Accelerating towards Paris:

how informed hope & action can Trump despair

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Difficult challenges demand clarity & integrity

"… this is not a message of futility, but a wake-up call of where our rose-tinted spectacles have brought us."

Anderson & Larkin
Beyond 'dangerous climate change
Philosophical Transactions of the Royal Society

Difficult challenges demand clarity & integrity

"Real hope, if it is to arise at all, will do so from a bare assessment of the scale of the challenge we now face."

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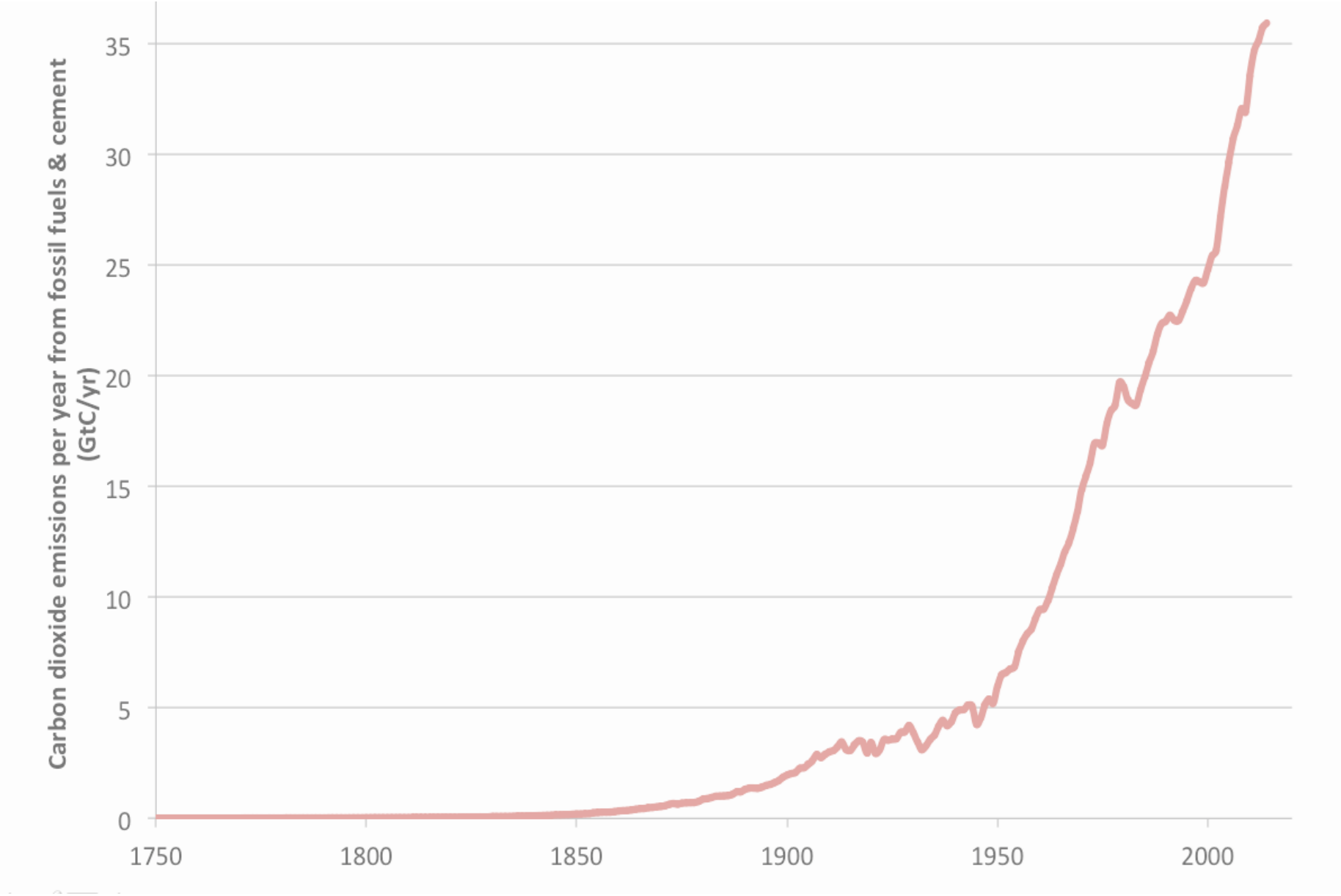
Backdrop to **Paris**



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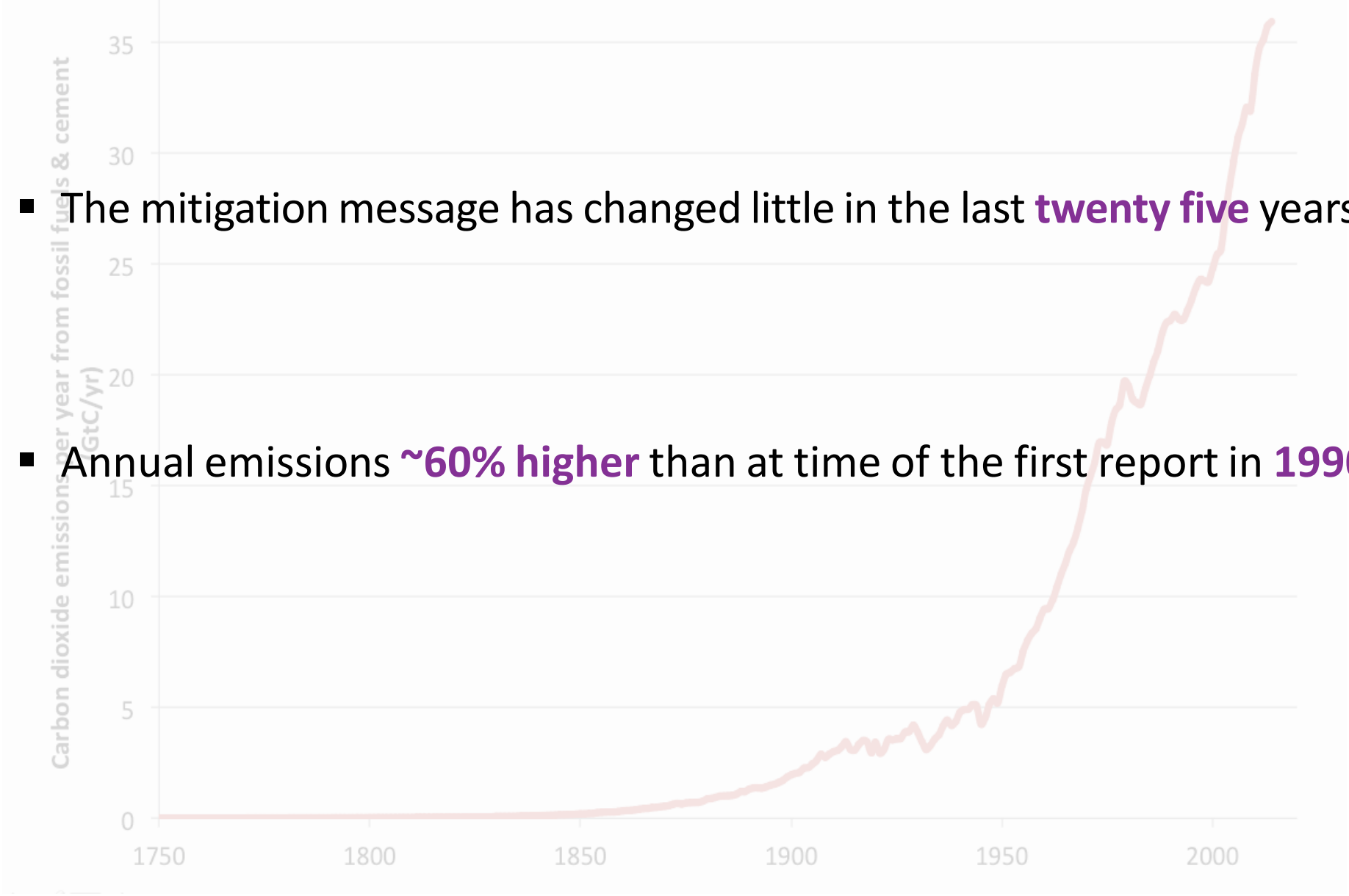
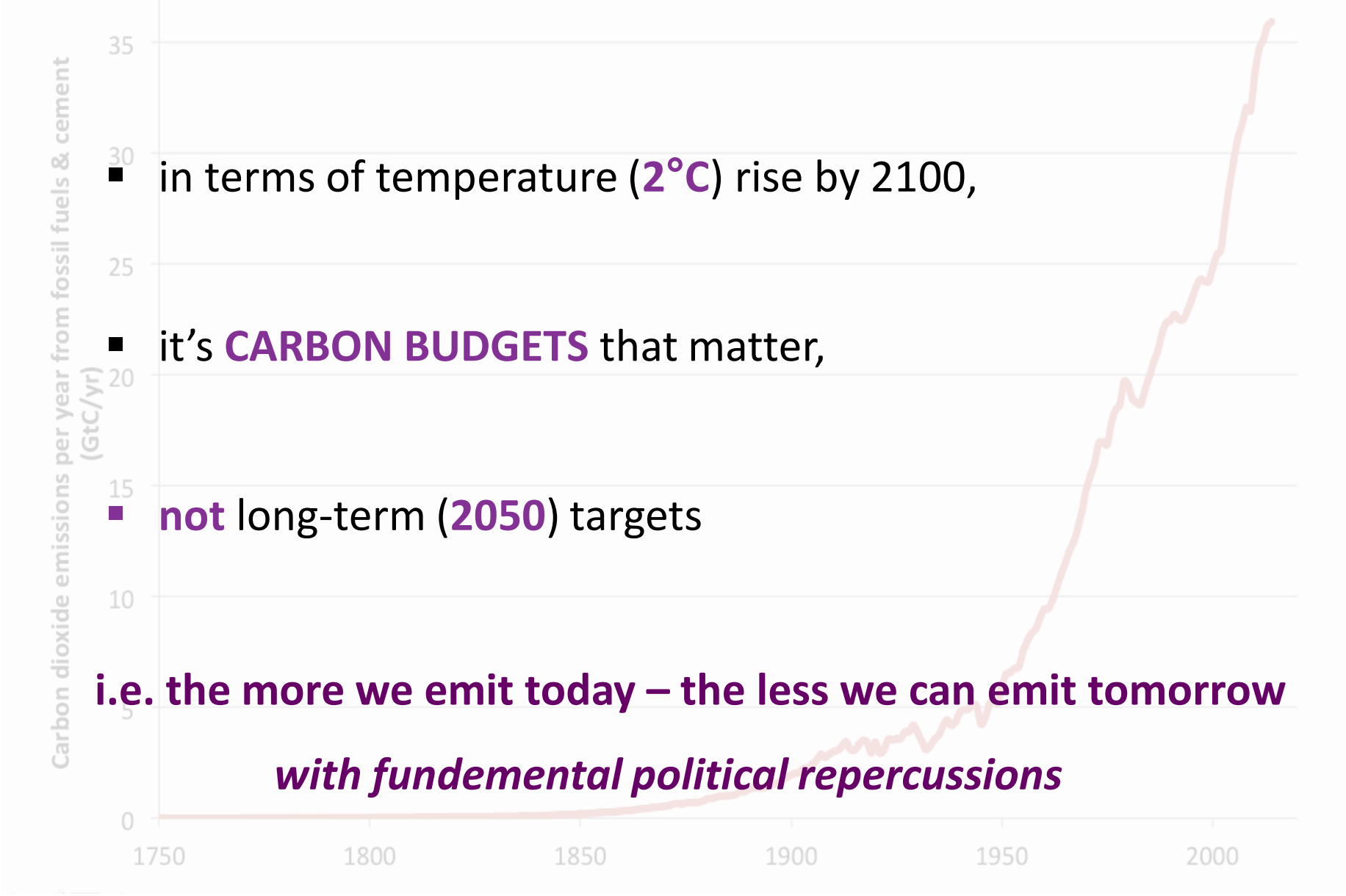


- The mitigation message has changed little in the last **twenty five** years
- Annual emissions **~60% higher** than at time of the first report in **1990**

Backdrop to **Paris:** *the latest **IPCC** reports*



- in terms of temperature (**2°C**) rise by 2100,
- it's **CARBON BUDGETS** that matter,
- **not** long-term (**2050**) targets

i.e. the more we emit today – the less we can emit tomorrow

with fundemental political repercussions

Paris Agreement

United Nations

Framework Convention on Climate Change

FCCC/CP/2015/L.9/Rev.1

Distr.: Limited
12 December 2015

Original: English

Conference of the Parties
Twenty-first session
Paris, 30 November to 11 December 2015

Agenda item 4(b)
Durban Platform for Enhanced Action (decision 1/CP.17)
Adoption of a protocol, another legal instrument, or an agreed outcome with legal force under the Convention applicable to all Parties

ADOPTION OF THE PARIS AGREEMENT

Proposal by the President

Draft decision -/CP.21

The *Conference of the Parties*,

Recalling decision 1/CP.17 on the establishment of the Ad Hoc Working Group on the Durban Platform for Enhanced Action,

Also recalling Articles 2, 3 and 4 of the Convention,

Further recalling relevant decisions of the Conference of the Parties, including decisions 1/CP.16, 2/CP.18, 1/CP.19 and 1/CP.20,

Paris Agreement – *An important diplomatic* ***triumph***

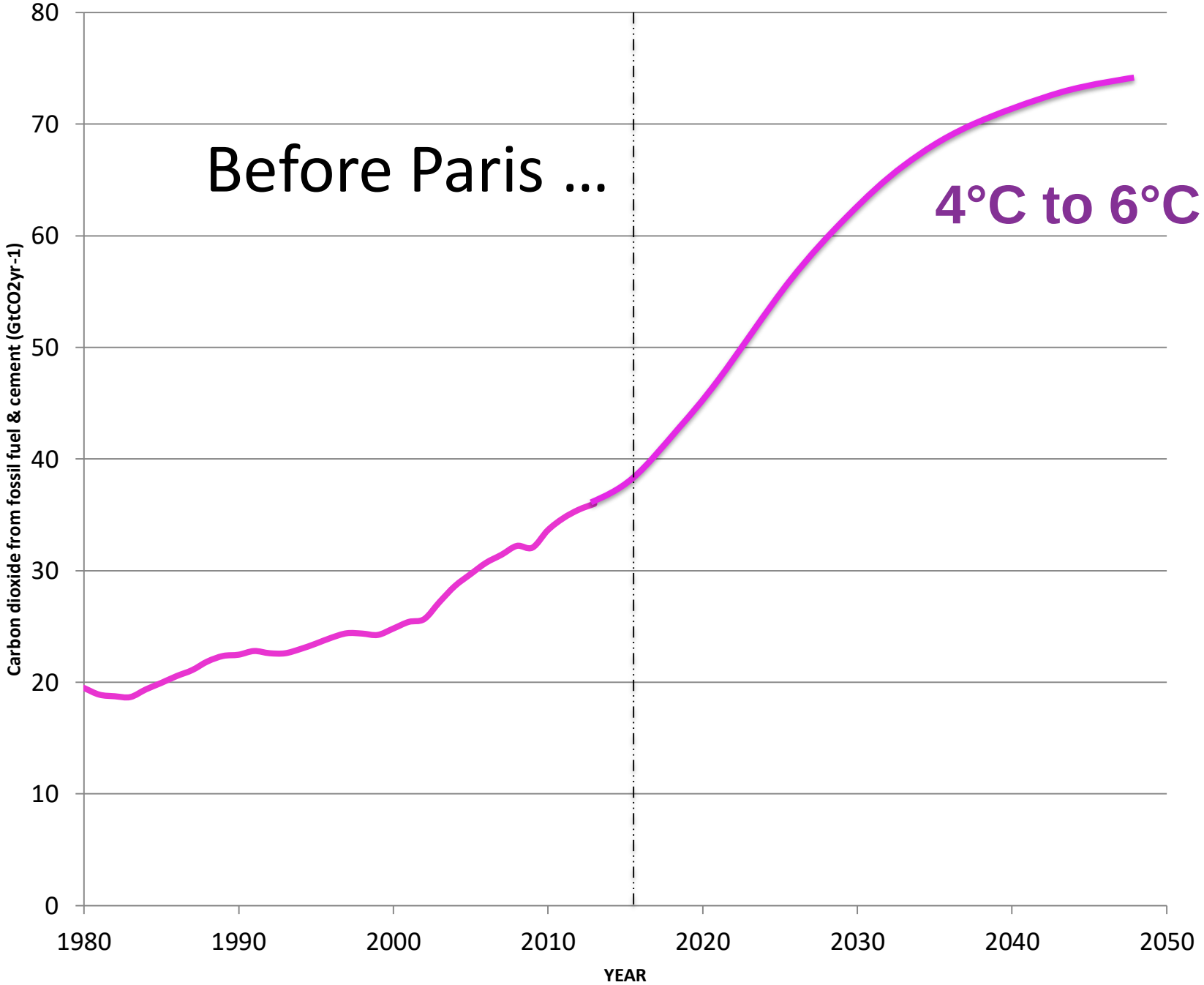
… hold the increase in global average temperature to **well below 2°C** above pre-industrial levels and pursue **efforts** to limit the temperature increase to **1.5°C**

…to undertake rapid reductions in accordance with **best science**

…on the **basis of equity**, and efforts to **eradicate poverty**.

‘Issues’ with the Paris Agreement

- no reference to **fossil fuels** **or** **decarbonisation**
- **aviation** and **shipping** exempt from any action
- **National promises** (INDCs) submitted to Paris equate to **3 to 4° C**
- fundamental reliance on highly speculative **negative emission technologies**


Before Paris …
4°C to 6°C
Carbon dioxide from fossil fuel & cement (GtCO2yr-1)
80
70
60
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10
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1980
1990
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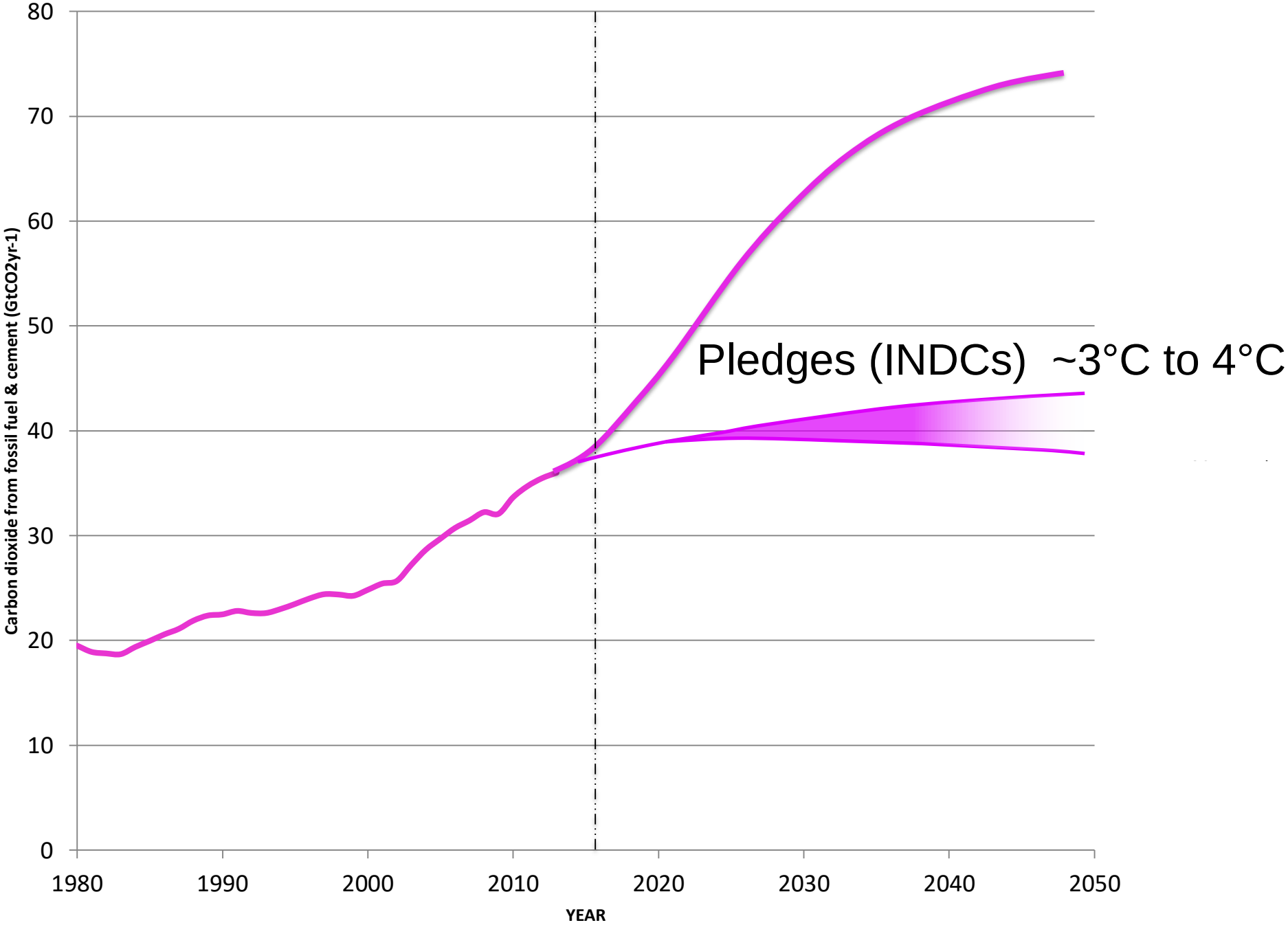
YEAR


Pledges (INDCs) ~3°C to 4°C
Carbon dioxide from fossil fuel & cement (GtCO2yr-1)
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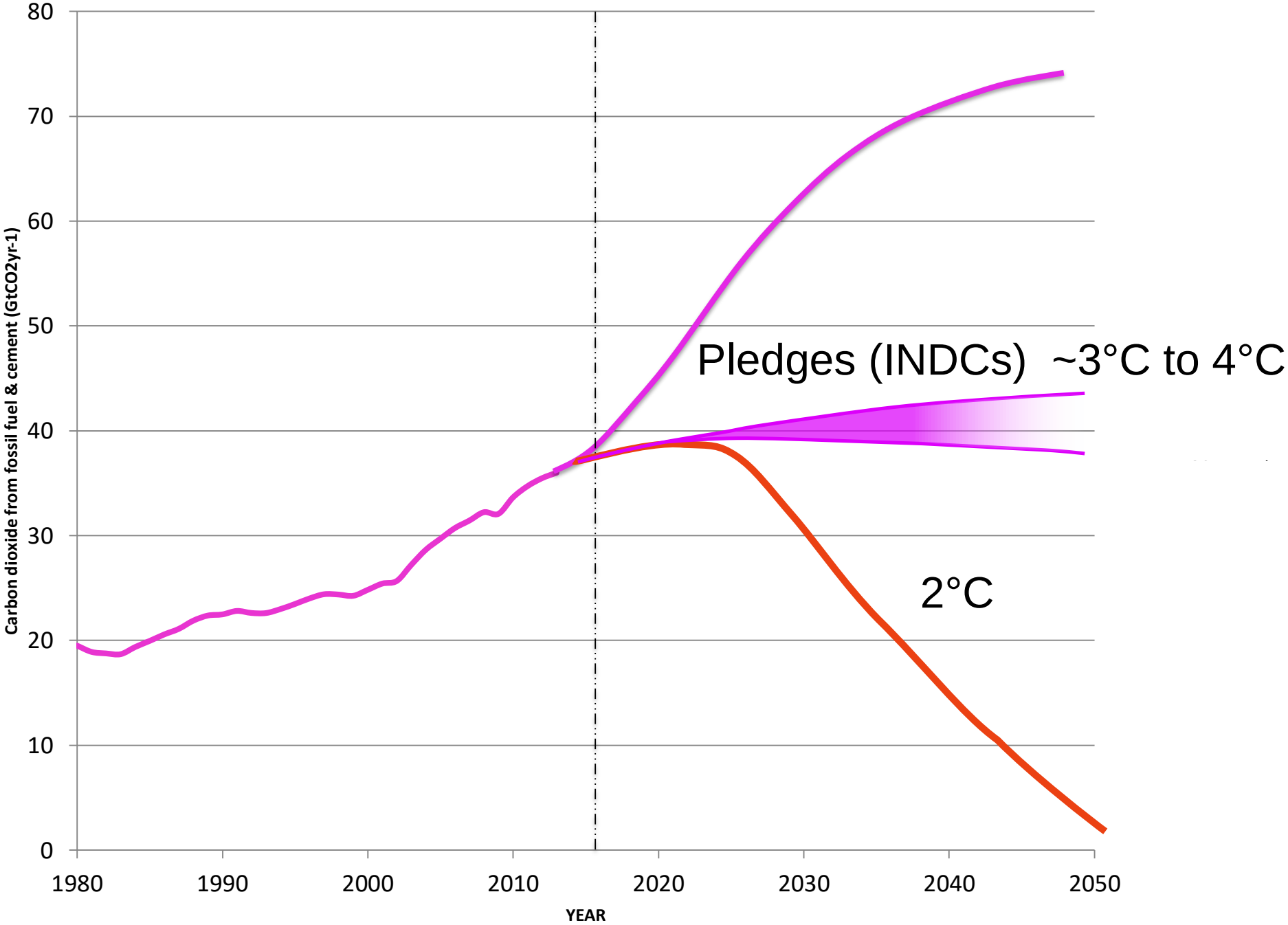
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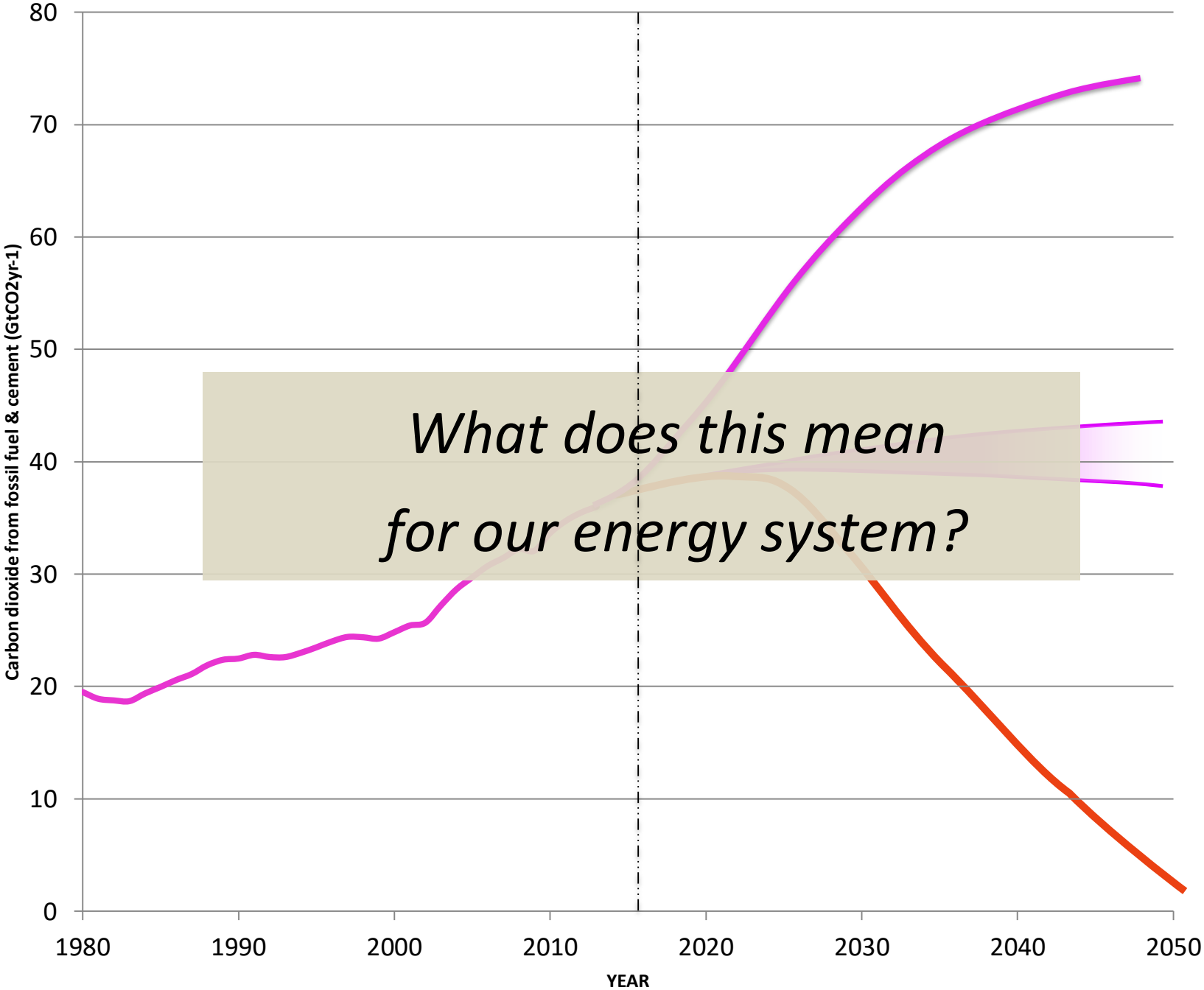
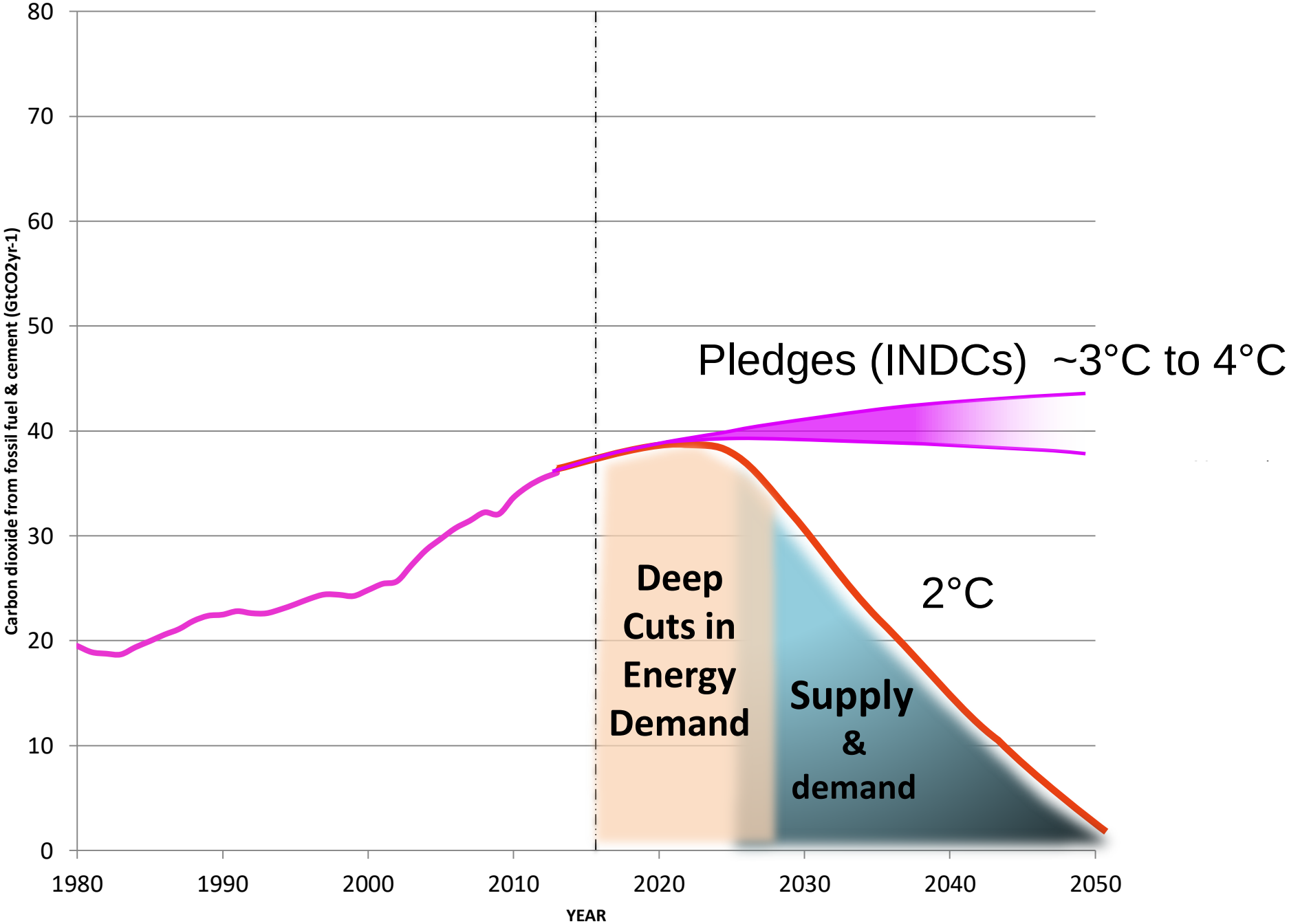
Pledges (INDCs) ~3°C to 4°C
2°C



What does this mean for our energy system?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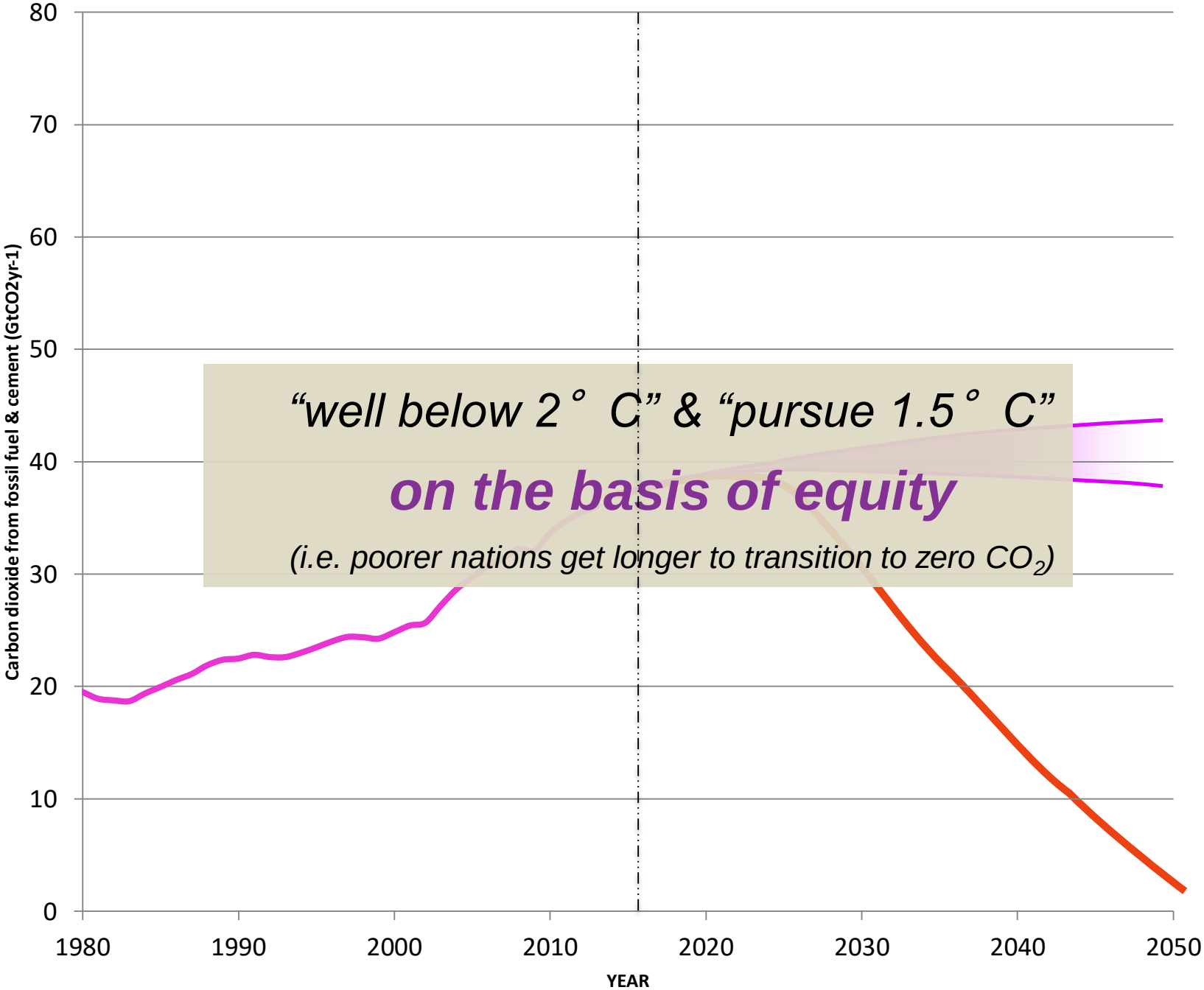
Pledges (INDCs) ~3°C to 4°C
Deep Cuts in Energy Demand
Supply & demand
2°C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"well below 2° C" & "pursue 1.5° C"
on the basis of equity
(i.e. poorer nations get longer to transition to zero CO_2)

Returning to IPCC's Carbon budgets

In 3 to 13 years we'll use all the 1.5°C energy-CO_2 budget

Pledges not reviewed in depth till 2023

… from a budget perspective

Is it now too late for 1.5°C?

And even for 2°C:

- Poor & less-industrialised nations: *zero CO_2 energy by* ***~2050***
- Wealthy industrialised nations: *zero CO_2 energy by* ***~2035***

How can this fit with the Paris euphoria?

… by pulling a rabbit from the magician's hat

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Negative emissions technologies (NETs)

i.e. suck CO_2 directly from the atmosphere by 2030 & beyond

… by pulling a rabbit from the magician's hat

Negative emissions technologies (NETs)

BECCS – *biomass energy with carbon capture & storage:*

Grow trees/plants

they absorb CO_2 through photosynthesis

burn trees in powerstations

capture the CO_2 from the chimney

~liquefy the CO_2 & pump it underground

store for many 1000s of years

… by pulling a rabbit from the magician's hat

Negative emissions technologies (NETs)

BECCS – *biomass energy with carbon capture & storage:*

Never worked at scale

huge technical & economic unknowns

major efficiency penalty

limited biomass availability *(fuel or food?)*

large biodiversity impacts

… by pulling a rabbit from the magician's hat

BECCS *– level of inclusion in government means :*

- planting 1 to 3x the area of India
- year after year; decade after decade
- continue till far beyond 2100

… or the equivalent of adding another biosphere!

+

… absorbs ½ of anthropogenic annual CO_2

i.e. oceans & plants absorbs ~20GtCO_2/yr.

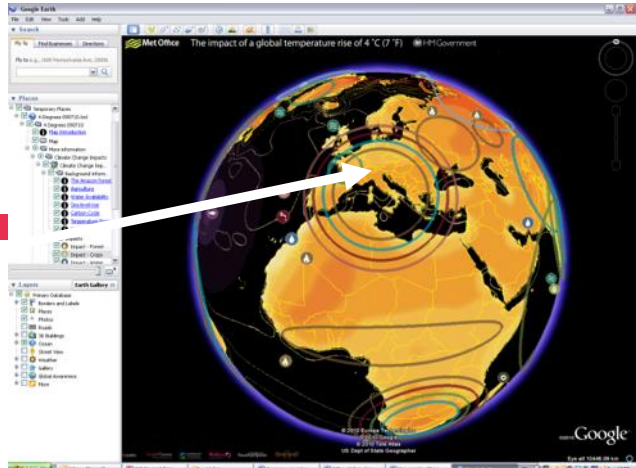
BECCS is set to absorb 10 to 20GtCO_2/yr

i.e. up to another planet's worth of biospere

So if 2°C is too challenging, what about 3 to 4°C?

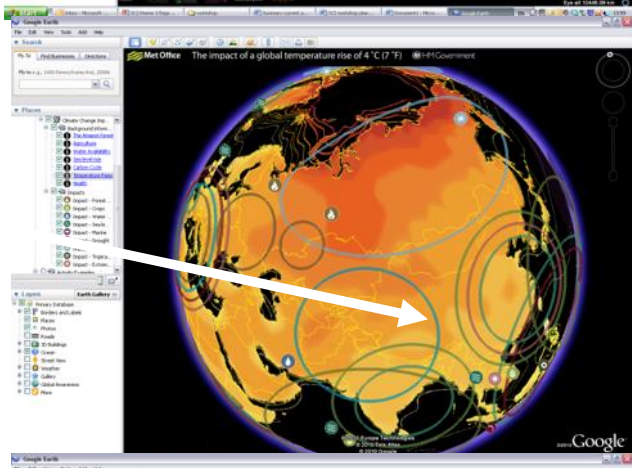
Global impacts: 4°C

+8°C

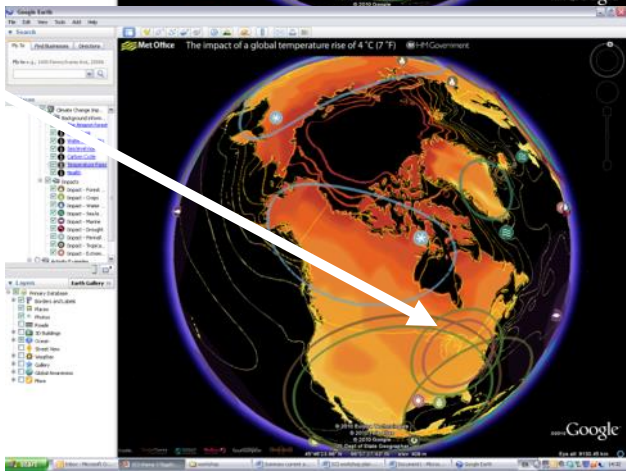


Hottest days

+6°C



+10-12°C



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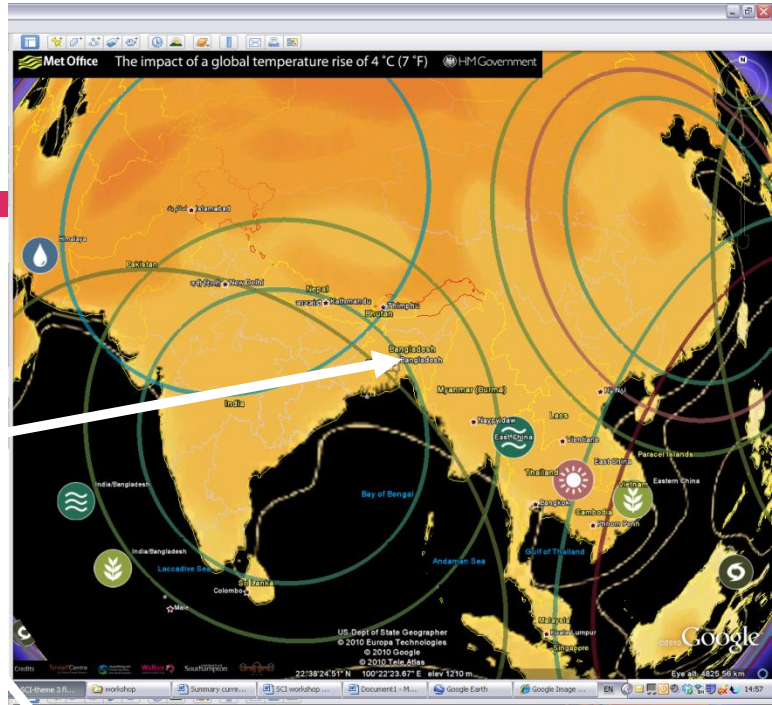
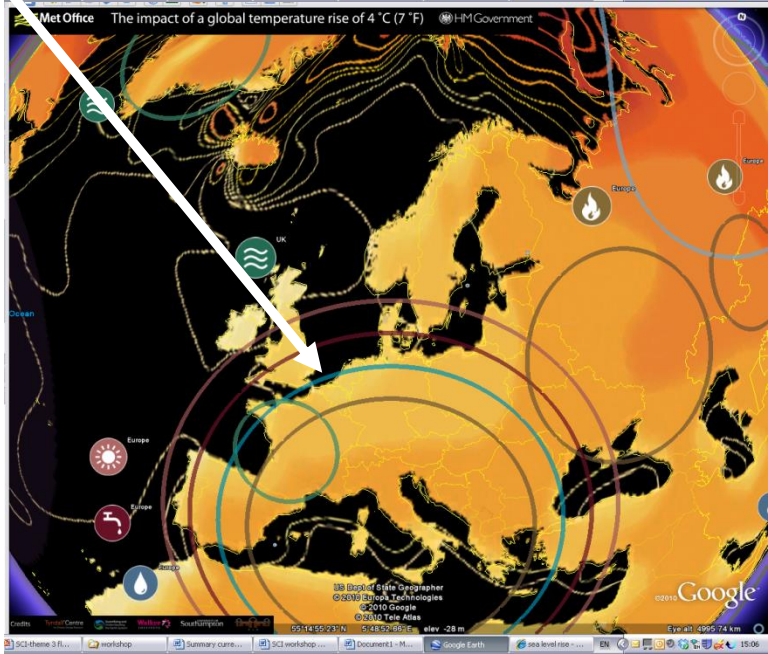
Global impacts: 4°C

Sea level rise

1-2m rise,
higher
in low
latitudes

& locked in
7m+
overcoming
centuries



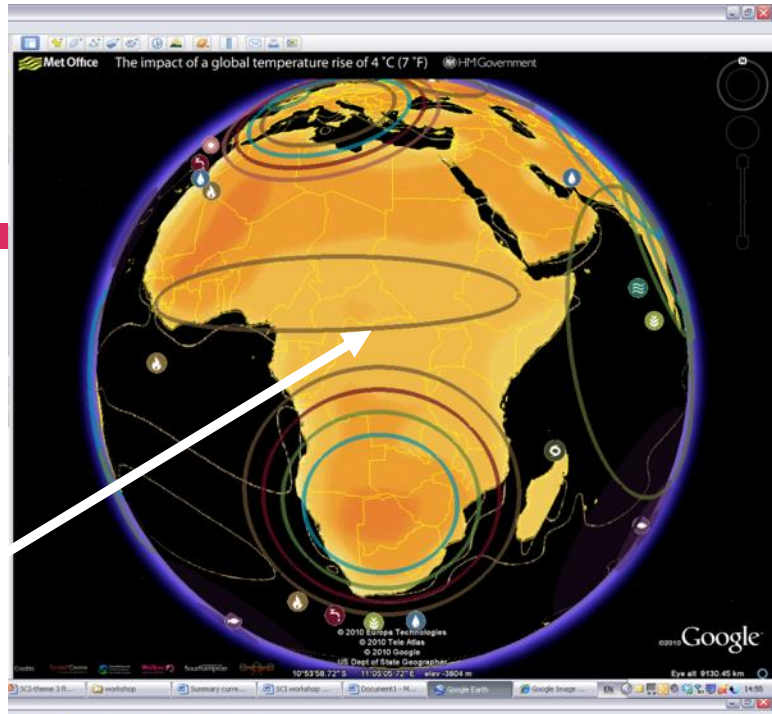


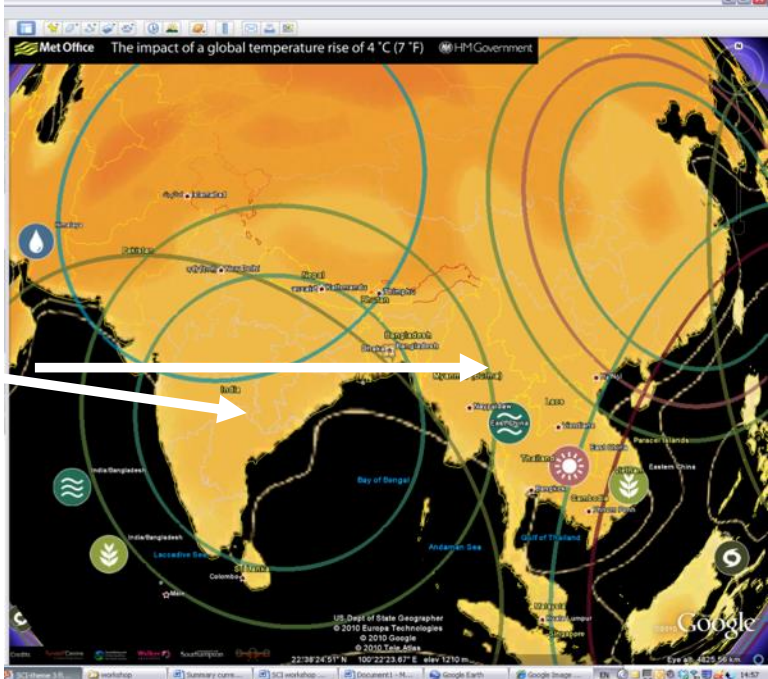
Global impacts: 4°C

Food crops

40% reduction in maize & wheat yields in low latitudes.

30% decrease in rice yields





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There is a widespread view that 4°C is…

- Incompatible with an organised global community
- Beyond ‘adaptation’
- Devastating to eco-systems
- Highly unlikely to be stable (‘tipping points’)

… consequently …

4° C should be avoided at ‘all’ costs

Returning to 2°C

… is it still a viable goal?

Hypothesis: yes … *just*

Technology:

- Supply: decadal timeframe
- Demand: near term options

Equity: immediate & near-term

Technology:

saviour of the status quo?

SUPPLY: low-CO_2 *electricity*

Tidal

Wave

Biomass

(CCS ?)

SUPPLY: low-CO_2 *energy*

- But, electricity is typically 20% of final energy demand

- So also need a massive programme of electrification

DEMAND: opportunities for near-term mitigation

- Establish stringent efficiency standards
- Tighten year on year
- Providing long-term & dynamic market signal

Industrialised/wealthy nations:

Beyond technology

But:

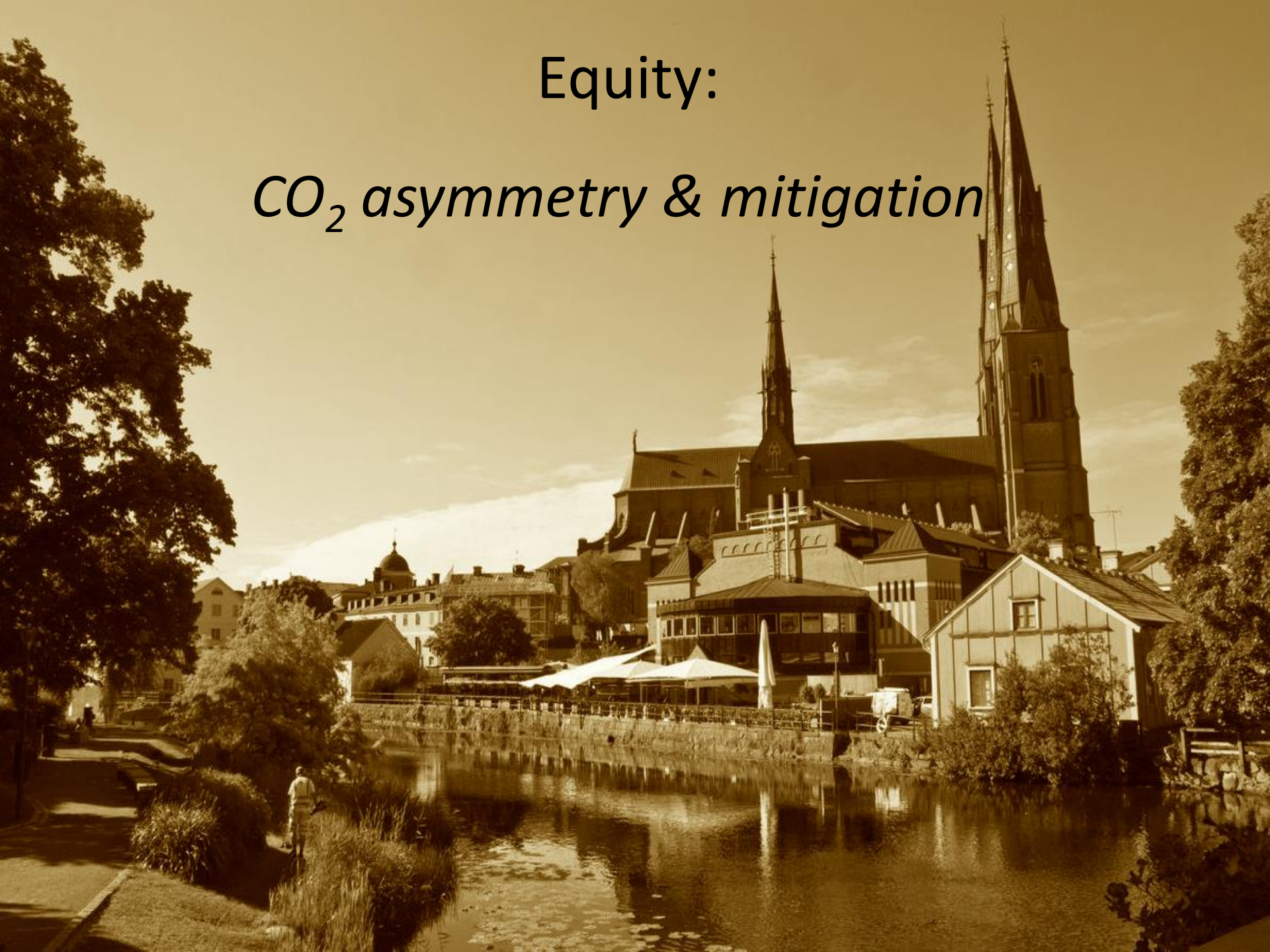
Technology (supply & demand) alone cannot deliver on the Paris budgets

Rapid & deep changes in *what we do, how we do it & how often we do*

is now critical

Equity:

CO_2 asymmetry & mitigation



EQUITY: extreme emission asymmetry

~50% of global CO_2 comes from ~**10%** of the population

_____

Top 1% of US emitters (~3.4 million people)

… have CO_2 footprints

2500x higher than bottom 1% globally (~70 million)

EQUITY: extreme emission asymmetry

… if the top 10% of global emitters

were to reduce their carbon footprint

to the level of a typical EU citizen

Global CO_2 emissions would be cut ~33%

So, who is in this key 10% group?

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EQUITY: frames a new agenda for mitigation

- Most of the 7 billion have little scope to reduce emissions
- There is huge asymmetry in responsibility
- Rapid & near-term reduction in CO_2 from top 10% of emitters
- Real opportunity for leading by example
- And thereby catalysing system-change

Climate Change demands System Change

Interpreting Paris through the **logic of carbon budgets** begs fundamental questions of our **norms & paradigms**

- *Marshall-style transition in supply technologies*
- *stringent efficiency programme around energy demand*
- *transition in physical & institutional Infrastructures*
- *profound shift in behaviour & practices*
- *development of cogent economic models*
- *much more inclusive values*
- *serious consideration of inter/intra generational equity*

Climate Change demands System Change

Interpreting Paris through the **logic of carbon budgets** begs fundamental questions of our **norms & paradigms**

… starting now …

Difficult challenges demand clarity & integrity

"Real hope, if it is to arise at all, will do so from a bare assessment of the scale of the challenge we now face."

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and a message of hope to finish …

"at every level the greatest obstacle to transforming the world is that we lack the ***clarity*** *and* ***imagination*** *to conceive that it could be different."*

Robert Unger

Thanks for listening

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