



tomorrow's
England

Our changing climate, our changing lives
The South East

TOMORROW'S CLIMATE
Today's Challenge



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Introduction

What does England mean to you?

Is it village greens, country gardens, song thrushes, the oak tree, carpets of bluebells, ancient woodland, primroses and hedgehogs – or our bustling towns and cities?

Is it apple orchards, local spuds, rhubarb crumble, roast beef and fish 'n' chips? Or golf courses, your allotment, fishing, the Six Nations and the Ashes?

Or is it simply home?

Whatever it means to you, the England we know and love is in peril owing to climate change.

The year 2007 saw sunbathers flocking to the beaches in the hottest April on record, quickly followed by flash flooding in June that destroyed thousands of homes and killed 11 people¹. In 2008 we witnessed the warmest two January days ever. The weather is changing. Scientists around the world and the three main UK political parties all agree that this climate change is largely the result of human activity. They also agree that any increase in the global average temperature above 2°C will be catastrophic for our way of life. To try and prevent any temperature rise above 2°C, all the world's wealthy countries will have to cut their carbon emissions (the main cause of climate change) by at least 80% by 2050. So, as climate change causes the Arctic ice cap to melt and threatens over a quarter of the world's wildlife with extinction, what does this all mean closer to home?

In England, climate change is projected to result in:

- Hotter, drier summers
- More frequent water shortages
- Flash flooding
- More and bigger storms

And how will climate change impact the South East of England? What effect could it have on office workers in Basingstoke? Farmers in Oxfordshire? Orchards in Kent?

The region will probably remain one of the hottest and driest in the country and, depending on the season, face either water shortages or severe flooding. Climate change could alter everything from golfing to gardening, from house prices to hedgehogs, from farming to fishing. We have the choice to limit the impacts on our homes, our health and our heritage – and increasingly politicians, business and the public are working together to find solutions to move towards a low-carbon society. This booklet takes a look at some of these solutions.

However, one thing is certain: the South East of England we know and love could look very different in the not-so-distant future.



¹ <http://observer.guardian.co.uk/magazine/story/0,,2230209,00.html>

Work



The daily commute

Three-quarters of people in the South East travel to work by car² which in itself contributes to climate change. The daily commute could be a whole different experience as a result of climate change. As summer temperatures rise, road surfaces could suffer, resulting in lower speed limits and lower CO₂ emissions. These roads are already under strain as they are some of the most heavily used in the UK. Rising fuel prices resulting from global shortages will hit commuters hard – they may be forced to find different methods of transport, or to work more flexibly. Searing summer temperatures will make for uncomfortable driving and increasing air pollution.

Rail travel in England is infamous for being easily disrupted by the weather but if leaves on the line result in lengthy delays, imagine what could happen as the change in climate becomes more severe. Prolonged hot spells could lead to speed restrictions from buckled and fractured rails or trackside fires. Heavy bursts of rain could lead to railway embankments and cuttings becoming unstable, tracks flooding and bridges being weakened, while high winds could prompt speed restrictions on routes with overhead lines or nearby trees. On the plus side, however, warmer winters could reduce the age-old problem of frozen points, and the ‘wrong kind of snow’ might no longer cause problems.

Office hours

If you work in an office, soaring temperatures could make those summer days very sticky. Rising fuel prices and power shortages may mean that air-conditioning is no longer a feasible option for many. Instead, offices might opt for external blinds, shade trees or allowing employees to work more from home.

Down on the farm

Life for the South East’s farmers will change. Seventy per cent of land in the South East is farmed. Agriculture and horticulture employ 50,000 people in the region³. Rising fuel prices across the globe could mean that we bring in a lot less food from abroad; this could mean that the British farming industry grows. Rising energy prices will also mean that inorganic fertilisers are much more expensive.

The South East will continue to be one of the hottest and driest regions of the country. Severe water shortages combined with rising temperatures could change farming conditions. Small increases in temperature could mean increased yields of traditional crops. But as temperatures continue to rise and water becomes more and more scarce, yields of traditional crops will get smaller and the geographic range in which they can be cultivated will move northwards. Farmers in the South East, however, could be forced to try new types of crops: sunflowers, soya, even olives and figs. But it could be bad news for the berry industry in the South East. Strawberries, raspberries, blackcurrants, redcurrants, gooseberries, blackberries and hybrid berries are all high water-consuming crops and susceptible to extreme weather. Farmers may increasingly need to grow them in polytunnels to shelter them from extreme weather events and to control evaporation of water. But even that will only work as long as the temperature does not rise too high.

As the climate continues to change, there will be an increasing need for farmers to look after the natural environment on their farms and protect the important ‘ecosystem services’ that their land provides. This will help the natural environment, farm businesses and the region as a whole to cope with the effects of climate change.

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Cider producers in Kent, Sussex and Hampshire could initially see bumper harvests from warmer summers for the next decade or so. However, if winters become too warm in the South East, the buds will not set, which could mean that apple orchards, already in decline for commercial reasons, could become a thing of the past. Instead they could be replaced by lemon, orange and even peach trees.

The English wine industry could flourish. There are already over 60 vineyards in the South East of England and this number is set to soar alongside rising temperatures. French Champagne producers are already turning their attention to South East England as climate change affects their vineyards in France⁴. Hampshire rosé and Sussex dry sparkling wine could eventually become the tipple of choice for wine drinkers.

For more information on the challenges and opportunities that climate change presents to farmers and land managers and ways to adapt to and mitigate climate change, visit the Farming Futures website: www.farmingfutures.co.uk

All washed out

The floods of the past five years have already cost small and medium UK businesses £864 million⁵. Flash floods and storm surges are set to increase as the climate changes; this will particularly affect the low-lying South East, impacting thousands of businesses in addition to industrial areas. Take the examples of Fawley Power Station and Oil Refinery, both of which are vulnerable to flooding from high tides and sea level rises on Southampton Water, or think of the vulnerability of Thamesport, the UK’s third largest container port, and the proposed industrial and warehousing area for Thames Gateway.

2 www.environment-agency.gov.uk/commondata/acrobat/soe07final_1941006.pdf

3 www.soilassociation.org/web/sa/psweb.nsf/A5/south_east.html

4 <http://news.bbc.co.uk/1/hi/england/3629187.stm>

5 www.ukcip.org.uk/resources/publications/documents/99.pdf

Leisure



Sizzling summers

Across the UK, temperatures are already rising. Summer 2006 was the longest and hottest summer since records began in 1659⁶ and six of the 15 warmest years in the UK have occurred in the past decade⁷. In the South East, a warm and sunny part of England, this could mean sizzling temperatures. The current figures are already hot enough, with Brogdale in Kent reaching an all-time record breaking 38.5°C on 10 August 2003. By 2050, tourists will appreciate escaping into the cool of Canterbury cathedral, as a 2003 summer will be considered an average summer by 2040⁸.

A bad sport?

Hotter, drier summers combined with water shortages, freak weather events and wetter winters could spell big changes for leisure in the South East, home to world famous sporting events.

If the grass dries to a crisp and water restrictions are in place, it will be a lot harder to tee off at the Royal St Georges Golf Club in Sandwich, play cricket in Canterbury, or to keep the racecourses in shape at Epsom, Ascot, Sandown and Goodwood. Whilst such well-known venues will probably be able to pay the increased maintenance, many smaller ones could suffer, and possibly close.

Falling river levels could mean that weekend fishing trips become a thing of the past. In the summer of 1997, fishing was forbidden on the River Teise in Kent because of low flow levels⁹.

Extreme weather events, such as torrential rain, severe storms and tornadoes, are likely to occur more frequently in future. Tempestuous weather severely disrupted the 2007 Fastnet race from Cowes to Plymouth, forcing over half of the competing yachts to give up after the first day¹⁰. Racing at Cowes may increasingly be disturbed by violent summer storms. Could Henley regatta be flooded out in a summer flash flood on the Thames?

The wetter winters could mean that rain stops play at football grounds across the region. Extreme flooding would result in Reading Football Club's Madejski Stadium being inundated, and the same could happen to the new stadium at Portsmouth on Horsesea Island¹¹.

Our heritage

The South East is home to outstanding heritage sites. Extreme weather events and rising sea levels could affect those nearest the coast. Warmer summers and milder winters provide fertile conditions for the household pests that are already eating away at some of the jewels of the region. The Arts and Crafts Family Home at Standen, near East Grinstead is being destroyed as silverfish devour the priceless William Morris wallpaper and moths destroy the furnishings. With fewer days of recorded frost, these pests are not being killed.

Projections are that sea levels will rise by 34cm by 2050 in the English Channel, with rises of up to 50cm in areas such as the Solent in the same timescale¹². Henry VIII's artillery castles along the South coast at Calshot, Camber, Deal, Hurst and Walmer could all be affected. The 103 Martello towers along the South and East coasts could be similarly vulnerable. HMS Victory in Portsmouth has now been retired to a dry dock, but could find herself awash and severely damaged if high tides, winter storms and rising sea levels all combine to flood her current home. The Romney, Hythe and Dymchurch narrow gauge railway could be washed away as a result of severe winter storms or rising sea levels.

Other heritage sites are already being damaged. Kelmscott Manor in Oxfordshire, a Grade 1 listed Tudor manor, home of William Morris, was flooded in July 2007 and was still closed for repairs in early 2008¹³.

6 www.metoffice.gov.uk/corporate/pressoffice/2006/pr20061214.html

7 www.ukcip.org.uk/climate%5Fimpacts/ukciP08_Trends.asp

8 www.metoffice.gov.uk/research/hadleycentre/pubs/brochures/2005/clim_green/slide42.pdf

9 www.climatesoutheast.org.uk/downloads/RTC_Summary_Document.pdf

10 <http://news.bbc.co.uk/1/hi/england/6942302.stm>

11 http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=floodmap&ep=map&lang=_e&x=470692.0&y=169695.0&scale=5&layerGroups=1,&layerGroupToQuery=1&location=RG2%200FL

http://www.portsmouthfc.co.uk/index.php?cms_ref=stadium http://www.portsmouthfc.co.uk/index.php?cms_ref=stadium

12 www.climatesoutheast.org.uk/downloads/RTC_Summary_Document.pdf

13 www.kelmscottmanor.co.uk/

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Green fingers

Climate change will mean gardeners will have to alter their habits. Seed merchants have already changed the instructions on seed packets to take account of earlier springs and later summers¹⁴. Garden favourites such as delphiniums and lupins will not enjoy the drier summers, but bougainvillea might be able to move out of the conservatory into the garden. Alpine plants will probably be harder to grow in the South East, if the warmer winters do not provide adequate chilling¹⁵.

By 2050, conditions could be ideal for exotic species of plants and trees. These new species would compete with our existing native species. Pomegranates, citrus fruits, apricots and figs may be able to thrive in the increasingly Mediterranean climate¹⁶. Many of the region's best-loved gardens, however, such as those at Hinton Ampner, described as one of the great gardens of the 20th century, and West Green House Garden between Basingstoke and Camberley, voted one of the UK's top 50 gardens, could be severely affected by drought.



14 Stuart Jeffries, The Guardian, 22/01/08

15 www.rhs.org.uk/climate/documents/climate_summary.pdf

16 www.bbc.co.uk/gardening/basics/weather_climatewarming.shtml

Nature



All change to nature's calendar

The seasons are already changing, with spring coming earlier and earlier and our hopes for a white Christmas diminishing. The date of the first oak leafing in Surrey in the 1950s was around 30 April; in 2003 it was 6 April¹⁷. Hawthorn used to be called the may tree, with a national average first flowering date of 11 May. But in 2007, hawthorn flowered three weeks early. January 2008 brought another crop of strikingly early sightings: active newts and butterflies and even tadpoles were reported in London. Although many may welcome a shorter winter, these changes could wreak havoc with the delicate rhythms of nature. There is already evidence that in Oxfordshire the hatching of great tits may no longer coincide with peak numbers of its main food source, the moth caterpillar. This could mean that the population of this much-loved bird decreases as its food source declines¹⁸.

Where have all the flowers gone?

Early springs could become a problem for our spring flowers, such as bluebells. As trees come into leaf earlier in the year, there may be less time for spring flowers to gather the energy from the sun needed for flowering as a result of this shading from trees. This may create problems for spring flowers and, furthermore, the greater abundance of less fussy woodland plants will increase competition for space and light. The Bluebell Railway in East Sussex may have to change its name if the woods it travels through are no longer carpeted with blue in the spring.



Towering trees

Huge oaks, old yew trees, ancient forests – we are so used to these typically English sights that some of us barely notice them. Fifteen per cent of the South East is wooded¹⁹. It is England's most wooded region, with Surrey taking the prize as the most wooded county, whilst Kent and Hampshire are England's number one counties for ancient woodland (sites continuously wooded since at least 1600)²⁰. Yet all this could change.

Models suggest our magnificent beech tree may suffer most in the South East from climate change. This large forest tree with relatively shallow roots often grows on light, free-draining soils and is vulnerable to drought and storms. This could affect national treasures such as the 500-year-old Bisham Woods, assumed by some to be the basis for the Wild Wood in Kenneth Grahame's *The Wind in the Willows*, as well as the Wychwood National Nature Reserve in the Cotswolds, or the Hampshire beech hangars on the Downs. The natural range of the beech is projected to move north and west as temperatures increase.

A struggle is taking place between the oak and the ash, in terms of first leafing in the spring. Data shows that for every 1°C rise in temperature, oak comes into leaf four days earlier than ash. It is getting an advantage in increasingly prevalent warmer years. Such competitive struggles exist across the natural world, but this example illustrates how the response to climate change will be unpredictable, with some species doing better than others, and in this context raises questions about the composition of our woodland in the future.

The common oak is seen as a quintessentially English tree. The South East has many venerable oak trees, such as the Law Day Oak in Bonnington, Kent on the edge of Romney Marshes that dates from the time of Elizabeth I. It also has many less venerable ones, the old oaks in fields, woods and villages across the region. Oaks can live for over a thousand years in favourable conditions, and some of the country's most magnificent ancient trees are oaks. It remains to be seen how they will cope with a changing climate. They will of course have seen many climatic variations over the centuries, so are real survivors, although the scale and rate of predicted current warming is unprecedented in their lifetimes.

The crumbling coast

The South East is already crumbling into the sea, with some of the fastest coastal erosion rates in Europe²¹. The flash floods and stormy seas anticipated as a result of climate change could attack the region's delicate coastline from both sides. Famous coastal landmarks such as Hurst Castle Spit, Selsey Bill and East Head could be destroyed²². Undercliff on the Isle of Wight has been slipping into the sea for centuries, but the pace could increase over the next 50 years.

Fur and feathers

The diversity of the UK's wildlife is already under threat owing to a range of factors including climate change. The number of species on the UK government's at-risk list has doubled in the past 10 years, from 577 in 1997 to 1,149 in 2007²³. This list now includes more than a fifth of our most familiar birds²⁴. A changing climate could exacerbate this crisis as birds lose their natural habitats and change their breeding habits. Three-quarters of all Europe's nesting bird species are likely to suffer declines in range²⁵.

There could be a major change to the types of birds in the South East. Some species of breeding birds could vanish from the region, such as the lapwing and tree creeper, while new breeding species may colonise from Europe. This could lead to the little bittern, the hoopoe and the purple heron regularly nesting in the South East.

Coastal wetlands may be an early victim of climate change – from drying out, rising sea levels or flooding. If these sensitive marshes disappear, so could the wildfowl and waders – brent geese, terns, lapwings and oystercatchers – in coastal and inland areas such as Romney Marshes, Pevensy Levels, Titchfield Haven, the Cuckmere River estuary and the lower reaches of the Beaulieu River in the North Solent. Instead of building more houses on flood plains, they can be used as a natural defence against sea-level rise while providing a refuge for wildlife.

Castle Bottom National Nature Reserve near Fleet in Hampshire has recently been designated as a Special Protection Area because of the European importance of its heathland birds. As climate change continues, it will be more important than ever to invest in habitat protection and expansion to maintain these birds' populations in the South East.

Climate change is bad news for some of the nation's most loved furry, prickly and slithery wild animals. Already many are in dangerous decline. In 2007, the hedgehog, grass snake and harvest mouse were added to the at-risk list. The hedgehog could be extinct by 2025. This small spiny mammal is already under threat from traffic, pollution, agricultural pesticides and garden chemicals. Climate change could exacerbate pollution, disrupt hibernation patterns and mean a shortage of slugs, one of its main food sources, in the hot dry summers, particularly in the South East²⁶.

Another victim could be the otter. In the South East, otters have successfully been introduced to the Thames region and the River Itchen. Climate change and increased demand for water could mean falling river levels and dwindling food supplies. Equally, flooding could wash out otters' holts, or drown their cubs.

Species that only breed once a year are also facing a tough future with such wide variations in winter temperatures and the true start of spring. Records of frogspawn in South East England are now common before Christmas and in January. These unusually early spawning events are associated with mild mid-winter weather, fooling frogs into thinking spring has arrived. A return to more normal winter temperatures then sees frogspawn frozen and killed in shallow pools, rendering that year's breeding attempt a failure and the frog waiting until the following year to breed. It is a graphic example of how unpredictable variations in temperature within seasons can cause problems for the life cycles of species.

17 www.ecn.ac.uk/ICCUK/indicators/25.htm

18 Nature's Calendar project – Woodland Trust

19 CPRE April 2007

20 [www.forestry.gov.uk/pdf/englandsmostwoodedregioninventorypdf/\\$FILE/englandsmostwoodedregioninventory.pdf](http://www.forestry.gov.uk/pdf/englandsmostwoodedregioninventorypdf/$FILE/englandsmostwoodedregioninventory.pdf)

21 www.southdowns.gov.uk/content/page/1194/UKCIP_Rising%20to%20the%20challenge_summary.pdf

22 CPRE April 2007

23 The Independent, 8 November 2007

24 The Independent, 8 November 2007

25 The Independent, 8 November 2007

26 The Independent, 8 November 2007

Home

Water, water everywhere?

Water may become scarce and, if metering becomes widespread, more expensive for heavy users. Drier summers and wetter winters could mean an annual flip-flopping between more water shortages and flash flooding.

Hosepipes could become a thing of the past in parts of the South East. In 2006 Folkestone and Dover Water Services applied for and were granted water scarce area status, which allowed them to install meters compulsorily. In November 2007, Defra designated water companies in the region as being seriously “water stressed”, which means that companies in the South East will be able to compulsorily meter, where it is required to enable them to meet demand in the future.

Yet water demand in the South East is set to rise by 11% over the next 23 years²⁹, owing in part to the building of new homes and the increase in the shift to single occupier households.

Thames Water is already considering a £200 million desalination plant in the Thames Gateway area to supply water to North East London during drought periods³⁰. Many UK households are preparing themselves for a drier future and will increasingly find themselves using bathwater or rainwater to water the garden and perhaps even flush the loo.



Home, sweet home?

The evolving climate is also bad news for anyone living on land at risk from flooding. You've got the idea by now: it's probably going to get worse. Even if you do not suffer from flooding, your home insurance could go through the roof. Residents in and around the areas flooded in summer 2007 are already reporting very significant increases in insurance premiums, even if their houses have not yet been flooded³¹. Insurers and mortgage providers are threatening to withdraw their financial support completely for homes on flood plains in the UK³².

Housing numbers in the South East will keep on growing, with somewhere in the region of 600,000 new homes in the region by 2026³³, focused on eight sub regions including Thames Gateway, Ashford and Milton Keynes. Regeneration of former industrial areas for housing will continue because land values are so high in the South East. Redeveloped dockland areas are now very popular but could be prone to flooding as sea-level rises and winter storm-surges batter coastal zones, raising questions about how insurable such developments are.



Food, glorious food

Food could become much more expensive because of climate change. Rising fuel prices could mean there is less produce from overseas in the shops. Instead we are likely to eat more food from the UK, but even this will cost more as the price of water rises and crops are more frequently damaged by flash flooding.

Rising costs of vegetables could mean that people decide to grow more themselves, using their gardens, balconies or even windowsills³⁶. There is already a huge demand for allotments, particularly in London and the South East. Many households might be prompted to transform their landscaped gardens into vegetable patches. The types of vegetables we grow may change. For example, rhubarb crumble made from locally grown produce could be consigned to the history books, as rhubarb needs a long cold winter to grow.

Cost of living

Domestic energy use on household products has doubled in the last 30 years. By 2020, entertainment products such as computers and sound systems will account for 45% of our domestic energy consumption. We will need the equivalent of 14 average-sized power stations just to run them³⁷. For instance, the new large plasma screen TVs can cost up to three times as much to run as traditional TVs, adding £85 to a typical household electricity bill every year³⁸. Set alongside rising fuel prices, this could mean a huge outlay for the average consumer.



27 www.environment-agency.gov.uk/aboutus/512398/289428/1927662/?lang=_e

28 www.fdws.co.uk/home/yh_water_scar.shtml http://www.fdws.co.uk/home/yh_water_scar.shtml

29 www.environment-agency.gov.uk/commondata/acrobat/soe07final_1941006.pdf

30 www.environmentalexpert.com/resultEachArticle.aspx?cid=20481&codi=6967&level=0&idproducttype=6

31 www.guardian.co.uk/money/2008/jan/17/homeinsurance.insurance
www.benfieldhrc.org/floods/Crichton_AIRMIC_2007.pdf

32 www.theecologist.org/archive_detail.asp?content_id=977

33 www.environment-agency.gov.uk/regions/southern/955496/?lang=_e

34 www.telegraph.co.uk/news/main.jhtml?xml=/news/2007/08/26/nthames126.xml

35 www.guardian.co.uk/money/2005/feb/01/insurance.greenpolitics

36 The Food Up Front scheme was established in London in April 2007 with the following to promote and initiate the use of front gardens and balconies to grow food. www.foodupfront.org/ www.foodupfront.org/

37 Energy Saving Trust (2007) The Ampere Strikes Back

38 www.energysavingtrust.org.uk/energy_saving_products/a_guide_to_choosing_consumer_electronics

Health

High temperature

Climate change brings mixed tidings for the nation's health. Scientists say the death rate increases 3.3% for every degree rise in temperature above 21.5°C³⁹. The 2003 heatwave killed an estimated 35,000 people across Europe⁴⁰. During the height of the heatwave, mortality in England and Wales increased by 16%, with a large proportion of the deaths affecting elderly and ill people⁴¹. The health costs of the heatwave for the UK as a whole, in terms of medication and suffering, have been put at £41.4 million⁴². Heatstroke could replace hypothermia as a major problem for older people.

By 2070, the climate in the South East of England will probably be similar to parts of Portugal⁴³—a skin cancer hotspot⁴⁴. We will have to learn to stay in the shade, cover up and apply high factor sunscreen throughout the hot summers if we are to avoid skin cancer. Increased temperatures could mean more wrinkles, regular muscle cramps and even lower fertility in men. Food poisoning will increase dramatically in the warmer weather, perhaps by 10,000 cases a year⁴⁵.

There is some good news though. There are currently between 60-80,000 cold weather-related deaths in the UK each year. This figure will decrease dramatically with warmer, mild winters⁴⁶. More sunlight will boost natural levels of vitamin D, improve mood by affecting serotonin levels in the brain, and even help acne sufferers.

39 http://findarticles.com/p/articles/mi_qn4158/is_20020418/ai_n12608377
The Independent April 18 2002

40 <http://environment.newscientist.com/channel/earth/climate-change/dn4259>

41 http://randd.defra.gov.uk/Document.aspx?Document=GA01075_4036_FRP.pdf

42 http://randd.defra.gov.uk/Document.aspx?Document=GA01075_4036_FRP.pdf

43 International Centre for Research on the Environment and Development

44 Cancer Research UK

45 Department of Health, UK (2001) The Health Effects of Climate Change

46 Department of Health, UK (2001) The Health Effects of Climate Change



Not all change is bad

Living in England today we all share responsibility for climate change. But the good news is that if we take action now we can all do something to help reduce CO₂ emissions – we can all be part of the solution.

Take a break

Whilst some British holidaymakers are currently taking advantage of cheap flights for exotic holidays or European mini-breaks, all this could change as fuel prices rise. The Mediterranean – currently so popular with English holidaymakers – could become too hot to be a comfortable holiday destination. This could mean people will start flying less and that domestic holidaying will increase, with beaches along the south coast attracting sun-seekers. Outdoor activity holidays such as camping and caravanning (New Forest, Hastings, Camber Sands, Isle of Sheppey), sailing (Isle of Wight, Southampton), windsurfing (Chichester Harbour), cycling (Cotswolds, Kent), tennis and horse riding (New Forest, North and South Downs) could also have greater take up. Holidaying at home would give a welcome boost to the UK tourism industry and help tackle carbon emissions by reducing the need for air travel and airport expansion – which in turn would mean a better night's sleep for some of us.

Energy pioneers

As fossil fuels decrease and concern about climate change increases, we will need to find different ways of powering our homes. Wind, wave and solar power could be common across South East England. The South East is already leading the way with offshore wind power. Renewable energy could become a vital part of the South East's economy. In 2005, the UK's then largest offshore wind farm started operation on the Kentish Flats, on the North Kent coast. Soon the region will be home to the world's largest offshore wind farm, with 341 turbines in the Thames estuary between Margate and Clacton. The scheme, called the London Array, could generate enough electricity to supply a quarter of London homes or every home in Kent and East Sussex⁴⁷ and will also help create new jobs in the region.

Home is where the heart is

The types of houses we build will change, to enable people to save money – and the environment. The Beddington Zero Energy Development in south London already provides a working example of low-impact housing. It inspires its community to live a greener lifestyle, with initiatives such as a car club, a vegetable box scheme and composting. The 82 homes were built with large quantities of reclaimed, recycled and locally-sourced materials, and face south with large triple-glazed glass windows, to make the most of the sun's free energy. Solar electricity panels provide a welcome boost as well. All this, combined with other insulation and electricity-saving measures, means that eco-aware residents' heating requirements are 90% lower than a standard home and that they have half the average UK ecological footprint (impact)⁴⁸.

Or take the example of Woking, where the local authority has halved power demand in its buildings. The council saves £1 million a year and has cut CO₂ emissions from its buildings by 77%⁴⁹.

It is likely that our energy is going to get much more expensive as fossil fuels become increasingly scarce. Rising prices mean we will all become more energy-savvy, buying low-energy appliances, turning off lights and insulating our houses. We will also be using more and more renewable energy.

The next steps: addressing climate change

This booklet has outlined the wide-ranging impacts that climate change will have on the South East of England – cutting across nature, landscapes, our economy and our lifestyles. Although some change is inevitable, there is still just enough time to prevent some of the worst impacts. In the UK we will need to look at and begin to actively rethink all aspects of our lives – at home, at work and at leisure. We need to move towards a low carbon England, investing in renewable energy. We need to start using less energy, and use it more efficiently, when travelling, in our homes, and in our everyday lives. It may seem like a big task but there is plenty of information and support available – together we can make a difference.

Tomorrow's England is a partnership of leading environmental and voluntary organisations, who have come together to present the impacts of climate change in the South East. It is recognised that greening around the edges is not enough, we need big changes. If you would like to know more about what the partners are doing to tackle climate change visit our website, www.climatechangeandme.net as well as the government's Act on CO₂ campaign www.dft.gov.uk/ActOnCO2

⁴⁷ www.londonarray.com/category/press-releases/

⁴⁸ www.peabody.org.uk/pages/GetPage.aspx?id=179

⁴⁹ www.woking.gov.uk/news?item=000043AA942C.C0A801C2.000013A6.003F

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- Beyond Green - www.beyondgreen.co.uk
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- Forum for the Future - www.forumforthefuture.org.uk
- Groundwork UK - www.groundwork.org.uk
- The National Trust - www.nationaltrust.org.uk
- RSPB – www.rspb.org.uk
- The Wildlife Trusts - www.wildlifetrusts.org
- National Federation of Women's Institutes - www.thewi.org.uk
- Woodland Trust - www.woodland-trust.org.uk/campaigns/climate
- WWF-UK – www.wwf.org.uk

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The content of this booklet is the result of wide and detailed research into the likely consequences of climate change in the South East but does not necessarily represent in every particular the policies or views of the partner organisations.