

Climate Change

during dry summers by 2025.

* Farming are likely to grow more and different crops from now. These crops will need more water, so we will have to store winter rainfall to water the fields in the summer. Insects could become a problem too - by eating younger plants that can't cope with such an attack, or new insects coming into Britain for the first time. Farm animals are likely to pick up new diseases from these insects.



* Rising sea levels will affect towns and villages by the sea. Tides will get higher and flooding along rivers and coasts could worsen in winter. In the summer, droughts are likely during longer, hotter summers. Wales' coastal and low land is important to the economy, because of tourism, human habitation and as wildlife habitat.

* Hotter summers mean that people will suffer from the heat, and diseases common to warmer countries like malaria or cholera could



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come to Britain.

* Plants and animals will have to adapt to cope with the new climate. Storms, floods, droughts and sea level rises will affect animals by destroying habitats and wiping out entire species.



Can we change climate change?

We can't completely stop climate change happening because the harmful greenhouse gases are already in the atmosphere.

We can all do something to help though.

There are two ways to address climate change - slow it down (mitigation) and work to adjust to the new conditions it will bring (adaptation). Information on adaptation and mitigation is available in our 'Tackling Climate Change' leaflet.

It is important that we take both courses of action at once. Look at our other leaflets on saving energy, generating energy, reducing food miles and waste, to find out how you can do your own climate change 'mitigation' and 'adaptation' work.

More information?

Get in touch with the team at Science Shops Wales. You can phone us on 0845 841 3545, email us at scishopw@glam.ac.uk or visit our website www.scienceshops wales.org.uk

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CLIMATE CHANGE EXPLAINED

Towards A Sustainable Future

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Climate Change Explained

Climate change is one of the biggest challenges facing the world today. But what is it, why is it happening and what can we do about it?



How Climate Works

"Climate" is the word we use to describe the average weather of a place over many years. Climate change is a natural process of warming and cooling that has occurred throughout the Earth's history.

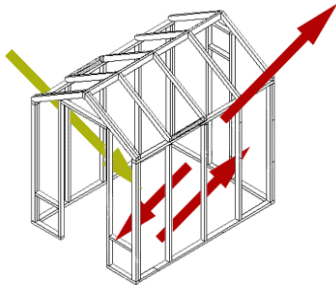


These natural changes in climate take place over very, very slow timescales - it is this very slow rate of change that allows plants and animals to adapt to the different conditions that climate change brings with it - changes like higher temperatures, higher sea levels and extreme weather.

What is climate change?

The Earth's atmosphere acts in a similar way to the walls of a greenhouse, letting in the visible light and absorbing the outgoing infra-red energy, keeping it warm inside. This natural process is called the "greenhouse effect." Without it, the earth's average temperature on earth would be -18°C , whereas at the moment

Image courtesy of Corby



it is $+15^{\circ}\text{C}$. It is gases that protect the earth from this effect. They are known as 'greenhouse gases'. They include *carbon dioxide*, *methane* and *nitrous oxide*. As energy from the sun warms the earth's surface, and as the temperature increases, heat radiates back into the atmosphere as infra-red energy. Some of the energy is absorbed within the atmosphere by these 'greenhouse gases'.

This pace of change is speeding up at the moment and the earth is getting warmer.

A Sustainable Future Climate Change

All the 'fossil fuels' (oil and gas) that we use to power our modern lifestyles, along with the waste that we bury in landfill, create greenhouse gases. These affect the natural balance of the atmosphere which protects our earth. These greenhouse gases are building up in the Earth's atmosphere and causing the earth to heat up more quickly than it otherwise would without our extra emissions.



This is often called 'global warming' or the 'greenhouse effect' because it works the same way as a greenhouse. People use all three terms; climate change, global warming and the greenhouse effect when talking about this process, and the problems that come from it.

How will Climate Change affect us?

Climate change is one of the biggest challenges facing the world today. The speed at which the planet is heating up is a great problem because the earth's life-forms - animals, humans and plants cannot adapt to the new conditions quickly enough.

The effects of climate change will be widespread and varied across the world. Broadly, average temperatures are likely to rise. This will lead to higher sea levels as the ice in the north and south poles melt. In turn this will bring flooding and different rain patterns - all of which will change our world dramatically.

Changing challenging choices: the Welsh scoping study, a report on the Welsh impacts of climate change found that by 2080 we will experience:

- higher temperatures year-round by $1.1-2.9^{\circ}\text{C}$
- more rainfall in winter by 7-24%
- less rainfall in summer by 7-14%
- greater annual rainfall by 2-9%
- a rise of sea level of 18-79 cm
- higher average wind speeds by 1-4%
- more water evaporating from the earth (including everything from puddles to oceans and plants) by 13-27%
- more varied weather from year to year - the number of extreme years will increase
- more frequent and more violent storms
- more drought years by 10%
- more very severe gales by 10%



These Climate Change *impacts* will affect our everyday lives in Wales, possibly leading to some of the following situations:

* It will be hard to supply water to parts of Wales



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