CHAPTER 1.

# THE CHALLENGE & OPPORTUNITY OF CLIMATE CHANGE

## Why do we need to act now?

## 1.1 GLOBAL EFFECTS AND IMPACTS

Our planet's climate is changing and warming is accelerating. Globally, 2010-2019 was the warmest decade since records began in 1850 and each decade since 1980 has been warmer than the preceding one[1]. 2019 was the second warmest year on record, 1.1°C above pre-industrial levels[2] (2016 is currently the warmest)[3] and 2020 is on course to be the hottest[4]. The UK's warmest ten years ever recorded have all been since 2002.[5]

The Intergovernmental Panel on Climate Change has concluded it is extremely likely that our emissions of greenhouse gases (GHG) have been the dominant cause of this warming.[6] The greenhouse effect occurs when GHGs, such as carbon dioxide and methane, in the atmosphere trap some of the sun's heat. This process makes Earth warmer and over the last 12,000 years has allowed humanity to thrive.

However, since the industrial revolution, human activities, such as the burning of fossil fuels for heat, electricity and transportation, deforestation and intensive agricultural practices, have been changing the balance of the greenhouse effect. The increased levels of GHGs mean we are trapping more heat and causing our planet to warm at an unprecedented rate. [7]

This warming is causing more extreme storms, droughts, heat waves, melting ice, ocean acidification and rising sea levels. The impacts of these changes are widespread and immense in scale. Figure 1 summarises these changes to the climate system and the impacts arising: from flooding to food insecurity, health implications, international migration and unparalleled loss of biodiversity.

Climate change is not just an environmental problem. It has been described as "humanity's greatest threat" by Sir David Attenborough[9]; as the "biggest threat to the global economy" by the World Economic Forum[10]; as the "greatest threat to global security" by the UN Security Council[11]; and the "greatest ever threat to human rights[12]" by the UN High Commissioner for Human Rights.

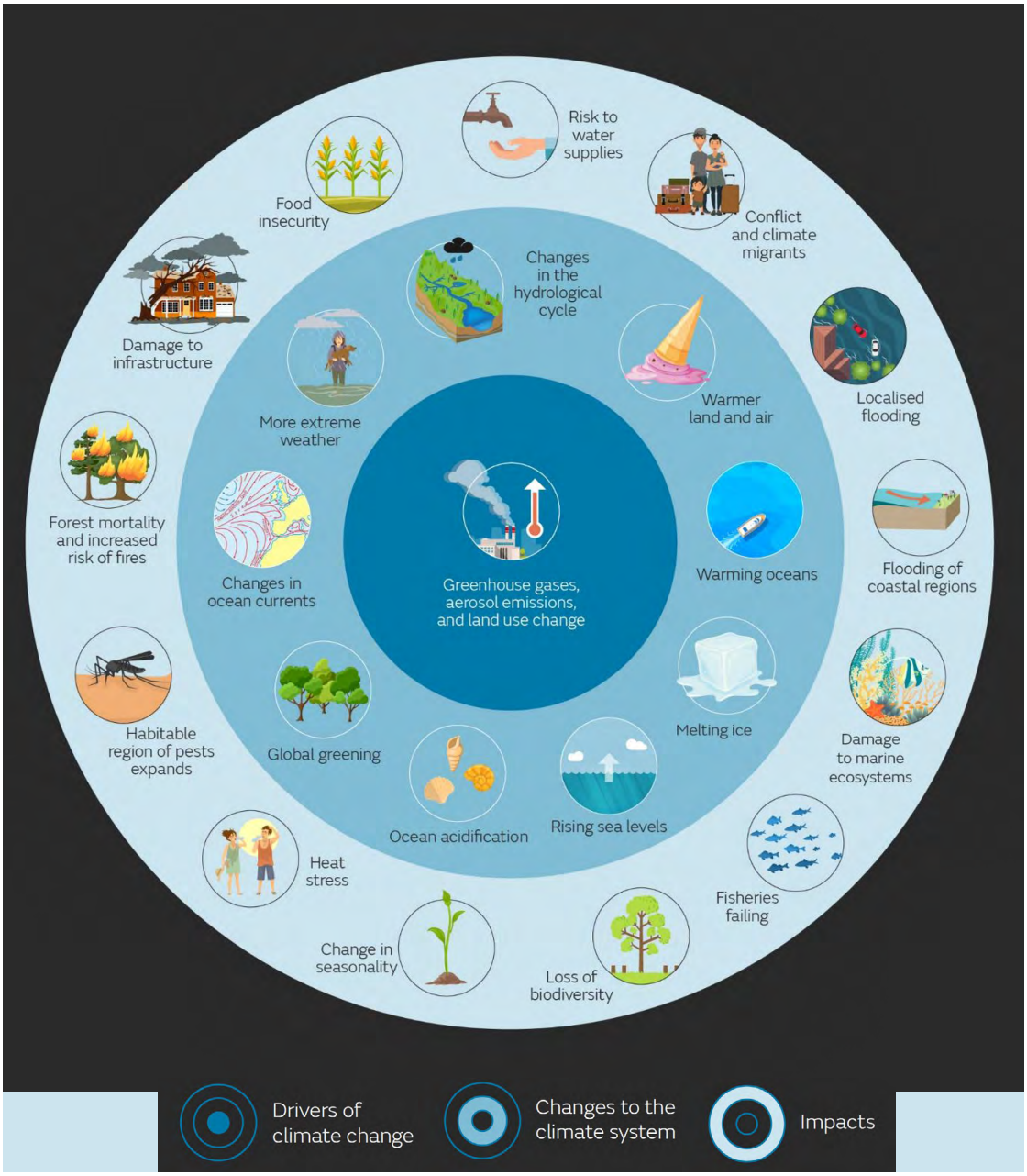


**Figure 1 - Impacts of climate change, with kind permission of the Met Office[8]**

# 1.2 EVIDENCE OF CLIMATE CHANGE IN THE UK & DEVON

Each year the Met Office produces its State of the UK Climate report. A series of national temperature records were broken in 2019:

- The hottest ever recorded temperature (38.7°C)
- The warmest winter temperature
- The warmest December temperature
- The warmest February temperature
- The highest minimum February temperature

The most recent decade (2010 -2019) has seen the UK experience 16% fewer days of frost, 13% more summer rainfall, 12% more winter rainfall and 7% more annual sunshine than the 1961-1990 average. Six of the 10 wettest years for the UK since records began in 1862 have occurred since 1988[13]. The first signs of spring are, on average, occurring 6 days earlier than they were in the first part of the 20th century[14].

Exmouth has recorded a temperature increase of 1.05°C since 1900 and Ilfracombe 0.64°C[15]. In comparison to 1961, south west England also now experiences almost 10% more rainfall each year. Winters have got wetter and summers[16] have got drier; the South West receives 28% more precipitation in autumn, almost 16% more in winter and approaching 9% less in summer. In comparison to the UK, these south west England figures demonstrate the regional nature of the UK's climate.

Relative sea level in south west England has risen by approximately 25cm since 1916[17].

## 1.3 CLIMATE PROJECTIONS

If we continue emitting GHG emissions as if it's "business as usual", by the end of the 21st century the central estimate of change of Devon's average summer temperature is projected to increase by 5.6°C and average winter temperature by 3.4°C in comparison to the 1961-1990 average. Compared to the same period, average winter precipitation is projected to increase by 28% whereas average summer precipitation is forecast to decrease by 44%. Relative sea level is very likely to rise by more than 43cm but less than 90cm.[17]

Although these numbers may seem small, the knock-on effects from them will be substantially larger and disrupt our current quality of life. As the climate continues to change, the scale and frequency of impacts will increase. The science is clear: we are in a climate emergency and need to act now to reduce carbon emissions to limit global temperature rise to below 1.5°C.

## 1.4 CLIMATE JUSTICE

Developing countries and small island states are predicted to see the most severe effects and impacts[18] because these communities in these countries have fewer resources to adapt.[8] Warming of 2°C would put over half of Africa's population at risk of undernourishment which, at the current rate of global warming, will be reached sometime between 2030 and 2052[19]. This raises profound issues for global climate justice because it is the more developed countries, through earlier industrialisation, that have caused the climate emergency: countries such as ours have a moral duty to act. Limiting warming to 1.5°C, compared to 2°C, could reduce the number of people exposed to climate-related risks and poverty globally by several hundred million by 2050.[18]

These climate injustices are not just felt overseas. In the UK, disadvantaged and less affluent

groups are responsible for the least carbon emissions, yet they are most likely to be negatively affected by climate change. Indeed, the effects of climate change can make disadvantage worse, which in turn increases vulnerability to the impacts of climate change, such as flooding or heatwaves.[20]

## 1.5 THE OPPORTUNITY

Addressing the climate and ecological emergency is an opportunity to **create a fairer, healthier, more resilient and more prosperous society.** Those most affected by climate change need more of a say in how we respond, and our actions to mitigate climate change must be aligned with goals for public health improvement, green growth and the reduction of social vulnerability.[20]

Encouraging everyone to be more active by walking and cycling; improving air quality through the electrification of vehicles; insulating our homes to make them warmer; and eating more balanced diets will all **improve public health and reduce pressures on the NHS.** [21]

There is considerable potential for the transition to clean technologies to **create new jobs and skills** requirements, **improve our national energy security** and **increase economic prosperity** – nationally and locally in Devon. Retrofitting energy efficiency measures into existing housing will **reduce fuel poverty** and illnesses associated with cold homes and subsequently provide enhanced **opportunities for work and study.**[21]

Enhancing the ability of habitats along our coast, in our countryside and in our villages, towns and cities to store carbon offers tremendous opportunities to **reverse the decline of biodiversity** and restore the benefits healthy ecosystems provide. These include **reduced flood risk, improved water and air quality, nutritious food, timber and fuel, and accessible greenspace.**

The Devon Climate Emergency project aims to create a resilient net-zero carbon Devon – where people and nature thrive.

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