

Hastings and St Leonards Town-wide Climate Change Strategy and Action Plan 2012



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Our key partners and stakeholders:

East Sussex County Council
East Sussex Local Authorities: Wealden, Rother, Eastbourne, Lewes
Local Strategic Partnership and Community Network
Environment Agency
Department for Energy and Climate Change
Climate Change Commission
Department for Environment and Rural Affairs
Natural England
Department for Communities and Local Government
Homes and Community Agency
Sussex Coast College Hastings
Jerwood Gallery on the Stade
Coastal Users Group
Energise Hastings
Hastings Trust
Bridge Community Centre
Southwater Community Centre
Southern Water
Sea Change Sussex
Hastings Voluntary Action
Local Space
Amicus Horizon
Tourism South East
Climate South East and Climate UK
East Sussex Sustainability Network
10:10 Campaign
Let's do Business Group and Hastings Chamber of Commerce
Transition Town Hastings
Centre for Sustainable Energy
Youth Council
Hastings and St Leonards Seniors Forum
Hastings Urban Bikes
Hastings Environment Network

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Urban Networks to Face Climate Change project.



1. Introduction

This document sets out a vision, an approach and ten themes towards a town-wide climate change strategy and action plan.

It provides key background facts and figures on climate change, and what this means, particularly for Hastings set in the context of the South East. This plan covers activities relating to both types of action on climate change: *mitigation* and *adaptation*.

- *Mitigation* relates to action taken to tackle the causes of climate change i.e. by reducing greenhouse gas emissions.
- *Adaptation* relates to action taken to adapt to the unavoidable effects of climate change caused by increased concentrations of greenhouse gases from human activities.

Excellent examples of community based activity are already happening in Hastings and St Leonards, for example the installation of renewable energy on community buildings, and several high profile new builds such as the Sussex Coast College sites and the Jerwood Gallery that have been built to a high environmental standard. Eco-construction training, refurbishing industrial sites and working with the fishing community and the Environment Agency to find solutions to shingle accretion along the coastline, are other examples of important activity underway.

We have also learnt a lot from our work with our Future Cities project partners, bringing innovative and practical ideas that are ready to apply. Our key aim is to build on this experience, recognising the rich diversity and distinctiveness of areas, accepting that the same single approach to dealing with climate change will not work.

Thank you to everyone who responded to the consultation on the draft document.

Our Vision

Our vision for Hastings and St Leonards is of a sustainable, resource efficient, low carbon town, optimising the opportunities for greening the economy, whilst protecting our residents from the impacts of a changing climate including extreme weather.

This document aims to inspire and encourage behavioural change, providing locally focused actions which will reduce greenhouse gas emissions and ensure we are resilient to the impacts of climate change now and in the future. The strategy sets out ten activity areas that where we already work, or could work together in future, to tackle the impacts of climate change in the town:

- A low carbon economy and working with business

- Low carbon homes and buildings
- Renewable energy and energy efficiency
- Transport
- Waste
- Water
- Natural environment and green spaces
- Food
- Health and wellbeing
- Community engagement

Our approach

This climate change plan connects with other strategies of the Council, other agencies and organisations, including the East Sussex Climate Change Strategy, prepared in 2009¹. It will also build on Hastings Borough Council's first climate change strategy, developed in 2005. It particularly complements the emerging Local Plan, and links directly to the Anti-Poverty Strategy.

The following factors are proposed as part and parcel of the way we make decisions and in what we do with the active support of our citizens:

- 1: Assessing risk and resilience: for today and into the future
- 2: Accountability and responsibility: answering for what we do
- 3: Affordability and efficiency: taking a joined up approach
4. Adapting our infrastructure: to support people and places
- 5: Advancing resource efficiency: doing more with less

1: Assessing risk and resilience: for today and into the future

This means understanding the how global financial, economic, and environmental challenges impact on our social wellbeing and livelihoods at the local level. We need to learn how to work better in managing change in times of increasing uncertainty, being ready to act on those things that need to be done now. An outward looking approach, to build better self-reliance and resilience of our communities, businesses, industry and institutions, is key.

2: Accountability and Responsibility: answering for what we do

Working confidently means knowing 'where the buck stops', who is charged to do what, and how we best work together, in planning and on a day to day level. Success depends on organisations working at different scales, sharing and collaborating. Knowing who leads and supports in keeping things ticking over, and how we all have to be ready and prepared for large scale emergencies, such as floods, is important. Communities have rights and responsibilities, and now greater power to influence what happens.

¹ <http://www.eastsussex.gov.uk/environment/climatechange/strategy.htm>

3: Affordability and efficiency: taking a joined up approach

Making the money go round is ever more demanding in these challenging times. Public sector partners and agencies are streamlining how they work and what they do. Merging and managing to do things differently is unsettling and takes time to adjust. Many of the solutions to the challenges we face will come through innovation and entrepreneurialism. We need to be alert both within and beyond our local boundaries, involving all our contractors, suppliers, and partners, and to support local enterprise and business.

4. Adapting our infrastructure: to support people and places

This is about supporting the vital things that make communities tick; through our planning system, roads and railways, energy and fuel supplies, access to schools and healthcare, and how we manage our water and waste, food, and so on. Regenerating our livelihoods and realising our potential means making the best use of local skills, insight, experience and knowledge across all ages. A robust physical and social infrastructure underpins a stable and thriving community, but needs to work at a scale that makes sense and matters.

5: Advancing resource efficiency: doing more with less

This is about accepting the need 'to do more with less', knowing there are finite and now scarce limits to many of the things upon which we depend. Contracts for goods and services can look to smarter eco-efficient options that are better value for money. The individual choices we make in our own homes, on what we spend and use, can make a difference. The way land is managed, natural and urban green spaces, can work positively for wildlife and help us to protect and adapt to the consequences of climate change.

Our progress

The town has committed to work in partnership with public agencies, business and voluntary and community sectors working together for the benefit of local people, as a 'Local Strategic Partnership' (LSP). This partnership put together a sustainable community strategy to:

"Build upon the town's strong community spirit, culture, diverse population and extraordinary natural environment to create a safer, healthier more prosperous sustainable and more prosperous place with lasting opportunities for everyone."

In 2003², the town further recognised the importance of tackling climate change by signing the Nottingham Declaration on Climate Change (a local authority sector-led initiative).

² The Nottingham Declaration is currently being updated. Further background and resources http://www.local.gov.uk/web/10161/topic-climate-change/-/journal_content/56/10161/95708/ARTICLE-TEMPLATE

This town-wide climate change plan supports the delivery of this vision and recognises that it is only by working in partnership with the public, private and voluntary sectors across the Borough that we can really achieve change. Many of the priorities identified in 2005, when Hastings Borough Council developed its first climate change strategy, are still relevant for 2012 and beyond. There have been successes but new challenges have emerged.

Our footprint

There are strong links between reducing our carbon emissions and our ecological footprint. In terms of greenhouse gases, carbon dioxide (CO₂) is the most widely known that contributes to global warming. It accounts for 85% of all greenhouse gas emissions in the UK. The town's annual emissions³ are 384.6 kilo tonnes for 2009, broken down into 35% industrial and commercial sources, 45% from domestic (housing) sources and 20% from road transport.

A Renewable Energy and Low Carbon Development Study was commissioned in 2009 to provide a comprehensive analysis of the low carbon energy strategies appropriate for the new developments planned in Hastings up to 2026. This strategy describes the mix of technologies which will be the most appropriate and cost effective in delivering the required CO₂ savings on the new build development sites in the town. The results of this analysis form a robust evidence base, which should be used to guide low carbon strategic planning in the town.⁴

In Hastings and St Leonards, the town's carbon dioxide emissions have been reducing in line with national and regional trends. Data shows there has been a 15% reduction in our per capita, or per person, emissions in the period 2005 - 2009 from 5.2 to 4.4. For regional comparators see Appendix 5. A recent Centre for Cities Outlook 2012 [report](#) ranks Hastings as having the lowest carbon dioxide emissions per capita when compared with 64 other towns and cities.

³ [DECC statistics](http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/climate_stats.aspx) 2008 Local Authority Carbon Dioxide Figures (last updated: 15 Sept. 2011) http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/climate_stats.aspx There are two local authority spreadsheets

⁴

http://www.hastings.gov.uk/environment_planning/planning/localplan/evidence_base/#renewable

Table 1: Carbon dioxide emissions within the scope of Local Authorities for the Borough [DECC](#)

Hastings Borough	2005	2006	2007	2008	2009
Kilo tonnes	448.8	447.2	427.9	420.1	384.8
Tonnes per head	5.2	5.2	5.0	4.9	4.4

Indications are that the national trend is likely to rise, and we now need to make sure there are plans in place to manage progress towards achieving the UK's 2020 and 2050 targets⁵ and our own ambitions towards sustaining a low carbon town. This is encapsulated in our sustainable community strategy target to reduce emissions by 3% year on year.

Ecological footprint

This is measured in global hectares (gha) per person, and is the land required per resident to sustain their current lifestyle. If everyone around the globe had an equal share, each of us would have less than 2 global hectares. In the South East we already use 6 global hectares per person to support our lifestyles. If everyone lived as we do, it would require 3.3 planets.

Consumption based data

This provides a more comprehensive picture by analysing the impact of all products and services people use, rather than just looking at direct carbon dioxide emissions. The Resource and Energy Analysis Programme (REAP) is the research area of the Stockholm Environment Institute and shows the ecological footprint, carbon footprint and greenhouse gas footprint.

The latest REAP data relates to 2006, so it is helpful to provide understanding and direction, but not for tracking performance.

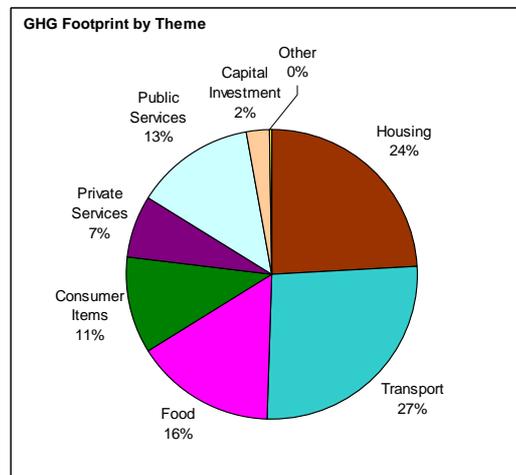
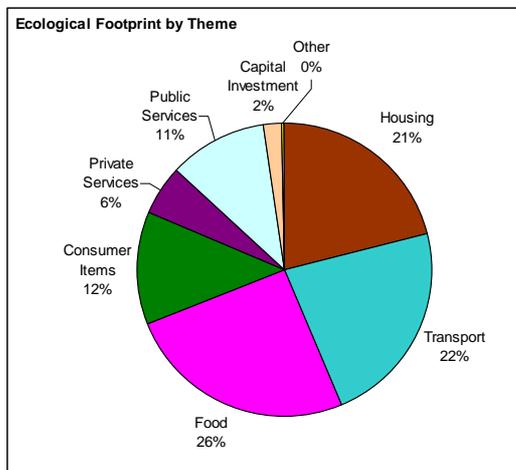
⁵ [Climate Act 2008 targets](#)

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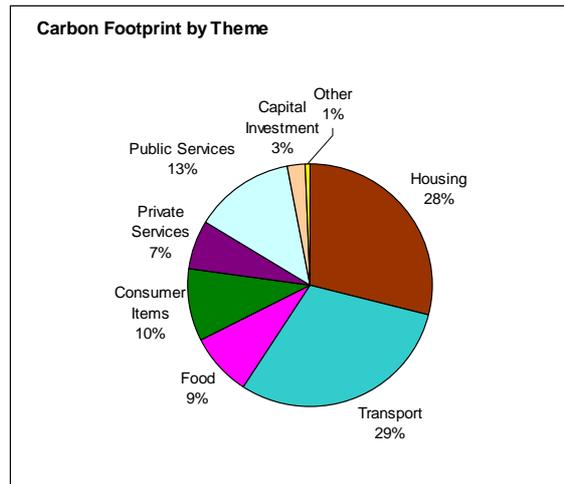
Table 2 REAP Ecological Footprint data

	Ecological footprint (gha/capita)	Carbon footprint (tonnes CO₂/capita)	GHG footprint (tonnes CO₂eq/capita)
Hastings			
2004	5.24	11.80	16.01
2006	4.70	12.18	16.42
South East			
2004	5.63	12.76	17.28
2006	5.09	13.17	17.73
UK			
2004	5.30	12.08	16.34
2006	4.64	12.10	16.24

2006 REAP footprint breakdowns by themes



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Source: Stockholm Environment Institute, Biology Department, University of York, Footprint Results from BRIO model, October 2009. <http://www.resource-accounting.org.uk/downloads>

The challenge for Hastings is how to make economic progress, but keep the footprint as low as possible.

Greening the economy has now become an international priority. Innovation for cleaner and more efficient use of energy and technology and radically reducing all kinds of waste (in production processes, packaging, transport and reprocessing of wastes), whether industrial or agricultural, is key.

All of this applies to Hastings and offers opportunities for new skills, training and jobs.

2. Why do we need a climate change strategy?

Climate change is one of the key challenges facing Hastings and St Leonards over the next 50 years. Climate projections show that past, current and future greenhouse gas emissions will influence the climate for decades. So alongside efforts to reduce emissions we need to prepare for the climate change that we cannot avoid.

(For more details on the science of climate change, see Appendix 1).

The economic cost of adapting to climate change is likely to be significant as highlighted by the [Stern Review](#). In 2008, Sir Nicholas Stern's [second report](#); states that by investing 2% of our global Gross Domestic Product now in initiatives like energy efficiency schemes, and reducing green house gas emissions, we will save up to 20% of global GDP in the future and reduce the worst impacts of climate change. By not taking action now the costs to society as a whole will be far greater in the future.

Weather versus climate

- **Weather** is what we experience over a short period of time (e.g. an hour or a day)
- **Climate** is the average weather and its variability over a long period of time (e.g. 30 years)

It is important not to:

- Confuse short-term weather events (e.g. snow in November and December 2010) with long-term trends in the climate (e.g. winters warming by over 2⁰C by the mid-century)
- Presume extreme cold spells will end. Despite a warming climate, cold spells will still occur but with reduced likelihood.

We know that climate change made the floods in autumn 2000 – which cost £3.5 billion, and flooded over 10,000 homes – two to three times more likely. We know that climate change made the heatwave in 2003 twice as likely. And we fear that in less than forty years time, the summer temperatures that wreaked havoc will be the norm.

Being prepared will mean increasing funding for security and disaster responses.

Refitting our health infrastructure to cope with a surge in heat related illnesses.

Boosting our energy, food and trade security by diversifying our supplies.

Changing our land use planning legislation to allow flexibility for farming and reinforce water security. Investing in resilience and adaptation, not just for critical infrastructure, but across the whole economy”

Secretary of State for Energy and Climate Change, [speech](#) to the Royal Society: The Geopolitics of Climate Change 7 July 2011.

The broader policy context: international and national

There is a range of national and international legislation and policy designed to help reduce greenhouse gas emissions. (See Appendix 2 and 3). The **Kyoto Protocol**⁶ is an international agreement linked to the **United Nations Framework Convention on Climate Change**. The major feature of the Protocol is that it sets targets for reducing greenhouse gas emissions, which are taken into account in our national legislation.

National policy in the UK is framed by the **Climate Change Act** 2008⁷ which set a legally binding target of at least an 80% cut in greenhouse gas emissions by 2050, to be achieved through action in the UK and abroad. Also it set a reduction in emissions of at least 34% by 2020. Both targets are against a 1990 baseline. The Act also introduced 5-yearly carbon budgets to help ensure the targets are met.

The **Low Carbon Transition Plan**⁸: National Strategy for Climate Change and Energy is a government White paper published in 2009. It set out the UK's first ever comprehensive low carbon transition plan to 2020. This plan will deliver emission cuts of 18% on 2008 levels by 2020 (and over a one third reduction on 1990 levels). **The Energy Act 2011**⁹ provides for a step change in the provision of energy efficiency measures to homes and businesses, and makes improvements to our framework to enable and secure low-carbon energy supplies and fair competition in the energy markets. It includes the Green Deal, a government initiative to improve the energy efficiency of our homes, funded by a charge on energy bills. (See more information at Appendix 3)

The new National Planning Policy Framework¹⁰ provides for a presumption in favour of sustainable development, and the emerging Local Plan key draft planning strategy policies SC1-SC7, EN2 and T3 are also relevant.

The Natural Choice: securing the value of nature¹¹ was published in June 2011 in response to the Lawton report, and the National Ecosystem Assessment, that showed that over 30% of nature in England is highly fragmented and unable to respond effectively to new pressures such as climate and demographic change.

⁶ <http://unfccc.int/resource/docs/convkp/kpeng.html>

⁷ http://www.decc.gov.uk/en/content/cms/legislation/cc_act_08/cc_act_08.aspx

⁸ http://www.decc.gov.uk/assets/decc/White%20Papers/UK%20Low%20Carbon%20Transition%20Plan%20WP09/1_20090724153238_e_@@_lowcarbontransitionplan.pdf

⁹ http://www.decc.gov.uk/en/content/cms/legislation/energy_act2011/energy_act2011.aspx

¹⁰

<http://www.communities.gov.uk/planningandbuilding/planningsystem/planningpolicy/planningpolicyframework/>

¹¹ <http://www.defra.gov.uk/environment/natural/whitepaper/>

The UK Climate Change Risk Assessment was published in January 2012 and has reviewed the evidence for over 700 potential impacts of climate change in a UK context. Detailed analysis was undertaken for over 100 of these impacts across 11 key sectors, on the basis of their likelihood, the scale of their potential consequences and the urgency with which action may be needed to address them.¹²

How the climate will change in Hastings

The UK Climate Impacts Programme in 2009 outlined the likely changes for the south east of England by 2080 as follows:

- Warmer, wetter winters
- Hotter, drier summers
- Rising sea levels
- More extreme weather events
- More very hot days
- more intense downpours of rain,
- Increased storms in winter

It will be warmer all year round. Mean temperatures for summer are likely to rise by between 3°C and 4.9°C and for winter between 2.6°C and 3.7°C. This means a greater risk to health, particularly among the older population, the very young and those with health problems. This may lead to increased demand on our hospitals and health care, and links to impacts on infrastructure, such as damage to road and rail surfaces.

There will be a change in the distribution of rainfall. Winters will be wetter and summers will be drier. Precipitation is likely to decrease by between 15% and 29% in summer and increase by between 18% and 30% in winter. The impacts of severe water shortages and conversely flooding are likely to be substantial and must be planned for now. Southern Water has produced a report 'Adapting to Climate Change' that recognises both these risks. The Environment Agency has developed a local Strategic Flood Risk Assessment¹³ increasing the extent of flood zones locally, and the Flood and Water Management Act brings together all flood risk authorities to work together to understand and mitigate the impacts.

The vital services that the natural environment provides to society (ecosystem services) will be directly affected by climate change and indirectly affected by adaptation actions that society might take. Ecosystem services include: flood management, urban cooling and shade, water quality and storage, pollination, soil formation and increasingly important carbon storage.

¹² <http://www.defra.gov.uk/environment/climate/government/risk-assessment/>

¹³ http://www.hastings.gov.uk/environment_planning/planning/localplan/evidence_base/#flood

A South East regional vulnerability study that was part funded by the Future Cities project, and carried out by the then South East England Regional Partnership Board shows climate impact risks across the region in terms of vulnerable groups and population distribution. Its findings fed into the UK Climate Change Risk Assessment¹⁴ published in January 2012 which outlined key opportunities and threats.

3. Proposed areas for action

In the following section we outline ten key themes, labelled A to J. These are highlights of what we have achieved so far. For each theme we have also provided a list of 'what we plan to do next'. These have come from our conversations and community engagement processes to date. They are numbered purely for ease of reference, not in terms of importance or priority. We hope that further feedback will sharpen and shape these actions into a robust action plan with targets and timescales. We need to be clear on who is responsible for leading and championing, and also supporting the delivery of each one.

¹⁴ <http://www.defra.gov.uk/environment/climate/government/risk-assessment/>

A: A Low Carbon Economy and working with business

The UK Government has clearly stated that significant economic growth can be achieved within the low carbon economy, resulting in new jobs and investment opportunities.

A low carbon economy can deliver opportunities across a wide range of business sectors, not just those seen as being in the 'traditional' environmental technologies sector. Business can take advantage in many ways, by diversifying into new low carbon products, becoming more efficient in their current processes and by taking advantage of national initiatives such as the Green Deal.

In Hastings, our challenge will be to further develop our local economy without increasing our relatively low carbon footprint.

Whilst the scale of reduction in CO₂ emissions by 80% by 2050 is a huge challenge - the good news is that reductions of that size are possible without sacrificing the benefits of economic growth and rising prosperity.

Technologies are either available, or with appropriate support could be developed, which deliver low-carbon energy. Opportunities to increase the efficiency with which we use energy are huge; lifestyle changes that do not undermine welfare can produce significant cuts in energy consumption.

Also many of the actions required to tackle climate change, we should want to do anyway because these have economic, wider environmental and security of supply benefits. The potential will be achieved with appropriate policies: support for technology innovation; information and encouragement; regulation when needed and financial measures such as carbon pricing, and the Climate Change Levy. The challenge is not the technical feasibility of a low-carbon economy but making it happen.

The town has recognised the importance of a low carbon economy. Within the local economy commitments in the sustainable community strategy we have identified that to achieve a sustainable economy we need to:

- Ensure economic growth incorporates the principles of sustainable development to ensure we conserve and enhance our environmental assets, both natural and built, for a high quality environment.
- Maximise environmental enterprise - Taking advantage of opportunities to attract and grow the environmental goods and services sector and improving local environmental knowledge and skills - in environmental technology, best practice and management.

These ambitions are further echoed in the Planning Strategy and [Hastings & Bexhill Economic Development & Inclusion Strategy](#) 2008 -2013 which the aims of which include:

- To achieve and maintain environmentally-sustainable prosperity, by maximizing environmental benefits and opportunities, and minimizing negative environmental impacts.

What we have achieved so far

Partners have raised business awareness of sustainability issues through free environmental advice, best practice, support, grants and loans available from various agencies e.g. [Low Carbon Essentials](#), [Sussex Enterprise](#) and [BETRE](#)

Public authorities including Hastings Borough Council, East Sussex County Council and local health organisations, require companies wishing to do business with them to have a positive approach to environmental management including carbon management.

The Sussex Exchange¹⁵ based at the South Queensway Enviro21 Park, provides an opportunity to showcase environmental technologies and is a place where you can see rain water harvesting, green and brown roofs and a biomass boiler system in action. It aims to be a unique resource that can enable companies, universities, think tanks, professional bodies and research institutes to come together to debate the latest developments, formulate new ideas and share knowledge.

What we plan to do next and future opportunities

1. Explore local opportunities from national government policies such as the Feed in Tariffs (FITs), the Renewable Heat Incentive (RHI) and the Green Deal.
2. Work towards ensuring the town has energy efficient private, public & third sector organisations through the provision of energy advice, and sharing of good practice.
3. Promote the southeast of England tourism [adaptation guide](#) to local businesses, a simple toolkit to help businesses to prepare for the effects of weather and climate variability.
4. Promote the Business Link climate change [adaptation guide](#) for business.
5. Exploit the opportunities that a warmer, longer summer climate may bring to the town, by continuing to market Hastings and St Leonards as a tourist destination.

¹⁵ <http://www.sussexexchange.co.uk>

6. Continue to promote free environmental and carbon management advice services that support local businesses.
7. Working in partnership take advantage of funding that becomes available throughout the lifetime of this strategy that supports its aims and actions.
8. Promote the Sussex Exchange across all sectors
9. Explore ways of working with private sector landlords of business premises to increase energy efficiency
10. HBC will support, where appropriate, high quality third sector bids to help create more 'green' jobs (either in traditional crafts or new green technologies)

B: Low carbon homes and buildings

Two-thirds of the homes and commercial buildings in which we will be living and working in 2050 are already built. It is vital to tackle the existing building stock if we are to achieve the 80% CO₂ emissions reduction by 2050 as prescribed by the Climate Act 2008.

We do, however have a local housing target of 3,400 homes to be built in the town by 2028 and it is important that we address the increase in emissions arising from such development.

The built environment has a large part to play and an important role in tackling climate change. It can:

- mitigate climate change by reducing greenhouse gas emissions
- adapt to a changing climate by providing more comfortable environments in which to live and work
- adapt services and infrastructure to ensure resilience to extreme weather events
- ensure vulnerable people are protected from climate change risk
- increase low-carbon energy supplies.

The way in which developments are regulated, planned and built can determine whether or not they are sustainable. Simply by re-evaluating how and where we build things we can reduce emissions and help adapt to some of the issues climate change will bring about.

Infrastructure is already sensitive to current climate variability and the future climate is likely to be considerably more challenging and disruptive. To increase the resilience of both new and existing infrastructure, we must be

prepared to plan ahead and manage the impacts of climate change to reduce the risk of increased service disruption and adverse economic impacts.

Effective reliable infrastructure underpins economic activity. Recent impacts from flooding and severe weather events emphasise the risks the national infrastructure could face and the significant economic damage these types of events bring. The town's beach and seafront activities are important to the economy of the town. Tourism provides some 3000 jobs whilst the commercial and recreational activities that line the A259 are also important sources of employment.

The town has an Infrastructure Delivery Plan that considers the improvements that will be necessary to support the planned level of new development.

Tackling the existing building and housing stock to make it more energy efficient and resilient to climate change is a challenge but presents huge potential for low-carbon growth. There are approximately 25 million homes in the UK that need to be retrofitted by the end of 2050. In Hastings, this is a huge challenge due to the type and age of our existing building stock.

Housing Statistics - the scale of the challenge

Hastings and St Leonards have

- a greater than average amount of pre-1919 housing, 47% compared to the national average of 25%
- a high proportion of converted flats, 27% compared to the national average of 3.3%
- almost 25% of homes in the private rented sector, more than twice the national average
- 39% of housing stock (13,000 properties) failing the Decent Homes Standard, compared with a national average of 25%

New Buildings and Sustainable Construction Methods

Energy use in buildings providing services such as water, heating and lighting equates to 50% of the UK's CO₂ emissions. This can be reduced through tackling water efficiency, e.g. storing rain water for re-use in our buildings, installing renewable energy sources as a means of power and heat and insulating buildings to reduce energy consumption. The Government has committed to reducing carbon emissions from domestic dwellings to ensure all new homes will be zero-carbon by 2016; this will be in part delivered through

revisions of Building Regulations and the Code for Sustainable Homes and the planning system.

New developments will be designed to be zero carbon and 'climate-proofed'. The [Local Plan](#) will set out the planning policies to guide future development in the town which takes account of national policy including the Code for Sustainable Homes.

What we have achieved so far

Hastings Trust have demonstrated how it is possible to [eco retrofit](#) an existing building by converting a Victorian terraced property into four environmentally friendly flats, that are now saving energy, carbon emissions and money for the residents that live there. The learning gained during this project is shared in a comprehensive training manual and video, and was funded through the Future Cities project.

In 2009 the Council published its [Renewable and Energy and Low Carbon Energy Study](#). This will be used to inform the development of the strategic planning framework of the town as part of the Local Plan, particularly the development of sustainable design and renewable energy policies.

The Council has also developed a Supplementary Planning Document "[Householder Development Sustainable Design](#)" which offers advice and information on saving energy, sustainable design and construction for local residents wishing to alter or to extend their homes.

[Sussex Coast College](#) Hastings is a £95m college, with two campuses that provide state of the art educational opportunities to over 2000 students a year. Grant funding enabled the college to create sustainable buildings which achieved a Building Research Establishment Environmental Assessment Method (BREEAM) 'excellent' rating, awarded to buildings which meet or exceed guidelines for sustainability. The new college incorporates rainwater recycling, a biomass boiler, solar thermal heating for hot water and a ground source heat pump.

The [Jerwood Gallery](#) on the Stade is purpose-built to create the best possible environment for experiencing art, with a design that responds sensitively and creatively to the unique site on the Stade, and engineered to be as environmentally efficient as possible, with CO2 emissions of around 40% compared to a standard gallery design.

[Ecofab](#) is a European funded project involving Sussex Coast College, the Bridge community centre, Hastings Trust, HBC, local contractors and a training network in Normandy, France - is working collaboratively to promote environmental, sustainable and heritage construction skills and local training opportunities.

[Pathway to Construction](#) is an annual event in Hastings providing an opportunity for local contractors to showcase their eco-intelligent approaches

to building with the ability to try them out, as well as discussion events and workshops open to all. A unique element of the project is the schools' challenge, encouraging local young people to get involved in designing and building an eco-home of the future.

Amicus Horizon have The Green Plan¹⁶ that sets out four key themes for action: Green residents, neighbourhoods and communities; greener homes; greener operations; and monitoring, measuring and information. They have carried out a large-scale retrofit in Hastings to the Four Courts tower blocks, applying external wall insulation and refurbishing bathrooms. The CO₂ reduction achieved varies between 25% and 56% depending on the block. Energy consumption has been reduced by 19%, and they diverted 67% of the construction waste was diverted from landfill and as a result of the bathroom refurbishments, they have saved 7.5 million litres of water. Amicus have also signed up to the WRAP construction commitment for new builds to halve waste to landfill.¹⁷

Sussex Police also has an environmental carbon reduction strategy and all District Commanders have an objective to look at innovative ways that Sussex Police make most efficient use of resources both internally and with partners, and making best use of resources is a key pillar of the Sussex Police Policing Strategy.

At the Hastings police station, specific measures include new window furniture and stays commissioned to retain heat, there is 100% recycling system rolled out across the East Sussex Division and push button taps have been installed to save water.

At Castleham Business Centre West refurbishments include LED lighting in common areas with movement control and day/night sensors, new windows and doors and replacement WC cisterns to reduce water consumption. PhotoVoltaics and voltage optimisation is under consideration.

What we plan to do next and future opportunities

1. Purchase a [Map Table](#) and provide associated training for use in policy development, consultations and planning.
2. Continue to support the development of a Coastal Space project in St Leonards which aims to increase the quality and efficiency of existing poor quality homes in the renewal area.
3. Implement the Planning Strategy and as part of the emerging Local Plan. This has a local housing target to build an additional 3,400 homes by 2028, working towards zero carbon development by 2016, in line with national policy

¹⁶ <http://www.amicushorizon.org.uk/thegreenplan>

¹⁷ <http://www.wrap.org.uk/category/sector/construction>

4. Promote examples of good practice for projects demonstrating exemplar sustainable design and build and low carbon approaches. This will be through publicity and events such as the Brighton eco-open house event, held here.
5. Amicus Horizon are developing a low carbon retrofit strategy by late Autumn 2012.
6. Answers to the Carbon Economy (ACE) is a European funded project between France, Belgium and Hastings. In Hastings, the £470,000 grant will be used to reduce our carbon footprint through two projects. The first project involves a low-carbon retrofit of some council owned industrial units and the second will involve the development of a new unit on the [Enviro-21 green business park](#) on Queensway. The project also includes research on reducing the carbon footprint of Hastings' industrial estates overall.

C. Renewable Energy and energy efficiency

This section is about harnessing the potential for renewable energy in Hastings, and how we can take advantage locally of national policy around feed-in tariffs, and the upcoming green deal.

The Energy Hierarchy

1. Reduce the overall need for energy
2. Maximise energy efficiency
3. Use energy from renewable sources
4. Where fossil fuels need to be used, use them as efficiently as possible (e.g. Combined Heat & Power – CHP)

The need for energy efficiency and renewable energy to reduce our reliance on fossil fuels is key to ensuring a secure energy supply going forward. A total of 45% of Hastings' carbon dioxide emissions come from domestic dwellings.

Planning policy can be used to promote decentralised and renewable or low-carbon energy generation and infrastructure through the development process. The majority of the energy used in Hastings comes from fossil-fuelled power stations, where a large proportion of the energy is lost as waste heat (through cooling towers).

Decentralised energy allows smaller power units to be located in towns, close to the population they serve and enables the use of waste heat in the form of district heating. The energy generated becomes more efficient and the plants are powered by a mixture of low carbon and renewable fuels, including gas and biomass. There are examples of Combined Heat and Power (CHP) in

Hastings; a small scale industrial unit on Stirling Road include a CHP plant and Energise Hastings¹⁸ is applying for funding to undertake feasibility studies for new sites. The Government has recently published the [National Heat Map](#) - a spatial plan of building heat demand for the whole of England. The objective of the [heat map](#) is to enable planners to identify opportunities for developing low carbon heating solutions.

Wasted energy or poorly managed energy provision, leads to higher greenhouse gas emissions, wasted money and environmental damage. The Council, along with other key partners, has been implementing energy efficiency schemes and renewable energy initiatives in the town, to help make heating more affordable, reduce energy bills and therefore CO₂ emissions from the housing sector. Activity has been targeted at households with low SAP¹⁹ ratings and households on low incomes.

However, 14.7% of households in the borough are experiencing 'fuel poverty' – where a household spends more than 10% of its income to heat their home.

Focus on Friary Gardeners

22 years ago the Parchment Trust bought some dilapidated land including some Victorian barn units, cattle stalls and a grain store. They excavated and cleared the land, and have created a plant nursery and education project, working with people with learning difficulties.

The manager has recently overseen a complete refurbishment of the buildings putting environmental considerations into the heart of what they do.

With a solar array installed before the reduction in the feed-in tariff, they expect to reach payback on their investment in four and a half years. A biomass boiler is fed by a timber donation of applewood. Applewood burns really well, after it has been dried appropriately in their drying area, and also smells lovely! This single donation will power the boiler for two years.

A rainwater harvesting system channels water for use in the sinks and toilet flush, as well as irrigation for the nursery.

What we have achieved so far

Through initiatives such as the [East Sussex Energy Partnership](#) many home energy schemes to tackle fuel poverty, affordable warmth and energy efficiency in our homes have been delivered. Even so there is still much more to do.

Sussex Coast College Hastings has opened the [Energy Centre](#) on Castleham Industrial Estate to demonstrate a range of energy technologies on site, and

¹⁸ Energise Hastings was established in 2009 and is an informal partnership of Hastings Trust, Sussex Coast College Hastings, Hastings Borough Council, local energy companies, engineers, architects, developers and residents. The aim is to promote energy efficiency and renewable energy in the Borough.

¹⁹ Standard Assessment Procedure (SAP) indicates the efficiency of energy use for space and water heating (score out of 100, with 0 being the least and 100 being the most efficient) need a SAP rating of 70-80 to remove most households from fuel poverty

provide local accredited training opportunities for both businesses and individuals.

Planning permission for a two MegaWatt wind turbine has been granted on the Enviro21 sustainable business park http://www.enviro-21.com/wind_turbine.html with the capability to generate enough energy to power 1000 homes.

HBC signed up to the [10:10 campaign](#) and achieved 10% CO2 reduction emissions in 2010/11 and encouraged others to do the same – it has now agreed to work towards a total of 25% reduction compared with its 2008-09 emissions over the next 5 years.

Using a thermal imaging camera, purchased with Future Cities co-financing, we have been able to show 'before and after' shots of heat loss in local buildings.

Secured funding via Energise Hastings for three community buildings (Southwater Community Centre, Hastings Trust Resource Centre and The Bridge Community Centre) to install and showcase solar energy technologies to the wider community.

East Sussex Energy Infrastructure and Development Limited (ESEID) has been established as a legacy to Hastings and Bexhill Renaissance Limited (HBRL) to take forward economic development in Hastings and the wider area, including the ambition to develop 14 MegaWatts of renewable power, and to expand the opportunities for green businesses at the Enviro21 business park.

What we plan to do next and future opportunities

1. Continue to exploit opportunities for CHP and district heating schemes. This will be in accordance with the findings of the low carbon and renewable energy study for the town.
2. Seek resources to create a sustainable energy plan for the town and apply to the Covenant of Mayors <http://www.eumayors.eu> to build on our European links.
3. Continue to work in partnership to tackle and reduce the effects of fuel poverty through energy efficiency measures where possible, and investigate provision of independent energy advice for householders.
4. Continue to support Energise Hastings
5. Working in partnership the development of an Energy Services Company (ESCO) for the town will be explored.

6. Reduce the carbon emissions of council, public, private, community and voluntary sector buildings through energy efficiency improvements.
7. Look at the feasibility for incorporating renewable energy into public and community buildings.
8. Promote Sussex Coast College Energy Centre to encourage local businesses and individuals to take advantage of local training opportunities and business growth into renewable technologies.
9. Promote funding opportunities to local organisations and businesses for energy efficiency, low carbon and renewable energy projects and initiatives including [Salix Funding](#) & [Enhanced Capital Allowances](#)
10. Deliver planning strategy policies, particularly SC3 promoting sustainable and green design, SC4 working towards zero carbon development and SC5 district heating networks and combined heat and power systems.
11. HBC will continue to effectively utilise enforcement powers in the private rented sector in tackling issues of energy efficiency, inadequate heating and excess heat, where this poses a risk to health.

D: Transport

Transport is a key contributor to our overall green house gas emissions. How we choose to travel affects our carbon footprint, from air travel to using our cars, taking public transport, or opting to walk or cycle. If we are to significantly reduce our emissions across the Borough then sustainable transport will be vital.

Transport is the fastest growing source of climate change gases in the UK; transport alone now accounts for 21% of emissions, and travelling by road accounts for 92% of the domestic sector greenhouse gas emissions. However, emerging government strategies and new technologies should enable us to tackle this issue and make transport greener.

The Government's [Transport Strategy](#) recognises the importance of local sustainable transport and low carbon emission vehicles as a means to meet the UK's climate targets; it has committed £400 million to support measures to promote the uptake of ultra-low emission vehicle technologies.

Reducing the need to travel by using alternatives to the car by providing local facilities in places where people live and work is essential to transforming to a more sustainable transport system. Safe walking and cycling routes, a good public transport network and access to an electric vehicle charging infrastructure are all important elements to make this transformation happen. East Sussex County Council have published the [Local Transport Plan](#) for East Sussex which will help to shape the future of transport from now until 2026, and includes the strategic objective to tackle climate change.

In Hastings and St Leonards there are four railway stations that provide regular transport links within the Borough and to London, Brighton and Ashford. The [Quality Bus Partnership](#) which has been in operation in town since 2003 has made huge improvements to the town's bus service including the introduction of low floor buses and raised kerbs, a network of Arrow buses which run every 10 minutes on major routes into the town and rationalised the town's bus network. A successful bid to big lottery by Sustrans has enabled the development of a dedicated cycle route between Hastings and Bexhill as part of the [National Cycle Network](#), thus enabling walkers and cyclists to avoid the busy A259. [Hastings Urban Bikes](#) provides regular cycle training and promotes family rides through the town and wider area. Working in partnership, [Sussex Air Quality Partnership](#) secured funding from DEFRA to install electric vehicle recharging points to begin to create a local network including a point in Hastings.

What we have achieved so far

Delivered the objectives of the [Quality Bus Partnership](#) including the introduction of low floor buses and raised kerbs, increased bus usage and rationalised the town's bus network.

Through funding secured by the Sussex Air Quality Partnership the Council has installed the town's first electric vehicle publically accessible charging point in Pelham Place car par, as part of regional charging network.

Local authorities in Sussex have collaborated to develop [Low Emission Strategy](#) guidance for planning policy and new development sites.

Following a successful bid by [Sustrans](#) for a cycle network have installed a dedicated cycle route between Bexhill and Hastings, which has now been extended to link the Jerwood Gallery to the De La Warr Pavilion.

A large number of employers have produced [green travel plans](#) including East Sussex County Council, HBC and Conquest Hospital to support and encourage staff to use alternatives to the car when travelling to and from work.

A range of traffic calming measures have been introduced to reduce traffic speeds and consequently green house gas emissions.

What we plan to do next and future opportunities

1. Expand and promote electric vehicle recharging infrastructure.
2. Hastings Urban Bikes and The Ramblers Association, and Ore Community Land Trust have reinvigorated a campaign for a Greenway in the Borough

3. Promote the [Government grant scheme](#) to increase the take up of ultra-low emission vehicle technologies including electric cars and vans.
4. Plan for a strategic network of cycle routes in accordance with Planning Strategy policy T3.
5. Continue the dialogue with Stagecoach relating to quality bus services

E: Recycling and Waste

Sustainable waste policies are an important part of tackling climate change and protecting our natural resources. If we want a more sustainable economy, we need to reduce waste and make better use of what we produce.

The UK is still sending 44 million tonnes a year to landfill, of which almost 70% is biodegradable. This generates greenhouse gas emissions, especially methane (methane is 23 times more potent than CO₂) and the waste sector is estimated to account for around 3% of all UK emissions. But the overall impact of waste policies on reducing carbon across the economy goes much further. Through its waste strategy the government wants to move beyond a throwaway society.

The [Waste Local Plan](#) sets out a strategy for future waste management and associated use of land in East Sussex and Brighton & Hove. It encourages a shift away from disposal to land towards more sustainable methods of treatment. The Waste Local Plan is a land-use plan designed to promote the minimisation and re-use of waste where it is appropriate to land-use considerations, and support new facilities to enable opportunities for recycling, composting and energy recovery from waste to be maximised. Working in partnership with Brighton and Hove City Council and South Down's National Park Authority, East Sussex County Council is preparing a revised [Waste and Minerals Plan](#) that will provide planning policies to guide the management of waste and production of minerals in the plan area until 2026.

Our landfill sites are rapidly filling up, and combined with the resulting greenhouse gases they create, the way we treat waste needs to be re-evaluated. In addition, European and national policy is targeting the reduction of waste that can be disposed of by landfill. We need to move as a society to a 'zero waste economy' where we reuse and recycle all we can and throw away only as a last resort.

Whilst households do not contribute the largest quantities of waste, either on a national basis or in most local authority areas, household waste does present a major disposal problem because its high organic content. The majority of waste generated in the town from households is currently disposed of at the landfill site at Pebsham. The site is rapidly coming to the end of its

life, and in the future the town's waste, after maximum extraction of recyclates will be disposed of through incineration at a waste to energy plant.

Tackling food waste

Every tonne of food and drink wasted creates around 4 tonnes of CO₂. Food waste also costs business and households money - UK households throw away £12 billion of good food and drink every year.

To help tackle this issue the Government has published its [Anaerobic Digestion Strategy](#) and action plan.

Anaerobic Digestion (AD) is a natural process in which microorganisms break down organic matter, in the absence of oxygen, into biogas (a mixture of carbon dioxide (CO₂) and methane) and digestate (a nitrogen-rich fertiliser). The biogas can be used directly in engines for Combined Heat and Power (CHP), burned to produce heat, or can be cleaned and used in the same way as natural gas or as a vehicle fuel. The digestate can be used as a renewable fertiliser or soil conditioner.

Since the introduction of the alternate weekly waste and recycling collection scheme in Hastings, the borough has seen a significant reduction in the amounts of waste being sent to landfill. This is due to the increasing proportion of waste collected for recycling which has increased from 11% in 2005/06 to almost 30% in 2011/12.

To support local householders who wish to compost their garden waste at home, we promote discounted home composters, wormeries and green Johannas in partnership with East Sussex County Council. In addition garden waste can be collected from the doorstep via the "brown wheelie bin" scheme.

The [Joint Municipal Waste Management Strategy for East Sussex](#) constitutes a 14 year plan for introducing environmentally and financially sustainable waste management practices in the county, covering the period running from 2006 to 2020. The strategy includes increasing recycling rates to 40% by 2015 and 50% by 2020.

The Council's parks and gardens team via its contractors recycles green waste from the maintenance of the town's parks and open spaces; the waste is composted and re-used in the grounds as mulch and soil enhancer.

What we have achieved so far

Working in partnership with local residents the Council has increased household waste recycling rates to almost 30%.

In addition, the Council has helped to divert organic waste for disposal at the landfill site through encouraging composting at home, the use of the brown wheelie bins and composting of the towns parks and gardens waste.

[Hastings Furniture Service](#) has continued to collect unwanted but reusable furniture & appliances, preventing them from going to waste in landfill. Last year the scheme saved over 275 tons of furniture and electrical equipment and passed them onto local households once refurbished for re-use.

What we plan to do next and future opportunities

1. Working in partnership with local authorities in East Sussex, including Hastings Borough Council will award a joint Waste Contract in October 2012, bringing significant environmental benefits as it will:
 - Introduce increased efficiency by reducing vehicle movements and duplication of journeys by rationalising collection rounds across boundaries resulting in fewer vehicles and less vehicle emissions
 - Reduce the overall tonnages of waste entering the waste stream – charging for garden waste will encourage home composting in rural areas taking this out of the waste stream
 - Increase the range of materials which can be recycled at the doorstep.
 - Introduce a new target for contractors to achieve a 50% recycling rate
2. Contribute to the Government's ambition of a "[zero waste economy](#)" and explore the business opportunities this may create locally.
3. Promote local community recycling and re-use schemes e.g. [Hastings Furniture Service](#), [Hastings & Bexhill Wood Recycling Project](#) and [Freecycle](#) including involving them in the bulky waste collection element of the joint waste contract..
4. Promote the "[love food hate waste](#)" campaign to raise awareness of food waste and how to reduce this.
5. Promote the repair culture and upcycling via the HBC website
6. Consider a garden and compost 'twinning' scheme, possibly using social media sites and linked to the HBC garden waste scheme. A twinning scheme links people who compost their waste but who don't have gardens with people who can use the compost, for example those with larger gardens or allotments.

F: Water

The availability of water is likely to be affected by climate change especially during hotter summer months and during periods of drought. Coupled with a growing population and changes in rainfall patterns demand on water resources across the country is likely to increase, and especially in the southeast which is identified as an area under severe water stress.

Water in the borough is provided to all domestic and non-domestic properties by Southern Water. Based on data from [Southern Water](#) the average daily consumption of water in Hastings and St Leonards is 170 litres per person per day, which is significantly higher than the average household in England and Wales of 150 litres per person per day. Coupled with the fact that the southeast of England is the driest place in the UK, this level of consumption is unsustainable into the future.

Saving water

The government has set a target for water consumption in the UK as 130 litres per person per day by 2030, a 30% reduction on current Hastings consumption rates. Reduced consumption can be achieved by adopting a number of measures, and through encouraging behaviour change.

Whilst rain water is free - energy is spent on making it fit to drink, distributing and piping in into our homes and businesses, heating it and disposing of it afterwards.

It takes 1.2kWh of (mostly) electrical energy to supply and treat 1m³ of mains water. This results in 0.7kg of CO₂ emission per m³ of mains water used. This rises to 7kg from 1m³ of hot water.

Saving water, also saves energy and reduces our carbon footprint.

In Hastings 30% of households are metered, although Southern Water plans to fit all homes with water meters by 2015. Leakage from mains water supply is currently 13% but the new water meters will include “leak alarms” which will help to reduce this problem and save millions of litres of water a day. In addition water meters reduce average household water use by 10% and save up to £40 per year.

Water butts and ‘whole-building’ water harvesting systems collect rainfall and store it to be reused at a later date. Not only does this reduce water demand but can also reduce the risk of flooding. Alternatively, ‘used’ water can be collected and stored and re-used for purposes that don’t require drinking water quality water.

Rainwater harvesting is typically defined as being water collected from roofs via traditional guttering, through down pipes to an underground tank(s). Water is delivered on demand by an in-tank submersible pump direct to toilets, washing machine and outside tap use. More than 50% of mains water can be substituted by rainwater.

Greywater recycling is typically defined as being water from the bath, shower, wash hand basin. The ideal situation for 'Greywater' is in living accommodation where sufficient amounts are generated daily for reuse in toilets, washing machine and outside tap and in large public buildings.

Flooding

Hastings is vulnerable to flooding from a variety of sources including flooding from the sea (tidal flooding and/ or overtopping), freshwater (fluvial flooding) from local water courses and rivers and from heavy rainfall (surface water flooding). The climate projections show that we are likely to experience wetter winters, more frequent and intense storms and continued rising sea level.

The town has already experienced a number of surface water flooding events which have caused the temporary closure of the A259 and flooded local homes. For example in July 2009 the town received more than 3 month's rain in under 4 hours and in February 2010 the A259 was closed for days following chaos caused by a burst storm drain.

The Strategic Flood Risk Assessment for the town shows flood zones in the area overlaid onto ordnance survey data.

Traditional drainage is designed to move rainwater as rapidly as possible from the point at which it has fallen to a discharge point, either a watercourse or soakaway.

Sustainable Drainage Systems (SuDS) aim to replicate natural systems that use cost effective solutions with low environmental impact to drain away dirty and surface water run-off through collection, storage, and cleaning before allowing it to be released slowly back into the environment, such as into water courses. Systems include the development of retention tanks, ponds and wetlands, the use of permeable paving allowing water to soak through and green roofs and walls. SuDs are widely used in new developments and can be retrofitted to existing developments and individual buildings and can improve biodiversity and contribute to the greening of urban areas.

Our Coastline

Our coastline is very well developed and supports 2 major infrastructure links – the A259 road and the coastal railway providing links to London, Brighton, Kent and ultimately Europe.

The Borough Council has a shared responsibility for coastal defences in partnership with the Environment Agency. Our coast is approximately 12km but is affected by coastal processes that happen all along the coastline; to the east of the town are 7km of sandstone and clay cliffs which extend past the cliff top village of Fairlight to the low lying land at Pett Level.

The cliffs are designated as a Special Site of Scientific Interest (SSSI) and Special Area of Conservation (SAC) and are left to erode naturally.

To the west of the town are 2 km of low-lying land at Bulverhythe which the Environment Agency has responsibility for defending against coastal and fluvial flooding.

Coastal erosion from western parts of the county has resulted in the accretion (or accumulation) of shingle on the Stade area in the Old Town. This is having an impact on the local fishing industry and our coastal defences. Research is under way to identify the best solution for this issue.

What we have achieved so far

Developed a [Strategic Flood Risk Assessment](#) of the Borough to consider the areas of the town that may be subject to future flooding to guide planning decisions and assess sites' suitability for proposals for new development.

The Environment Agency has produced the Cuckmere and Sussex Havens Catchment [Flood Management Plan](#) to:

- understand the factors that contribute to flood risk within a catchment both now and in the future;
- recommend the best ways of managing the risk of flooding within the catchment over the next 50 to 100 years.

It has shown that one of the main risks to the area is from surface water flooding, which is likely to worsen with climate change.

Working in partnership across East Sussex the Council has prepared a **Surface Water Management Plan**, to manage surface water flooding in the town.

The Environment Agency have installed 10 new rock groyne sea and flood defences at Bulverhythe to defend over 800 homes, the railway and A259.

Hastings Borough Council also installed a new rock groyne to help address overtopping by the pier.

Working in partnership with Hastings Fishermen Protection Society The Council secured DEFRA funding to become one of 15 [Coastal Change Pathfinders](#) to research and understand the impact of coastal processes and climate change affecting our coastline. This has led directly to the purchase of three bulldozers for the Stade to manage the shingle accretion.

Southern Water has produced a comprehensive report in accordance with the Climate Change Act 2008 Adaptation Reporting Power called 'Adapting to Climate Change' that details the key risks and mitigation measures that are under way to address the key impacts of climate change.

What we plan to do next and future opportunities

1. Ensure implementation of the Surface Water Management Action Plan during 2012 and 2013.
2. Using DEFRA funding the Council will carry out a flood risk assessment of the Borough's shoreline.
3. Using DEFRA funding the Council will undertake a survey of the Harbour Arm to establish its structural state.
4. Promote green roofs and green walls in accordance with planning strategy SC1
5. Promote water efficiency in accordance with planning strategy SC1
6. Continue to work in partnership with the Environment Agency to secure additional funding to upgrade the town's coastal defences as required.

G: The natural environment and green spaces

Both habitats and biodiversity will be challenged through climate change. This increases the importance for retaining and defragmenting habitats networks (including wildlife corridors and stepping stones) to allow species to seek alternative habitats when local environmental conditions become less favourable to them.

In order to protect and enhance these habitat networks, they need to be recognised, mapped, and documented, and then protected by use of the planning system and enhanced by improving land management practices.

Climate change may exacerbate and/or alter the pressures placed on the natural environment, and may, in turn, affect the way humans are able to use it, for example growing crops, or obtaining high quality drinking water.

The natural environment provides a key resource for increasing our resilience to extreme weather and crucial to our ability to adapt, reducing flood risk, cooling towns and cities and storing water, as well as having an important role in reducing climate change by absorbing carbon dioxide. It is important to recognise the link between the status of natural resource systems and ecosystem services that support human well-being.²⁰

Parks, gardens, allotments, green roofs, cemeteries, our shoreline and natural landscape makes up our green infrastructure, a network of green and blue elements that have adaptive capacity in dealing with increased extreme weather events in future. For example, the green infrastructure is very effective at intercepting rainwater and moderating the flow of water into traditional drainage systems. Trees are very effective at slowing the rate that water reaches the ground, and how much of it flows away, thus alleviating the potential for flash flood water during periods of heavy rainfall. Alexandra Park has an important flood prevention role with its underground reservoir, and parks and gardens also have a large capacity to shade and reflect heat, making them efficient at lowering temperatures during summer extremes.

To help address water shortages in dry summer months it will become more important to plant drought tolerant species and use shelter and shade to reduce the amount of water lost.

Parks that incorporate elements of shade will become increasingly important especially during longer hotter summers and heat waves, providing easily accessible cool open spaces.

What we have achieved so far

Working to the climate change adaptation principles set out in the England Biodiversity Strategy we have:

Protected existing biodiversity by designating wildlife habitats, sites of special scientific interest and Local Nature Reserves

Working in partnership with the Council's ranger service a large number of voluntary groups undertake a huge amount of work as volunteers to help to maintain the town's diverse green spaces.

The Council's parks and open spaces team have revised the town's planting schemes to include more drought tolerant plants.

²⁰ <http://www.parliament.uk/business/publications/research/briefing-papers/POST-PN-377>
[The ecosystem approach, May 2011 \(PDF, 4 pages, 254.9 KB\)](#)

Achieved [green flag](#) status for a number of the town's [parks and gardens](#) in recognition of the way in which they are managed and their value to the wider community.

What we plan to do next and future opportunities

1. Maintain and develop wildlife corridors, so that species do not become trapped by the built environment (roads, housing, commercial developments) and are able to migrate to more suitable habitats as the climate in Hastings & St Leonards changes.
2. Prepare a green infrastructure plan as part of the Local Plan evidence base which will look at opportunities for a network of multi-functional green spaces in association with allocations for development, in accordance with Policy EN2 of the Planning Strategy refers to this.

H: Food

There is a clear link between food production and consumption and climate change.

Our food system is a very significant contributor to greenhouse gas emissions.

- The United Nations Food and Agriculture Organisation (FAO) has calculated that, globally, agriculture generates 30% of total man-made emissions of greenhouse gases, including half of methane emissions and more than half of the emissions of nitrous oxide.
- In the EU, over 30% of the greenhouse gases from consumer purchases come from the food and drink sector.
- Latest conservative estimates from the Food Climate Research Network in the UK suggest that over 20% of the UK's total greenhouse gas emissions are associated with our food and drink.

However, in Southern England, Hastings and the surrounding area opportunities may stem from warmer and longer growing seasons to grow crops adapted to a warmer climate e.g. vine. Water scarcity and more regular droughts will be issues that need to be considered especially where crops are dependent on high levels of irrigation.

Growing food locally and using local food suppliers will contribute to reducing the town's carbon footprint arising from food.

The Moveable Feast Community Garden

Led by a gardening group from the local Women's Institute, this project has brought the community together to create a fruit and vegetable garden on an empty site awaiting development in Western Road, St Leonards on Sea. HBC cleared the land to enable this project. As well as providing a much needed space for community food growing, the Moveable Feast Community Garden will be designed to be completely portable so that it can be picked up and moved to another local empty or underused site when the current site is developed for flats as planned. It therefore provides a neat solution to the blighting effect of empty development plots as well as much needed gardening opportunities for a dense urban area with few private gardens and a long waiting list for allotments.

The vegetables will be grown in raised beds made from of a mixture of 1 ton polypropylene builders sacks and stacks of old tyres resting on a base of wooden pallets. To move the garden the pallets would be lifted onto a flatbed truck using a fork lift truck and the bags would be hoisted in the usual way. Part of the site will be sown with annual wildflower seeds as a colourful meadow also for community use.

The vision for this project is to bring the community together by taking loneliness and fear out and putting fun back into the equation. If people get to know their neighbours and work alongside them and share the fruits of their labours, the positive effects will ripple out into the wider community. The aim is to involve a range of local people and approach established groups including those working with asylum seekers, young parents, old people, teenagers and the long term unemployed and the three primary schools within walking distance.

What we have achieved so far

Worked in partnership with CPRE to map the town's local food web ([Field to Fork: Hastings Mapping the Local Food Web](#)).

Hastings Fishermen's Protection Society and the Council have supported the local fishing industry to achieve Marine Stewardship Council certification for some fish species caught, including Dover sole and herring..

Developed community growing spaces to act as hubs to encourage and demonstrate how to grow your own food e.g. The Bridge Community Garden, Ore Valley Community Orchard and the Bohemia Walled Garden.

The Borough Council and local allotment associations rent out [allotments](#) to support local food growing.

Supported the establishment of a weekly market in the town centre, promoting locally grown produce including fruit and vegetables, bread, preserves and meat.

Top selling local recipe books, encouraging use of local seasonal produce, have been published by Transition Town Hastings, [Hastings Harvest](#) and members of the local community. [Hastings Fish Book](#) has been a sell out and is now in second edition, with a sequel.

What we plan to do next and future opportunities

1. As part of the Fisheries Local Action Group (FLAG) business plan the council and its partners aim to set up a “classroom on the coast” a seafood training kitchen within a flexible meeting and training space. The public will learn fish cookery skills and the value of the Marine Stewardship Council certification for Hastings Dover sole and herring... Other issues addressed could include climate change, coastal processes, fish identification and learning about the seaside and the Seafood and Wine Festival 2012 will pilot some of these.
2. Continue to support local food initiatives, the allotment scheme and community fruit and vegetable schemes.
3. Promote the locally sourced [Sussex breakfast](#) with tourist accommodation in the Borough.
4. Continue to promote and support the weekly food market.

Health and Well-being

The impact of climate change on our health is a complex issue, and the benefits for, or threats to health may be direct, or indirect. Projected changes in the climate could have huge implications for public health. The recently published [UK Climate Risk Assessment](#) indicates that health and wellbeing will be affected by both extreme weather events and long term gradual change. The Department of Health has also published Guidance on the [Health Impact of Climate Change: Promoting Sustainable Communities 2008](#).

Direct impacts on health are likely to be among the earliest effects of climate change not only due to heat-waves or extreme heat events but also as a result of flooding, storms and periods of extreme cold as well. [Met Office](#) research has demonstrated that the extreme summer temperatures experienced in the summer of 2003 and 2006 will be normal in the next 25-30 years.

The effects of climate change on health will be diverse and mediated by a range of different mechanisms, including the direct physiological effects of heat leading to heat related illnesses, vector borne disease, increased incidence of food poisoning, poorer air quality (as for example increasing temperatures and prolonged hot periods are associated with summer smog and ozone episodes which irritates respiratory conditions), and increases in allergens.

Vulnerable populations such as the very young, the elderly and those living in poverty are likely to suffer disproportionately negative health impacts as a result of climate change, as they tend to have less access to resources that can improve health and take adaptive actions.

Actions we take to mitigate the impacts of climate change can be of positive benefit to public health. For example, energy efficiency initiatives to reduce carbon emissions and create warm homes can reduce the risk of ill health from cold related illnesses. The increased use of active transport such as walking and cycling encourages active lifestyles whilst also reducing greenhouse gas emissions.

As a result of climate change there are likely to be increased demands placed on social, health and emergency services during heat waves and flooding – it will be important to ensure that these services are resilient to a future climate.

In response to these issues the Department of Health has a [Climate Change Plan](#) and the Health Protection Agency will shortly update its 2008 report [Health Effects of Climate Change](#).

The Department of Health produces an annual [Heat Wave Plan](#) (Protecting Health & Reducing Harm From Extreme Heat and Heat Waves) to manage their impact and the Sustainable Development Unit of the NHS

promotes the building of adaptive capacity, and identifies robust responses to these challenges.

What we have achieved so far

Through Sussex Air Quality Partnership involving all local authorities and other agencies in Sussex, established Sussex [AirAlert](#) service that sends out messages to vulnerable people in Sussex informing them about poor air quality predicted in their area.

[Sussex NHS Partnership](#) continues to provide the health and social care response to the annual Heat Wave Plan in the Sussex Area, according to the level of action required for each alert level, including providing cool spaces in buildings for vulnerable people.

The [Sussex Resilience Forum](#) has been established; a partnership of local authorities, health authorities, voluntary sector, local agencies and response services in Sussex. This is responsible for undertaking preparations for, and responding to major incidents and emergencies throughout Sussex, including extreme weather events, flooding and marine pollution.

Throughout the summer season Hastings Borough Council provides free [sun screen](#) protection from the Lifeguard stations and beach office.

During 2011, established the [East Sussex Warm Homes Healthy People Project](#), a partnership involving the voluntary sector and local authorities in East Sussex, to address fuel poverty in the county.

[Air quality](#) is monitored to ensure it meets government standards and an air quality action plan and air quality management area has been established in the Borough.

Active Hastings provides programme of physical activities and HBC has a Sport and Physical Activity Strategy.²¹

What we plan to do next and future opportunities

1. Continue to provide an appropriate response to the Annual Heat Wave Plan.
2. Continue to work in partnership to reduce the incidence of fuel poverty in Hastings and St Leonards, targeting the wards with the highest incidence of people experiencing fuel poverty.

21

http://www.hastings.gov.uk/decisions_democracy/how_we_make_decisions/policies_strategies/sport_physical_activity_strategy/

J: Community Engagement

This climate change strategy sets out policies and specific actions to help reduce the town's greenhouse emissions and adapt to climate change. A key aim of the strategy is to help develop a collaborative response. It aims to encourage behaviour change.

By communicating widely about climate change and its likely impacts we can begin to build and share climate change intelligence in the town. We need to continue to raise awareness, build understanding and promote a step change towards reducing carbon dioxide emissions (CO₂). Adapting to climate change - both through individual behaviour and through collaboration with others can lead to innovative solutions.

This strategy is for the whole of Hastings and St Leonards: its residents, businesses, workers, students, and visitors. It looks at all our areas: the town, estates, offices, factories, places of education, open spaces. It covers our use of resources, our travel, and our leisure time. Our success will be measured by our ability to work together. Clear communication will be essential to maximise the impact of all our actions.

What we have achieved so far

Funded by the [Future Cities](#) project the Council bought a thermal imaging camera to provide colour pictures of energy loss from buildings in the town. These paint a vivid image for local people and businesses and help to share understanding about energy efficiency in our buildings.

Increased the awareness and understanding and promoted the benefits of renewable and low carbon energy technologies through [Energise Hastings](#)

Working in partnership we have supported local events such as Pathway to Construction and Ecofab which showcase sustainable construction methods.

Amicus Horizon is developing a team of residents to become 'green ambassadors'. Training is provided on water, energy use, waste reduction, composting and recycling. Five people have already been recruited

Through their work in a project called IFORE²² Amicus have found that when they compare the cost of retrofitting with behaviour change activities – the latter is far more cost effective, so are looking to replicate this work.

What we plan to do next and future opportunities

1. Continue to promote national, regional and local initiatives to encourage behavioural change and inspire local action through a broad range of local media including websites, social media and radio.

²² www.ifore.eu/index.php/Home

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2. Promote national initiatives and campaigns such as [Climate Week](#), the [25:5 campaign](#), the [Carbon Trust](#) and [Act on CO2](#) to engage and inspire local action.
3. Collaborate and bid for funding to support local campaigns and initiatives which reduce our greenhouse gas emissions and build resilience.
4. Link to practical actions from our website
5. Ensure that the Council's contact centre staff are aware of climate change and can signpost all residents and businesses to relevant support and advice e.g. energy efficiency advice.
6. Host an international climate change conference to showcase all the Future Cities achievements of the Borough and of our European partners in February 2013.
7. Continue to build understanding of issues across the Borough, demonstrating the benefits of change by working in partnership.
8. Continue to work with community groups, schools and other organisations to raise awareness and understanding of the issue of climate change. This will involve developing strong, simple messages that encourage, inspire and promote change.
9. Monitor the progress the Borough as a whole makes towards reducing greenhouse gas emissions and promote the findings when available.
10. Hold community awareness raising events and showcase exemplar projects.

Appendix 1

What is Climate Change?

Mounting scientific evidence and debate leaves little doubt that climate change is happening and affects us all. To understand climate change, it is important to understand the difference between weather and climate. Weather is the variation of temperature, precipitation and wind, which changes hour by hour, day by day. The climate is the average weather and its variations across decades. The Met Office definition is as follows: “climate change is the long-term change in climate and is usually used in context of man-made climate change”.²³

The greenhouse effect is the term used to describe the warming of the earth. It is a natural process.

The Science

The earth is warmed by light from the sun, which the earth’s surface radiates back into space as infrared radiation or heat. Most of the sunlight travels straight through the atmosphere, however, much of the infrared radiation is absorbed by atmospheric gases (greenhouse gases) – principally water vapour and carbon dioxide (CO₂) and methane. (They act like a blanket around the Earth). Some is then re-radiated back to the earth’s surface thereby keeping it warm - called the “greenhouse effect”.

The Greenhouse Effect

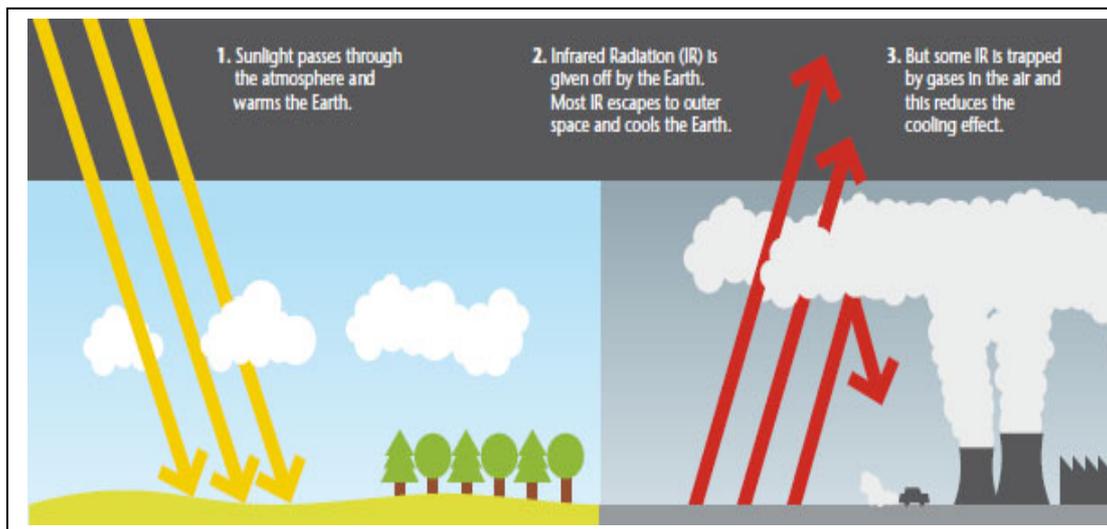


Figure 1: The Greenhouse Effect (source: MET Office Together we Can Make a Difference 2007)

²³ (Met Office “Together we Can Make a Difference” 2007).

Without the greenhouse effect, most of the sun's heat would be reflected back into space and the earth would be at least 30°C cooler.

For several thousand years the atmosphere has been delicately balanced, with levels of greenhouse gases relatively stable. There is a natural variation in the climate. UK summers can be hotter or cooler, winters cooler or milder; variations can persist from year to year or from decade to decade; however there has been an underlying increase in average temperatures which continues.

Our dependence on fossil fuels for energy (coal, gas, oil) and changes in agriculture practices have increased greenhouse gases in the atmosphere to above natural levels. This has led to an increased greenhouse effect and extra warming. Any increases in the levels of greenhouse gases in the atmosphere mean that more heat is trapped and global temperatures increase – an effect known as 'global warming'.

Temperature Rises

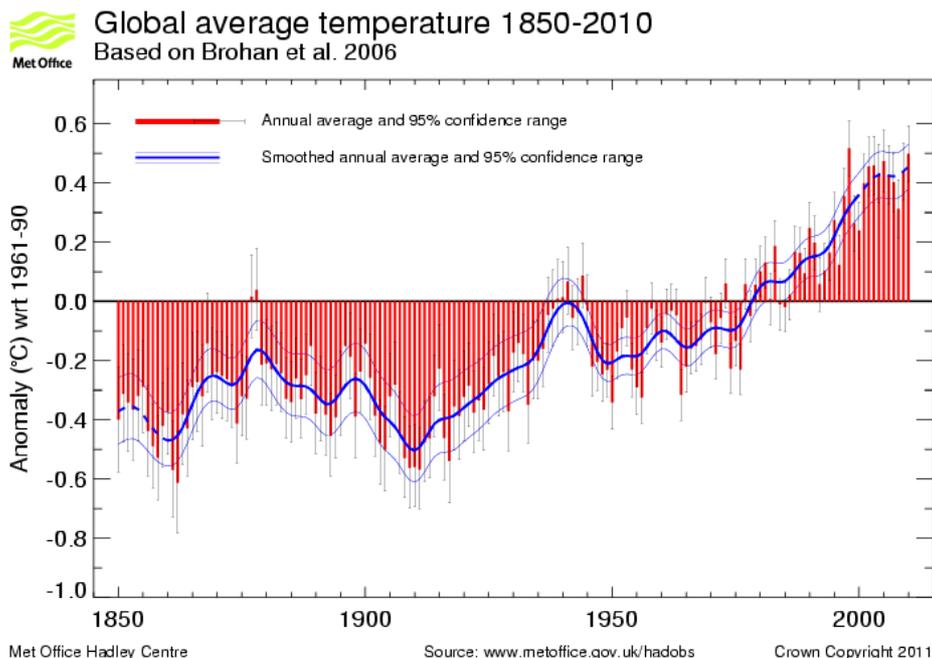


Figure 2 Global Temperature 1850 – 2010 (Source MET Office)

The rise in global surface temperature has averaged more than 0.15°C per decade since the mid-1970s. Warming has been unprecedented in at least the last 50 years, and the 17 warmest years have all occurred in the last 20 years. The long term trend is for rising temperatures, even if one year is not necessarily warmer than the year before.

The warming trend can be seen in the above graph of observed global temperatures. The red bars show the global annual surface temperature,

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which exhibit year-to-year variability. The blue line clearly shows the upward trend, far greater than the uncertainties, which are shown as thin black bars. The recent slight slowing of the warming is due to a shift towards more frequent La Niña conditions in the Pacific since 1998. These bring cool water up from the depths of the Pacific Ocean, cooling global temperatures.

Recognition of the global, national, regional and local significance of climate change has dramatically increased in the last 10 years, resulting in international co-operation, targets and frameworks to tackle this important global issue.

Appendix 2

International Cooperation

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 and published its first report in 1990. In 2007 the 4th Climate Assessment presented an integrated view of climate change; summarising observed changes in climate and their effects on natural and human systems and assessed the causes of the changes.

Projections of future climate change and related impacts under different scenarios and what adaptation and mitigation options we have over the next few decades was also in the report, along with how this interacts with sustainable development.

The Fifth Assessment Report (AR5) is now under way. It will consist of three Working Group (WG) Reports and a Synthesis Report, to be completed in 2013/2014:

WG I: The Physical Science Basis - mid September 2013

WG II: Impacts, Adaptation and Vulnerability - mid March 2014

WG III: Mitigation of Climate Change - early April 2014

AR5 Synthesis Report (SYR) - October 2014

The United Nations Earth Summits on Sustainable Development

The UN Earth Summit in Rio in 1992 saw the issue of climate change bring 160 nations together to agree to reduce carbon dioxide emissions to 1990 base year levels by 2000. Born out of this, initiatives such as the Kyoto Protocol and the United Nations Framework Convention on Climate Change have been developed, encouraging countries from around the world to reduce emissions of CO₂.

Earth Summit 2012 'Rio+20' is to be hosted again in Rio de Janeiro at the end of June 2012. It will be another opportunity to reaffirm and consolidate action on climate change. **Greening the economy** is one of the two major themes. The key document the UN 'zero draft' was released on 10 January 2012 called '**The Future we want**'²⁴.

The European Commission

'Adapting to Climate Change: Towards a European Framework for Action'²⁵

²⁴

http://www.uncsd2012.org/rio20/content/documents/370The%20Future%20We%20Want%2010Jan%20clean%20_no%20brackets.pdf

²⁵ <http://www.eurosite.org/en-UK/content/adapting-climate-change-towards-european-framework-action>

Recently the EC published a White Paper (titled above) which identifies Europe's vulnerability to the impact of climate change and sets out why an adaptation strategy is needed at an EU level. It looks at the impact of climate change on a number of sectors including:

- human health & well-being
- water
- agriculture
- energy
- infrastructure

Framework Conventions on Climate Change (FCCC) Conference of the Parties (COP)

The 17th annual UN Climate Conference (COP17) took place in Durban, South Africa from 28 November to 11 December 2011. Its aims were to seek in advance, a balanced fashion, the implementation of the Convention and the Kyoto Protocol, as well as the [Bali Action Plan](#), agreed at COP 13 in 2007, and the FCCC [Cancun Agreements](#), reached at COP 16 December 2010.

The key outcomes of Durban were:

- Establishment of a new negotiating process – the 'Durban Platform' – to agree a new, legally binding global climate deal by 2015, with entry into force by 2020
- Extension of the Kyoto Protocol with agreement to a second commitment period from 2013 to either 2017 or 2020 (exact end date to be confirmed at COP18)
- Implementation of a range of new 'Cancun' institutions and processes, not least the new 'Green Climate Fund'

The specific political and environmental implications of this are covered in a 'post Durban briefing report' produced by the Climate Group²⁶.

²⁶ http://www.theclimategroup.org/_assets/files/COP17---Post-COP-briefing---Dec23.pdf

Appendix 3

National Policy Commitments

The coalition government has pledged to make climate change a national priority with relevant policy developing rapidly. The government has recognised the role that local authorities and indeed the public sector has in delivering policies on climate change and is planning increasingly higher expectation on councils to engage and perform in this area of work.

Sir Nicholas Stern Report “Review of the Economics of Climate Change” October 2006²⁷

The report provided a detailed analysis of the economic implications of human-induced climate change. Key messages were:

- Climate change is real and is happening now
- There is compelling evidence that climate change will have an adverse effect on economic growth unless there is urgent, global action; tackling climate change is a pro-growth strategy
- The longer action is delayed, the harder (and more expensive) it will become
- Climate change mitigation is technically and economically feasible at a cost of around 1% of GDP via increased efficiency; acting non-energy emissions (e.g. avoiding deforestation) and switching to low carbon technologies for power, heat and transport
- An essential element of climate change is carbon pricing
- Responding positively to climate change will bring economic opportunities
- Adaptation as well as mitigation can reduce the negative impacts of future climate change

In June 2008, Stern said that because climate change is happening faster than predicted, the cost to reduce carbon would be even higher, of about 2% of GDP instead of the 1% in the original report²⁸

Climate Change Act 2008²⁹

The Climate Change Act has established long term legal framework to underpin the UK's actions on tackling climate change. The Act commits the UK to reducing carbon dioxide (CO₂) emissions by 80 per cent by 2050 and at least 34 per cent by 2020, against a 1990 baseline.

²⁷ http://webarchive.nationalarchives.gov.uk/20100407174731/http://www.hm-treasury.gov.uk/stern_review_report.htm

²⁸ ^a ^b Jowit, Juliette; Wintour, Patrick (26 June 2008). "[Cost of tackling global climate change has doubled, warns Stern](http://www.guardian.co.uk/environment/2008/jun/26/climatechange.scienceofclimatechange)". *The Guardian* (London). <http://www.guardian.co.uk/environment/2008/jun/26/climatechange.scienceofclimatechange>.

²⁹ http://www.decc.gov.uk/en/content/cms/legislation/cc_act_08/cc_act_08.aspx

Two key aims underpinning the Act:

- to improve carbon management and help the transition towards a low carbon economy in the UK; and
- to demonstrate strong UK leadership internationally, signaling that we are committed to taking our share of responsibility for reducing global emissions in the context of developing negotiations on a post-2012 global agreement at Copenhagen next year

UK Adaptation Strategy 2008 “Adapting to a Changing Climate in England – a Framework for Action” 2008³⁰

Recognises that in addition to our policies to mitigate future climate change, we also need to adapt to the changes we are likely to face.

Health Effects of Climate Change in the UK 2008³¹

The report considers the impacts of climate change on health from – flooding & windstorms, vector-borne diseases, food borne disease, water and disease, and the direct effects of rising temperature on mortality.

The UK Low Carbon Transition Plan - National Strategy for Climate Change and Energy 2009³² (in support of sections 12 and 14 of the Climate Change Act 2008)

This plan sets out the previous Government’s route map for the UK’s transition to a low- carbon economy: cutting emissions, maintaining secure energy supplies, maximising economic opportunities and protecting the most vulnerable.

It includes a 5 point plan to tackle climate change:

1. protecting the public from immediate risk
2. preparing for the future
3. limiting the severity of future climate change through a new international climate agreement
4. building a low carbon UK
5. supporting individuals, businesses and communities to play their part

³⁰ <http://archive.defra.gov.uk/environment/climate/documents/interim2/climate-change-framework.pdf>

³¹ http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/DH_082692

³² http://www.decc.gov.uk/assets/decc/White%20Papers/UK%20Low%20Carbon%20Transition%20Plan%20WP09/1_20090724153238_e_@@_lowcarbontransitionplan.pdf

Energy Act 2011³³

In October 2011, the Energy Bill received Royal Assent and became the Energy Act 2011. This Act provides for some of the key elements of the Coalition's Programme for Government and its first [Annual Energy Statement](#). It is a first step in our legislative programme, and further legislation has been sought to implement, for example, the findings of the Electricity Market Reform Programme.

The Act provides for a step change in the provision of energy efficiency measures to homes and businesses, and makes improvements to our framework to enable and secure low-carbon energy supplies and fair competition in the energy markets.

The Act includes provisions on:

Green Deal

- The Act creates a new financing framework to enable the provision of fixed improvements to the energy efficiency of households and non-domestic properties, funded by a charge on energy bills that avoids the need for consumers to pay upfront costs.

Private rented sector

- The Act includes provisions to ensure that from April 2016, private residential landlords will be unable to refuse a tenant's reasonable request for consent to energy efficiency improvements where a finance package, such as the Green Deal and/or the Energy Company Obligation (ECO), is available.
- The Act also provides for powers to ensure that from April 2018, it will be unlawful to rent out residential or business premises that do not reach a minimum energy efficiency standard (the intention is for this to be set at EPC rating 'E').

Energy Company Obligation

The Act amends existing powers in the [Gas Act 1986\[External link\]](#), [Electricity Act 1989\[External link\]](#) and the [Utilities Act 2000\[External link\]](#) to enable the Secretary of State to create a new Energy Company Obligation that will:

- take over from existing obligations to reduce carbon emissions (the [Carbon Emissions Reduction Target \(CERT\)](#) and [Community Energy Saving Programme \(CESP\)](#)), which expire at the end of 2012

³³ http://www.decc.gov.uk/en/content/cms/legislation/energy_act2011/energy_act2011.aspx

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- work alongside the Green Deal finance offer by targeting appropriate measures at those households likely to need additional support – in particular those containing vulnerable people on low incomes and in hard-to-treat housing

The Act also includes measures to:

- improve energy efficiency and energy security
- enable low-carbon technologies
- extend the role of the Coal Authority
- repeal the Home Energy Conservation Act 1995 (HECA) in Scotland and Wales

Appendix 4

UK Climate Projections (UKCP09)

The UK climate projections (UKCP09)³⁴ provide information on how the UK's climate is likely to change in the 21st century, as it responds to rising levels of greenhouse gases in the atmosphere.

The purpose of providing information on the possible future climate is to help those needing to plan how they will adapt to help society and the natural environment to cope with a changing climate.

The Projections show three different scenarios representing high, medium and low greenhouse gas scenarios – this can help to demonstrate the importance of reducing our greenhouse gas emissions (mitigation).

The types of climate information provided are:

- observed climate data (20th and 21st century historical information about temperature, precipitation, storminess, sea surface temperatures and sea level)
- future climate projections (for temperature, precipitation, air pressure, cloud and humidity)
- future marine and coastal projections (for sea level rise, storm surge, sea surface and sub-surface temperature, salinity, currents, and waves)

The UK climate projections are based on a new methodology designed by the Met Office, which allows a measure of the uncertainty in future climate projections to be included in the information.

The south east is predicted to experience the greatest change in its climate, of any English region over the coming century. Examples of predicted effects include:

- Hotter, drier summers
- Milder, wetter winters
- A significant seasonal changes in levels of soil moisture deficit
- More frequent extreme high temperatures
- More frequent extreme winter precipitation
- Increase in sea level rise

The following shows the climate change scenarios for the southeast region; the UKCP09 climate projections can be used to assist and support policy development and test policy scenarios.

³⁴ <http://ukclimateprojections.defra.gov.uk/>

Climate Change Maps for the South East

The maps below show some projections of how the UK climate may change for the 30-year period from 2070–2099. These maps give a range of climate that we might expect, together with the probability of different outcomes based on the strength of evidence. The central estimate is given by the centre map.

Change in annual mean temperature for the 2080s under a medium emissions scenario

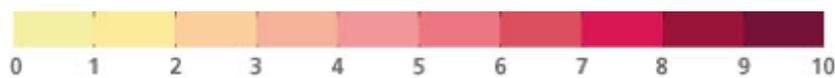
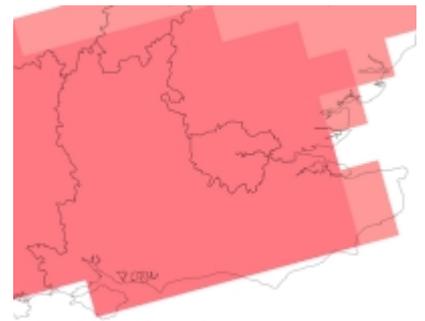
10% probability level:
very unlikely to be less than



50% probability level:
central estimate



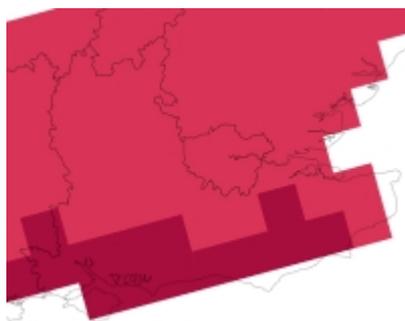
90% probability level:
very unlikely to be greater than



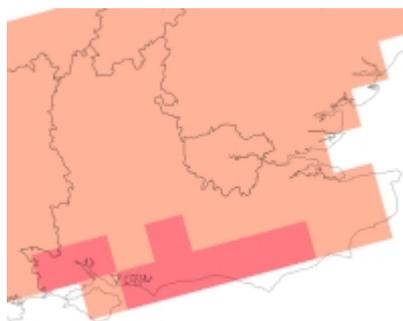
Change in summer mean
temperature (°C) Medium
emissions

Change in summer mean precipitation for the 2080s under a medium emissions scenario

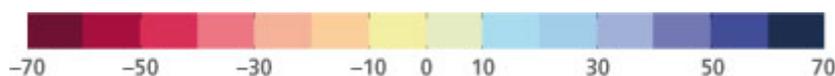
10% probability level:
very unlikely to be less than



50% probability level:
central estimate



90% probability level:
very unlikely to be greater than



Change in summer mean
precipitation (%) Medium
emissions

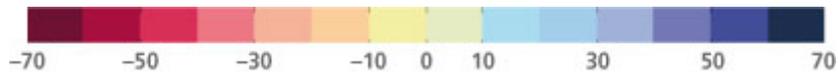
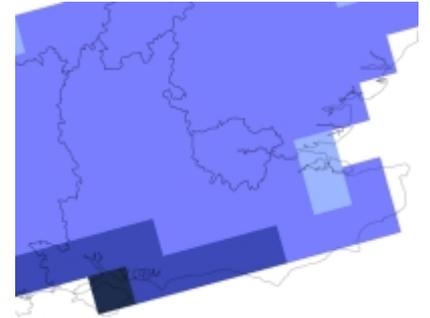
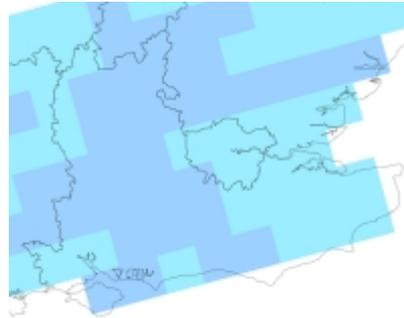
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Change in winter mean precipitation for the 2080s under a medium emissions scenario

**10% probability level:
very unlikely to be less than**

**50% probability level:
central estimate**

**90% probability level:
very unlikely to be greater than**



**Change in winter mean
precipitation (%) Medium
emissions**

Two variables are shown in the maps above – temperature and precipitation (which includes rainfall, snow and hail). The maps show changes suggested by climate models at the 10, 50 and 90% probability levels. The example above considers the impact of continued global greenhouse gas emissions on a pathway that is described, in UKCP09, as the medium emissions scenario.
<http://ukclimateprojections.defra.gov.uk/>

Appendix 5

Hastings: Local Carbon Dioxide Emissions

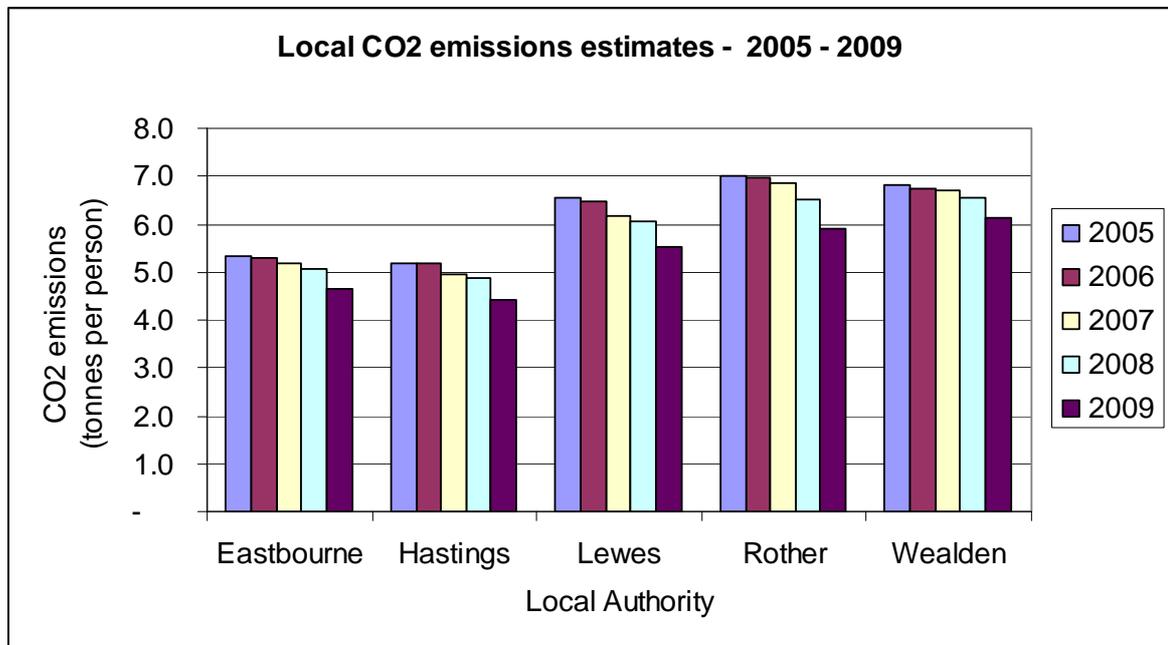
Source: Source: DECC

http://www.decc.gov.uk/en/content/cms/statistics/climate_stats/climate_stats.a.spx

2009 Local Authority Carbon Dioxide Figures (published: 15.09.2011) Hastings

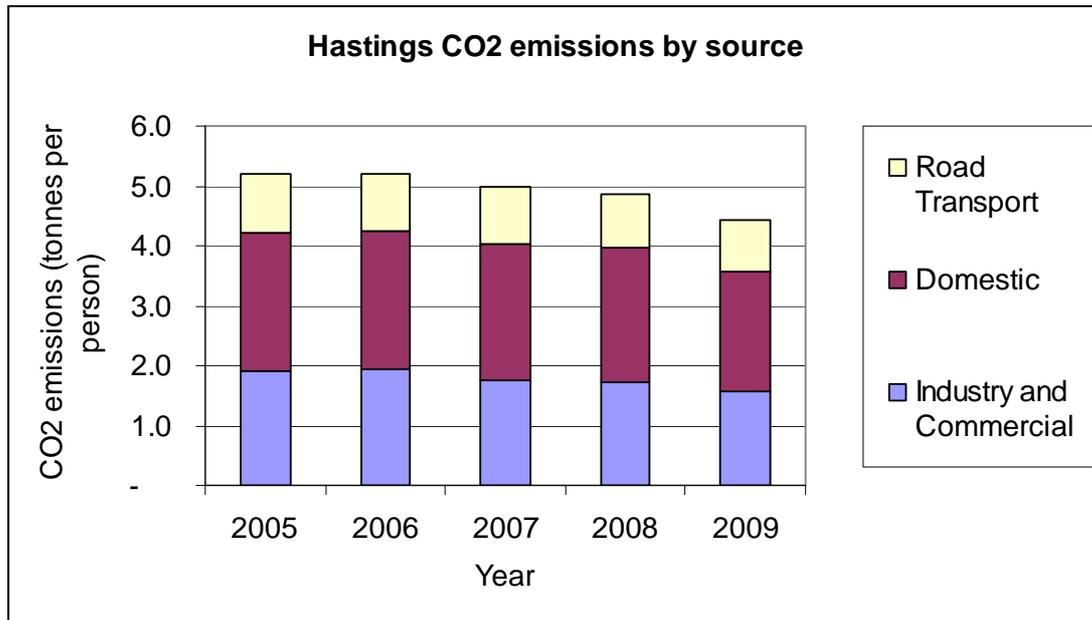
The graph below shows Carbon Dioxide (CO₂) emissions per capita, across East Sussex local authorities. This data is produced by Government and emissions are assigned to the end user, showing where energy is consumed and or produced.

Per Capita Carbon Dioxide Emissions (CO₂) 2005 -2010

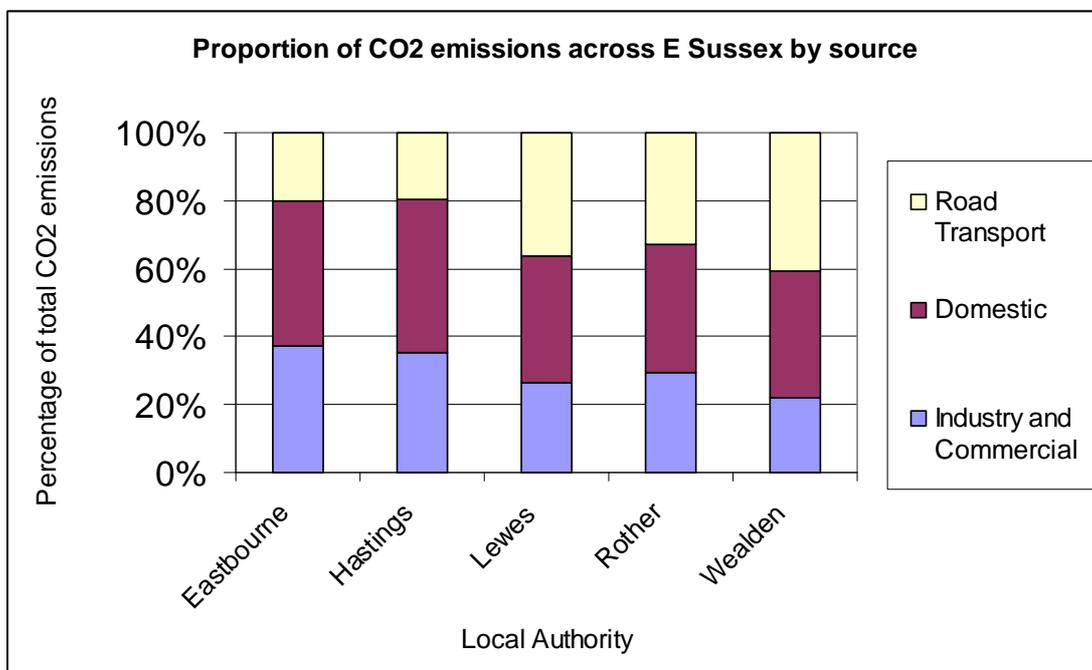


The data shows that Hastings has the lower per capita emissions when compared with the other local authorities in East Sussex. The graphs below shows the proportion of these CO₂ emissions assigned to road transport, housing, and industrial and commercial buildings including the public sector for Hastings in years 2005 - 2010 and compared with the other East Sussex local authorities.

Percentage CO₂ by sector



The data shows that in Hastings the highest proportion of emissions are from the domestic sector, with emissions from the commercial and industrial sector emitting the second highest proportion. A lower than average proportion of emissions is from the transport sector.



Appendix 6

Future Cities³⁵

[Future Cities](#) in context

This work began back in September 2009 when Hastings and St Leonards hosted, through the council, a working group meeting of the Future Cities partnership bringing together Belgium, France, the Netherlands, Germany and the UK. This was followed by a conference, Facing up to Climate Change that showcased good practice from the UK and Europe. Watch the event [video](#)

Each partner committed to creating their own climate change strategy and action plan locally, as well as contributing case studies to an [adaptation compass](#), to guide planners and policy makers through the process of climate proofing a city. Meetings are held twice a year and hosted by each of the partners in turn.

In May 2011 we [hosted](#) our Dutch partners with a demonstration of a map table, a tool for creating a climate map of the town.

A seminar with members of the Local Strategic Partnership was held in June that challenged participants to think ahead to Hastings and St Leonards in the year 2066 and think about what may need to be in the plan. The report and presentations are available [here](#).

The project also funds a range of practical projects, including, locally, a training manual and video [guide](#) on how to retrofit existing older housing stock, further to the conversion of a Victorian property by Hastings Trust. It has contributed to the [Sussex Exchange](#), a conference centre that aims to be a showcase of environmental technologies with potential for a wind turbine on site that could power approximately 1000 homes.

The project will culminate in a high profile international conference here in Hastings, to highlight the good practice and all the European projects.

This work is co-financed by the European Regional Development Fund Interreg IVB North West Europe programme.

³⁵ <http://www.future-cities.eu/>