

Hot Air Rising

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UTSpeaks

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How to avoid dangerous climate
change?

Stop Emissions of Greenhouse Gases!

And stop clearing forests which remove
Carbon Dioxide from the atmosphere!

We'd all vote to stop climate change immediately, if we only believed that doing so would be so cheap that no country or bloc of countries could effectively object. But we do not so believe. Thus we're forced to start trading away lives and species in order to advocate a 'reasonable' definition of 'dangerous' ... (Baer & Athanasiou 2004)

- Be careful of the “cost argument” – building wind farms, installing solar panels etc – it is a cost – but also an economic activity – which creates jobs – so beware “economic cost of rapid emission reductions is too high” – too many jobs?

Outline of Presentation

Vision - what would be best outcome for avoiding dangerous climate change

Challenges - what are the challenges to be overcome to achieve the Vision

Strategies – what strategies could overcome the Challenges

Vision – a zero greenhouse gas emissions global economy by 2050

Where all of humanity basic needs for food and shelter are met – and quality of life and gross global happiness continues to improve

Avoiding Dangerous Climate Change

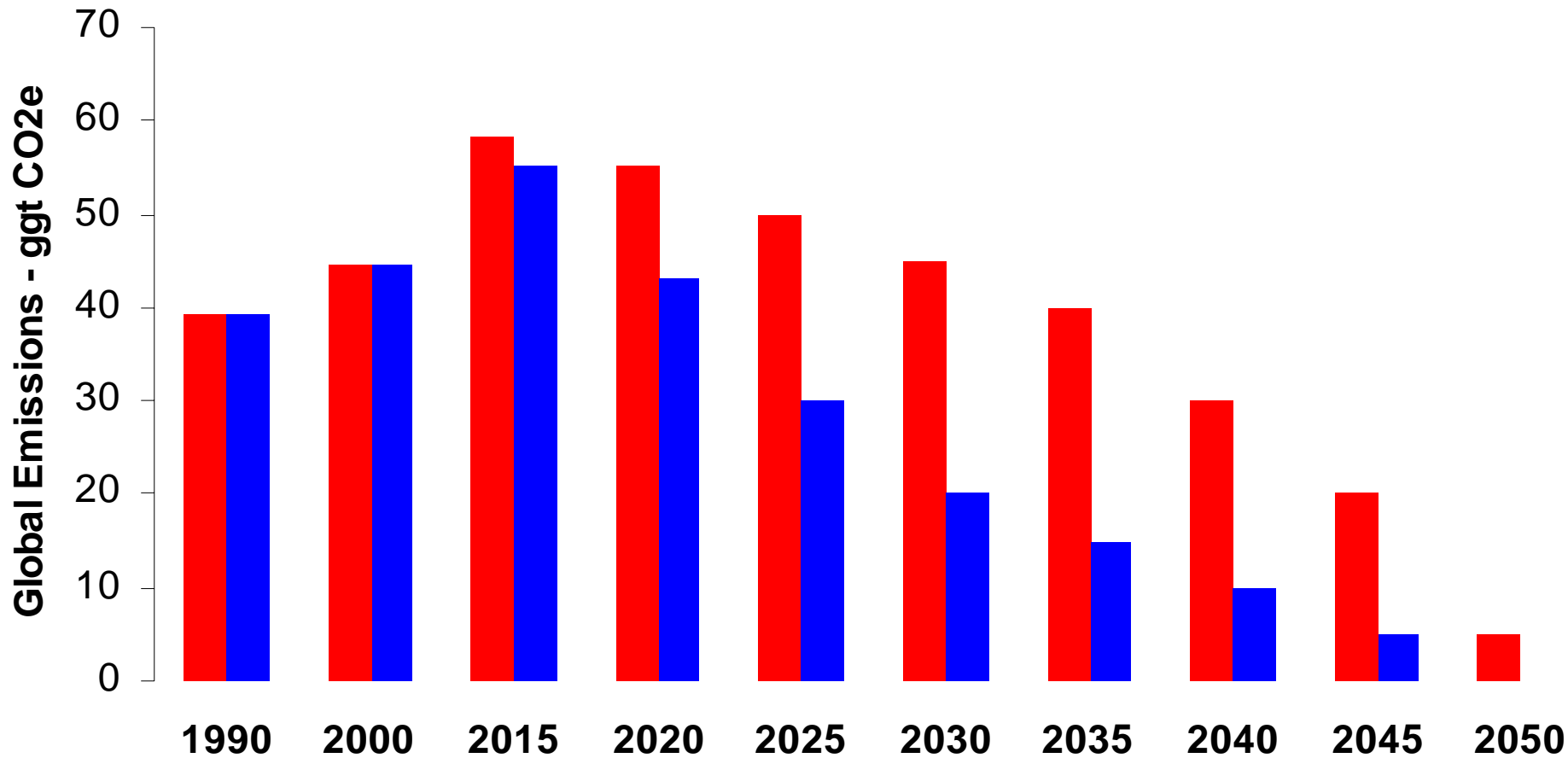
- Need to start reducing emissions very soon!
 - 2015 at the very latest – according to latest IPCC Report – sooner is better – less risky!
- Also requires substantial early reductions in emissions - we need to get back below 2000 emission levels by 2020
- Emissions growth globally currently = 2% pa (sooner we bring that to zero the better!)

2007 – NASA's James Hansen's warning

- If we go another 10 years, by 2015, at the current rate of growth of CO₂ emissions, which is about 2 per cent per year, the emissions in 2015 will be 35% higher than 2000 levels and this would take emissions scenarios to avoid dangerous climate change beyond reach (Connor, 2007)

Remember we need for 2020 emissions to be below 2000 levels – so would then require 35% reduction in 5 years!

Also need emissions to fall rapidly –
blue column to minimise danger!



The Challenges!

IPCC 2007 Synthesis Report's Bad News!

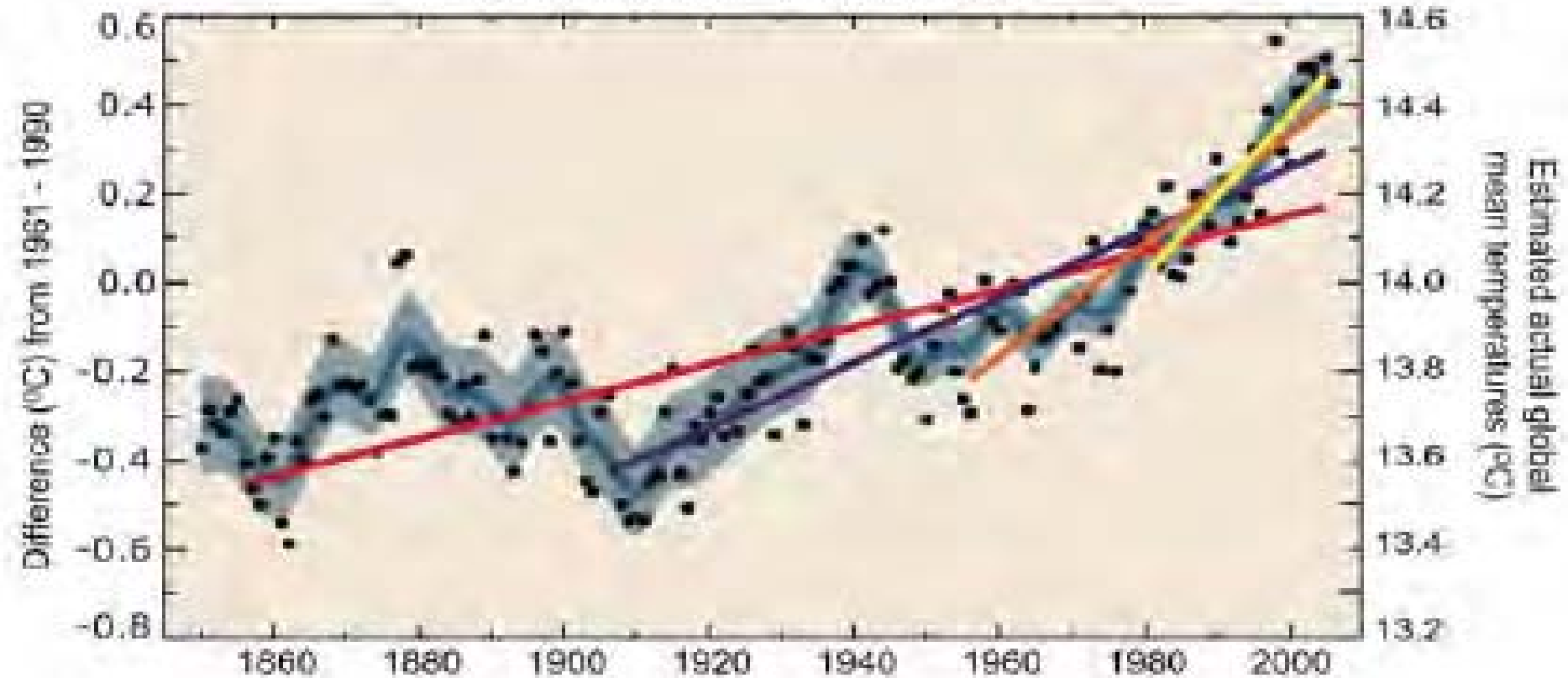
- Eleven of the past 12 years rank among the warmest on record
- Concentrations of greenhouse gases in the atmosphere are highest in 650,000 years
- Carbon dioxide emissions, largely from fossil fuel, grew 80 per cent between 1970 and 2004
- Global warming could lead to impacts that are "abrupt and irreversible" including rapid sea-level rise

But, the situation is almost certainly worse!

Rate of warming is increasing

FIGURE 1 – TRENDS IN GLOBAL TEMPERATURES.

Global Mean Temperature



Climate Institute –
Evidence of Accelerated Climate Change –
November 2007

Period	Rate
Years	°C per decade
25	0.177±0.052
50	0.128±0.026
100	0.074±0.018
150	0.045±0.012

The Weather in 2050

Darwin ☁️🌀
Dangerous monsoons 44°

Broome ☀️
Bloody hot 51°

Cairns ☁️🌧️
Storm surges and
major floods 38°

Brisbane 🌀☁️
Cyclones 39°

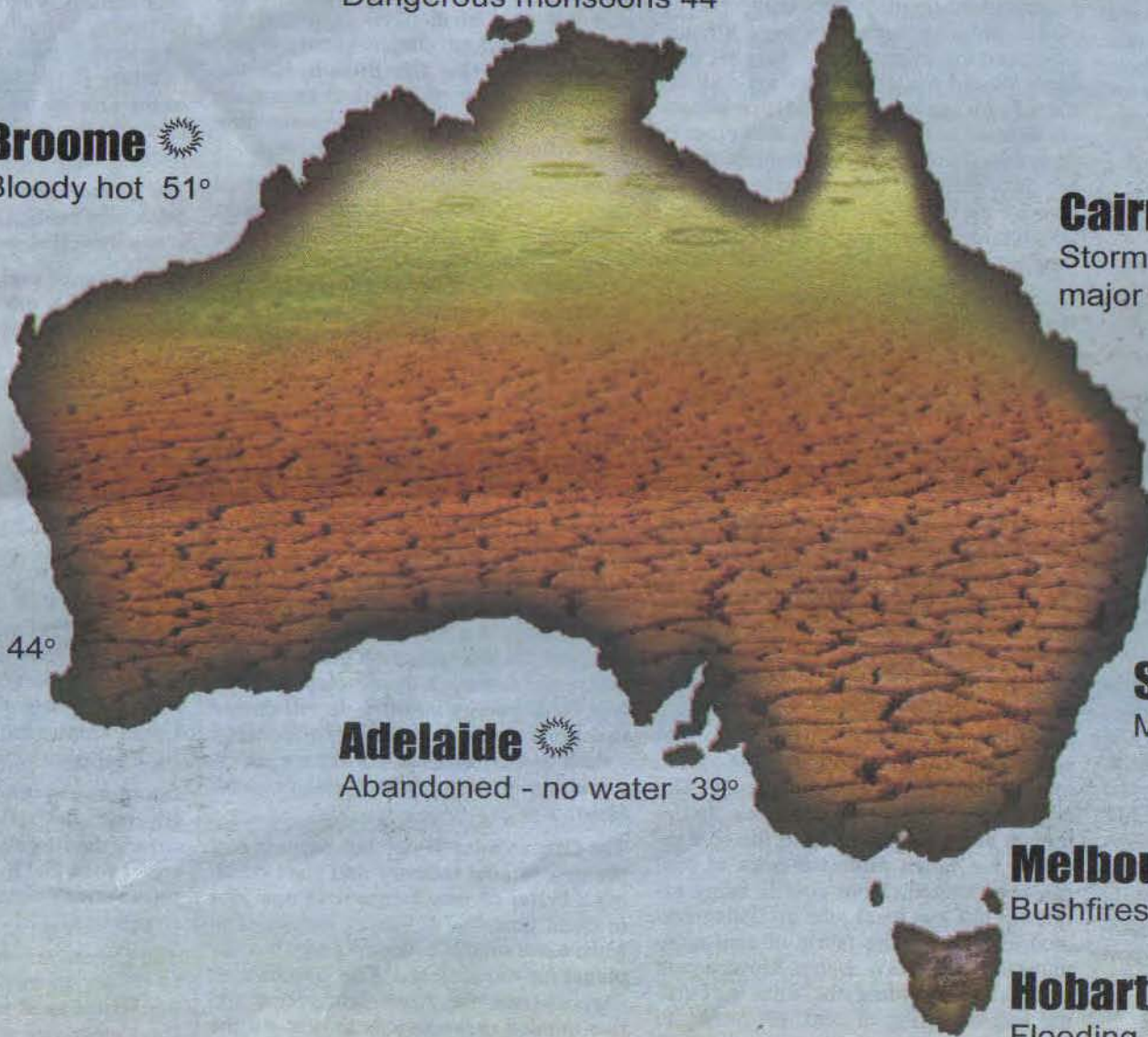
Perth ☀️
Scorching hot 44°

Sydney ☀️
Major sea level rises 43°

Adelaide ☀️
Abandoned - no water 39°

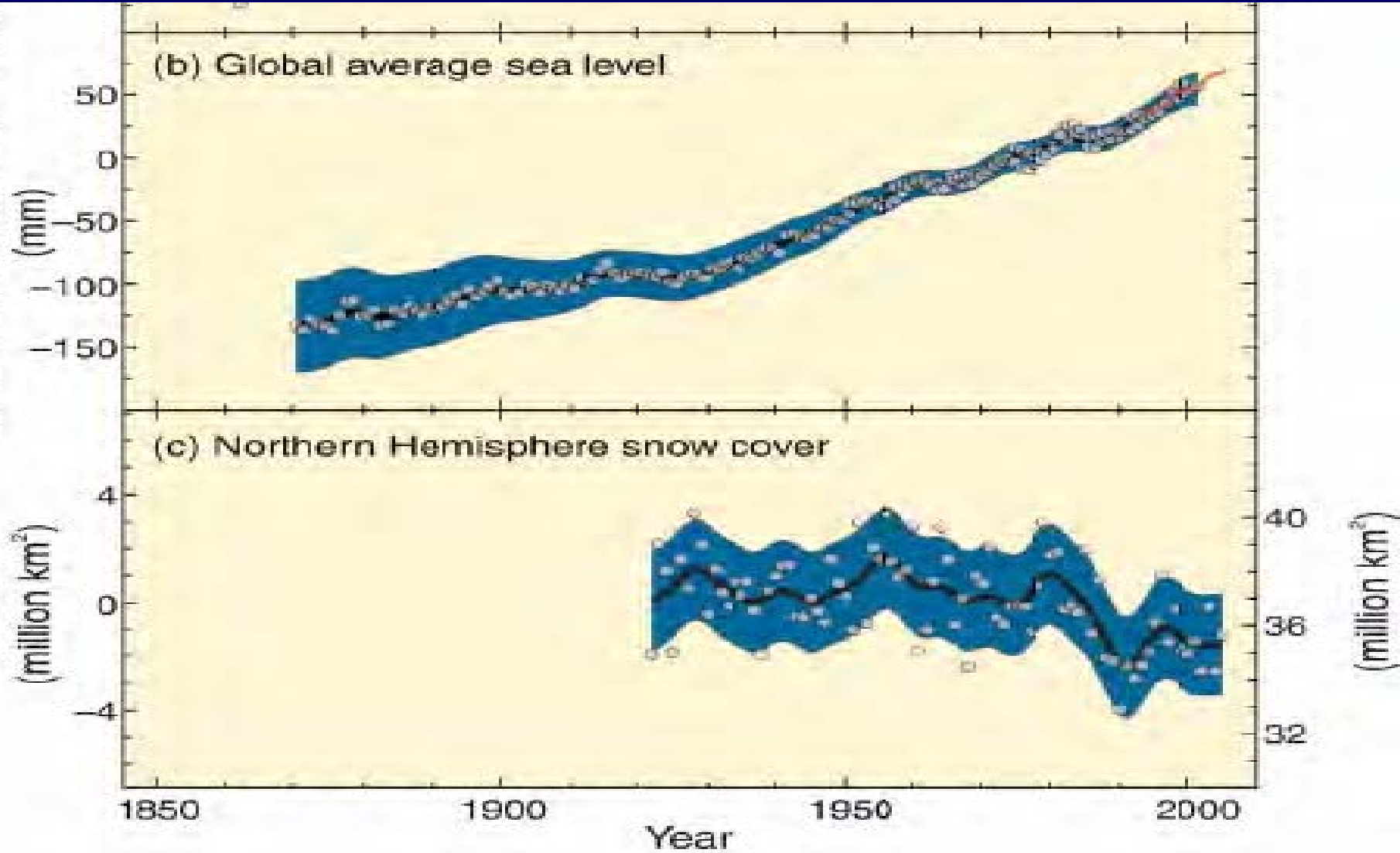
Melbourne ☀️
Bushfires threaten city 42°

Hobart ☁️🌧️
Flooding - goodbye snow 34°



Sea level rising – snow cover reducing

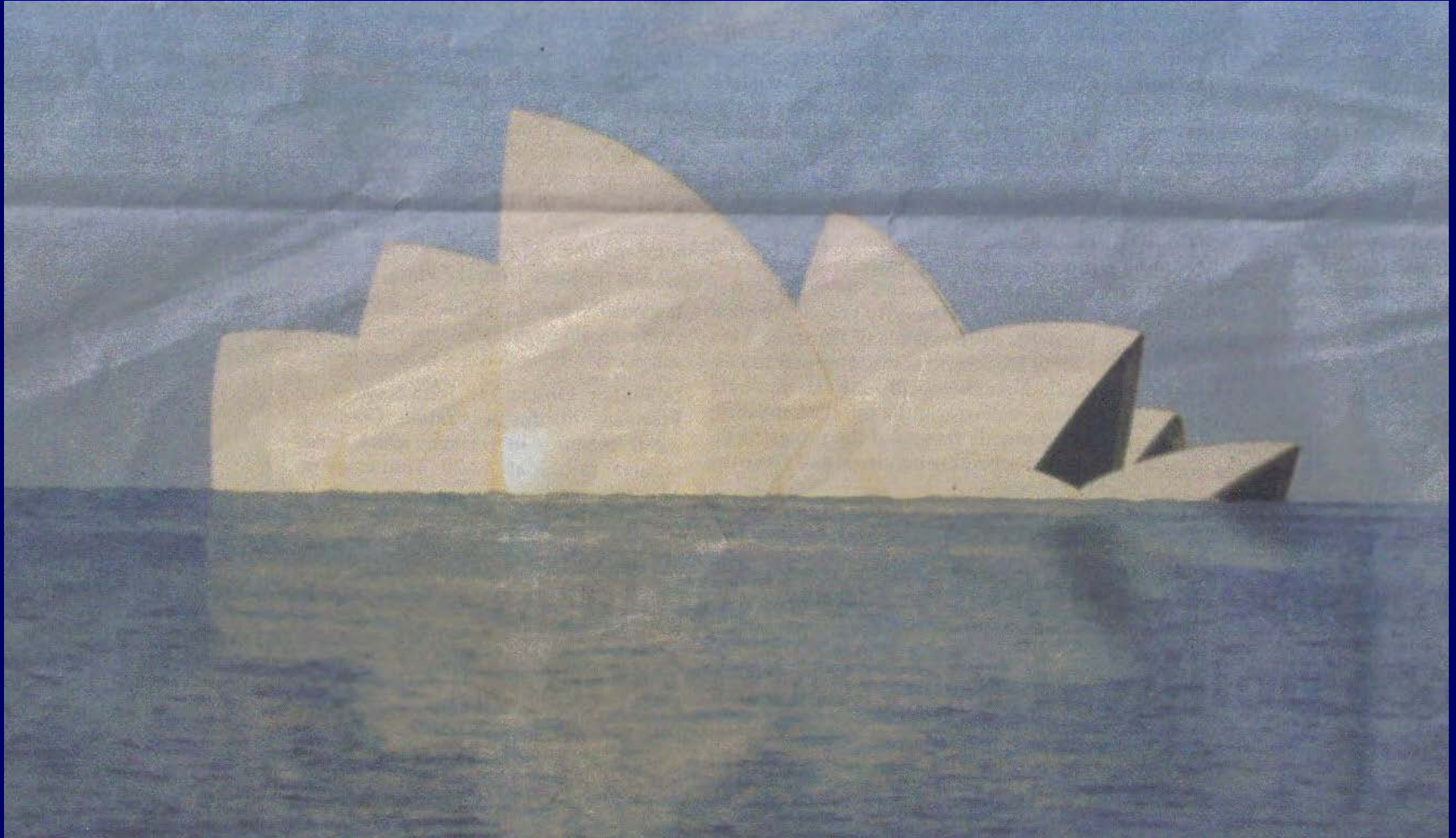
Difference from 1961–1990



Some sea level rise has already taken place



But without huge emission reductions – more will occur!



More dangerous than the IPCC 2007 Reports

IPCC Reports – based on scientific and other peer reviewed research up until end of 2006
– since then:

- Growth rate of emissions since 2000 above IPCC projections (Raupach 2007)
- Arctic sea-ice disintegrating “100 years ahead of schedule” (Spratt 2007)

What is dangerous climate change?

“Dangerous” has become something of a cliché when discussing climate change”

(Schneider and Lane, 2006)

Precautionary Principle agreed in 1992
UNFCCC – scientific uncertainties will not delay action to prevent dangerous climate change – has not been implemented



6° 95% OF LIFE ON EARTH WIPED OUT

5° 70M SEA LEVEL RISE, WORLD FOOD SUPPLY CRISIS

4° AUSTRALIAN AGRICULTURE COLLAPSES

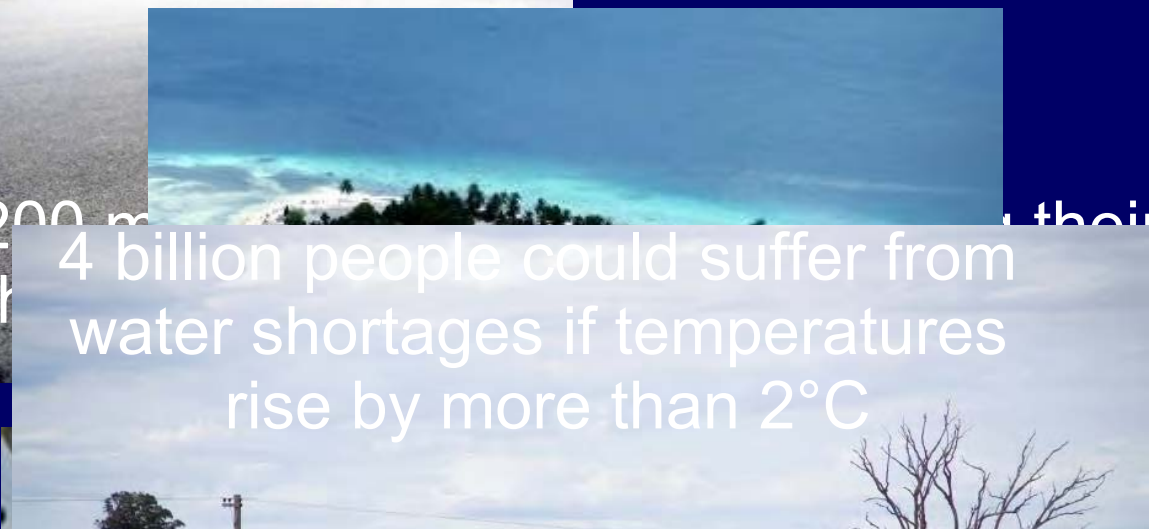
3° DEATH OF THE AMAZON, GREENLAND MELTED

2° TIPPING POINT GLOBAL WARMING ACCELERATES UNCONTROLLABLY

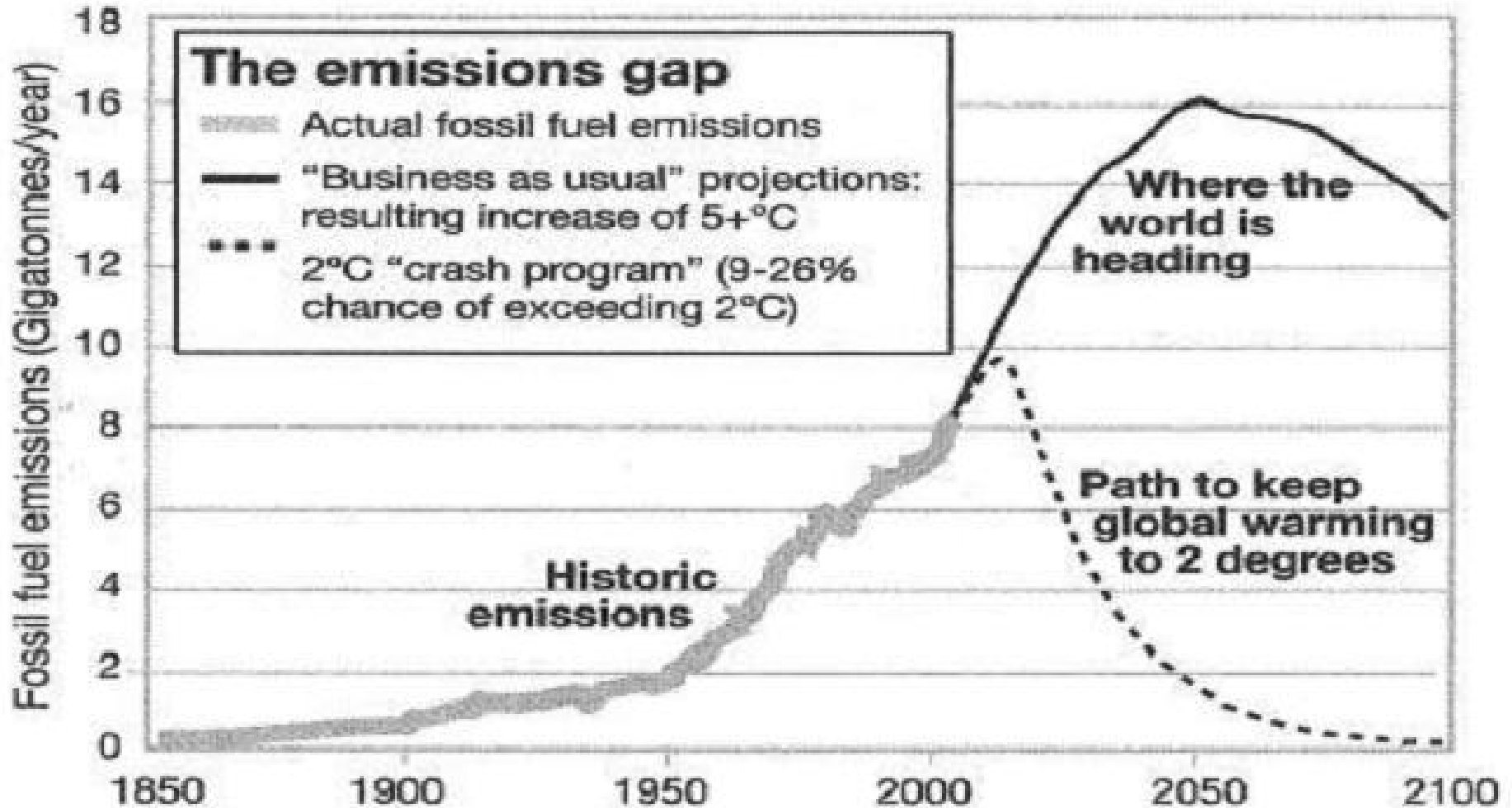
1° DROUGHT AND BUSHFIRE INCREASE

200 m

4 billion people could suffer from water shortages if temperatures rise by more than 2°C



For fossil fuels - the challenge looks like this!



1 tonne of carbon burned = 3.65 tonnes of CO₂

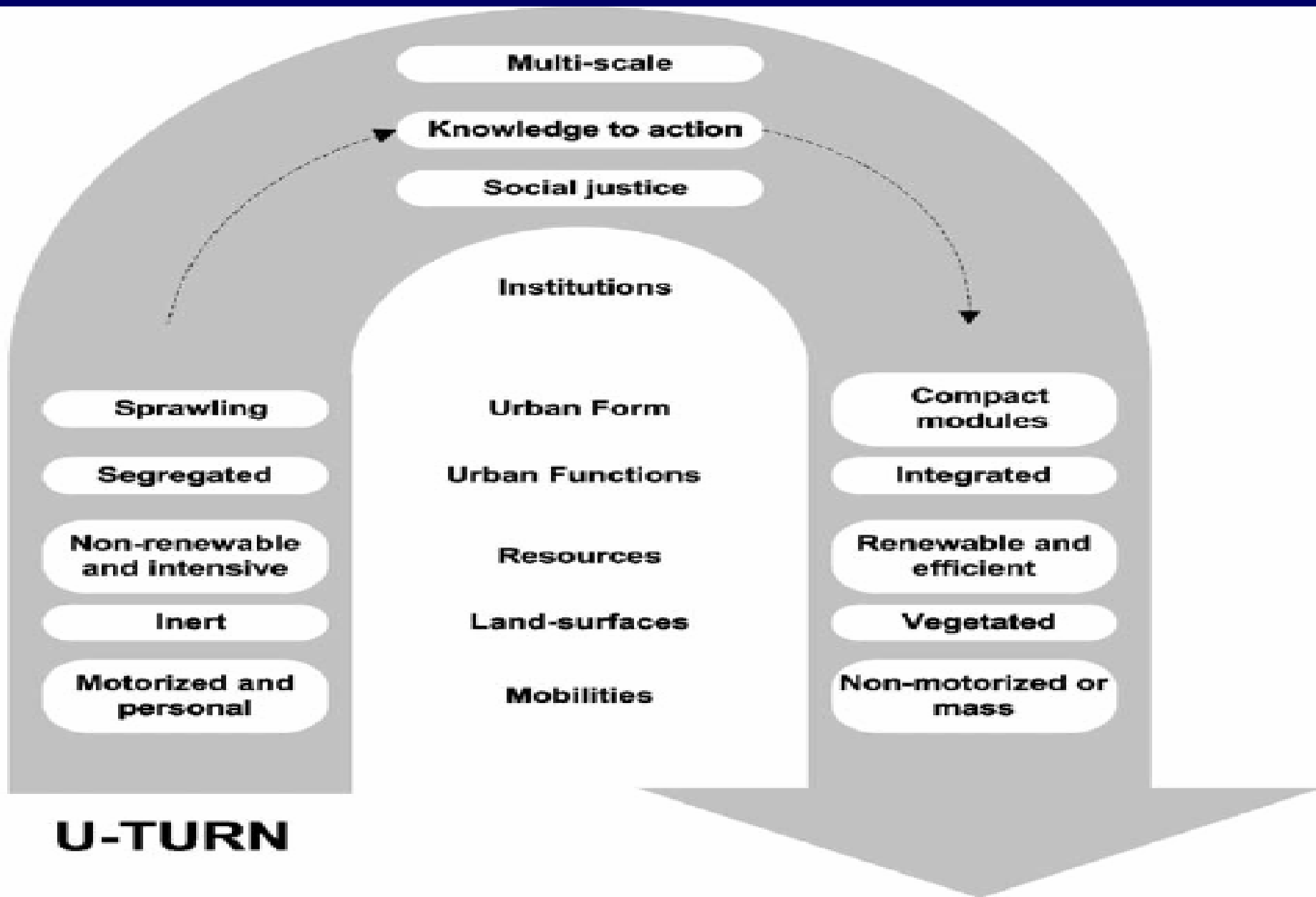
Adapted from: (Carbon Equity Project, 2007)

Problem is Systemic!

- **Too much “faith” in markets** – “climate change greatest market failure ever” – Stern
- **Economic Growth** – market driven priorities – rather than Ecologically driven priorities – need Ecologically Sustainable Development – not more Plasma TVs – need more wind farms and solar panels – not coal mines!
- **Cooperation not competition needed to solve the problem** – Stronger coordinated climate policy actions by all governments across the globe

Strategies to Overcome the Challenges

A Global U-Turn is needed!



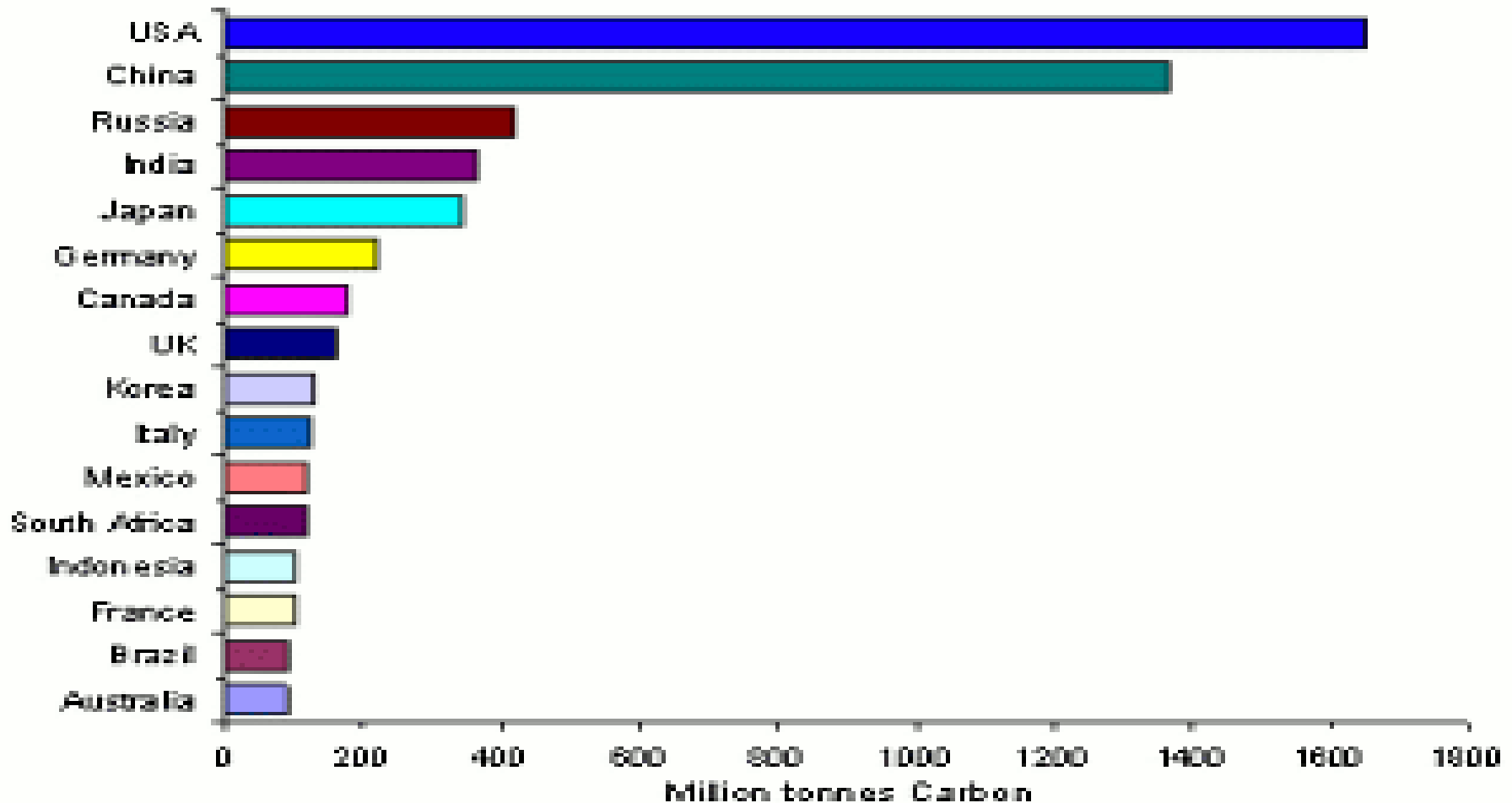
What else is needed to fix the problem?

- **Post-2012 International Agreement that starts to cut global emissions immediately and substantially**
- **Kyoto Protocol covers 2008-12 and time needed to design and ratify an effective international agreement**

How can this be achieved?

US & China are critical

Fossil Fuel Carbon Emissions in 2004



• Source: Worldwatch Institute

Both still favouring Economic Growth over Precaution

Per Capita Emissions Important

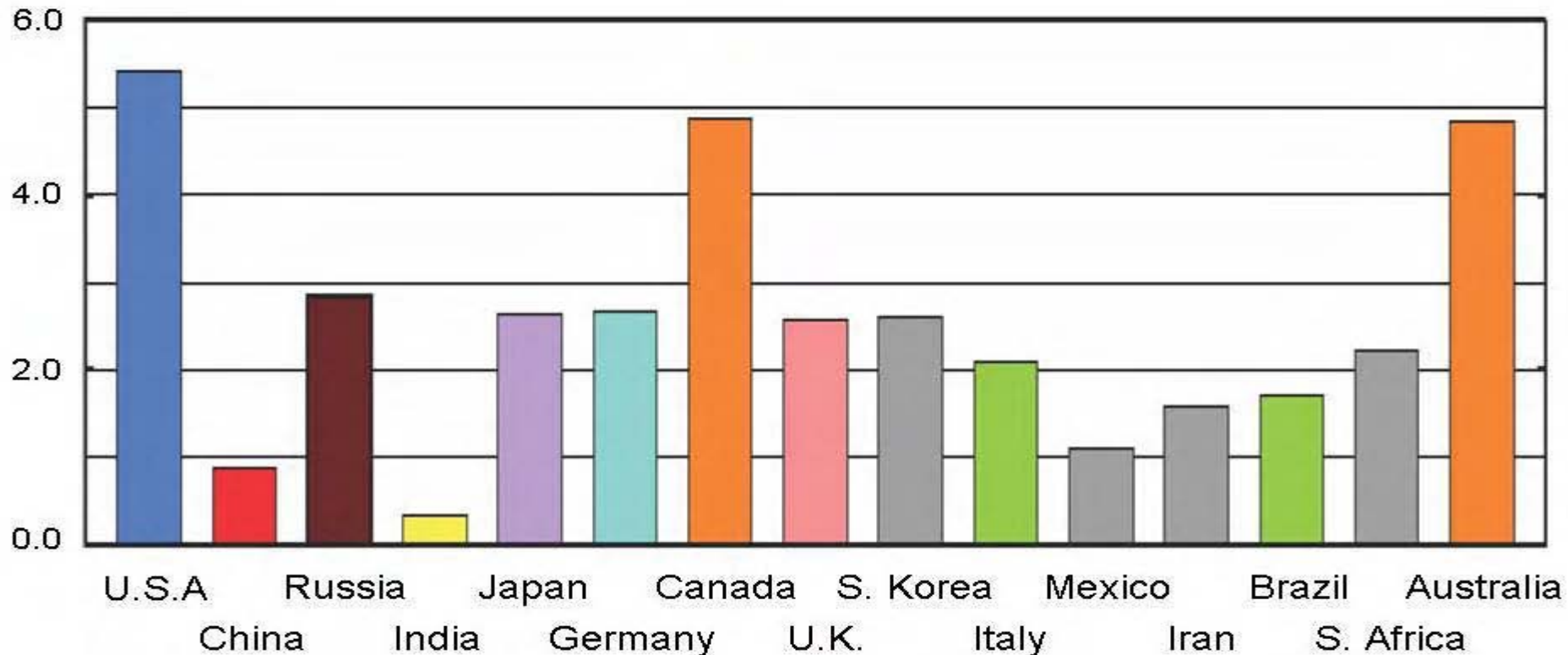


Figure 3. Year 2003 Per Capita Fossil Fuel CO₂ emissions (10³ kg/year/person)
(Image created by James Hansen using data from Marland, Boden, and Andres)

US, Canada and Australia – the world's worst emitters

Historically US Emissions - huge

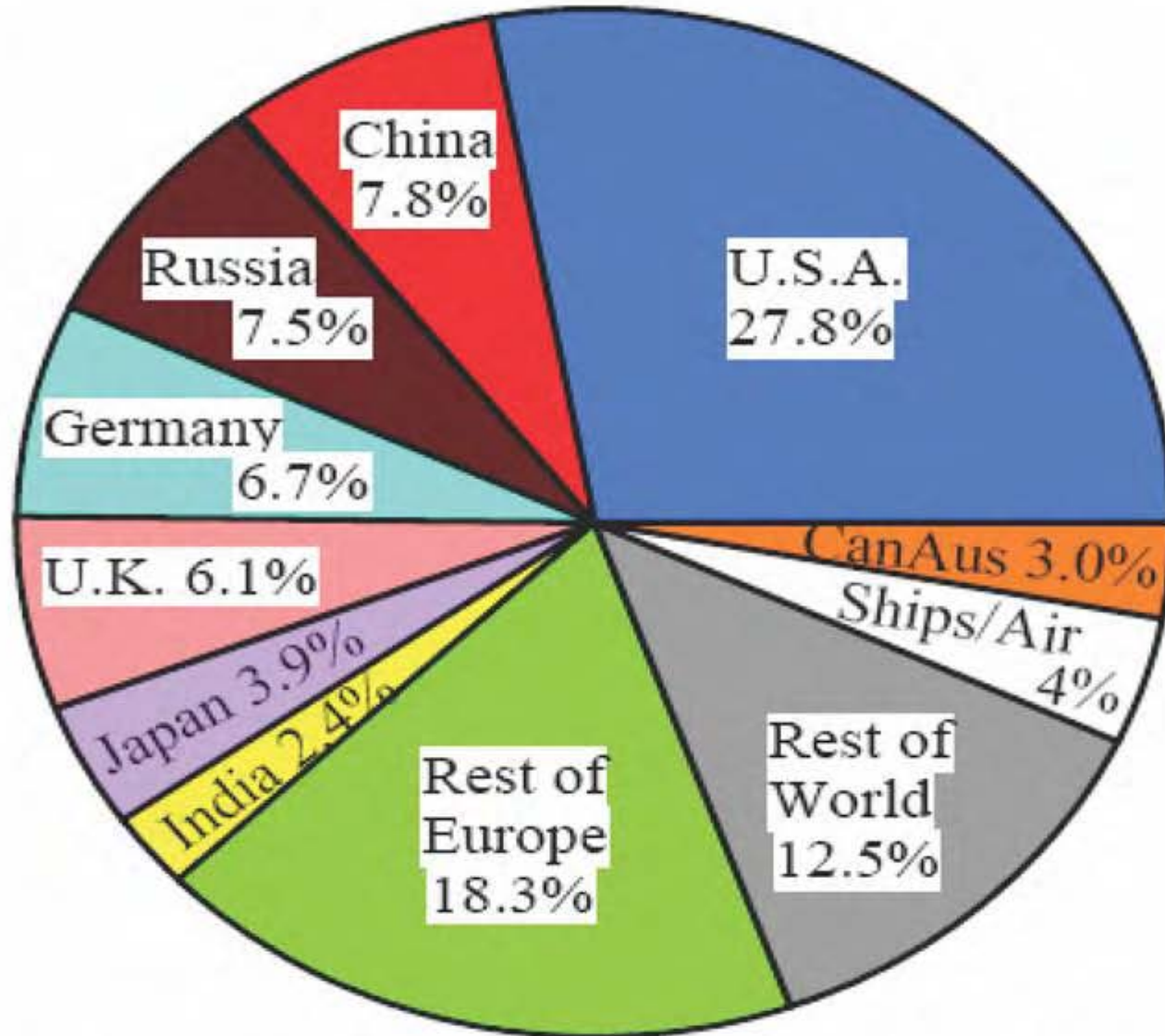


Figure 2. CO₂ emissions from 1750-2005 (Image created by James Hansen)

What does the International Agreement need to achieve?

A climate protection framework designed to support an emergency climate stabilization program while, at the same time, preserving the right of all people to reach a dignified level of sustainable human development free of the privations of poverty

(Baer P, Athanasiou, T & Kartha, S 2007)

Climate Stabilization – below 2°C requires:

2012 – Stabilise emissions – by then globally around 8 tonnes per capita

2015 – Rapid reductions in emission levels

2025 – Global emissions 25% below 2000 levels

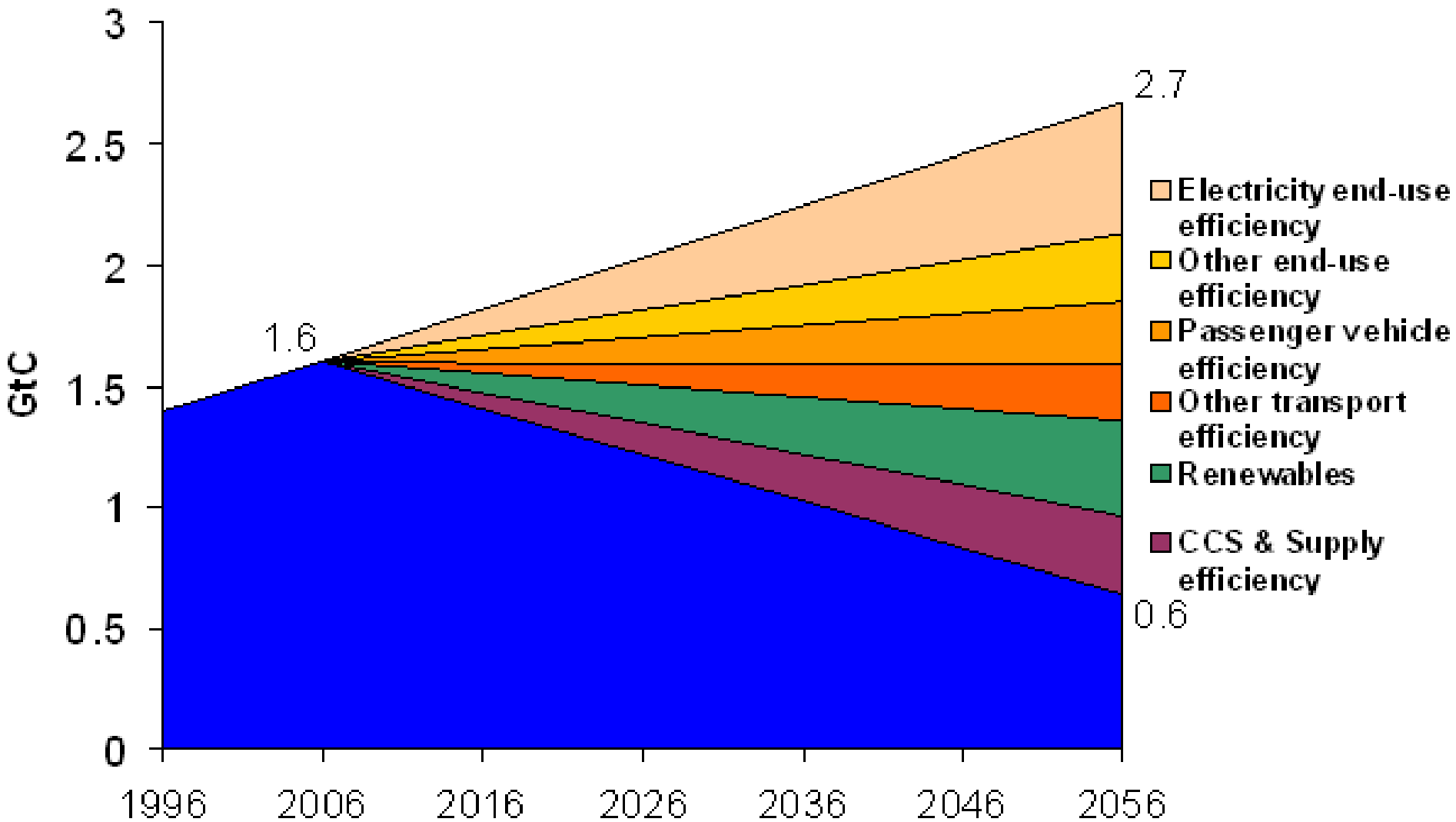
2050 – Global emissions at least 90% below 2000 levels

Safer Option – zero emissions by 2050 – greater likelihood of avoiding dangerous climate change as no guarantee that even 2C will not be dangerous


Getting Effective International Agreement requires

- Recognising historic as well as current responsibility
- Developed countries need to fund low emissions development path for less developed countries, including China, India, Brasil and Indonesia
- Funding based on current per capita emissions and historic responsibility

We have the technologies to start doing it



SOURCES: Adapted from ROBERT H. SOCOLOW AND STEPHEN W. PACALA, PRINCETON UNIVERSITY (UPDATED REPORT)

A photograph of three young children of African descent, smiling broadly. The child on the left is wearing a blue and yellow patterned shirt. The child in the center is shirtless. The child on the right is wearing a light blue shirt. They are sitting on a wooden ledge in front of a dark wooden wall. A white scalloped-edge object is visible in the top right corner.

**“No need for greed or hunger,
A brotherhood of man,
Imagine all the people,
Sharing all the world...”**

from Imagine – song written and performed
by John Lennon



*The world has enough for
everyone's need, but not
everyone's greed.*

Mahatma Gandhi

To end on a optimistic note

“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”

Roberto Unger (*quoted in Smolin 1997 - The life of the cosmos*)

The major problem is the
international political will!

Open for questions, comments,
suggestions, criticisms – now!

- or later – can email

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