Exeter Climate Change Strategy

2007 - 2017

DRAFT

"There is still time to avoid the worst impacts of climate change, if we act now and act internationally. Governments, businesses and individuals all need to work together to respond to the challenge. Strong, deliberate policy choices by governments are essential to motivate change."

Sir Nicholas Stern, 2006

Executive Summary

Climate change is real and its implications are global. The need for action at all levels is urgent. Exeter City Council, working in partnership with others, has a vital role to play not only in the way it runs its own business but also as a leader of the community. This strategy aims to address the climate change challenges faced by Exeter. Our efforts and those of our partners in Exeter Vision will be directed towards **reducing Exeter's carbon dioxide emissions (CO_2) by 30% by 2020** (from the government's 1990 baseline). This will allow Exeter to make its full contribution to national targets in this area. To make sure that we are in line to achieve this, we have set out a 10-year strategy for climate change, which covers 5 themes. Progress in relation to each theme will be underpinned by creation of an action plan, which will be subject to regular review and monitoring.

1. **Reducing emissions from the energy we consume and increasing the use of local (sometimes called 'decentralised') and renewable sources of energy (e.g. solar power)**

   We will endeavour to increase the energy efficiency of housing in the city and will explore the use of renewable heating technologies for our council housing. We will ensure that all new local authority-led development, including affordable homes, achieves excellent environmental standards for construction and energy efficiency. We will sponsor exemplar developments to demonstrate what is achievable in this area. We will appoint an independent expert to research the scope for 'decentralised' and renewable energy across Exeter and depending on the results of that study, establish an Energy Services Company (ESCO), potentially in partnership with others. An ESCO would then lead on developing 'decentralised' energy provision for Exeter.

   We will draft a Local Development Framework, which in setting the planning context for the future of Exeter beyond 2008, places emphasis on low-carbon and sustainable development. Informed by the Regional Spatial Strategy, we will move ahead of the government's plans for the introduction of improved energy efficiency standards for development. In the meantime, we will introduce supplementary planning guidance, which says that all larger-scale new developments and conversions should seek to incorporate on-site renewable energy equipment to reduce predicted carbon dioxide emissions by at least 10% (the so-called 'Merton Rule').

2. **Reducing emissions linked to transport**

   In partnership with others, in particular, Devon County Council as Transport Authority, we will encourage behavioural change among the residents, visitors and workers of Exeter through the implementation of sustainable travel objectives as set out in the Devon Local Transport Plan and elsewhere.

Where practical, we will use city parking policy to encourage a) the use of public transport and other sustainable travel modes and b) the ownership of more carbon-efficient cars. We will consider applying an additional, though modest, 'carbon offset fee' on Council car-park charges, which will be used entirely to invest in sustainable transport and energy initiatives within Exeter.

We will encourage public transport providers to invest in carbon efficient fleet (e.g. using bio-fuels/hybrid models). We will consider using licensing requirements to encourage taxi and private hire operators to invest in increased carbon efficiency across their fleet.

Within the City Council, we will achieve a reduction in the number of staff who travel to work by car. We will reduce business travel by non-sustainable means and we will ensure that the Council's own vehicle fleet uses the most carbon efficient and effective fuel/energy source.

We will help to reduce 'food miles' by supporting the market for locally sourced food.

3. Reducing emissions linked to the disposal of waste

We will work towards Exeter becoming a Zero-Waste city. To that end, we will offer high quality recycling infrastructure and services with the aim of recycling 40% of domestic waste by 2011. We will investigate how best to provide a recycling service for trade waste and will provide support for the voluntary sector to undertake recycling initiatives. As a City Council, we will reduce our own resource consumption and waste.

4. Exercising our role as community leader by raising awareness of climate change across Exeter and by improving capacity to respond to it.

We will sponsor an independent review of the information and advice facilities, resources and other skills, support and services available to Exeter business and residents in relation to climate change. Where unmet need is identified or where limitations in the supply of services are revealed, we will lead on proposing additional services, taking full account of the views of residents, business and providers of existing services.

Taking into account the results of this review, we will raise awareness of the impacts of climate change and encourage local residents, landlords, developers and businesses to reduce carbon emissions. We will do this by using grants and incentives, accreditation tools and a variety of media, and by supporting other organisations involved in delivering change in this area. We will work with the University of Exeter and the Met Office to deliver flagship 'case study' projects focused on the practical application of the latest research techniques and understanding in relation to climate change.

We will work with the Carbon Trust, through the Local Authority Carbon Management Programme, to calculate a baseline 'carbon footprint' for the City Council and a set of measures to further reduce the Council's greenhouse gas emissions in support of our aspiration to become a carbon neutral council.

5. Taking measures to 'adapt' to the effects of climate change, recognising that a certain amount of climate change is already inevitable.

We will use land-use planning frameworks to help manage the environmental consequences of climate change. We will work with organisations like the South West Climate Change Impacts Partnership to keep abreast of knowledge in this area and we will continue to review and update Council emergency planning processes to take account of new understanding. We will regularly assess the anticipated impacts of climate change on existing council policies and services, and we will make sure that all new Council policies, programmes and plans, infrastructure and maintenance regimes are 'climate-proofed' against projected changes.

1. Our Ambition for Exeter

"There is no longer any real debate over the fact that climate change is happening and that man-made emissions are the main cause. The evidence is stark as to the serious and urgent nature of climate change and the consequences we face from our every-day activities."

David Miliband, Secretary of State for Environment, Food and Rural Affairs, 2007

Climate change is real and its implications are global. The need for action at all levels is urgent. Local government, working in partnership with others, has a crucial role to play, both in the way it runs its own business and as a leader of the community. To that end, and as part of our obligation under the Nottingham Declaration on Climate Change and the Devon Wide Declaration on Climate Change and Fuel Poverty, Exeter City Council has produced this strategy. It aims to address the climate change challenges faced by Exeter and does so within the context of the Exeter Vision Partnership's ambition for a city where the environment - understood in its broadest sense - is cared for.

In the strategy, we offer a brief definition of climate change, its implications and the case for taking action now (section 2). In section 3, we outline the action that is already happening to tackle climate change across all levels of governance. In sections 4 and 5, we set out a strategy for addressing climate change in Exeter, covering five themes. Whilst the challenge of climate change is a daunting one, we take hope from Stern and others who say that action now represents a good investment for the future.

Our Commitment – Devon Wide Declaration on Climate Change and Fuel Poverty

- Work with central government to contribute, at a local level, to the delivery of the UK climate change programme.
- Actively support the work of the Devon Sustainable Energy Network
- Prepare a plan with our local communities including key stakeholders within the health and business sectors to mitigate the causes of climate change and fuel poverty and to secure maximum benefit for our communities
- Integrate within this plan the implications and actions contained within Devon's Affordable Warmth Strategy, Devon's Renewable Energy Strategy and Action Plan, and the Community Strategies of the county, district & unitary authorities
- Publicly declare within the plan, the commitment to achieve a significant reduction of greenhouse gas emissions from the authority's operations especially energy sourcing and use, travel and transport, waste production and disposal and the purchasing of goods and services.
- Encourage all sectors in the local community to take the opportunity to reduce their own greenhouse gas emissions and to make public their commitment to action.
- Promote and support opportunities for the supply of renewable heat and electricity within our area and work with all Devon authorities and other key stakeholders to meet Devon's renewable electricity target of 151 MW by 2010, as expressed within the Devon Structure Plan. Opportunities for renewable energy should take into account Devon's landscape character in balancing local impacts with wider issues such as climate change.
- Work with key providers, including health and business and development organisations, to assess the potential effects of climate change on our communities, and to identify ways in which we can adapt.
- Monitor the progress of our plan against the actions needed and publish the results.

2. Understanding Climate Change

"The need to tackle climate change is urgent. All of us are aware, on some level at least, of the impact that climate change is having on our world."

David Cameron, Conservative Party Leader, November 2005

This statement is a reminder that we need to act. Recent floods, storms and droughts both here and abroad illustrate how vulnerable we all are to extremes of climate and illustrate the high human, environmental and economic costs involved. There is now an overwhelming body of scientific evidence highlighting the serious and urgent nature of climate change and that this is caused by a build-up of man-made emissions of greenhouse gases in the atmosphere.

The Intergovernmental Panel on Climate Change (IPCC) report, published in February 2007, shows conclusively that the debate over the science of climate has moved on from whether or not it is happening to what action we need to take. Indeed the report from Sir Nicholas Stern's Review on the Economics of Climate Change (October 2006) states that *"The scientific evidence that climate change is a serious and urgent issue is now compelling."*

2.1 What is Climate Change?

Climate change is any long-term changes or fluctuations in weather patterns, including changes in temperature, rainfall, cloud cover or prevailing wind direction. Climate change happens naturally due to a variety of factors, such as changes in the earth's orbit around the sun and the output of solar radiation, for example. However, since the Industrial Revolution of the 1750s atmospheric concentrations of greenhouse gases have increased at an accelerating rate as a result of human activities. In the late 1970s it was recognised that this human influence may be causing a 'global warming', resulting in changes to the climate system.

The mechanism behind the heating effect is called the 'greenhouse effect', which is a natural phenomenon that keeps the earth warm (see Figure 1). Some gases in the Earth's atmosphere act like a blanket and trap heat, keeping the surface temperatures approximately 30^{o}C higher than they would be if the major greenhouse gases were not present. These gases include water vapour, carbon dioxide, methane, nitrous oxide, ozone and several other trace gases. The release of additional greenhouse gases from changes in land use, the burning of fossil fuels and various industrial processes adds to the blanket, causing it to trap more of the sun's energy and leading to rising global average temperatures and changes to the Earth's climate.

The IPCC report confirms that atmospheric concentration of the major greenhouse gases, carbon dioxide, methane and nitrous oxide have all increased significantly since industrial times because of human activities. For example, the current level of greenhouse gas emissions in the atmosphere is equivalent to 430ppm (parts per million) of carbon dioxide, compared with only 280ppm before the Industrial Revolution. This concentration is far higher than the natural range of 180-300ppm over at least the last 650,000 years, as determined from ice cores.

"We've reached the point where it's only by including human activity that we can explain what's happening."

Dr Geoff Jenkins, Hadley Centre

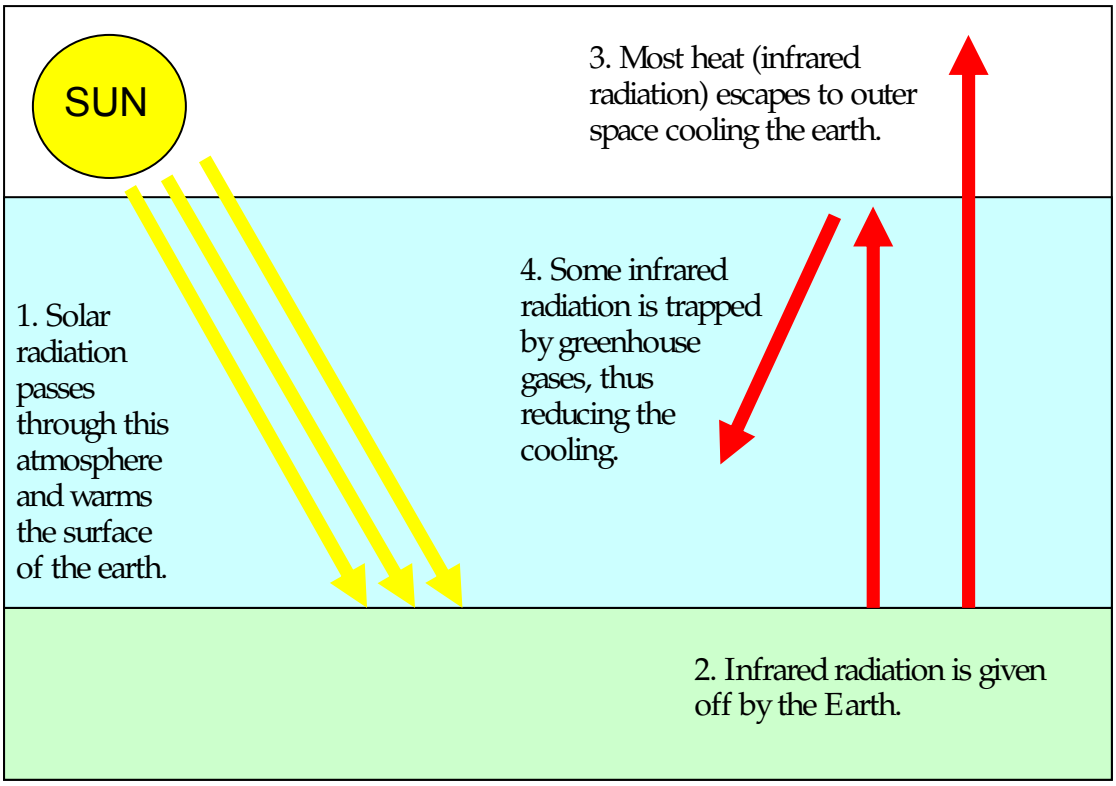


Figure 1: The Greenhouse Effect. Source: Reproduced from the Stern Review (October 2006)

2.2 Changes to Our Climate

Changes to our climate are already being seen as a result of increased concentration of greenhouse gases. Global mean temperatures have risen by 0.74°C over the past century, with 0.4°C of this warming occurring since the 1970s and a similar picture has been seen locally - the mean annual temperature in Exeter has risen by 0.9°C since 1900. In addition, the warmest decade in Exeter was observed between 1995 and 2005, during which 7 of the 10 warmest years recorded occurred. Only 1921, 1989 and 1990 were warmer. There is also evidence that rainfall has increased by up to 1% over most Northern Hemisphere mid-latitudes and that there has been up to a 4% increase in the frequency of heavy precipitation events. In addition, average sea level around the UK has risen by about 10cm during the 20th century, mainly as a result of the thermal expansion of the oceans.

How climate change progresses will be dependent on future greenhouse gas emissions, which in turn will be determined by how the population grows and how economies, energy technologies and societies develop. In a business-as-usual world carbon dioxide concentrations will be double the pre-industrial level by the middle of the 21st century and will double again by the end of the century. At such concentrations global average surface temperature could rise by up to 5.8°C and sea level by almost a metre (IPCC). A climatic change of this magnitude would be far outside the experience of human civilisation and comparable to the difference between temperatures today and the last ice age.

At a local level, the predictions for Devon estimate a 1°C temperature rise by 2020, followed by a 1.4°C to 2.3°C rise by the 2050s and further heating to a reach a 4.0°C rise by the 2080s (UKCIP). Climate change may also reduce annual rainfall by up to 8% by the 2080s and winters may become up to 30% wetter and summers up to 55% drier. Extreme weather events will also become more prevalent, with an increase in the frequency and intensity of winter storms and heavier rainfall events and much hotter, drier summers with associated water shortages (SWCCIP, 2003). The impacts of these changes on society and on biodiversity will be very significant.

2.3 The Case for Taking Action Now

As a result of the significant time lag in the climate system between cause and effect, the climate change that is occurring today is caused by the greenhouse gas emissions released 40-50 years ago. As a result, what we do now can only have a limited effect on our climate over the first half of this century. However, the actions that we take in the next 10 to 20 years can have a profound effect on the climate in the second half of this century and the next. Therefore the longer we delay the shift to a low carbon economy the more likely we are to experience the more extreme and potentially dangerous climate change scenarios for the 2080s.

As well as having impacts on the world's climate, people, wildlife and ecosystems, climate change will have substantial economic consequences. Already the financial impacts of climate change are being experienced across the world due to weather-related events and it is likely that these costs will escalate in the future. The Stern Review provides compelling economic reasons to address climate change and emphasises that the benefits of strong and early action far outweigh the economic costs of not acting. *"There is still time to avoid the worst impacts of climate change, if we act now and act internationally."* The report also states that strong action to reduce emissions must be viewed as an investment, a cost incurred now and for the coming few decades to avoid the risks of very severe consequences in the future.

To achieve a stabilisation of atmospheric greenhouse gases at a level that would avoid the more damaging effects of climate change the world needs to reduce overall emissions by about 50% (stabilising within the range of 450-550ppm CO_2 equivalent), compared to current levels (430ppm). The Stern Review estimates the annual cost of stabilisation at 550ppm CO_2 equivalent to be around 1% of GDP – a level that is significant but manageable.

3. Action to Tackle Climate Change

"We are at a crucial moment in history. Climate change is now the biggest challenge facing the world. And we must all rise to meet it. The next ten years are the point of no return. What we do now will affect future generations in ways we can only imagine."

Menzies Campbell, Liberal Democrat Leader, June 2006

3.1 International Action

Climate change is a global problem and therefore needs a concerted global response to tackle it. As a result, the international community is working together to tackle and reduce the effects of climate change. Over a decade ago, most countries joined an international treaty, the United Nations Framework Convention on Climate Change (UNFCCC), to begin to consider what can be done to reduce global warming and to cope with the inevitable changes to the climate. Recently, a number of nations approved an addition to the treaty – the Kyoto Protocol. The protocol came into force in 2005 and sets legally-binding greenhouse gas emission targets for each of the 55 countries that ratified it, including a target for the UK to reduce overall greenhouse gas emissions to 12.5% below 1990 levels by 2010. The figures for the UK for 2005 show that whilst greenhouse gas emissions have fallen by 15.3% since 1990, only a 6.4% reduction has been made for carbon dioxide, which is just 0.1% lower than in 2004.

3.2 National Action

The UK government has committed itself to a global leadership role by putting in place a programme of measures to reduce greenhouse gas emissions. The UK Climate Change Programme 2006 sets out how the UK plans to deliver its Kyoto target and move towards its goal of cutting carbon dioxide missions by 20% below 1990 levels by 2010. The Energy Review 2006 "The Energy Challenge" introduced proposals to put the UK in a position to tackle climate change by reducing carbon dioxide emissions and to deliver secure, clean energy at affordable prices. The UK government has recently sought to cast in statute a mandatory 60% cut in the UK's carbon emissions by 2050 (compared to 1990 levels), with an intermediate target of a 26%-32% cut by 2020 (draft Climate Change Bill 2007).

To meet these goals, the government has introduced a number of initiatives and policy instruments to make the transition to a low carbon economy, including measures to promote energy efficiency in homes and businesses, the introduction of emissions trading for industry, a strategy to support the growth of combined heat and power, support for microgeneration technology, measures to encourage the take up of less polluting vehicles and fuels, improvements to the Building Regulations and a new Code for Sustainable Homes. Many of these initiatives are backed up by targets, including the requirement for 10% of new UK vehicles to be low carbon by 2012, 10% of road fuel and 20% of electricity to come from a renewable source by 2020 and all new homes to be carbon neutral by 2016, as well as targets for the recycling of waste and reduction in biodegradable waste sent to landfill.

In addition to promoting emissions reduction, the government recognises that there is a pressing need to identify the impacts that climate change will have and prepare appropriate adaptation responses. As a result, the UK Climate Change Impacts Programme was set up in 1997 to work with stakeholders and co-ordinate research on how climate change will have an impact at regional and national levels.

3.3 Regional Action

At the regional level, action to tackle climate change is being taken forward through the Regional Spatial Strategy, Regional Environment Strategy, Regional Renewable Energy Strategy, Integrated Regional Strategy and through initiatives such as the Regional Sustainable Development Framework. To address the adaptation agenda, the South West Climate Change Impacts Partnership was established in 2001, to investigate, inform and advise on the impacts of climate change in South West England and to influence the strategies and plans of key partners and stakeholders. In 2003, the partnership published a scoping study entitled "Warming to the Idea", which sets out the likely impacts of climate change on the South West and what needs to be done to adapt. The work of the partnership is being taken forward through a number of priority sector groups, including one for local authorities.

3.4 Role of Local Government

Whilst action at an international and national level is needed, local action is of vital importance. The Local Government White Paper 2006 stresses the pivotal role that local government has in achieving sustainable development and mitigating and adapting to climate change. It gives local government new opportunities to drive local action on climate change mitigation and adaptation. The government also stresses that local authorities are critical to the success of the UK Climate Change Programme *"Local authorities are uniquely placed to provide vision and leadership to local communities, raise awareness and help change behaviour. In addition, through their powers and responsibilities e.g. housing, planning, local transport, powers to promote well-being and through activities such as their own local procurement and operations, they can have significant influence over emissions in their area"*.

3.5 Role of the Local Strategic Partnership

Exeter's Local Strategic Partnership (Exeter Vision) was set up in 2000 to represent the public, private, voluntary and community sectors in the city and to produce and deliver a sustainable community strategy, turning the vision of a sustainable community into reality. The partnership is currently developing a new sustainable community strategy for the city for 2008 onwards. This will draw together the long-term economic, environmental and social aspirations, priorities and needs of the local area and promote continued sustainable development and inclusive communities.

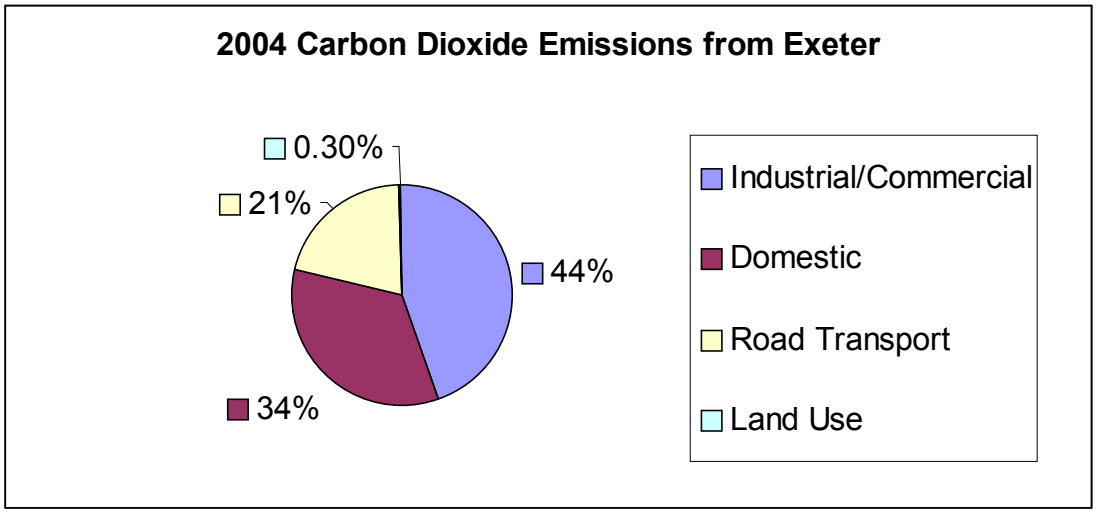
3.6 Role of Exeter City Council

As a community leader, as well as a service provider and corporate manager, Exeter City Council has a key role to play in mitigating carbon emissions from its own operations as well as in the wider community and in providing leadership on how the city can adapt to climate change. The Council has already demonstrated a commitment to reducing greenhouse gas emissions by signing the Nottingham Declaration on Climate Change and the Devon Wide Declaration on Climate Change and Fuel Poverty. This means that the Council recognises that climate change is likely to be one of the key drivers of change within our community this century and commits us to preparing a plan to address the causes and effects of climate change. This strategy fulfils that commitment.

4. Mitigating Climate Change

4.1 Exeter's Greenhouse Gas Emissions

In 2004, Exeter produced an estimated 709 kilo tonnes[1] of carbon dioxide from energy consumption, road transport and land uses[2]. The biggest sources of carbon dioxide emissions are from energy use in the commercial/industrial sources (44%) and the domestic sector (34%) and from road transport (21%). Accurate data for waste emissions is not available, so it has been excluded from the footprint, however, estimates suggest that its contribution is small. These estimates can be used to inform priorities for actions to reduce carbon emissions within the city.



Whilst average household energy consumption in Exeter has reduced marginally in recent years, the growing number of new households in the city has caused overall consumption to increase. This is in line with the national picture where domestic energy consumption has increased by over a third in the thirty years to 2001. In that time, energy use per household has increased by only 5%[3]. Growth in the proportion of households with central heating and in the ownership of household electrical appliances has to a certain extent been offset by improvements in energy efficiency.

The Regional Spatial Strategy outlines the prospect of a further 525 dwellings per year to be built in Exeter up to 2026, increasing the current population by around 10%. Unless action is taken soon to ensure that these dwellings are built to high standards of sustainability, including carbon neutrality, Exeter's emissions will continue to rise, making achievement of targets for carbon reduction all the more difficult.

In the UK, emissions from transport are rising faster than from any other sector, primarily due to increased air travel. Emissions from road transport continue to rise due to increase in car ownership and use, though improvements in technology are helping to reduce the rate of increase. The introduction of higher standards for new cars, increased use of low carbon fuels and a modal shift to more sustainable forms of transport are needed to achieve a significant reduction in emissions.

More positively, the amount of domestic waste disposed of to landfill has reduced by nearly a third in Exeter over the last five years, largely due to increased recycling rates. A similar trend has been observed for commercial and industrial waste[4]. A further reduction in emissions is forecast as recycling rates increase still further and the move away from landfill disposal continues.

1 = Source DEFRA (data excluding air travel)
2 = Net emissions from land use, land use change and forestry
3 = Office for National Statistics
4 = Environment Agency

4.2 What does Exeter need to do?

Action to tackle climate change depends on significant international, national and local regulatory and policy change. Exeter can only do so much. In what follows, we focus on what *can* be achieved, and achieved locally, in the coming years. All of our efforts and those of our partners in Exeter Vision will be directed towards **reducing Exeter's carbon dioxide emissions by 30% by 2020***. This will allow Exeter to make its full contribution to the government's target of a 26%-32% reduction in emissions between 1990 and 2020.

As well as safeguarding the future, many of the initiatives that reduce emissions also reduce costs and therefore produce clear net economic benefits, even before counting the indirect economic benefits of avoiding the negative impacts of climate change. Many of the measures to reduce greenhouse gases also directly benefit our communities, businesses and the economy. For example, using energy efficiently, better insulation in our homes, cleaner engines/fuels and better public transport systems not only reduce emissions, but also help to improve our quality of life.

Our strategy covers 5 overarching themes:

1. Reducing emissions from energy consumption and increasing the use of decentralised and renewable sources of energy in Exeter
2. Reducing emissions associated with transport
3. Reducing emissions associated with the disposal of waste
4. Exercising community leadership by raising awareness of, and building the capacity to respond to, climate change across Exeter
5. Taking measures to adapt to the effects of climate change (covered in Section 5)

We address each of these themes below (see also Exeter's Environmental Strategy (2007-2012)).

*Note: The baseline year for the government's target is 1990, however, the earliest data available for Exeter's carbon footprint is 2004. Based on the assumption that carbon dioxide emissions in Exeter have fallen at the same rate as nationally i.e. by 6.4% between 1990 and 2004, emissions need to be reduced by approx 25% compared to 2004 levels to meet the government's target.

Theme 1: Energy

Reducing energy consumption is a key part of our approach to tackling greenhouse gas emissions. Nearly 80% of Exeter's carbon dioxide emissions come from energy use across the domestic, industrial and commercial sectors.

In the medium to long term the goal is to move to a mixed economy of energy supply in Exeter. This will involve much greater use of decentralised energy and renewable technologies. As well as resulting in lower carbon emissions these technologies also benefit from low transmission losses and improved energy security. While the transition to a low carbon economy will take time to achieve, there is a more immediate opportunity to integrate such decentralised technology into new developments and to ensure they are built to high standards of energy efficiency. Our strategy seeks to encourage this approach.

Our priority is also to lower energy consumption in existing homes and businesses in the city. Within the domestic sector, the greatest scope for improvement lies in private sector homes as these properties make up the majority of the housing stock and, in general, have a lower level of energy efficiency than social housing. Given that nearly 75% of domestic energy is used for space and water heating, improving the insulation of homes is a key priority. Despite considerable progress in recent years, it is estimated that over 50% of the private sector housing stock still require improvements to their loft insulation, whilst 40% would benefit from cavity wall insulation and 25% from hot water cylinder insulation. Further improvements are also possible by increasing double-glazing and installing more efficient or lower carbon forms of heating. There is, however, considerably less scope to reduce carbon dioxide emissions from the Council's own housing stock as virtually all homes now have double-glazing, cavity wall insulation and loft insulation. To provide further savings will require increased use of external and vacuum insulation and the installation of renewable energy measures.

Emissions from the industrial and commercial and public sectors represent the biggest source of carbon dioxide emissions in Exeter. Reducing emissions in these sectors need not, and indeed should not, be an impediment to the city's economic growth. Actions can be taken that both cut energy costs and reduce carbon dioxide emissions. Enhanced energy efficiency is one of the cheapest ways for commercial organisations to deliver corporate social responsibility.

Strategic Aims

To reduce greenhouse gas emissions from energy use in the city by:

- Implementing, facilitating and encouraging the adoption of energy efficiency measures and low carbon technology in both new and existing development
- Moving towards a mixed economy of energy supply through greater reliance on decentralised and renewable energy sources

Proposals

1. We will continue to work to eradicate fuel poverty in vulnerable households in the city by 2010 (and in all households by 2016) and will achieve a 30% reduction in carbon dioxide emissions from Exeter households by 2010 from a baseline of 1996 levels* (Home Energy Conservation Act). To that end, we will continue to provide grants to improve the thermal efficiency of housing and raise awareness of energy saving measures. We will also continue to invest in measures to improve the energy efficiency of Council housing so that an average SAP rating of 70 by 2010 is achieved. We will trial the use of solar water heating and will assess the feasibility of introducing biomass technologies into Council housing.

* Note: an estimated improvement in energy efficiency of 26% was achieved between 1996 and 2006 as a result of the installation of energy efficiency measures in domestic properties in Exeter.

2. We will appoint external expertise to research the potential for decentralised energy supply in Exeter (e.g. local heat and power networks, renewable energy etc). Subject to the outcomes of this study, we will hold a competition to appoint a private sector energy partner to work with us to create a venture energy services company (ESCO) whose purpose is likely to be one of identifying sites, designing, financing, building, owning and operating local decentralised energy systems for both new and existing development in the Exeter area. The focus will be on the use of additional renewable and combined heat and power technologies. We will build on current partnership working with neighbouring local authorities (for example, East Devon in relation to the New Growth Point) to achieve this. As a secondary measure, we will explore the commercial/operational feasibility and compatibility of the same company also acting as a bulk purchaser of (non-local) renewable energy for use in Council housing in the city.

3. We will prepare a Local Development Framework for Exeter, which places emphasis on the need to reduce energy consumption, increase energy efficiency, promote the efficient use of materials and resources, provide adequate waste and recycling storage facilities and promote renewable energy in all development. We will take careful account of the South West Regional Spatial Strategy in relation to sustainable construction and on-site renewable energy generation. We will move ahead of the government's planned trajectory for the introduction of improved energy efficiency standards in Building Regulations and will explore the use of planning conditions to impose standards (referring to the BREEAM and Code for Sustainable Homes as our guide). We will also explore the appropriateness of carbon offsetting arrangements, implemented as part of Section 106 agreements, which would be used entirely to invest in sustainable transport and energy initiatives within Exeter.

4. Prior to the formal adoption of the Core Strategy of the Local Development Framework (expected late 2008), we will introduce supplementary planning guidance, which will require compliance with Policy CP16 of the Core Strategy 'Preferred Options'. All larger-scale new developments and conversions should seek to incorporate on-site renewable energy equipment to reduce predicted carbon dioxide emissions by at least 10%. The City Council will offer advice and support to developers to achieve these objectives.

5. For those developments that fall to the City Council's Building Control function to inspect we will ensure that such developments meet improving energy efficiency standards to be set out in the Building Regulations over the next 9 years. We will also use Building Control expertise to support the planning function in reviewing the carbon efficiency of developments.

6. We will work with regional agencies, East Devon and Devon County Council to make sure that development linked to the new Growth Point designation, which encompasses the New Community, Sky Park and Science Park, is a model for sustainability.

7. We will ensure that all new development (including affordable homes) that is funded or otherwise resourced by the local authority achieves excellent environmental standards for construction and energy efficiency (using BREEAM and the Code for Sustainable Homes as our guide). To demonstrate best practice in this area we will construct exemplar affordable 'ecohomes' in the city.

8. We will review our own estate to consider further opportunities for the introduction of energy efficiency measures and the installation of renewable energy technologies and will seek to maximise the purchase of green electricity.

Theme 2: Transport

In 2004, 21% of carbon emissions in Exeter came from road transport. We know, for example, that approximately 15,500 vehicles access the city via the 7 main routes in the morning peak alone and that car ownership has risen by 30% in the last 10 years. In partnership with the Highway Authority we need to do more to reduce the need to travel (in business and in our home life), to promote sustainable alternatives to the private car, and to promote the use of less polluting vehicles and fuels.

Strategic Aims

To reduce greenhouse gas emissions from transport in the city by:

- Ensuring that new development is located in areas with easy access to public transport, cycling and walking routes and within easy access of community services and facilities to reduce the need to travel by private car
- Increasing opportunities for sustainable travel as an alternative to the private car and encouraging behavioural shift in favour of more sustainable travel
- Encouraging public transport providers to adopt lower polluting vehicles and fuels

Proposals

1. In partnership with others, in particular, Devon County Council as Transport Authority, we will encourage behavioural change among the residents, visitors and workers of Exeter through:
    - The implementation of the sustainable travel objectives set out in the Devon Local Transport Plan (specifically car sharing; household, school and business travel-planning; park and ride facilities; strategies for improving air quality on key arterial routes; local rail network investment; and reviewing the case for the introduction of demand management measures, which include road user charging).
    - The construction of high-quality and sustainable public transport links between the City and the proposed new community to the East of Exeter (working with regional agencies, East Devon District Council and developers as well as Devon County Council), and similarly with other significant future development.
    - The refinement of city parking policy to encourage a) the use of public transport and other sustainable travel modes and b) the ownership of more carbon-efficient cars. In particular, we will consider applying an additional, though modest, ‘carbon offset fee’ on Council car-park charges, which will be used entirely to invest in additional sustainable transport and energy initiatives within Exeter.
    - Continued investment in sustainable modes like cycling and walking.
    - The promotion of sustainable transport options for visitors and tourists to Exeter and for residents to take holidays locally to reduce air travel.

2. In partnership with the Transport Authority, we will encourage bus operators and other significant public transport providers to invest in transport fleet to deliver carbon efficiencies (e.g. through use of bio-fuels/hybrid models). We will also consider the application of licensing requirements to encourage taxi and private hire vehicles to invest in increased carbon efficiency across their fleet.

3. We will take action in relation to our own business to:
    - Achieve a reduction in the number of City Council staff who travel to work by car by implementation of a range of incentives, including home-working, as part of the Exeter City Council Green Travel Plan.
    - Reduce City Council business travel by non-sustainable means and ensure that the Council's own vehicle fleet continues to use the most carbon efficient and effective fuel/energy source.
    - Train key staff in fuel-efficient driving techniques, in order to further reduce carbon emissions

4. In an effort to reduce 'food miles', we will continue to facilitate the market for locally sourced food through awareness raising, specialist markets (including Exeter's Farmers' Market) and events e.g. Exeter Festival of South West England Food and Drink, Best Local Food Awards etc.

Theme 3: Waste

Waste is a growing problem, and its appropriate disposal is a central part of the strategy to reduce the effects of climate change. Waste disposed of to landfill produces carbon dioxide and methane, which is a potent greenhouse gas, with a global warming potential over 20 times higher than carbon dioxide. Increased recycling of waste and alternative treatment facilities for residual waste are therefore required, as well as reducing waste production at source. The Council is making good progress in terms of reducing carbon emissions from waste, with 30% of domestic waste recycled/composted in 2005/06.

Strategic Aims

To reduce greenhouse gas emissions from waste disposal in the city by:

- encouraging waste minimisation at source
- encouraging and facilitating the reuse, recycling and composting of waste by residents and businesses
- reducing landfill disposal of biodegradable waste

Proposals

1. We will work towards Exeter becoming a Zero-Waste city, by encouraging local residents and businesses to create less waste through the efficient use of resources and sustainable purchasing decisions. We will continue to offer a high quality recycling infrastructure and service and encourage local people to recycle and compost their waste, with a view to achieving a recycling rate for domestic waste of 40% by 2011. We will investigate how best to provide a recycling service for trade waste and will provide support for the voluntary sector to undertake recycling initiatives.

2. We will adopt the principles of the 'waste hierarchy' in relation to our own activities, in order to reduce resource consumption and to minimise the amount of waste disposed of and the production of greenhouse gases. To achieve this, we will undertake initiatives to reduce paper consumption and other resources, ensure that all Council sites have adequate recycling facilities and compost green waste from our grounds maintenance activities.

Theme 4: Exercising Community Leadership

Of all the options considered in this document, helping Exeter's residents and businesses to reduce their own carbon footprint offers the greatest opportunities to cut emissions quickly, cost effectively and with significant additional benefits. By raising awareness and developing the capacity for local businesses and residents to respond to climate change, Exeter City Council will be succeeding in its ambition to deliver true community leadership in this area.

Strategic Aims

- Raise awareness and understanding amongst individuals and organisations about the causes and effects of climate change.
- Develop the capacity for local residents and businesses to reduce their greenhouse gas emissions.

Proposals

1. We will sponsor a comprehensive review of the information, advice, financial support, project management, assessment, brokerage and 'green accreditation' services and skills available to Exeter business and residents in relation to climate change. Where unmet need is identified or where limitations in the supply of services are revealed, we will lead on proposing additional services, taking full account of the views of residents, business and providers of existing services (for example, the Energy Saving Trust through the Devon Energy Advice Centre and the SW Envision Project). We will also establish systematic processes for the regular monitoring of opportunities for external funding to underpin significant climate change initiatives in Exeter.

2. We will raise awareness of the impacts of climate change and encourage local residents, landlords, developers and businesses to reduce carbon emissions, through changes in behaviour and take up of grants and other incentives. We will do this through a variety of media, including events, awareness campaigns, award schemes, signposting, competitions and training. We will also draw on the support of partners in the energy industry to facilitate awareness-raising projects and will provide support and endorsement for community/voluntary sector initiatives. For example, we will support the Exeter Resource Efficiency Club and Low Carbon Exeter, promote the Green Tourism Business Scheme and work with Sustainability South West on their 'Fair Shares Fair Choice' programme.

3. We will work with partners, building designers and the construction industry (small and medium size businesses in particular) to increase capacity in Devon and the South West to deliver sustainable living (for example, through the Devon Sustainable Building Initiative). We will work to implement a 'Green Accord' for contractors working on behalf of the City Council and we will do more to promote sustainable procurement in Exeter.

4. We will work with the University of Exeter (for example, building on our existing relationship with the Centre for Energy and the Environment through associate membership of the South West Energy and Environment Group) and the Met Office to deliver flagship 'case study' projects focused on the practical application of the latest research techniques and understanding in relation to climate change mitigation (achieving carbon zero development for example).

5. Building on previous initiatives, we will work with the Carbon Trust, through the Local Authority Carbon Management Programme, to calculate a baseline carbon footprint for the Council's operations and, in turn, prioritise measures to reduce the Council's greenhouse gas emissions from buildings, transport and waste production. Progressive implementation of these

measures will lead to the Council meeting its aspiration of becoming a carbon neutral authority. By demonstrating that the Council is committed to getting its own house in order we will be offering leadership to the whole of Exeter.

6. We will undertake a thorough review of local authority staff training needs in relation to climate change and will implement training programmes as required. We will also feed into wider debates about skills needs and capacity within the locality e.g. sustainable energy industry.

5. Climate Change Adaptation

Regardless of the action taken now, a certain amount of climate change over the next two to three decades is unavoidable. Although the precise implications of this are unknown, it is likely to raise sea levels further, affect ecosystems and cause widespread disruption to the climate. As a result we are likely to experience wetter winters with more intense and frequent storms, contrasted by much drier summers with drought conditions and associated water shortages. The challenge is therefore to adapt to the inevitable changes that will take place. The shift to a low-carbon economy will also bring opportunities in terms of increased market for low-carbon technologies and potential benefits for tourism. It is important that we are in a position to adapt to these changes and make full use of the opportunities where possible.

Strategic Aim

- To mitigate the adverse impacts of climate change and take advantage of the potential opportunities that climate change may bring.

Proposals

1. We will use the forthcoming Local Development Framework as an important tool in managing the environmental consequences of climate change, in particular by setting out spatial planning policies which:
    - Concentrate development in locations expected to be resilient to climate change
    - Reflect the precautionary principle to flooding and flood risk. Site allocations will be determined by applying a risk-based search sequence in accordance with the Exeter Strategic Flood Risk Assessment. Development should avoid areas of higher risk and manage that risk elsewhere to mitigate the impact.
    - Promote and preserve biodiversity and green infrastructure across Exeter

2. We will work with partners such as the South West Climate Change Impacts Partnership to keep abreast of current thinking about the impacts of climate change on the city and develop key intervention strategies required to minimise losses or benefit from potential opportunities. We will ensure that residents and businesses are kept informed as necessary. In conjunction with this, we will continue to review and update the Council's emergency plans to take into account the likely impacts of climate change and will continue to work with the Environment Agency and other Category 1 responders regarding flood risk to Exeter.

3. We will undertake an assessment of the likely impacts that climate change will have on the Council's services and, where necessary, formulate action plans to address this. We will ensure that all new Council policies, programmes and plans, infrastructure and maintenance regimes and are climate-proofed against projected changes in climate.

6. Taking the Strategy Forward

This document sets out the key themes that need to be addressed to tackle climate change in Exeter over the next decade. To take these themes forward we will develop an action plan over the coming year, in conjunction with our partners. This action plan will be subject to regular performance review and monitoring to ensure that we are on track to meeting our goals and target for reducing carbon dioxide emissions.

Appendix – Glossary of Terms

Term	Definition
Adaptation	In relation to climate change this refers to the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.
Affordable homes	Includes social rented and intermediate housing, provided to eligible households whose needs are not met by the market.
Anthropogenic	Anthropogenic effects, processes, objects, or materials are those that are derived from human activities, as opposed to those occurring in natural environments without human influences.
Biodegradable	Organic material such as plant and animal matter that can be broken down by living organisms.
Biofuels	Refers to fuels made from biological material, including bioethanol, biobutanol, biodiesel and biogas.
Biomass technology	Refers to biological material that can be used to generate renewable energy or heat e.g. wood, agricultural residue.
BREEAM	The Building Research Establishment Environmental Assessment Method is a tool for assessing the environmental performance of buildings.
Carbon dioxide (CO_2)	A naturally occuring gas and a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes.
Carbon footprint	A measure of the amount of carbon dioxide equivalent emitted into the atmosphere from the activities of an individual or organisation.
Carbon neutral	A term used to refer to a building, organisation etc that produces no net contribution of carbon emissions.
Carbon offset	Carbon offset is the process of reducing the net carbon emissions of an individual or organisation, by making a payment to fund additional sustainable energy projects or tree planting.
Carbon Trust	The Carbon Trust helps businesses and the public sector cut carbon emissions, and supports the development of low carbon technologies.
Category 1 responders	Emergency services, local authorities, health authorities and Environment Agency.
Code for Sustainable Homes	An environmental assessment method for new homes based upon the Building Research Establishment's Ecohomes assessment.
Combined heat and power (CHP)	The use of a heat engine or power station to simultaneously generate both electricity and useful heat.
CO_2	See carbon dioxide
CO_2 equivalent	This is used to compare the emissions from various greenhouse gases based upon the amount of carbon dioxide that would have the same global warming potential (GWP).
Decentralised energy	Energy that is generated close to where it is needed rather than being transported over long distances, including renewable energy and local heat and power networks.
Devon Local Transport Plan	Sets out Devon County Council's approach to travel and transport in Devon.
Devon Sustainable Buildings Initiative	A not-for-profit organisation formed by a partnership of local authorities, universities, businesses, charitable organisations and interested individuals to promote and enable more sustainable construction in the county.
Devon Sustainable Energy Network	A partnership of organisations from across Devon, who are committed to promoting the use of sustainable energy and working together to combat climate change and fuel poverty.
Devon Wide Declaration on Climate Change and Fuel Poverty	A declaration that local authorities in Devon, Plymouth and Torbay can sign up to, committing them to work towards reducing greenhouse emissions.
Ecohomes	This term when used in a generic sense refers to homes built to high

	standards of sustainable construction. The term also relates to an environmental assessment method for new homes operated by the Building Research Establishment. This has now been replaced by the government' Code for Sustainable Homes (see above).
Emergency Planning	Exeter City Council's Emergency Planning Service is responsible for co-ordinating the Council's response to all emergency and civil contingency matters in Exeter.
Energy services company (ESCO)	A company set up to supply an energy service, such as the heat to keep a building warm or power, rather than the separate components needed to deliver that service.
Exeter Vision Partnership	The Local Strategic Partnership for the city, which was set up in 1998 to work towards achieving a long-term vision for Exeter that will make a real difference to the quality of life people experience in the city.
Food miles	The distance food travels from where it is produced to the consumer.
Fossil fuels	Carbon-based fuels from fossil carbon deposits, including coal, oil and natural gas.
Green electricity	Green electricity commonly refers to electricity that is generated from renewable energy.
Greenhouse gases	Greenhouse gases are gases that contribute to the greenhouse effect. Some greenhouse gases occur naturally in the atmosphere, while others result from human activities such as burning of fossil fuel and coal. Greenhouse gases include water vapour, carbon dioxide, methane, nitrous oxide and ozone.
New Growth Point	*Information to follow*
Fuel poverty	The term used to describe when a householder is unable to heat their home to the level required for health and comfort. This is commonly defined as having to spend over 10% of income on domestic fuel.
Hybrid vehicles	The term most commonly refers to a petroleum electric hybrid vehicle, which captures the energy lost during deceleration in a battery to power the vehicle.
IPCC	The Intergovernmental Panel on Climate Change is a panel that was set up by the World Meteorological Organisation and the United Nations Environment Programme in 1988 to evaluate the risk of climate change brought on by humans, based mainly on peer reviewed and published scientific/technical literature.
Landfill	A site where non-hazardous solid or municipal waste is buried.
Local Authority Carbon Management Programme	A programme operated by the Carbon Trust, which provides councils with technical and change management support and guidance to help them realise carbon emissions savings.
Low carbon	A term that can be used in relation to the economy, fuels, vehicles, technology etc to explain that the carbon emissions from the use of fuels is significantly reduced.
Local development framework (LDF)	A spatial planning strategy, which sets out the planning policies for the city. The LDF will comprise a set of documents, including a Core Strategy, setting out the main principles to be followed when planning an area. The LDF must have regard for the Regional Spatial Strategy (see below).
Nottingham Declaration on Climate Change	A declaration that local authorities can sign up to, committing them to work towards reducing greenhouse emissions.
Merton Rule	The name applied to planning policy, pioneered by the London Borough of Merton, which requires the use of renewable energy production onsite to reduce annual carbon dioxide emissions.
New community	*Information to follow*
Regional Spatial Strategy	Regional Spatial Strategies provide a regional-level planning framework for the regions of England.
Renewable energy	Energy derived from resources that are regenerative or for all practical purposes cannot be depleted. For this reason, renewable energy sources

	are fundamentally different from fossil fuels, and do not produce as many greenhouse gases and other pollutants as fossil fuel combustion.
SAP	The government's Standard Assessment Procedure for the Energy Rating of Dwellings, which is calculated on a scale of 1-100. The higher the number, the more energy efficient the building is.
Science Park	A Science Park is a cluster of knowledge-based businesses located in an attractive and supportive environment, where there is an active link to a university or research centre, and services are available to support the companies to grow.
Section 106 agreements	The term relates to monies paid by developers to Local Planning Authorities in order to offset the costs of the external effects of development.
Sky Park	*Information to follow*
Small and medium sized enterprises	Commonly defined as businesses with less than 250 employees.
Supplementary planning guidance	Supplementary Planning Guidance (SPG) is non-statutory guidance that supplements the Local Plan policies.
Sustainable	This can refer to development or the use of a resource. Its use or existence must be able to be continued without being detrimental to the environment, or endangering the resource for its use by future generations
SWCCIP	The South West Climate Change Impacts Partnership was established to investigate, inform and advise on the impacts of climate change in South West England and to influence the strategies and plans of key partners and stakeholders.
UKCIP	UK Climate Impacts Partnership is an organisation that provides scenarios that show how our climate might change and co-ordinates research on dealing with our future climate.