

Mendip Strategic Partnership

Climate Change Strategy

May 2007



Contents

Introduction

Topic 1 Energy use - mitigating future impacts

Topic 2 Waste

Topic 3 Land management and the natural environment

Topic 4 Planning and the built environment

Topic 5 Business and the economy

Topic 6 Health and lifestyle changes

Topic 7 Education and promotion

Leading role for Mendip Strategic Partnership

Taking the Climate Change Strategy forward

Appendices

A Members of Mendip Strategic Partnership

B Glossary of terms

C Bibliography and resources

Introduction

This Climate Change Strategy has been produced specifically for the Mendip Strategic Partnership (MSP) and seeks to consider the main impacts of climate change in Mendip relating primarily to the activities of the partners, but also considering the wider climate change agenda for the area.

Climate change covers a wide variety of topics and areas of work, and the uncertainties of the natural world means that making precise statements of what will happen in the future, or locally specific predictions very difficult. For this reason the Climate Change Strategy covers issues as simply as possible, adding locally specific matters where possible. The background information is accompanied by action points as to how the MSP members, and possibly other organisation, can address climate change through their work.

The overall aim is to ensure that the all members of the MSP begin to think about what climate change means to them and the operation of their business or organisation. This is to allow mitigation measures to be put in place, and adaptations made to ensure the business is 'future-proofed' against climate change impacts, as well as promoting this message to the wider Mendip community.

Surveys undertaken by the South West Climate Change Impacts Partnership identified that where as individuals were aware of climate change, few businesses (or organisations) featured climate change in their agendas. Where it does influence their policy it is through mitigation (avoiding climate change through reduction in climate change gases), rather than adaptation (responding to climate impacts), that is their main concern. This Climate Change Strategy aims to help MSP partners to recognise the importance of adaptation to ensure Mendip is more resilient to the future impacts of climate change, and to build on measures already in place to address mitigation.

Mendip Community Strategy

The Mendip Community Strategy has been prepared by the Mendip Strategic Partnership. The Community Strategy sets out the main issues for Mendip as well as what the Partnership intends to do to improve the social, economic and environmental circumstances in the District. It also sets out an aim to co-ordinate the work of organisations to address issues more effectively.

The Climate Change Strategy will build on the existing work already being undertaken in Mendip, to mitigate and adapt to climate change. It will reflect issues which impact on local communities and their approach to tackling them.

Mendip Community Strategy can be found at:

<http://mendipstrategicpartnership.org.uk/>

The vision of the Community Strategy is *'by 2026 Mendip will be a thriving, just and sustainable place to live in, work in and visit'*. The eleven themes of the Community Strategy cover all aspects of life in Mendip:

- Environment** – natural and built environment, including street cleanliness
- A place to live** – accommodation, providing shelter and warmth
- Energy and waste** – reducing use of energy and materials, promoting recycling and the use of renewable resources, reducing pollution
- Food** – the positive impact upon our health and economy that can be provided by access to good quality, healthy food from known sources, for which the producer receives a fair price, produced locally where possible
- A job to do** – the local economy, availability and access to jobs, job satisfaction, training, wage levels
- Ways to learn** – lifelong learning opportunities, including improving access and removing barriers
- Things to do** – opportunities for leisure activities and ways to contribute to society
- Getting around** – public transport, traffic and parking and also access to services – such as shops, health services and Broadband
- Feeling safe** – community safety, road safety, anti-social behaviour and environmental safety
- Staying well** – factors influencing the ability to stay well, including environmental impacts, health information and access to health services
- Sense of community** – feeling a part of a community of place or of interest

There are key links between the vision and themes of the Community Strategy, and the mitigation and adaptation to climate change. The Climate Change Strategy is responsible for delivering parts of the Community Strategy.

What is climate change?

It is now well acknowledged by the majority of the world's climate scientists, as represented by the Intergovernmental Panel on Climate Change, that the global climate is changing and will continue to change. Studies have shown that over the last century global surface temperatures have risen by around 0.7°C and global sea levels have risen 10-20cm over the past 100 years. Therefore global change is needed to mitigate further severe impacts and to adapt the way we do things to accommodate the changing climate.

Climate change is caused by increased emissions of gases such as carbon dioxide and methane which trap heat within the atmosphere that would otherwise be lost into space. This results in gradual warming of the planet and changes in global weather systems. Internationally there is majority consensus that the main source of the increase in these gases is human activity, with rates increasing in line with global industrialisation. Due to the amount of gases already in the atmosphere it is too late to reverse existing climate changes and therefore we will have to learn to adapt to the impacts. However, it is vital that we work now to reduce further emissions in order to mitigate against more substantial impacts in the future where the extent of climate change will result in severe and irreversible impacts on the environment and peoples' way of life.

UK wide climate change impacts have been developed through the work of the UK Climate Impacts Programme (UKCIP), with the most recent report produced in 2002 (UKCIP02). This used a method of identifying likely future effects through developing scenarios for change based on low and high emissions of climate change gases, and in three time periods, the 2020s, 2050s and 2080s. These predictions are based on 50km grid squares covering the UK with the likely climate impacts for each square calculated.

A point to note is that revised climate scenario information is currently under preparation known as the "UK 21st Century Climate Scenarios" (UKCIP08). Although interim results are available they will not be in a simplified useable form until later in 2007. UKCIP08 will contain data on 25km x 25km grids allowing impacts on Mendip to be identified in greater detail. The new predictions will also show climate change in terms of probabilities of change instead of the ranges shown in UKCIP02, which is better-suited to risk-based decision-making for adaptation. The timeframes will also change, and be for overlapping 30 year periods to 2100, and the emissions scenarios will be simplified.

The main impacts of climate change in the UK are identified as:

- Warmer, wetter winters
- Hotter, drier summers
- Extreme rainfall events happening more often
- Rising sea levels
- Higher wind speeds.

The significance of climate change is recognised through UK strategies and guidance, the UK programme for climate change (March 2006) identifies climate change as 'the greatest long-term challenge facing the world today'.

At a regional level the South West Climate Change Impacts Partnership (SWCCIP) is working to better understand what climate change means for our region, and how we can mitigate against impacts and adapt to the changes. A scoping study on the climate change impacts in the south west was produced by the partnership, 'Warming to the Idea: meeting the challenge of a changing climate in the South West' (January 2003).

At a more local level Somerset County Council are working with partners to produce a climate change strategy for the County. This will cover mitigation and adaptation measures to reduce the impacts of climate change, and includes in depth consideration of the flood risk issues relating to climate change.

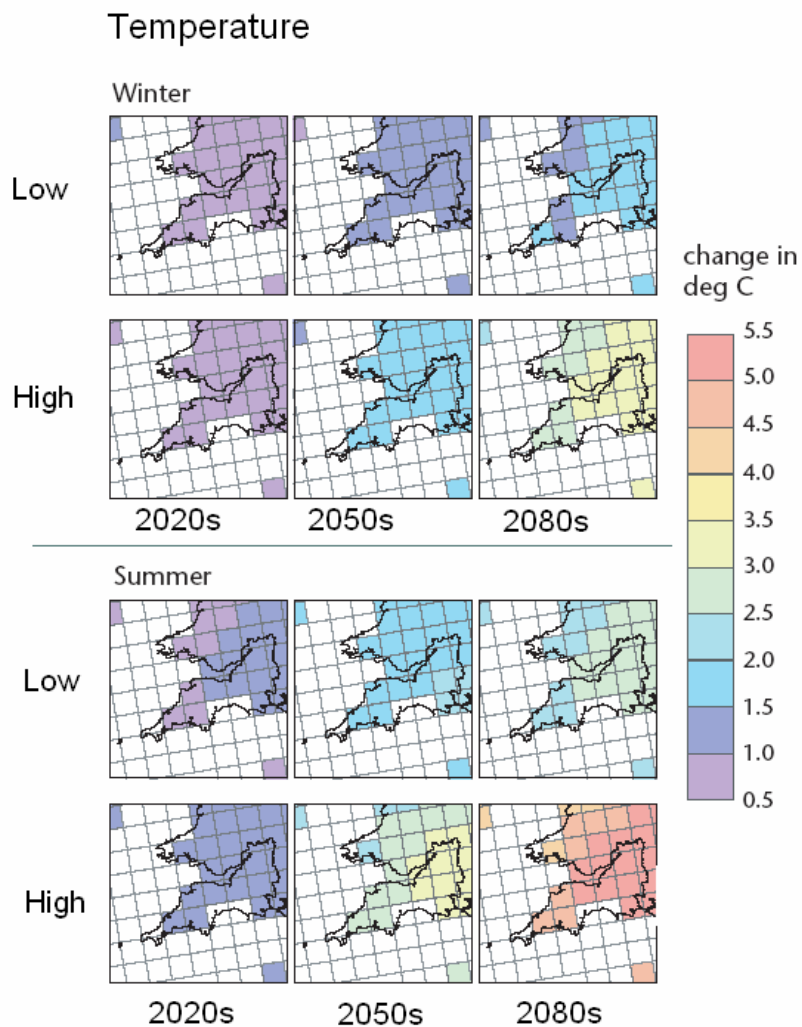
Climate change in Mendip

The impacts of climate change are often presented in such a way as to feel remote to our lives in Mendip, such as melting glaciers, expanding deserts, mass floods and tropical storms. However as the effects of the changing climate become more pronounced the impacts will be noticeable to everyone. Although clearly in Mendip these impacts may not be as

devastating as for those in parts of the world that can not as easily adapt for whatever reason to a changing climate, the effects will still have substantial impact on our jobs, homes and lifestyles, and even on the way Mendip looks through changes in the natural environment.

The SWCCIP considered what the UKCIP02 scenarios meant for the south west region, and from this it is possible to identify into which boxes of the 50km grid Mendip falls. Figures 1 and 2 show the anticipated climate changes in these grid squares. Changes are from average conditions from 1961-1990.

Figure 1: Estimated temperature and precipitation climate changes in the South West based on change from averages of 1961-1990 showing low and high emissions scenarios for winter and summer (UKCIP02)



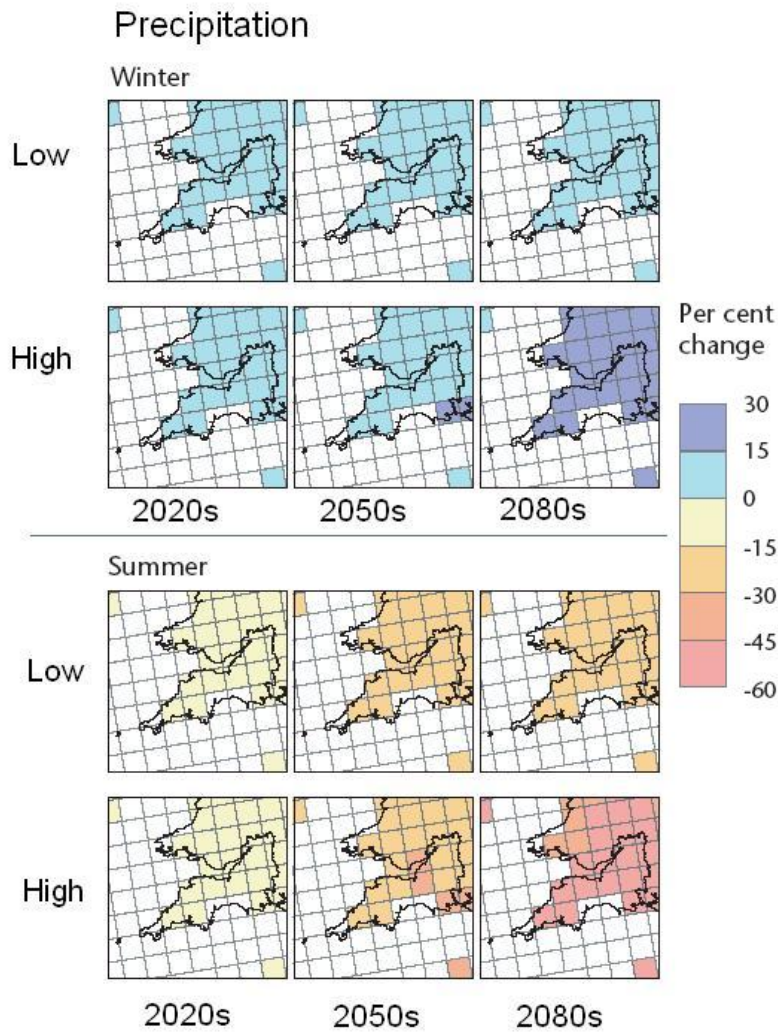


Figure 2: Anticipated climate change in the area of the South West containing Mendip

Based on 50km grids covering Mendip District		
	Anticipated climate in the 2050s	Anticipated climate in the 2080s
Temperature		
Winter	increase of 1.0-2.0°C	increase of 1.5-3.5°C
Summer	increase of 1.5-3.5°C	increase of 2.5-5.5°C
Precipitation		
Winter	increase of 0-15%	increase of 0-30%
Summer	decrease of 15-45%	decrease of 15-60%

In addition to these statistics on temperature and weather changes there are other predicted effects of climate change in the south west. These include:

- Exceptionally hot years will become more frequent, such as years as hot a 1999 (+1.2°C above average)

- Very dry summers such as that experienced in 1995 will become more common
- Snowfall will decrease significantly and become a rare event
- Increase in sunny days in summer and autumn
- Increased humidity throughout the year
- Soil moisture will decrease in the summer
- More storm events in the winter, due to up to 50% more deep low pressure areas passing over the south west
- Due to changed patterns in the weather system of the North Atlantic there will be more wet, windy and mild winters in the south west
- Sea level is expected to rise in the Somerset coast by about 10-50cm by the 2050s and 10-80cm by the 2080s, based on the sea level average 1961-1990.

What all this data means is that by 2050 or 2080 Mendip could be a very different place than it is today. Summers may be hot and dry, with peak temperature much above what we currently experience, this could lead to long hot spells with hot days and nights, and lack of rain will lead to low soil moisture impacting on the green character of Mendip's landscapes, parks and gardens.

The winters may be very different, although also warmer than we experience now they may also be much wetter with frequent storms, heavy rains and strong winds. This may cause flash floods, and in Mendip these may be exacerbated by sea level rise putting pressure on the flood defences protecting the Somerset Levels. Due to mild winters snowfall will be rare, as will frosts.

The natural environment of Mendip may also be very different with plants and animal species being pushed north and east as the seasons change. This may lead to the loss of some species currently found in Mendip. In addition the lack of frosts will mean different species will survive in Mendip, some positive such as new crops and some negative such as pests and diseases.

Mendip Climate Change Strategy

Mendip Climate Change Strategy is very wide reaching in its scope, covering a range of diverse issues for all sectors. It is written for the Mendip Strategic Partnership, but the content is significant for a great many individuals and organisations.

The actions and objectives it contains aim to be as useful and informative as possible, although this is only a first stage in developing a comprehensive Climate Change Strategy for the District. It is not a static strategy and it

should be constantly reviewed and updated to take into account emerging work programmes and the needs of different groups.

It is essential for relevant organisations of the MSP to take these recommendations and actions forward into their own plans, strategies and action planning for the future. As part of this it will be necessary to create more detailed action targets for particular issues, including detailed timeframes for implementation. It is for the MSP itself, working with the climate change sub-group, to discuss how this should be taken forward in specific plans for action, for different sectors, including the joint actions for the MSP.

The Climate Change Strategy sets out comprehensive coverage of the issues that will need to be considered in mitigating and adapting to climate change. However, it is not possible to set out all possible eventualities and this coverage seeks to focus on key issues with the aim of those with particular interest in specific topics using the references sources given at the end of this document for further information.

It should be remembered that there may be conflicts between other strategic priorities and the need to address climate change in Mendip. For instance the need for new buildings to make more efficient use of energy may result in higher build costs, and this may conflict with matters such as affordability and deliverability of the new homes and other facilities, in conflict with other objectives for Mendip. This therefore may require decisions to be made on what the priorities are taking into account current needs versus the long-term impacts of climate change.

Mitigation

It is through the reduction of energy use that the severity of future climate change impacts can be mitigated. Mendip must play its role to reduce emissions from the UK. This will help in climate change mitigation and also aid in reducing future energy costs as fossil fuel prices increase, it also will help avoid the associated air pollution produced as a result of fossil fuel generated power that local to global reaching impacts.

Mitigation of climate change is predominantly covered in the first topic section of energy, as generating energy from fossil fuels is understood to be the predominant cause of climate change. Some sector specific matters relating to mitigation of climate change are covered in the other relevant topic sections.

For mitigation of climate change immediate action is necessary. Reducing energy use from non-renewable resources is something that can be implemented in the short term through simple measures, such as better energy management and reducing the number of car trips made. Although longer term planning is also required, for instance through developing more energy efficient buildings and establishing sustainable travel patterns.

The recent Stern Review¹ identified that there are clear economic impacts of climate change. This evidence gathered in the review leads to a simple

¹ Stern Review on the Economics of Climate Change (October 2006)

conclusion that the benefits of strong early action to reduce emissions considerably outweigh the costs of future adaptation.

Adaptation

It has been shown through studies by the South West Climate Change Impacts Partnership that understanding of mitigation measures is already better and more frequently acted on than strategies for adaptation. Therefore this Climate Change Strategy places a strong emphasis on adaptation matters, to start to reinforce the message that climate change is happening and the effects are already being felt round the world, and will become more apparent in Mendip therefore development needs to take these into account.

In planning for adaptation it will be necessary to build adaptive capacity into organisations, including raising awareness of the issues, changing standards and developing policies to support adaptive approaches. Actions on adaptation will be needed to reduce the vulnerability to climate risks or exploit the climate change opportunities, using actions such as climate proofing of organisations or developments, learning to live with the risk possibilities, accepting changes including losses, and finding new business practices.

Topic 1

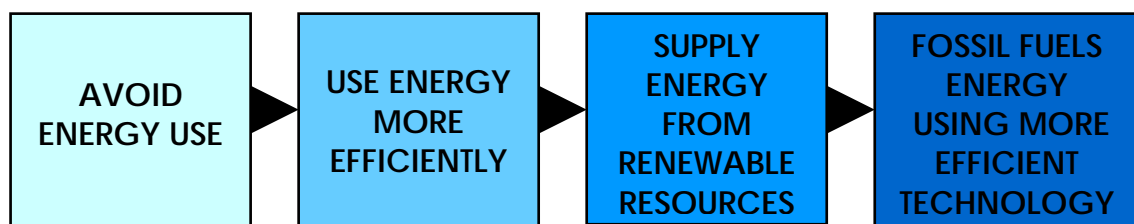
Energy use - mitigating future impacts

It is already widely acknowledged that we should be aiming to reduce the amount of 'greenhouse gas' we emit into the atmosphere, primarily through reducing the amount of fossil fuels that we burn.

This section of the strategy considers how the energy this creates is used within Mendip, setting the picture for what matters need to be addressed in reducing use. All organisations and individuals have a role to play in reducing their energy use from fossil fuel sources.

Reducing our energy use includes making better use of the energy we have, and then trying to find alternative ways of generating this energy not using fossil fuels. Figure 3 shows a hierarchy of energy use from the most desirable which is to avoid energy use to less desirable approaches.

Figure 3: The Energy Hierarchy



Energy use in Mendip

Data published by Defra shows the carbon dioxide emissions by sector in 2003. These statistics give a rough idea of the sources of carbon dioxide emissions in Mendip. Figure 4 shows that the greatest sources are from industry and domestic sectors. This does not necessarily give a full picture of the carbon emissions for the people of Mendip, for instance it is not possible to show what emissions are from aviation, which could make up as much as a quarter of the UK's total greenhouse gas emissions.

Figure 4: Carbon dioxide emissions for Mendip District in 2003 (source: Defra 2005)

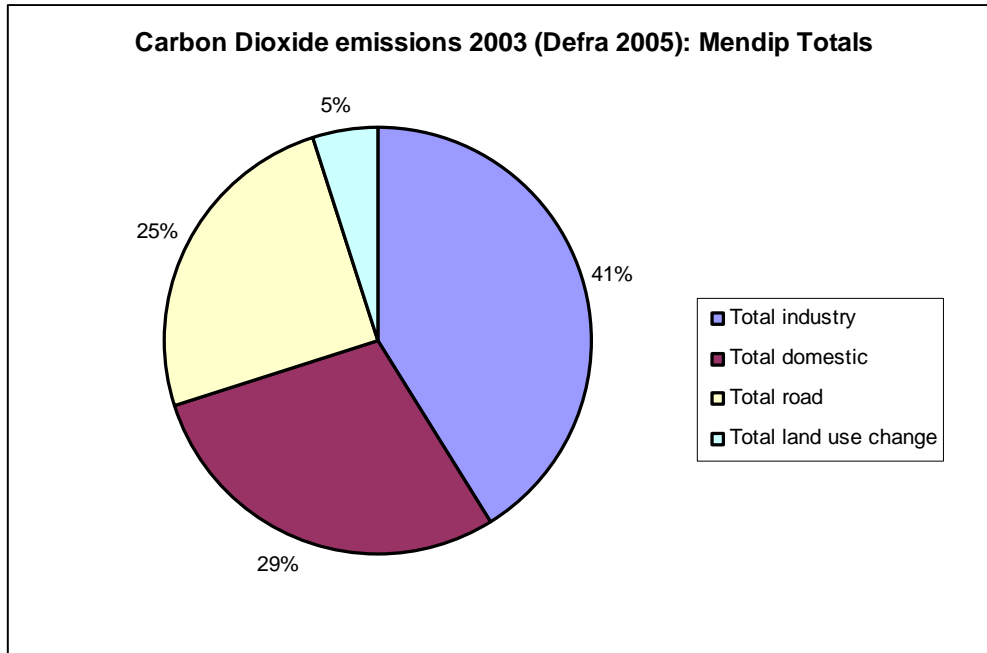
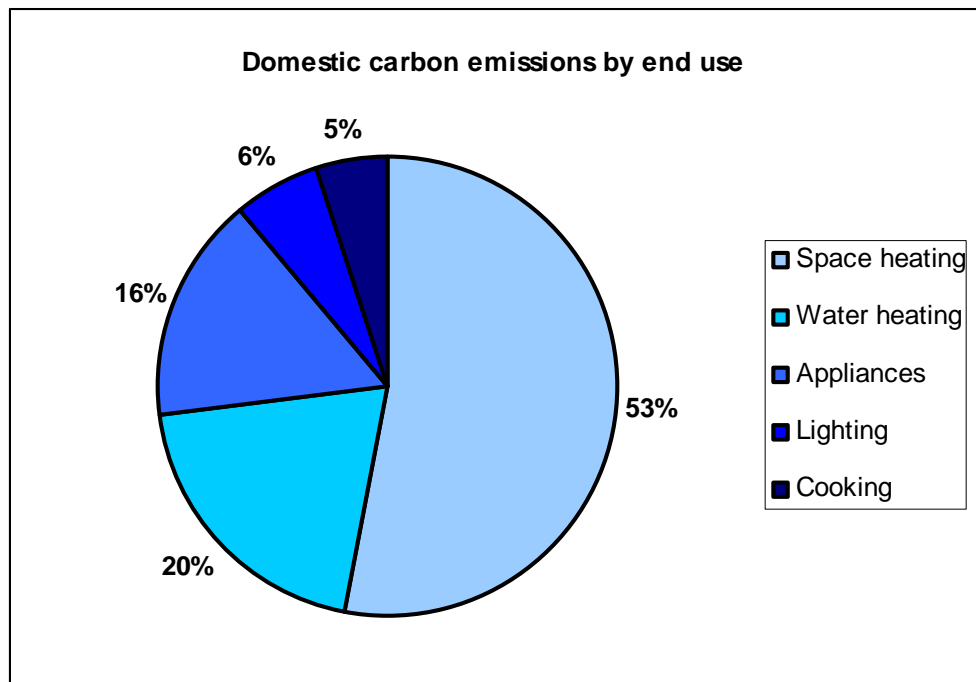


Figure 5: Domestic carbon emissions by end use: average carbon emission per household 1.54 tonnes per year (source: Climate Change – The UK Programme 2006)



This clearly shows that heating, both space and water, is by far the biggest emitter of carbon from the home, at 73% of total emissions. This measure will fluctuate with changing technologies as well as a result of the impacts of climate change, with space heating requirements potentially decreasing with warmer winters, but summer cooling requirements increasing. The use of electricity by appliances may also fluctuate, with some technologies getting

more efficient such as refrigerators and other white goods, but the number of electrical items in the average home increasing.

UK data is available from Defra which shows the sources of direct emissions of carbon dioxide from the burning of fossil fuels. The figures show that in 2004 these figures show the biggest source (27%) of direct carbon dioxide emissions from the burning of fossil fuel was from the energy industry to produce electricity, transport (not including aviation) is the second biggest source of carbon dioxide (21%), fossil fuel burning in home boilers (primarily for heating) was also a source of (16%) of carbon dioxide emission. These figures also show that since 1990 residential emissions have increased by 12% and road transport by 9%.

Key Actions For MSP Partners

The homes, businesses and organisations of Mendip must play their part in helping to reduce energy demand, and the production of energy from fossil fuel resources. There are several ways this can be achieved:

- More efficient use of energy in buildings, particularly for heating
- Reducing the need and distance people and goods travel, particularly by car and lorry
- Generating more of the energy we use from renewable energy sources

The advantages of this are not only in terms of climate change but also the more efficient use of energy can help reduce costs and reduce pollution from the burning of fossil fuels.

The topic of reducing energy use and carbon dioxide emissions is relevant to all topic based sections covered in this Climate Change Strategy. However this section looks at these issues in a cohesive way: identifying the key issues for each of the three approaches for Mendip, and providing recommendations and actions for these three energy topics.

a. Ensure the more efficient use of energy in the buildings

Planning policy

Government planning policy requires that new buildings are built to higher energy efficiency standards, with strong emphasis on the efficiency of new homes. The recent Government publication 'Code for Sustainable Homes'² sets out the requirements for new residential development linked to meeting and exceeding Building Regulations. The Code contains various matters of relevance to climate change, including reducing energy demands in new homes from non-renewable sources. These requirements will also increase over time linked to Building Regulations standards. There is also a supplement to Planning Policy Statement 1 under preparation that will set out the role of

² DCLG (Dec 2006) Code for Sustainable Homes: a step-change in sustainable homes building practice

planning in mitigating and adapting to climate change, titled 'Planning and Climate Change'.

This requirement continues down the planning hierarchy to the Regional Spatial Strategy (RSS) for the south west and the Local Development Framework (LDF). The RSS is currently at draft and it is likely the final version will contain requirements for reductions in carbon emissions on site with the proportion reduction increasing over time in line as with national requirements in the Code for Sustainable Homes. Policies of the Mendip LDF will also contain requirements for a reduction in the use of non-renewable energy resources in new developments. This will be applicable to all new buildings, although exact requirements will depend on the size of development.

Energy efficient buildings

Energy efficiency through the refurbishment and maintenance of existing homes is also essential in order to reduce the overall use of energy in the District.

More efficient buildings can be achieved through:

- Efficient construction, through choice of materials with lower embodied energy, and reducing waste of materials on site
- Better insulation, in new homes through choice of materials and construction style, and through retrofitting insulation in existing homes such as cavity wall and loft insulation
- Improving air tightness of new developments and existing buildings in order to reduce drafts and energy loss
- More efficient fixtures and fittings, in particular for heating such as condensing boilers, and also lighting and appliances, for instance
- Layout and orientation of buildings to maximise passive heating in summer from the sun, but designed to allow shading and ventilation in the summer to avoid the need for artificial air conditioning
- Better management of buildings to avoid energy wastage particularly in businesses, including efficient lighting and heating management, education of the workforce and less equipment left on standby, for instance.

Current Mendip schemes

Reducing energy use in the home is closely related to schemes to reduce fuel poverty, where a household requires too great a proportion of their income to heat their home. One way to reduce this is to make these homes more energy efficient, and provide energy saving advice to residents. These schemes include:

- Mendip partnership for Energy

- Somerset Warm and Well
- Warming Mendip

These are current schemes in Mendip and the MSP could link into and build upon these projects, through the effort of each organisation in changing their work practices, influencing customers and signing up to a scheme similar to the Invest to Save scheme.

Mendip Partnership for Energy

This is a scheme to reduce energy usage by the partner organisations, and will result in costs saving in terms of energy usage and help mitigate climate change. It is a three year project.

This is being carried out by the Mendip Partnership for Energy, and will include:

1. Energy audit for each partner organisation, looking at energy used in buildings and business travel
2. Identify opportunities for joined up working which will reduce energy use
3. Identifying means of effecting behavioural change within partner organisations which will reduce energy wasted
4. Promote investment in energy efficiency measures
5. Identify potential for renewable energy within partner organisations
6. Raise awareness of the need for energy efficiency among local people and partner organisation staff.

The Partners are:

- Mendip District Council
- Somerset Primary Care Trust
- Somerset and Avon Constabulary
- Somerset County Council Forum
- Mendip Environment Forum
- Centre for Sustainable Energy

Estimated saving

It is estimated, prior to full assessment, that the partner's buildings energy use adds up to around 30,348,000 KWh of energy, costing around £1.3 million, and resulting in 21 tonnes of carbon dioxide emissions annually. In addition about 55 tonnes of carbon dioxide are emitted annually by car travel by partner organisation's staff travelling for business.

At start the scheme estimates a saving of up to 20% can be made on total emissions using no or low cost measures.

Mendip Partnership for Energy - run by Mendip Strategic Partnership

Somerset Warm and Well

The scheme is open to nearly all homeowners and privately renting tenants in Somerset, and provides a grant towards installing loft and cavity wall insulation. The scheme is run by the Energy Efficiency Advice Centre.

Energy Efficiency Advice Centre - 0800 512 012

Warming Mendip

Warming Mendip is a scheme to improve local energy advice and provision (energy efficiency and renewable energy) in the District by working with voluntary and community groups in areas with high fuel poverty. It includes training, advice and support for local community representatives. It has seen particular success with a freephone advice line on energy providing continuing support, and also involved face-to-face interaction with local networks and organisations for awareness raising, working with key partners to deliver the project. Achievements by the end of the initial scheme period included 199 loft insulations, 118 cavity walls filled, 535 enquiries to the advice line, training for volunteers including youth centre staff and community representatives.

Energy Efficiency Officer, Mendip District Council - 01749 648999

Community Action for Energy - 08701 261 444

Key Actions For MSP Partners

- Mendip District Council should use the planning system to increase the energy efficiency of all new buildings.
- MSP Partners should seek ways of improving energy efficiency within their own buildings, both investing in efficiency measures and encouraging energy efficient behaviour by staff.
- MSP Partners should give energy use high priority in making decisions about their own development proposals.
- MSP Partners should seek ways to encourage awareness about the need for energy efficiency and ways of improving energy performance throughout their work, promoting the issue to clients, customers and other contacts.

b. Reduce the need to travel, particularly by car

Figure 4 and UK data on emissions clearly show that road transport is one of the main sources of carbon dioxide. In 2004 figures show that 21% of the UK emissions of carbon dioxide were from travel and transport. We all have a responsibility to consider how we can change the way we travel to reduce

car use including reducing the number and length of trips we make, switching to public transport, walking and cycling shorter journeys and avoiding making unnecessary journey.

Part of reducing travel emissions is also considering the 'travel miles' of goods we use, for example by buying more goods and food that is made/grown locally and therefore does not have to be transported long distances to reach us. More on this topic can be found in procurement in Topic: 5.

The 'Mendip Partnership for Energy' project should help to reduce the travel impacts of staff in the District Council and the partner organisations. Proposals such as car sharing, encouraging cycling and working from home can help reduce the journeys undertaken by staff and reduce car use and therefore carbon dioxide emissions.

The location of new development in the District is essential in helping to reduce the need to travel. Car ownership is very high in Mendip, with only around 16% having no car, compared to a south west average of 20%, and of those households that do have a car over a third have two cars – reflecting the rural nature of the District. The location of development in terms of proximity of homes, shops, leisure and particularly work can have significant impacts on carbon dioxide emissions by reducing the need to travel by car. Therefore new development must be planned to ensure greater accessibility, by being near public transport facilities and also general proximity to one another. The Local Development Framework plays an important role in this, as it must ensure the large majority of new development is located in the most accessible locations, such as the five population centres of the District and in these locations help ensure development is served by public transport and good walking and cycling routes.

Key actions for MSP partners

- Use the 'Mendip Partnership fro Energy' project to reduce the impact of all MSP partners travel needs, considering car sharing, home working, walking and cycling.
- Use the solutions found for reducing travel to deliver a Mendip Strategic Partnership wide scheme for reducing the need to travel by car.
- New development in Mendip should be located so as to reduce the need to travel. Focus development on the main population centres of the District that can support a range of jobs and facilities and are also accessible by alternatives to car.
- Encourage and support the use of transport modes that have lower carbon dioxide emission per person, such a bus travel and car sharing.
- Develop Green Travel Plans or Sustainable Transport strategies in all organisations, including establishing car share schemes and promoting cycling.

- Possibility of supporting innovative transport solutions such as the Wells police electric bike scheme, and use of biofuels.

c. Encouraging energy from renewable resources and alternative technologies

The Regional Renewable Energy Strategy for the South West of England 2003-2010 sets a target of 11-13% new renewable electricity generation in the South West by 2010, with an additional need for renewable transport and heating energy.

Targets were also set out in the 2001 report 'Renewable energy assessment and targets for the South West' produced by the Government Office. These targets gave the expected electricity generation from various renewable sources, and included a specific set for Somerset. There is an expectation that a large proportion of renewable electricity would be generated from on-shore wind (24-44MW) with the second highest expectation (15MW) from biomass power.

Alternatives to fossil fuels need to be found that have lower net carbon dioxide emissions and ideally less environmental impacts. These renewable energy sources can either be used to generate electricity or energy directly for heating or transport.

In Mendip the types of renewable energy with greatest potential are:

- Wind energy
- Biomass energy – this is the production of fuels, such as bio-diesels for transport use, or use of fuel crops and timber for heat production or in electricity generation.
- Micro-generation – small scale generation of electricity or heat to provide a proportion of the energy needed to run a building or group of buildings, often integrated into the structures on a site. This can include micro wind turbines and solar panels.

Large scale renewable energy facilities

The development of large scale renewable energy facilities will largely be determined by the planning system. For this reason it will be important that relevant planning policy set by the District Council help in the implementation of renewable energy scheme as part of development. It will be particularly important for Mendip District Council to ensure that the Local Development Framework provides positive planning policies to the development of large scale renewable energy facilities, and that this is supported by the MSP.

Site based renewable energy generation

Micro-generation can be from a variety of sources, easily integrated into new sites and most can also be retrofitted onto existing sites. Schemes can

include solar water heating, ground cooling, ground source heat pumps, photovoltaics, wind energy and absorption cooling. Some types, such as absorption capacity are better suited for commercial and industrial sites, while others such as photovoltaics can easily be used in domestic situations. Mendip District Council, through planning policy in the Local Development Framework in the Core Strategy, will set out requirements for all schemes requiring planning permission, above a threshold size³, to generate a defined proportion of their energy from renewable sources on-site. Passive measures can also be introduced which use natural resources to reduce the need for energy in buildings. This can include passive solar design and passive building ventilation systems.

Combined Heat and Power

If we continue to use fossil fuels we should also ensure that energy is generated from them in a more efficient way. In particular generating energy, heat and power, nearer to where it is used will help increase efficiency. Therefore instead of focussing on the national grid more energy could come from 'distributed energy' systems. This can be from local combined heat and power plants (CHP), which can run on fossil fuels or on new renewable sources. CHP allows heat produced from power generation to be captured for warming (water and space), and with close proximity of both energy generation and user, this means there is less energy wasted in transmission. Locally produced energy also highlights to the consumer the source of the power they use, and can make the community more energy aware.

Fuel Farms

Biomass crops can be used to make biofuels as replacement for fossil fuels, to also be used in heating and as transport fuel. The creation of fuels from plants is becoming an increasingly financially viable alternative due to rising costs of fossil fuels, as well as having much reduced carbon dioxide emissions. In order for biofuels production to reduce carbon dioxide emissions, as opposed to fossil fuels, it will be necessary for crops to be grown and processed in close proximity, and also as close as possible to place of use. Part of this could be through the development of bio-fuel farms, where a network of farms supply a central processing plant, with the by-product heat being used to heat nearby homes. Mendip may be particularly suited to this type of development, and it may therefore be appropriate for the MSP to aim to promote this type of energy generation in appropriate locations subject to natural environmental quality considerations.

³ **Large Scale Sites definition**

For dwellings: where 10 or more are to be constructed (or if number not given, floor space of more than 0.5 hectares)

For all other uses: where the floor space will be 1000sq metres or more (or site is 1 hectare or more). Area of site is that directly involved in some aspect of the development. Floor space is defined as the sum of floor area within the building measured to the external wall faces at each level. Basement car parks, rooftop plant rooms, caretakers' flats etc. should be included.

Existing projects in Mendip

There are already a number of projects in using renewable energy resources and alternative technologies in Mendip and Somerset, a couple of which are outlined below:

UK's first wood fuelled pyrolysis power plant to be built in Mendip

Planning permission was granted by a wood fuelled pyrolysis plant in Mendip District at a site near Buckland Dinham. This is expected to generate 7MW of energy a year, and works by heating wood chips in an air free environment to generate electricity. The residue of the process is charcoal which is then burnt to produce the heat and dry the woodchips for pyrolysis. The plant will be fuelled by wood waste from a sawmill, supplemented by miscanthus (elephant grass) which will be grown by local farmers.

This is part of the renewable energy agency for the south west of England (Regen SW) investment award of over £1/2 million to help develop the region's bioheat sector.

Regen SW - 01392 229 394 - www.regensw.co.uk

Somerset Biofuel Project

Bioethanol is likely to become the dominant biofuel, reducing carbon dioxide emissions by up to 75% compared with fossil fuel. The Somerset scheme aims to help jump start the use of bioethanol as a transport fuel as a substantial number of vehicles using this fuel are required to generate a commercial rate of return from investments in dedicated ethanol fuel pumps. Therefore joint action is needed from car manufactures, fuel retailers and local stakeholder to initiate the market.

The Somerset scheme is being led by Somerset County Council now together with the BioEthanol for Sustainable Transport (BEST), with funding coordinated with Stockholm City Council. Principle partners in the Somerset Biofuel Project are: Somerset County Council, Wessex Grain (with subsidiary Wessex Biofuels), Imperial College London, Ford Motor Company, and the Energy Savings Trust.

Aims of the project are to develop a local fuel distribution network of 5 forecourt pumps. Blending, storage and distribution by Wessex Grain alongside their own proposals for a bioethanol plant in Somerset using grain from the south west region. Ford are making cars engineered to run on bioethanol mixed fuels. Local stakeholders Somerset County Council, Avon and Somerset Constabulary, Wessex Water and Wessex Grain will aid promotion by using the cars provided by Ford as part of their vehicle fleets.

A key deliverable from the project will be to establish monitoring and accreditation for the carbon emissions actually offset in the production and use of bioethanol. With a mechanism established for fuel price support for low carbon transport fuel, based on carbon savings these achieve.

Renewable Energy Officer, Somerset County Council - 01823 356356

Key actions for MSP partners

- Mendip District Council will need to ensure that the emerging Local Development Framework is supportive to large scale renewable energy facilities, microgeneration and biofuel production.
- MSP partners, individually and as a partnership, should positively support both planning policy and planning applications for large scale renewable energy facilities, microgeneration and biofuel production, subject to other sustainability considerations.
- The MSP could work with the agricultural sector on promoting the idea of a 'fuel farm' in Mendip using suitable agricultural land.
- Ensure all new developments comply with policy requirements of on-site renewable energy generation, with the potential to push for higher requirements over time.
- Take a positive approach to development of new local energy facilities, such as CHP.
- The MSP partner organisation, particularly those involved in 'Mendip Partnership for Energy' should consider using renewable energy in their buildings and vehicles, including photovoltaics, wind power and buying locally produced biomass fuels.

Topic 2

Waste

Impacts of waste management

Methane is one of the primary greenhouse gases and although methane emissions from landfill sites do not form a high percentage of total emissions, they are an issue because of the major dependence on this waste disposal option. Reducing waste sent to landfill is essential, not only to reduce these methane emissions, but also to stop the wasted energy from the disposal of materials that are suitable for reuse or recycling. For instance only 5% of the energy required for primary aluminium production is needed to make recycled aluminium reusable, and there are also energy savings in other metals recovery as well as glass and paper.

Somerset has set waste reduction targets for the County and is currently meeting these. Mendip has a full kerbside recycling service, that includes the separation of organic wastes for composting, thereby helping reduce methane emissions at landfill. To reduce the transport impacts of waste it will also be important to ensure the recovery and reprocessing of recycled materials takes place as close as possible to their source, i.e. the towns and villages of Mendip.

Municipal Waste Disposal statistics gathered by Defra show that in Somerset in 2205/6 around 188,764 tonnes of municipal waste was sent to landfill, and about 37% of total municipal waste was recycled. In Mendip the recycling and composting rate was lower at 33%, which is about equal to the South West average.

Envirowise, a government funded organisation, offers advice to businesses on reducing their waste, and ways of saving money through this.

Adapting to climate change

High temperatures in summer and at times more intense rainfall due to climate change, this will have an effect on waste. Rubbish will decay more rapidly as summer temperatures increase, and landfill design and operation may be affected as temperature rise and winter rainfall becomes more intense.

Key Actions For MSP Partners

- Continue to work towards meeting targets to reduce waste to landfill in Somerset.
- Ensure all homes are served by kerbside recycling, as well as local accessible household waste recycling centres.
- Encourage all social housing residents to recycle, through the use of tenant packs and general information supplied.

- Review how MSP partners manage their waste, including setting recycling targets.
- Consider the need for more waste handling and recycling facilities close to sites where waste arise, reducing the need for travel and transport.
- Increase frequency of waste collections as temperature become higher in the summer.
- For existing landfills monitor conditions, and regard climate change when planning the future design of operation of new sites.

Topic 3

Land management and the natural environment

Agriculture

It is highly probable that existing farming practices in Mendip will be impacted on by the changing climate. Currently by far the major agricultural land use in the District is lowland grazing for general livestock and dairy cattle herds. 61% of the total farmed area of Mendip is permanent grassland, and this rises to 76% when temporary grassland and rough grazing land is included.⁴ Studies have shown warm dry periods can have a substantial impact on livestock farming, as in the unusually warm year of 1995 there was around a £200 million losses sustained by livestock farming in the UK.

Impacts of climate change on livestock farming include the following:

- Changes to the grass and other forage crops from extended dry periods
- Impacts of heat stress that effect older animals and may reduce reproductive efficiency
- Increased pathogens as they survive milder winters and thrive in hotter summers
- Effects on drinking water availability
- A need for shelter from sun and extreme weather.

Other impacts of climate change on agriculture could include:

- Loss of competitive advantage for crops in the area as range becomes extended in the UK
- Prolonged dry periods putting stress on crops, including forage
- Possibility of growing new crops not previously found in any great quantity in the area, including sunflowers and grapes, and potentially others such as almonds and olives
- A need to adapt to new management techniques and technologies, including the need for greater water storage in winter for irrigation in extended dry summer periods

⁴ DEFRA (2005) Farm land use in Mendip

- New or greater prevalence of diseases and pathogens due to warmer temperatures and less frequent frosts
- Changes in the soil moisture in the District, with potential for water logging and loss of structure in the winter, and moisture deficit in the summer.

Therefore it may be suitable to start considering what this will mean to the agricultural landscape of Mendip, the ways to adapt and offset negative impacts, as well as taking advantage of the changing climate.

Key Actions For MSP Partners

- Support proposals to help mitigate against climate change such as biomass crops of miscanthus or more areas of coppice woodland, particularly as part of fuel farms at suitable agricultural locations.
- Take advantage of the changing climate by growing new crops, such as sunflowers, grapes, sweetcorn, wine production and olives, which normally have to be transported long distances for the UK market.
- Protect livestock from the increasing summer temperatures and extreme rainfall and flooding.
- Prepare water storage strategies, and installing rain water reservoirs for summer irrigation and watering of livestock.
- Help ensure farmers are considering what the changing climate will mean for management of land and beginning planning now for any long term adaptation that may be necessary.

Habitats and landscapes

Changes in weather patterns will bring inevitable change to the appearance of the Mendip landscape and the animals and plants found within it. It is important that we consider what these changes will be, how to manage them, and how best to preserve some features of the landscape that bring distinctive qualities to Mendip.

Species at the southern, and possibly western, limit of their range are most likely to be impacted on by climate change, with local extinctions where species are unable to move, or find suitable new habitats. Warmer winters will adversely affect species suited to harsher winter weather, such as those that need frost conditions for germination. More frequent strong winds from the Atlantic may also impact on species of the area.

It will be important to plan for these changes in plant and animal species, whilst ensuring the movement of these species range is not hampered by blocked migration routes. For this reason habitat patches, wherever they are found, must be maintained with habitat linking features such as hedgerows, rivers and trees conserved and enhanced.

Work is being undertaken on the impact of climate change on various habitat types in the UK as part of the Modelling Natural Resource Responses to Climate Change (MONARCH) project. This is currently in its third phase, and when completed should provide a modelling tool that can widely be applied to habitats of Britain, and should be able to help identify impacts in Somerset and Mendip.

Actions and recommendations

- Ensure the Mendip BAP conservation objectives take account of the impact of climate change on relevant habitats and species.
- Conservation objectives within the wider countryside should be used in a way that is more closely integrated with the protection of designated areas, in response to climate change, including those for the management of agricultural land.
- Local biodiversity and nature conservation groups should prepare strategies for the areas of habitat they manage, to identify the changing needs of these areas and how this change can be successfully managed.
- Consider what the impacts might be for designated sites and ensuring conservation objectives are revised accordingly, this may have to be in discussion with those responsible for designation.
- Development and habitat restoration needs to ensure that habitat linkage is maintained and wherever possible improved, this will include maintenance of hedgerows, verges, trees, ponds and habitat fragments. Part of this could include an integrated green infrastructure strategy for Somerset, to create wildlife corridors to allow natural migration.
- New planting provided in Mendip, as part of landscaping, creating parks and in habitat restoration must be of species able to withstand the changing climate.

Forestry

Climate change is likely to have an impact on trees, where as mature trees are more likely to be able to cope with dryer summers the overall soil moisture deficit may effect new tree growth, limiting their range. It was shown that in the unusually hot and dry year of 1995 the health of lowland deciduous trees, particularly beech, suffered. In addition broadleaved woodland is susceptible to storm damage when in full leaf, and can be a serious problem for conifers at any time of the year. Increase in storm severity and frequency will therefore be an issue.

There may be more fungal disease of trees such as Phytopthera, particularly coniferous species, and the prospect of new imported diseases taking hold due to more mild winters and fewer frosts.

Although increased summer temperatures, and increased atmospheric carbon dioxide, may aid the growth of tree plantations.

Key Actions For MSP Partners

- New tree planting should be appropriate to be resilient to climate change without needing additional watering.

Parks and gardens

Reduction in water availability, warming summers and wetter winters with fewer frosts will all have an impact on the parks and gardens of the District. In addition the warmer summers may also change the way people of Mendip use outside spaces with demand and use patterns changing.

Several key issues might be:

- Changes in historic parks and gardens with the maintenance of traditional planting schemes becoming more difficult to maintain in hotter, drier conditions
- More public and private outdoor space needed in all development, including roof terraces, balconies and gardens as well as public parks
- Greater use of the parks in the summer evenings as meeting and social spaces
- Possible need to adapt traditional park planting to take into account reduced water availability in summer, which may result in the loss of expansive grassed areas and raising the need to find alternatives, and the changes in traditional planting including tree species.

Key Actions For MSP Partners:

- Those responsible for maintaining public gardens and parks will need to prepare a strategy for coping with the changing climate, including new planting, and considering how peoples' use of these areas may alter with changing weather patterns.
- Trees being planted now will need to last into the future and therefore should be more drought resistant, although sensitivity to frost will be less of an issue.
- Investigate potential of large rain water reservoirs for parks and gardens to provide a water source for these areas during the dry summer months.
- Landscaping plants must be resistant to hotter drier summers without need for frequent watering.

- Those responsible for new developments should consider providing more public and private outdoor space, including roof terraces, balconies and gardens, as well as public parks.

Topic 4

Planning and the built environment

The way in which we plan and deliver the built development in Mendip, can have a large impact on reducing emissions of greenhouse gases, and on helping adapt to the changing climate.

There are many ways in which the buildings we use and live in have an impact on climate change. In the vast majority of buildings the energy we use for heating, lighting, cooking, and powering appliances will be contributing to climate change (see figure 5). Therefore we need to mitigate these impacts by reducing the amount of fossil fuel energy needed to do these things.

In 2001 there were estimated to be around 44,000 homes in Mendip of various types of occupancy and by 2026 this number is expected to grow by up to 20% (9000 homes). Therefore it is essential that all these new homes are built to high energy efficiency standards as well as being built to adapt to the changing climate.

In addition to the homes of Mendip there is also almost 5 million metres square of non-domestic floorspace in the District in 2001 (ODPM), and these existing buildings and all such future development will also need to take into account climate change mitigation and adaptation.

All development in Mendip will need to take into account its impact on climate change, and will need to mitigate and adapt to the effects of this change. This will include housing, commercial premises, schools, community facilities and transport and utilities infrastructure.

Flooding

There will be increased pressure on the flood defences at the River Parrett at Bridgewater from sea level rise. For the coastline in this part of the South West high greenhouse gas emissions scenarios indicate sea levels could rise as much as 80cm by the 2080s (based on average levels from 1961 to 1990) but even low emissions it could rise by 15cm by the 2050s. This may have direct impacts on the frequency of flood in Mendip, particularly at Glastonbury and Street and other settlements near the Somerset Levels.

Somerset County Council are currently producing a Climate Change Strategy for Somerset, and initially this will consider looking at flood risk and how to mitigate and adapt to the effects of a changing climate. With future editions of both the Somerset Strategy and Mendip Climate Change Strategy, there will be requirement to integrate the two strategies.

Heritage

Mendip has a rich natural and built heritage, with over 2800 listed buildings, scheduled ancient monuments and 29 conservation areas. These include

specific heritage features that are a strong draw for visitors to the District, such as Wells Cathedral and Glastonbury Tor and Abbey.

Key issues relating to climate impacts on these features include:

- Increased visitor pressures and increased revenue for historic buildings from warmer climate and longer summers
- Potential damage to features from extreme weather events including wind and rain, impacts of intense sunshine, rain damage, fungal and beetle damage
- Archaeology could deteriorate in some uplands where soil moisture reduction leads to drying out of buried remains.

Adapting to the impacts of climate change on buildings

The buildings in Mendip will need to be able to adapt to the impacts of climate change. This will include making sure new buildings will not be adversely harmed by flood, as well as ensuring that new development does not raise the risk of flood elsewhere. New buildings will have to be designed to adapt to hotter summer temperatures so they remain comfortable for living and working without resorting to artificial air conditioning. Buildings will also need to withstand increased storm events, with more frequent times of high winds and heavy rains.

Impacts of climate change on the built environment include:

- Hotter summers impacting on the comfort of working and living environments
- Increased storm events may impact on the structural integrity of buildings, particular in the case of strong winds and driving rain, and long hot dry periods
- Increased risk of flooding of existing buildings, and limiting land available for future development
- Reduction in water supply in summer
- Buildings are vulnerable to subsidence and ground movement through soil shrinkage in prolonged dry periods.

In adapting buildings to cope with the changing climate seven **key issues** for consideration are:

Location of development

- Ensure new development is not built in areas with significant risk of flooding, and does not increase the risk of flooding elsewhere.

- Develop in areas where there are adequate water resources to serve the development.
- If buildings are in areas at higher risk of subsidence, for example clay soils, deeper foundations will be needed to counteract this risk.
- Locate new development to local travel destinations or where there is good access to public transport.

Site layout

- Development will change the flood risk of the site, including surface runoff flash floods, therefore the topography and permeability of surfaces need to be taken into account. Some sites may be suited to development with no living spaces on the ground floor.
- Landscaping planting can be used for shade in summer, and open spaces integrated into development can reduce overall 'heat island' effects of grouped buildings. The site landform can also be used to shelter and minimise heat loss in winter, and shade in summer. Use of deciduous trees can provide shade in summer, without impacting on solar gain in winter.
- Create more outdoor spaces to make use of warmer weather, public and private.

Building structure

- The physical structure of buildings needs to withstand increased wind speeds. It also needs to be able to cope with changing soil characteristics from extreme wetting and drying cycles.
- The building form will need to be able to adapt to heavy rainfall in the design of the roof and rain draining from the building, and needs to be protected against rain driving harder at walls and roofs from increased frequency of storms involving strong winds and rain.
- Construction materials are likely to require high thermal mass, to make the most of passive solar gain and protect against over heating.
- Some buildings will require flood proofing where they are in areas prone to increased flooding.

Ventilation and cooling

- Ventilation for summer heat needs to consider maintaining security, and ventilation technologies need to be suitable even for high temperatures.
- Standards for cool buildings are those that exceed 28°C less than 1% of the time, and exceed 25°C less than 5% of the time. Include cooling systems, including consideration such as shading and choice of materials.

Drainage

- Flash floods through inundation of the sewerage system can cause foul water to enter buildings and therefore there is a need to separate foul and surface sewerage systems.
- Establishing sustainable drainage systems that mimic natural drainage patterns and greenfield run-off rates.

Water

- Pressure on water systems related to lower summer rainfall, but increased demand for watering of plants and washing. Ensure more efficient use of potable water in developments, through efficient technologies and grey water and rainwater recycling.
- Increase ditch clearing and gully emptying activities to obviate against blockages.

Utilities

- New development will need to work with utilities companies to ensure climate change impacts on utilities are taken into account, for example flood risk may require better protection for gas mains, electricity and telecoms cables.
- Increase severity of wetting and drying cycles of soil may mean that utilities pipes, tunnels and other earthworks will be impacted upon.
- Masts, pylons and overground transmission lines will all be impacted on by increased storm events.

Planning policy

At a south west regional level the Regional Spatial Strategy (RSS), which looks forward to 2026, provides the context and framework for planning future development of the south west, including Mendip. The Mendip Local Development Framework sets out the local planning policy approach for the District. Both these documents have yet to be finalised, however emerging policy contained within them cover several matters of relevance to the built environment and the need to mitigate and adapt to climate change.

Planning policy, at national, regional and local levels requires consideration and prevention of climate change. This includes:

- National planning policy is being prepared on how climate change should be considered through planning.
- Avoiding flood risk land in new development, including improving flood defences where necessary, this is included in National planning policy statement 25, as well as regional and local policy
- The Regional Spatial Strategy states that all new and refurbished buildings to achieve BREEAM and/or Eco-Homes standard 'very good' or at least level 3 of the Code for Sustainable Homes. Mendip Local Development Framework would like to see this raised to 'excellent'

standard on BREEAM on all large sites of 10 dwellings or more, or a floor space of 1000m² or more

- The 'Code for Sustainable Homes' sets out the principles for more energy efficient homes, giving targets that will increase over time in order to help mitigate climate change and reduce energy consumption
- A supplement to Planning Policy 1 'Sustainable Development' is currently under preparation, title Planning and Climate Change, that will set out how planning policy and development can respond to climate change, both in terms of mitigation and adaptation
- Mendip Local Development Framework will set out policy to require all new development, which requires planning permission, to demonstrate sustainable construction proposals within the Design Access Statement.
- Mendip Local Development Framework policy will requires all new development in Mendip to:
 - Achieve a greater level of energy efficiency, with all new development achieving a defined minimum reduction on building regulation standards of carbon dioxide emissions
 - On large sites⁵ provide a further reduction of carbon dioxide emissions by a greater amount by incorporating on-site renewable technologies
 - Reduce the rates of potable water use to a defined volume
 - Be constructed to be able to adapt to a warming climate, by the inclusion of passive cooling to avoid the need for artificial air conditioning
 - Maximise resource sustainability through building orientation, building form and materials within detailed design considerations
 - Be appropriately located to reduce risk from flooding and pollution
 - Promoting sustainable, durable and adaptable developments
 - Include sustainable drainage schemes to minimise flood risk and protect surface water from pollution during storm events.

⁵ **Large Scale Sites definition**

For dwellings: where 10 or more are to be constructed (or if number not given, floor space of more than 0.5 hectares)

For all other uses: where the floor space will be 1000sq metres or more (or site is 1 hectare or more). Area of site is that directly involved in some aspect of the development. Floor space is defined as the sum of floor area within the building measured to the external wall faces at each level. Basement car parks, rooftop plant rooms, caretakers' flats etc. should be included.

Key Actions For MSP Partners

- Any partner organisation involved in commissioning and developing new buildings as part of their role will need to take into account the need to ensure new buildings help reduce carbon dioxide emissions, and are built to adapt to climate change impacts, through working through the seven key issues listed above.
- Any partner organisation should plan for preventative and remedial maintenance of existing building stock.
- Mendip Strategic Partnership should be leaders in promoting more sustainable design and construction of buildings, and in preventative and remedial maintenance of existing building stock.
- Implementation of the Mendip Housing 'Green Policy' to reduce energy consumption in new and existing Housing Association stock.
- Encourage and support training of contractors and other organisation in climate change initiatives, including sustainable construction and installation of energy saving technologies.
- Visitor numbers to historic buildings should be monitored to manage the impact of a future increase in visitors.
- Those involved with the maintenance of historic buildings and archaeological remains will need to plan for the impacts of climate change, to reduce risks of harm from more severe weather.
- The MSP should play a major role in shaping planning policy at least at a local and regional level, to maximise levels for securing sustainable construction.
- The MSP should take a keen interest in responding to any national planning policy consultation relating to climate change
- Develop and continue close relationships with Somerset County Council, in future revisions of both the Mendip and Somerset Climate Change Strategies.

Topic 5

Business and the economy

Energy management

Impacts of climate change

The financial advantages and reduced risk for businesses that will be achieved through successfully global mitigation against the severe impacts of climate change are clear, and highlighted in the recent Stern review of climate change impacts. In addition it is essential that businesses plans to adapt to climate change in order to reduce their risks from the inevitable changes that are already occurring and are likely to become more pronounced.

Sources of advice on mitigation and energy savings for business are readily available. The Carbon Trust is a key source of advice on reducing greenhouse gas emissions. In addition they can provide energy surveys, interest free loans, awareness raising and training events, and the Energy Technology List detailing the tax incentives on some energy efficient equipment. Research by the Carbon Trust has carried out indicates that a 20% saving in energy consumption is realistically achievable in most businesses and can have the same positive effect in profits as a 5% increase in sales. Still few businesses actively seek better energy management.

Key Actions For MSP Partners:

- All MSP businesses will need to ensure the more efficient use of energy, through identifying members of staff to champion energy saving in all offices, reducing car travel and setting up building energy management. Actions for this can be developed from successful approaches employed by the 'Invest to Save' partners.
- Reducing employee travel, including the promotion of car clubs, car sharing, teleconferencing, bicycle grant schemes and public transport use. It has been shown that the most effective schemes for reducing employees commuting to work by car are those that use financial incentives for those who choose to leave their car at home.
- The Community Council should help inform small organisations on energy saving schemes, and how they can take advantage of funding and schemes and grants. The money saving potential should be highlighted.
- Research the potential of a business carbon pledge scheme as a means of promoting and monitoring carbon reduction measures to businesses, as part of an environmental assessment and plan for each MSP partner.

Adapting to change

The South West Region Climate Change Impacts Scoping Study identifies that very few business sectors, and even fewer individual businesses, currently consider climate change adaptation as necessary. Although businesses role in mitigation by reducing energy wastage and carbon emissions is increasingly recognised and acted upon by businesses of the region. One of the drivers for this may be the cost savings resulting from mitigation, including reduced energy costs and the impacts of the Climate Change Levy. The costs of adaptation are less easily recouped in the short term, although their long term financial benefit may be great.

The MSP organisations are well placed to lead the way in adopting adaptation strategies for the impacts of climate change on their business operations.

Changing costs of insurance

Increased risk of flood, storm and rain damage may increase insurance premiums on many commercial properties, and in some instances buildings may become uninsurable. This will have impacts on business running costs and the choice of sites.

Construction and property management

Those involved in the development industry, particularly those responsible for the management of buildings, will need to ensure new development, and existing development where possible, can to adapt to the changing climate, as outlined in the last chapter. New buildings need to be constructed to be properly protected from climate change, as they will be easier to sell or let, and may be able to secure a higher price. Matters to be taken into consideration include protection from flood, being built to withstand high winds, heavy rainfall and storms and not be uncomfortable in high summer temperatures.

Changing weather, such as more frequent storms and high winds, and prolonged peak temperatures, may disrupt work on construction sites more frequently than at present, prolonging construction time with associated cost implications.

Travel and infrastructure

Changing weather patterns and more extreme weather events may cause disruption to travel networks. Flooding may cause roads to close, with road and rail routes adversely impacted by extreme heat. This may disrupt supply chains, and staff getting to work, all with potential impacts on the functioning of the business. Increased frequency of these events could have great financial impacts on businesses.

Extreme weather may also impact on community infrastructure, with particular impacts on masts and overhead cables from more frequent and stronger storms.

Businesses that are particularly reliant on communications and supply and distribution should prepare plans of action for times of disrupted communication.

All businesses should also plan for communications disruption impacting on their business and plan emergency strategies for this, including provision for home working where possible so as to ensure working days are not lost because of these events.

Key Actions For MSP Partners:

- Preparing business strategies for coping with the impacts of climate change.
- Promote emergency planning by all business sectors for disruption to supply and communication lines in order to reduce potential income losses.
- Seek buildings and business premises that are not at such risk of climate change impacts.

Identifying business opportunities

There are economic opportunities from the changing climate, these include:

- Agricultural opportunities and new crops (Topic 3), and other local food production to mitigate and adapt to climate change
- Taking advantage of future opportunities for increased year round tourism, particularly in the summer due to the longer warm periods, as overall UK tourism may increase
- Opportunities for expanding the environmental technology sector in Mendip, building upon the South West's reputation for renewable energy technology, and other 'green' technologies.

Key Actions For MSP Partners:

- Promote use of Morlands Business Park and other future key sites for environmental technologies.
- Chambers of Commerce to play a key part in working with businesses and development agencies in attracting environmental technology businesses, as well as encouraging local food production.
- Encourage local food production, and support planning applications for local processing and production of food.

- Encourage businesses to adapt to new markets.

Procurement

The source and type of good bought has an impact upon the environment. For example the embodied energy in the product, the distance travelled, its intended life span and reusability or recyclability, as well as its energy efficiency during operation. All organisations in Mendip, starting with the MSP partner organisations, need to adopt an environmental policy on purchasing goods and services.

MSP partners should make an effort to buy goods and services that are more sustainable, looking at factors such as service delivery and contracts that encourage businesses to reduce the environmental impact of their product. This could include local sourcing of products and labour, use of locally produced biofuel for vehicles and buying more energy efficient electrical items with replaceable components.

Key Actions For MSP Partners:

- The MSP should consider how to promote and support local businesses which produce and sell products with good environmental credentials.
- Ensure all products bought by MSP partners are sourced locally where possible, and introduce environmental procurement policy within each MSP partner organisation.
- MSP partners to promote procurement of locally sourced goods, within partner organisations and to customers and employees.
- Each MSP partner should produce a procurement strategy to include a reference on climate change and other environmental policies, to minimise the environmental impact of the organisation and contribute to reducing carbon dioxide emissions.

Topic 6

Health and lifestyle change

For health the main issues relating to climate change are likely to be associated with limiting impacts and adapting to the changing climate. Mitigation issues are related primarily to building stock and operation as covered in Topics 1 and 4, and through ensuring all have access to health facilities without needing to use private cars. It will also be suitable to consider emergency planning for climate change and the effects of extreme weather events.

The key health and lifestyle change impacts in Mendip from climate change are:

- Rising temperatures and the increase in the number of heatwaves will affect the health and safety of outdoor workers, and the comfort of those in insufficiently ventilated workplaces, and increase mortality and ill health of a number of vulnerable groups.
- Additional mortality rates during summer heatwaves will be offset by decreases in winter mortality.
- Increased incidences of food poisoning from higher year round temperatures.
- Diseases such as Malaria returning to the UK, and increase in others such as Lymes disease as their vectors are better able to survive mild winters and from an increased in outdoor recreation
- Changes in rainfall patterns may increase risk of microbial contamination of public water supplies.
- Risk of deterioration in water quality and increase in infection.
- Increased incidences of skin cancer from increased sun exposure.
- Impacts on mental health, including improvement during prolonged warm summers, and the adverse psychological impacts related to extreme heatwaves, storm events and flooding.
- Increased levels of outdoor activity in warmer summers may help improve the health of the residents of Mendip.
- Extreme flood events and storms causing risk to human health and well-being, including acute events such as winds causing tree felling, water inundation and structural damage to buildings for instance, as well as long-term impacts relating to homes cut-off from utilities, homelessness and transport isolation.

Key Actions For MSP Partners

- Health and social care providers to keep up to date strategies, including the existing Somerset Primary Care Trust 'Heatwave Plans'
- Developing approaches to reduce food poisoning incidents through better education of the public and food outlets.
- Extended schemes for skin cancer education and awareness raising throughout Mendip, focusing on outdoor workers, school children, and in parks and community centres.
- Maximise opportunity for planning for future outdoor recreation and tourism needs, while providing shade in public recreational areas.
- Minimise psychological effect from flood events and severe weather, by providing flood defences where suitable subject to other sustainability consideration and by ensuring that emergency services put in place emergency procedures and equipment which are updated to meet increased needs.
- Utilities companies and others, such as the District Council, will need to plan for long term impacts of severe storm events, including caring for vulnerable groups who may cut off from utilities or from public transport for extended periods following such events.
- Mendip PCT to share information relating to health and climate change to all MSP partners, to enable them to disseminate information to their associated customers, employees and partner organisations.

Topic 7

Education and promotion

By creating better awareness of climate change, through education and publicity, it will be easier to bring about the changes that are needed. The aim is to ensure everyone now and in the future can make informed choices in helping to mitigate and adapt to a changing climate.

MSP partners employ people, have customers, work in partnership with other organisations and may also have daily contact with the general public. Therefore they have an opportunity to utilise these contacts to raise awareness of climate change in Mendip. This requires a joint effort by every MSP partner, their employees, customers, partnership organisations and the general public to work together, to really make a difference. More importantly, Partners should lead by example.

It will be important to create champions of climate change and gain general support within the local community in promoting a more sustainable way of living and working in Mendip.

Using existing resources, schemes, projects and partnerships will be key. These will be able to offer established communication channels through which messages about climate change can be promoted. MSP partners have access to communication channels, including;

- Traditional media: newspapers, radio, TV, magazines
- Events: conferences, forums, speeches
- New media: website, e-mail
- Partnership marketing: sponsorship
- Internal communications: newsletters, brochures, reports
- Direct marketing: mail drops.

Some helpful sources of information on climate change and education can be found with:

- Defra
- Energy Saving Trust
- Carbon Trust
- Centre for Sustainable Energy - Glastonbury
- Regen SW
- Somerset Trust for Sustainable Development

Current actions in Mendip

Community Choices for Sustainable Living in Mendip

This is a 1 year project, in partnership with the Somerset Trust for Sustainable Development, which aims to support local voluntary groups to take action on the environment.

It works to recruit "community champions", support community groups and provide information through preparation of a locally focussed information pack.

*Jo Milling, Community Planning Officer, Mendip District Council –
01749 648999*

Mendip Partnership for Energy.

The MSP successfully applied for Invest to Save Budget funding for a 3 year programme to reduce carbon emissions from a range of public buildings in the District. Alongside this a public awareness raising campaign is being run, to take messages about energy efficiency to the wider community (the Mendip Energy Awareness Project).

The project is looking at energy efficiency in buildings and business travel by Mendip District Council, Somerset County Council, Somerset Primary Care Trust and Avon and Somerset Constabulary. It will suggest savings which can be made by each organisation and will go on to look at ways in which further savings can be made by partners acting together.

*Jo Milling, Community Planning Officer, Mendip District Council –
01749 648999*

Key Actions For MSP Partners

- The MSP should keep up-to-date with current climate change issues and identify how they can maximise their influence on mitigating and adapting to a changing climate in Mendip, as detailed in the next chapter.
- Identify a climate change champion for each MSP partner, to proactively raise awareness, and provide advice and information to customers, partners and those MSP partners who serve the general public.
- Educate all employees within each of the MSP partners about how they can contribute to both mitigating and adapting to climate change.
- Disseminate information and promote projects to customers and general public, building upon existing projects such as "Community

Choices for Sustainable Living' and 'Mendip Energy Awareness Project'.

- Encourage the Chief Executive at Mendip District Council to become the climate change champion for the Council.
- Create 'climate change' pages on Mendip District Council's website. The Council web pages could provide the key central point of information and links to partnerships, information and schemes, with links from each MSP partner to the Council's web pages.
- Use existing resources, schemes, projects and partnerships in Mendip Strategic Partnership organisations to provide materials, venues, resources and PR streams for educational and publicity purposes.
- The Centre for Sustainable Energy is seeking to hold a national Environment Day, based from Glastonbury. The MSP should integrate this into their work and possibly link into a 'Mendip Environment Day', which could include climate change as a topic, to involve a wide range of groups in Mendip, including schools, businesses and local residents.
- Identify opportunities to visit schools and colleges to deliver messages about climate change, including energy use, waste minimisation and recycling.
- Strode College and St Dunstan's School to collate best practice education material from all school and colleges in Mendip to share with other education establishments.

Topic 8

Leading role for Mendip Strategic Partnership

A key emphasis throughout this Climate Change Strategy is for all MSP partners to lead by example in their policies to achieve best environmental practice and commitment to mitigation and adaptation to climate change.

It is important that partner organisations take this leading role to influence employees, customers, partner organisations and the general public, wherever possible.

It will be important to ensure that all MSP partners produce a climate change assessment and plan, which should incorporate all environmental issues, including a Green Travel Plan. Where suitable larger organisations should seek to implement a recognised Environmental Management System (EMS), and smaller organisations could prepare a simplified environmental management plan.

In producing this strategy, however, it has been apparent that not all sectors that may have an effect on climate change are represented on the MSP. The MSP will need to work with all sectors to deliver the actions.

As a partnership the MSP can have a more powerful voice in influencing and lobbying organisations that can make a difference to climate change, both in Mendip and beyond, for example, producing joint responses to planning policy consultations. The partnership can also ensure that climate change is included as a cross cutting issue which has relevance to all the themes identified in the Community Strategy in future reviews of the document.

Above all, Mendip District Council, along with the Chamber of Commerce, should take on a leading role for mitigation and adaptation to climate change in Mendip, pooling information and resources, and providing a key senior level champion for action on climate change.

Actions and recommendations:

- Ensure climate change is discussed across all the themes included in any review of the Community Strategy.
- Identify any conflicts in the other aims and objectives of the Community Strategy with climate change objectives in order to suitably prioritise actions.
- All MSP partners should have a policy to achieve best environmental practice and commit to efficient use of energy and resources in all its business practices and lead by example to others. All partners to produce environmental assessment and green travel plan for their business, if not already undertaken.

- All MSP partners should produce a climate change assessment and plan, which should incorporate all environmental issues, including a Green Travel Plan. For smaller organisations, this could be a simplified version of the Environmental Management Systems (EMS).
- Recruit more partners to MSP to encompass all sectors that will have an effect on climate change in Mendip, and people who are in more senior roles with more influence in their respective organisations, including agriculture, tourism, heritage sectors in Mendip.
- Ensure that all environmental issues are represented, and if invite new members who do, to join the Environment Forum. This could include areas such as waste, agriculture, water.
- As a partnership the MSP should pool resources in influencing and lobbying organisations that can make a difference to climate change, both in Mendip and beyond, for example, producing joint responses to planning policy consultations.
- The MSP should encourage Mendip District Council to sign the Nottingham Declaration on climate change, which is a statement of intent to address climate change issues which has so far been signed by 83 councils, which emphasises the importance of awareness and working together.
- The Community Council could help inform small organisations on climate change and environmental schemes, including energy saving schemes, and how they can take advantage of funding and grants. The money saving potential should be highlighted.
- Chambers of Commerce to expand the Business Environment Network, to promote the Climate Change Strategy to all members through events, newsletter and other communication streams.
- MSP partners to work in partnership with each other or other organisations, in sharing Green Travel Plans, for example, where it may be possible to integrate car share schemes, car pools etc.
- The MSP should work towards specific quantified targets for the actions and recommendations of this strategy.

Taking the Climate Change Strategy forward

The MSP will need to consider how to take forward the actions set out in the Strategy.

Each Partner should consider how they can take forward action to tackle climate change, both individually and collectively.

A facilitated action planning process is recommended, involving all MSP partners. This will allow the MSP to identify those partners that are best placed to take ownership of the actions identified in the Strategy and to develop a timetable for implementation.

It will also encourage individual partner organisations to develop their own action plans for mitigation and adaptation across the whole range of their activities.

Key Actions

- Develop a process for preparing shared action plans, through a series of facilitated workshops for all MSP partner organisations.
- Encourage and support individual partner organisations to develop action plans across the full range of their activities.
- Continue regular meetings of the Climate Change Sub-Group, to act as a steering group for the action planning process.

Reviewing the Climate Change Strategy

- Review the strategy on a regular basis – annually
- Provide updates on climate change information and data relevant to Mendip.
- Monitor and report regularly to the MSP on progress.

Appendix A

Members of Mendip Strategic Partnership

- Avon and Somerset Police
- Barclays Bank
- Chambers of Commerce
- Community Support
- Elim in Wells
- Environment Forum
- Frome Jobcentre Plus
- Mendip District Council
- Mendip Housing Limited
- Somerset Primary Care Trust
- Mid Somerset Citizens Advice Bureau
- Natural England
- NCH (National Children's Home)
- Somerset County Council
- St Dunstons School
- Strode College
- Volunteering Network
- Wells Jobcentre Plus
- Young Somerset

Appendix B

Glossary of terms

BREEAM	Building Research Establishment Environmental Assessment Method
CH ₄	Methane
CHP	Combined Heat and Power
CO ₂	Carbon dioxide
CO ₂ equiv.	Greenhouse gases, Hydrofluorocarbons, methane, etc
DCLG	Department for Community and Local Government
Defra	Department for Environment, Food and Rural Affairs
EEACs	Energy Efficiency Advice Centres
EIA	Environmental Impact Assessment
GHG	Greenhouse Gas
HECA	Home Energy Conservation Act
HFC	Hydrofluorocarbons
HECA	Home Energy Conservation Act
LDF	Local Development Framework
ODPM	Office of the Deputy Prime Minister
PPG	Planning Policy Guidance
PPS	Planning Policy Statement
RDA	Regional Development Agency
RSS	Regional Spatial Strategy
SWCCIP	South West Climate Change Impacts Partnership
SWEDA	South West England Development Agency
SWERA	South West England Regional Assembly
SUDS	Sustainable Drainage Systems
UKCIP	United Kingdom Climate Impacts Programme
UKCIP02	Climate change scenarios for the UK from 2002
UKCIP08	Soon to be released (2008) climate change scenarios for the UK

Appendix C

Bibliography and resources

The Energy Saving Trust – aiming to reduce carbon dioxide emission by more sustainable energy use, push for renewable technologies, reduced energy for heating, cleaner fuels, provide advice and offer grants. Also developed the Nottingham Declaration for Climate Change for Local Authorities.

www.est.org.uk

Carbon Trust – helping the UK move to a low carbon economy by helping business and the public sector reduce carbon emissions and capture the commercial opportunities of low carbon technologies www.carbontrust.co.uk

UK Climate Impacts Programme - provides scenarios that show how our climate might change and co-ordinates research on dealing with our future climate. <http://www.ukckip.org.uk>

South West Climate Change Impacts Partnership – uses the UK climate scenarios to look at the implications for the South West

<http://www.oursouthwest.com/climate/>

Built environment

www.bre.org.uk

UKCIP (2003) Building Knowledge for a Changing Climate: The impacts of climate change on the built environment

Three Regions Climate Change Group (November 2005) *Adapting to climate change: a checklist for development*

Hacker JN, Bekker SE & Connell RK (2005) *Beating the heat: keeping UK buildings cool in a warming climate*. UKCIP Briefing Report. UKCIP Oxford.

DCLG (December 2006) Code for Sustainable Homes: a step change in sustainable homes building practice. DCLG.

DCLG (2006) Planning Policy Statement Planning and Climate Change: a supplement to planning policy statement 1 (Consultation). DCLG.

Travel and transport

www.dft.gov.uk Sustainable travel

DfT (2002) *Making Travel Plans Work: Lessons from UK Case Studies*

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

Renewable Energy

www.dti.gov.uk

<http://www.dti.gov.uk/energy/sources/renewables/index.html> - details on renewable energy, including teaching packs, grants for renewable energy schemes

<http://www.dti.gov.uk/energy/sources/sustainable/index.html> - details of new energy technologies including microgeneration

ODPM (March 2006) Low or Zero Carbon Energy Sources: Strategic Guide

Land management and the natural environment

Defra (2001) Planting and Growing Miscanthus : Best practice guidelines for applicants to DEFRA's energy crop scheme

Business

UKCIP (2005) *A changing climate for business: business planning for the impacts of climate change*

Local authorities

UKCIP (2003) *Climate Change and Local Communities – How prepared are you?*

The Nottingham Declaration on Climate Change

<http://www.est.org.uk/housingbuildings/localauthorities/NottinghamDeclaration/>

General

Palutifkof, JP, Subak S. and Agnew MB (20??) *Impacts of the Exceptionally Hot Weather of 1995 in the UK* (CRU, UEA)