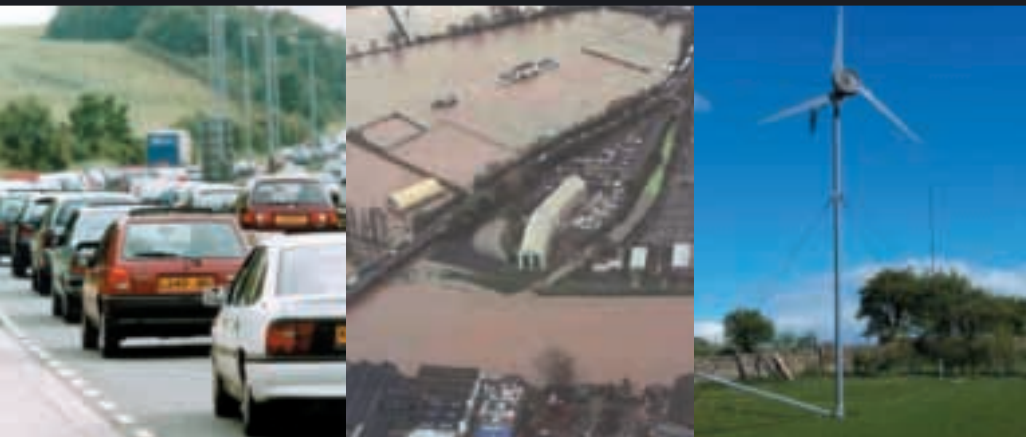


OUR CLIMATE IS CHANGING

CLIMATE CHANGE IN

Despite the increasing frequency of severe weather events - heavy rain, hail, heatwaves, hurricanes and floods - it's true that some people don't believe that our climate is changing, or even if it is, that it's anything to do with us. A few people still don't think the world's best scientists can be right, when they say that taking

NOTTINGHAMSHIRE



fossil fuels and burning them is reversing the process that made human life possible on earth. There's still a tiny chance they're right, but overwhelming evidence suggests they're very wrong indeed.

WHAT DOES IT MEAN FOR YOU?

AND WE'RE NOT JUST TALKING ABOUT THE WEATHER.

If you live by a river you'll have spotted that your insurance premiums are going up. If you're a gardener you're probably aware of changes in the growing season. These impacts are hints of a much more complicated and unpredictable picture of change that we are dealing with, with knock-on effects for every aspect of our lifestyle.

- So what does climate change mean for Nottinghamshire?
- How will it affect your life?
- What can we do to slow it down?
- How are we going to adapt to the changes that will come?

These questions are being taken very seriously by the Nottinghamshire Agenda 21 Forum, who commissioned Dr Brian Waters to assess the likely impacts for the county, and develop some ideas on what can be done. This leaflet draws from Brian's report* and some of the responses to it.

* Available to view or download from www.nottsagenda21.org.uk

CLIMATE FACTS

The earth is now hotter than at any time in the last 2,000 years.

Every one of the hottest 15 years on record has occurred since 1980, with the hottest 5 all since 1997.

The thermal growing season for plants in central England has lengthened by about one month since 1900.

In spring 2003, snowdrops in the UK came into flower 10 days earlier than in 2001.

Where does the road we're on lead to? And what can we do to ease the pain? Whatever we do now, we're stuck with the current rate of climate change for the next 20 years or so because today's climate is responding to emissions of the 1980s. Here's how some aspects of life might change by 2080, and some of the things we could do to adapt.

WATER WATER

A few percentage points on our domestic demands for water will be dwarfed by a 20% increase required with agricultural irrigation by 2025. Water flowing in the Trent and its tributaries, already depleted by reduced summer rainfall, will diminish dramatically with more abstraction, threatening wildlife, water quality and supply. However in winter, increased rainfall and more land taken up by buildings and roads will mean far more water entering rivers. Insurance companies are already calculating a doubling of flooding risk as a result; others think the risk may quadruple.

ADAPTATIONS

Water will have to be much more carefully managed and rationed if this is the future. The amount of pollutants we can discharge to rivers will have to drop further still. We'll have to maximise water efficiency in our homes and businesses. In winter the name of the game will be storage, finding ways to keep hold of precious rainfall for use in the coming year. Rainwater storage and 'greywater recycling' will become more common. To tackle flooding we'll have to stop building in flood risk areas and find better ways to store flood water.



FARMING FARMING

Water shortages in summer will threaten traditional crops like beets, onions and potatoes, especially where soils are sandy. Over clay, flooding will be common. New pests will arrive from Europe, joining existing pests for long summers of crop-bothering.

ADAPTATIONS

With water a summer scarcity and a winter enemy, farmers will have to find ways to store the greater winter rainfall for summer use, and switch to drought-resistant crops. They'll need training in new techniques, and like gardeners they'll have to manage soil moisture content carefully to avoid water-logging or drying out. New technologies including trickle irrigation and wetting agents may have a part to play.

HEALTH OUR HEALTH

It's not all bad news: one estimate is that 20,000 fewer people will die of cold each winter in the UK in 2050. But heat will kill about 3,000 more in the summer, and we'll also have more food poisoning, diseases, weather-related disasters and worsening air quality. Skin cancer will increase by 5,000 cases per year, and cataracts by 2,000. Our health is also threatened by failing food supply and conflicts that arise as the rest of the world struggles to feed itself.

ADAPTATIONS

We may have to learn how to live with the threat of malaria, skin cancer and heat, all of which require well-known lifestyle changes. Sunbathing will become a lot less fashionable. But our health will also benefit as we adapt to new transport patterns based on walking and cycling.

NATURE THE NATURAL WORLD

The woodlands of oak, ash and beech that for many define the English countryside will be in steep decline as heat, lack of water and new pests claim their victims. Storm damage and fires will become more widespread, so that by 2080 Sherwood Forest may have lost most of its trees. Along with them will go the plants, insects and birds that depend on woodland, or are sensitive to drought.

ADAPTATIONS

Linking woodlands together better using wildlife corridors may help some trees and dependent species survive better and adapt to a changing climate. Managing greenspace, including gardens, to better protect threatened species will also help, as will shifting to organic production and using less river water for farming.

GARDEN IN THE GARDEN

It'll be nice to grow grapes, but many other garden plants will suffer with the changed weather. Soil fertility will drop as rainfall washes nutrients away, and organic material will break down quickly with higher temperatures. Diseases will threaten garden favourites like holly, yew, oak and box.

ADAPTATIONS

Drought tolerant shade trees will be at a premium, and we need to start planting more of them now. Cutting the grass less often will help too, and gardeners will have to manage soil moisture more carefully. Organic matter added to sandy soils will mean better retention, but clay soils will need grit to improve drainage.





GETTING AROUND GETTING AROUND

We won't get held up by snow and ice much, but flooded roads and railways will slow us down considerably. So will the storms, rain, and the sudden structural failures of bridges and embankments that saturated soils and rivers in spate can cause. But guess what? More extreme heat in the summer could have similar effects, as damaged rails, melting roads and overheated vehicles clog the main transport arteries with exhausted people.

ADAPTATIONS

The best way to avoid transport problems is to stop travelling! With luck, we'll have found ways to avoid the journeys we don't enjoy, and the huge distances we ship goods, by 2080. For our health we also need to be walking and cycling a lot more, easing the burden on the transport infrastructure.



HOW DO WE STOP CLIMATE CHANGE?

“Whatever you do will be insignificant, but it is vital that you do it”.
Ghandi.

However much 'adaptation' we do, accelerating climate change is not going to make the world a better place. We need to find ways to slow it down, so that by 2080 the worst predictions won't come true.

The solution is basically very simple: we need to reduce the rate at which we're pumping greenhouse gases - especially carbon dioxide - into the atmosphere. That means either using less energy or finding ways to generate energy that do not depend on fossil fuels. Simple, but on the other hand it requires radical action around the world for it to happen, and that's the very unsurprising reason why global action on climate change is yielding such agonisingly slow progress. Developing economies, particularly India and China, understandably take some persuading that they should curtail their development to suit massively polluting countries like the USA.

“On most issues we ask children to listen to their parents. On climate change, it is the parents who should listen to their children. Now is the time to start.”

Tony Blair. Sept 2004

LIFE IN TOWN LIFE IN TOWN

Town centres are hotter than the surrounding areas in summer, magnifying the effect of increasing temperatures. In coming years we can expect overheated offices with greater demand for air conditioning, sleepless hot nights, building subsidence as clay soils dry out and extremes of heat buckling rails and cracking roads. In the winter, floods and storms will damage properties and disrupt transport. Weather damage has already contributed a 4% increase to insurance claims in the last five years, with historic buildings particularly at risk.

ADAPTATIONS

The layout of buildings and public spaces will have to change to emphasise shade and heat loss in the summer. In winter, we'll have to deal with lashings of rainfall in a more sophisticated way, keeping it in the place where it fell for longer to help control flooding. Buildings will need to be designed to withstand subsidence and strong winds, and to provide much of their own energy from renewable sources. We may have to build new flood defences to protect settlements in our river valleys and older buildings like Kelham Hall.



There are plenty of ways that Nottinghamshire can play its part in reducing the threat of climate change, many of which will also make life better today, never mind 50 years from now.

To tempt you to play your part, we offer a “healthy menu” of options over the page.

NOTTINGHAMSHIRE MENU FOR GREENHOUSE GAS EMISSIONS REDUCTION

STARTERS: REDUCING ENERGY USE

There are plenty of options for using less energy, with travelling less top of the list. The county's Local Transport Plans are seeking to reduce traffic volume - and have succeeded in part, through greater use of buses and the new tram system. Best of all is walking and cycling - which will also benefit our health. Hot on the heels of transport is waste: all that packaging that you could avoid or recycle, and green waste that could be composted.

LOW CARBON MAIN COURSE: EFFICIENCY DIET

Huge savings can be made with basic measures. Domestic energy use in Nottingham City's housing stock has reduced by about 12% in the last eight years, mainly by replacing inefficient boilers, adding double glazing and loft insulation. Everyone wins: in the same period fuel bills went down by £4m. Fuel efficient vehicles using a variety of power sources are finally coming on the market and could be worth considering.

COUNTING THE CARBON

PUDDING: THE RENEWABLES

On the menu are bio-fuels, such as the wood burning boilers installed in schools and small scale wind power could be more of an option in the county. At home you can now shift to renewable power wherever you live, with a number of companies now offering electricity from renewable sources at no extra cost. You could also look at solar water heating. For little effort, you'll be building a market for the energy of tomorrow, encouraging innovation, economic development and a brighter future for Nottinghamshire!

AND NOW, HERE IS THE WEATHER FORECAST

	2020 - whatever we do	2080 - if we do nothing!
Rainfall	Little change on average, but less rain in summer and more in winter.	Up to 30% more rain in winter and 30% less in summer.
Temperature	Average about 1°C hotter.	Up to 5°C hotter.

The effects of these changes in rainfall and temperature include:

- up to 50% less soil moisture in summer by 2080
- average wind speeds up by 10%
- 40% more 'deep' weather depressions in winter
- snow becomes virtually unknown
- extreme weather events including high winds and torrential rain become much more common.

Hotter and drier in summer, wetter and windier in winter may not sound too daunting, but these percentage changes are greater than anything we've seen in thousands of years, and they have dramatic implications.

**IN 2004, THE CHANCE OF A SUMMER DAY ABOVE 30°C IS ONE IN A HUNDRED,
BY 2080 IT WILL BE ONE IN FIVE**



MORE CLIMATE FACTS

The European heat wave in 2003 resulted in 26,000 premature deaths and cost \$13.5 billion.

By the 2040s at least one year in two is likely to be even warmer than 2003.

The number of people affected by floods worldwide has already risen from 7 million in the 1960s to 150 million today.

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WE SIMPLY CAN'T HAVE OUR
PLANET AND EAT IT.

