The Climate Crisis

Our Christian response

General Synod sets 2030 Net Zero Carbon Target

That this Synod, recognising that the global climate emergency is a crisis for God's creation, and a fundamental injustice, and following the call of the Anglican Communion in ACC Resolutions A17.05 and A17.06;

(a) call upon all parts of the Church of England, including parishes, BMOs [Bishop Mission Orders], education institutions, dioceses, cathedrals, and the NCIs [National Church Institutions], to work to achieve year-on-year reductions in emissions and urgently examine what would be required to reach net zero emissions by 2030 in order that a plan of action can be drawn up to achieve that target;

(b) request reports on progress from the Environment Working Group and the NCI's every three years beginning in 2022 and;

(c) call on each Diocesan Synod, and cathedral Chapter, to address progress toward net zero emissions every three years.

Why should Christians act?

God created our world

Now knocked out of kilter – on our watch

God's attitude to bad stewards – Matthew 25

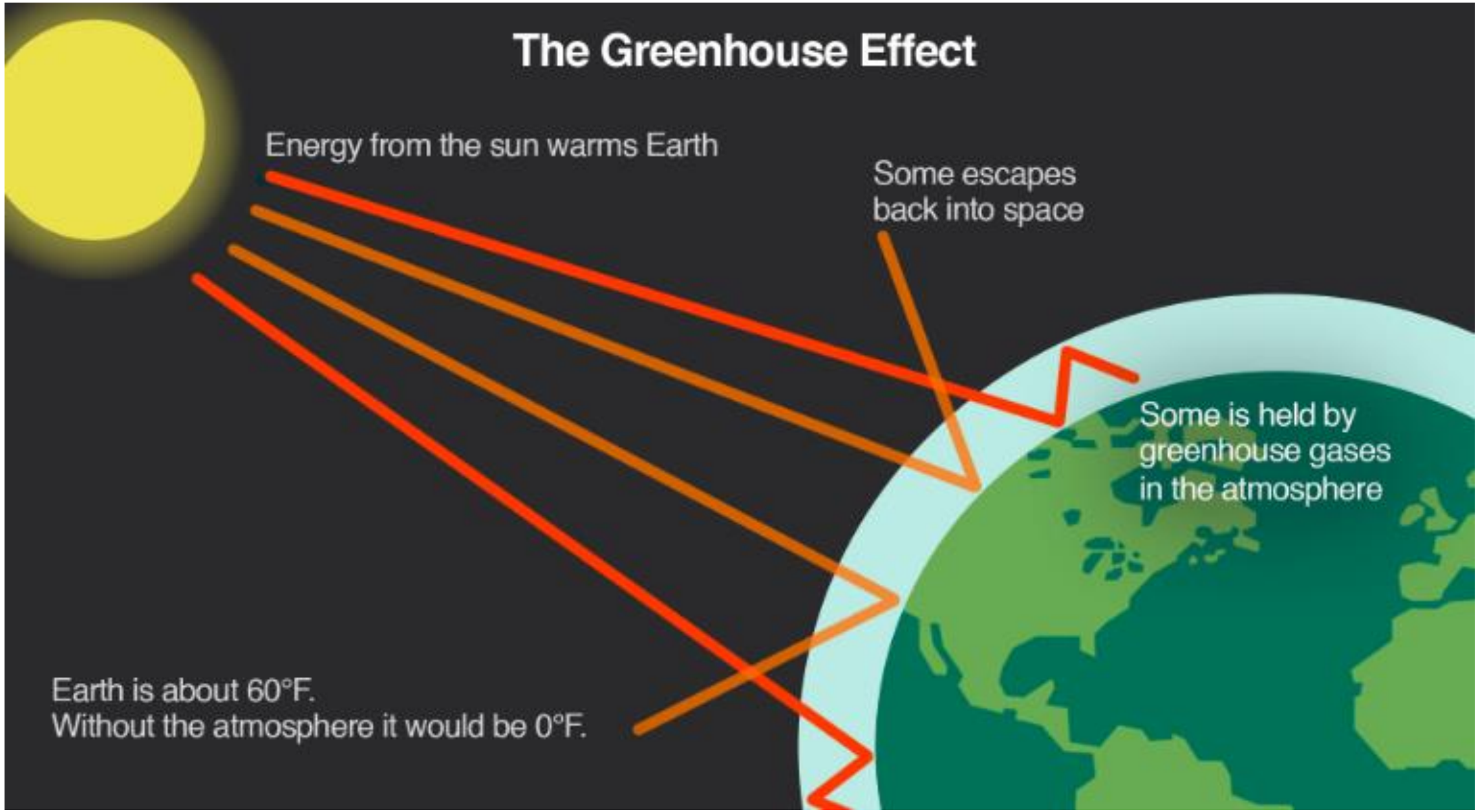
Called to reflect God's special care for the poor, weak, vulnerable

Climate crisis hits them worst

Called to pray and act – eg Jesus and Temple moneychangers

The Five Anglican Marks of Mission

1. To proclaim the Good News of the Kingdom
2. To teach, baptise and nurture new believers
3. To respond to human need by loving service
4. To seek to transform unjust structures of society, to challenge violence of every kind and to pursue peace and reconciliation
5. To strive to safeguard the integrity of creation and sustain and renew the life of the earth


The Greenhouse Effect
Energy from the sun warms Earth
Some escapes back into space
Some is held by greenhouse gases in the atmosphere
Earth is about 60°F.
Without the atmosphere it would be 0°F.

				
Carbon Dioxide CO_2	**Methane** CH_4	**Nitrous oxide** N_2O	**CFCs** and **HCFs**	**Sulphur HexaFluoride** SF_6

Lifetime in the atmosphere

Hundreds years	12 years	114 years	100 and 12 years	3,200 years

Global warming potential or '**potency**' over 20 years, compared to CO_2

1	72	289	11,000 and 5,160	16,300

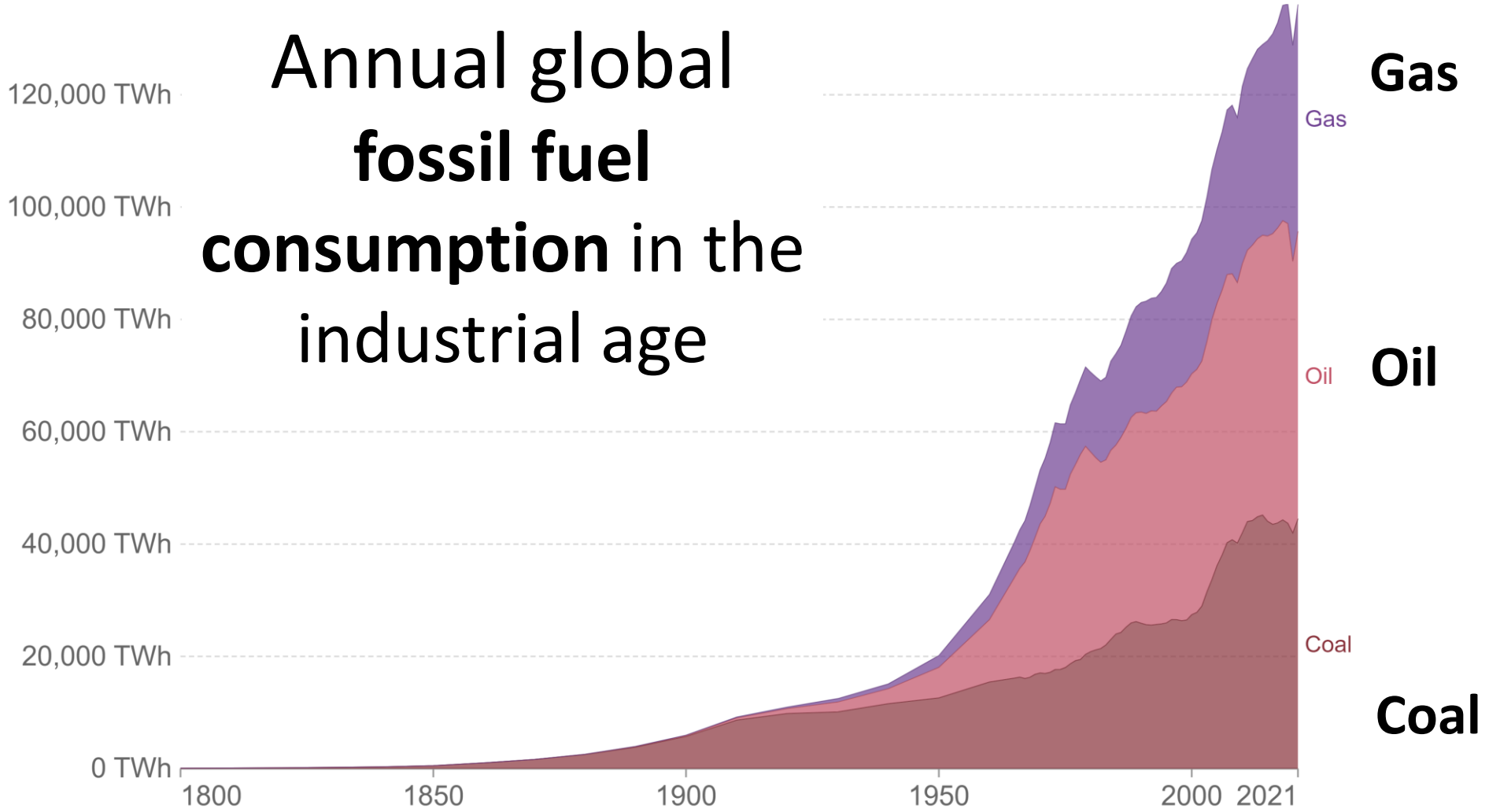
CO_2e

Global fossil fuel consumption

Global primary energy consumption by fossil fuel source, measured in terawatt-hours (TWh).

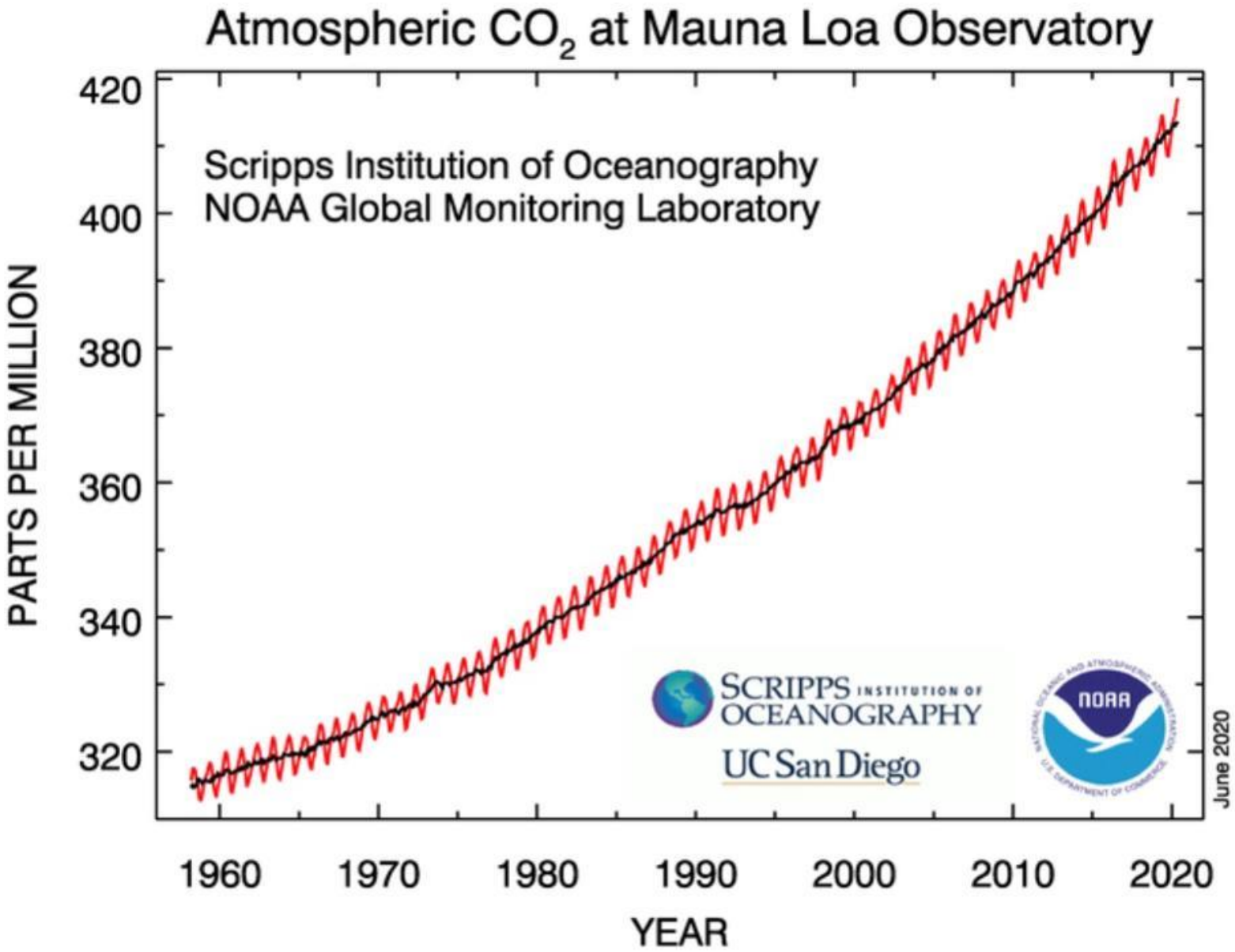
Our World in Data

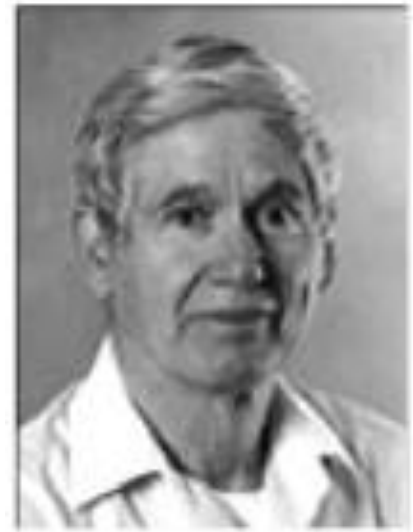
Annual global **fossil fuel consumption** in the industrial age



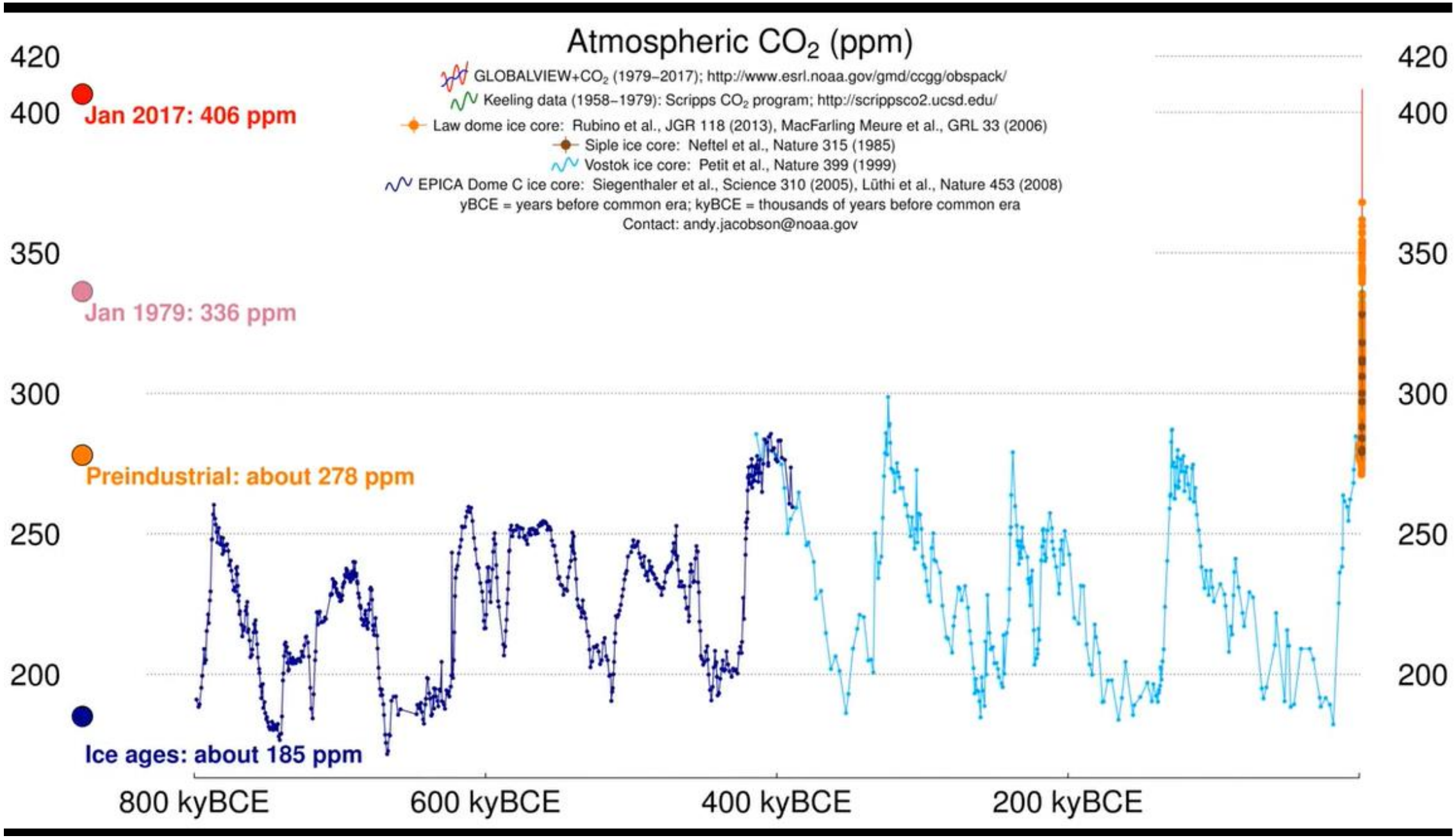
Source: Our World in Data based on Vaclav Smil (2017) and BP Statistical Review of World Energy

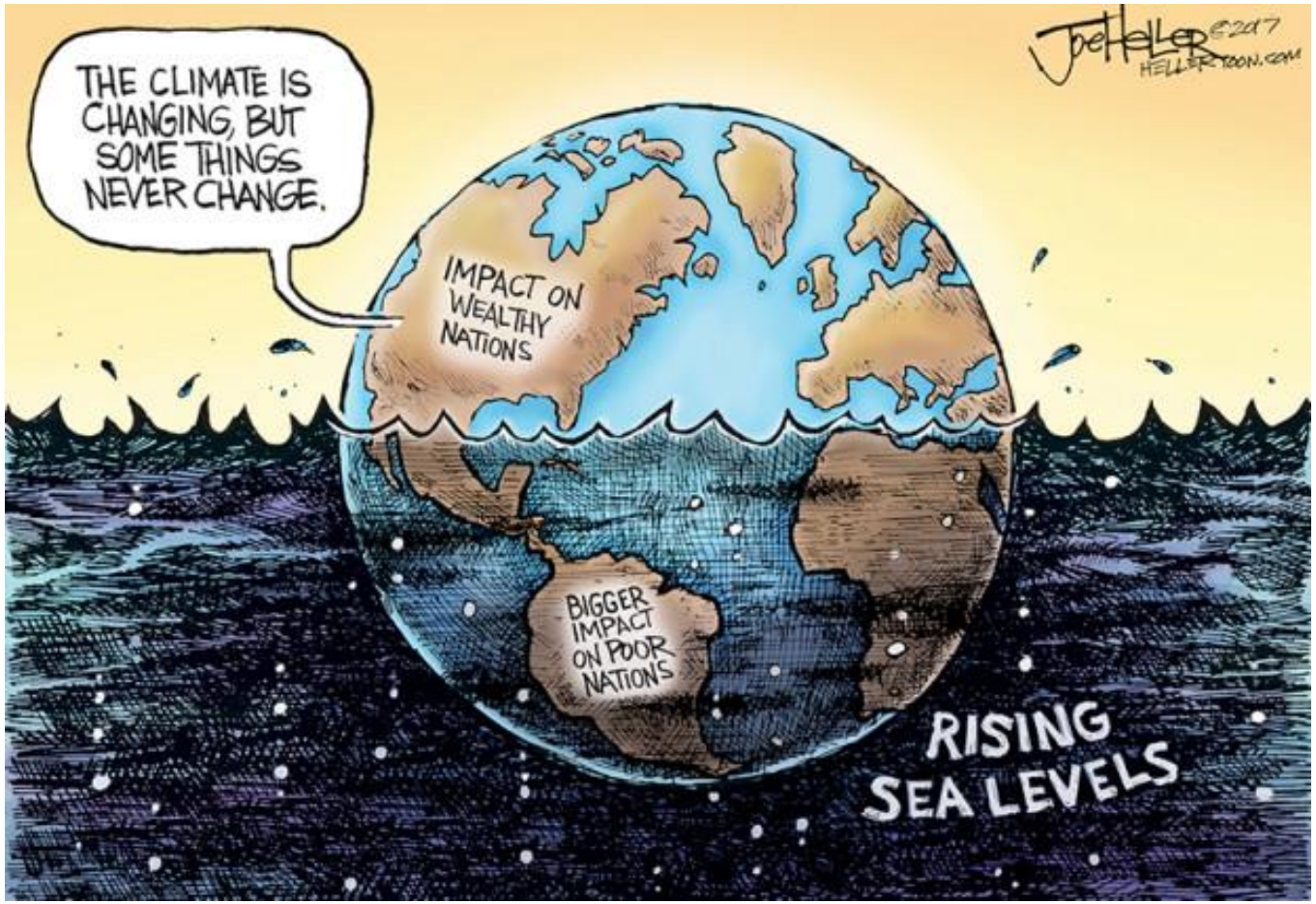
OurWorldInData.org/fossil-fuels/ • CC BY

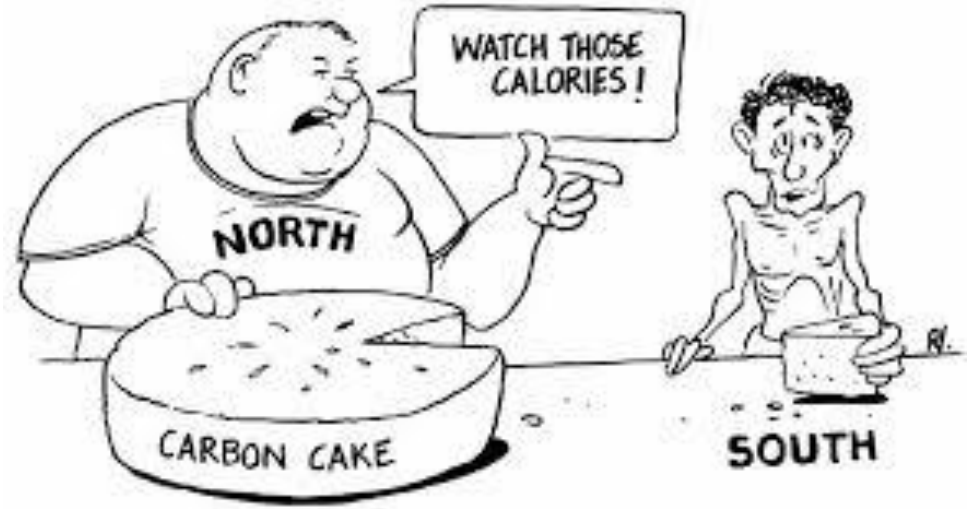




Charles Keeling


Atmospheric CO_2 (ppm)
GLOBALVIEW+CO_2 (1979–2017); http://www.esrl.noaa.gov/gmd/ccgg/obspack/
Keeling data (1958–1979): Scripps CO_2 program; http://scrippsco2.ucsd.edu/
Law dome ice core: Rubino et al., JGR 118 (2013), MacFarling Meure et al., GRL 33 (2006)
Siple ice core: Neftel et al., Nature 315 (1985)
Vostok ice core: Petit et al., Nature 399 (1999)
EPICA Dome C ice core: Siegenthaler et al., Science 310 (2005), Lüthi et al., Nature 453 (2008)
yBCE = years before common era; kyBCE = thousands of years before common era
Contact: andy.jacobson@noaa.gov
420
400
350
300
250
200
Jan 2017: 406 ppm
Jan 1979: 336 ppm
Preindustrial: about 278 ppm
Ice ages: about 185 ppm
800 kyBCE
600 kyBCE
400 kyBCE
200 kyBCE

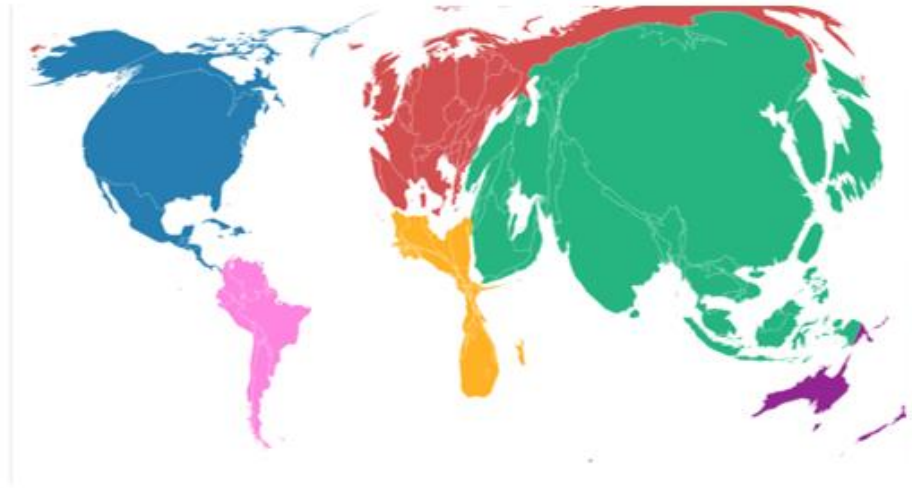




Climate Justice

ACTUAL LAND AREA

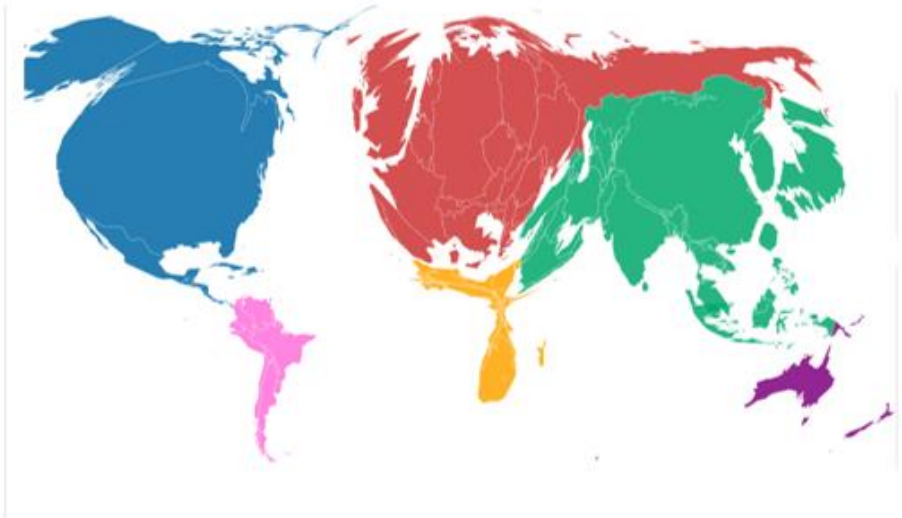
https://www.theguardian.com/environment/ng-interactive/2014/sep/23/carbon-map-which-countries-are-responsible-for-climate-change



CURRENT CONTRIBUTIONS

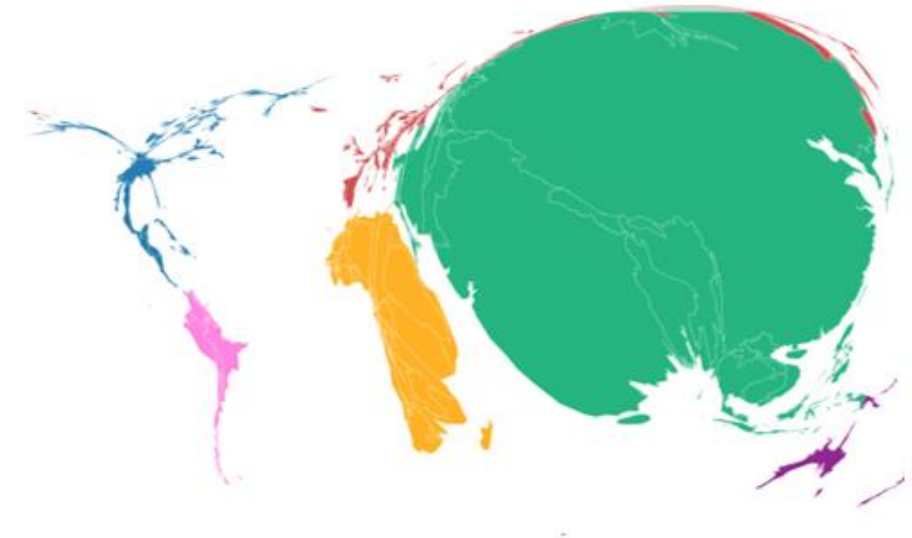
Countries are sized to show their **annual CO_2 emissions from fossil fuel use and cement production** (2013).

This is the conventional way to view national emissions but it ignores imports and exports of fossil fuels and goods and services.



PAST CONTRIBUTIONS

Country sizes show **CO_2 emissions from historical energy use (1850 – 2011)**. These 'cumulative' emissions remain relevant because CO2 remains in the atmosphere for centuries.



VULNERABILITY TO CLIMATE CHANGE IMPACTS

Country sizes show the **number of people** injured, left homeless, displaced or requiring assistance due to floods, droughts or extreme temperatures in a typical year. Climate change will exacerbate these threats.

Our carbon footprints

Developed world
Child to 18 years – over 1,000 tonnes CO_2

Mali
Child to 18 years – less than 2 tonnes CO_2

Effect so far?

- Currently 1.1/1.2 degrees Centigrade above pre-industrial levels
- Eight warmest years on record all since 2015
- July, August and September 2023 – hottest on record by some distance
- Increased temperatures cause weather extremes
  - Droughts
  - Wildfires
  - Flooding

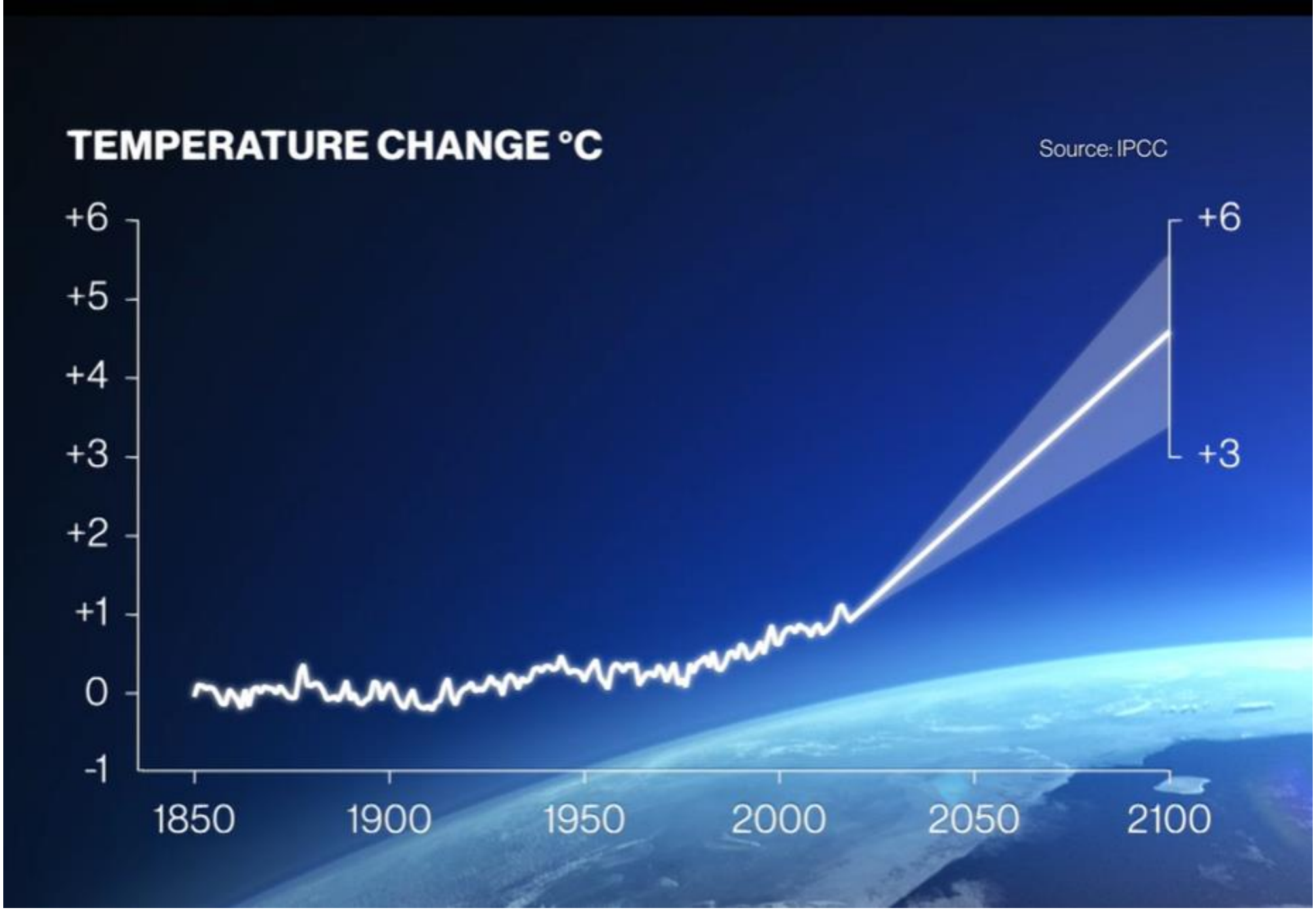
A very urgent message from scientists

IPCC Special Report on 1.5°C (Oct 2018)

1. Limit warming to **1.5°C to avoid** a climate crisis
2. We will reach **1.5°C** between **2030** and **2050** depending on our emissions
3. We must halve CO_2 emissions by **2030** and reach net zero by 2050 to keep to **1.5°C**

www.facebook.com/watch/live/?v=2703879823212489&ref=watch_permalink

– Tim Jackson, 15min 50 sec – 22mins-40secs


TEMPERATURE CHANGE °C
Source: IPCC
+6
+5
+4
+3
+2
+1
0
-1
1850
1900
1950
2000
2050
2100
+6
+3

HAY FESTIVAL

65 million more people exposed to exceptional heatwaves

10 million more people flooded by rising sea levels

99%

of the world's coral reefs disappearing
plants, insects and amphibians lose a third of their climatic habitat

Decline of world food supplies
0.5 million additional malnutrition deaths by 2050

6

million square km of permafrost will melt across the Arctic

total disappearance of the Arctic sea ice

2°C

TWO DEGREES

HAY FESTIVAL

hotter than any time since the Pliocene, 3 million years ago

deadly heatwaves sweeping across a third of the world's land area

sea level rise potentially as much as 2m by the end of the century

melt the majority of glaciers on all the world's mountain regions

Sahara desert spreading into southern Europe

major yield declines for staple food crops, with famines and cross-border refugee flow

3°C

THREE DEGREES

16:13 48:38

HAY FESTIVAL

hotter than any time since the Pliocene, 3 million years ago

deadly heatwaves sweeping across a third of the world's land area

sea level rise potentially as much as 2m by the end of the century

melt the majority of glaciers on all the world's mountain regions

Sahara desert spreading into southern Europe

major yield declines for staple food crops, with famines and cross-border refugee flow

3°C

THREE DEGREES

16:13 48:38

HAY FESTIVAL

deserts spreading over 6 million additional km²

1000km

move farmland areas 1,000km towards the poles

1 in 10 and a 1 in 4 chance that current policies take us even higher, into the five degrees world

New hurricane category: Level 6

worst mass extinction since the dinosaurs

4°C

FOUR DEGREES

22:28 48:38

The solutions exist!

‘Happily the solutions exist. The only thing stopping us solving this problem is us.’

Mike Berners-Lee

Author of ‘There is No Planet B’ speaking at Greenbelt Festival in 2019

Why is CofE's Net Zero Carbon Target important?

- 2021 estimated buildings emissions – 410,000 CO2e tonnes
- Responding to our Christian calling
- Leadership role to church members
- Leadership role to wider community

CofE Routemap to Net Zero Carbon

A vision for our buildings in 2030

- The buildings of the Church will be warm, bright and welcoming, powered by renewable energy and using low or zero carbon technologies for heat and light.
- Energy consumption for the Church as a whole will have fallen, on-site renewable energy generation will have increased, travel will be by low carbon means.
- Carbon emissions will be less than 10% of those now, offset in verified schemes.

Birmingham Diocese's response

THE CHURCH OF ENGLAND BIRMINGHAM

- Prepared Net Zero Carbon Action Plan – outline this year, detailed in 2024
- Gathering data, communicating what we need to do and why, developing plans, pilot schemes
- Top 20% of energy consuming churches identified and offered support in developing Net Zero Action Plans
- Working towards Eco Diocese Silver Award
- Supporting churches in engaging with Eco church

Our role in Birmingham Diocese's response

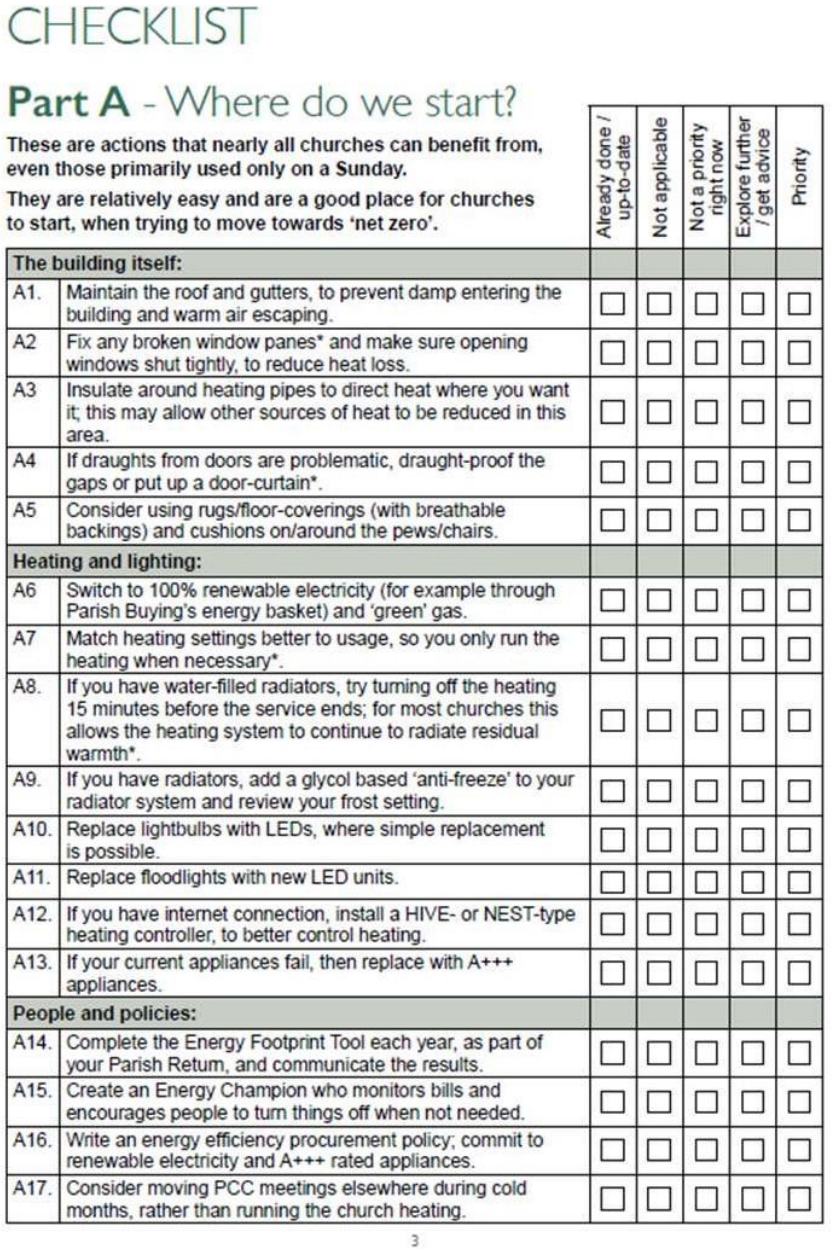
- **Everyone** has a role
- Spreading information about urgent need for action and our Christian calling
- Helping our churches move towards net zero by 2030
- Helping our churches to become Eco Churches

Quick Wins

Low cost / no cost actions
Match heating timing to use
Turn off heating before end of service
Complete the EFT each year and communicate the results
Create an Energy Champion to review use
Encourage people to turn things off
Move PCC meetings elsewhere during cold months
Get your energy supplier to install a smart meter
Vary service times in winter
Maintain the roof and gutters
Fix broken window panes
Insulate around heating pipes
Draught proof around gaps
As lights fail, replace with LED bulbs where suitable

Practical Path to Net Zero Carbon

- Possible actions to reduce church carbon emissions
- Starts with relatively simple ‘quick wins’ that nearly all churches can benefit from
- Up to bigger, more complex projects



CHECKLIST

Part A - Where do we start?

These are actions that nearly all churches can benefit from, even those primarily used only on a Sunday.

They are relatively easy and are a good place for churches to start, when trying to move towards ‘net zero’.

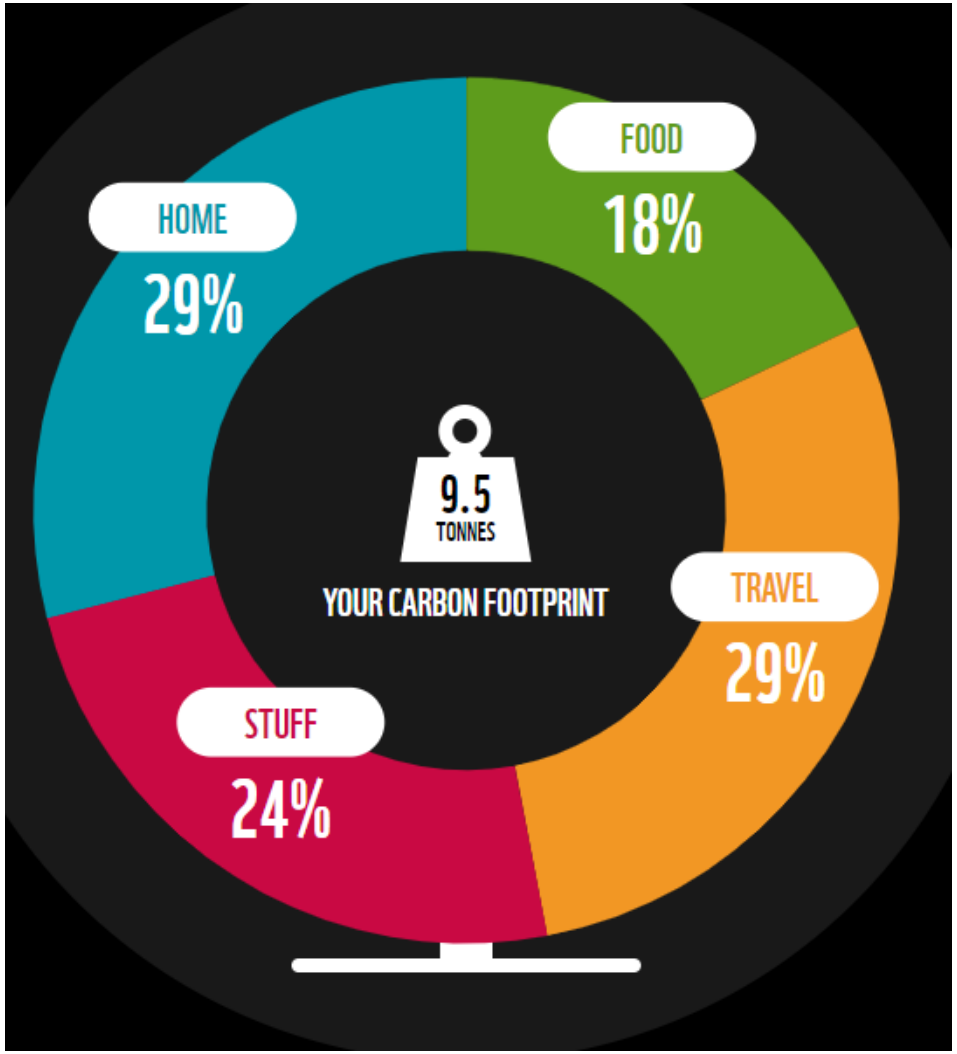
		Already done / up-to-date	Not applicable	Not a priority right now	Explore further / get advice	Priority
The building itself:						
A1.	Maintain the roof and gutters, to prevent damp entering the building and warm air escaping.	☐	☐	☐	☐	☐
A2	Fix any broken window panes* and make sure opening windows shut tightly, to reduce heat loss.	☐	☐	☐	☐	☐
A3	Insulate around heating pipes to direct heat where you want it; this may allow other sources of heat to be reduced in this area.	☐	☐	☐	☐	☐
A4	If draughts from doors are problematic, draught-proof the gaps or put up a door-curtain*.	☐	☐	☐	☐	☐
A5	Consider using rugs/floor-coverings (with breathable backings) and cushions on/around the pews/chairs.	☐	☐	☐	☐	☐
Heating and lighting:						
A6	Switch to 100% renewable electricity (for example through Parish Buying’s energy basket) and ‘green’ gas.	☐	☐	☐	☐	☐
A7	Match heating settings better to usage, so you only run the heating when necessary*.	☐	☐	☐	☐	☐
A8.	If you have water-filled radiators, try turning off the heating 15 minutes before the service ends; for most churches this allows the heating system to continue to radiate residual warmth*.	☐	☐	☐	☐	☐
A9.	If you have radiators, add a glycol based ‘anti-freeze’ to your radiator system and review your frost setting.	☐	☐	☐	☐	☐
A10.	Replace lightbulbs with LEDs, where simple replacement is possible.	☐	☐	☐	☐	☐
A11.	Replace floodlights with new LED units.	☐	☐	☐	☐	☐
A12.	If you have internet connection, install a HIVE- or NEST-type heating controller, to better control heating.	☐	☐	☐	☐	☐
A13.	If your current appliances fail, then replace with A+++ appliances.	☐	☐	☐	☐	☐
People and policies:						
A14.	Complete the Energy Footprint Tool each year, as part of your Parish Return, and communicate the results.	☐	☐	☐	☐	☐
A15.	Create an Energy Champion who monitors bills and encourages people to turn things off when not needed.	☐	☐	☐	☐	☐
A16.	Write an energy efficiency procurement policy; commit to renewable electricity and A+++ rated appliances.	☐	☐	☐	☐	☐
A17.	Consider moving PCC meetings elsewhere during cold months, rather than running the church heating.	☐	☐	☐	☐	☐

Grant Funding

- Community, environmental and statutory funding
  - churchofengland.org/about/environment-and-climate-change/webinars-getting-net-zero-carbon
- From the Church of England - £30m to end of 2025
  - Demonstrator projects
  - Pilot for clergy housing retrofit
  - Net zero Programme Manager
  - Support for Parishes

Support for Parishes - Coming soon!

- Free energy audit for 600 highest energy use churches
- Subsidised energy audits for 1,000 next highest
- Support for trialling/evaluating new net zero technologies/solutions
- Support for schools – pipeline of net zero projects, help with bids for statutory funding, technical advice
- Quick wins grants – via Diocese – for small scale works in churches
- **Get ready to apply!**



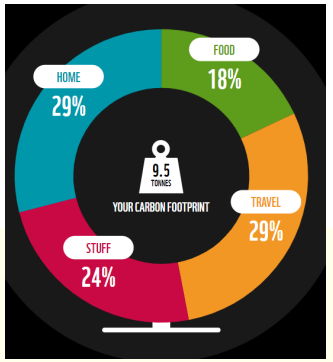
Our Carbon Footprint

Why what we say and do matters

Our willingness to act on climate affects:-

- Government attitudes/policies
- Actions of businesses
- Opinions/actions of other individuals

Tonnes of CO2 per person per annum



‘Fair share’: **1 tonne**

World Average in 2018: **6.26 tonnes**

UK’s 2022 target based on a linear reduction of the UK average to net zero by 2045: **9.5 tonnes**

UK average in 2022: **10.5 tonnes**

What do we really need to feel content?

'NO REGRETS'

Effects of over-consumption

Encroaching more into nature

Destroying natural habitats

– forests, mangroves, peatland, wetlands….
– Amazon – beef and soy
– South East Asia – palm oil
– Mangroves – coastal developments

Degrading and polluting natural and cultivated habitats

– Over-use of fertilizers
– Plastic waste

Consequences of over-consumption

Making climate change much worse

Land plants and soils contain 2-3 times as much carbon as the atmosphere

Destroying forests, wetlands and grasslands has returned two-thirds of that to the atmosphere

Peatlands cover 3% of planet land surface, but store over a third of total soil carbon, more than all other vegetation combined (including forests)

Salt-marshes, mangroves and seagrass, even as depleted, absorb very significant emissions

Consequences of over-consumption

Removing habitats and accelerating extinctions

– Extinctions vastly faster than historic rates
– Many species numbers dropping dramatically
– Disrupting delicate inter-connected web of life

Accelerating arrival of next Covid 19 – zoonotic diseases

– Encroaching into wildlife habitats
– Warming climate favours small mammal carriers

The importance of talking/engaging

Crucial that we do now, in this critical decade – it makes a difference

Talking to friends, family, neighbours, social groups, colleagues
Engaging with your MP, local councillors
Engaging with businesses you deal with –
, retailers, product manufacturers

Friends of the Earth

Maybe join group?
e.g. Eco Church, local nature restoration,
Campaign for climate justice

What can we change?

Money

Homes

Food

Clothes

Travel

Waste and pollution

‘Stuff’

Money

Pension –

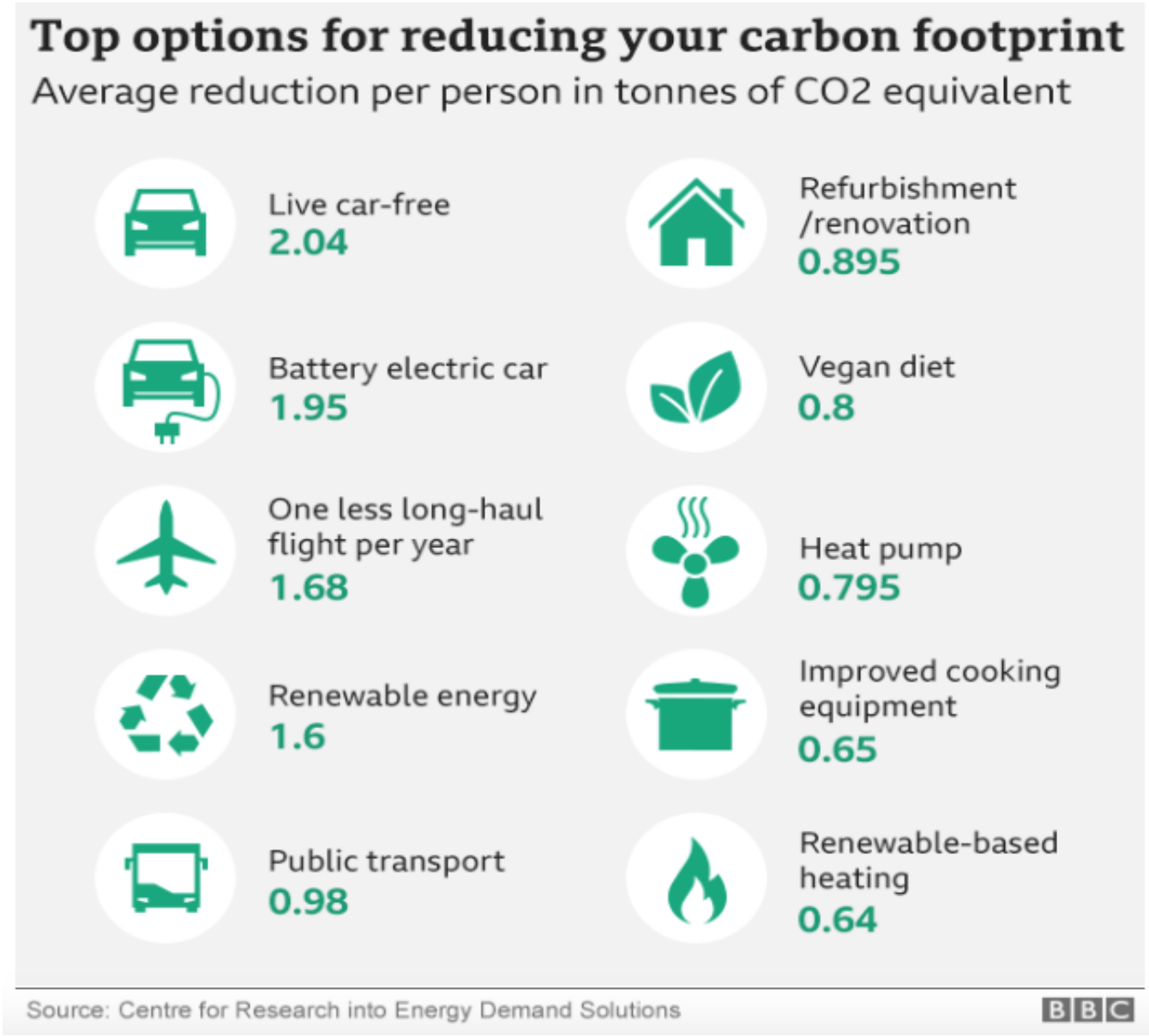
money purchase – consider ethical fund

final salary – ask about climate risk investments

Bank accounts/investments

choose ethical provider/investment

https://makemymoneymatter.co.uk


Top options for reducing your carbon footprint
Average reduction per person in tonnes of CO2 equivalent
Live car-free
2.04
Battery electric car
1.95
One less long-haul flight per year
1.68
Renewable energy
1.6
Public transport
0.98
Refurbishment /renovation
0.895
Vegan diet
0.8
Heat pump
0.795
Improved cooking equipment
0.65
Renewable-based heating
0.64
Source: Centre for Research into Energy Demand Solutions
BBC

Home

Change to 100% renewable electricity provider

Ensure proper insulation – Great British Insulation Scheme

When changing central heating/cooker – opt for air pump/electric

Turn thermostat down

Food

Food production globally – a third of all emissions

Food waste – UK

7.2m tonnes (19% of total) thrown away annually, of which

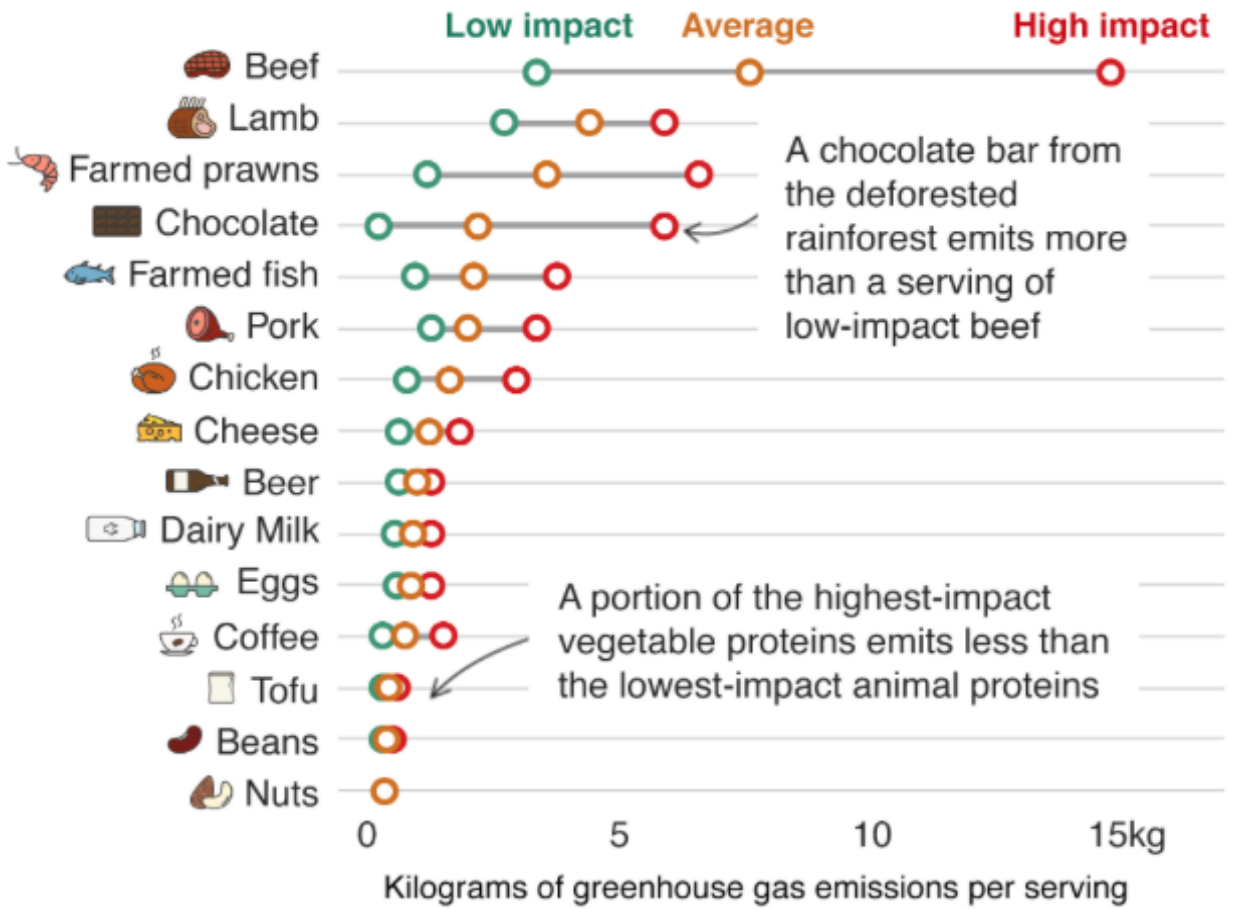
4.4m tonnes could have been eaten; and

2.6m tonnes not used in time

Post farm gate waste causes approx. 25m tonnes of emissions annually

Beef has the biggest carbon footprint - but the same food can have a range of impacts

Kilograms of greenhouse gas emissions per serving



Source: Poore & Nemecek (2018), Science

BBC

Clothes

Cause 10% world GHGs and 20% waste water

Global stock of clothes per person (2016) - 26kg

Buy fewer, better quality, use longer!

Transport

Carbon footprint per person per kilometer

- Large SUV – 625g
- Domestic flight – 255g
- Medium petrol car – 192g
- Economy short or long-haul flight – 150g
- Medium electric car (UK) – 53g
- Rail – 41g
- Eurostar – 6g!

Who can I ask?

- Birmingham Diocese Property Team
- -Dan Mayes – Property Director DanielM@cofebirmingham.com
- -Ben Smith –Care of Churches Officer BenS@cofebirmingham.com
- -Ian Simpson - Historic Places of Worship Support Officer
- IanS@cofebirmingham.com
- John Templeman John.Templeman@cofebirmingham.com

Rev Patrick Gerard – Bishop's Adviser on the Environment
Environment@cofebirmingham.com
Caroline Egan – Assistant Diocesan Environment Officer
AssistantDEO@cofebirmingham.com
Heather Holmes – Lead Environment Champion
LeadEnvironmentChampion@cofebirmingham.com

Helpful Books/ Materials

The Future We Choose – Christiana Figueres and Tom Rivett-Carnac

Saving Us – a Climate Scientist's Case for Hope and Healing in a Divided World - Katharine Hayhoe

The Sustainable(ish) Living Guide – Jen Gale

There is no Planet B / How Bad are Bananas?– Mike Berners-Lee

Doughnut Economics – Kate Raworth

I have copies of all the books, if anyone wants to borrow them

churchofengland.org/about/environment-and-climate-change/webinars-getting-net-zero-carbon