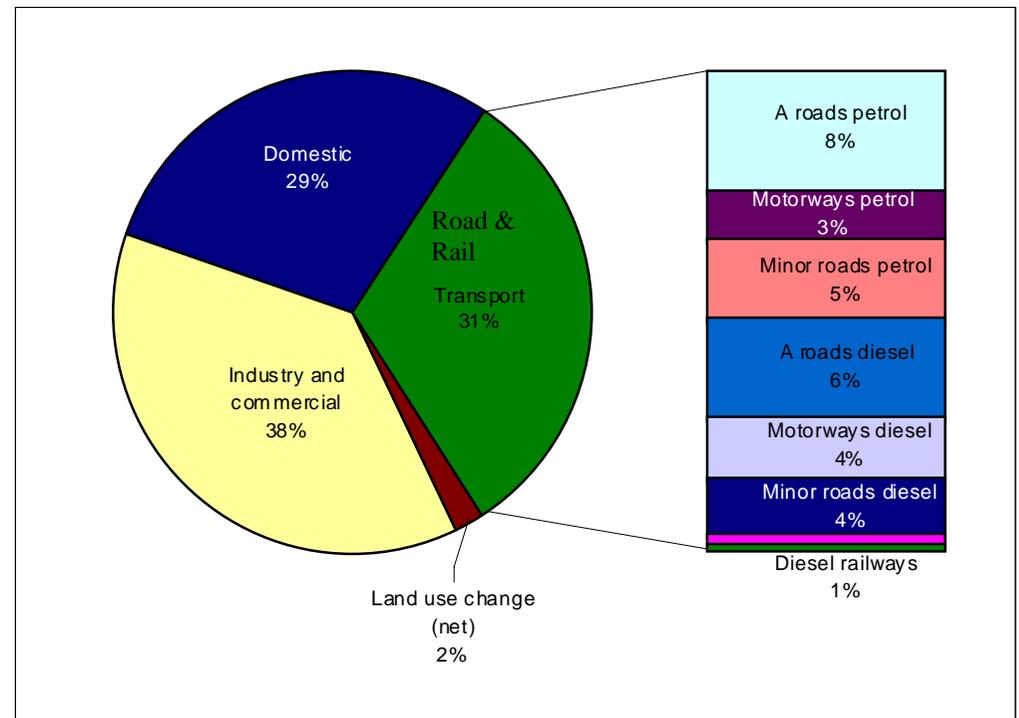
CHAPTER 7: Carbon emissions from transport

OUR AMBITION: Promote measures to reduce both the need to travel and the carbon intensity of transport modes

What do we know and understand?

Geographically the South West is the largest of the English regions, with some areas sparsely populated and inaccessible while the eastern part of the region (particularly Swindon, Poole / Bournemouth and Bristol) is now within the functional 'city region' of London. The larger cities and towns draw people from increasingly wide 'travel to work areas' and commuting on the region's trunk roads and motorways is a growing trend. High levels of urban congestion pose different challenges for reducing emissions. 99% of transport emissions in the South West arise from road-based travel. According to the South West Observatory (based on Dept for Transport statistics), traffic movements are also increasing, due mainly to population growth, tourism, rising economic activity and increased car ownership. Fewer people now walk or cycle short distances. An average person in the South West travelled 8,073 miles in 2005/06 which is significantly higher than the English average. In 2006, over 21,000 million tonne kilometres of freight was transported, with road haulage carrying the greatest amount (62%). Bus usage is lower than the average for UK regions, but rail patronage has shown consistently strong growth.

Figure 8: Principal sources of carbon emissions from transport in the South West



Source: Defra Local & Regional CO₂ Emissions Estimates for 2005 (AEA Energy & Environment 2007)

All the indications are that successfully implementing current policy will achieve a net reduction in *the growth* of transport emissions. Reductions in the overall level of emissions present enormous challenges to transport policy and subsequent implementation, requiring a real “step change” in approach. Investment in public transport options to effect significant modal shift, primarily away from the private motor car, will require very large scale investments linked to measures to manage demand.

What is already in hand?

National level

The region’s propensity to travel as well as its CO2 emissions are largely controlled or influenced by the economy and by national policies and taxation. The **Eddington Transport Study** (2006), and the Department for Transport’s report ‘**Towards a Sustainable Transport System**’ (2007), suggest that in the short to medium term it is likely that we will only be able to reduce the growth in traffic/CO2 emissions, although recent fuel price rises may have begun to influence vehicle usage and emission levels. In the longer term, technological improvements offer the greatest opportunity for significant reductions in carbon emissions from transport.

The **Low Carbon Transport Innovation Strategy** (2007) sets out an overall framework through which the government will encourage innovation and technology development in lower carbon transport technologies. Car manufacturers, who are a very important and significant contributor to the South West’s economy, are already active in developing cleaner-burning engine technologies. The **Renewable Transport Fuels Obligation** has required 5% of road transport fuel to be generated from biofuels by volume since April 2008. However, there are concerns that the process of growing some biofuels contributes to global food shortages and affects wildlife. The national bio-fuels accreditation scheme should help to reduce the negative impact of the UK bio-fuels sector. The UK government has commissioned a study to look into the impact of biofuels and make recommendations on the appropriate policy response. All of these initiatives are national and the region’s influence is limited; it is ‘behavioural change’ where regional policy and programmes can have most effect.

Regional and sub-regional level

The **Regional Transport Strategy** (RTS), part of the **draft Regional Spatial Strategy** (RSS), contains the key transport priorities for the region. These include a focus for development in the Strategically Significant Cities and Towns (SSCT’s) and working with local authorities to promote a ‘step change’ in public transport provision linked to demand management. Whilst rail is managed nationally, the region acts to influence provision through the **Rail Prospectus**, which sets out the regional rail priorities, encouraging rail use on specific corridors. The **Regional Economic Strategy** policies aim to combine sustainable

transport with a strong economy. The **Regional Funding Allocation** directs funding to key priorities within the region, prioritising public transport schemes.

Transport strategies and programmes now place greater emphasis on sustainable mobility, supported by travel marketing campaigns and investigation into the development of smartcard technology. Implementation of the draft RSS policies should have an effect on the need to and mode of travel by creating the potential for a closer relationship between the location of jobs, services and homes in the future. The South West Regional Assembly commissioned an assessment of the possible impact of the RSS based on the potential for coordinated land use changes to reduce the need for travel and encourage modal shift. The study made a number of assumptions including that per capita emissions would stay the same to 2026 and no carbon savings were attributed to biofuels. The study arrived at an estimate of a 2.85% reduction in CO₂ output from transport by 2026 if all of the dRSS policies were implemented.

What will need to be overcome?

It is a considerable challenge for a large and rural region like the South West to reduce its traffic levels and emissions. Making reductions in the rate of traffic growth at a sub-regional level by implementing policy on demand management and public transport will present local delivery challenges. Finding a meaningful, accurate and consistent method of measuring current and future emissions through transport is required to assess the impact of developing transport strategies and schemes on overall traffic movement and CO₂ emissions, balancing this with other economic and environmental issues.

With approximately 40% of the region's SMEs working from home, as well as others working at home on an occasional basis, it will be important to clarify the role that home working and home-work properties can play, along with IT usage, in reducing emissions. Whilst some studies have provided evidence that home working can lead to an overall decrease in emissions, (even with increased residential emissions) due to the reduced energy consumption associated with commuting and, in some cases energy associated with use of commercial office space, it may need a regional study to identify the impact of pursuing such a policy. This work will need to identify whether communication technology, including high speed broadband, will play a critical role in the transition to a low carbon economy for the South West.

What more do we want to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (Lead in bold)	When		
			08	09	10
Develop evidence base, monitoring and evaluation for sustainable, low carbon transport and travel	7.1 Coordinate the production of a consistent evidence base for carbon emissions from transport for use by sub-regional partners / LAs to support development of their local policies LDF policies and programmes.	SWRO SWRA LAs HE/FE Sector			
	7.2 Lobby for carbon assessment criteria to be included in the development of transport scheme appraisal methodology e.g. New Approach To Appraisal (NATA).	SWRA			
	7.3 Establish a regional evidence base (including case studies) and define CO2 impacts of transport policies.	SWRO SWRA			
Undertake regional activity to support regional and local multi-modal carbon reduction and demand management	7.4 Support LAs to successfully embed sustainable travel choices by identifying regional skills and capacity needs to ensure long term modal shifts and wider benefits	SWRA SWRDA HE/FE sector SWRO			
	7.5 Support existing regional networks in continuing to take forward best practice in demand management.	SWRA			
	7.6 Continue to develop and lobby for key strategic public transport priorities including the prioritisation of rail schemes.	SWRA SWRDA			
	7.7 Work with businesses to progress sustainable mobility solutions at all levels (strategic, development and wider place-based) and the Smarter Choices agenda, e.g. use sustainable mobility master travel plans agreed by businesses as best practice.	Highways Agency Local transport authorities			

	<p>7.8 Work with Regional Airports and Ports to understand their business needs and help them achieve more sustainable ground operations, travel and access, and associated construction of low carbon development.</p>	<p>SWRA SWRDA SW Airports SW Ports</p>			
<p><i>Actions link to adaptation activity:</i></p> <ul style="list-style-type: none"> <i>to increase the region's resilience to climate change. See actions 1.1 and 1.2</i> <i>to raise awareness in the business community of the risks and opportunities of climate change. See actions 2.3 and 4.2</i> 					

CHAPTER 8: Low carbon technology sector

OUR AMBITION: Increase the installed capacity of renewable energy and low carbon technology and position the South West as a leader in these technologies.

What do we know and understand?

The South West region has the ambition to lead a low carbon economy and is host to many innovative businesses in the energy, waste and advanced engineering sectors, with the potential to build upon this expertise to become a global leader in low carbon technologies. The South West is a natural home for renewable energy. It has the highest levels of solar radiation in the UK. There are strong areas of wind resources in all seven of our counties and research suggests the region has over 1,000 MW of untapped wind energy resource. The South West also has one of the largest woodland resources in the country, and the potential to generate substantial amounts of renewable energy from its wave and tidal resources.

In 2007, the UK agreed to a binding target stating that 20% of the EU's energy consumption must come from renewable sources by 2020. The UK's contribution to this should increase the share of renewables in our national energy mix from 1.5% in 2006 to 15% in 2020. The government published a **Renewable Energy Strategy** for consultation in June 2008 to set out the pathway for achieving this target.

The draft **Regional Spatial Strategy** sets ambitious targets for renewable electricity, heat and building integrated renewables, but the chance of us meeting our current regional renewable electricity generation target of 11-15% by 2010 is now fading fast so we know just how much concerted effort is needed. The **Renewables Obligation** has certainly helped, requiring licensed electricity suppliers to source an annually increasing percentage of the electricity they supply from renewable sources. The current level is 7.9% for 2007/08 rising to 15.4% by 2015/16, but this still might not be sufficient to enable the renewable energy sector to compete on a level playing field with traditional sources of energy generation. It is expected that the Obligation, together with exemption from the **Climate Change Levy** for electricity from renewables, will also provide support to industry.

The economic benefit of generating more low carbon energy within the region could be significant. The South West already has a thriving renewable energy industry, with over 200 businesses and organisations that employ over 2,900 (FTE) people and contribute some £34 million to the economy. Generating more low carbon energy from within the region will directly support further growth of this sector. The Wave Hub alone could create 1,800 jobs and contribute £560 million to the UK economy.

What is already in hand?

The South West has a track record of developing 'firsts' in renewable energy. There are over 150 renewable electricity schemes in the region including the first wind farm in the UK, the first centralised anaerobic digestion power station, the first commercial pyrolysis plant and the first underwater tidal stream turbine in the world. The region has the potential to further enhance this reputation with the world's largest commercial wave farm off the North Cornwall coast, the innovative **Wave Hub** project to help develop wave energy technologies and proposals for major offshore wind. Work is also underway to consider options for securing power from the Severn Estuary, the second highest tidal range in the world. Approval has recently been given for the development of further wind farms, bioethanol refineries and a wood-fuelled pyrolysis plant, right across the South West.

The innovative approach the region has taken to delivering biomass projects, through the **South West Bioheat Programme** has secured a £3m injection of funding from Defra for capital grants. The government has also made funding available through the **Low Carbon Buildings Programme**, which provides grants for the installation of micro-generation technologies in a range of buildings to include households, community organisations, public, private and the non-profit sectors.

The South West has an excellent track record for partnership working at the regional and sub regional level, which has proved invaluable. It is the home of the first regional renewable energy agency in the UK, **Regen SW**, and to successful 'county champions' like the **Centre for Sustainable Energy**, **Cornwall Sustainable Energy Partnership** and the **Devon Association of Renewable Energy**. The low carbon technology sector is growing and will be further supported by the prominence of environmental technologies within European Union Structural Funds.

What will need to be overcome?

There are considerable challenges to overcome in delivering on existing and future targets for the generation of energy. Continued support and leadership is needed from the government but the region's innovative approach and fantastic natural resources should hold us in good stead.

The low carbon technologies sector is diverse and fragmented, consisting of a number of sub-sectors, including energy and waste. Although there is strong research capability within South West Universities, with further potential to commercialise this knowledge through technology transfer, in some sub-sectors there is a lack of market awareness and inadequate management and marketing skills.

What more do we want to do?

Objectives (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (lead in bold)	When		
			08	09	10
Develop a world class marine energy sector	8.1 Proactively support environmentally sustainable offshore renewable energy opportunities in wave and tidal including installing the Wave Hub in 2010	SWRDA Regen SW			
	8.2 Support establishment of the Peninsula Research Institute for Marine Renewable Energy.	SWRDA Regen SW			
Stimulate the increased installation of renewable energy technologies in the regiOn	8.3 Assess the region's renewable energy potential, establish and produce a new regional target for primary energy from renewables by 2020 and agree and develop a strategic plan and targets for each county.	RegenSW SWRA / SW Councils LAs			
	8.4 Support local planning authorities to take responsibility for the proposed sub-regional and local renewable energy targets.	SWRA / SW Councils LAs			
Develop a major low carbon technology sector	8.5 Promote innovation and sector development in the low carbon technology sector.	SWRDA Higher Education			
	8.6 Develop a targeted skills programme to support the region's Renewable Energy businesses.	SWRDA Regen SW Sector skills councils			
<p><i>Actions link to adaptation activity:</i></p> <ul style="list-style-type: none"> <i>to support LA Planning Officers in ensuring new developments are adapted to climate change. See action 1.4</i> <i>to raise awareness in the business community of the risks and opportunities. See action 2.3</i> <i>to establish a network of Marine Protected Areas. See action 3.3</i> 					

CHAPTER 9: Carbon emissions from new build

OUR AMBITION: To mainstream the construction of low and zero carbon buildings in the South West

What do we know and understand?

It has been calculated that the changes to the Building Regulations which came into effect in April 2006 will save approximately one million tonnes of carbon per year by 2010. Whilst new build comprises only a small percentage of buildings in the region their potential influence will grow in the long term by gradually improving the overall trajectory of energy use in the building stock. Both the draft Regional Spatial Strategy and a growing number of Local Development Frameworks are attempting to set construction standards that will achieve progressively reduced emissions from all new development, both residential and non-residential. Supporting technical analysis has estimated that, if adopted, the impact of the revised RSS Development Policy G and RE5 would be to reduce carbon emissions from new development in the region by 34-50% up to 2016, creating around 1,000 additional new jobs for the region in the micro-renewables sector, with a GVA per year of £20-30 million.

What is already in hand?

In the last few years significant new and revised national legislation has been introduced to support planning policy for, and raise standards of, sustainable construction throughout the country. The current national legislation on planning and building regulations is beginning to develop the framework for low and zero carbon developments of the future. National planning policy on climate change has been clarified and strengthened in the **Planning Policy Statement (PPS) on Planning and Climate Change, a supplement to PPS1** (December 2007) which requires local and regional planners to ensure local plans have strong carbon ambitions, set targets for renewable energy in line with national targets, and encourages the development of decentralised renewable energy generation networks.

Building Regulations set the standards for many aspects of a building's construction, including energy emissions. These are divided into 'regulated emissions' which are those covered by Building Regulations, namely emissions from space and water heating, lighting, pumps and fans and the remaining unregulated emissions which include those from cooking, appliances and lighting of communal areas. The government has committed to tighten Building Regulations in future, with carbon emissions from new homes to be 25% lower than 2006 Building Regulations by 2010 and 44% lower by 2013 and all new homes to be zero carbon (where net regulated and unregulated carbon emissions from energy use over a year would be zero) from 2016 onwards, as explained in its report **Building a Greener Future: policy statement** (July 2007). In addition, the government announced in March 2008 that

it intends all new commercial non-domestic buildings to be zero-carbon from 2019 onwards, and public sector buildings zero carbon from 2018. In order to ensure the 2016 target is achieved, the government has established a taskforce which is charged with putting in place measures to overcome the barriers to implementation of the zero carbon 2016 target.

The government has also introduced the **Code for Sustainable Homes**. It measures the sustainability of new homes against categories of sustainable design, including energy and water use, using a 1 to 6 star rating system. This is currently a voluntary standard for private developments and a mandatory one (to achieve Level 3) for social housing providers. From May 2008, it became mandatory for all new homes to have a Code level rating, although there is no obligation yet to achieve any particular code level.

In addition to setting progressively higher code levels the draft RSS Policy G and Policy RE5 would require the use of sustainability statements for larger scale residential and/or mixed-use planning applications, the contents of which should meet, or exceed, the **South West Sustainability Checklist for Developments**. This is an easy-to-use online tool that has been developed by **Future Foundations** and the **Buildings Research Establishment** (BRE), together with other regional stakeholders, to guide the design of new developments by making sense of current policy. The Future Foundations initiative was launched in 2001 and provides information, advice and networking on sustainable construction for anybody involved in construction in the South West. **Regen SW** has launched a low carbon new development programme to help developers achieve low carbon new development and assist five developments in the South West that are looking to achieve carbon savings in advance of national timeframes. The South West is also home to several county level organisations which support the local delivery of the sustainable construction agenda, including the **Ecos Trust**, the **Cornwall Sustainable Building Trust**, and the **Devon Sustainable Buildings Initiative**.

What will need to be overcome?

There is a considerable amount of new national legislation related to construction standards being introduced with more proposed. Supporting all those involved in delivering this relatively rapid change in policy and standards is a significant task. In some areas this has led to a lack of clarity over definitions, standards, aspirations and techniques. The scale of re-training and 'up-skilling' required in terms of those working on all elements of planning, designing and building low and zero carbon buildings needs to be taken into account. The lack of adequate supply chains to support low and zero carbon development means that this sector will need to be developed if the increased rate and levels of sustainable construction are to be achieved.

There are also concerns over the ability of the Building Control system to deliver the standards of construction legislated for, and a national review of the Building Control system is currently underway. There are cost issues around delivering the higher levels of the Code to be resolved, especially Code Level 6 which includes unregulated as well as regulated CO2 emissions. There is also potential for higher sale prices or rents and lower land values being passed on to the customer in both the residential and non-residential sector due to these higher build costs. At the same time, the impact of regional variation in land values on the viability of low and zero carbon development needs to be considered when assessing the likelihood of voluntary take up before the changes to the Building Regulations occur. With increased housing targets and affordable housing levels to be met alongside sustainable construction standards there will inevitably be pressure on resources. The 'credit crunch' and general economic slow down is also likely to constrain resources still further.

What more do we want to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (lead in bold)	When		
			2008	2009	2010
Provide support and coordination of activity to achieve low and zero carbon new development by 2016 (housing) and 2019 (non domestic sector)	9.1 Establish a SW Zero Carbon Construction Task Force to support regional and local delivery of low and zero carbon development in the domestic and non-domestic sectors. [Complementing work of national Task Force, FF and Regen SW].	SWRA			
	9.2 Provide and facilitate provision of networking, training and guidance for LA officers & Members to support delivery of low/zero carbon development.	SWRA SW Councils SWEEG			
	9.3 Provide and facilitate provision of networking, training and guidance for other stakeholders involved in low / zero carbon development in conjunction with industry and professional associations.	Regen SW Future Foundations RSP			
	9.4 Provide inception-to-delivery guidance to all relevant professional parties for project-level low / zero carbon development e.g. via use of a 'low carbon toolkit'.	SWRA Future Foundations Regen SW			

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (lead in bold)	When		
			2008	2009	2010
	9.5 Produce regional supporting technical guidance to assist with implementation of low /zero carbon development policies in RSS	SWRA			
	9.6 Produce and keep up to date a common evidence base (including case studies) to support Local Authority delivery of low / zero carbon developments.	SWRA/ SW Councils LAs			
	9.7 Support pre and post construction demonstration projects with Post Occupancy Evaluation and cost analysis to provide evidence for low / zero carbon development policy and technical design.	SWRDA SWRA Future Foundations Housing Corp. LAs			
	9.8 Public sector to ensure delivery of exemplar low / zero carbon development projects and share lessons learnt with public and private sector.	SWRDA LAs GOSW HCA Defence Estates FC NE			
	9.9 Support local authorities, especially those with SSCT's, to deliver decentralised energy networks in new major urban extensions and large developments.	RegenSW SWRA SWEEG			
	9.10 Map the strategic impacts and opportunities arising from the growth in low/zero carbon development in the South West. Support development of local capacity, skills and supply chains.	SWRA SWRDA RegenSW			
<i>Actions link to adaptation activity to support LA Planning on including adaptation measures in all development/new build. See action 1.4</i>					

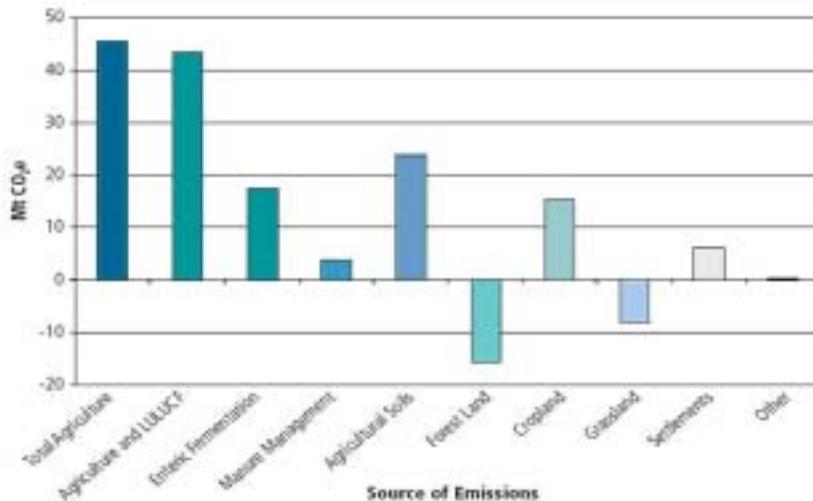
Chapter 10: Effective Land Management

OUR AMBITION: Promote the binding of carbon in natural carbon sinks and reduce the release of carbon and other greenhouse gases from rural land use.

What do we know and understand?

Agriculture and forestry contribute some 7% of the UK's total GHG emissions. CO₂ emissions are a relatively minor component of this and are offset to some extent by the carbon extraction and storage activities of agriculture and forestry. Actions within this chapter are drawn from a Regional Environment Network commissioned **project to develop a framework for a greenhouse gas reduction strategy for rural land use and the land based industries** (food, woodland and forest products) in the region by the Centre for Rural Policy Research at the University of Exeter.

Figure 9: GHG emissions and removals (million tonnes of CO₂ equivalent) from agriculture, land use change and forestry in 2005



Source: **NFU, CLA and AIC (2005) Part of the Solution: Climate Change, Agriculture and Land Management**

Agriculture is a substantial source of methane (CH₄) and nitrous oxide (N₂O). Both of these gases are long lasting and have a more potent GHG effect per molecule than CO₂ (21 and 310 times CO₂, respectively). Agriculture is a source of approximately 40% of the UK's CH₄ emissions, the majority of which derive from enteric fermentation by livestock, although liquid and solid manures are also a source of CH₄. Scientific research to reduce CH₄ emissions from enteric fermentation is still in its infancy, mainly revolving around experiments with different types of cattle feed. As a result, this Action Plan does not call for any specific regional actions on this source of emissions at this stage.

Agriculture is responsible for 65% of the UK's emissions of N₂O. Management practices which result in excess nitrate in the soil (from fertilisers, manures and natural soil processes) increase N₂O emissions, particularly when soils are wet. Due to the potency of N₂O, action to reduce its emission is included in an otherwise carbon focused Action Plan.

Peatlands and salt-marshes are not included as sources of removals (or emissions) within this chart but have a potentially significant role to play as carbon sinks, in addition to woodlands, croplands and grasslands. These land types can directly sequester ('remove') carbon dioxide from the atmosphere. Once sequestered, carbon can be retained in sinks for hundreds (even thousands) of years if it is undisturbed. Locally, the carbon pool on Dartmoor (which is largely peat based) has been estimated to be 7.5 times the annual CO₂ emissions for Devon. However, broader estimates of the size and impact of the region's carbon sinks are yet to be developed.

Whilst there is potential for sinks to remove carbon from the atmosphere, if a sink is weakened, damaged or disturbed then significant amounts of carbon (as well as other GHGs) can be rapidly emitted to the atmosphere. There is increasing scientific evidence that many sinks are weakening, possibly as a result of higher global temperatures but also due to historic and current human degradation. Some models suggest that the weakening of global terrestrial carbon sinks could amplify warming by an additional 1.5°C, on top of any temperature rise caused by human-induced GHG emissions. Peatlands are an extremely significant carbon sink and are subject to degradation due to a range of factors, including inappropriate management and raised temperatures causing them to dry out.

Farmers, land managers and foresters are uniquely placed to directly 'manage' carbon in their land by maintaining, restoring and creating carbon sinks through changes in land use or to management practices. In addition, effective and efficient land management practices can reduce carbon emissions from agriculture, as well as promoting the displacement of fossil fuels with renewables. Finally, effective land management techniques can reduce the level of N₂O emissions significantly.

What is already in hand?

There are a number of projects currently underway to reduce the GHG impacts of the South West's land and land based industries. Examples include:

- Natural England's project on the Dorset Downs and Cranborne Chase includes aims to understand the potential for land managers to mitigate climate change through carbon management, and the opportunities and constraints in relation to wind energy, biomass and energy crops.
- The **Exmoor Mire restoration project** aims to enhance carbon sequestration and storage as well as reducing erosion and flood risk, improving aquatic ecology and delivering wildlife promoting objectives.

- A **Dartmoor PhD project on the Sustainable Carbon Management of Moorlands** co-funded by NT, NE, Duchy of Cornwall, and Dartmoor National Park Authority.
- The National Trust is exploring a carbon stewardship approach to carbon sinks and land management based on adopting a '20% net gain' policy for carbon (i.e. for every 80kg of carbon emitted 100kg of carbon would have to be 'banked' on NT property).
- The Landscape Carbon Sequestration Project by **West Country Rivers Trust** project aims to establish a database of rural land forms and their carbon content and establish a catchment map of 'land in need of restoration'. It will then use the database and map to calculate the potential net increase in carbon content in catchments where all 'land in need of restoration' has all been restored.

What will need to be overcome?

There are a number of scientific uncertainties regarding the permanence and effectiveness of carbon sinks and the verification of how much carbon is 'saved' from land management practices that maintain or enhance sequestration. Furthermore, some practices that enhance sequestration will result in land being taken out of agricultural production. This could create a perverse outcome through higher demand for imports, resulting in greater transportation distances and fuel consumption, negating any benefits from sequestration. Projects to address the gaps in scientific knowledge are underway in the region as set out above and within the broader scientific community; further research is needed to support the emerging findings on the carbon savings achieved through effective land management practices.

Progress on widespread adoption of carbon saving land management practices has been limited by policy, institutional, social, educational and economic constraints. In this context, communication and capacity building within the community of land managers is seen as important so that land managers become increasingly well informed regarding climate change and aware of the potential opportunities and benefits that are associated with mitigation actions.

What more do we want to do?

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (lead in bold)	When		
			2008	2009	2010
Develop effective and robust carbon accounting to underpin advice to land managers	10.1 Build on existing tools and projects to further research, maintain and enhance the carbon content of soils, peatlands, woods and hedgerows within the region, and the carbon implications of management practices.	NE IGER NFU FWAG DEFRA			
Manage agricultural inputs and outputs of nitrogen, in particular matching nitrogen applications to specific crop requirements.	10.2 Education and guidance in use of fertiliser recommendation systems and in enacting recommendations to match nitrogen content to crop requirements, and to ensure full use is made of manure supply.	DEFRA NE EA IGER NFU FWAG			
	10.3 Promotion of slurry storage systems to improve timing and method of slurry and manure applications and ensure no applications in autumn/early winter or to bare ground.	DEFRA NE EA IGER NFU FWAG DEFRA			
Investigate and promote the carbon ‘sink’ capacity of the region’s peatlands.	10.4 Maintain and enhance the region’s peat, through projects such as re-wetting, reducing stocking densities and frequency of burns and restoring vegetation, to maximise the carbon storage potential.	NE RSPB DNP ENP SW AONBs National Trust			

Objective (Priority in bold)	Regional activity required (Priority in bold)	Who will do it (lead in bold)	When		
			2008	2009	2010
	10.5 Investigate wider environmental and economic implications of peat management and restoration projects.	NE, RSPB DNP, ENP SW AONBs National Trust			
Maintain and expand permanent grassland and woodland.	10.6 Investigate potential for areas to be converted permanently to grassland/woodland, including consideration of geographical, environmental, economic and social factors and the impacts of financial incentives to convert (minimum of 50 years required).	NE Forestry Commission IGER NFU FWAG DEFRA			
Improve woodland management and new woodland planting, to promote carbon sequestration and provide substitutes for fossil fuels.	10.7 Establish effective communications strategy, including high and low technology solutions, to promote multiple benefits of new planting, backed by appropriate advice and grant aid.	SW Forests, Forestry Commission NE, EA SW AONBs			
	10.8 Support small woodland owners by promoting cooperative working, ensuring contract services and wood processing facilities are available.	SW Forests Forestry Commission, SW Woodland Renaissance, NE, EA SW AONBs			
<i>Actions link to adaptation activity on land management of sensitive catchments. See action 3.1</i>					

Weblinks embedded in the document

(Web-links are subject to change – last updated August 2008.)

Act on CO2

<http://actonco2.direct.gov.uk/index.html>

BREW Programme

www.defra.gov.uk/Environment/waste/brew/factsheets.htm

Building a Greener Future (2007)

www.communities.gov.uk/archived/publications/planningandbuilding/buildinggreener

Buildings Research Establishment

<http://www.bre.co.uk/>

Business Link

www.businesslink.gov.uk

Carbon Emissions Reduction Target

www.defra.gov.uk/environment/climatechange/uk/household/supplier/cert.htm

Carbon Trust

www.carbontrust.co.uk

Catchment Flood Management Plans

www.environment-agency.gov.uk/subjects/flood/1217883/1217968/907676/

Catchment Sensitive Farming

www.defra.gov.uk/farm/environment/water/csf/index.htm

Centre for Rural Policy Research *Towards a framework for a GHG emissions reduction strategy for rural land use and the land based industries in South West England*

www.centres.ex.ac.uk/crpr/publications/pdfs/reports/CRPR%20report%2025%20GHG%20reduction%20framework%2002%2004%2008.pdf

Centre for Sustainable Energy

www.cse.org.uk/

Climate Change Bill

www.defra.gov.uk/environment/climatechange/uk/legislation/index.htm

Climate Change Levy

www.defra.gov.uk/environment/climatechange/uk/business/ccl/index.htm

Code for Sustainable Homes

www.communities.gov.uk/planningandbuilding/buildingregulations/legislation/englandwales/codesustainable/

Community Energy Efficiency Fund

www.defra.gov.uk/environment/climatechange/uk/household/fuelpoverty/local/index.htm

Cornwall Sustainable Energy Partnership

www.csep.co.uk/

Cornwall Sustainable Building Trust

www.csbt.org.uk/

Decent Homes Standard

www.communities.gov.uk/housing/decenthomes/deliveringdecenthomes/whatis/

Defra Local & Regional CO2 Emissions Estimates for 2005 (AEA Energy & Environment 2007)

www.defra.gov.uk/environment/statistics/globalatmos/galocalghg.htm

Devon Association of Renewable Energy

www.devondare.org/

Devon Sustainable Buildings Initiative

www.sustainablebuild.org/

Ecos Trust

www.ecostrust.org.uk/

Eddington Transport Study

www.dft.gov.uk/about/strategy/transportstrategy/eddingtontstudy/

Energy Efficiency Commitment

www.ofgem.gov.uk/Sustainability/Environment/EnergyEff/Pages/EnergyEff.aspx

Energy Savings Trust

www.energysavingtrust.org.uk/

EU Directive on Energy End Use and Efficiency

http://ec.europa.eu/energy/demand/legislation/end_use_en.htm

EU Directive on Performance of Buildings

http://ec.europa.eu/energy/demand/legislation/buildings_en.htm

EU Habitats Directive

www.jncc.gov.uk/page-1374

Exmoor Mire Restoration Project

http://www.exmoor-nationalpark.gov.uk/index/looking_after/looking_after_landscape/moorlands/moorlandinitiative/mire.htm

Finding sanctuary

www.finding-sanctuary.org/

Future Foundations

www.futurefoundations.co.uk/

Future Water

www.defra.gov.uk/Environment/water/strategy/index.htm

Highly Protected Marine Reserve

<http://www.lundy.org.uk/inf/zone.html>

Home Energy Conservation Act

www.defra.gov.uk/environment/climatechange/uk/publicsector/localauth/heca95/index.htm

Home Information Packs

www.homeinformationpacks.gov.uk/

IPPC (2007) *Mitigation of Climate Change*

www.ipcc.ch/ipccreports/ar4-wg3.htm

Landlord Energy Savings Allocation

www.changeworks.org.uk/uploads/AW%20Landlord%20Factsheet%20LESA.pdf

Low Carbon Buildings Programme

www.lowcarbonbuildings.org.uk/home/

Low Carbon Transport Innovation Strategy

www.dft.gov.uk/pgr/scienceresearch/technology/lctis/lowcarbontis

Making Space for water

www.defra.gov.uk/enviro/fcd/policy/strategy.htm

Marine Bill

www.defra.gov.uk/marine/legislation/index.htm

Marine Climate Change Impacts Partnership

www.mccip.org.uk/

Marine Protected Areas

www.defra.gov.uk/marine/biodiversity/protected-areas.htm

National Indicator Set

www.communities.gov.uk/localgovernment/performanceframeworkpartnerships/nationalindicators/

Natura 2000

<http://www.jncc.gov.uk/page-1455>

NFU, CLA and AIC (2005) *Part of the Solution: Climate Change, Agriculture and Land Management*

<http://www.nfuonline.com/documents/Campaigns/Climate%20Change%20Report.pdf>

Pitt Review (Learning Lessons from the 2007 Floods)

www.cabinetoffice.gov.uk/thepittreview/final_report.aspx

Planning Policy Statement on Planning and Climate Change (supplement to PPS1)

www.communities.gov.uk/publications/planningandbuilding/ppscimatechange

Rail Prospectus

www.southwest-ra.gov.uk/media/SWRA/Regional%20Transport%20Board/29th%20November%202007/Final_Rail_Prospectus_Document_for_Website_-_30_Nov_2007.pdf

RegenSW

www.regensw.co.uk/

Regional Economic Strategy

www.southwestrda.org.uk/what-we-do/policy/economic-strategy.shtm

Regional Funding Allocation

www.hm-treasury.gov.uk/consultations_and_legislation/devolving_decision_making/regional_funding_allocations.cfm

Regional Housing Pot

http://southwest-ra.gov.uk/nqcontent.cfm?a_id=1756&tt=swra

Regional Resilience Forum

www.gosw.gov.uk/gosw/emergencies/

(draft) Regional Spatial Strategy

www.southwest-ra.gov.uk/nqcontent.cfm?a_id=538&tt=swra

Regional Transport Strategy

www.gosw.gov.uk/gosw/transport/regtransstrat/

Regional Waste Strategy

www.southwest-ra.gov.uk/nqcontent.cfm?a_id=500

Renewable Energy Strategy (consultation)

<http://renewableconsultation.berr.gov.uk/>

Renewable Transport Fuels Obligation

www.dft.gov.uk/pgr/roads/environment/rtfo/

Renewables Obligation

www.berr.gov.uk/energy/sources/renewables/policy/renewables-obligation/page15630.html

Shoreline Management Plans

<http://www.defra.gov.uk/enviro/fcd/guidance/smp.htm>

Smarter Choices Programme

<http://www.dft.gov.uk/pgr/sustainable/smarterchoices/>

South West Bioheat Programme

www.regensw.co.uk/about-renewable-energy/biomass/south-west-bioheat.php

South West Energy and Environment Group

www.centres.ex.ac.uk/cee/

South West Food & Drink

www.southwestfoodanddrink.com/

South West Low Carbon Housing and Fuel Poverty Strategy and Action Plan

www.oursouthwest.com/lowcarbon/lchfp-strategy-and-action-plan-291106.pdf

South West Nature Map

www.swenvo.org.uk/nature_map/index.asp

South West Regional Improvement & Efficiency Partnership

www.southwestiep.gov.uk/

South West Sustainability Checklist for Developments

www.checklistsouthwest.co.uk/

South West Tourism

www.swtourism.co.uk/

Stern Review

[www.hm-](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm)

[treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm](http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm)

Sustainable Development Commission (2008) *Breaking the Holding Pattern*

<http://www.sd-commission.org.uk/pages/aviation.html>

Sustainable Farming and Food Delivery Plan

<http://download.southwestrda.org.uk/file.asp?File=/regeneration/general/shaping-delivery.pdf>

Towards a Sustainable Transport System

www.dft.gov.uk/about/strategy/transportstrategy/tasts/

UKCIP02/08

www.ukcip.org.uk

Vision for moorland Dartmoor 2030

www.dartmoor-npa.gov.uk/index/lookingafter/laf-landmanagement/laf-moorfutures.htm

Warm Front

www.warmfront.co.uk/

Warming to the Idea

www.oursouthwest.com/climate/scopingstudy.htm

Water Framework Directive

www.euwfd.com/

Water Resources Management Plans

www.environment-agency.gov.uk/subjects/waterres/981441/1823555/

Wave Hub

www.wavehub.co.uk/

Glossary

BERR	Department for Business, Enterprise and Regulatory Reform	FWAG	Farming and Wildlife Advisory Group
BitC	Business in the Community	GOSW	Government Office for South West
BL	Business Link	GHGs	Greenhouse gases
BRE	Buildings Research Establishment	HA	Highways Agency
BREEAM	BRE Environmental Assessment Method	HC	Housing Corporation
BREW	Business Resource Efficiency and Waste Programme	HCA	Homes and Communities Agency
CE	Creating Excellence	HE	Higher Education
CMP	Carbon Management Plan	HEI	Higher Education Institutes
CSBT	Cornwall Sustainable Building Trust	IGER	Institute of Grassland and Environmental Research
CSE	Centre for Sustainable Energy	JCA	Joint Character Areas
CSEP	Cornwall Sustainable Energy Partnership	LAA	Local Area Agreement
CSF	Catchment Sensitive Farming	LARCI	Local Authority Research Council Initiative
CT	Carbon Trust	LAs	Local authorities
DARE	Devon Association of Renewable Energy	LCLIP	Local Climate Impacts Profile
DEFRA	Department for Environment, Food and Rural Affairs	LDF	Local Development Framework
DNPA	Dartmoor National Park Authority	LGCE	Local Government Centre for Excellence
DSBI	Devon Sustainable Buildings Initiative	LRF	Local Resilience Forum
EA	Environment Agency	LSC	Local Skills Council
EH	English Heritage	LSP	Local Strategic Partnership
ENP	Exmoor National Park	NATA	New Approach to Appraisal
EP	English Partnerships	NE	Natural England
EST	Energy Savings Trust	NFU	National Farmers Union
FC	Forestry Commission	NISP	National Industrial Symbiosis Programme
FE	Further Education	NT	National Trust
FF	Future Foundations	REAP	Resources and Energy Analysis Program
		REEIO	Regional Economy Environment Input Output
		RegenSW	South West Sustainable Energy Agency
		RES	Regional Economic Strategy

RIEP	Regional Improvement and Efficiency Partnership
RIF	Regional Infrastructure Fund
RLUF	Rural Land Use Forum
RRC	Rapid Response Catchments
RRF	Regional Resilience Forum
RSL	Registered Social Landlords
RSP	Regional Skills Partnership
RSPB	Royal Society for the Protection of Birds
(d)RSS	(Draft) Regional Spatial Strategy
SSC	Sector Skills Council
SSCT	Strategically Significant Cities and Towns
SSW	Sustainability South West
SW Councils	South West Councils (previously South West Local Government Association)
SWCCIP	South West Climate Change Impacts Partnership
SWCCT&F	South West Climate Change Task and Finish Group
SWEEG	South West Energy and Environment Group
SWF&D	South West Food and Drink
SWRA	South West Regional Assembly
SWRDA	South West Regional Development Agency
SWRO	South West Regional Observatory
SWRTPI	South West Royal Town Planning Institute
SWT	South West Tourism
Third Sector	Voluntary and Community Sector
UKCIP	UK Climate Impacts Programme
UKYP	UK Youth Parliament
WRAP	Waste & Resources Action Programme

The UK Youth Parliament enables young people to express their views on issues that concern them. In the South West one of those issues is climate change.

The South West Youth Parliament want to take a stand, alongside the other regional organisations, and encourage everyone in the region, and especially all young people, to work together to save our future. The South West Members of the UK Youth Parliament believe that there should be more education on how to stop climate change and its effects, and schools, colleges and youth organisations should be encouraged to become more environmentally friendly, setting a good example for future generations.

One person can make a difference and so it is vital that every person lives to the belief that any action - no matter how small - can preserve our country and the beauty we so often take for granted. If we work together we can achieve so much more.

South West Members of the UK Youth Parliament therefore support the creation of the South West Climate Change Action Plan.

UK Youth Parliament



South West England