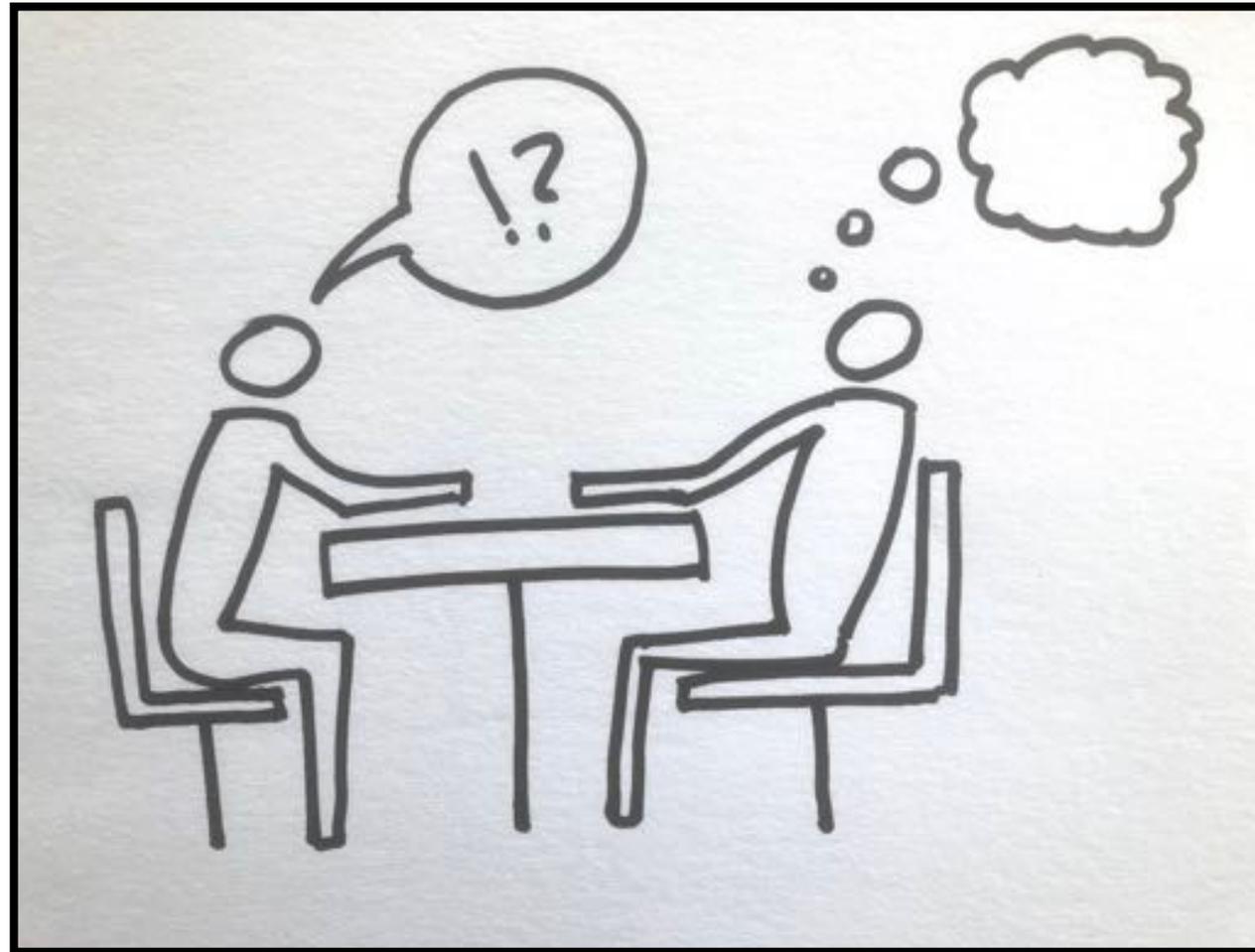


Talking about climate change

you don't have to be an expert



Do you find it difficult talking about climate change?

Here are some tips that make it much easier

Tip #1 - Ask Questions

It's important to remember that the person you're talking to might have a very different perspective on everyday problems and world issues. Constructive **conversations need everyone to understand each other's point of view**. "Why do you think that?"

Tip #2 - Make it real

For many people, climate change feels like a distant problem, but it has already arrived. So **talk about examples that involve real people in real situations** at home and abroad. People can relate to the fact that East Africa, for example, is already seriously impacted by climate change.

Tip #3 - Tell a Convincing Story

Think about how you're going to make your point. **People find it much easier to relate to stories** than facts and figures, so follow the classic story structure – setup, narrative, moral of story. For example: 'Why I got involved in climate change'

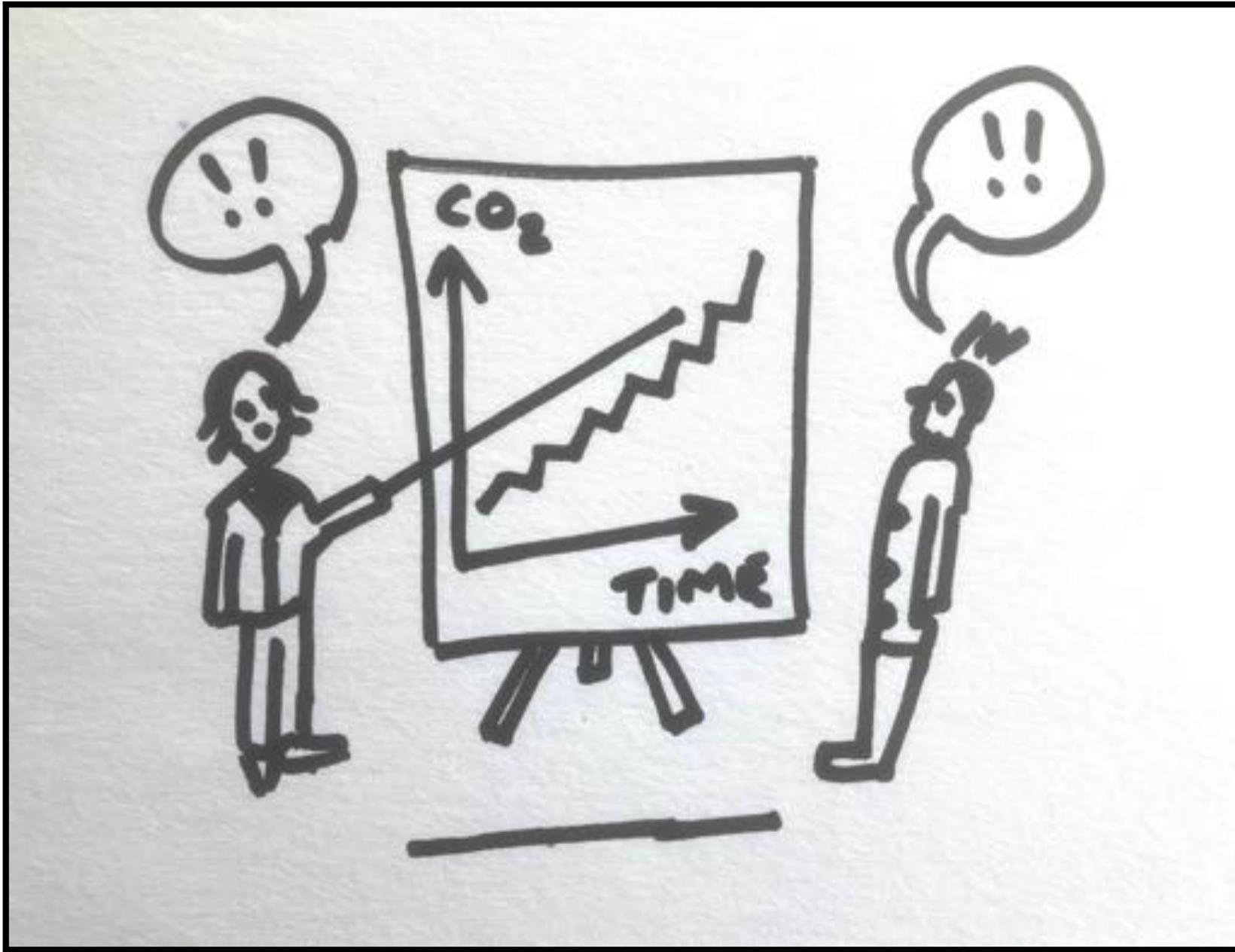
Tip #4 - Know Your Stuff

Facts are hard to refute, and when it comes to the climate crisis, there is a lot of useful evidence you can depend on to help you make your point and explain the problem and solutions to climate change. Prepare some facts in advance to help support your story (see **Some Key Climate Facts** and **Further Reading**)

Tip #5 - Keep Calm

It can be frustrating when people are doubtful about the need for climate action, despite overwhelming evidence. Where people raise **fallacies** (like the false choice between climate action and the economy), point this out **calmly but firmly**. But **don't allow** a conversation to descend into **conspiracy theories** - that should be a "Red Card" conversation stopper.

We include examples of commonly asked questions (Q1 to Q10) you may face from family, friends, neighbours and colleagues, and how to respond in everyday language.



A cartoon of the 'Keeling Curve' <https://keelingcurve.ucsd.edu>

Some Key Climate Facts

There is not much to know to get going - have a go!

- Knowledge of climate change has developed over 200 years; **that is no rush to judgment**. Now, the international consensus is that **human caused global warming is “unequivocal” and very serious** (IPCC 6th Assessment Report 2021/22)⁷.
- The **concentration of carbon dioxide** in the atmosphere has been **rising very fast due to human activities**, and is now higher than at any time in the last 2 million years⁷. The **level of warming is directly linked to the concentration**⁷
- **Warming will stop rising only once we stop emissions**⁷, so stopping burning coal, oil and gas is an imperative. Currently, there is no sign of global emissions reducing¹⁵.
- **Extreme weather events are becoming more frequent and more intense**, just as scientists told us they would¹.
- **Wind and solar for electricity generation are now extremely competitive**¹⁴, and **we can electrify much of our energy use** using electric vehicles for transport and heat pumps for heating.
- The top **10% of people in the world are responsible for 50% of emissions**, and the lowest 50% are responsible for just 10% of emissions³. But the poorest are in countries who are already feeling the impacts of global warming. **Is this fair?**
- **Carbon Dioxide is the dominant greenhouse gas** driving climate change at present⁷, but **Methane and Nitrous Oxide from agriculture** are also significant. Water vapour is a greenhouse gas that **doesn't drive climate change**, but **amplifies** carbon dioxide's warming effect¹⁷.

“Climate change has already influenced the likelihood of temperature extremes in the UK. The chances of seeing 40°C days in the UK could be as much as 10 times more likely in the current climate than under a natural climate unaffected by human influence.” (UK MetOffice, 30th June 2020 ¹)

Want to understand the **Greenhouse Effect**? See short video here: <https://www.howglobalwarmingworks.org>

For a very accessible set of **short videos on various topics** go to Dr Katharine Hayhoe's '**Global Weirding**' Youtube channel⁹

Q1. “How can a trace amount of carbon dioxide, only 0.04% of the atmosphere, really be a problem?”

“Well, see these two glasses of water. Suppose I tell you that one of these has 0.04% of cyanide in it. **Are you happy to take either glass to quench your thirst, or would you want to know which is which, to avoid the poison?”**”



“I’d want to know!”

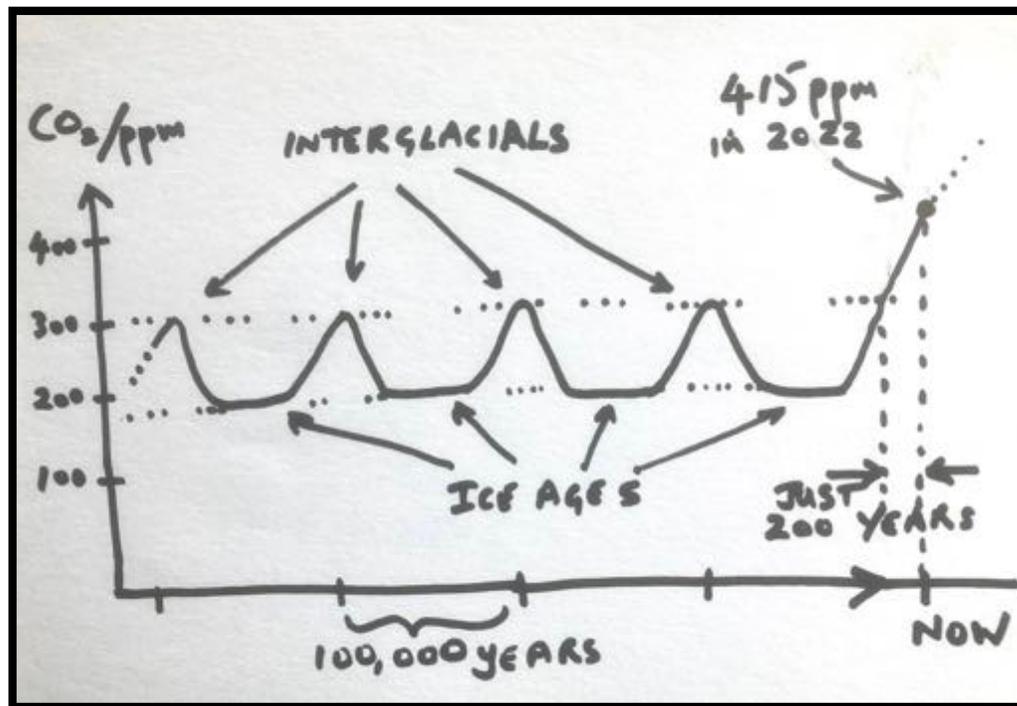
“So you see, the ‘common sense’ argument that a trace quantity means it’s harmless fails. **This is a logical fallacy**, because the overall effect depends on the potency of the trace component.”

“**The same is true in the atmosphere.** Carbon dioxide is very potent in the sense of its ability to **trap heat in the atmosphere**, so **being in trace quantities doesn’t change that.**”

“You can think of oxygen and nitrogen in the atmosphere as like the water in the glass - being the major component by volume - but irrelevant when it comes to the question of potency”.

Q2. “How come humans have been doing fine with carbon dioxide in the atmosphere, and anyway carbon dioxide is a plant food, so an increase is a good thing isn’t it?”

“Since the end of the last ice age roughly 10,000 years ago, up to the industrial revolution, the **atmospheric concentration of carbon dioxide was stable** at about 280 parts per million (**280 ppm** is equivalent to 0.028%), **during which time civilisation emerged**, but humanity has now greatly exceeded that in just 200 years.”



Based on NASA graphic ²

“Today’s (2022) level of **415 ppm** is a **hugely significant jump**, caused by humans extracting ancient carbon (fossil fuels) and burning them, adding over one 1/3rd more to the concentration in less than 200 years.”

“That is like a **flick of the fingers on a geological timescale.**”

“Any advantages from this increase - coming from its role as a plant food - is far outweighed by serious impacts, not least being **increased chances of heat stress, droughts and floods, which harm those very same plants.**”

Q3. “We’ve had heatwaves before, as in 1976, so what’s the fuss about the latest one?”

“Weather is variable, so yes we have had heatwaves before, but this **variability is superimposed on a man-made warming trend which amplifies extremes of weather**”

“If we think of extremes of weather (extremes of heavy flooding and heatwaves) as like throwing 3 sixes with 3 dice, say, then **what global warming does is begin to ‘load’ the dice to make this more likely.** As we add more and more carbon dioxide into the atmosphere, we load the dice more and more.”



Also see Further Reading ‘*Angry Weather*’ by Friederike Otto

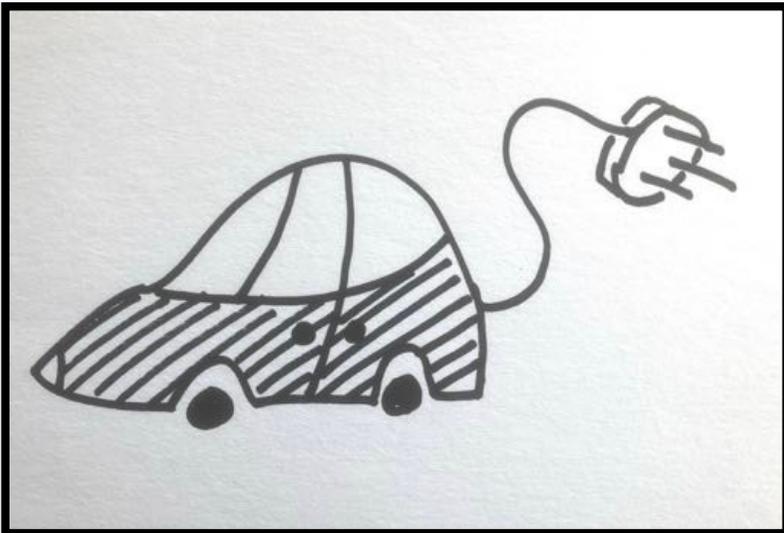
“So, not only have **extreme weather events become more likely, they are also becoming more extreme.** The record-breaking temperature in UK in July 2022 would be well nigh impossible without global warming, and was **much hotter than 1976.**”

“And unlike 1976, which was localised to UK, **the 2022 heatwave has impacted many countries** in the northern hemisphere, with fires raging from Portugal to Croatia, and Pakistan seeing extremes that **have been made 30 times more likely** because of our emissions¹³.”

Q4. “But aren’t Electric Vehicles (EVs) environmentally bad, so not a good alternative?”

“If we place **demands for absolute perfection on solutions** that will stop us burning fossil fuels, we will never get off fossil fuels. There have been issues but these are being addressed.”

“Why do EVs have to be held to a much higher standard than petrol/ diesel cars?”



“The **environmental damage caused by petrol/diesel use** includes:

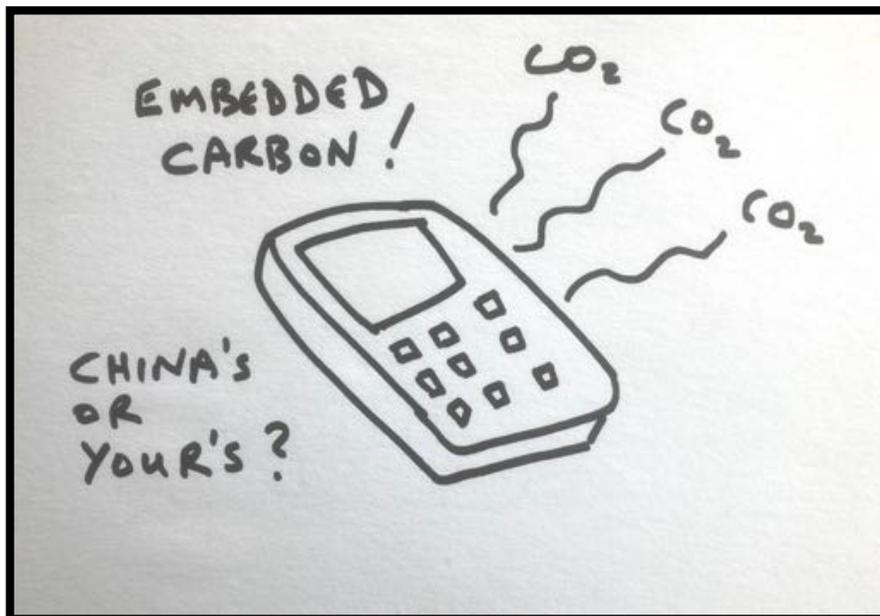
- **Damage to human habitats and ecology** (BP’s Deepwater Horizon catastrophe, Shell’s pollution of the Niger delta, Canadian tar sands impacting indigenous communities, etc.)
- **Serious air pollution** in towns and cities everywhere
- **Global warming** itself with thousands of impacts including **extreme weather events.**”

Also see **10 Myths about Electric Vehicles (EVs)**

“We **always have to look at a balance of harms**, and on that basis, Petrol and Diesel cars give rise to far far worse harms than EVs do.”

Q5. “What about China; our emissions are tiny compared to theirs?”

“It is true they now have higher emissions, but it depends on how you look at the numbers. You can look at **historic as well as current emissions**; you can judge them on a **per person basis** or on a **country as a whole basis**. You can prove any point by making certain choices. But the context is important.”



“Carbon Dioxide is called a ‘long-lived’ greenhouse gas because **raised levels of it in the atmosphere will stay raised for hundreds of years**. The West has historic emissions¹² that exceed China’s, and on a per person basis our **consumption-based emissions** remain higher¹¹”

“So from China’s perspective, their current emissions reflect recent development needs. **All countries need to find low carbon ways to pursue sustainable development**, and the UK is no exception”.

“**We consume a lot of things made in China**. So who is responsible for the carbon emissions that went into making them?”

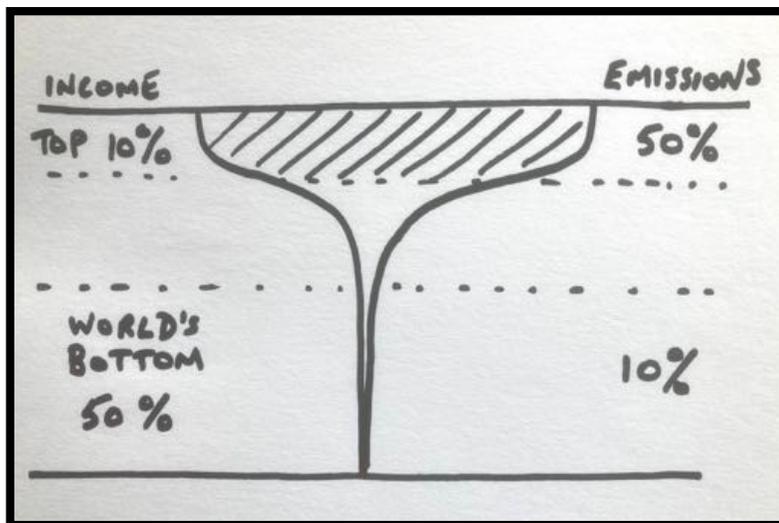
Also see Q6. “**The Problem is Population Growth ...**”

Q6. “The problem is population growth, so what can we do, and is it even worth trying?”

“Aren’t you concerned that this might seem to place the blame for our situation on the poorest in the world. **Africa has been responsible for just 3% of global emissions**, yet will be hit very badly by climate change. Is that fair?”

“Are you familiar with Oxfam’s ‘Extreme Carbon Inequality’ report³?”

“No?! Well here is a sketch of it ...”



“This figure has the richest at the top and poorest at the bottom. The width indicates the carbon emissions at these different income levels.”

“What this shows is that **the richest 10% of the world’s population have been responsible for 50% of carbon emissions**, yet the poorest 50% have only been responsible for 10% of emissions. If the top 10% reduced their consumption to the level of the average European, then global emissions would instantly drop by 33%.”

“Global warming has not been the result of population growth globally, but a massive increase in consumption growth, mainly in the west. It is really unjust to blame the developing world.”

Q7. “What’s the big deal about the world warming by 1°C or 2°C?”

“The global average surface temperature of the **Earth is analogous to your body** temperature - a degree or two rise is very significant. **The Earth is currently running a temperature.**”



“Your body temperature is on average 37°C. If this rises by just 1°C you are ‘running a temperature’.”

“A 2°C rise is a ‘high temperature’, and you may need to ring 111 or your GP”

“A 3°C rise is a ‘very high temperature’ and you should ring 999.”

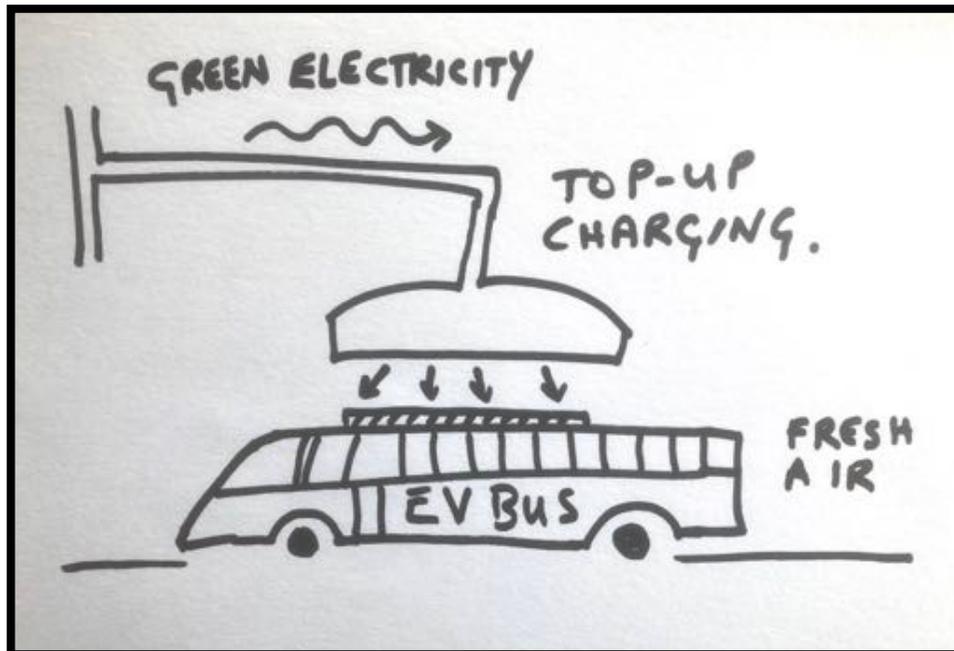
“The human body is very complex but manages to regulate itself to normally keep a steady temperature.”

“**The Earth is also very complex but also manages to regulate itself** to maintain its average temperature.”

“Now in 2022, **due to emissions of carbon dioxide**, the average surface **temperature on Earth has risen by 1.2°C since the start of the Industrial Revolution**⁷. It is running a temperature.”

Q8. “Don’t we need better public transport rather than Electric Vehicles (EVs)?”

“We should have much better public transport, and it should be low-carbon as well, such as the EV Shuttle Buses they have in Harrogate.”



“But **we’ll need EV Cars too**, especially in rural communities.”

“It’s not an ‘either / or’ decision; it’s both.”

“It is a **false binary to suggest we must choose between them.**”

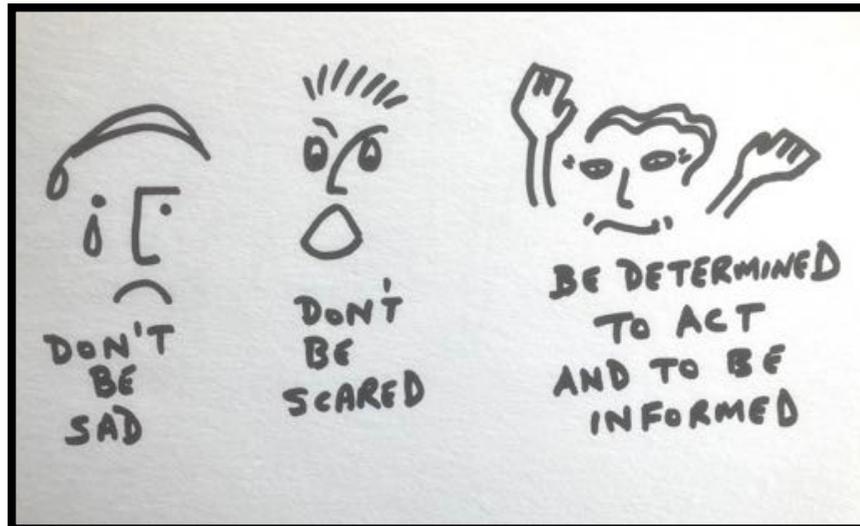
Also see **10 Myths about Electric Vehicles (EVs)**

Q9. “Arctic methane and other tipping points have already been crossed, so we need to now just prepare for the worst, don’t we?”

“There are tipping points but **these are not like dominoes** (so that if one ‘goes’ they all go; and there is no evidence that an arctic methane tipping point has been crossed).”

“There are **many opportunities to prevent future ones** being crossed.”

“The latest IPCC reports⁷ **do not support** the notion of **imminent runaway climate change**”



“As the IPCC says:

EVERY **ACTION** MATTERS
EVERY **BIT OF WARMING** MATTERS⁶
EVERY **YEAR** MATTERS
EVERY **CHOICE** MATTERS”

“We in the well-developed high-consuming countries, **must reduce our consumption and carbon emissions significantly** to achieve net zero by 2050, and **help developing countries take a different path.**”

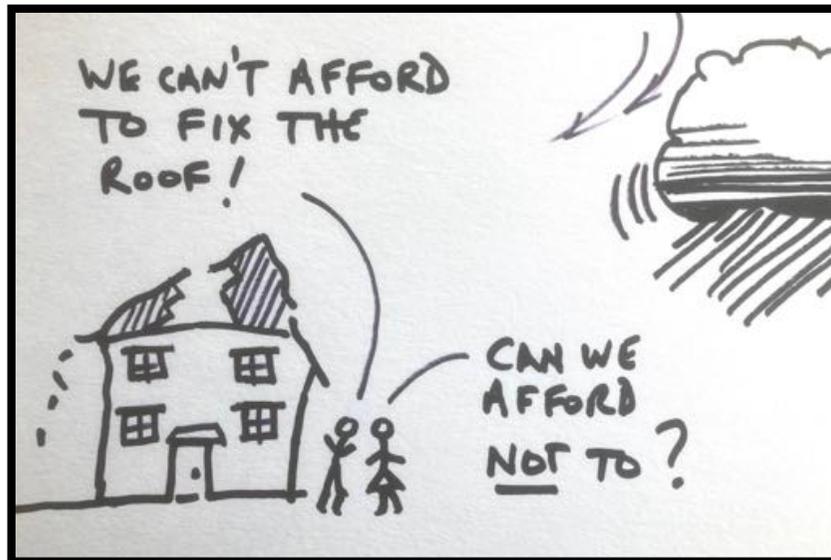
“So while there is lots to be concerned about, **there is lots we can do**, as families, businesses, towns, and as a country. There is hope, but only through **positive and sustained** action. **Let’s get to work!**”

Q10. “I am not a denier, but we can’t afford to rush it; Net Zero by 2050 is just an arbitrary target, we need more time”

“We should have started massively reducing reliance on fossil fuels 30 years ago, and **we cannot afford to delay any longer**, if we are really taking climate change seriously.”

“It is a **false binary** to say we must choose between the economy and climate change measures. With **consistent policies** and **investment in a low carbon economy**, we can actually have a **flourishing future**, good for jobs and the planet.”

Also see Q5. “**What about China ...**”



Cartoon illustrating why the delay argument is a bad one

“The Net Zero goal for the UK by 2050 **came into law in 2019**. Sectors/businesses **need a target to help with strategy and planning**, so it’s silly to complain about need for one.”

“IPSOS latest poll shows that **8 out of 10 Britons are concerned about climate change** - of these, 26% think the 2050 target is about right but **52% want it brought forward**¹⁶”

“The goal could be met at a “manageable” cost, **equivalent to 1-2% of GDP each year**, says the Climate Change Committee (CCC). But it would **only be “credible” if accompanied by stronger policies** to meet the new target, the CCC warns⁴”

“It’s not an early date, but really the **latest we can responsibly leave it for the UK to achieve its part** in avoiding dangerous global warming. Those politicians calling for a delay to policies that would promote bold action are really **not understanding the urgency** for change, **or are being disingenuous.**”

10 Myths about Electric Vehicles (EVs)

Myth 1: The range isn't good enough

"The average driver travels 20 miles a day, and modern EVs can travel 200 miles on a single charge (some even more). **This caters for the vast majority of journeys.** For very long journeys, resources like Zap Map ensure recharging need not be an issue."

Myth 2: They cost too much to buy

"Currently, the upfront cost of an EV is higher than a petrol or diesel car. However, when you include lower running costs, reduced tax and other perks, an **EV becomes a cheaper option after a few years.** There is much less to go wrong on an EV, so you will experience lower maintenance costs"

Myth 3: With electricity prices going up, they'll cost too much to charge

"Even with higher electricity prices, **EVs are so much more efficient that they are cheaper to 'fill up'.** The cost of EV home charging can be a third of what was spent previously on fuel. Because the car doesn't care where the electricity comes from, consumers can seek out the lowest tariffs. **Petrol costs will only get worse over time due to market uncertainty.** You can compare your current car and an EV using a calculator ** "

** <https://www.zap-map.com/tools/journey-cost-calculator/>

Myth 4: The charging infrastructure isn't good enough

"Many people can **charge at home**, using off-peak rates for electricity. **Most petrol stations will have EV charging points soon**, so a 10-minute top-up will be easy to find. For a fuller recharge, fast charging points are increasingly available and growing in number across the UK (and Europe). **ZapMap is a great tool** to find the nearest EV charging stations to your location."

Myth 5: The batteries won't keep their charge very long

"Studies have shown that **modern EV batteries will retain their charging capacity much longer than the fabric of the car** will last. Data on a Tesla S showed it had 90% of its capacity after 200,000 miles, and the lifetime for batteries has been continuing to grow."

Myth 6: They're not actually friendly to our environment

"A UK Government study showed that EV emits 1/3rd of that of a petrol/ diesel car over its full lifetime. **While batteries are energy-intensive to produce, this 'carbon debt' can be paid back after as little as 7,000 miles.** This distance will get less and less as the UK grid gets greener and greener.

An added bonus is that **EVs don't pump out noxious Nitrogen Dioxide and particulates** from the exhaust that are so damaging to our health, especially children."

Myth 7: We don't need cars with a decent public transport system

“In cities where people can live, work and play using excellent public transport, it should be the case that public transport meets everyone's needs, but in a rural setting, this is not the case.

Bus services are often infrequent or unreliable.

Homes and places of work are not well connected by bus routes. Cycle routes are often unavailable for those that want to get out of the car. We should not replace 30 million petrol/diesel cars in the UK by 30 million EVs, but zero cars is also not the answer. While car-sharing services can help in many cases, they won't work for a family with two working parents and children in a rural setting. **Transitioning to a greener future is not about black and white choices.**”

Myth 8: We can wait for the hydrogen cars and the hydrogen economy

“Car manufacturers like VW are **no longer pursuing hydrogen fuel cell cars because they are much less efficient than EVs.** Hydrogen infrastructure will also be hard to roll out, whereas we already have an electricity grid. Hydrogen will also become very expensive because it will be needed for 'hard to decarbonise' sectors like fertiliser production, steel and aviation, and for inter-seasonal energy storage.”

Myth 9: Because batteries require Cobalt mined in poor conditions abroad, they are unethical

“This has been an issue, but **we have to also acknowledge the huge environmental burden of fossil fuel extraction directly on communities and the global heating** that results from its use which impacts us all.

Cobalt child labour is a quickly disappearing problem due to pressure on companies to clean up their supply chains. And while electric vehicles are indeed far from clean, they are much cleaner than the gas guzzlers that currently are the alternative for many people.

But the **best news is that new battery designs don't require Cobalt.** Innovations are already happening in batteries¹⁰ to reduce the use of problematic materials, and also, to make them lighter and more compact.”

Myth 10: The grid can't cope.

“One article in The Times in 2017 claimed we'd need 20 new nuclear power stations to deal with a switch to EVs! The flaw in this argument rests on the assumption that everyone is charging at the same time, but **in reality, the load can be spread, lowering the peak demand.**

Nationally, 73% of cars are garaged or parked on private property overnight, according to RAC Foundation. Utilities are offering householders perks for signing up to flexible charging.

So the peak demand will be considerably less as a result, and in fact, EVs with their batteries will then become part of the solution, rather than the problem. **EVs will actually help create the flexible and adaptive grid we need in the move to renewables and electrification of transport, heating and much more.**”

See <https://www.nailsworthcan.org/blog/10-electric-vehicle-ev-myths> for more details

Further Reading

BOOKS

- *'Climate Change'* - **HRH The Prince of Wales, Tony Juniper and Dr Emily Shuckburgh**
- *'How Bad are Bananas?'* - **Mike Berners-Lee**
- *'From What Is to What If: Unleashing the power of imagination to create the future we want'* - **Rob Hopkins**
- *'Saving Us: A Climate Scientist's Case for Hope and Healing in a Divided World'* - **Katharine Hayhoe**
- *'Angry Weather: Heat Waves, Floods, Storms, and the New Science of Climate Change'* - **Friederike Otto**
- *'Regenesis: Feeding the World without Devouring the Planet'*, **George Monbiot**
- *'This Changes Everything'*, **Naomi Klein**
- *'Under a White Sky: The Nature of the Future'* - **Elizabeth Kolbert**
- *'There is no Planet B': A handbook for the make or break years'* - **Mike Berners-Lee**

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13. *Climate Change made devastating early heat in India and Pakistan 30 times more likely*, **World Weather Attribution**, 30th May 2022, <https://www.worldweatherattribution.org/climate-change-made-devastating-early-heat-in-india-and-pakistan-30-times-more-likely/>
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