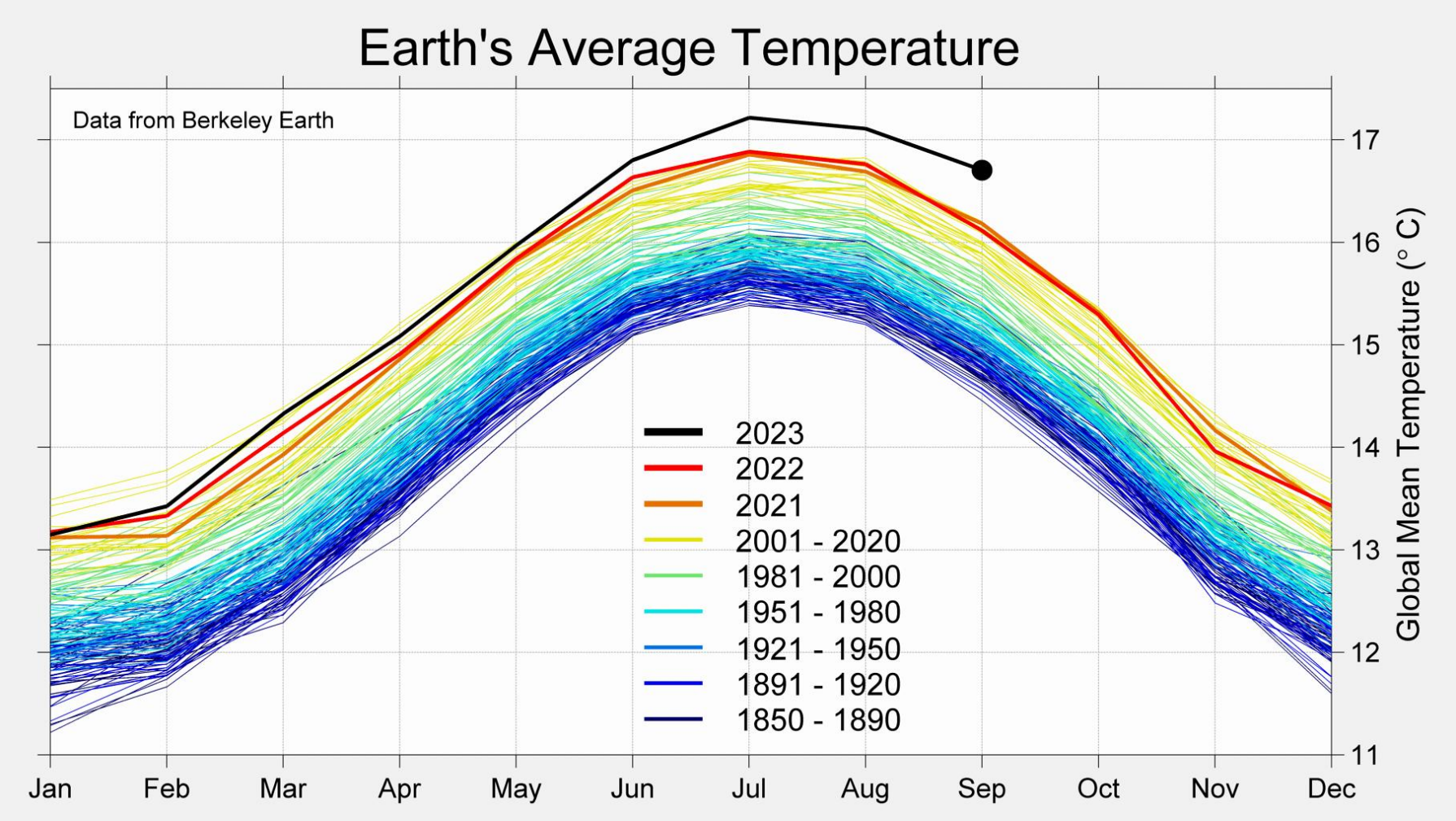
Climate Change
- looming human extinction

林超英

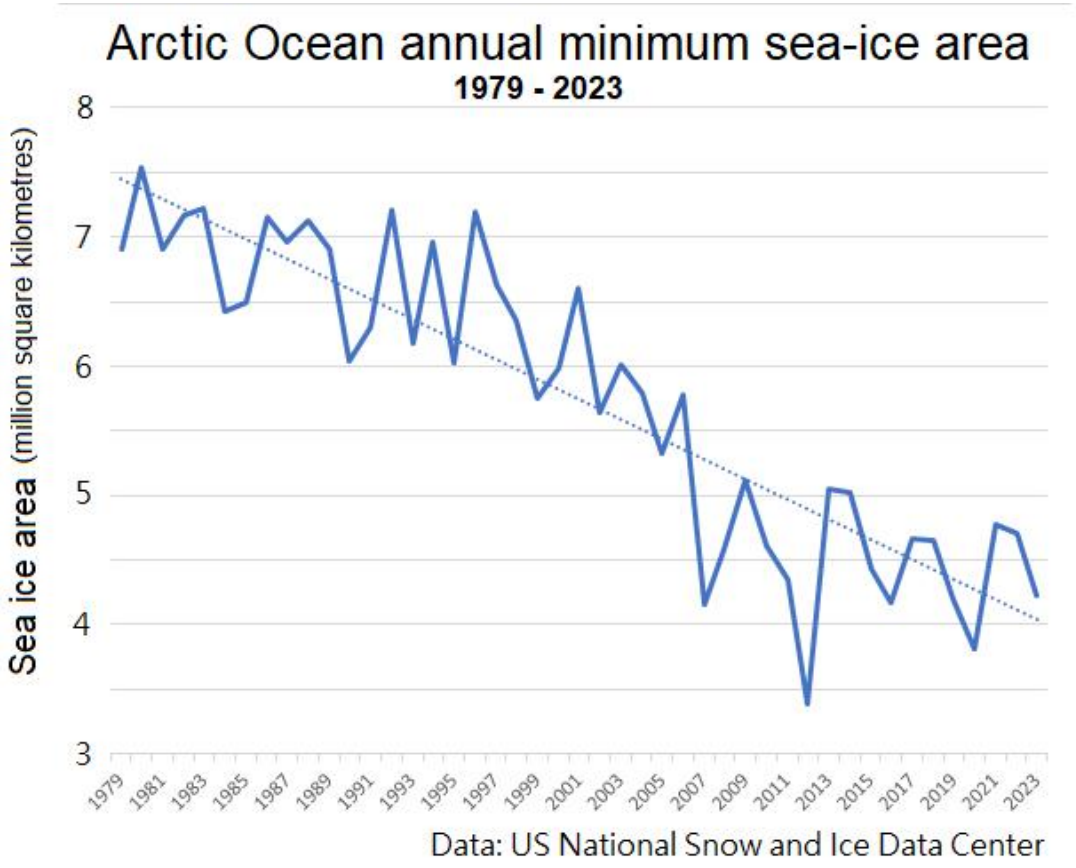
26.10.2023

September global average temperature
breaking record in a **record-breaking** manner



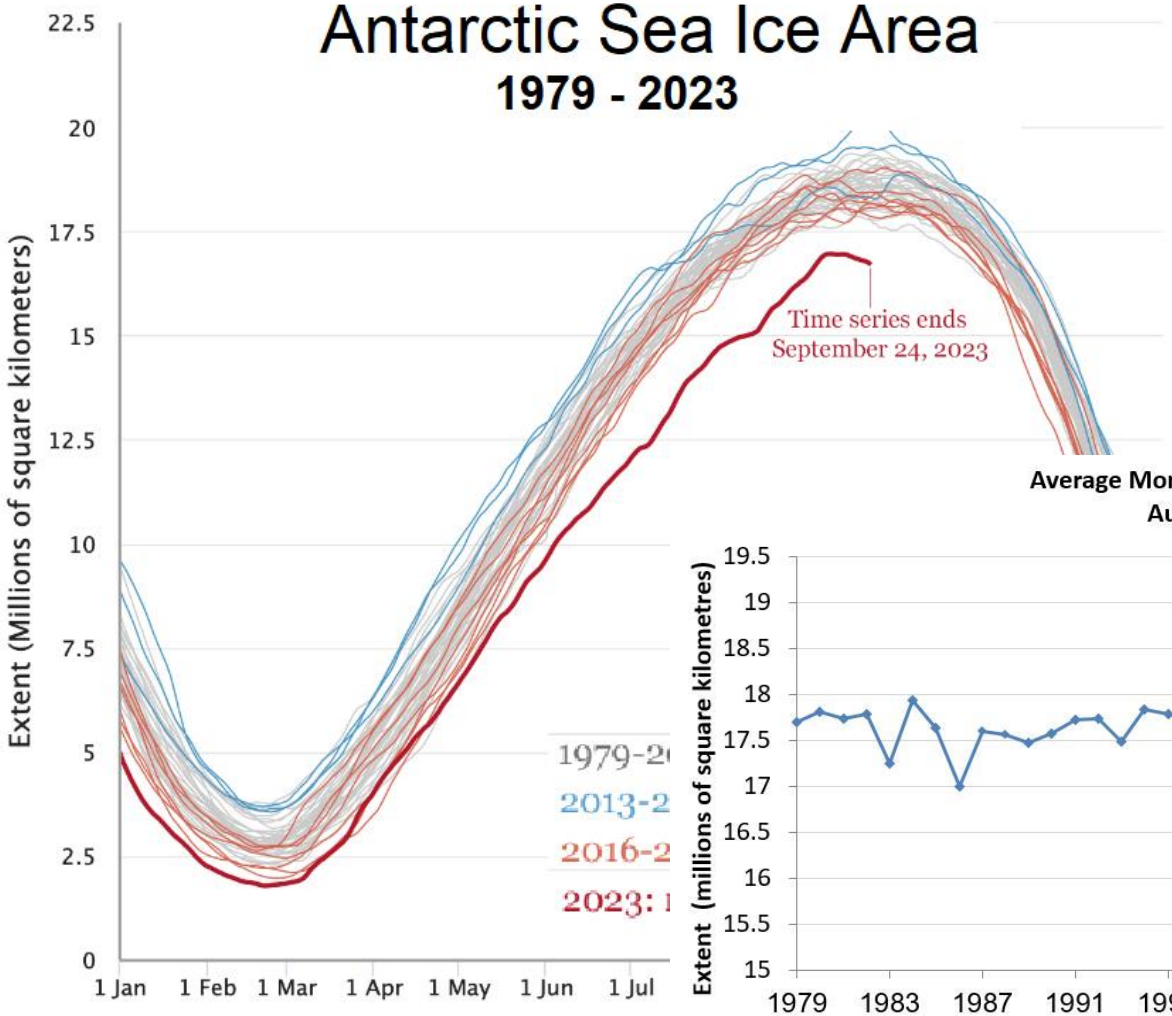
Arctic Ocean annual minimum sea ice area

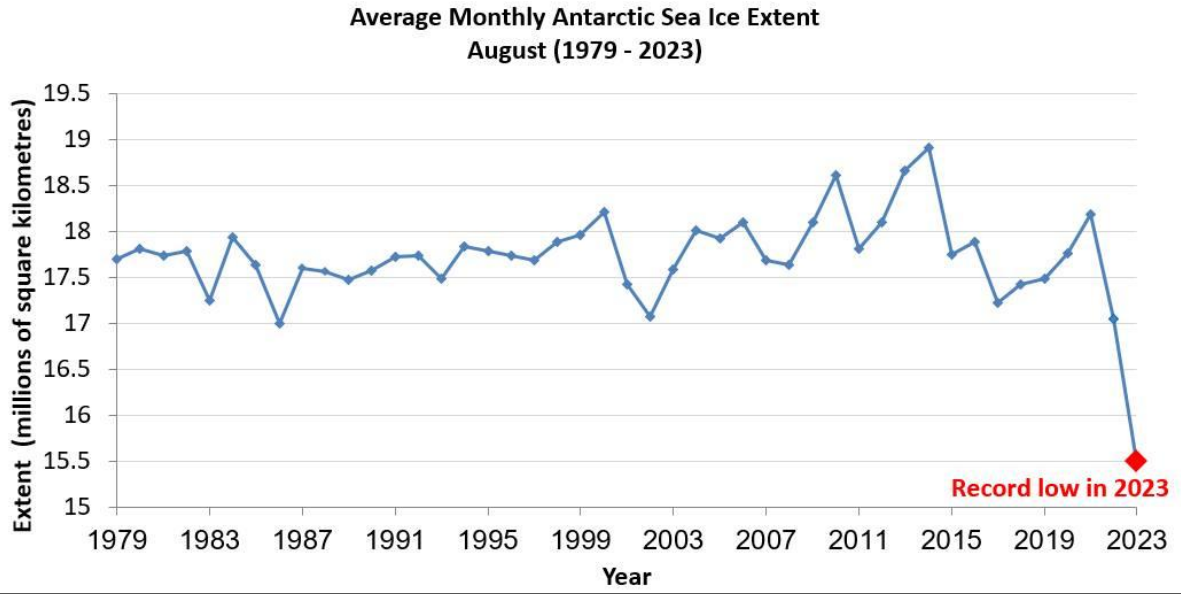
~ half of what it was *circa* 1980



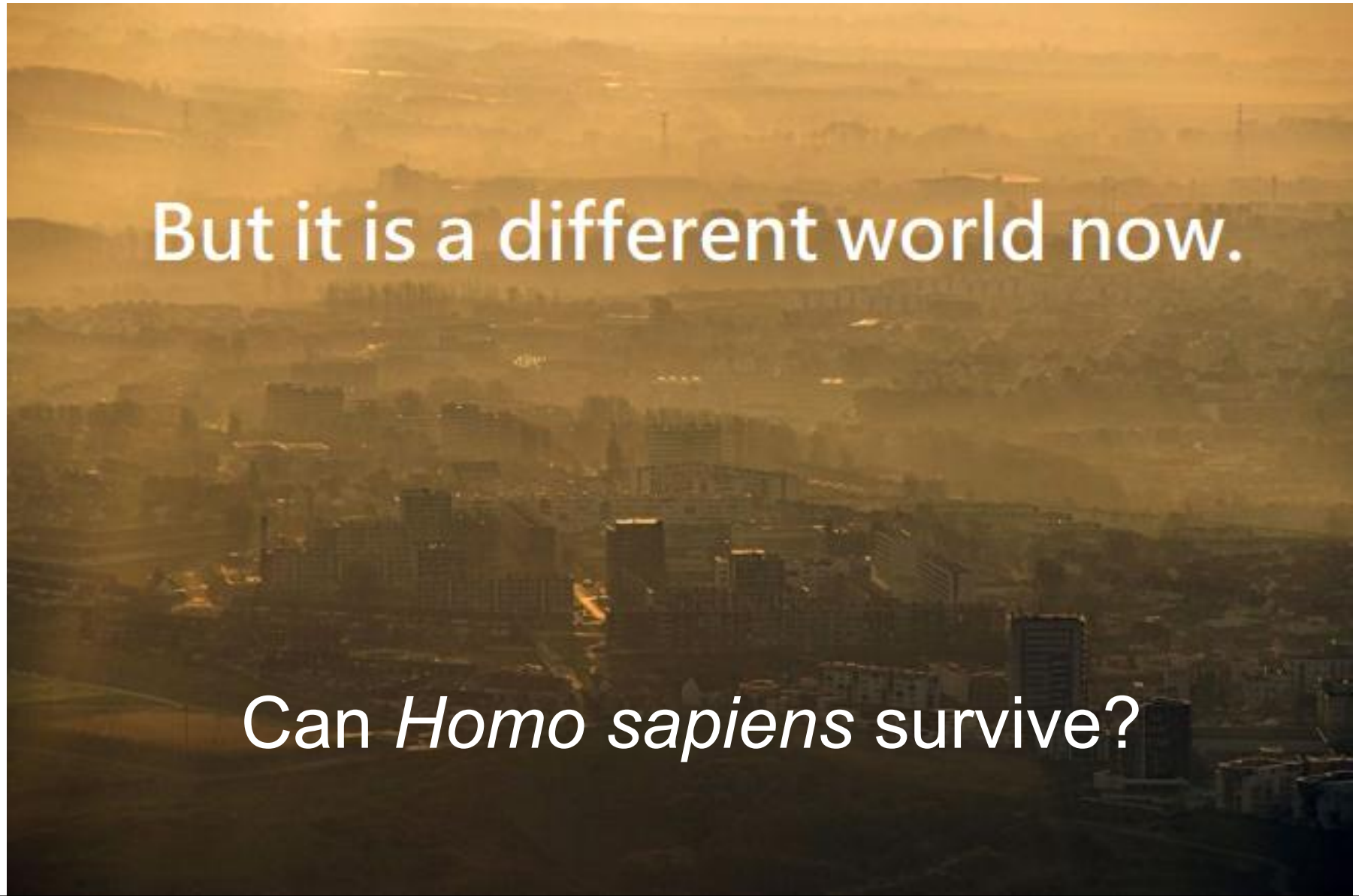
The North-East Passage is now open several months a year.

Antarctic Ocean annual maximum sea ice area breaking record in a **record-breaking** manner





We were born into a beautiful world.



Probability of Human Extinction

specifically *Homo sapiens*

100.00%

within 10 billion years

- expansion of the Sun

100.0%

within 1 million years

- like “all” mammal species
- like “all” previous human species

Human Extinction
is **not** a question at all

The real questions are:
When & How?
Will it be a dignified extinction?

100%
within a century or so
IF we stay with the life-style since 1970s

Undignified: could have been avoided;
causing extinction of numerous other species

Can we push the rainstorm away?
No
Can we reduce damage?
Yes
Hazard + Vulnerability → Disaster
“Disaster Management”

Combatting climate change

Adaptation = Live with climate change
Mitigation = Reduce climate change

Disaster Management

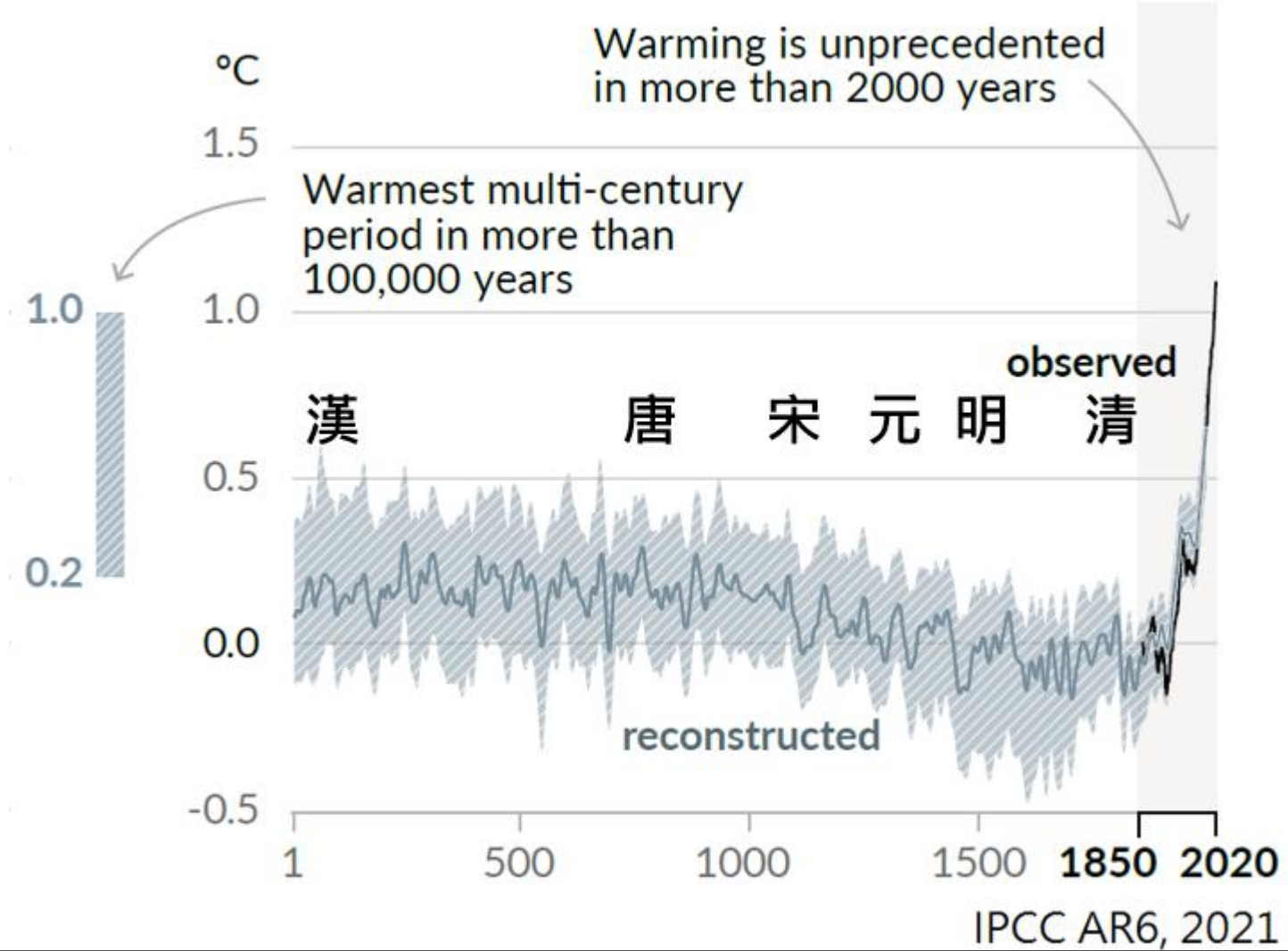
Reduce vulnerability
– we could adapt, but *only up to a limit*

Reduce hazard
– can we?

KNOW THY ENEMY!

Climate Change

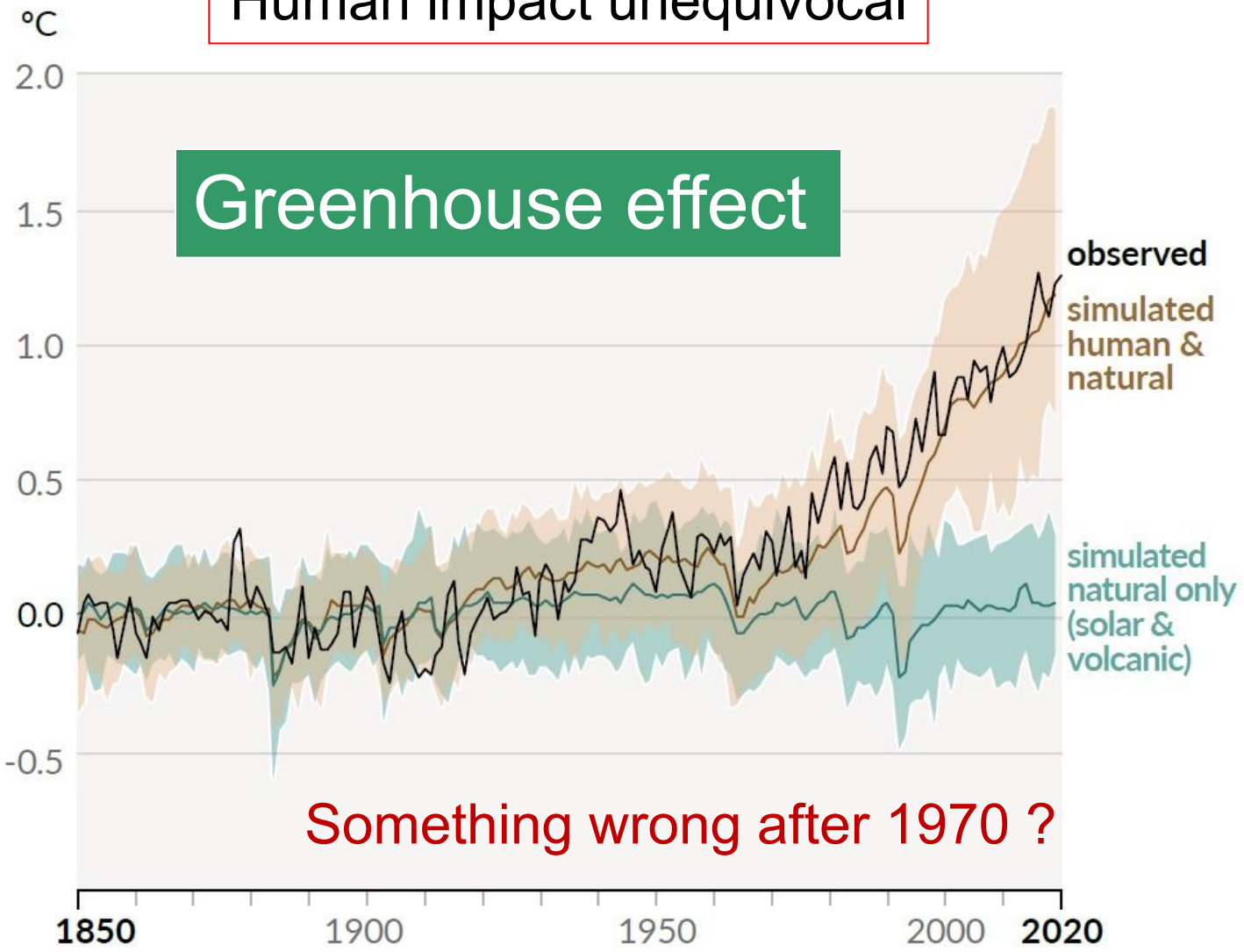
IPCC AR6, 9 August 2021
Warming unprecedented in 2000 years



Something wrong after 1850 ?

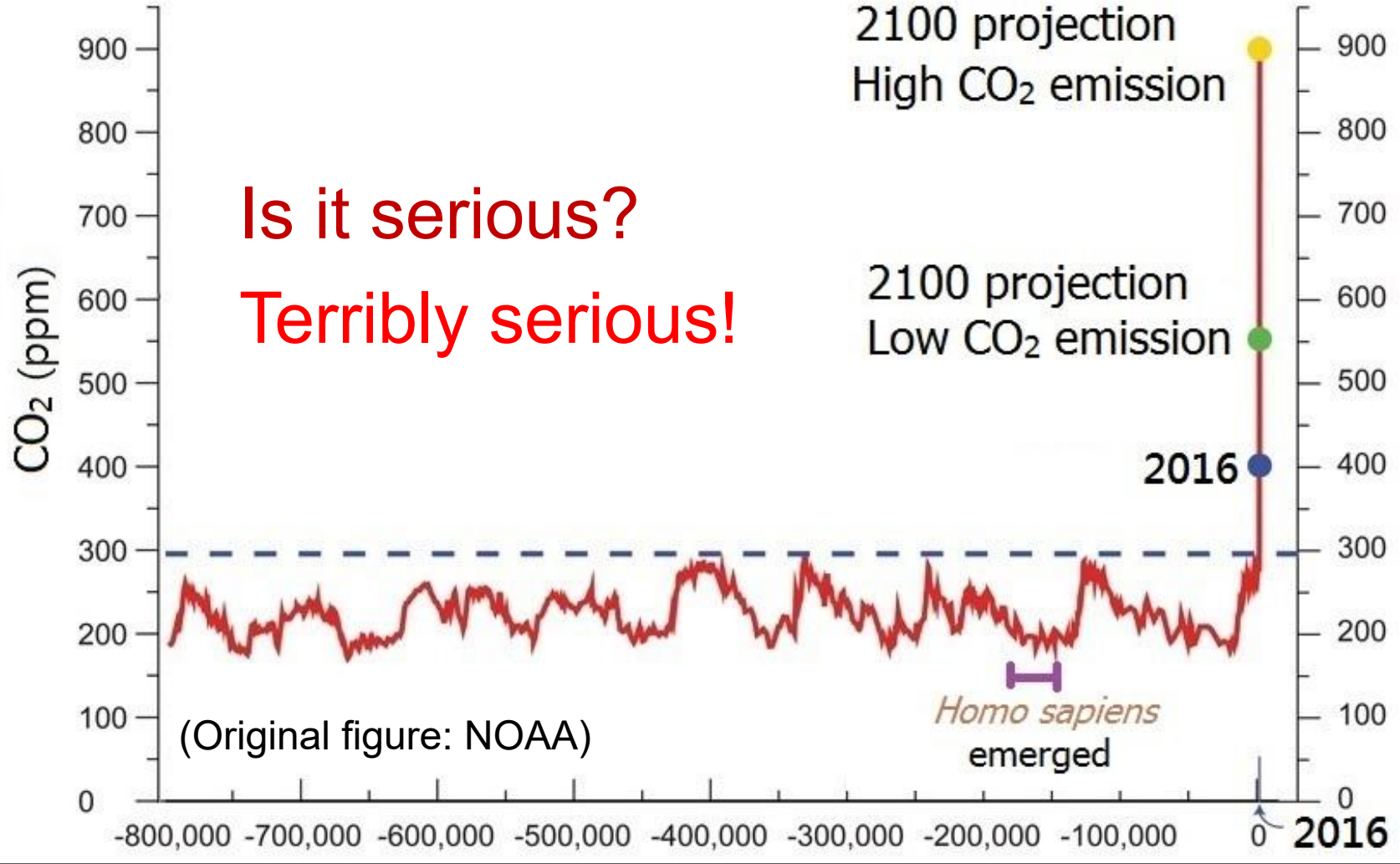
Human-induced Climate Change

IPCC AR6, 9 August 2021
Human impact unequivocal



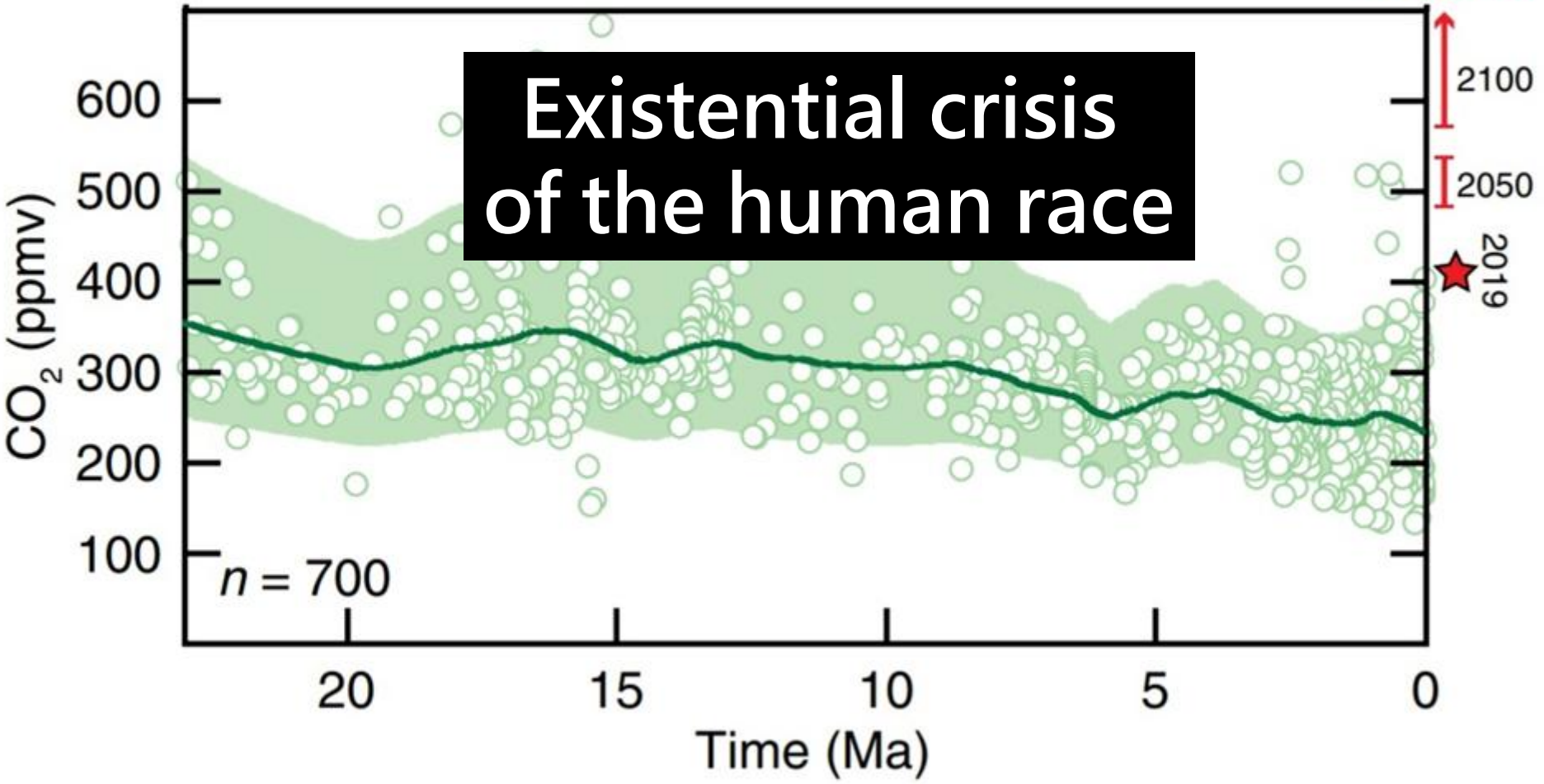
800,000-year perspective

Homo sapiens has never seen greenhouse gas level so high



20M-year perspective

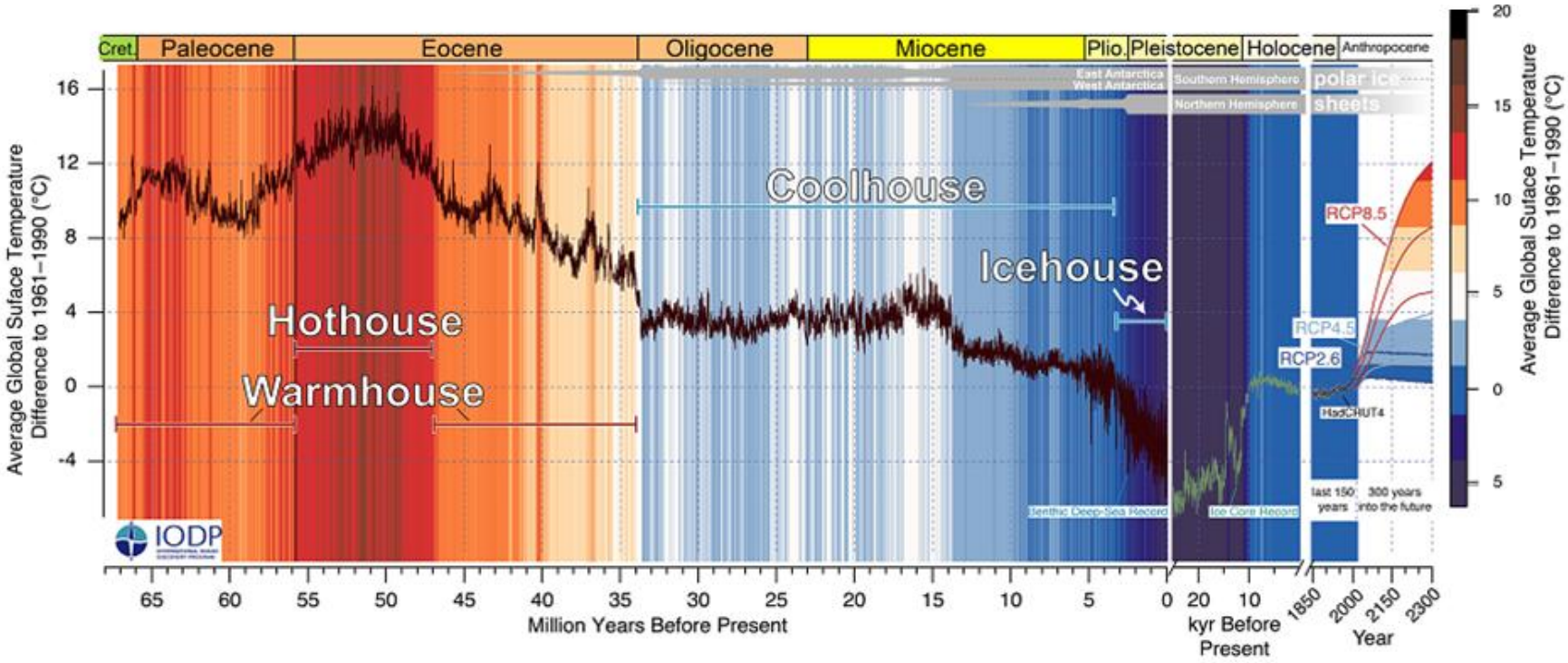
Is it serious? **Survival?** Deadly serious!



From: Cui et al. (2020): A 23 m.y. record of low atmosphere CO_2. *Geology*, June 2020.

65M-year perspective

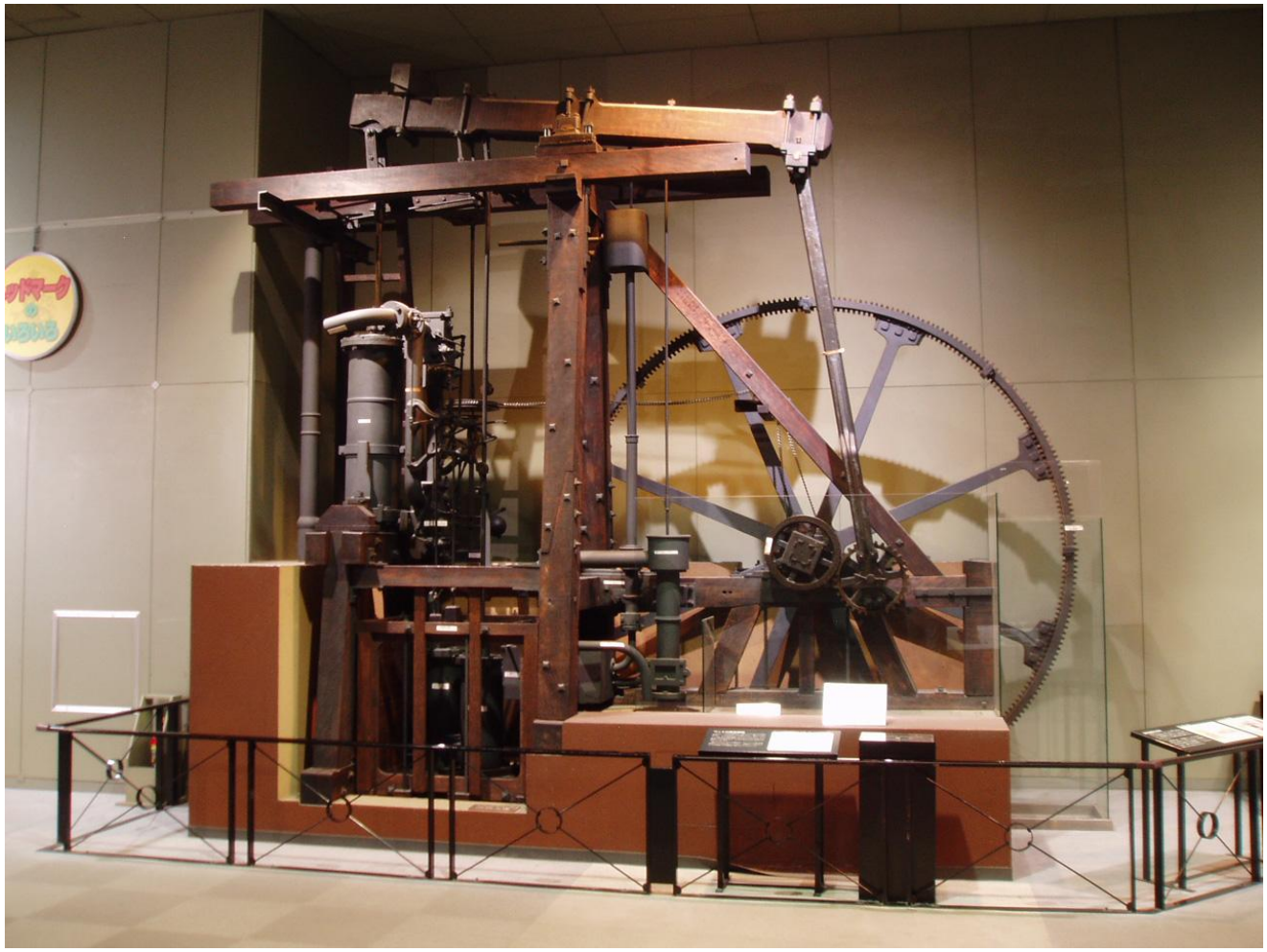
Many species have never seen temperature so high



Existential crisis of numerous species

Thomas Westhold et al. (2020). https://science.sciencemag.org/content/369/6509/1383

How have we arrived at this dire situation?



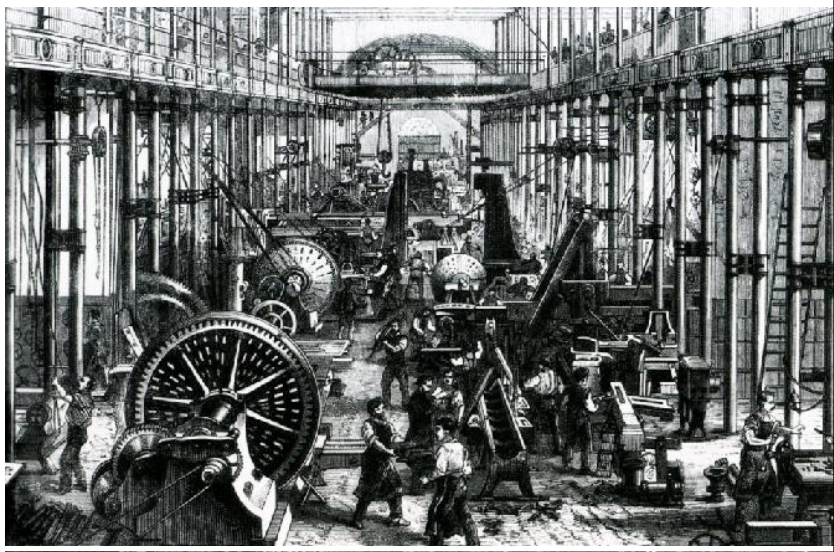
Watt's steam engine, 1769

Industrial Revolution

- **Technology**
  → mass production
  → “goods”
  → weaponry

- **Globalisation I**
  → maritime powers
  → trade

- **Urbanisation**
  → wealth in cities



Since 1970s

- **Globalisation II & consumerism**
  - surge in consumption, production & transport
  - buying for "want", not for "need"
- City: indoor climate control
- **Energy and material-driven economy**
- Fossil fuel

  → global warming
- Concurrent effects:
  - Pollution
  - Ecological damage
  - Fragmented society

Since 1970s

- Massive increase in material extraction

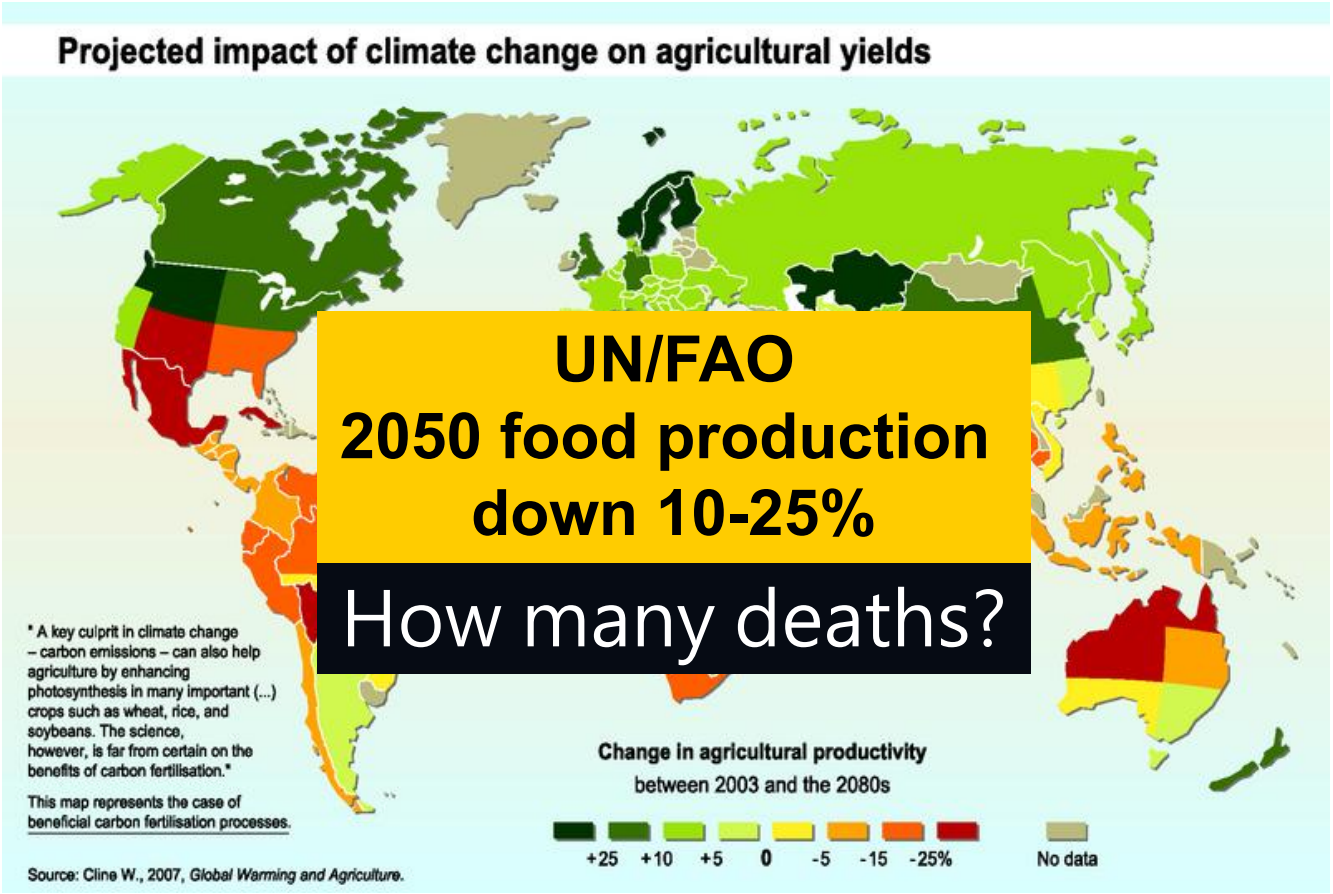
  from 22 Bt in 1970

  to 70 Bt in 2010

  acceleration since 2000
- Driven by growing consumption & accelerating trade
- Wealthiest countries – growing demand for material goods
- Global South – industrialisation & urbanisation
- Material efficiency declined since 2000 due to shift of global production to less developed / efficient countries

Heinz Schandl et al. (2018): Global Material Flows and Resource Productivity: Forty Years of Evidence. J Industrial Ecology Vol 22 Issue 4, pp 827-838

Climate change reducing food production
- hitting the poor countries

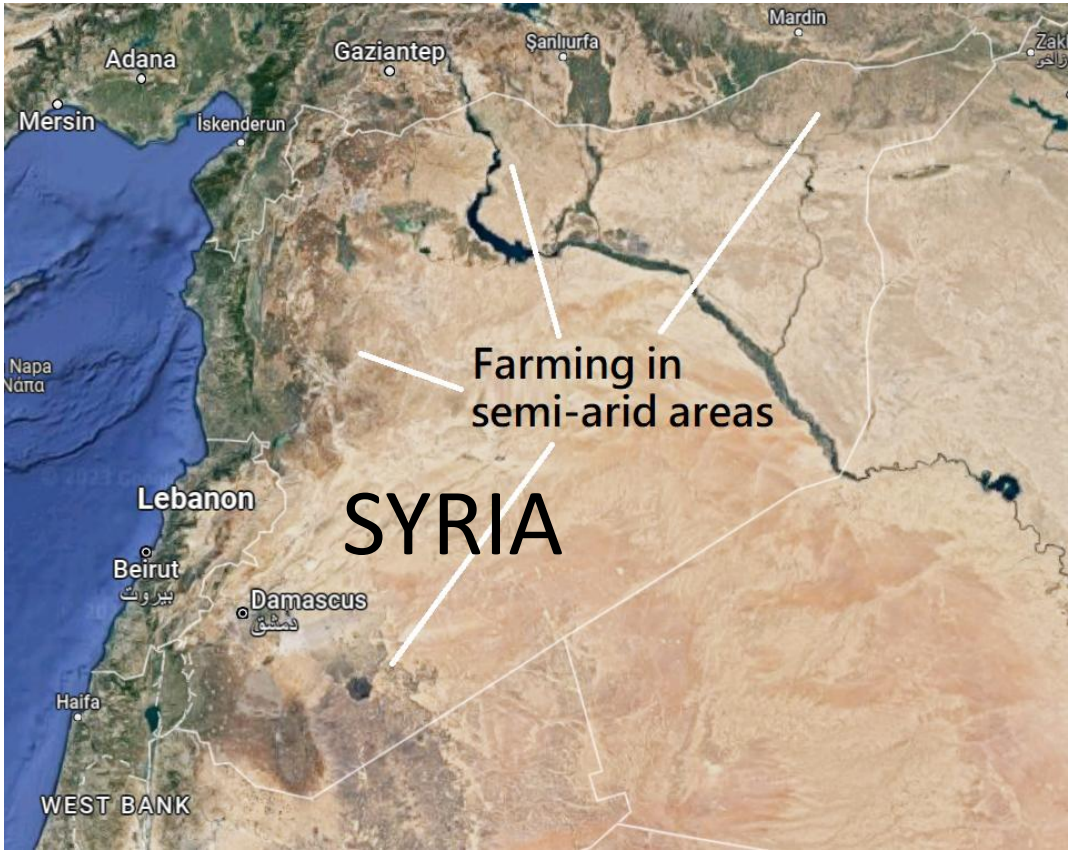


Famine & Malnutrition

Conflicts & Migration

Example: Syria

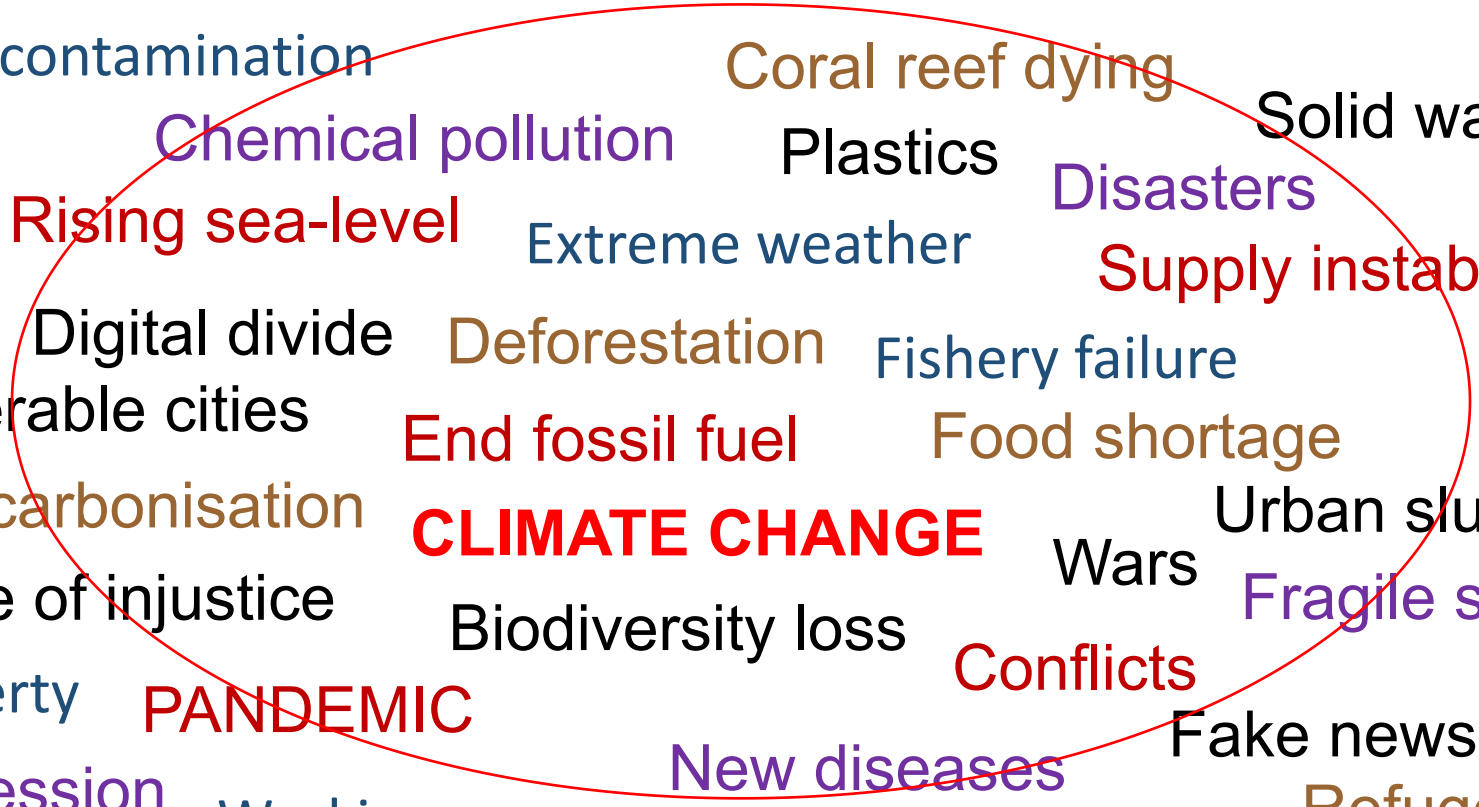
Climate change ➔ drought 2006-2011



Collapse of agriculture ➔ movement to cities

➔ social instability + trigger ➔ conflicts ➔ refugees

50 years from 1970, human society is a mess.



Food contamination
Coral reef dying
Solid wastes
Chemical pollution
Plastics
Disasters
Rising sea-level
Extreme weather
Supply instability
Digital divide
Deforestation
Fishery failure
Vulnerable cities
End fossil fuel
Food shortage
De-carbonisation
CLIMATE CHANGE
Urban slums
Wars
Sense of injustice
Fragile states
Biodiversity loss
Conflicts
Poverty
PANDEMIC
Fake news
New diseases
Depression
Refugees
Working poor
Trade wars
Rural decline
Split states
Mental illness
Financial crises
Frustration
Fight for new energy
Changing values
Low birth rate
LOW INSPIRATION YOUTH

“Climate Endgame”

Scientists, not environmentalists, raised the question:

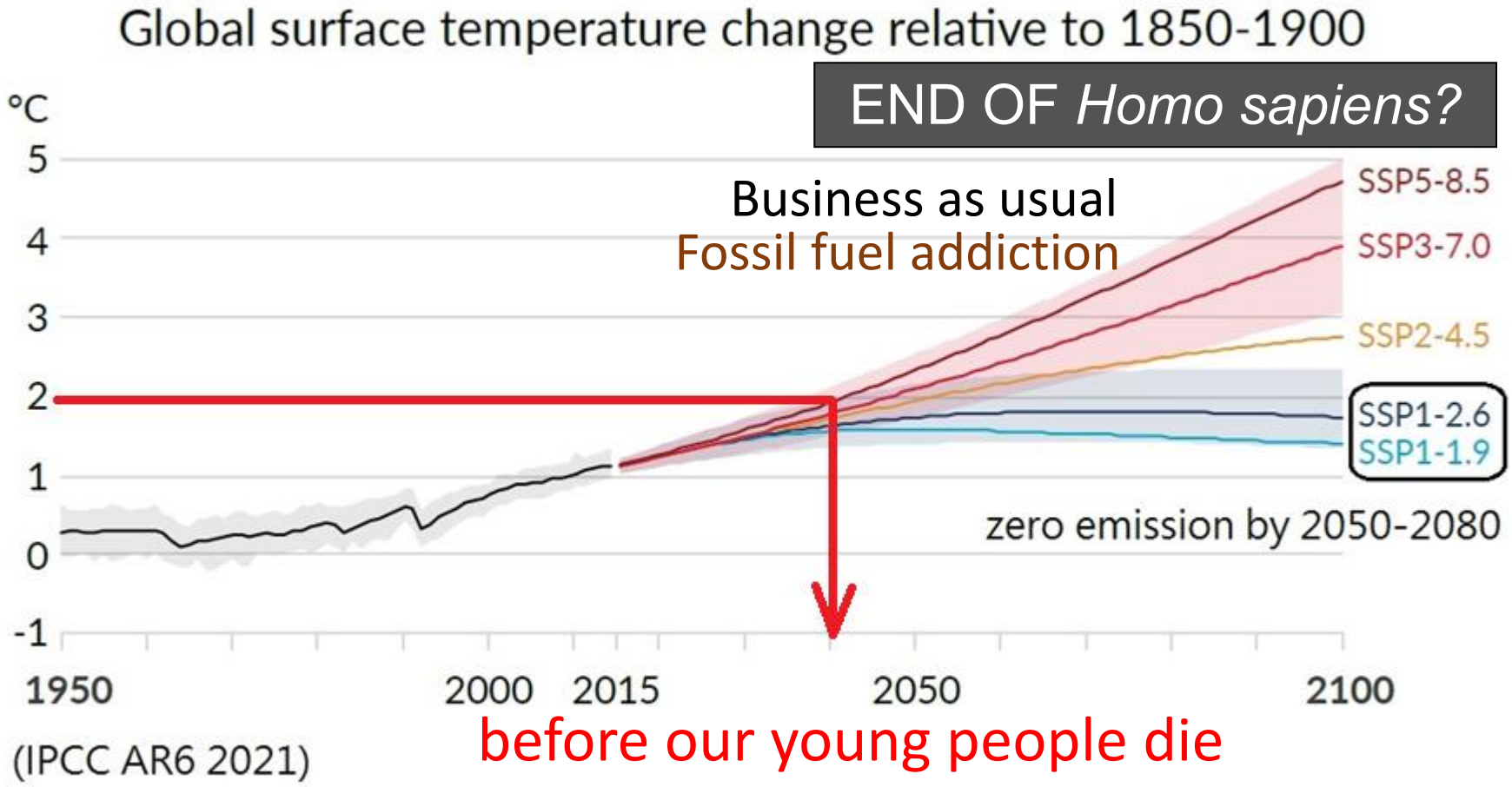
“Could anthropogenic climate change result in worldwide societal collapse or even eventual human extinction?”

“climate-triggered risk cascades, such as from conflict, political instability, and systemic financial risk”

Luke Kemp, et al.: Climate Endgame: Exploring catastrophic climate change scenarios. PNAS, 1 Aug 2022
https://www.pnas.org/doi/10.1073/pnas.2108146119

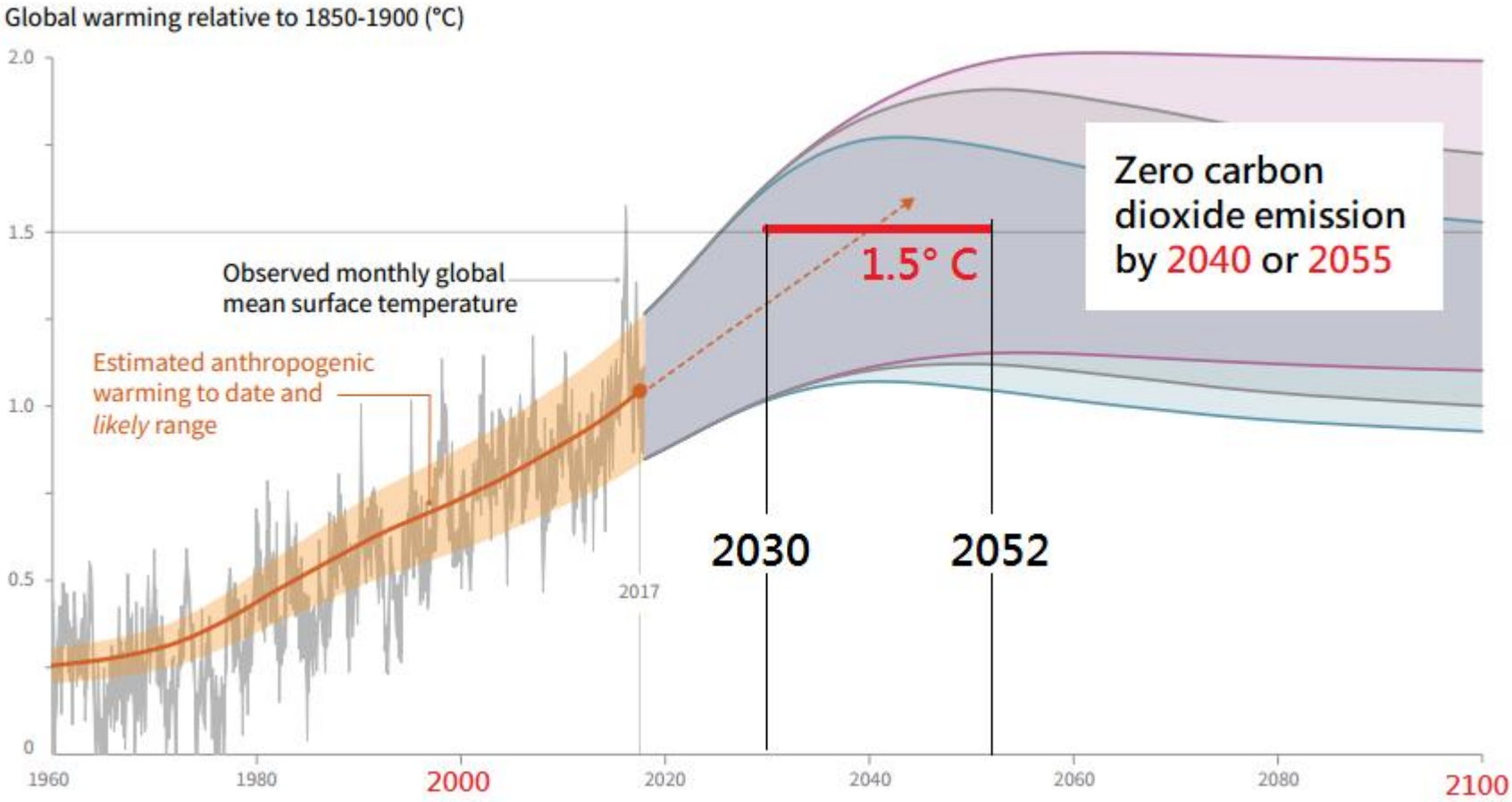
Temperature projections

Paris Agreement: strives to limit temp rise by 2100 to less than 2˚C above pre-industrial revolution level and pursues efforts to limit it to 1.5˚C

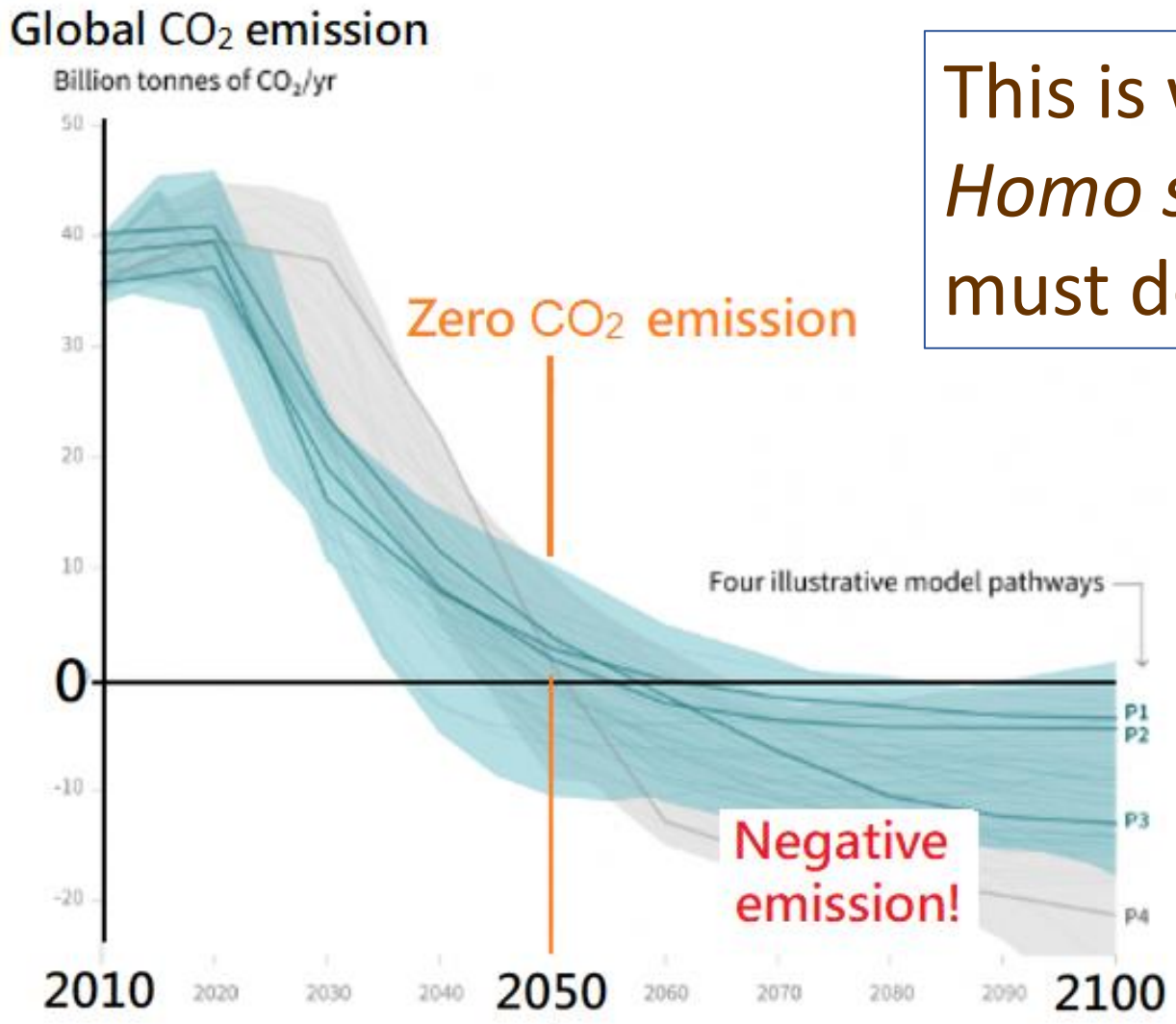


How to push climate hazard away?

Limit temp rise to less than 1.5 degrees above pre-industrial revolution level



Target: 1.5 degrees and no “overshoot”



This is what *Homo sapiens* must do.

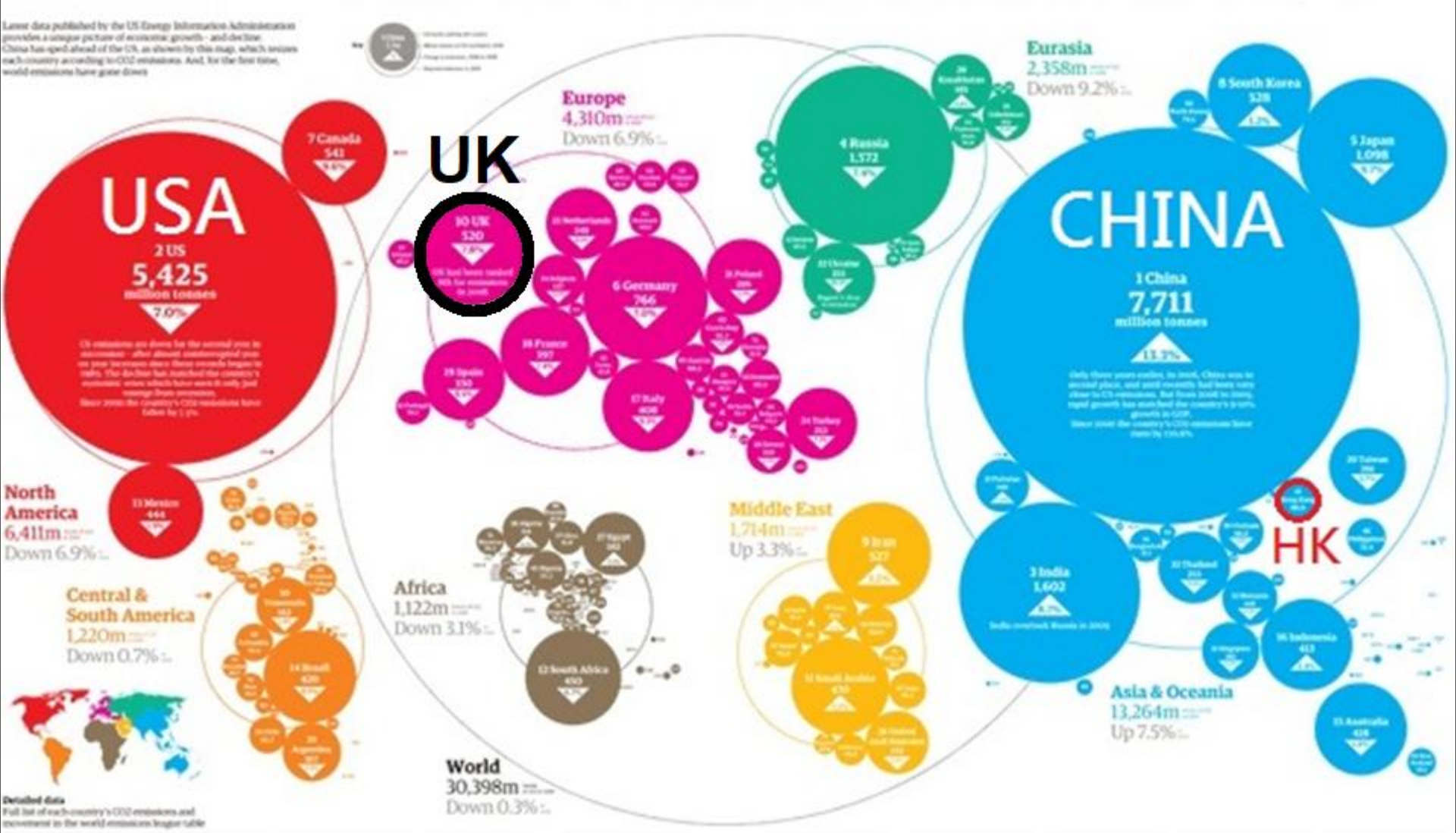
Source: IPCC

Common excuse for no action

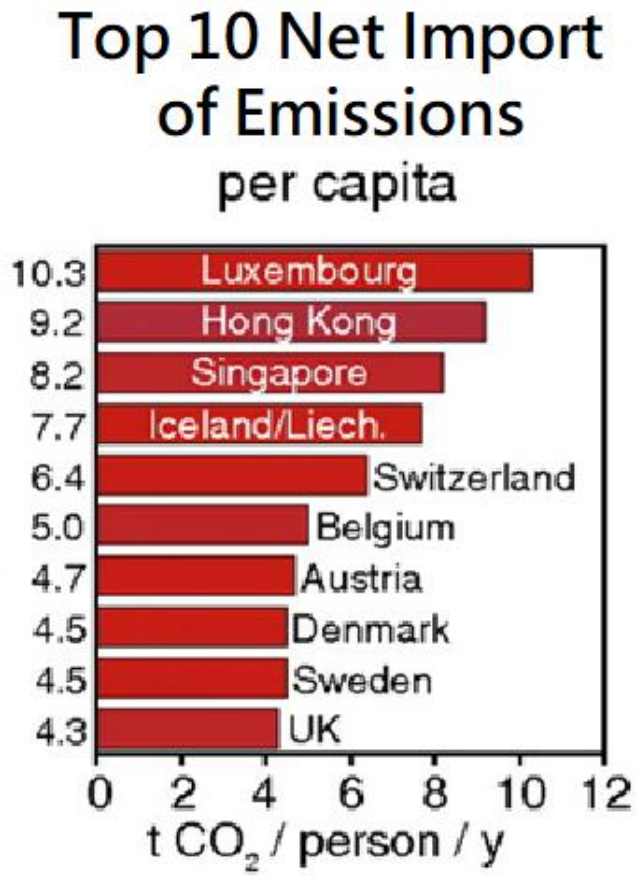
I alone cannot change the world.

Global perspective of UK & HK's **local** emission

Bigger than many countries = duty to contribute



Carbon dioxide emission
embedded in imported goods



(2004 data)

Imported emission per capita

HK World #2

UK World #10

Great individual responsibility to reduce consumption!

To avert climate catastrophe

De-carbonization

DROP fossil fuel

END consumerism-based economy

NEW ECONOMY

that values

People

Prosperity for all

Quality of life

and decouples

economy from energy and material

Climate Summit 2022

Sharm el-Sheikh, Egypt

- Slipping forward towards human extinction
  - Climate urgency hidden
  - No reference to phasing out fossil fuel
  - Back door for “natural gas”
  - No pressure on countries to reduce emission
- “Loss and damage fund” - smoke screen
  - No reference to “reparation”
  - No funding commitment nor rules

Climate Summit 2023, Dubai, UAE
Not hopeful at all

Global Inaction

- Blocked by prevailing values:
  - Materialism
  - Consumerism
  - Capitalism
  - Libertarianism
- North-South politics
- Vested interests (e.g. oil companies)
- Complacency
- Inability to imagine “distant” future

What can individuals do?

- Low-carbon LIFE-STYLE
  - Respect Nature
  - Thrifty
  - Minimum energy
- Be a VIRUS promoting
  - Prosperity for all
  - Quality of life (de-coupled with material)
- Support a new ECONOMY
  - that values experiences & services (instead of goods)
  - that values human labour

What can individuals do?

- Advocate a new ECONOMY that
  - is NOT energy-intensive
  - is NOT material-intensive
  - values human labour
- Advocate government policies that favour
  - Low carbon economy
  - Zero-carbon buildings
  - Zero-carbon transport

More or less doomed. Live in dignity.
What do we need in life?