RESOURCES PACK FOR TOWN AND PARISH COUNCILS – WHY IS IT A CLIMATE EMERGENCY

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Contents

Section 1. Introduction

As part of the Town and Parish Resource Pack, this document is intended to explain why we face an Emergency and how we need to act to prevent 'runaway Climate Change'.

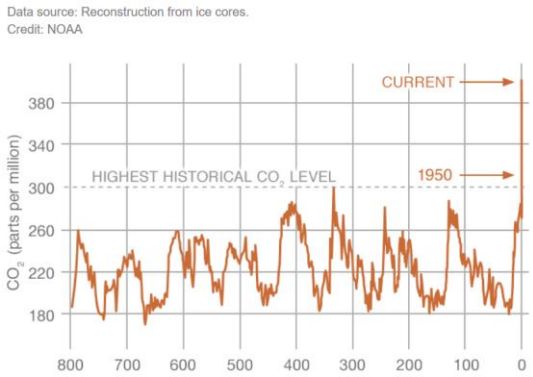
The information laid out here is readily available from many scientific and more general publications on the internet. We have therefore only included a few references which may otherwise be a little more difficult to find.

Section 2. How and why is the climate changing?

Since the end of the last Ice Age some 10,000 years ago, earth's climate has been 'stable'. The average global temperature during this period fluctuated because of natural events (e.g. volcanoes) and weather cycles (e.g. El Niño) within ~+/-0.5°C. This stable climate has allowed human population and civilisation to develop to what it is today.

Today this average global temperature has already risen by ~1°C above the 10,000 year average. It is continuing to rise in direct relation to the concentration of Green House Gases (**GHG**) in the atmosphere. This is because some of the huge amount of heat energy we receive from the sun gets trapped within our atmosphere, just like the effect of the glass in a greenhouse which stops some of the heat escaping.

Global average GHG concentrations in the atmosphere, measured in parts per million (**ppm**), have been stable for an even longer time (~800,000 years). The main GHG is Carbon Dioxide (**CO_2**), it is part of the natural Carbon cycle which supports life on earth.



Today GHG concentrations are at ~415 ppm. It is continuing to rise in direct relation to the amount of CO_2 and other more potent GHG such as Methane and Hydrofluorocarbons (**HFC** not CFC!) we started emitting since the industrial revolution.

We are emitting GHGs significantly faster than the natural systems can extract these. Indeed, the balance of the total emitted minus the amount absorbed, is still accelerating. To avoid further warming and its irreversible consequences, we need to return to a balance in the total amount of GHG in the atmosphere (also referred to as **Net Zero** emissions). This means not only slowing our emission rate, but reversing it so that we avoid a 'tipping point' in our climate. This is sometimes referred to as 'runaway Climate Change'.

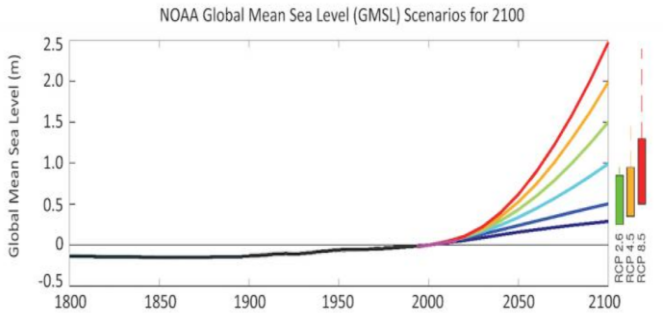
Climate scientists have studied both the correlation between GHG volumes in the atmosphere (measured in ppm) and the effects of global temperature increase from the long-term mean (i.e. stable climate conditions). The results have been regularly published/updated by the Intergovernmental Panel on Climate Change (**IPCC**).

In April 2016 the UK amongst other countries ratified the Paris accord to limit temperature rises to close to 1.5°C by the end of the century. The IPCC report from 2019 and 2021 have confirmed that we have a very limited Carbon Budget left to emit before exceed this limit. Furthermore, it has indicated that at current net emission rates:

- we are heading for at least 3°C rise by the end of the century; and
- we have ~8 years to reach Net Zero GHG emissions if we want to remain close to 1.5°C by the end of the century with a better than evens probability of doing so.

Section 3. What are the consequences of a changing climate?

Apart from the direct effects on our weather (more severe and frequent extremes) and rising sea levels (as permanent ice melts), there are several resulting impacts.



AR5 global warming increase (°C) projections[14]

	2046–2065	2081–2100
Scenario	Mean and *likely* range	Mean and *likely* range
RCP2.6	1.0 (0.4 to 1.6)	1.0 (0.3 to 1.7)
RCP4.5	1.4 (0.9 to 2.0)	1.8 (1.1 to 2.6)
RCP6.0	1.3 (0.8 to 1.8)	2.2 (1.4 to 3.1)
RCP8.5	2.0 (1.4 to 2.6)	3.7 (2.6 to 4.8)

Mass movement of population caused by these direct consequences will not be manageable or contained.

Widespread crop failure is another indirect consequence as weather patterns become more unpredictable.

Wildlife and ecological impacts such as reduction/extinction of species as they are unable to adapt quickly enough is yet another inevitable consequence.

The progressive thawing of the permafrost areas in the northern hemisphere. This will release very large volumes of locked-in Methane, a potent GHG, further accelerating Climate Change.

Most alarming though is the likelihood of 'runaway' Climate Change. That is relatively sudden and unpredictable global changes to sea and air flows which could tip vast areas into permanent extreme hot or cold conditions, making large parts of the world uninhabitable.

Section 4. What can we do and how quickly do we need to act?

That was the 'bad' news and why we are facing a Climate and Ecological Emergency. The 'good' news is that we know how to solve this. The single most important thing holding us back from solving this problem within the next 8 years is our individual and political will to do so!

The earth has a natural Carbon Cycle which has been in balance (Net Zero), keeping concentrations of CO_2 in the atmosphere stable at ~250 ppm. Oceans and plants are the largest absorbers of CO_2. Oceans are becoming saturated, so cannot absorb much more. We'd need a huge amount of land to plant more trees and other vegetation to sequester (remove) the CO_2 emissions. Unfortunately, there are no viable Carbon sequestration technologies in sight that could help us, nor is there a silver bullet to convert all our primary energy sources to zero Carbon emissions (e.g. nuclear fusion).

This leaves only one effective approach to achieving Net Zero Emissions by 2030, we must reduce these emissions by using less primary energy. Renewables cannot, on their own, replace the fossil fuels in the remaining 8 years. But if we reduced our energy consumption, they could come close.

Every action counts and is an important contributor to ensuring that we stay within the remaining Carbon Budget. Most of us in the UK are aware of Climate Change as a long-term challenge, but we may not appreciate the scale of the challenge, how much time we have to address it and what effective solutions are available, and necessary.

The following section explains why just having a Net Zero target is not sufficient. We need to be aware of our remaining Carbon Budget (i.e. how much we can still emit without exceeding the 1.5^{O}C increase in global temperature). It also allocates this Carbon budget to Teignbridge and proposes an optimal

annual allocation to reach Net Zero emissions by 2050. Please read on to find out why 2050 is not a typographical mistake!

Section 5. Carbon Emission Targets

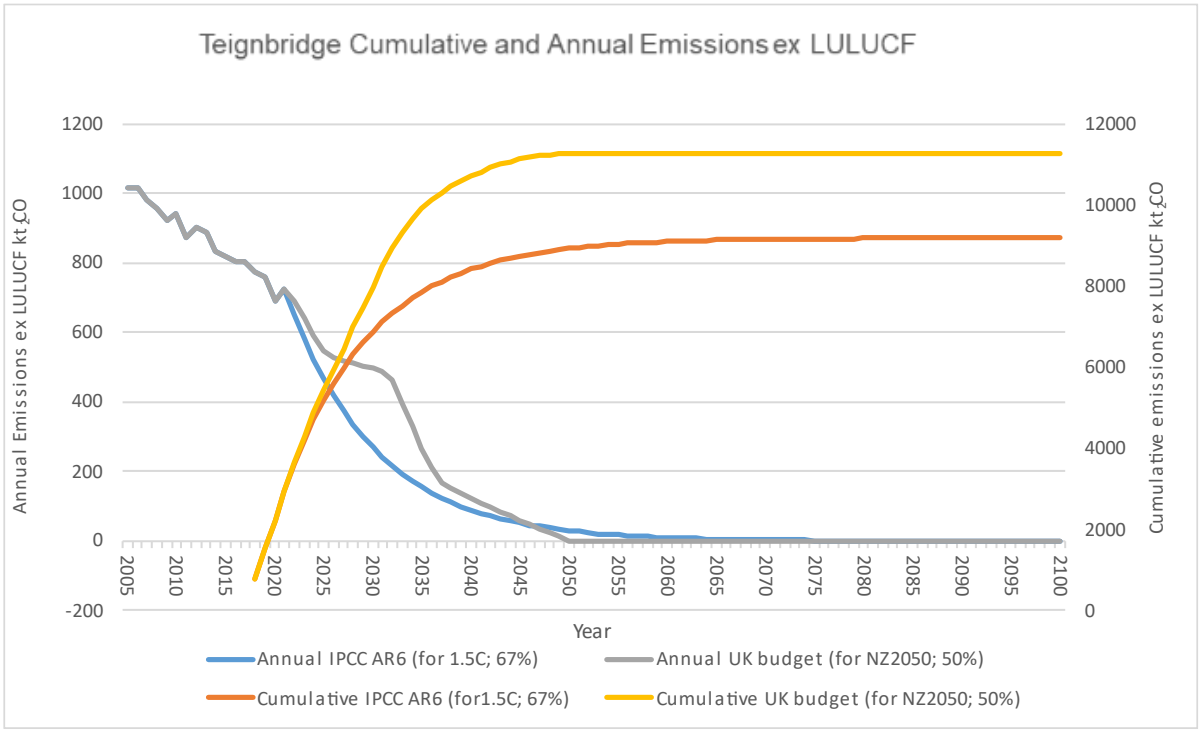
The statement that "Nationally, the Climate Change Act 2008, as amended, contains legally binding targets for the UK to bring all greenhouse gas emissions to Net Zero by the year 2050" is correct. However, TDC's current Local Plan interpretation of this as a linear reductions in annual emission targets is not in line with the government's Carbon Budget targets, also a legal requirement.

The 2008 Climate Change act also required that "To meet these targets, the government has set five-yearly carbon budgets which currently run until 2037. They restrict the amount of 'territorial' greenhouse gas the UK can legally emit in a five year period". We are currently in the 3rd five-year budget period which ends in 2022.

Although there are several ways in which the remaining Carbon Budget for Teignbridge can be allocated between now and 2050, in practice the majority of the GHG emission reductions must be front loaded. That is a steeper initial reduction in annual targets as it will become progressively more difficult to reduce emissions completely as we approach Net Zero Carbon.

Indeed TDC's Climate Emergency declaration to achieve Net Zero Carbon by 2025 is slightly more effective in meeting the legally binding Carbon targets, all be it this declaration appears to have been forgotten! The optimal annual emission targets for Teignbridge, which meet the legal requirement, are explained in the next point.

From the IPCC SR15 and more recently AR6 Carbon Budgets, we have applied the UK's Carbon Budget share to Teignbridge on the basis of the IPCC SR15 starting date of 2019. **It means that emissions must be reduced each year by between ~10.5 and 11.5% on the previous year from 2020 onwards.** The effect of this is illustrated below. This takes account of actual emissions since 2019.



The chart highlights the difference in the government's current Carbon Budgets (as set out by the CCC's 6th Carbon Budget report) and the IPCC's latest published data under AR6. The main difference is the likelihood of remaining within the necessary budget expressed in a % probability.

We believe it would be irresponsible to gamble on a 50-50 chance with something as irreversible and catastrophic as an uninhabitable world.

This is the maximum amount of GHGs (excluding sequestered Carbon) that can be emitted in each period for the whole of Teignbridge. Long term offsetting is not appropriate unless an equivalent amount of Carbon is sequestered as described in the following point. In addition, per-capita emission targets, as currently defined by the Local Plan, should not be used. Instead total Carbon emission targets should be set for Teignbridge's Towns and Parishes. Please contact ACT for information on how to allocate these Carbon Budgets to your area as well as to organisations and households.

Using the government's historic carbon emission subset data for Teignbridge excludes Land Use, Land-use change and forestry (**LULUCF**), which is the only viable offsetting component currently available. Reaching actual zero emissions without LULUCF or Carbon Capture and Storage (**CCS**) is now very challenging. LULUCF is currently -40.5 kt CO_2e annually, if tree cover in the district were to be increased by 25% then a LULUCF value of -50 kt CO_2e p.a. might be possible. Note that, here potential sequestration is measured in 1000's of tonnes, while emissions are measured in 1000,000's of tonnes.

We have provided information on our website which helps councils establish overall emissions for their areas, from which you can derive you remaining Carbon Budget. We have also provided suggestions on policies and initiatives at all levels, right down to individuals, to help manage our Carbon Budgets effectively. Please refer to other parts of the Town and Parish Resource Pack for both.