

Managing for Sustainable Futures

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Summary

- ◆ The goal of sustainability
- ◆ How are we doing?
- ◆ Unsustainable futures ?
- ◆ Respecting system boundaries
- ◆ Criteria: a checklist for decision-makers
- ◆ **Creating just and sustainable futures**

Fundamental points

- ▶ **The future is not somewhere we are going, it is something we are creating**
- ▶ **Many possible futures**
 - ▶ **We should be trying to shape a sustainable future**

CoAG 1992

- ▶ **National Strategy for ESD**
- ▶ “a path of economic progress that does not impair the welfare of future generations”
- ▶ “equity within and between generations”
- ▶ “recognition of the global dimension”
- ▶ “protection of biological diversity and the maintenance of ecological processes and systems”

UN 2015 report on progress

- ▶ Australia 18th of 34 OECD nations
- ▶ Below Canada, NZ, even UK
- ▶ Among worst in OECD on resource use per head, waste per head, GHG / GDP, obesity rate
- ▶ Well below average on poverty, inequality, gender pay gap, women in elected office
- ▶ Scandinavian nations, USA



State of NZ Report

Urban Research Unit, University of Auckland

Critical points

- ◆ Gender issues: inequality, discrimination
- ◆ Housing affordability, esp. in Auckland
- ◆ Up to 1/2 housing "cold or damp"
- ◆ Inefficient urban transport
- ◆ PT serves only 15% Auckland jobs

OECD peer review 2015

- ◆ New Zealand needs to "raise the ambition of its policy coherence" for sustainable development "in line with the expanded and universal agenda of the Sustainable Development goals"

1 NO POVERTY



2 NO HUNGER



3 GOOD HEALTH



4 QUALITY EDUCATION



5 GENDER EQUALITY



6 CLEAN WATER AND SANITATION



7 RENEWABLE ENERGY



8 GOOD JOBS AND ECONOMIC GROWTH



9 INNOVATION AND INFRASTRUCTURE



10 REDUCED INEQUALITIES



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



16 PEACE AND JUSTICE



17 PARTNERSHIPS FOR THE GOALS



THE GLOBAL GOAL

Creating *unsustainable* futures ?

- ▶ Rapid population growth
- ▶ Growing consumption per person
- ▶ Deplete mineral resources, e.g. Oil
- ▶ Over-use fisheries, forests, water
- ▶ Disrupt climate, lose biodiversity
- ▶ Economy demands resource growth
- ▶ Widen inequality
- ▶ Materialism or fundamentalism

**“Our present course
is unsustainable -
postponing action is
no longer an option”**

- GEO 2000 [UNEP 1999]

“...recent crises - fuel, food and finance - are simply the three canaries in the mine. These are the early warning signals that our current economic system is simply not sustainable.”

WEF Global Agenda Summit, 2008

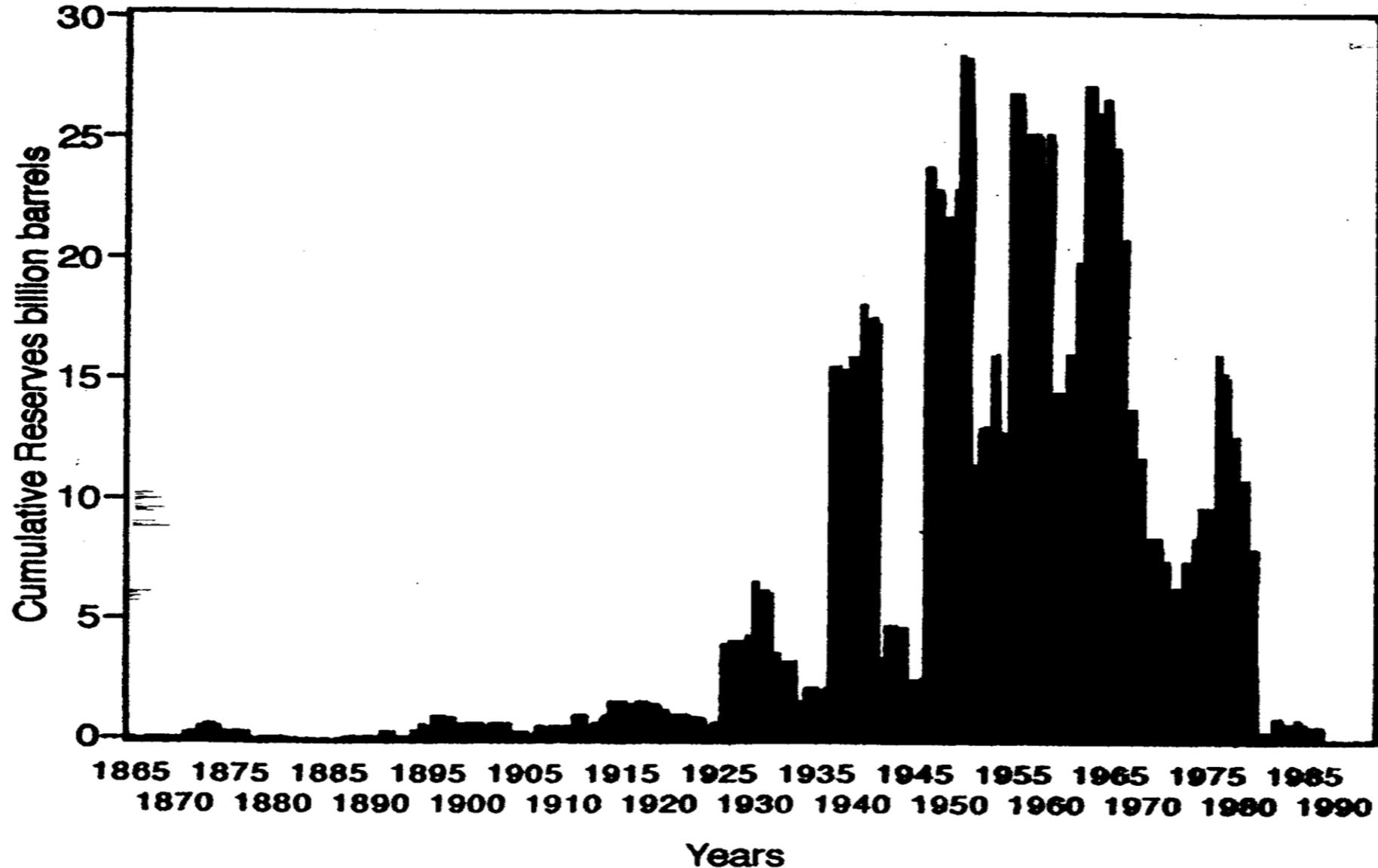




Discovery of large oil fields

DISCOVERY IN GIANT FIELDS 1865 TO 1985
5 year moving average

Billion barrels



Note: Cumulative Reserves attributed to discovery year
Giant Field > 500 billion barrels reserve

The Golden Century of Oil 1950–2050: C. J. Campbell 1991, p. 28.

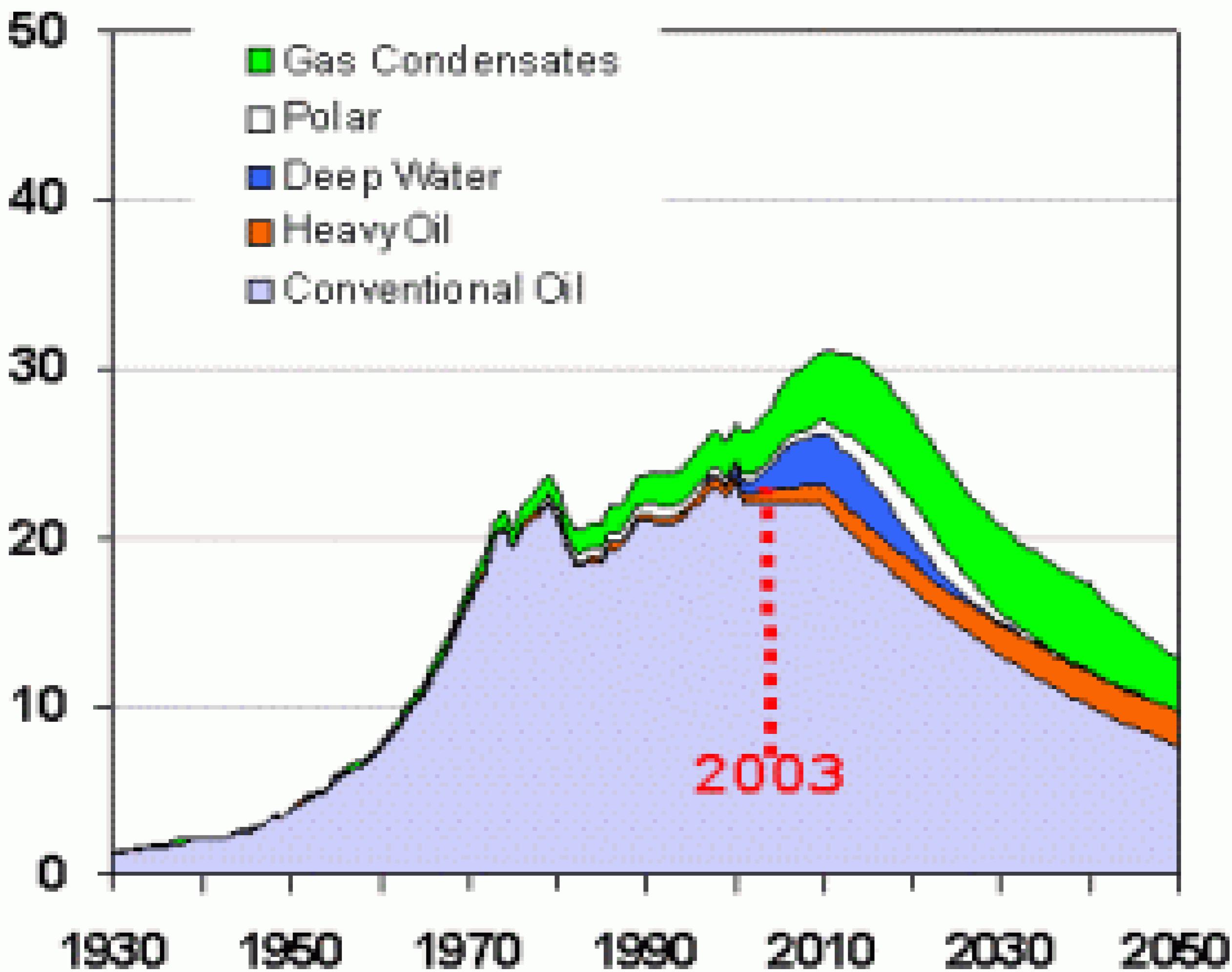
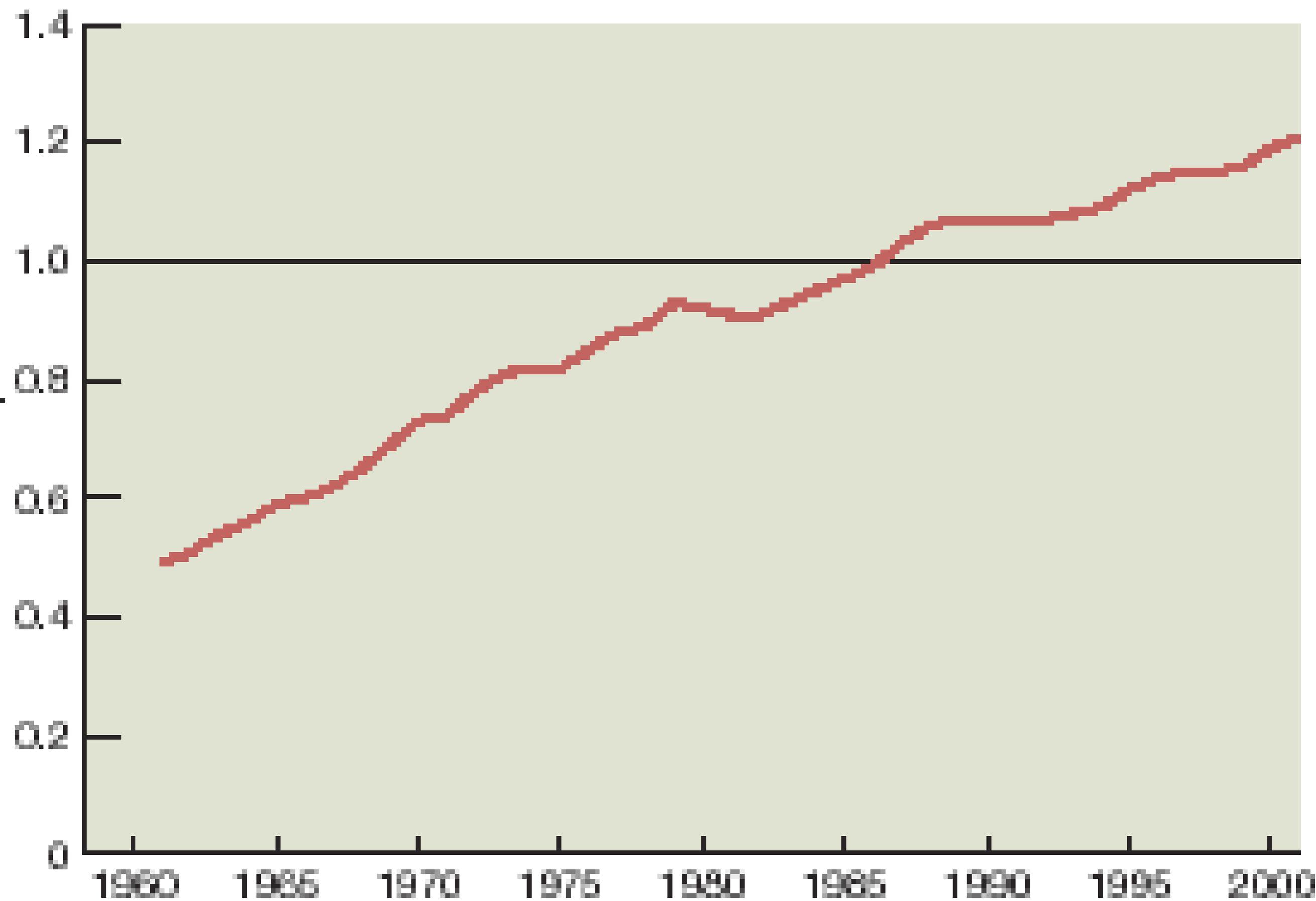


Fig. 2: HUMANITY'S ECOLOGICAL FOOTPRINT, 1961-2001



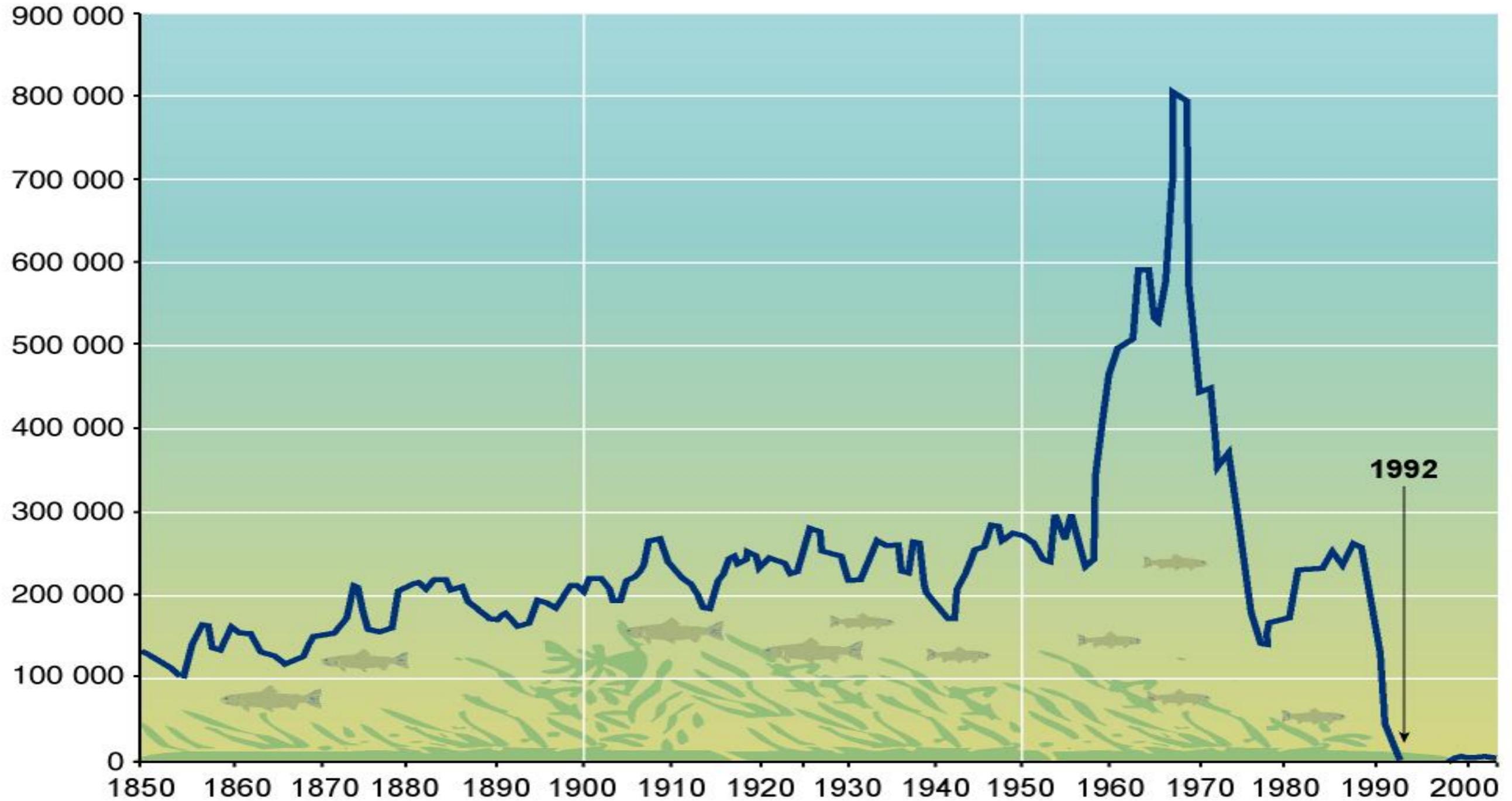
IGBP [2004]

“In terms of some key environmental parameters, the Earth system has moved well outside the range of natural variability exhibited over the last half million years at least.

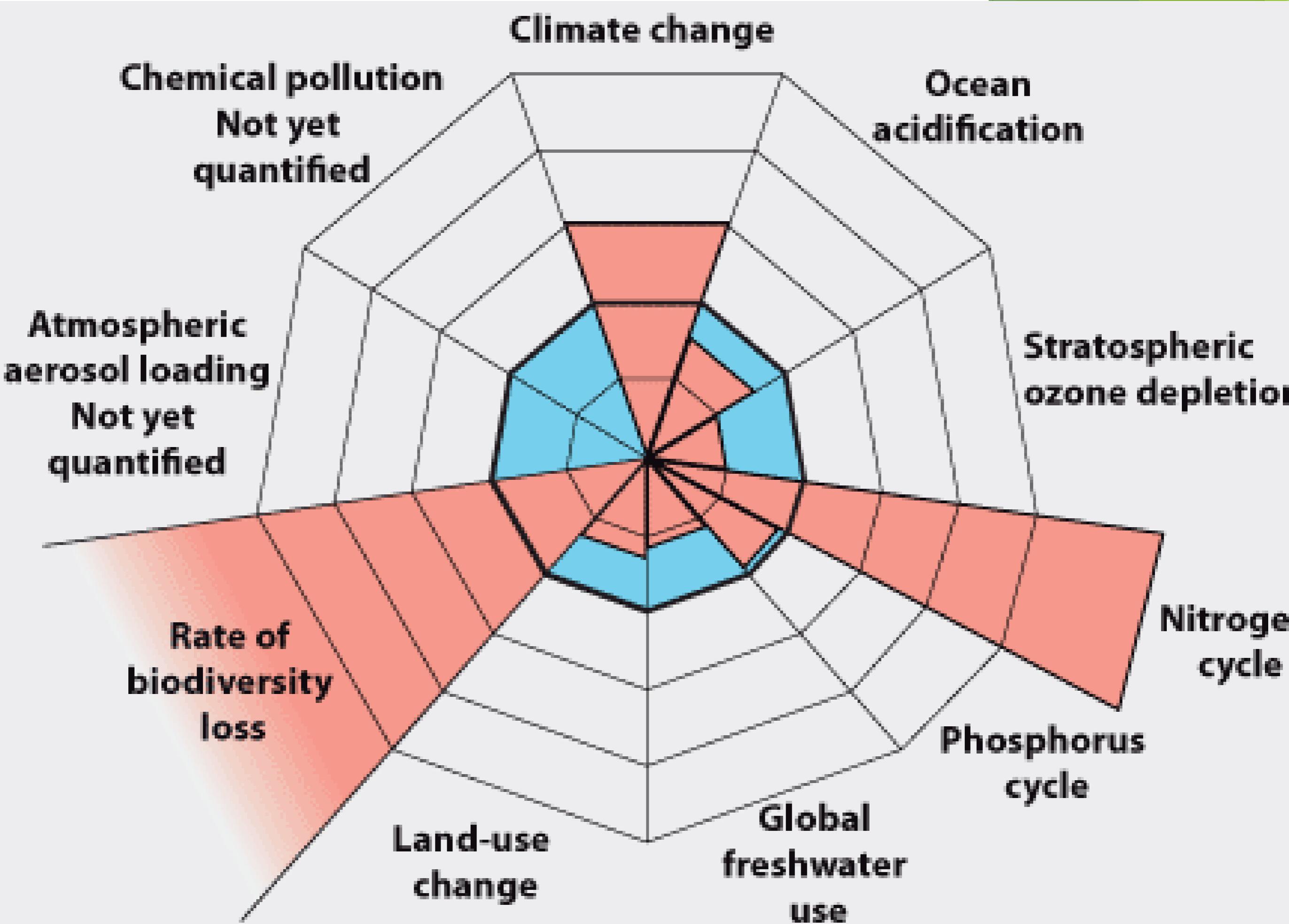
The nature of changes now occurring simultaneously in the Earth System, their magnitudes and rates of change are unprecedented.”

A classic non-linear change

Fish landings in tons



Source: Millennium Ecosystem Assessment



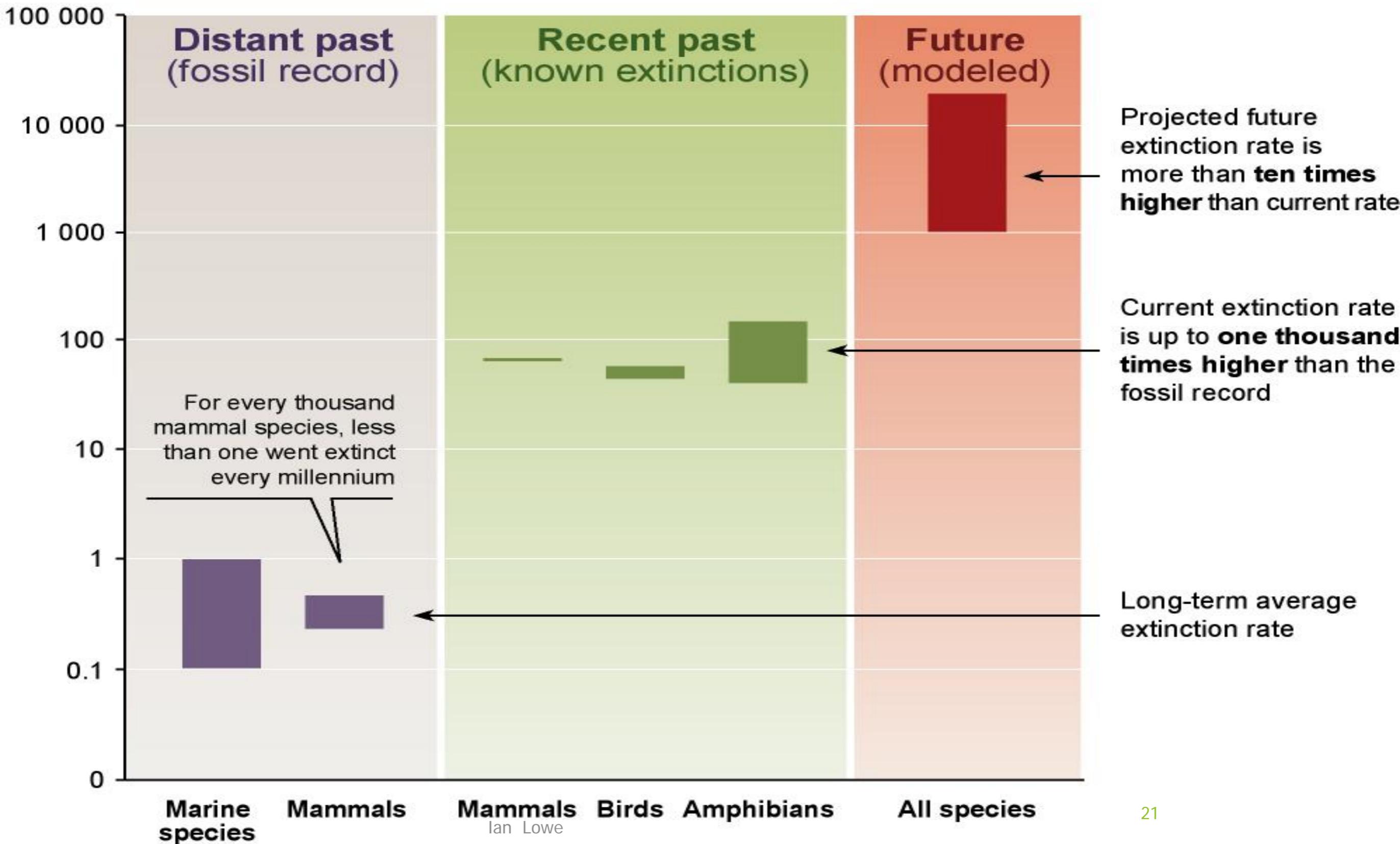
Living Planet Report 2014

- ▶ Survey of 10,000 species: mammals, birds, amphibians, fish and reptiles
- ▶ Populations down by $> 50\%$ since 1970



Loss of species diversity

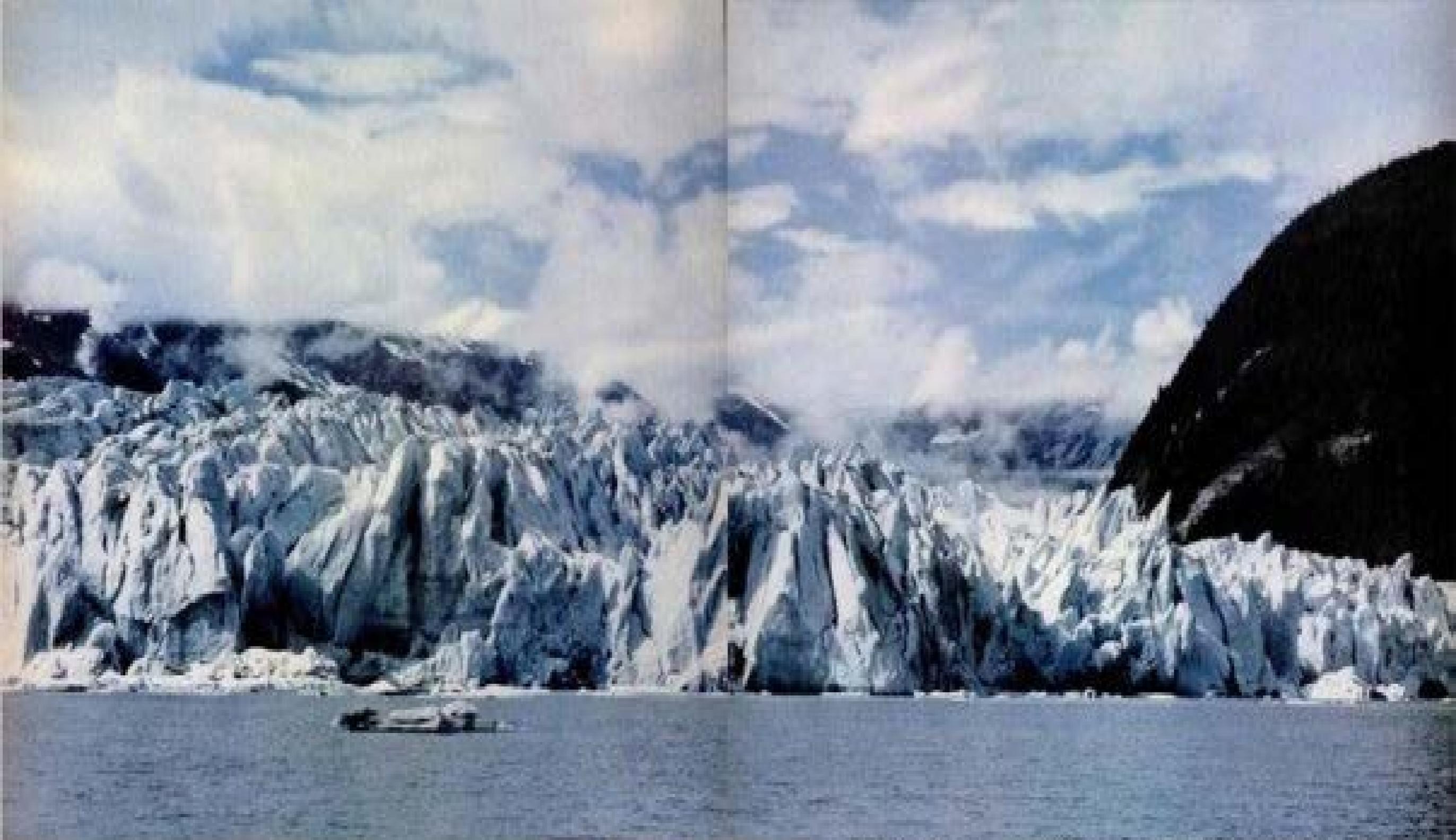
Extinctions per thousand species per millennium





Extra Cream ICE CREAM

CAUTION



THE PERITO-MORENO GLACIER, IN ARGENTINA, IS ONE OF THE LARGEST BY VOLUME IN THE WORLD. IT CAN BE HEARD FROM 100 MILES AWAY. IT'S THE ONLY ONE IN THE WORLD THAT'S BEEN STOPPED BY THE WALL OF VOLCANO FIAMM CONCA.

EACH DAY HUMBLE SUPPLIES ENOUGH *ENERGY* TO MELT 7 MILLION TONS OF GLACIER!

This giant glacier has remained unmelted for centuries. Yet, the petroleum energy Humble supplies—if converted into heat—could melt it at the rate of 80 tons each second! To meet the nation's growing needs for energy, Humble has applied science to nature's resources to become America's Leading Energy Company. Working wonders with oil through research, Humble provides energy in many forms—to help heat our homes, power our transportation, and to furnish industry with a great variety of versatile chemicals. Stop at a Humble station for new Enco Extra gasoline, and see why the "Happy Motoring" sign is the World's First Choice!

HUMBLE
OIL & REFINING COMPANY

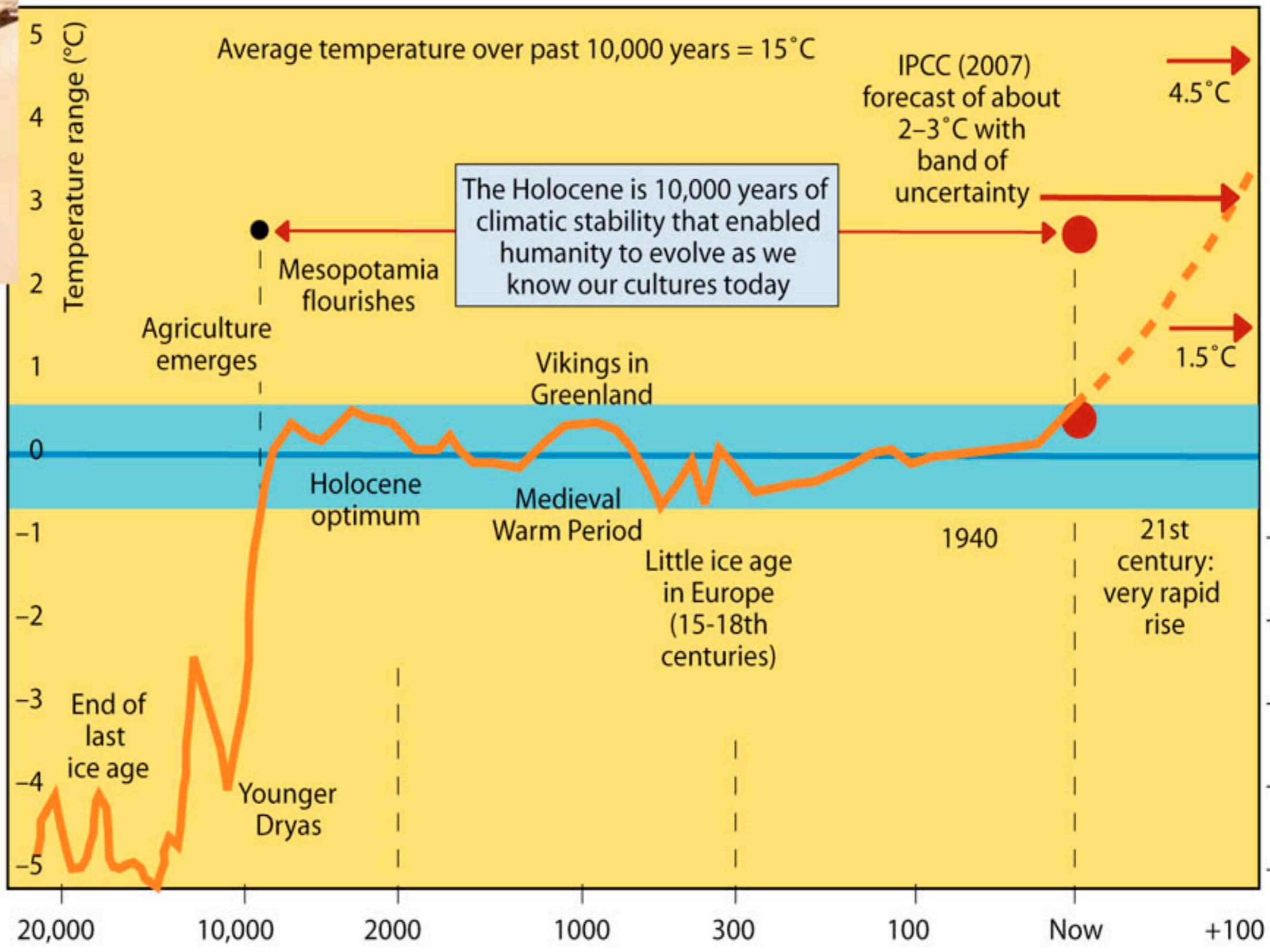
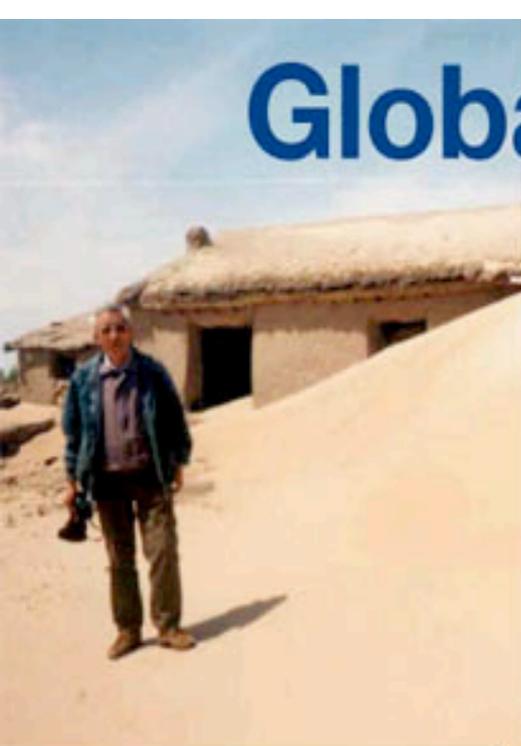
America's Leading **Energy** company





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Global warming and the safe-climate zone



Global Temperature Change

1980s: warmest decade ever

1990s: even warmer. Every year above 1980s average

2000s: warmer yet. Every year above 1990s average.

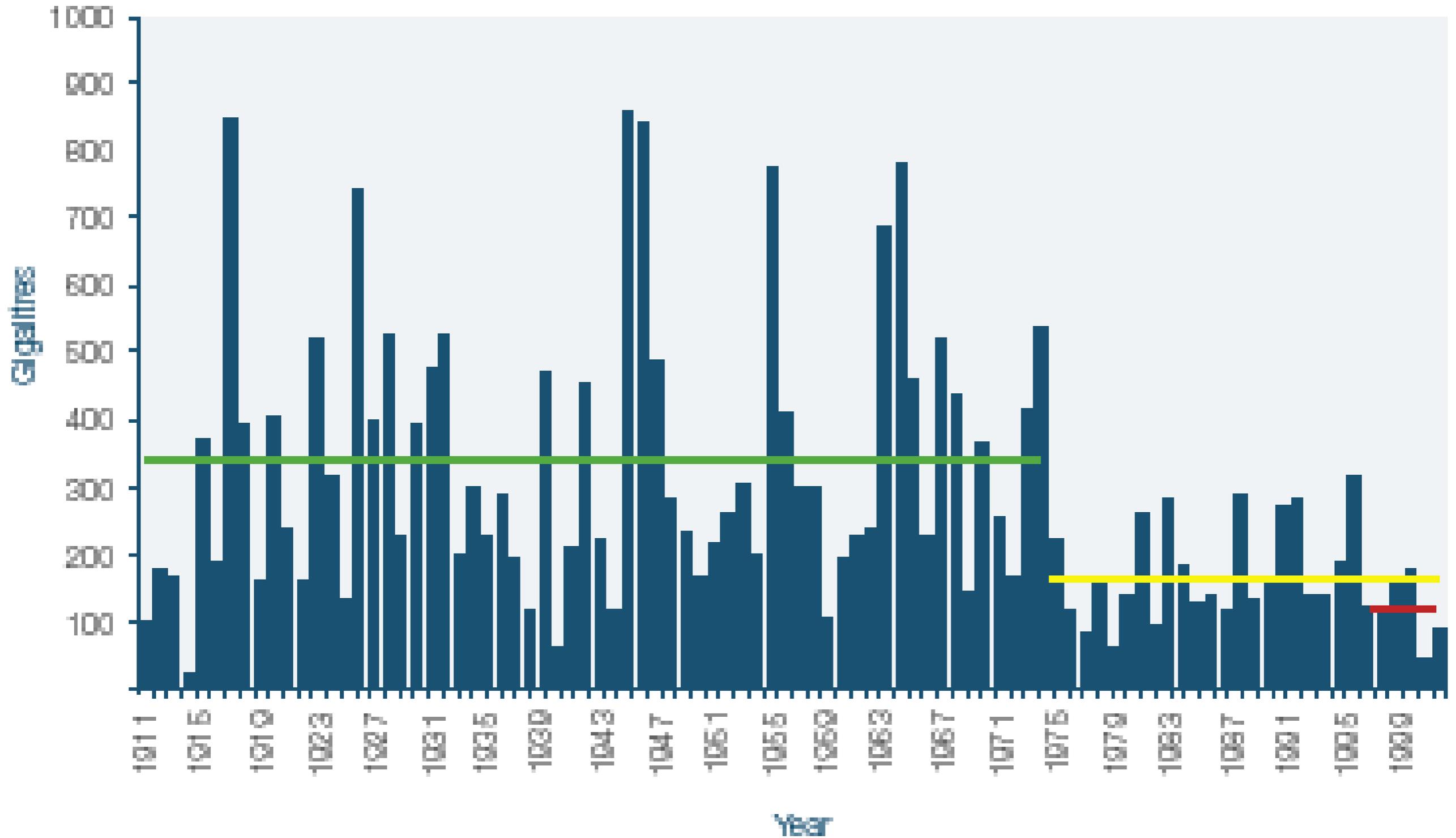
Recent data

- ▶ **2014 was the warmest year ever**
- ▶ **2015 was warmer still**
- ▶ **Every month of 2016 so far has been warmer than the same month of 2015**



Total annual inflow to Perth dams

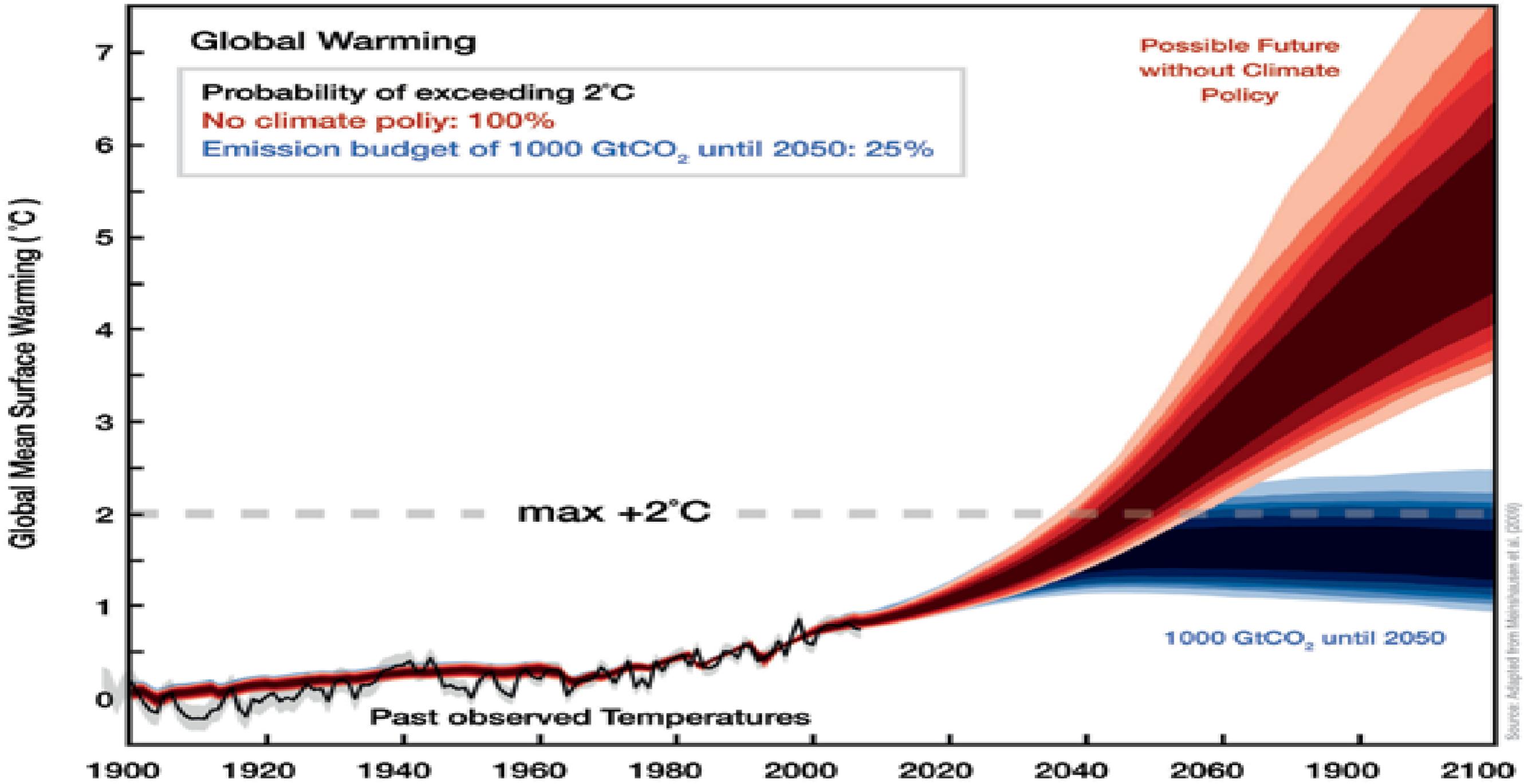
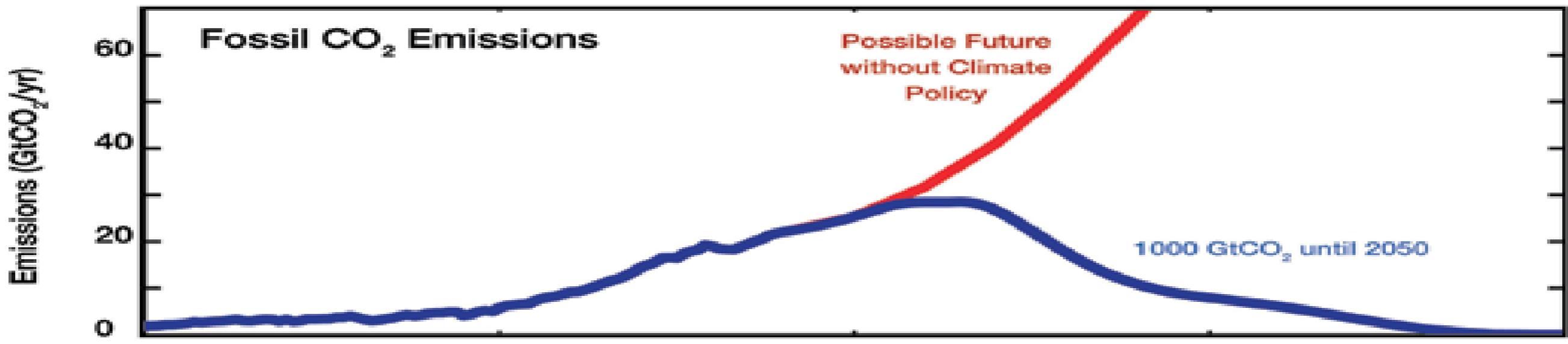
Source: WA Water Corporation 2004



1911 to 1974 (338 GL)

1975 to 2002 (164 GL)

1997 to 2002 (115 GL)



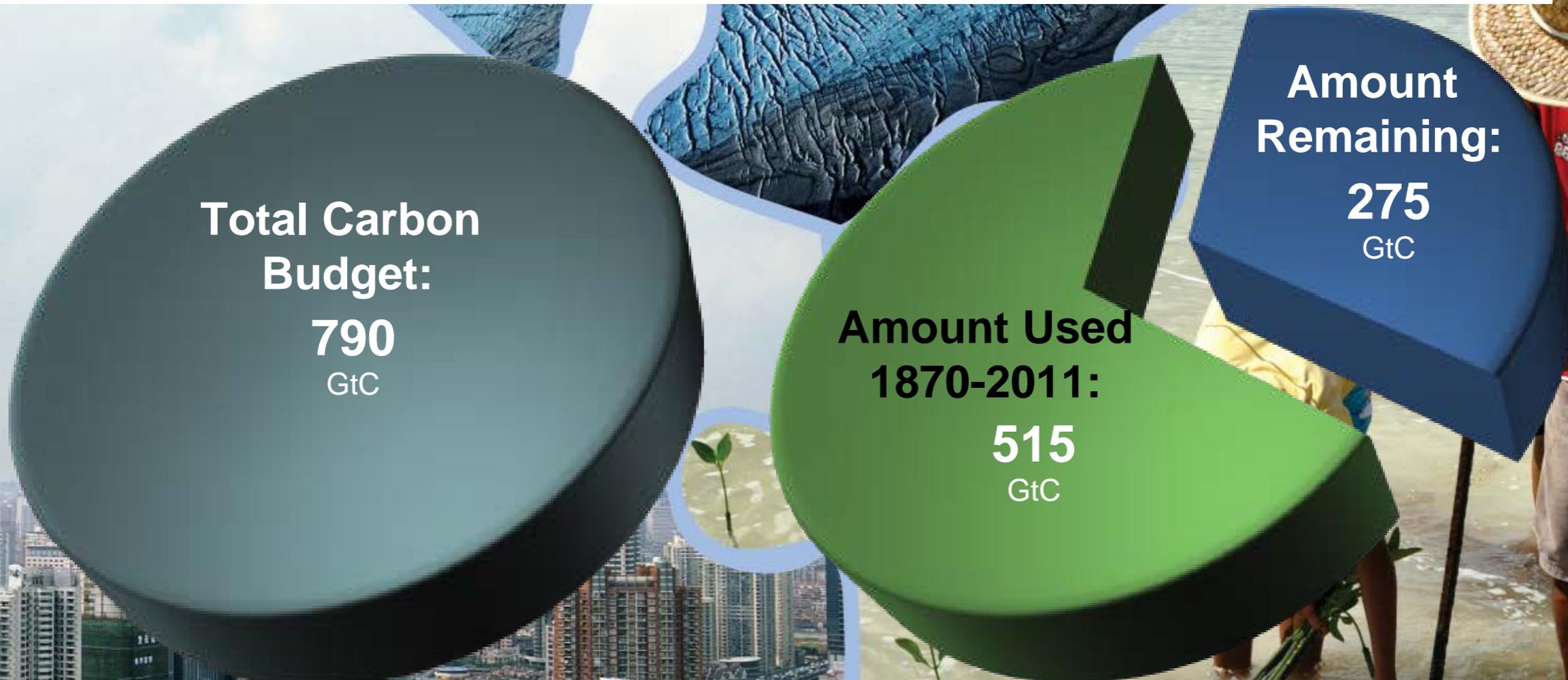
Source: Adapted from Meinshausen et al. (2009)

To have a better than even chance of keeping global average temperature rise below 2°C, the world would need to be emitting *less than half* the 2000 amount of CO₂ by 2050.

So global emissions need to peak by 2020, then decline rapidly.

The window for action is rapidly closing

‘Cumulative emissions of carbon dioxide largely determine global mean surface warming by the late 21st century and beyond’



AR5 WGI SPM

65% of our carbon budget compatible with a 2° C goal already used

IEA World Energy Outlook 2008

**“nothing short
of an energy
revolution”**



Renewable resources are enormous !

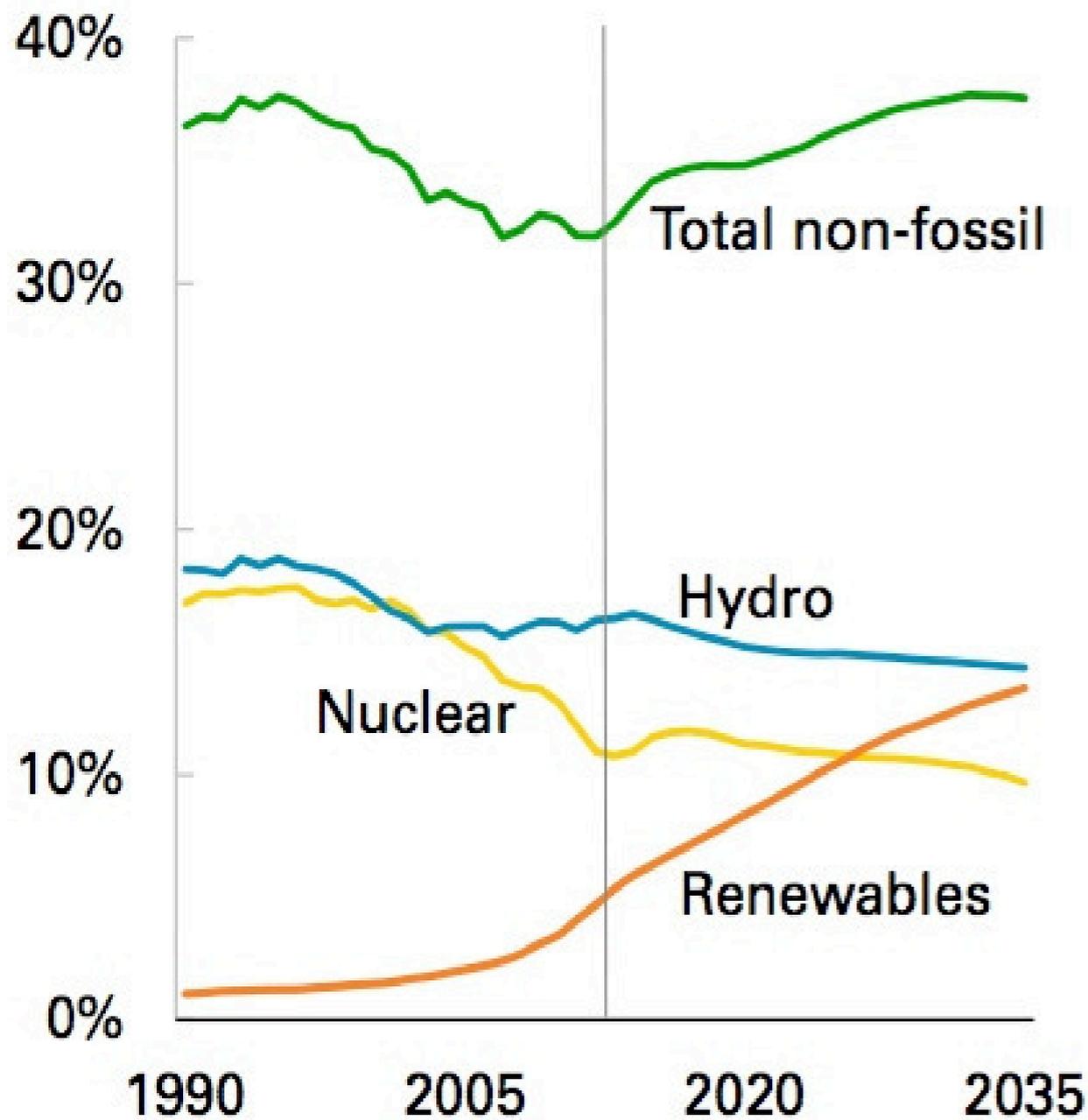
Overseas trends

- ▶ **Solar now the cheapest power in the USA: 3.87 c / kWh**
- ▶ **Renewables > half of all new power installed globally in 2013, 2014, 2015**
- ▶ **~ 30% all power now from renewables**
- ▶ **Gas replacing coal**
- ▶ **Total coal use declining**



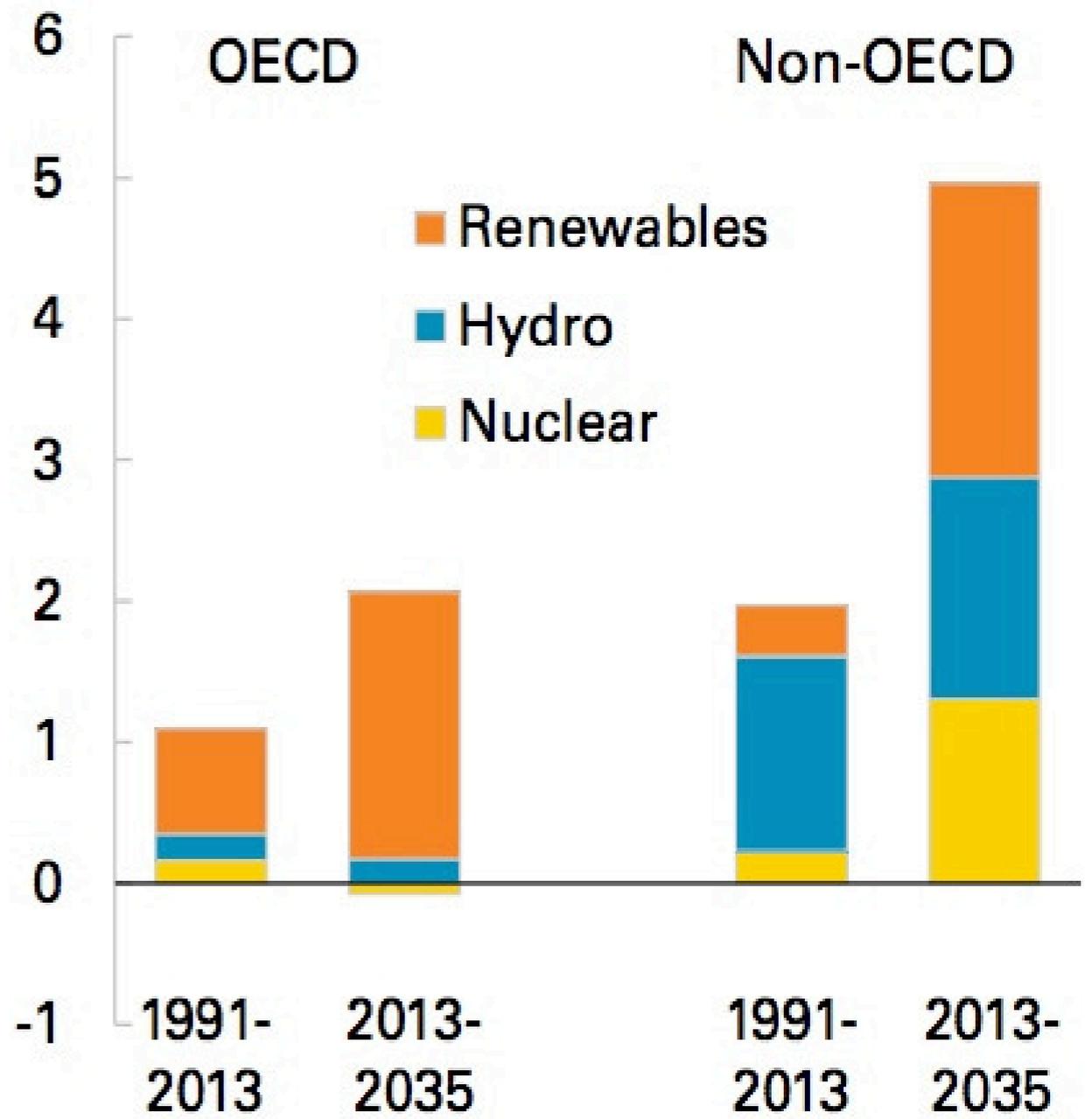
The share of power generated by non-fossil fuels increases...

Share of world power generation



Growth of non-fossil power

Thousand TWh



Criteria

- ◆ Resources, renewable and non-renewable
- ◆ Impacts on natural systems
- ◆ Social acceptability, cultural fit
- ◆ Long-term financial viability
- ◆ Limits to Growth

A fundamental challenge

- ◆ “anthropogenic climate change is ... a consequence of the global economic system.
- ◆ “our examination of the corporate world’s responses... paints a grim picture of humanity staggering towards the point of no return.
- ◆ “the political myths of corporate environmentalism, corporate citizenship and corporate omnipotence...[perpetuate] the ‘business as usual’ philosophy and the relentless, blinkered pursuit of creative self-destruction.”

Christopher Wright & Daniel Nyberg, *Climate Change, Capitalism and Corporations*, Cambridge University Press 2015

“businesses and consumers need to stop behaving as if we live in a limitless world”

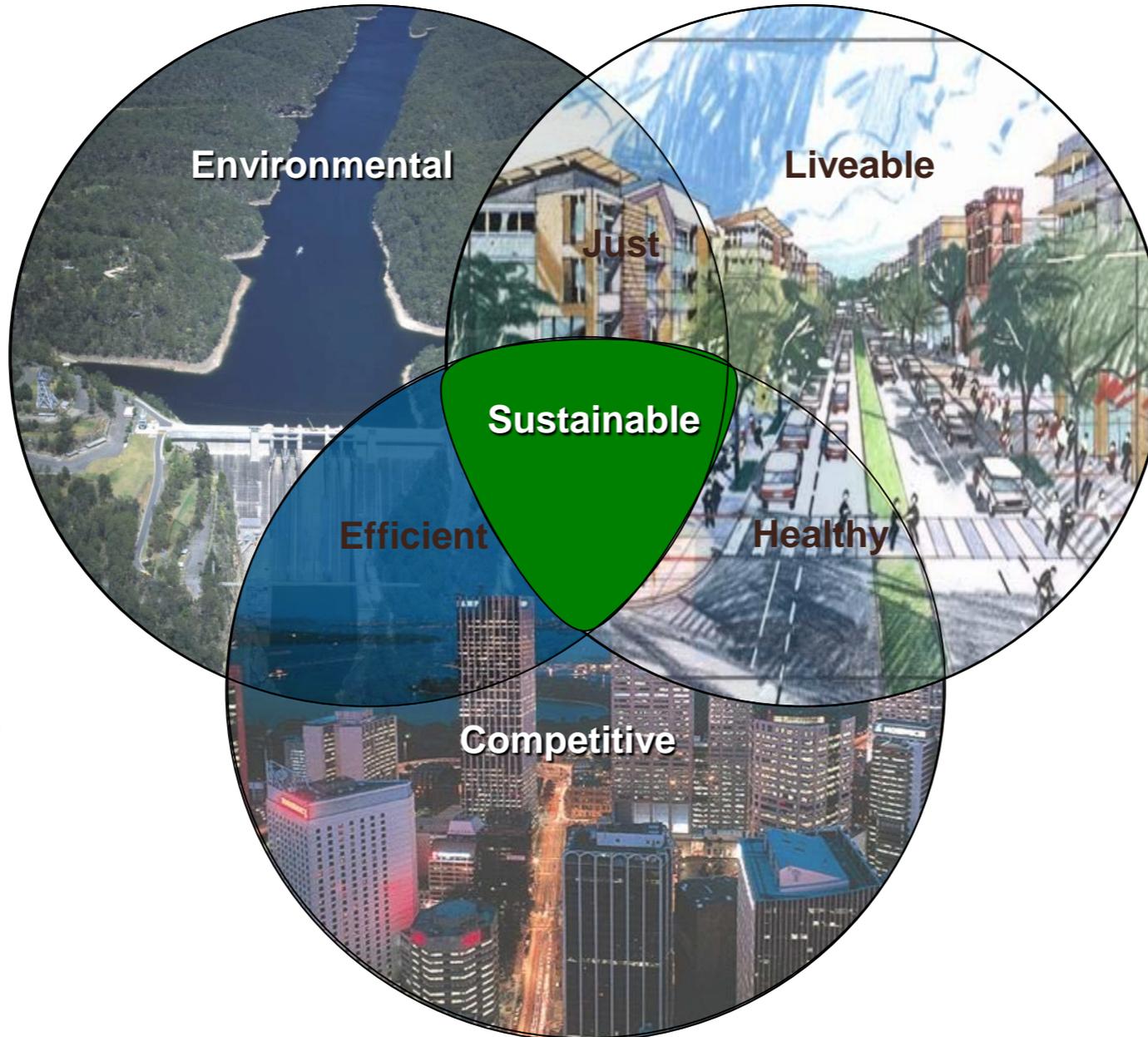
Vision for a Sustainable City

Sustainability

Sustainability is about living within our means. It is about managing our consumption of resources and balancing environmental, economic and social outcomes. It means improving our quality of life, but making that improvement without leaving a burden on the future generations.

Looking after our Environment

Environmental Sustainability is about reducing our impact on the environment by protecting our air, water and land, our native flora and fauna. It means reducing the load on our natural resources, such as water and fuels for energy, and decreasing our production of waste.



A Better Place to Live

Liveability is about making Sydney a better place to live. It means being able to walk to your corner shop, local school, park or bus stop, as well as providing us with a choice of housing that meets our needs.

Supporting our Economy

Competitiveness is about supporting Sydney's role as a Global city, and ensuring our city's long term economic prosperity. It means providing quality infrastructure and services to service our jobs and the economy, and supporting urban centres

SOCIETY

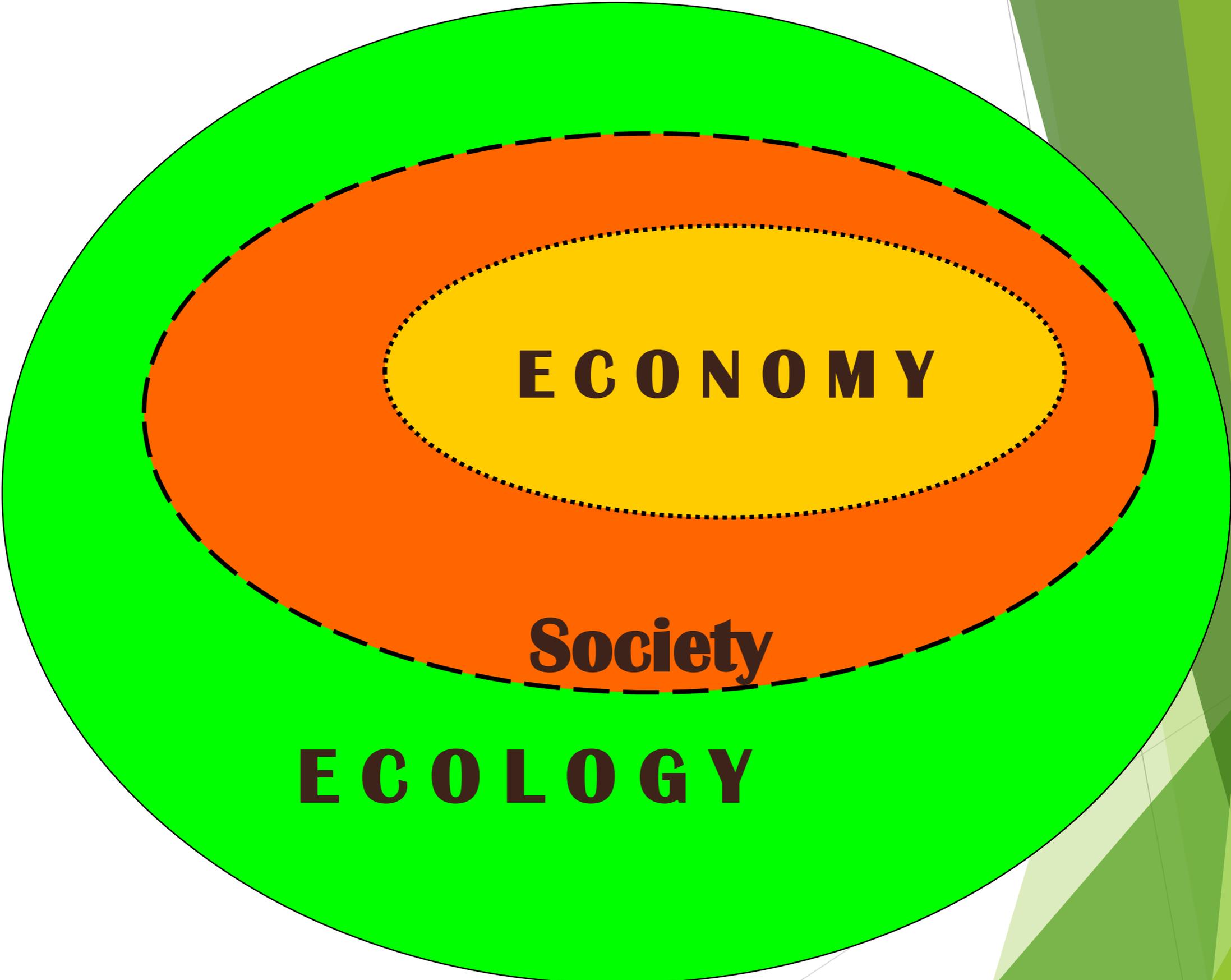
ENVIR'T

ECONOMY

Markets give us
things many of us
want

Natural systems
give us what we
really need!





ECONOMY

Society

ECOLOGY

Utopian?

- ▶ 1800: end slavery
- ▶ 1900: votes for women
- ▶ 1986: Berlin without the Wall
South Africa without apartheid
apology to stolen generations
African-American US president
good coffee, civilised licensing in Qld!

Nearly all aspects of modern life

Creating our future



- ▶ **not determined**
- ▶ **various options**
- ▶ **our choices**
- ▶ **holiday analogy**
- ▶ **quality of life**
- ▶ **social justice**





Ian Lowe

Questions ? ?