

## What on earth is a carbon footprint?

Nearly everything we make or do takes energy – and at present most of our energy comes from fossil fuels (gas, oil, or coal). When fossil fuels burn, they release carbon dioxide. Our ‘carbon footprint’ represents all the carbon dioxide generated in providing the things we use, and the life we live. It’s expressed in kg of CO<sub>2</sub>e, that is, kilogrammes of carbon dioxide equivalent.

Most of the energy we use at present comes from burning fossil fuels. (gas, oil/petrol; coal). Most cars and trucks burn fossil fuels. Heating, travel, waste disposal, services (schools, gyms, hospitals), making things and getting them to us, all contribute to our carbon footprint.

Energy produced from renewable sources (solar, wind, tides) has a much lower carbon footprint than fossil fuels.

## What’s wrong with carbon dioxide?

Nothing!! In moderation. Plants need carbon dioxide. They take it in and, using sunshine, turn it into plant tissue. Then they die, they rot, and the carbon that was in the plant gets slowly released as carbon dioxide. This is the carbon cycle we learnt about at school.

The trouble is – carbon dioxide acts as a ‘greenhouse gas’ – like glass, it lets sunlight through, but is less good at letting heat back out. When sunlight hits the earth, it heats it. And the carbon dioxide helps to trap some of that heat. Carbon dioxide levels in our atmosphere have risen a lot in the last hundred years, and especially the last few decades, and so the world has got warmer. It’s as if we’ve put a duvet over the world.

## Isn’t it great that we’re getting warmer?

Well, maybe it seems so, here in the UK. But a hotter world means more storms; more heatwaves, and changes in weather patterns, so some places that grow good crops now, will suffer drought and famine.... And as the polar ice melts, sea levels are rising. Many coastal cities and islands will flood. Food shortages, storms, and flooded cities – that really will affect us all.

## What’s the great hurry?

Temperatures worldwide have already risen, and violent weather events are increasing in frequency. It will take decades for the full impact of current high carbon dioxide levels to be seen. For example, polar ice caps take a long time to melt - but they’ve started. We have to act now to reduce carbon dioxide levels, to limit future problems far worse than what we’ve experienced to date.

## Why can't plants just take up the extra carbon dioxide?

Fossil fuels represent millions of years of stored carbon dioxide, in plant material which rotted down and became coal, oil or gas. And we've been burning that stored carbon in only a few decades. The balance has been broken. Plants are working as hard as they can, using the sun to fix carbon. They can't keep up – and since most of the suitable land is already covered in plants, even planting more trees won't be enough to restore the balance.



### Footnote 1: Other greenhouse gases

There are other greenhouse gases in the atmosphere which have a similar effect to carbon dioxide, for example methane and nitrous oxide. Emissions of these have also been rising due to human activity. Carbon footprints include the effects of these gases, which is why they are expressed in kg of CO<sub>2</sub>e (e for 'equivalent'). Climate action plans should address ways to cut these emissions too.

### Footnote 2: 'Territorial' versus 'Consumption-based' footprints

For checking our own impact on carbon dioxide emissions, a 'consumption-based' footprint is most useful. It aims to account for the total impact of how we live, on the world's carbon dioxide emissions. It can help us decide what to do. It is also possible to calculate footprints for an area, based solely on what happens locally, for example within the UK. Such a footprint ignores the impact of all the stuff we get from elsewhere, so for the UK would be misleading as we import so much of what we use.