

Sustainable Ideford The A – Z of Sustainability C: Climate Change

On this huge and desperately important subject, all we will do in this issue is give a summary of the problem, hope to increase awareness and provide some information that may help to change our behaviour. This website version contains more information on the actual challenges than we set out in the printed Parish News. In future articles we'll be sharing more detailed information and ways to cut our carbon emissions.

At the IPCC conference this year the UN Secretary General stated that we're heading for double the agreed limit of 1.5°C. Even 1.5° will mean worse climate extremes than there are now, and it has already reached 1.1°. The sort of rise the UN is predicting is truly alarming.

Here is a summary of the challenges we face

- Carbon dioxide (CO₂) levels have been rising rapidly since the Industrial Revolution. They are 50% higher than they were 250 years ago, and most of the rise has happened over the last 60 years. ([Ref 01](#))
- This is surplus to the natural carbon cycle and cannot be readily reversed. ([Ref 02](#) - Fig 2)
- Methane and other gasses have also increased over a similar period and, like CO₂, prevent heat energy from escaping into space, so the planet's temperature rises. ([Ref 03](#))
- There is now more CO₂ in the atmosphere than there has been at any time while humans have been around. ([Ref 04](#))
- The main causes of the increases are generally agreed as:
 - o burning carbon-based fossil fuels: transportation, manufacturing, power generation for industry and homes, cement production, etc.
 - o additional methane and other gasses (e.g. nitrous oxide): food production, farm animals, marshes and peat bogs being 'reclaimed' for agriculture, etc.
 - o loss of carbon sinks: deforestation, peat bogs. ([Ref 05](#))
- The major greenhouse gasses have a CO₂e (CO₂-equivalent) value which allows us to refer to them and their warming effects more easily, and often this is just called 'carbon'. ([Ref 06](#))
- The average global temperature has risen by 1°C since around 1880, and most of that increase has occurred since 1975. It will continue to rise until we stop our carbon emissions. ([Ref 07a](#) [Ref 07b](#))
- The temperature increase may seem small, but it represents a colossal amount of extra heat energy stored in the oceans, the land and the atmosphere. ([Ref 08](#))
- This year we are putting more than 50 gigatonnes (50,000,000,000 tonnes) of additional CO₂e into the atmosphere, and on average the amount has increased by about 2Gt each year. ([Ref 09](#))
- Reducing our emissions simply reduces the *increase* in atmospheric CO₂. When our total CO₂ emissions stop altogether, the actual levels of CO₂ will stop rising but they won't fall. And there is currently no practical way of reducing CO₂ levels. We can only stop adding to the problem. ([Ref 10](#))
- So when we stop carbon emissions the global temperatures will not reverse significantly for a long time because it will take thousands of years for the carbon to transfer out of the atmosphere. This means that any increase in CO₂ today, and therefore any corresponding rise in temperature today (or in 2030 or 2050) is effectively not reversible. ([Ref 10](#))

- So the sooner everything possible is done to stop carbon emissions, the more likely we are to be able to cope with the outcome. The longer we leave it, the greater the challenge because there will be less time, higher temperatures, and more catastrophic events.
- The effects on climate, the natural world and humankind are too numerous and complex to list here but there are many well-researched and reliable sources of information on this. Many links to highly respected and verified organisations are listed at the end of this article. We will continue to provide more information on the Sustainable Ideford page at ideford-parish.co.uk.
- A number of tipping points are already being reached (e.g. the melting of the Greenland ice sheet will soon, or may already, be unstoppable). ([Ref 11a](#) [Ref 11b](#))
- Once the temperature rise reaches 1.5°C there are likely to be more tipping points in the climate leading to more catastrophic climate changes. Current estimates are that the temperature increase will reach 1.5°C in the next 10 - 20 years. ([Ref 12](#)) Some estimates are lower, even as little as 7 years.
- After that, the even more destructive rise to 2°C will be reached in 30 - 50 years' time, depending on how much we reduce our emissions. ([Ref 12](#))

The good news

- Science and technology continue to find ways of generating energy without burning carbon. Humans are resilient, determined and amazingly inventive. There will be alternatives and solutions that can be scaled up...eventually.
- Industries are slowly moving towards using more renewable energy sources.
- Some governments are responding to the climate emergency with strong and effective action and legislation.
- Public awareness of the real, scientific facts is increasing.
- Mass production costs of many technologies are now low enough to make them available to many of us, such as electric vehicles and photovoltaic solar panels.
- There is good reason to be hopeful, and on the village website we will provide regular 'Good News' updates of promising developments.

What can we do?

- Look out for our A-Z articles in the Parish News that are designed to help us all make a difference in small ways where possible. You'll also find them at ideford-parish.co.uk.
- Go to our local Action on Climate in Teignbridge website (actionclimateteignbridge.org) to see what the ACT organisation is doing – there's a lot going on.
- Find out as much as possible about the emissions generated by products and activities in our own lives, using reliable and science-based sources of information rather than news media or social media.
Dip into this excellent book: *How Bad Are Bananas? The Carbon Footprint of Everything*.
- Make carbon-cutting decisions based on our individual lifestyle.
Don't simply 'follow the crowd' because what may cut carbon emissions in one situation may increase them in another.
- Think carefully about each daily task and activity. For instance: Is there another way of doing this to reduce emissions? Can I avoid this activity altogether?
- Before changing how we do things or investing in something that appears to be carbon-cutting, do the research and sums first: In our personal situation it may be more effective to spend money and effort on something else.

- Don't be shy about talking to others about it, especially those with power in government and business. They have the opportunity to make big and timely changes if they truly understand the basic science, the data, and the desperate urgency.

References and links used in this article:

Ref 01: <https://www.carbonbrief.org/met-office-atmospheric-co2-now-hitting-50-higher-than-pre-industrial-levels/>
Ref 02 (see Figure 2): <https://royalsociety.org/-/media/policy/projects/climate-change-science-solutions/climate-science-solutions-carbon-cycle.pdf>
Ref 03: <https://earthobservatory.nasa.gov/images/87681/a-global-view-of-methane>
Ref 04: <https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/question-7/>
Ref 05: <https://www.bgs.ac.uk/discovering-geology/climate-change/how-does-the-greenhouse-effect-work/>
Ref 06: <https://www.myclimate.org/information/faq/faq-detail/what-are-co2-equivalents/>
Ref 07a: <https://www.visualcapitalist.com/stunning-graphic-earths-temperature-22000-years/>
Ref 07b: <https://www.carbonbrief.org/met-office-atmospheric-co2-now-hitting-50-higher-than-pre-industrial-levels/>
Ref 08: <https://www.climate.gov/news-features/understanding-climate/climate-change-ocean-heat-content>
Ref 09: <https://ourworldindata.org/greenhouse-gas-emissions>
Ref 10: <https://www.nature.com/articles/climate.2008.122>
Ref 11a: <https://www.science.org/doi/10.1126/science.abn7950>
Ref 11b: <https://www.nature.com/articles/s41558-022-01441-2>
Ref 12: <https://www.ipcc.ch/sr15/>

More useful and informative links:

Action on Climate in Teignbridge (ACT):
<http://actionclimateteignbridge.org>

60 second climate change video:
<https://royalsociety.org/topics-policy/projects/climate-change-evidence-causes/basics-of-climate-change/>

Recent methane increase:
<https://www.nature.com/articles/d41586-022-00312-2>

UK greenhouse gas figures:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1051408/2020-final-greenhouse-gas-emissions-statistical-release.pdf

Effects of Climate Change:
<https://www.metoffice.gov.uk/weather/climate-change/effects-of-climate-change>

Intergovernmental Panel on Climate Change (IPCC) 2022 report:
<https://www.ipcc.ch/report/ar6/wg2/>

Summary of the IPCC 2022 report, plus tips:
<https://climate.selectra.com/en/news/ipcc-report-2022#five-tips-to-limit-your-impact-on-the-environment>

National Aeronautics and Space Administration (NASA) Global Climate Change info:
<https://climate.nasa.gov/vital-signs/carbon-dioxide/>

United Nations (UN) – Causes and Effects of Climate Change
<https://www.un.org/en/climatechange/science/causes-effects-climate-change>