



Climate Change and Where We Are:

Key trends in climate,
sustainability and
biodiversity

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MSc climate change and risk management



Outline

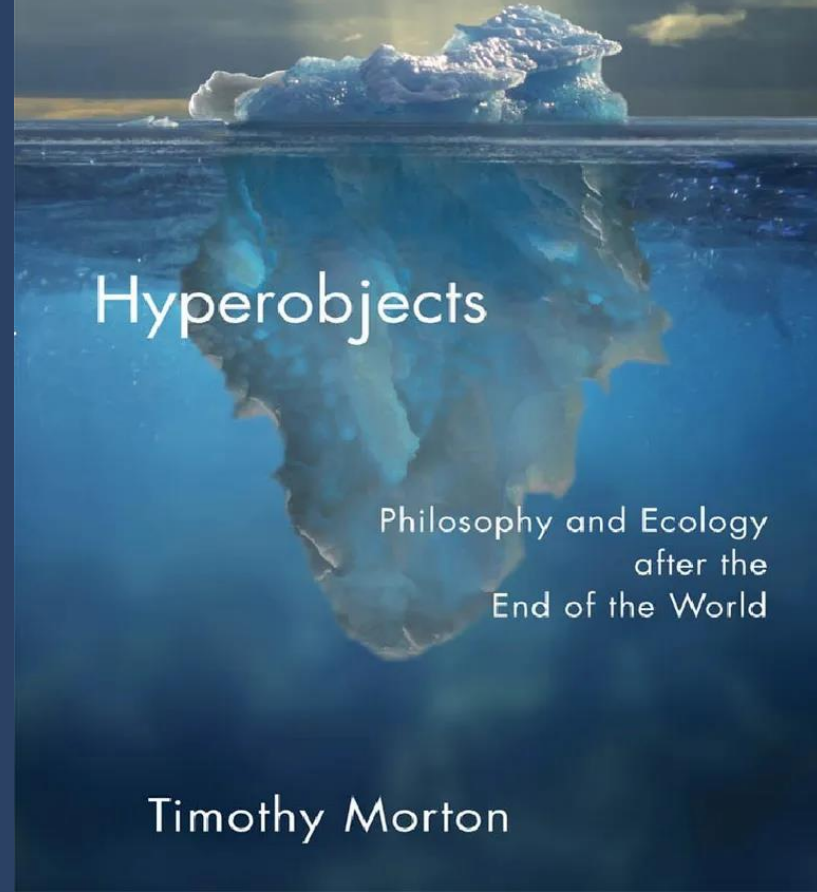
- ▶ How the research is presented
- ▶ How much is happening already
- ▶ What still needs to be done
- ▶ What we can do about it
- ▶ Questions



Hyperobject: Climate

- ▶ We only see a tiny part of it
- ▶ Can't easily relate or understand it and it's impacts
- ▶ Happens over years to centuries:
 - ▶ Time scales too long for humans too easily respond over
- ▶ It has a long lag time
 - ▶ Our actions take years to show impacts associated with them
- ▶ Affects everything we do:
 - ▶ Either directly through physical impacts or indirectly through societal/economic impacts
- ▶ It is caused by everything we do:
 - ▶ We are all bad (terrible for politicians and policy)
- ▶ We have left it too late to transition gradually, easily and cheaply

Tim Morton, are those "...things that are massively distributed in time and space relative to human."



Hyperobjects

Philosophy and Ecology
after the
End of the World

Timothy Morton

Why is climate difficult?



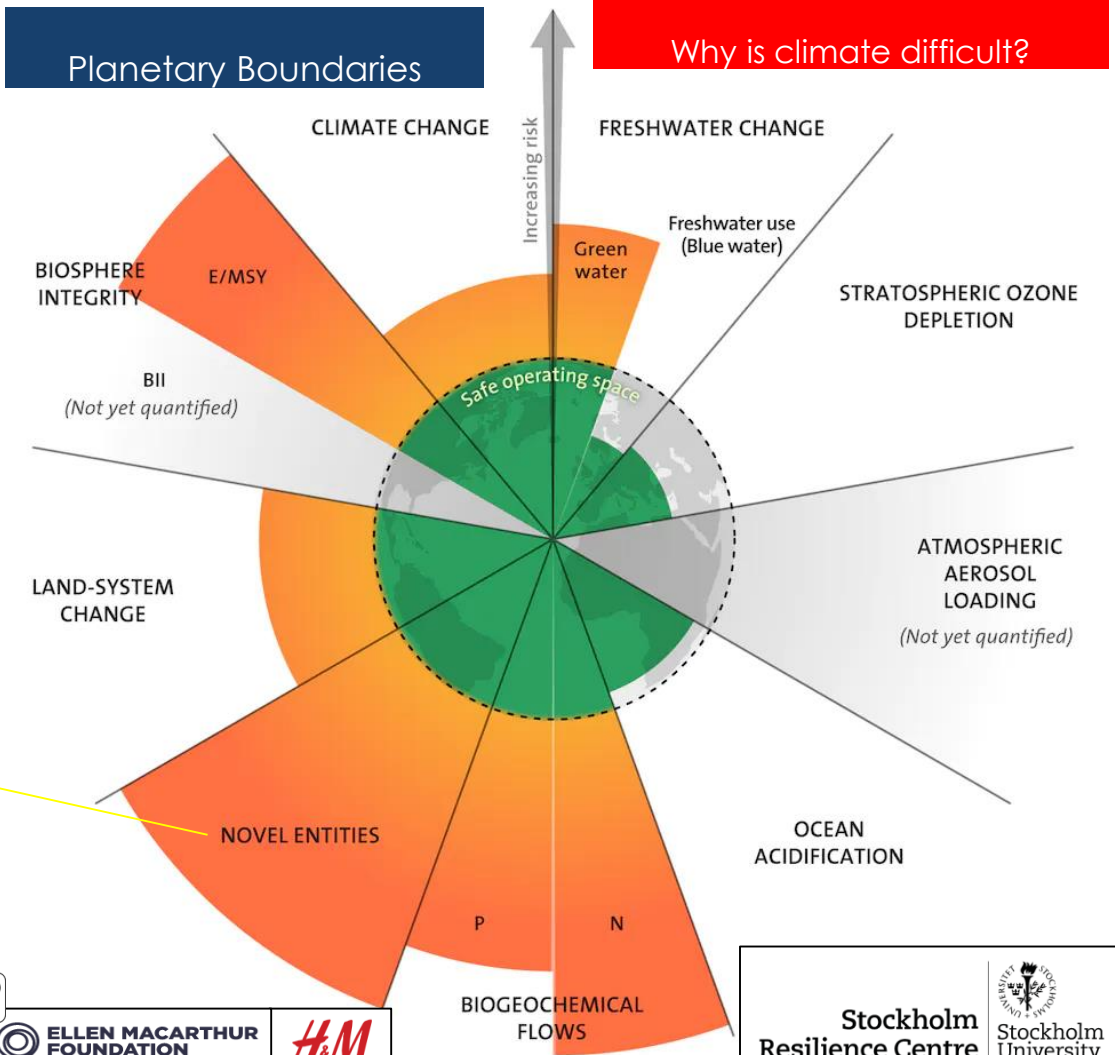
Understand it?

- ▶ Impacts are wide ranging
- ▶ How do we **research**, **communicate** and **act** on it?
- ▶ Land
- ▶ Ocean
- ▶ Atmosphere
- ▶ Cryosphere
- ▶ New substances that the nature hasn't even seen: **plastics**
- ▶ As it changes: we change
- ▶ As we change: it changes



Planetary Boundaries

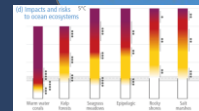
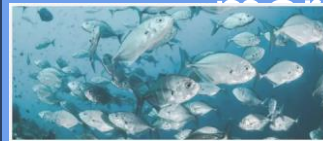
Why is climate difficult?



IPCC Reports: the best information we have

- Working Group 1 focus on the **physical science** that underpins past, present and future climate change.
 - 200 scientists
 - 14,000 citations to other documents, papers or reports.
 - 75,000 review comments addressed
- Working Group 2 assess climate **impacts**, the vulnerability of socio-economic and natural systems to climate change, and options for adaptation.
 - 270 authors
 - 34,000 citations
 - 62,000 review comments addressed
- Working Group 3 focus on climate change mitigation; **solutions**, assessing methods for reducing emissions and removing greenhouse gases from the atmosphere.
 - 278 authors
 - 18,000 citations
 - 59,000 review comments addressed

- UN Report AR6 (2021):
 - 748 academics
 - 66,000 citations
 - 196,000 comments
 - Uncertainty in important areas remains high, eg: **marine impacts**

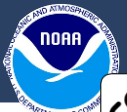
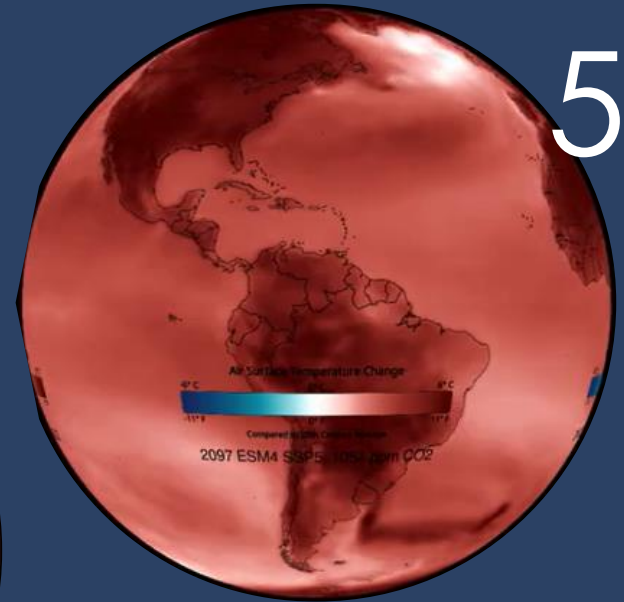
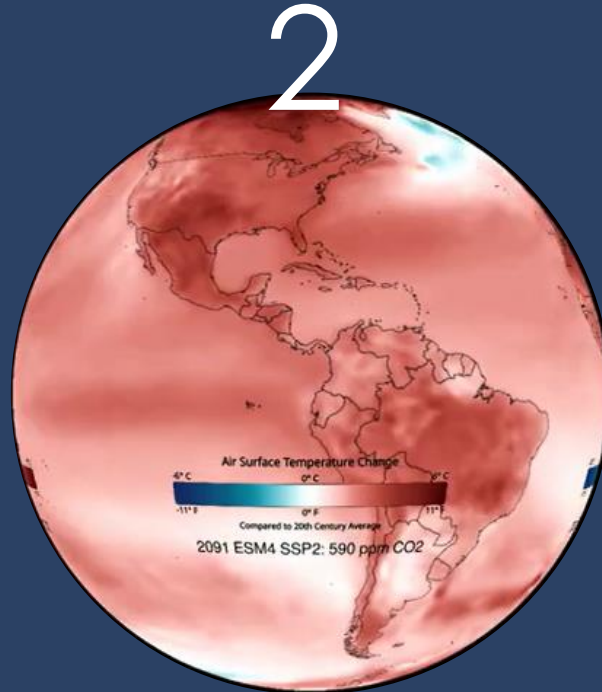
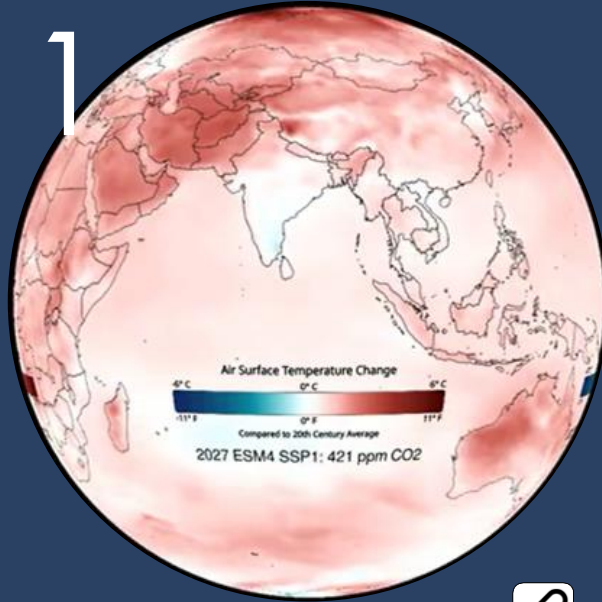


ipcc
INTERGOVERNMENTAL PANEL ON climate change



How the research is presented

Shared socioeconomic Pathways



Science On a Sphere

Different pathways to our future

SSP1-Sustainability; **Dangerous warming avoided** – Taking the Green Road

SSP2-Middle of the Road; **continue on current track**

SSP3-Regional Rivalry; **Protectionist** – A Rocky Road

SSP4-Inequality; **Wealthy few** – A Road Divided

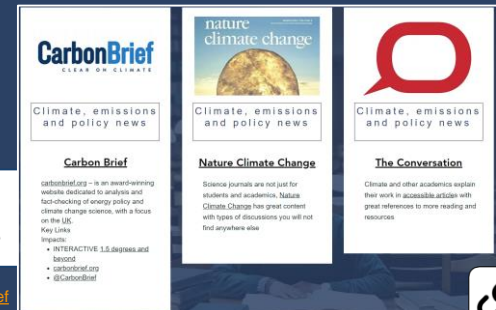
SSP5-Fossil-fueled Development – Taking the Highway: **Everyone helped to develop, massive emissions**

SSP2 represents a “middle of the road” scenario: historical patterns of development are continued throughout the 21st century.

Follow reputable news on climate

How the research is presented

[Explainer: How 'Shared Socioeconomic Pathways' explore future climate change - Carbon Brief](#)



Uncertainty: Who knows what is happening?

- ▶ What is a climate scientist?
 - ▶ Sociologists
 - ▶ Microbiologists
 - ▶ Mathematicians
 - ▶ Physicists
 - ▶ Biologists
 - ▶ Chemists
 - ▶ Psychologists
- ▶ Expansive
- ▶ Who has the best overview?
 - ▶ Physics, chemistry and biology of the biosphere
 - ▶ What the impacts are likely to be?
 - ▶ How adaptaptable we are?

Hannah Ritchie

WIRED

Stop Telling Kids They'll Die From Climate Change
Many young people feel like their future is in peril. To make progress on climate change, we must move past doomsday scenarios.

Our World in Data

OXFORD MARTIN SCHOOL UNIVERSITY OF OXFORD

Geoengineering: How, Why, When?

Dr Peter Irvine: Lecturer in Climate Change & Solar Geoengineering

- We predicted the pandemic but we didn't plan for it
- Even if the climate responds as we predict, we know that humanity can be its own worst enemy: wars, famines and political unrest are all predicted as climate tightens its grip.
- We face a future littered with setbacks and we are not planning for them.
- Our climate pledges get us to 2.3°C, if all goes well.....

Will this change the case for Geoengineering?

CGCH Cross Government Climate Hub

UCL CHALLENGING CLIMATE

UCL

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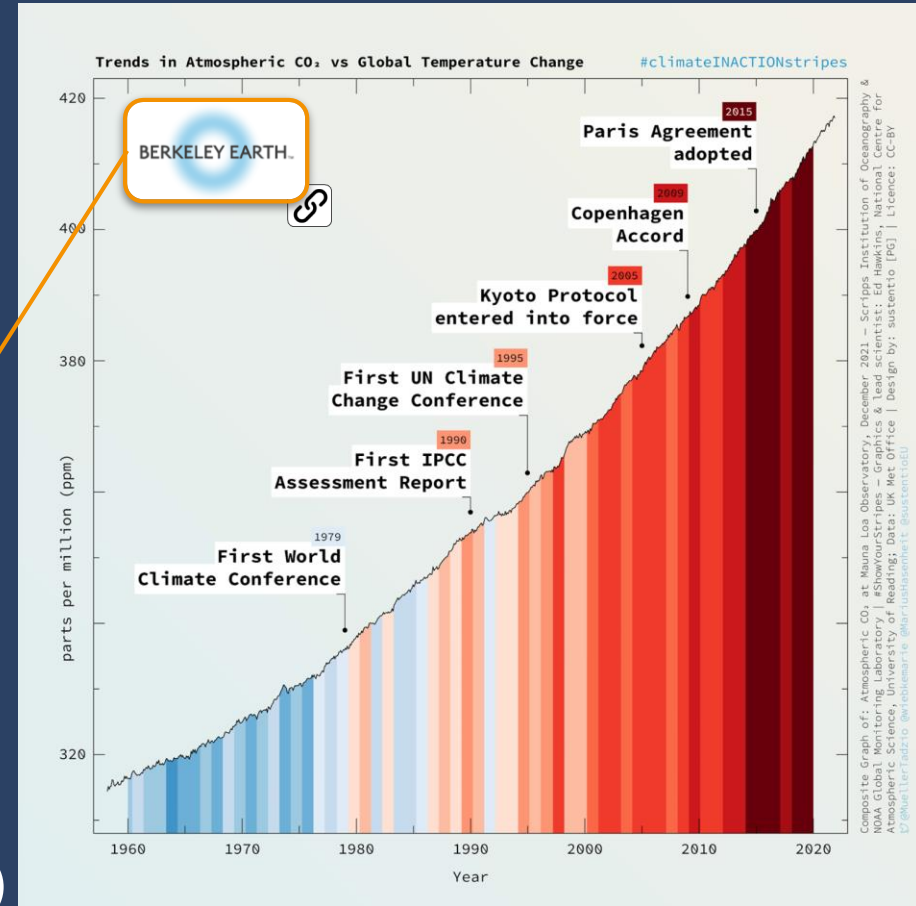
Energy: the power to do it all

- ▶ Food
- ▶ Transport
- ▶ Data
- ▶ Energy technology: production and storage
 - ▶ This is the biggest piece: the cost of energy underpins the cost of doing everything
 - ▶ All of these things become cheaper as we roll out more renewable energy that doesn't need fuel to be **mined**, **pumped**, **refined**, **shipped** and **burned** (producing waste at every step)



What are you hearing that is certain?

- ▶ Impacts are **happening** at lower temperatures than we thought (**ice / other**)
- ▶ 5 of the 16 major tipping elements may have already **tipped**: Ice sheets, AMOC, Amazon rainforest
 - ▶ 18 out of all 37 could tip between 1-2°C
- ▶ We will go past **1.5°C** in next 5 years
- ▶ Climate is much worse depending on where you live (**Berkley Earth**)
- ▶ BUT: If we get to net zero by 2050: **could be cooling by end of century**:
 - ▶ Earth system pulls out 50% all CO₂ we emit currently
 - ▶ Methane breaks down in ~12 years
 - ▶ Take longer and warming will continue after we get to net zero if we don't capture carbon



6th Mass Extinction?



- ▶ Still debated but likely
- ▶ 100–1000 times higher than the background rate
- ▶ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES)

Extinctions since 1500

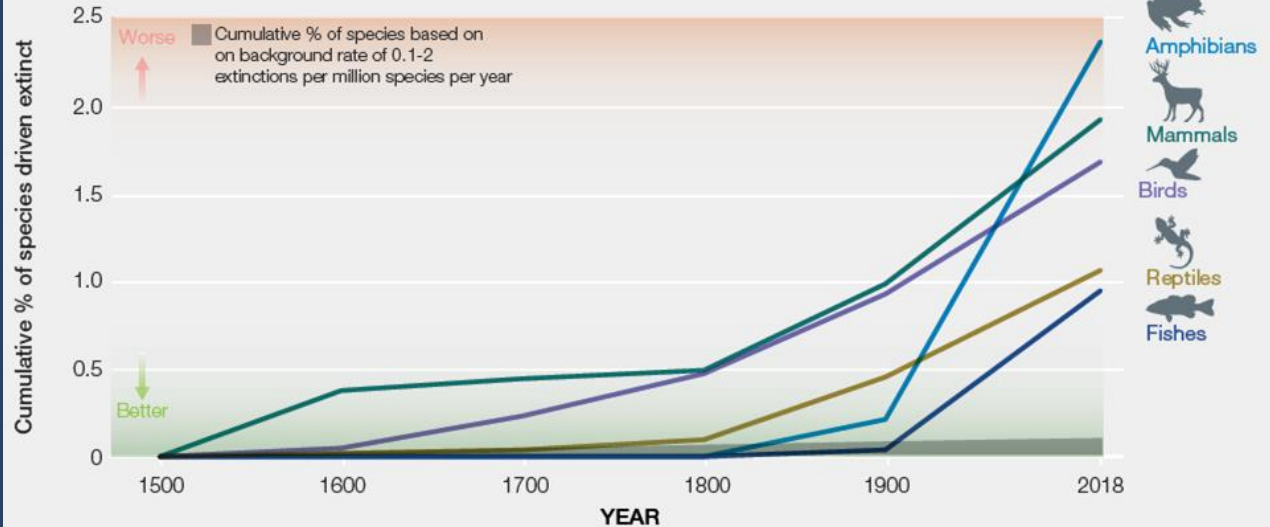


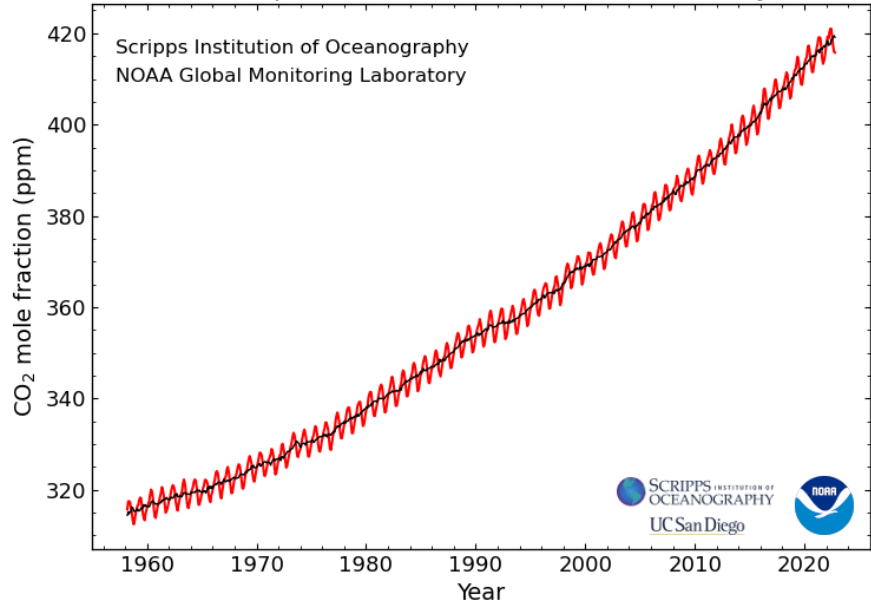
Figure 2.7 Extinction rates per century since 1500 for vertebrate classes.

Fishes includes bony fishes, cartilaginous fishes and lampreys. Values for Reptiles and Fishes are likely to be underestimates as not all species in these groups have been assessed for the IUCN Red List. The range of background rates of extinction (grey line) is based on 0.1- 2 extinctions per million species per year, following Ceballos et al. (2015) and references therein.

Source: Analysis of data in the IUCN Red List in September 2018.

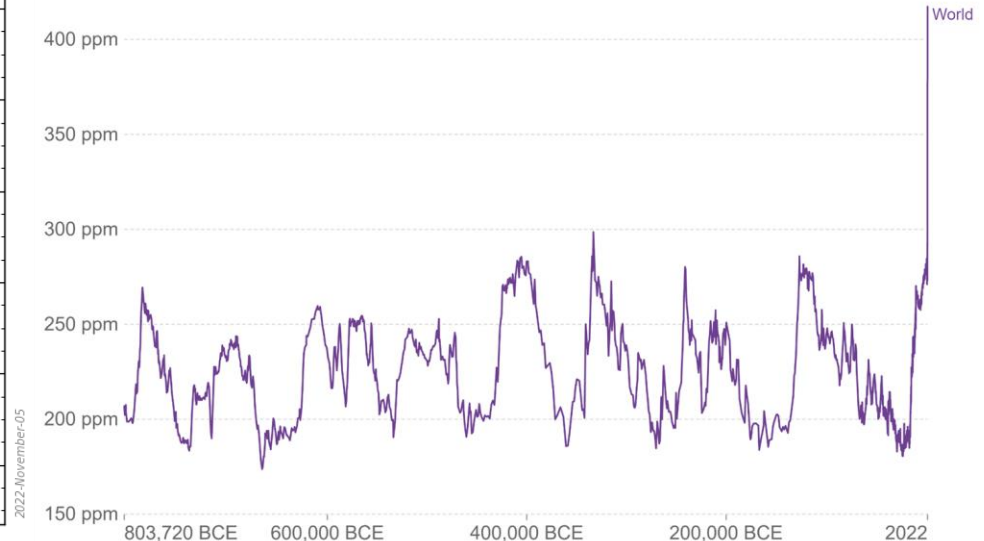
Atmospheric CO₂ is still filling up the atmosphere faster than it's being removed by humans and Nature

Atmospheric CO₂ at Mauna Loa Observatory



Global atmospheric CO₂ concentration

Atmospheric carbon dioxide (CO₂) concentration is measured in parts per million (ppm). Long-term trends in CO₂ concentrations can be measured at high-resolution using preserved air samples from ice cores.



Source: National Oceanic and Atmospheric Administration (NOAA)

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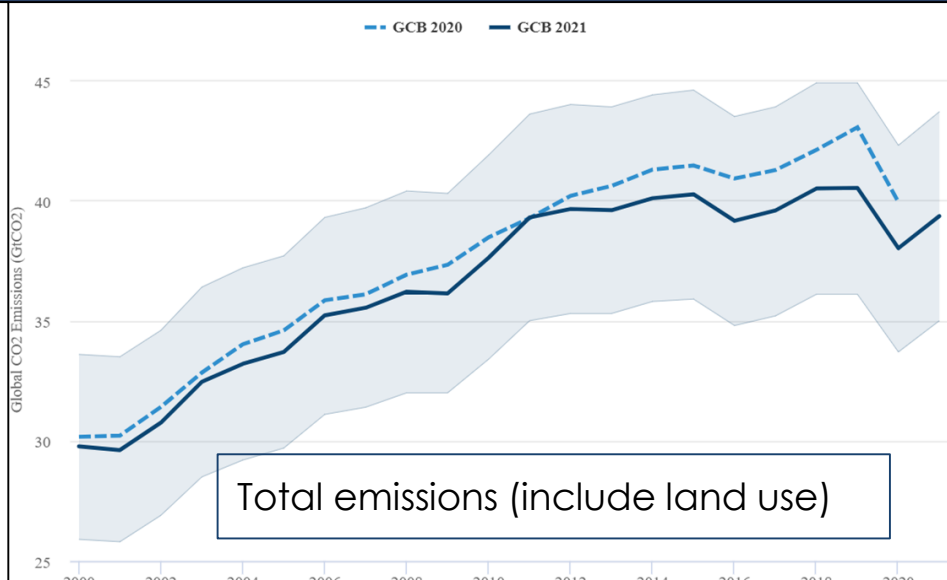
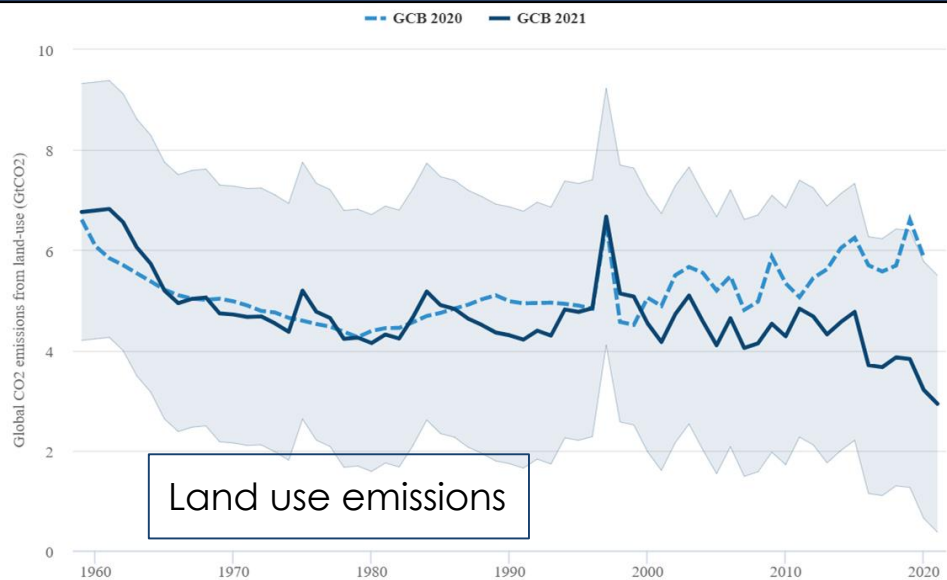
Global CO2 emissions have been flat for a decade, new data reveals

Data from the **Global Carbon Project** refined their carbon modelling in 2021 plotted against 2020 model run

How much is happening already



We are turning a corner

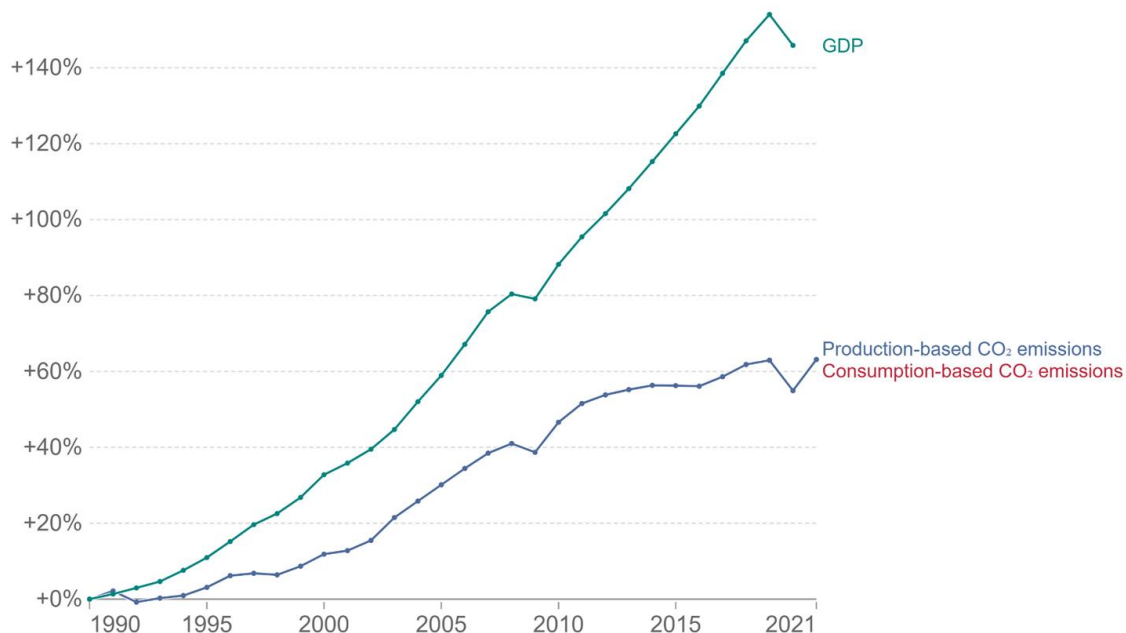


Global Emissions

Change in CO₂ emissions and GDP, World

Our World
in Data

Consumption-based emissions¹ are national emissions that have been adjusted for trade. This measures fossil fuel and industry emissions². Land use change is not included.



Source: Global Carbon Project; World Bank

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

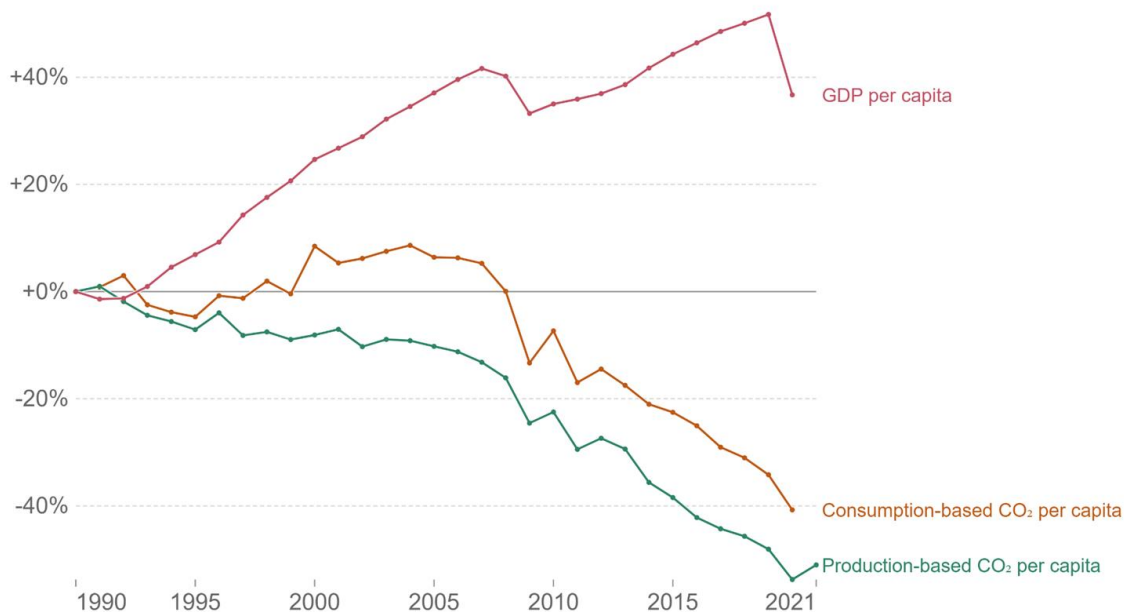
Note: Gross Domestic Product (GDP) figures are adjusted for inflation.

1. Consumption-based emissions: Consumption-based emissions are national or regional emissions that have been adjusted for trade. They are calculated as domestic (or 'production-based' emissions) emissions minus the emissions generated in the production of goods and services that are exported to other countries or regions, plus emissions from the production of goods and services that are imported. Consumption-based emissions = Production-based – Exported + Imported emissions

2. Fossil emissions: Fossil emissions measure the quantity of carbon dioxide (CO₂) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO₂ includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.

Change in per capita CO₂ emissions and GDP, United Kingdom

Consumption-based emissions¹ are national emissions that have been adjusted for trade. This measures fossil fuel and industry emissions². Land use change is not included.



Source: Data compiled from multiple sources by World Bank, Our World in Data based on the Global Carbon Project

Note: GDP figures are adjusted for inflation.

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

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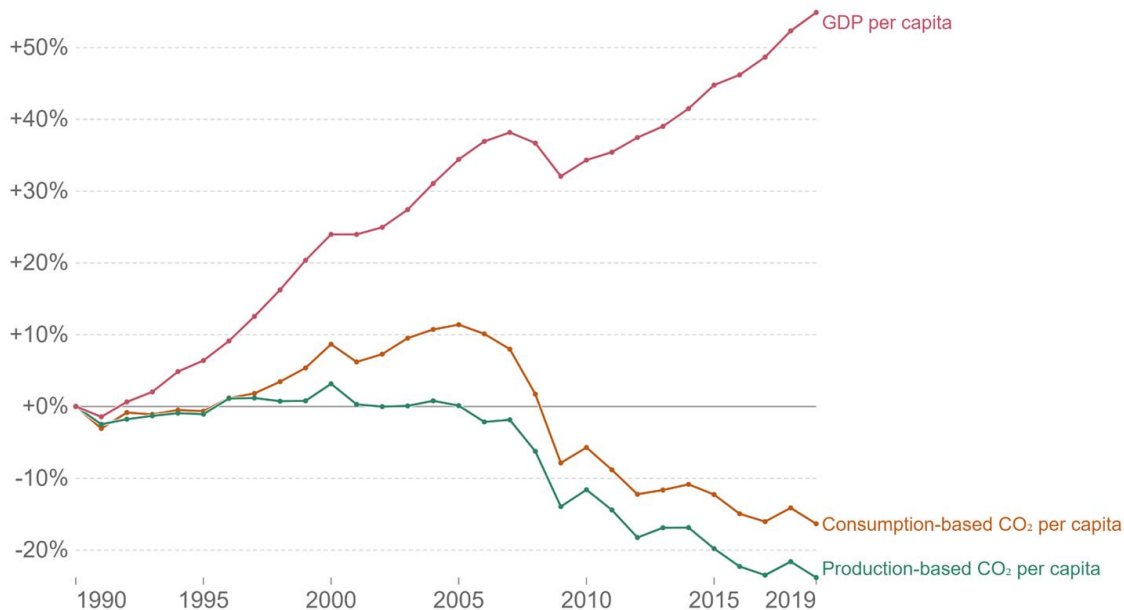
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USA

Change in per capita CO₂ emissions and GDP, United States

Our World
in Data

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Source: Data compiled from multiple sources by World Bank, Our World in Data based on the Global Carbon Project

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OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

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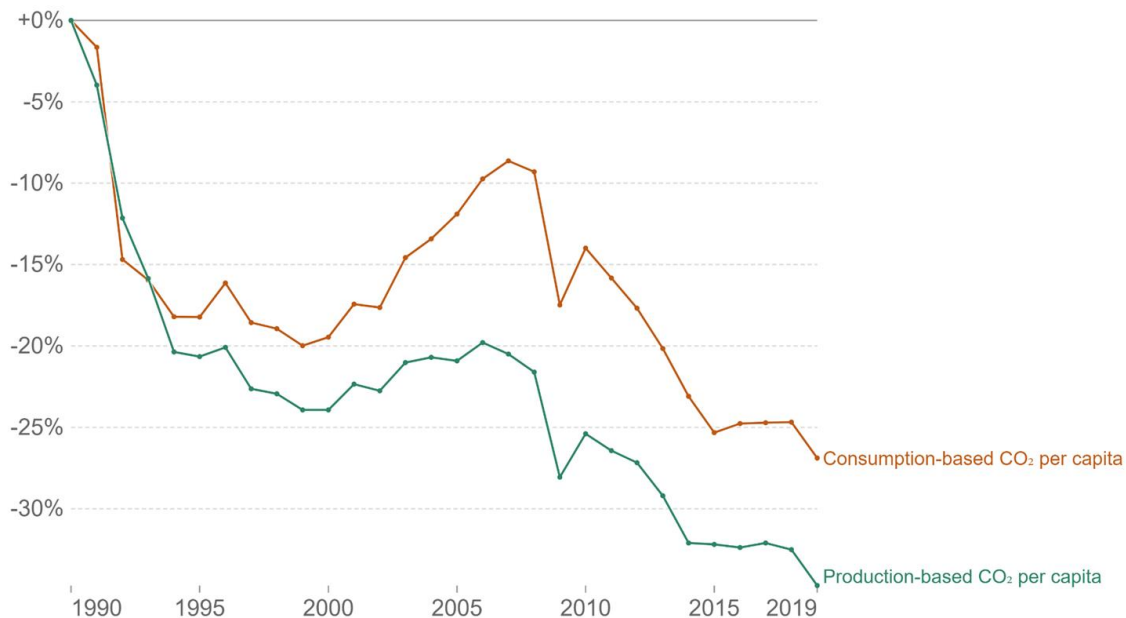
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Europe

Change in per capita CO₂ emissions and GDP, Europe

Our World
in Data

Consumption-based emissions¹ are national emissions that have been adjusted for trade. This measures fossil fuel and industry emissions². Land use change is not included.



Source: Data compiled from multiple sources by World Bank, Our World in Data based on the Global Carbon Project

Note: GDP figures are adjusted for inflation.

OurWorldInData.org/co2-and-other-greenhouse-gas-emissions • CC BY

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The energy transition

How much is happening already

- ▶ Energy industry 60:40 investing in renewables over fossil fuels
 - ▶ Big oil:
 - ▶ **BP** is among the first fossil fuel companies to start decarbonizing at scale
 - ▶ 2GW in 2020 to 50GW in 2030
 - ▶ **Shell**: 30% all investment now into renewables
- ▶ Grid connection holding back the transition:
 - ▶ US has enough renewable projects waiting for approval to double total energy production
 - ▶ At current rates we would be fully electric by 2036
- ▶ Renewables projected to make up 95% of all new energy between 2021-26



Energy Transition and Ukraine

▶ Europe:

- ▶ **Green EU policies:** 1.4% of GDP
- ▶ **Gas boiler ban:** no new natural gas boilers may be installed after 2024.
- ▶ **Heat pump installations have doubled over the last four years** across 21 of the 27 EU member states and are now growing by 34% per year (~doubling every 2.5years)

▶ UK (35GW of electricity):

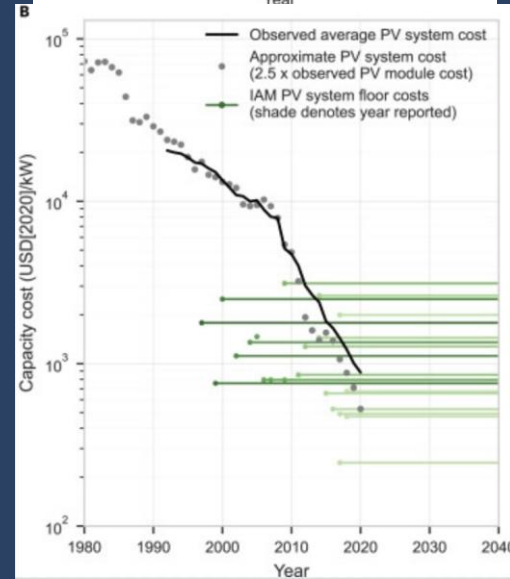
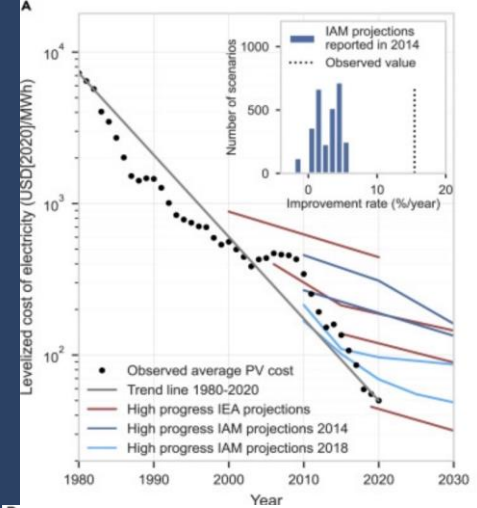
- ▶ **XLinks**, HVDC 3.6GW renewables from Morocco by 2030

▶ Nuclear:

- ▶ **Belgium** has decided to keep its remaining plants running until 2035
- ▶ **California** has given Diablo Canyon a reprieve beyond its 2025 planned closure
- ▶ **France** working to bring back 32 offline nuclear plants

- ▶ **China:** Add **33 United Kingdoms** of renewables by 2026 (installed 70% all wind 2021)

Cost of Solar?



Cost decline in renewables

~300x fall in cost solar

Cost of all renewable tech is falling faster and further than most predicted

 Institute for
New Economic Thinking
AT THE OXFORD MARTIN SCHOOL

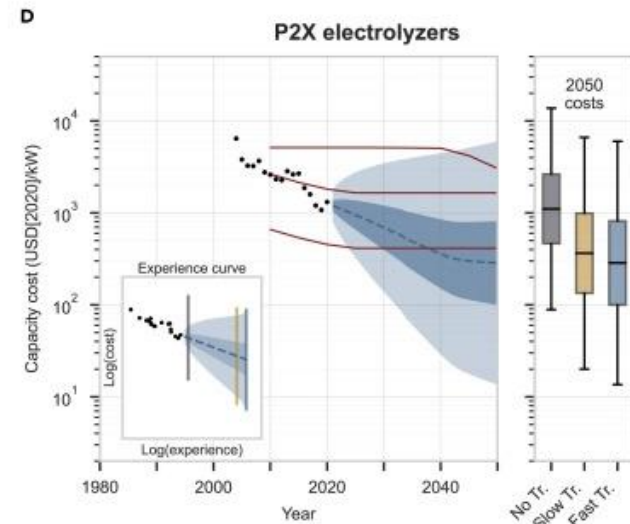
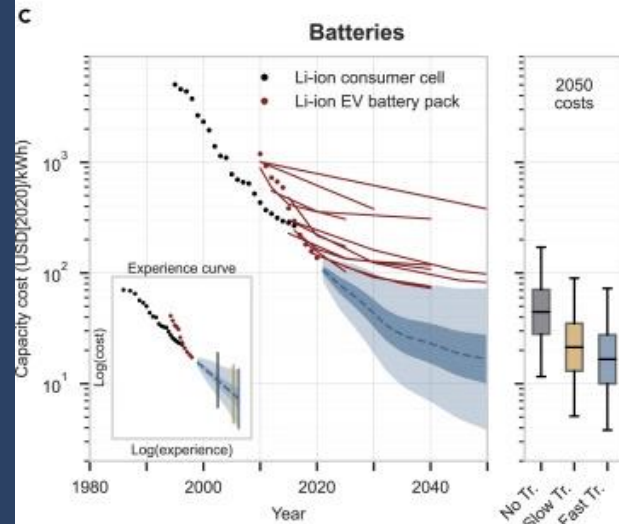
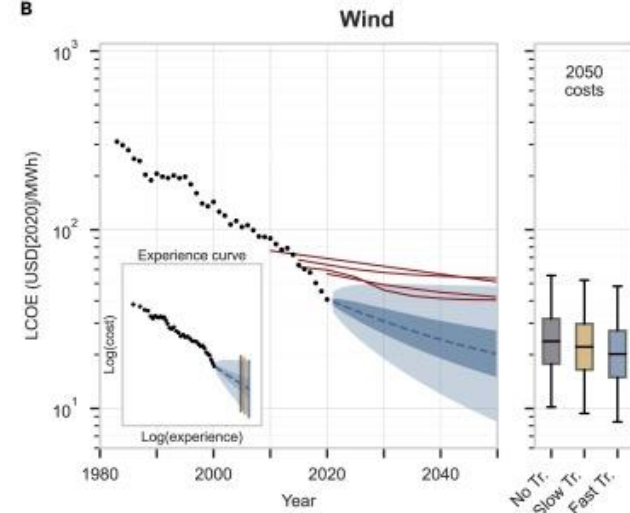
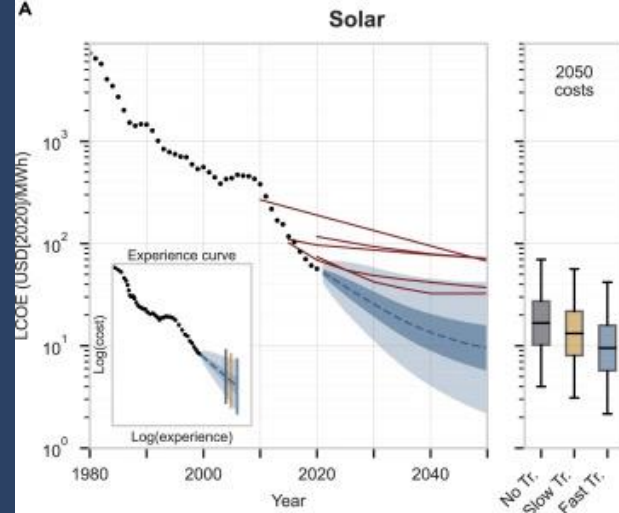
PUBLICATION

**Empirically grounded
technology forecasts and
the energy transition**

13 SEP 22



How much is happening already



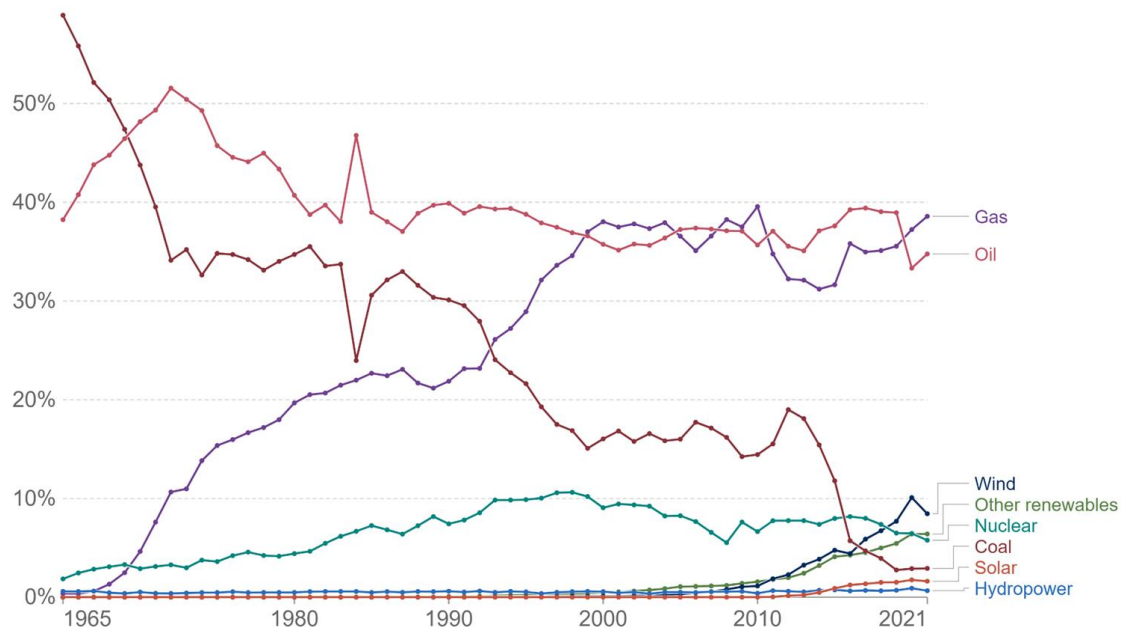
How is the UK doing it? Primary vs Electrical Energy



Our World
in Data

Share of energy consumption by source, United Kingdom

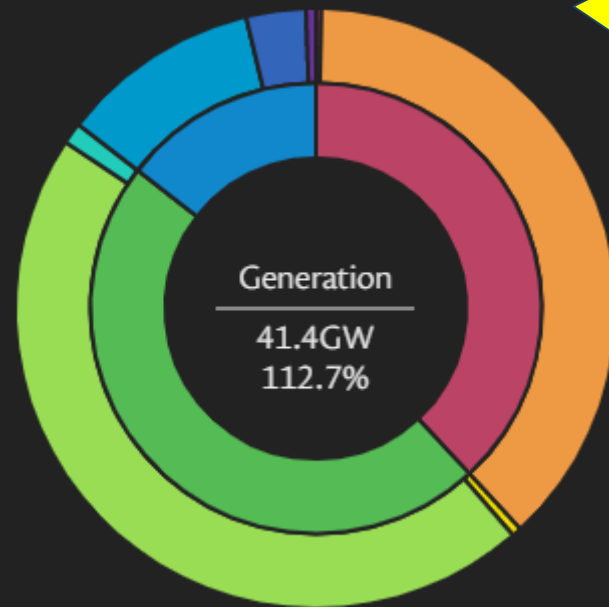
To convert from **primary direct energy** consumption, an inefficiency factor has been applied for fossil fuels (i.e. the 'substitution method').



Source: Our World in Data based on BP Statistical Review of World Energy (2022)

OurWorldInData.org/energy • CC BY

Generation: Electrical energy



Note: percentages are relative to demand, so will exceed 100% if power is being exported

National Grid: Live



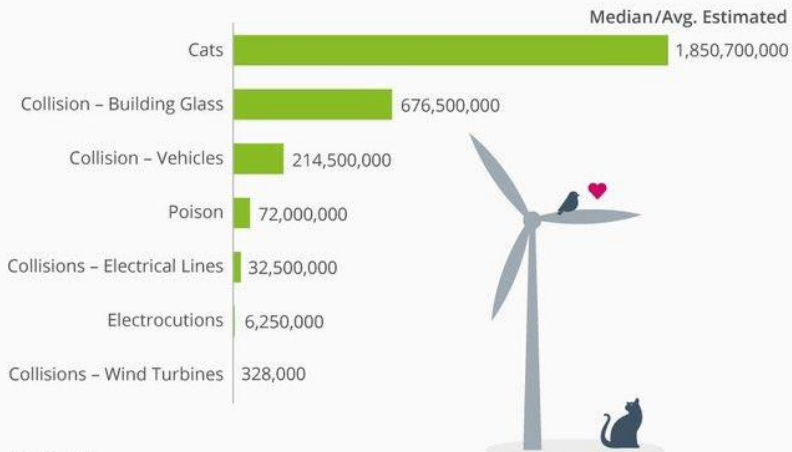
How are we doing it?



- ▶ Hornsea 3:
 - ▶ 231 offshore wind turbines
 - ▶ Over 2 million homes
 - ▶ 8,500 homes/turbine

Wind Turbines Are Not Killing Fields for Birds

Annual estimated bird mortality from selected anthropogenic causes in the U.S.



@StatistaCharts Source: U.S. Fish and Wildlife Service



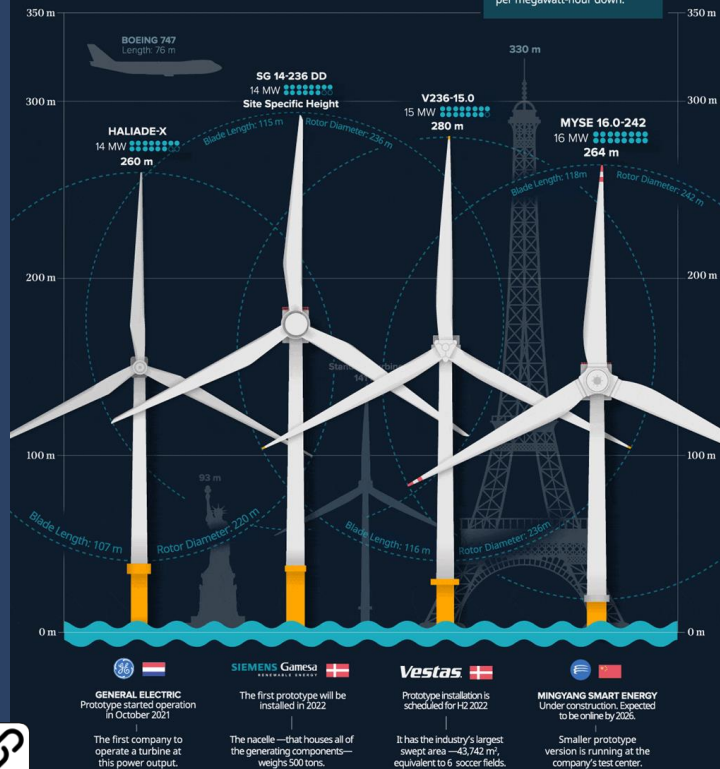
The World's Biggest WIND TURBINES

WHY DO THEY KEEP GETTING BIGGER?

To reduce costs. Huge turbines increase energy capacity, creating economies of scale that drive the cost of energy per megawatt-hour down.

Since the early 2000s, wind turbines have grown in size—in both height and blade lengths—to generate more energy.

Today, the tallest turbines can reach over 200 meters and cost more than \$12 million. They are all offshore—located over water.



GENERAL ELECTRIC
Prototype started operation in October 2021

The first company to operate a turbine at this power output.

SIEMENS Gamesa
The first prototype will be installed in 2022

The nacelle—that houses all of the generating components—weighs 500 tons.

Vestas
Prototype installation is scheduled for H2 2022

It has the industry's largest swept area—43,742 m², equivalent to 6 soccer fields.

MINGYANG SMART ENERGY
Under construction. Expected to be online by 2025.

Smaller prototype version is running at the company's test center.

Source: Vestas, General Electric, MingYang Smart Energy, Siemens Gamesa Electrec

How much is happening already



Positive Tipping points?

- ▶ Energy Trilemma:
 - ▶ Security
 - ▶ Affordability
 - ▶ Sustainability
- ▶ Meets our needs:
 - ▶ **Morally**
 - ▶ **Logistically**
 - ▶ **Economically**
- ▶ It's just better
- ▶ Growth of renewable capacity almost **95% of the increase** in **ALL GLOBAL POWER CAPACITY THROUGH TO 2026**.
- ▶ This is a disruptive change
- ▶ Exeter University doing entire season of events on **positive societal tipping points**

How much is happening already



**POSITIVE TIPPING POINTS
IN PRACTICE**
TUES 29 NOV 6.30-8.30pm BST
**WHAT NEXT?
OPEN SPACE SESSION**

UNIVERSITY OF EXETER | GLOBAL SYSTEMS INSTITUTE | GreenFutures Network



**POSITIVE TIPPING POINTS
IN PRACTICE**
THURS 24 NOV 6.30-8.30pm BST
**DOUGHNUT
ECONOMICS**

DOUGHNUT ECONOMICS ACTION LAB | UNIVERSITY OF EXETER | GLOBAL SYSTEMS INSTITUTE | GreenFutures Network

What do people think?

Figure 4. Urgency of Response among People Who Believe in the Climate Emergency

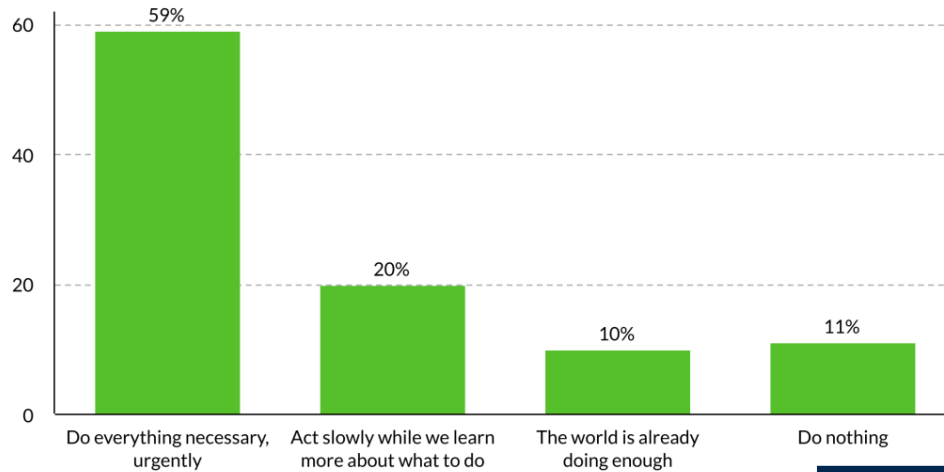
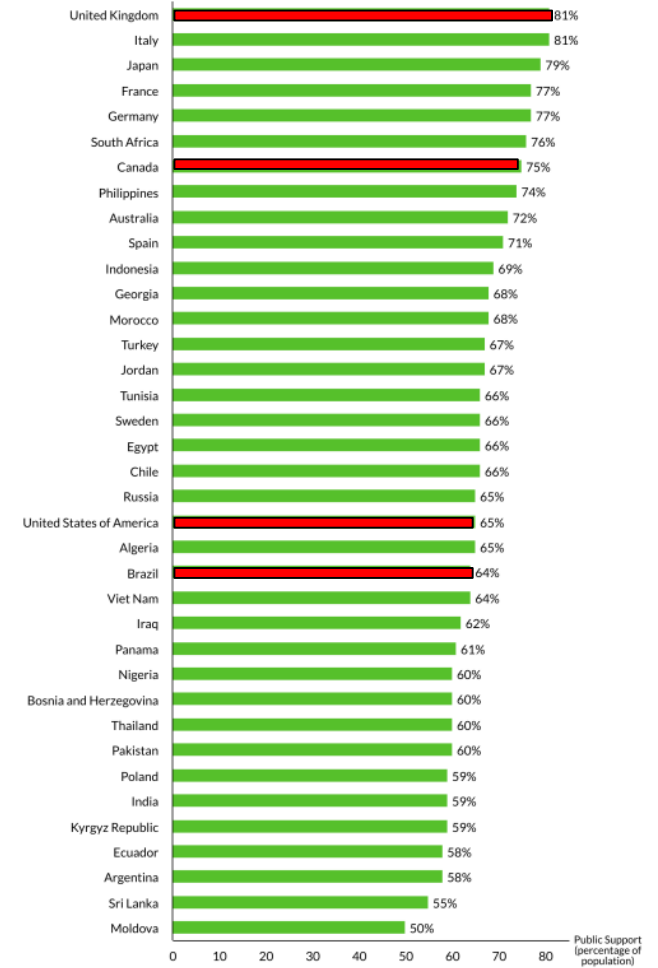


Figure 3. Public Belief in the Climate Emergency, by Country



Surveyed 1.5m people

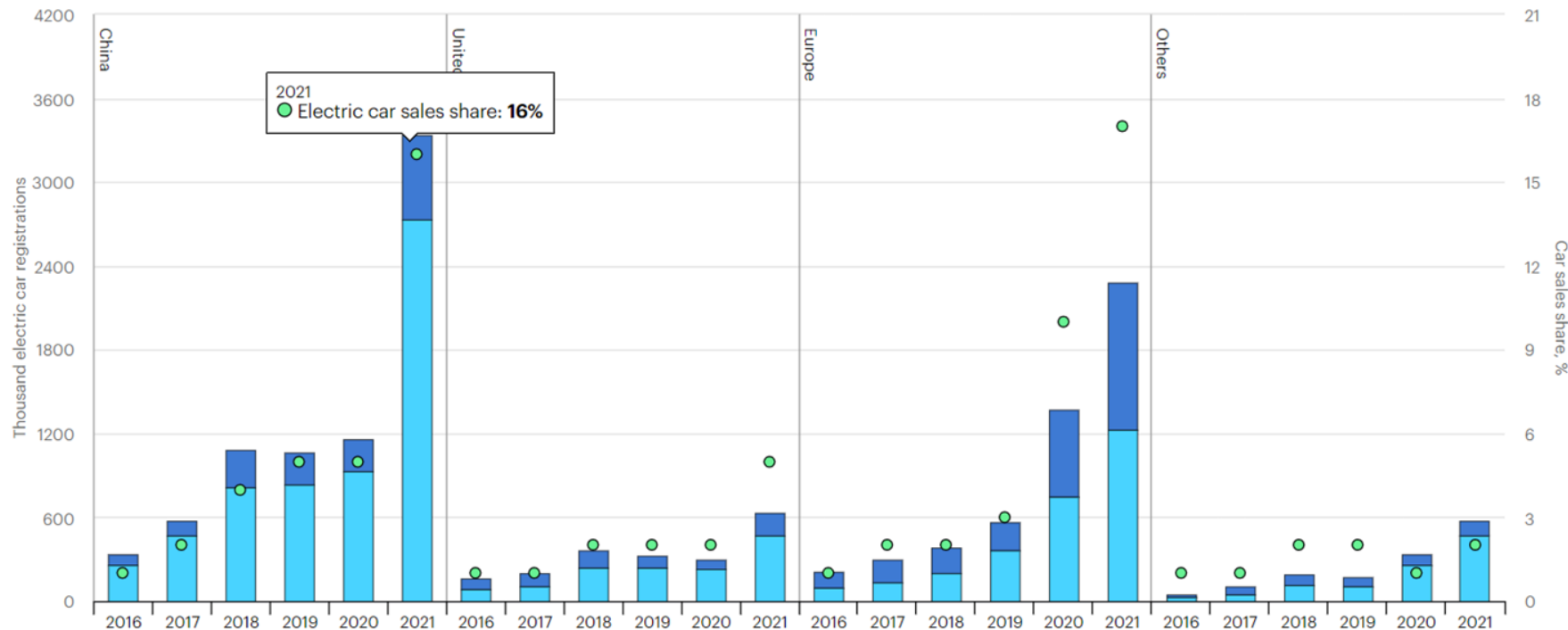


How much is happening already

Electric Vehicles market has tipped

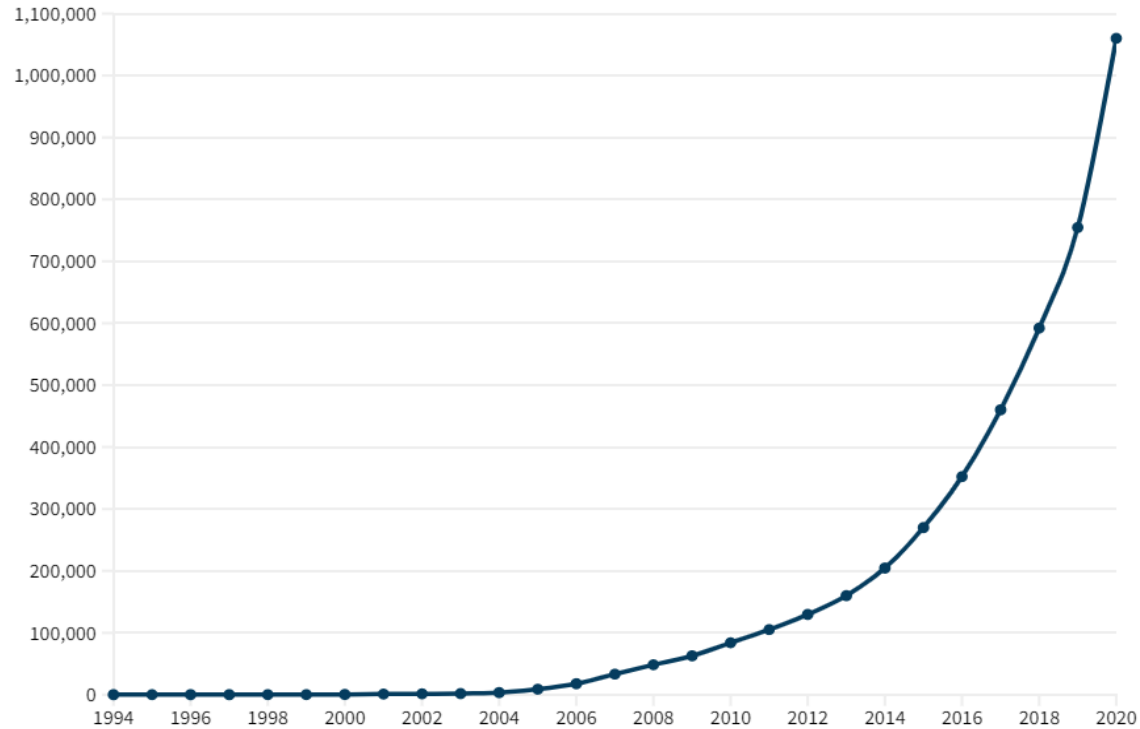


Electric car registrations and sales share in China, United States, Europe and other regions, 2016-2021



Electric vehicles in the UK?

Electric vehicle ownership in the UK



Source: Department of Transport

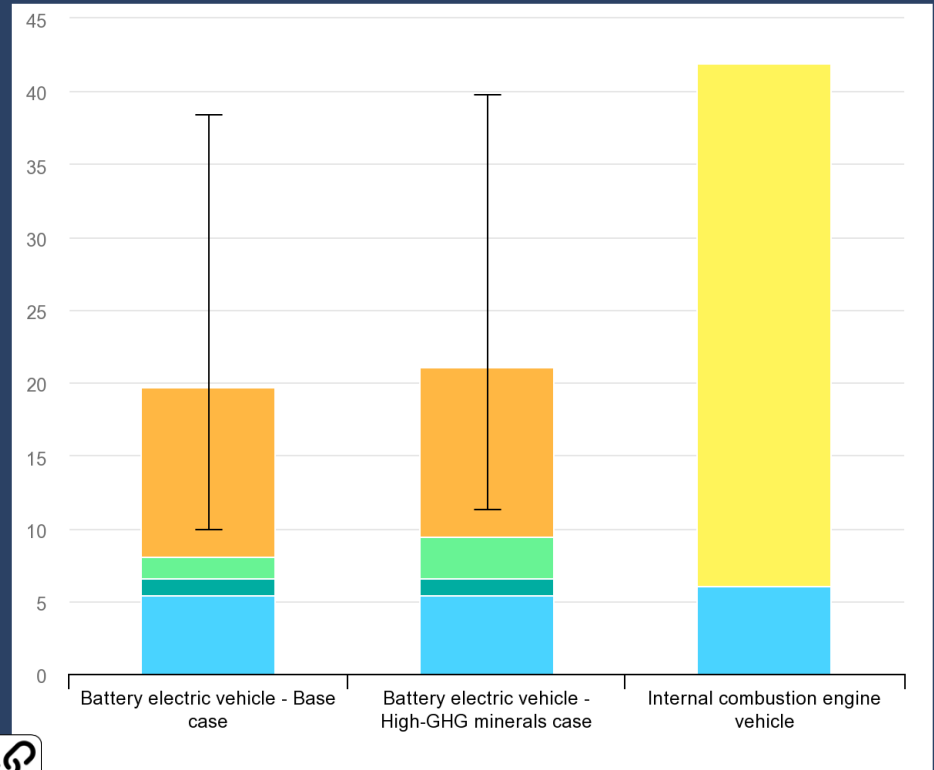
Electric Vehicles

- ▶ Electric vehicles need less resources:
 - ▶ I.C.E. car can easily burn 40 tonnes of fuel in its lifetime: all has to be **mined/extracted/processed/transported** and then **burned**
- ▶ Lifecycle: EVs **always better**
- ▶ First EV to reach **1 million miles**:
 - ▶ 4 batteries
 - ▶ 8 engines
 - ▶ Tesla working on 1m mile battery, already have the drive train
- ▶ Shipping will change:
 - ▶ 40% weight of all maritime trade is **made up of fossil fuels** (4,500 million tons out of the 11,000 million tons of total maritime shipping.)



Comparative life-cycle greenhouse gas emissions of a mid-size BEV and ICE vehicle

Last updated 26 Oct 2022



In the Public Sector: Net Zero



UK Law: 
78% Emissions
reduction by 2035

HM Government

▶ No lawful plan to get the country to net zero



Net Zero:

- ▶ Reduce your emissions as much as possible and offset the rest



Environment Agency



Crown Commercial Service



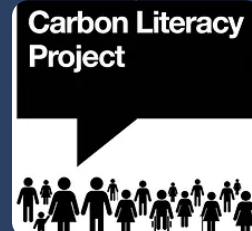
HM Revenue & Customs

How much is happening already



Public Sector: what else?

- ▶ Cross Government Climate Hub: all welcome here: **250 councils** represented and **100 other** public bodies:
 - ▶ Environmental groups growing significantly:
 - ▶ NHS has rich field of environmental groups: Greener NHS is well funded
 - ▶ UK Schools Sustainability Network and many others more locally
 - ▶ UKRI recognised us now and funding through councils side
 - ▶ Other non-profits who help to deliver on public sector net zero



British Academy:
working with our
community on policy
recommendations

Policy Means Money: The Inflation Reduction Act (USA)



Almost failed because of Joe Manchin

- So close to losing the US for years
- Law: Cannot be dismantled
- Gives certainty to business
- \$370 billion almost all for reducing emissions over 10 years
- Green investment bank with \$27 billion (expected to attract 5x that amount from private investment: another \$150bn)
- Brings the USA to the table on decarbonization
- Pushing everyone else to do more

How much is happening already



'Out of every crisis comes an opportunity': China, India, and EU could outpace emissions targets, study finds

BusinessGreen | [Read Article](#)

The rapid deployment of clean energy should see the world's largest emitting countries and trading blocs meet their emissions targets ahead of schedule, according to a new analysis by the Energy and Climate Intelligence Unit (ECIU) covered by BusinessGreen. The outlet adds: "In a new report, the thinktank argued that China, the EU, and India are all on track deliver faster progress towards a clean energy economy than they have set out in their stated national climate targets and the official climate plans they have submitted to the UN under the Paris Agreement."



CLEAR ON CLIMATE
CarbonBrief

How much is happening already



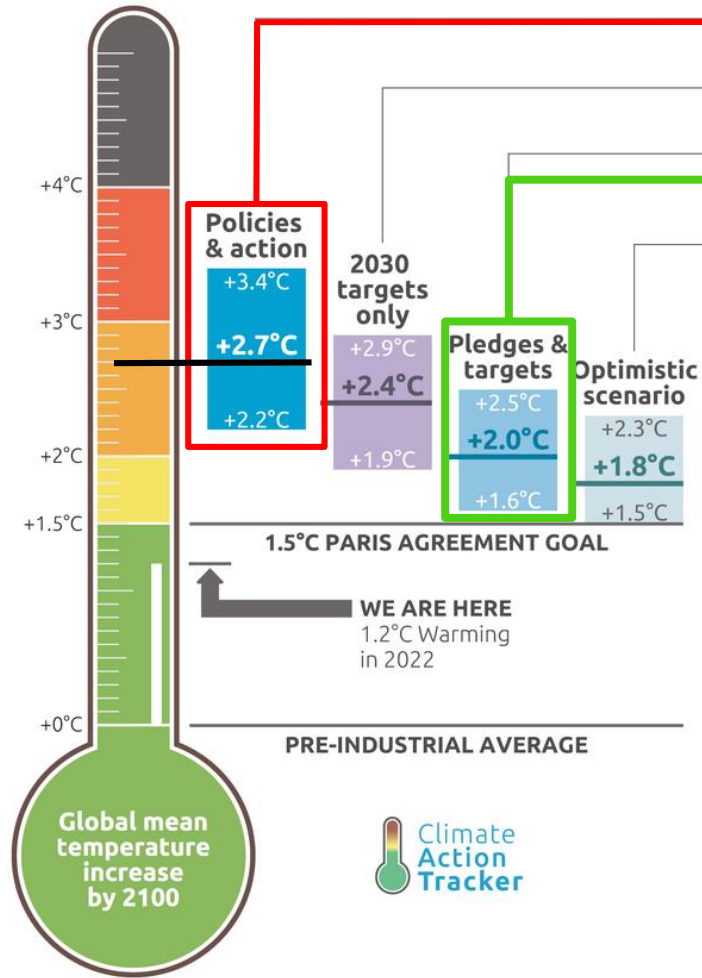
- [Energy & Climate Intelligence Unit | The Big Four: are major emitters... \(eciu.net\)](#)
- [US and China restart climate talks - Carbon Brief](#)

Where we are headed?

- ▶ Under current policies and actions:
 - ▶ 2.2-2.7-3.4°C
- ▶ Pledges: 2°C
- ▶ Decarbonisation is happening faster than many thought it would..... Or even could
- ▶ But: still unknowns in climate system
- ▶ How fast will impacts come?
- ▶ How fast will we respond?



How much is happening already



Policies & action
Real world action based on current policies †

2030 targets only
Based on 2030 NDC targets* †

Pledges & targets
Based on 2030 NDC targets* and submitted and binding long-term targets

Optimistic scenario
Best case scenario and assumes full implementation of all announced targets including net zero targets, LTSs and NDCs*

† Temperatures continue to rise after 2100
* If 2030 NDC targets are weaker than projected emissions levels under policies & action, we use levels from policy & action

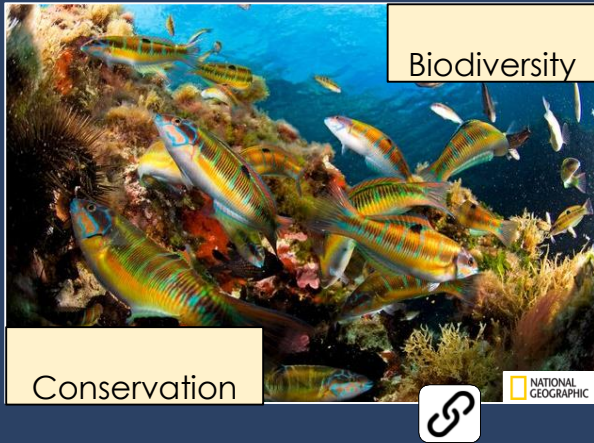
CAT warming projections
Global temperature increase by 2100

November 2022 Update



Climate Action Tracker

What we need most to address climate



Cost of renewable energy is falling:

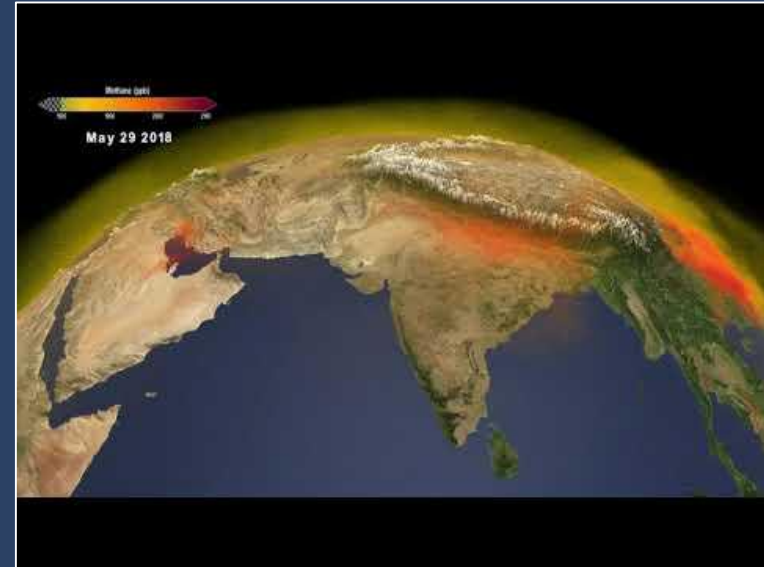
- Reduces the cost of doing everything
- Rapid transition is difficult and costly: we're feeling that now
- COP27 has been focused on money going from the rich and resilient nations to the poorest and most vulnerable



What we can do

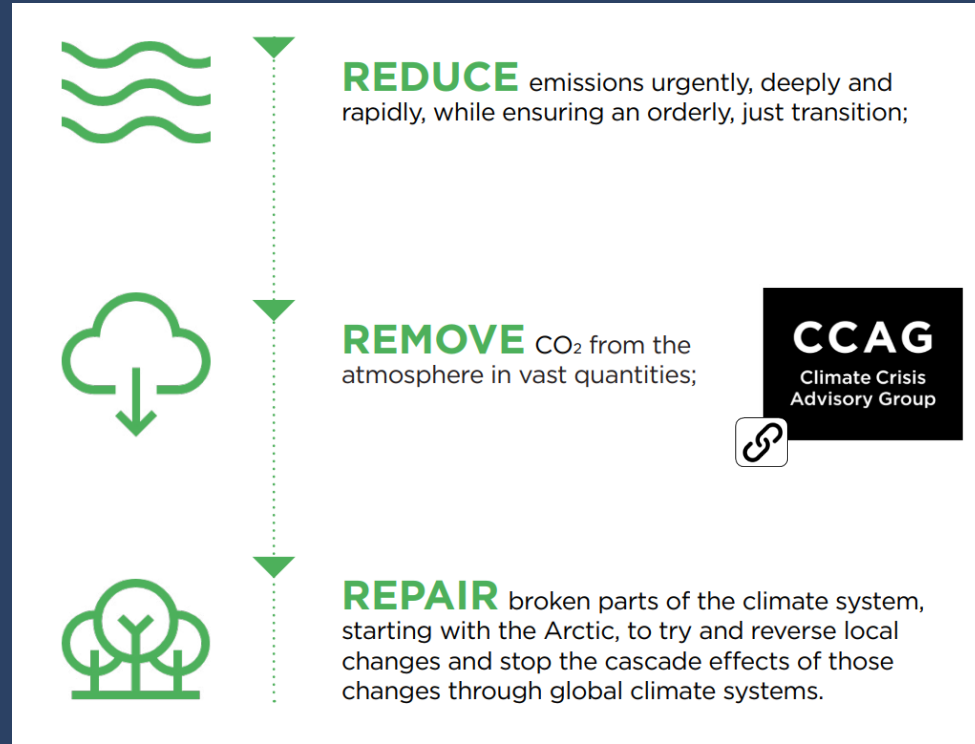
Money

- ▶ Far too little investment, lending and Aid
- ▶ Al Gore speech COP 27:
 - ▶ Private sector provides :
 - ▶ 96% renewables investment in USA
 - ▶ 14% across Africa
 - ▶ African companies pay 7x more interest on loans than US firms on renewables
- ▶ Climate finance goes to countries that can more easily pay it back, not those who need it most
- ▶ All need money:
 - ▶ Research and Innovation
 - ▶ Adaptation (100bn: Pakistan could need 30bn just from 2022 flooding)
 - ▶ Mitigation
- ▶ Clean Air Task Force: \$1 to prevent 1 tonne of CO2 eq released (Page 88: [fp-climate-change](#) ([founderspledge.com](#)))



Researching the Solutions:

- ▶ Adaptation:
 - ▶ City planning: Greening, Shading, Reflecting and Connecting
 - ▶ Migration: the west will need the people who are fleeing other parts of the world
- ▶ Carbon Capture
 - ▶ CCAG: carbon capture projects > 1gt/y
 - ▶ Cambridge Centre for Climate Repair: Refreeze Arctic
 - ▶ Mar Fernandez-Mendez: seaweed
- ▶ Desalination: new solution
- ▶ Research on Geoengineering is really moving now



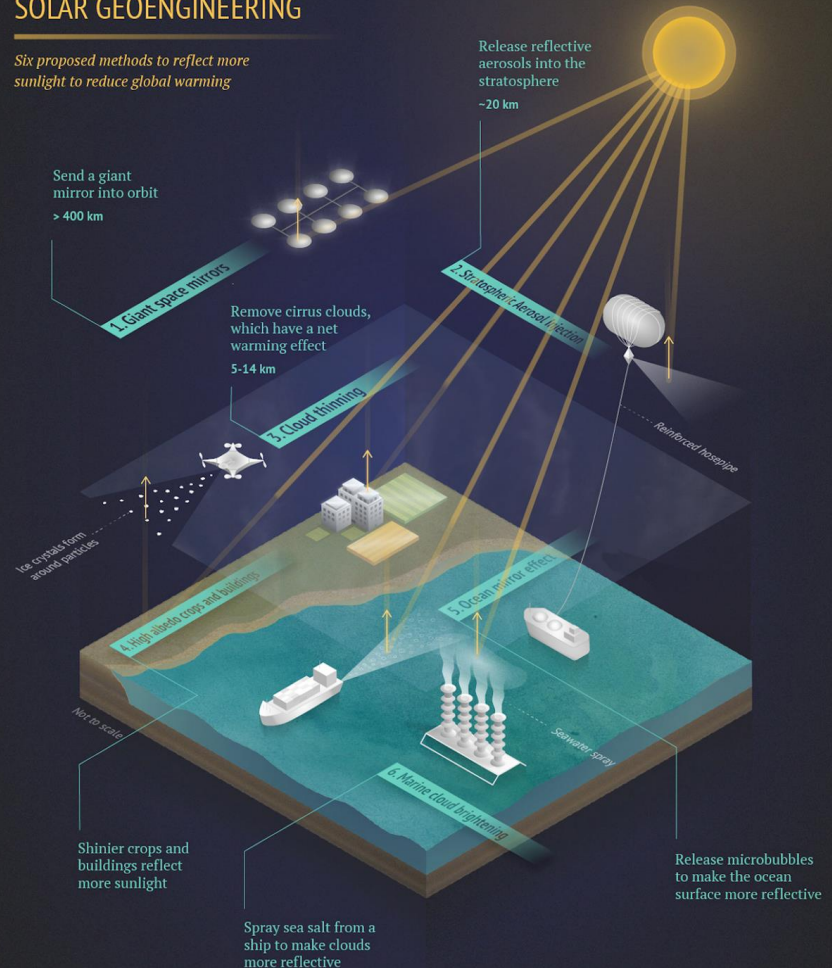
Geoengineering: slowing warming down

- ▶ Changing clouds:
 - ▶ creating some and dispersing others
- ▶ Sulphate Aerosols 
- ▶ Geoengineering increasing reflectivity of Earth:
 - ▶ MEER: Mirrors  



SOLAR GEOENGINEERING

Six proposed methods to reflect more sunlight to reduce global warming



How much is happening already

Inequality remains: UNEP Emissions Gap Report 2022

What still needs to be done

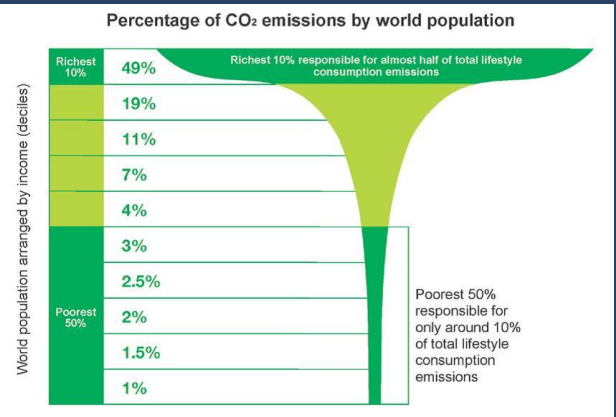
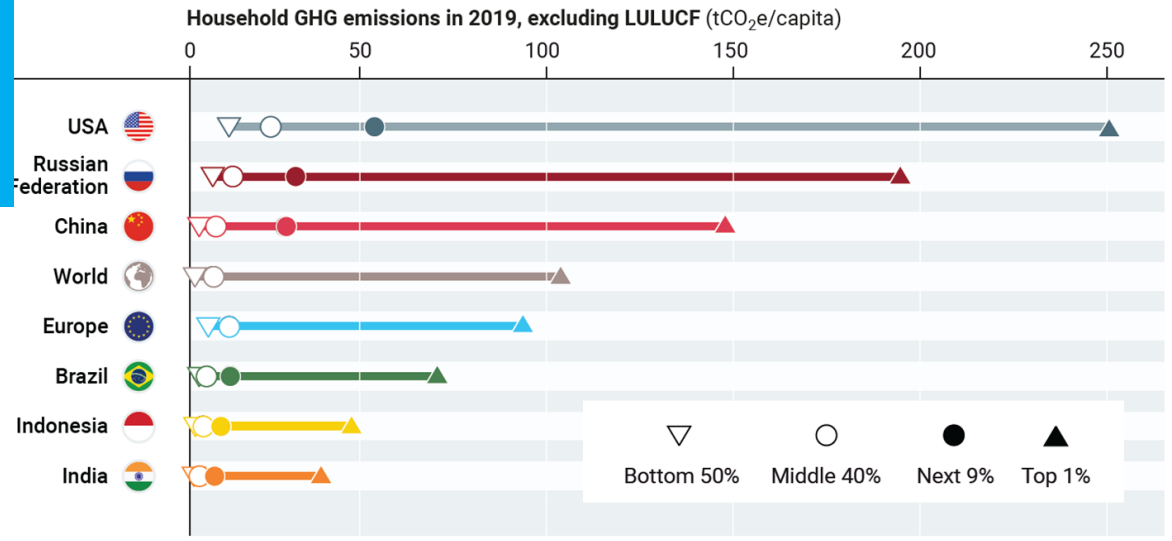


Figure 2.3 Household consumption-based emissions, excluding LULUCF, by emissions groups



Source: Chancel et al. (2022)

Note: Per capita emissions include emissions from domestic consumption, public and private investments, and imports and exports of carbon embedded in trade with the rest of the world. Households are ranked according to total emissions and divided accordingly into groups (e.g. the bottom 50 per cent refers to the 50 per cent of households with the lowest emissions in that country or region).

Research: Protests

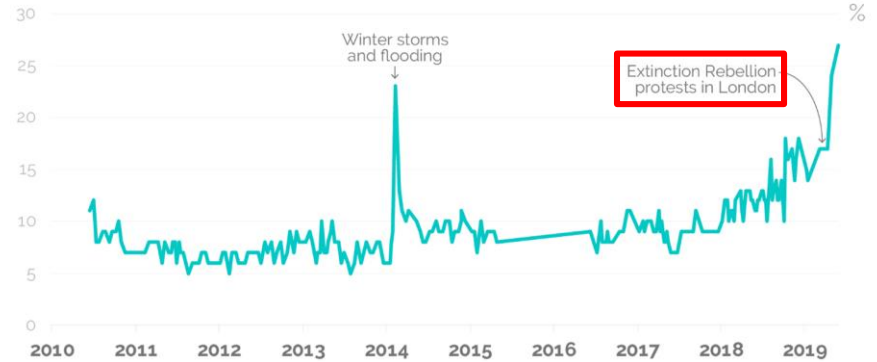
- ▶ Attempts to frame protesters to turn public opinion against them has no impact on support for the demands of those protesters
- ▶ Radicals create more space for moderate factions changing norms and making their views seem less radical
- ▶ Changes the conversation
- ▶ At worst people disagree with the methods, not the cause

What we can do



Concern about the environment at highest levels on record

Which do you think are the most important issues facing the country at this time?
Please tick up to three. % saying "the environment"

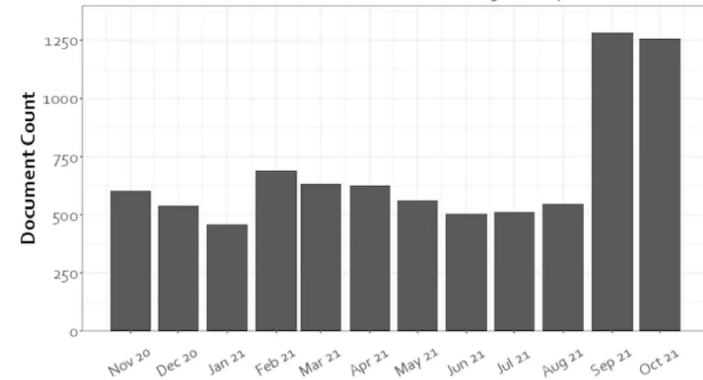


YouGov | yougov.com

Latest update: 28-29 May 2019

Mentions of the word 'insulation' in UK news media

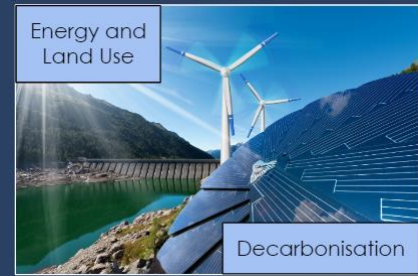
Mentions have more than doubled since Insulate Britain began their protests



Spot when the Insulate Britain protests began. (Author's own research, using Factiva database to search UK broadsheet and tabloid newspapers) Colin Davis. Author provided.

Every fraction of a degree matters

- ▶ We will pass tipping points in the climate system but we have also passed tipping points in human systems
- ▶ The more we slow climate warming buys us more time to:
 - ▶ **Adapt** to change
 - ▶ **Conserve** species and ecosystems
 - ▶ **Mitigate climate**: the more we slow climate and nature loss the more time we have to increasingly slow it down in the future with new solutions
- ▶ Change is inevitable but we can deal with it more effectively the more time we give ourselves



- ▶ Needs:
 - ▶ Conserving
 - ▶ Research
 - ▶ Regenerating
- ▶ Economics aren't on it's side



The future?

- ▶ It will be **different**
- ▶ It will be **hard**
- ▶ It will be materially **poorer**, but:
 - ▶ How much do we need to be content?
 - ▶ **Information/education** is available to far more now than it has ever been
- ▶ **It's working**: What we are doing is making a difference.
- ▶ **We have finally started on this journey**



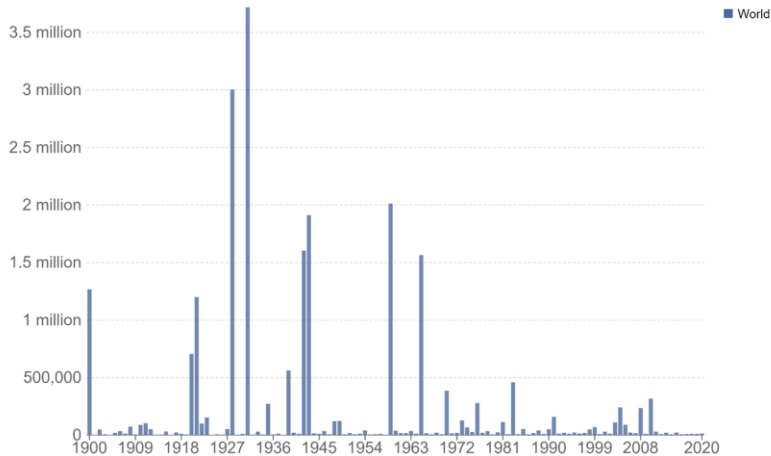
We are adaptable

- ▶ Absolute numbers of deaths from natural disasters have fallen massively despite population explosion

Number of deaths from disasters

Disasters include all geophysical, meteorological and climate events including earthquakes, volcanic activity, landslides, drought, wildfires, storms, and flooding.

Our World in Data



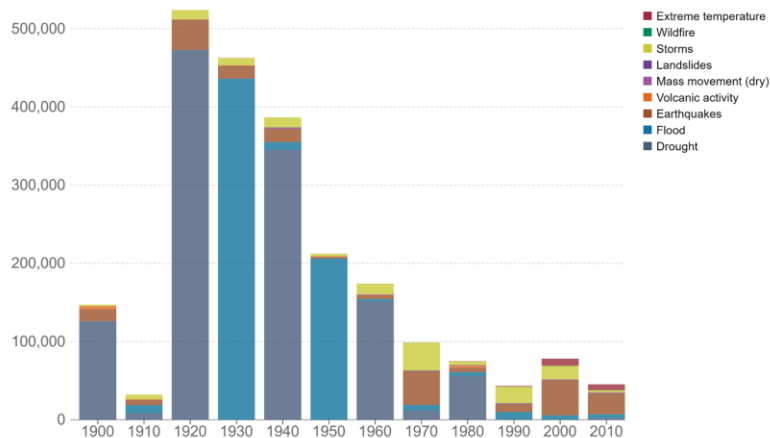
Source: Our World in Data based on EM-DAT, CRED / UCLouvain, Brussels, Belgium – www.emdat.be (D. Guha-Sapir)

CC BY



Decadal average: Number of deaths from natural disasters, World

Our World in Data

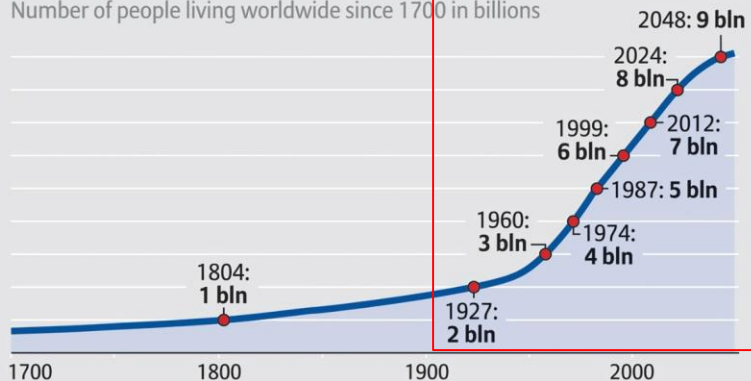


Source: Calculated by Our World in Data based on EM-DAT, CRED / UCLouvain, Brussels, Belgium – (D. Guha-Sapir) OurWorldInData.org/natural-disasters • CC BY

POPULATION OF THE EARTH

Number of people living worldwide since 1700 in billions

Allianz



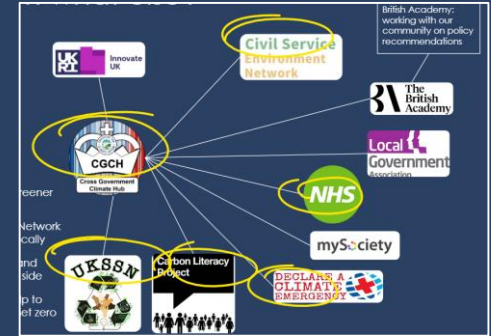
Source: United Nations World Population Prospects, Deutsche Stiftung Weltbevölkerung
For further information please visit: www.knowledge.allianz.com

Careers and working in climate: STEM only?

- ▶ Not just about STEM
- ▶ We need to do more than just understand it, we need to act on it:
- ▶ Rebuild our energy system
- ▶ Capture carbon
- ▶ Regenerate our environment
- ▶ **We will need everyone**
 - ▶ Communicators
 - ▶ Technicians
 - ▶ Heating engineers (30,000 needed in next 5 years)
 - ▶ Landscapers
 - ▶ Farmers
 - ▶ Regulators
 - ▶ Organisers
 - ▶ Teachers
 - ▶ Conservationists
 - ▶ Politicians
 - ▶ Policy

- ▶ Volunteers
- ▶ Advocates

- ▶ In everything not directly connected to climate you can still advocate for change in whatever company, group or community you are in



What to do?

- ▶ Talk about it
 - ▶ **Learn how to:** The conversation has been pivotal to all the action we have seen today
- ▶ Look for the most impactful actions
- ▶ Look at our resources
- ▶ Find actions that:
 - ▶ Are meaningful to you
 - ▶ Are meaningful to others
 - ▶ Have the greatest impact:
 - ▶ Help others already working on it:
 - ▶ Charities
 - ▶ Banking
 - ▶ Pension / investments
 - ▶ Volunteer groups: so much needs doing that isn't being done and can't be done for money
- ▶ Prepare for and take the big decisions when they come round
- ▶ Think about your career:



80,000
HOURS

What we can do



Make a Difference: Directly or Indirectly



Act

- ▶ Ask yourself: "Do I need it?"
 - ▶ Helps you see the world differently
- ▶ Learn about climate, and **SOLUTIONS**
- ▶ Talk about it



▶ Join a group

- ▶ Act: taking action enables you to take more action
- ▶ Doesn't have to be protesting
- ▶ Community: do something others can get involved with

Find / share our resources and volunteer with us **when you are 18**



Teachers and Volunteers:
Join UKSSN and CGCH



Learn about climate

