



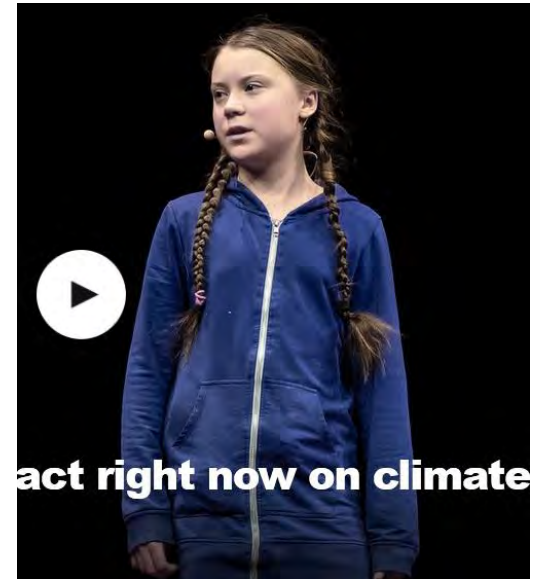
“..this is where people usually start talking about hope, solar panels, wind power, circular economy, and so on, but I'm not going to do that. We've had 30 years of pep-talking and selling positive ideas. And I'm sorry, but it doesn't work. Because if it would have, the emissions would have gone down by now.

Once we start to act, hope is everywhere.”

Greta Thunberg

An exception from the rule?

AECB members *have* been acting - inspiring others, exploring & sharing knowledge, expertise and experience and pushing forward sustainable design and practice - for over 30 years.



Oldest, largest, green building network, supporting c. 1100 members

We have influenced, and are increasingly influencing the mainstream

AECB have created and promoted the only credible UK building performance standards, AECB (Silver), AECB Water & Passivhaus – hundreds of buildings built, many certified, shared on a public AECB database, over 400 projects listed & 3 x that number built

AECB brought Passivhaus into the UK & set up Passivhaus Trust

Initiated Passivhaus training courses, hundreds of students, pass rate of 91%, working with WARM to explore more training

Helped initiate and support R4F

Supported CoRE & RA

Researched retrofit – creating a knowledge base

Created most advanced retrofit training course in UK – 200 students, 60 graduates, exploring creating nationally accredited courses from CLR.

Used CLR to support and contribute to ensuring better delivery of retrofit in public funded projects (ECO, PAS 2035) and helped create the latest Retrofit Coordinator course (CITB/FMB/Osmosis)

Supporting members working to turn climate emergency declarations into action

Supporting 22 local AECB groups

Running useful webinars, several hundred people

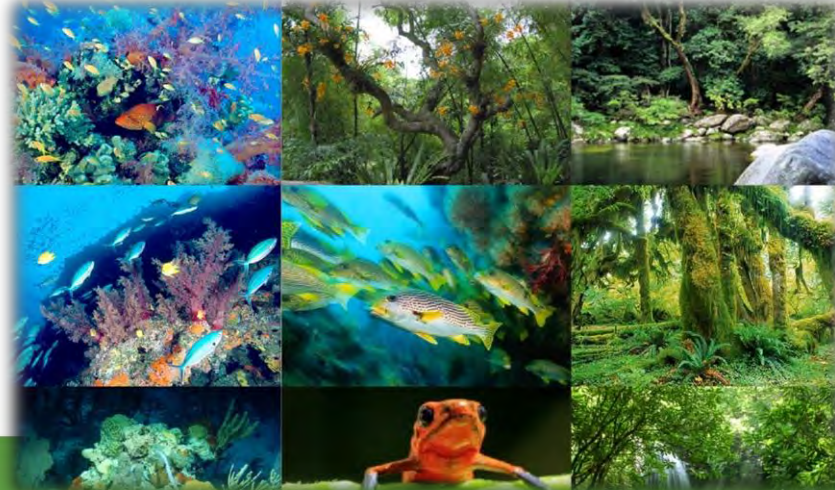
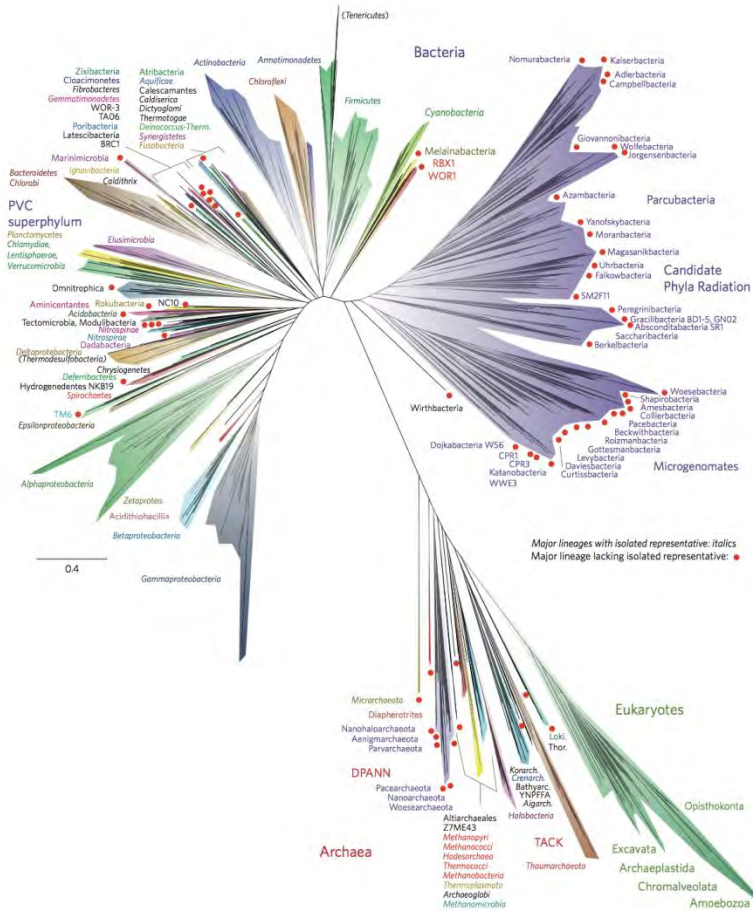
Exploring how to make available affordable finance for members' building better building developments

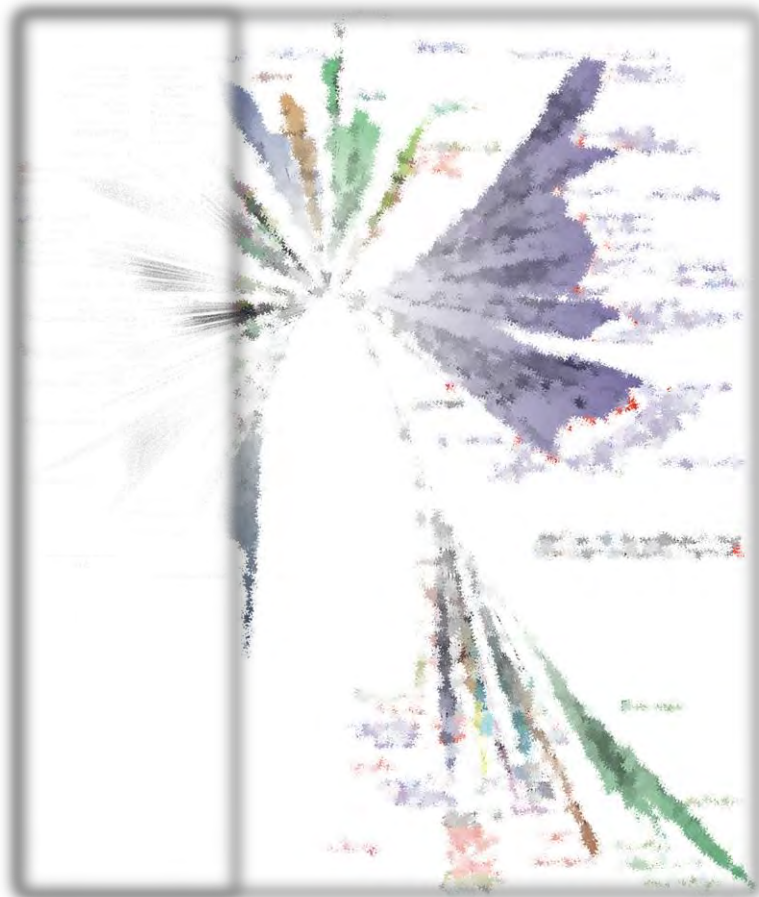
Trying to makes sense of how we create sustainable buildings in the context of climate chaos, biodiversity loss and social disruption!

The end or transformation of a civilisation?



The earth does not belong to man, man belongs to the earth. All things are connected like the blood that unites us all. Man did not weave the web of life, he is merely a strand in it. Whatever he does to the web, he does to himself.





The world's 6th mass extinction

“Species are disappearing up to about 100 times faster than the normal rate / life would take many millions of years to recover / our species itself would likely disappear early on,”

Lead author Gerardo Ceballos

<https://news.stanford.edu/2015/06/19/mass-extinction-ehrllich-061915/>

**Intergovernmental Science-Policy Platform
on Biodiversity and Ecosystem Services
(IPBES)**

<https://www.ipbes.net/>

Key IPBES messages:

<https://www.youtube.com/watch?v=rCiqij0dlGM&feature=youtu.be>

The World's remaining carbon budget

Paris Climate Targets, 2015

Well below 2°C (preferably 1.5°C)

IPCC Special Report on Global Warming of 1.5°C, 2018

The atmosphere can absorb no more than **420 gigatonnes* (Gt) of CO₂** if we are to stay below the 1.5°C threshold.

For 1.5C, budget exhausted in 9 years

c.42 Gt of CO₂ is emitted globally every year (1,332 tonnes per second)

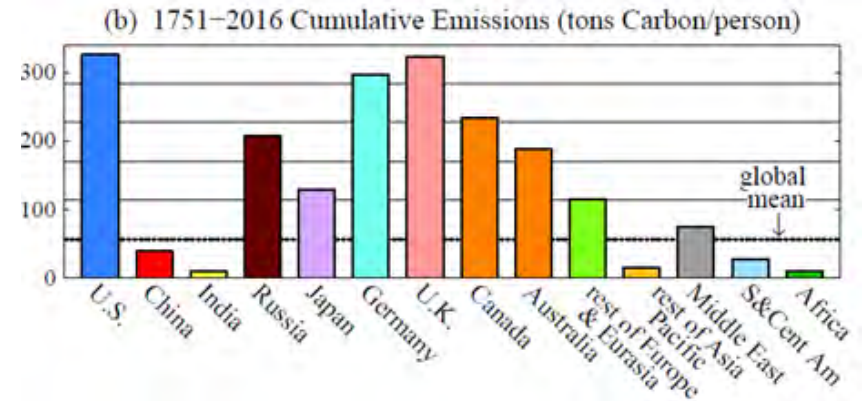
For 2.0C, budget exhausted in 26 years

The c. 1,170 Gt budget for staying below 2°C

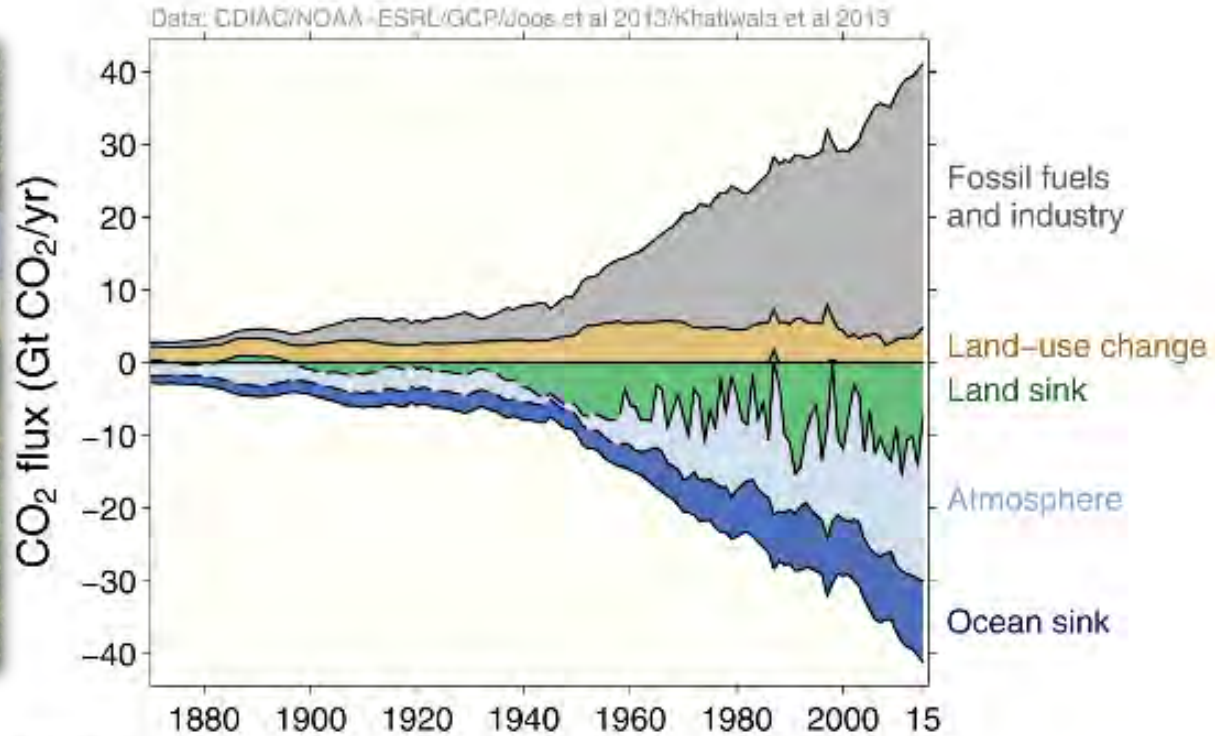
**420 GT = 420, 000,000,000 tonnes, and figure relates to the current condition of Earth's carbon sinks (2018)*

Who has used most so far?

J Hansen, 'In a Nutshell':



Where does it go? Carbon 'sinks'



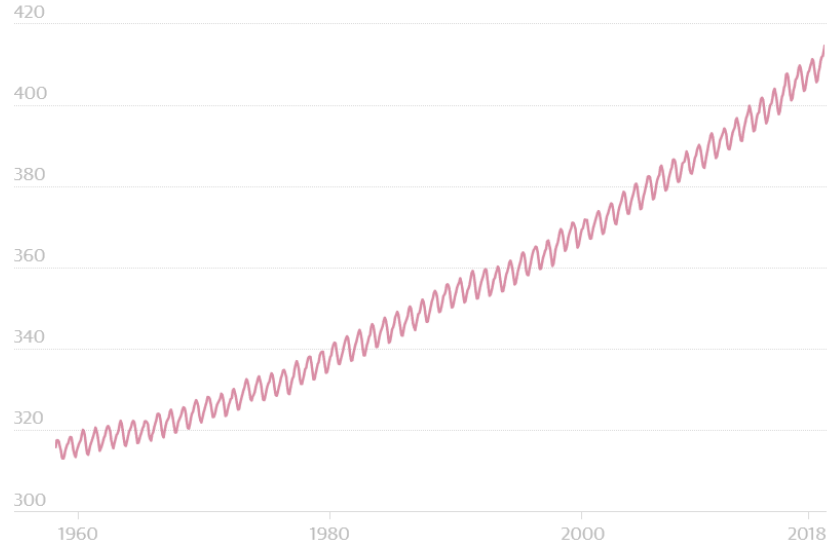
© 2015

Earth's imbalance – observed emissions suggest models underestimate the danger



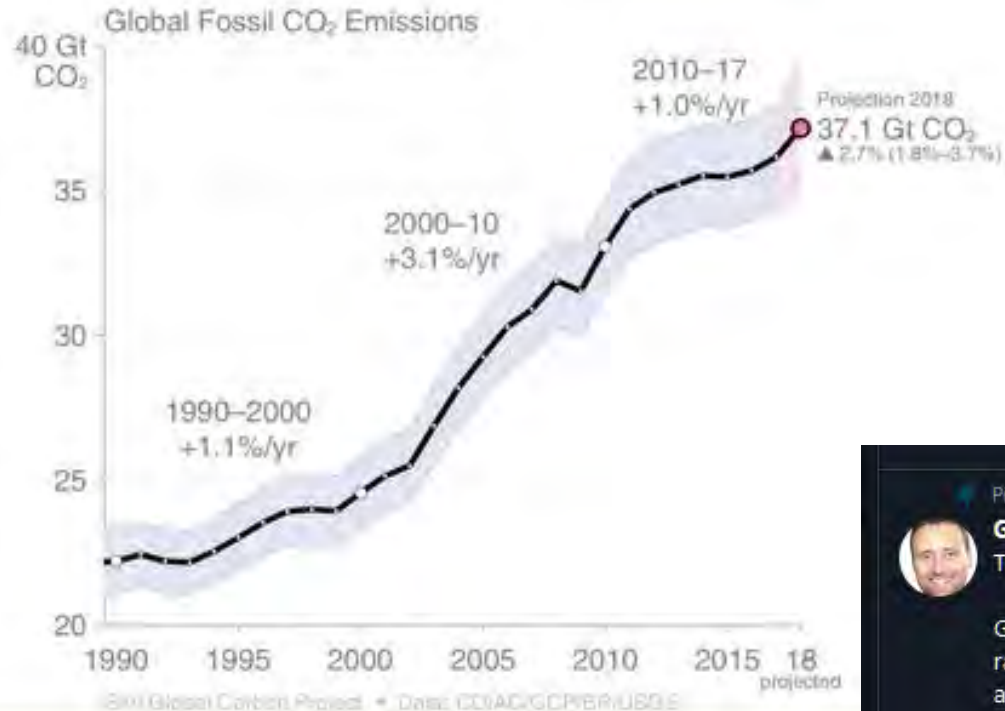
Atmospheric CO₂ rose to a record level in May

CO₂ levels (ppm) are being driven up by human activities but vary with the season



Guardian graphic | Source: US Earth System Research Laboratory, measurements from Mauna Loa, Hawaii

BUT rather than peaking or falling, globally we are burning more and more fossil fuel



Pinned Tweet

Glen Peters @Peters_Glen · 5 Dec 2018

THREAD (Global Fossil CO₂ Emissions)

Global fossil CO₂ emissions are on track to rise more than 2% in 2018 (2.7%, range 1.8% to 3.7%). Emissions rose 1.6% in 2017 (leap-year adjusted) after a temporary slowdown from 2014 to 2016.

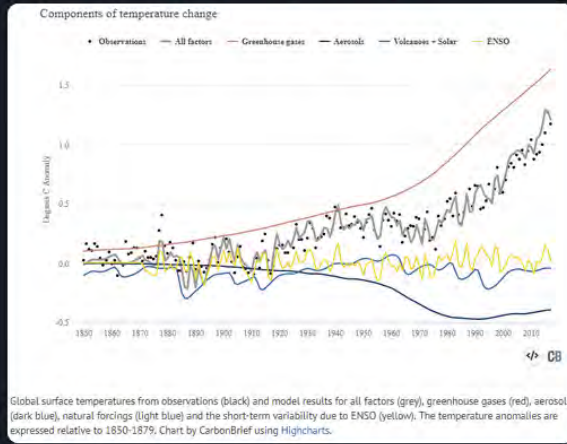
Health measures may speed up global heating

Glen Peters
@Peters_Glen

If it wasn't for aerosols, the human-induced temperature increase would be $\sim 1.6^{\circ}\text{C}$ instead of $\sim 1.2^{\circ}\text{C}$.

Aerosols (mainly SO_2) currently cool $\sim 0.4^{\circ}\text{C}$, & cleaning them up for health reasons may accelerate global warming...

carbonbrief.org/guest-post-why



12:06 am - 31 May 2019

Finding 'mysterious sources'

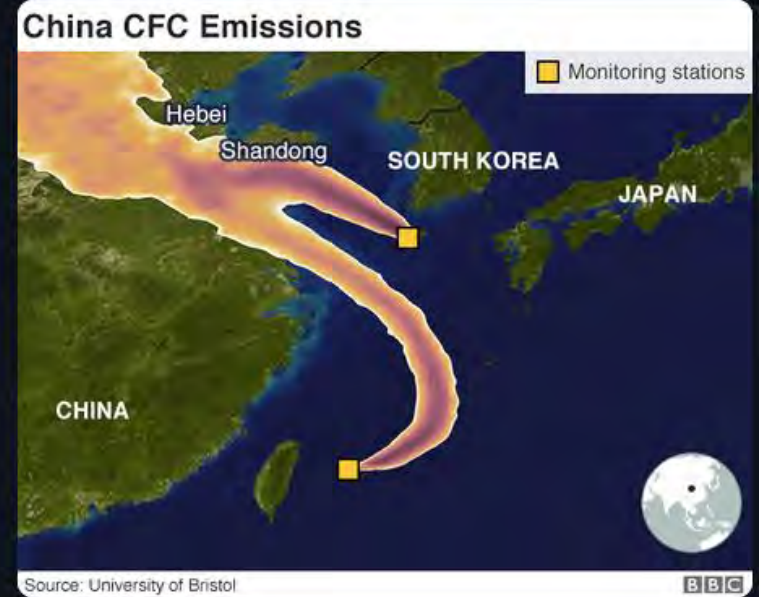


Glen Peters @Peters_Glen · May 26

Observations & modelling "confirm beyond any reasonable doubt" that Eastern China is the source of the mysterious rise in CFC-11.

Are there mysterious sources of CO_2 ? Will observations & modelling be able to detect them or are CO_2 sources too diverse?

bbc.com/news/science-5...



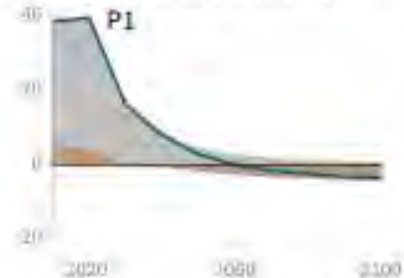
IPCC illustrative pathways for 1.5C

P1



● Fossil fuel and industry ● AFOLU ● BECCS

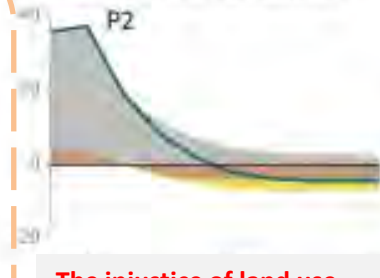
Billion tonnes CO₂ per year (GtCO₂/yr)



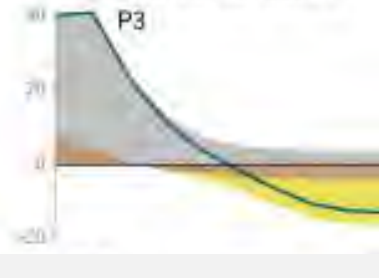
P1: A scenario in which social, business and technological innovations result in lower energy demand up to 2050 while living standards rise, especially in the global South. A downsized energy system enables rapid decarbonization of energy supply. Afforestation is the only CDR option considered; neither fossil fuels with CCS nor BECCS are used.

Global indicators

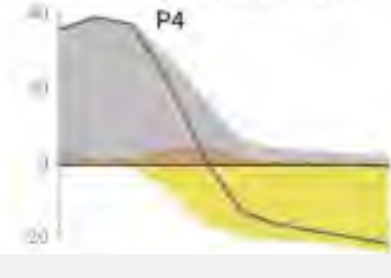
Billion tonnes CO₂ per year (GtCO₂/yr)



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Billion tonnes CO₂ per year (GtCO₂/yr)



The injustice of land use

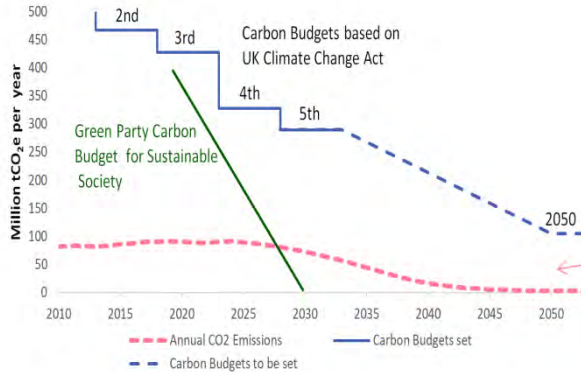
- it would require a vast amount of fast-growing bioenergy crops
- biomass feedstock is therefore likely to come from the global south (trees to grow much more quickly)
- land needed to achieve the negative emissions from BECCS assumed in almost all of the IPCC's scenarios does not square with the land globally available.

One scenario aiming to limit global warming to 1.5C would require bioenergy crops to be planted over an area almost twice the size of India.

<https://www.greenbiz.com/article/burning-solve-climate-change-beccs-paradox>

GHG emissions →

England: net-zero by 2050
Scotland: net-zero by 2045
Wales: 95% reduction by 2050



- supply of low-carbon electricity (which will need to quadruple by 2050)
- efficient buildings & low-carbon heating for all the UK's building stock
 - electric vehicles - the only option from 2035 or earlier
 - developing low-carbon hydrogen technology
 - stopping biodegradable waste going to landfill
 - phasing-out potent fluorinated gases
- increasing tree planting, and measures to reduce emissions on farms
 - developing carbon capture and storage technology

But Gov. still working to Climate Change Act (80%)

February

'Policies failed': CCC issues quietly damning assessment of UK climate policy progress

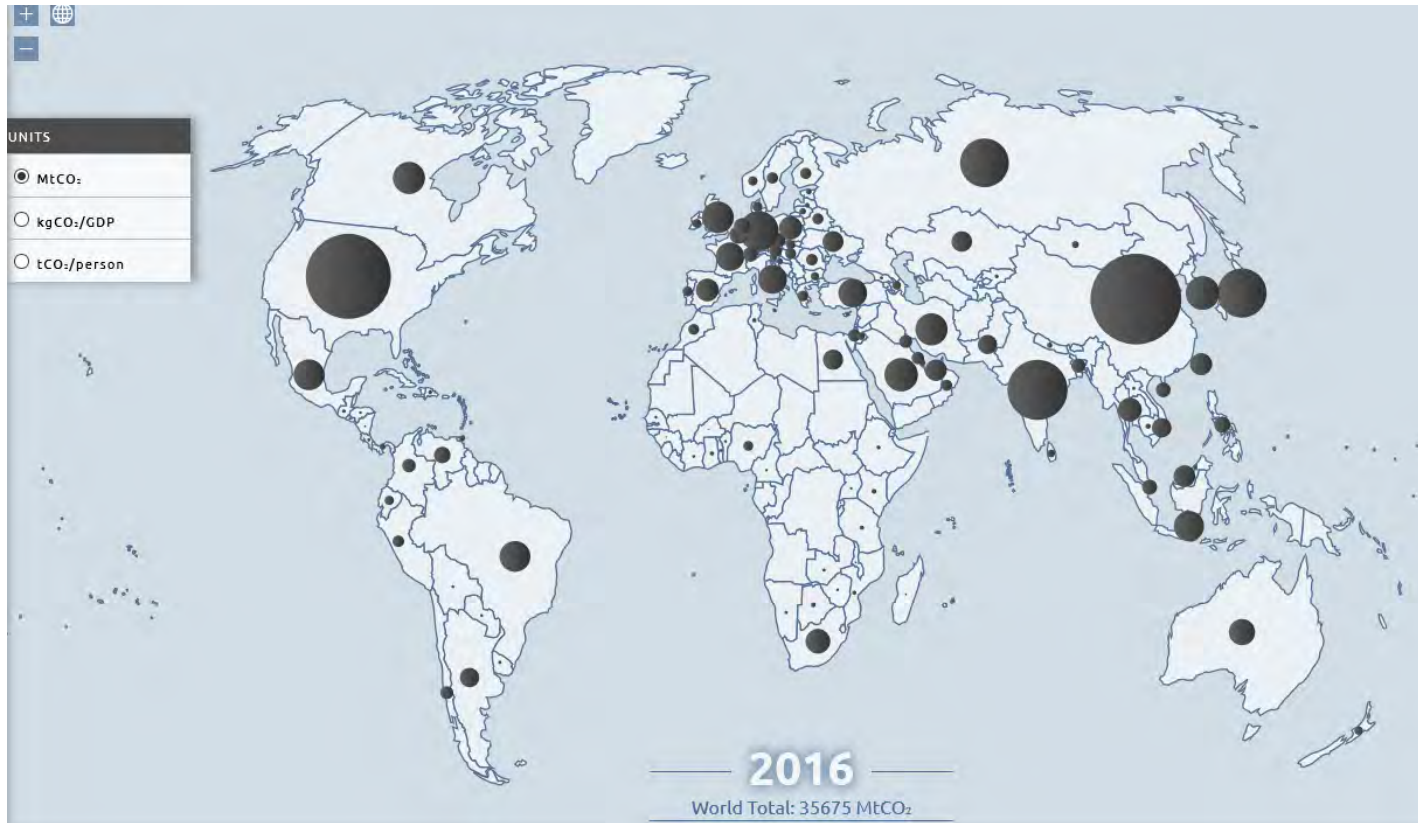
June

Government considering 'accounting tricks' to relax climate targets

"...behind closed doors they're using **accounting tricks to hide mega tonnes of emissions the size of Switzerland and New Zealand combined.**"

Shadow Minister for Energy and Climate Change, Alan Whitehead

Territorial based emissions – by country per year (CO₂e)



Territorial based emissions – per person per year (CO₂e)



Emissions – a comparison



UK territorial emissions = 6.1 tCO₂e/person

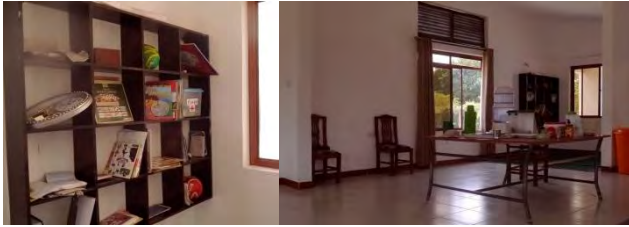
UK consumption emissions = 8.5 tCO₂e/person



Typical Britons



Consumption emissions – heating & powering our homes is the tip of the iceberg...



Tz ecovillage. Toys for 10 children & communal room

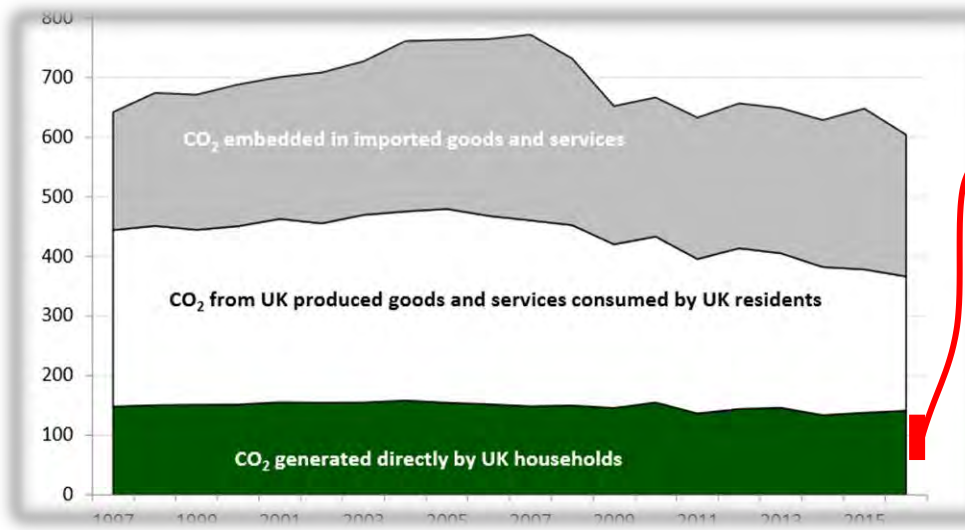
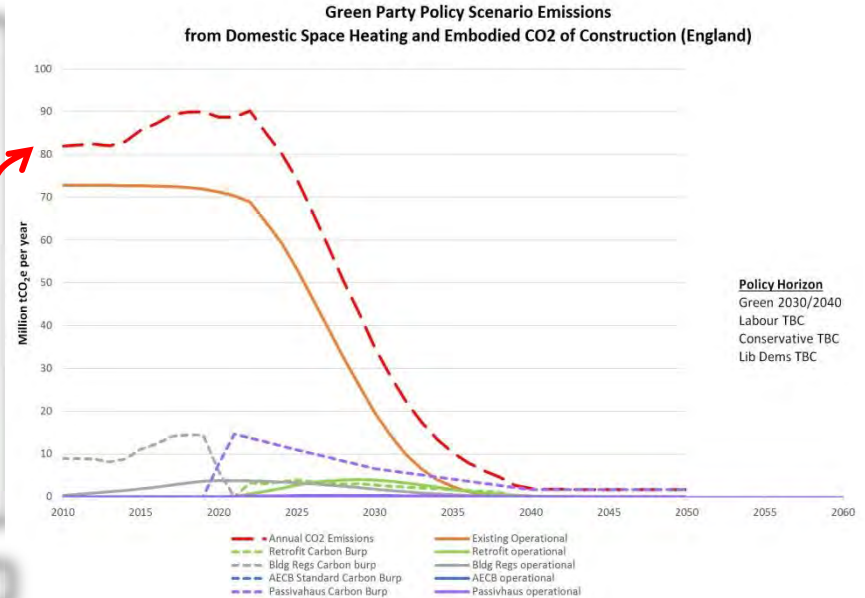


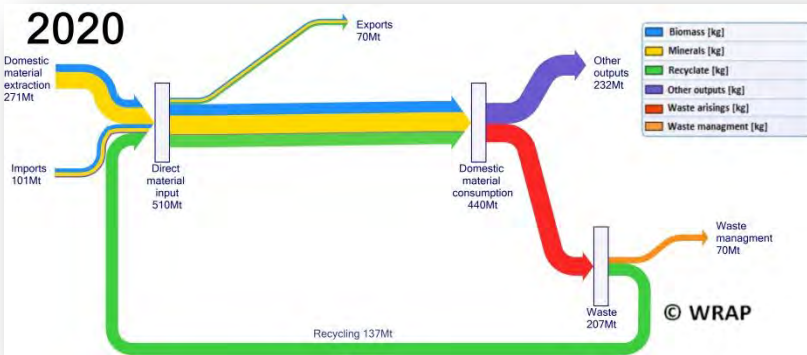
Figure 4 looks at emissions from CO₂ only. CO₂ is the main greenhouse gas, accounting for 78 per cent of total UK consumption greenhouse gas emissions in 2016.



Policy Horizon
 Green 2030/2040
 Labour TBC
 Conservative TBC
 Lib Dems TBC

UK resource use & material flows

- 30Mt **fewer material inputs** into the economy
20% **less waste produced** (50Mt less waste)
- 20Mt **more materials recycled** back into the economy
(2010 baseline. UK population will grow by 8% in the decade)



Realising these savings

- lean production (**goods with a lower material requirement**)
- **reducing waste** in manufacture & commerce
- **reducing** the amount of working **products thrown away**
- goods to services (**more leased products**)



Equity



Securing freedom molecules in 1942

Tanzania emits only 3.5% of what the UK emits

UK citizens' footprint is 6.1 tCO₂e/person

Tanzanians footprint is 0.2 tCO₂e/person

In the drive to reduce emissions we need to accept international mechanisms for 'fairness'

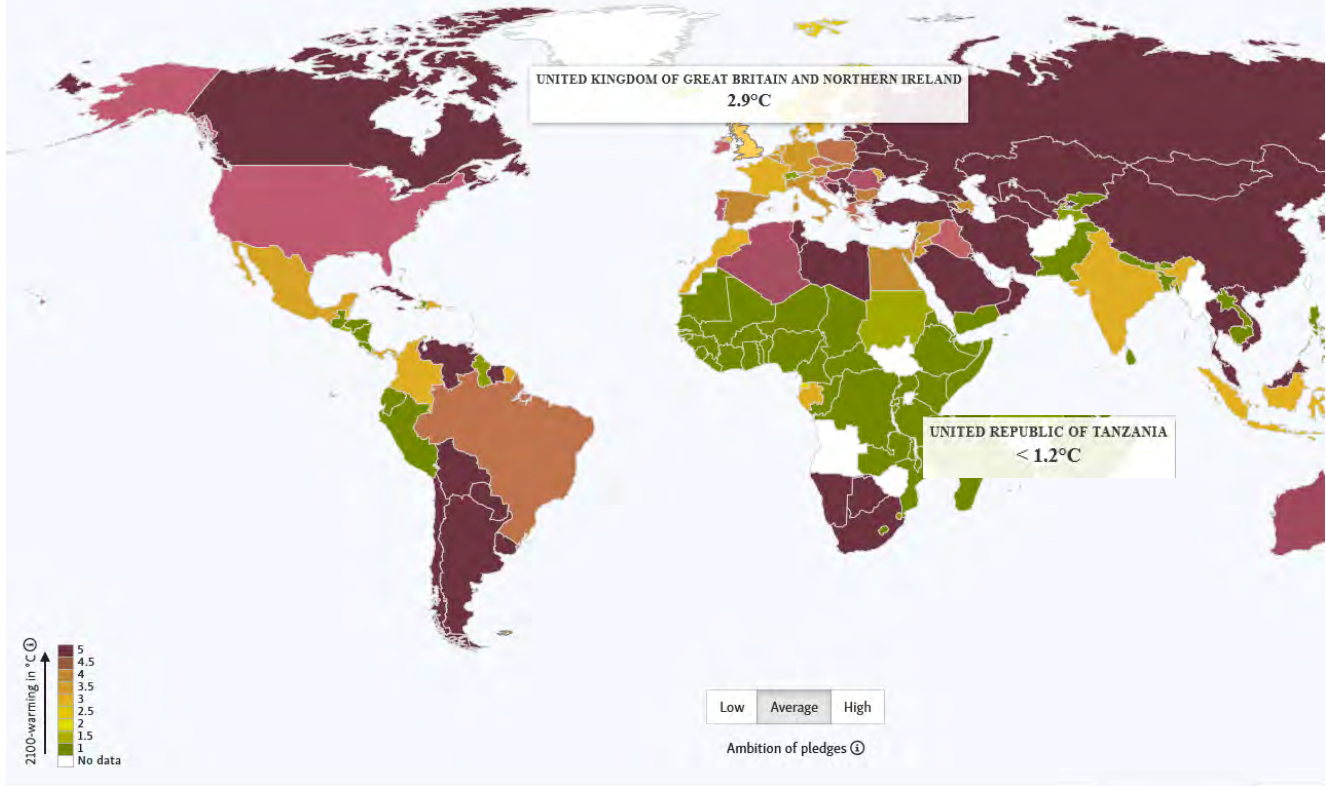
Previously 'Contraction & Convergence' (UNFCCC) more recently expressed as '**Equity**' (IPCC)



How much global warming is each country's pledge leading to? ⓘ

UK
2.9C

Tz
1.2C



Five equity assessments ⓘ



Constant emissions ratio



Greenhouse development rights



Capability



Equal cumulative per capita



Equal per capita

1.5°C 2°C
Temperature goal ⓘ

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND
NDC consistent with 1 equity approach.



CER



GDR



CAP



CPC



EPC

UK: 1/5
Tz: 4/5

UNITED REPUBLIC OF TANZANIA
NDC consistent with 4 equity approaches.



CER



GDR



CAP



CPC



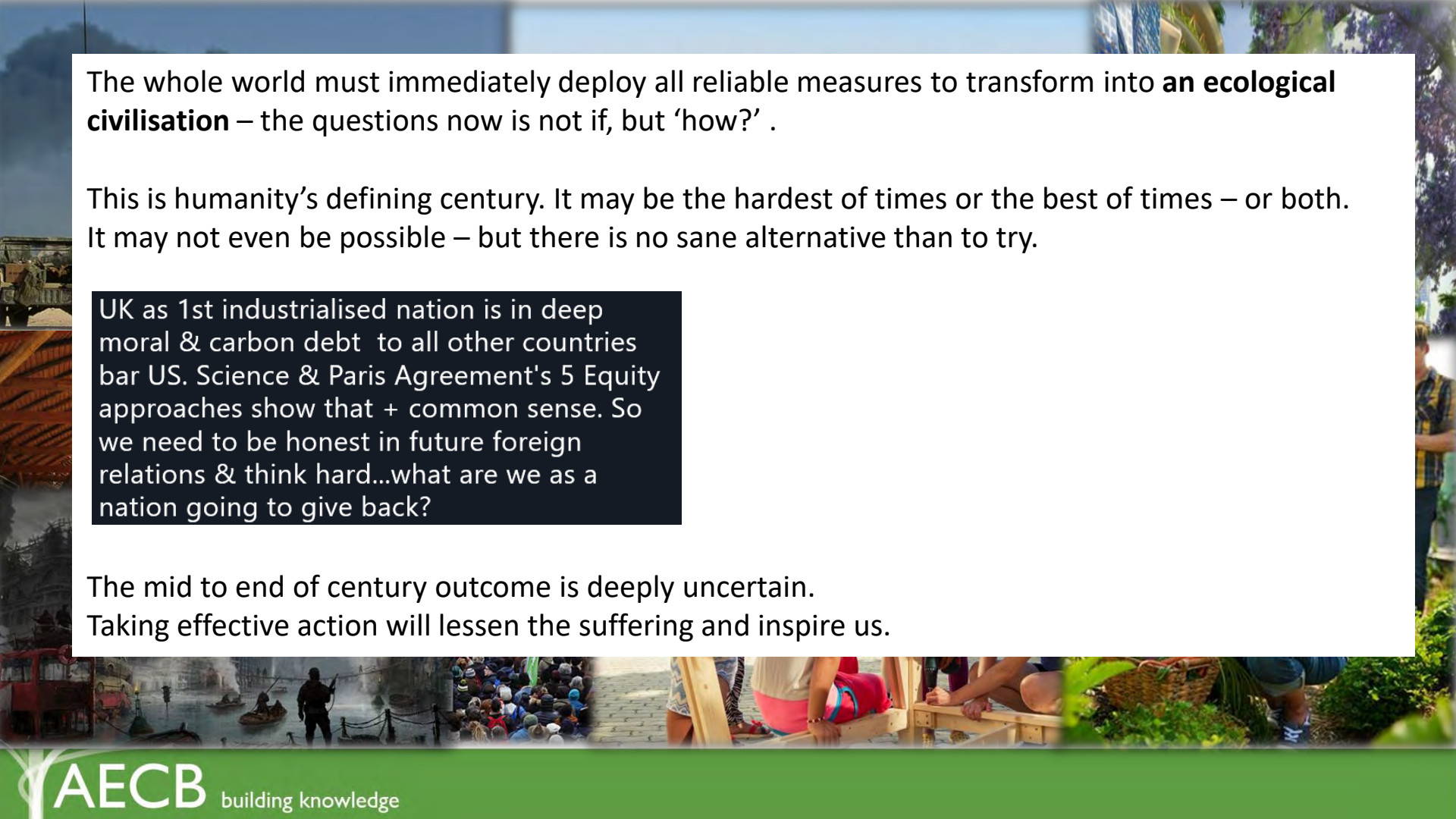
EPC

What does a 'high equity' scenario for first-industrialised, wealthy nations mean?

carbon dioxide emissions budget per person (tCO₂e/yr)

Group/Country	2015	2030
Tanzania	1.6	1.5
China	9.2	10.9
United Kingdom	7.8	-7.8
United States	20.4	-26.5

Our professed 'equity scenario' & ability to deliver it will define the UK's future international relations & all that this implies.....



The whole world must immediately deploy all reliable measures to transform into **an ecological civilisation** – the questions now is not if, but ‘how?’ .

This is humanity’s defining century. It may be the hardest of times or the best of times – or both. It may not even be possible – but there is no sane alternative than to try.

UK as 1st industrialised nation is in deep moral & carbon debt to all other countries bar US. Science & Paris Agreement's 5 Equity approaches show that + common sense. So we need to be honest in future foreign relations & think hard...what are we as a nation going to give back?

The mid to end of century outcome is deeply uncertain. Taking effective action will lessen the suffering and inspire us.

Towards an ecological civilisation

Jeremy Lent

Follow up workshop:

Jeremy & Elizabeth Ferguson

Room CLC G.04

