



The many dimensions of sustainability

Ian Lowe

www.wakefieldgroup.org



ANOTHER WAVE OF
ILLEGALS WHERE
WILL IT END?!

moir

A fundamental point



- ▶ 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
- 

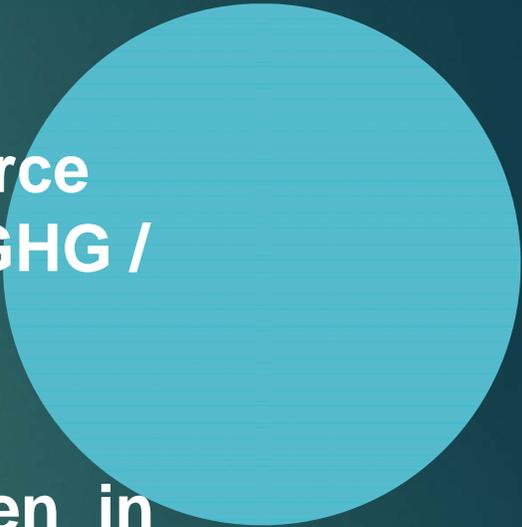
CoAG 1992



- ▶ National Strategy for Ecologically Sustainable Development
 - ▶ “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”
 - ▶ “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, 33 / 34 !
- 

How could we create *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"

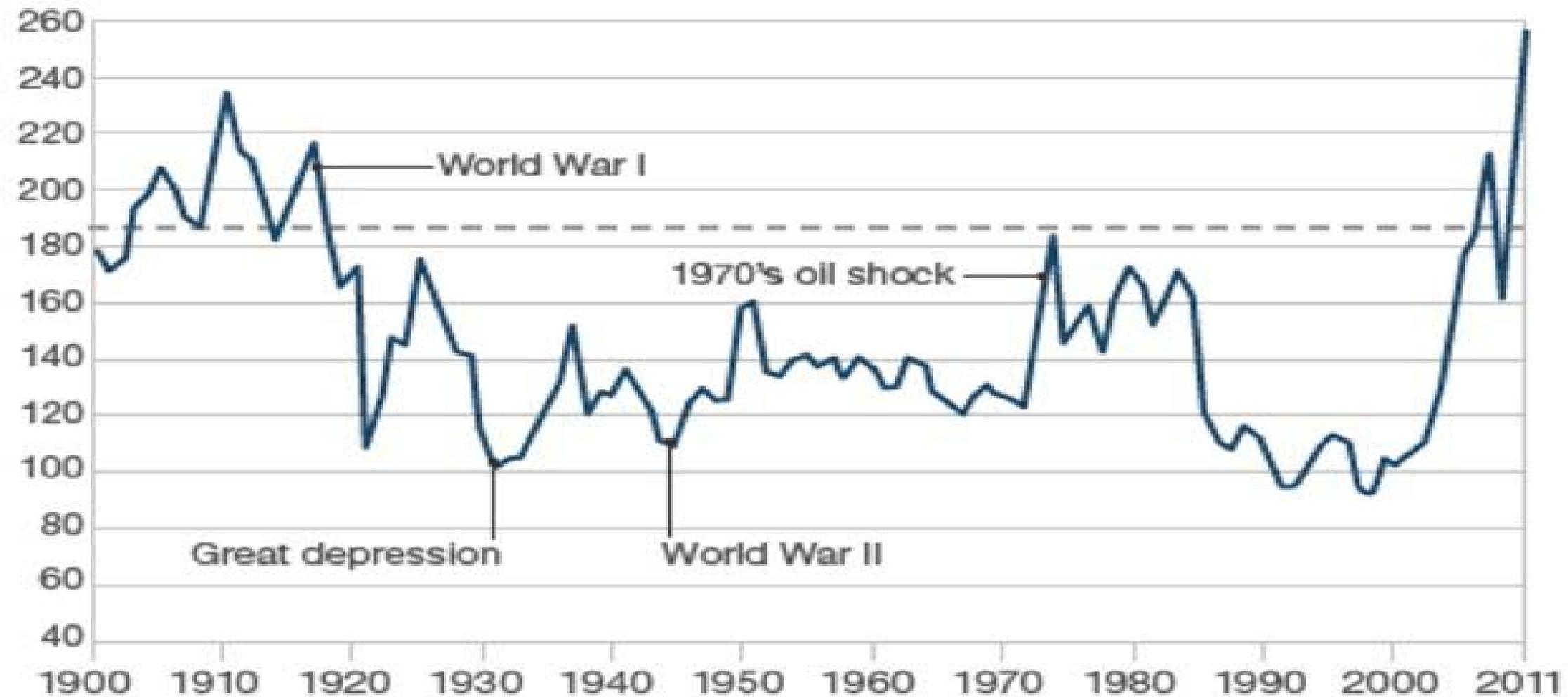


- GEO 2000 [UNEP 1999]



Global commodity prices since 1900

US \$*



*MGI Commodity Index (1999-2001 = 100)

Source: McKinsey & Company

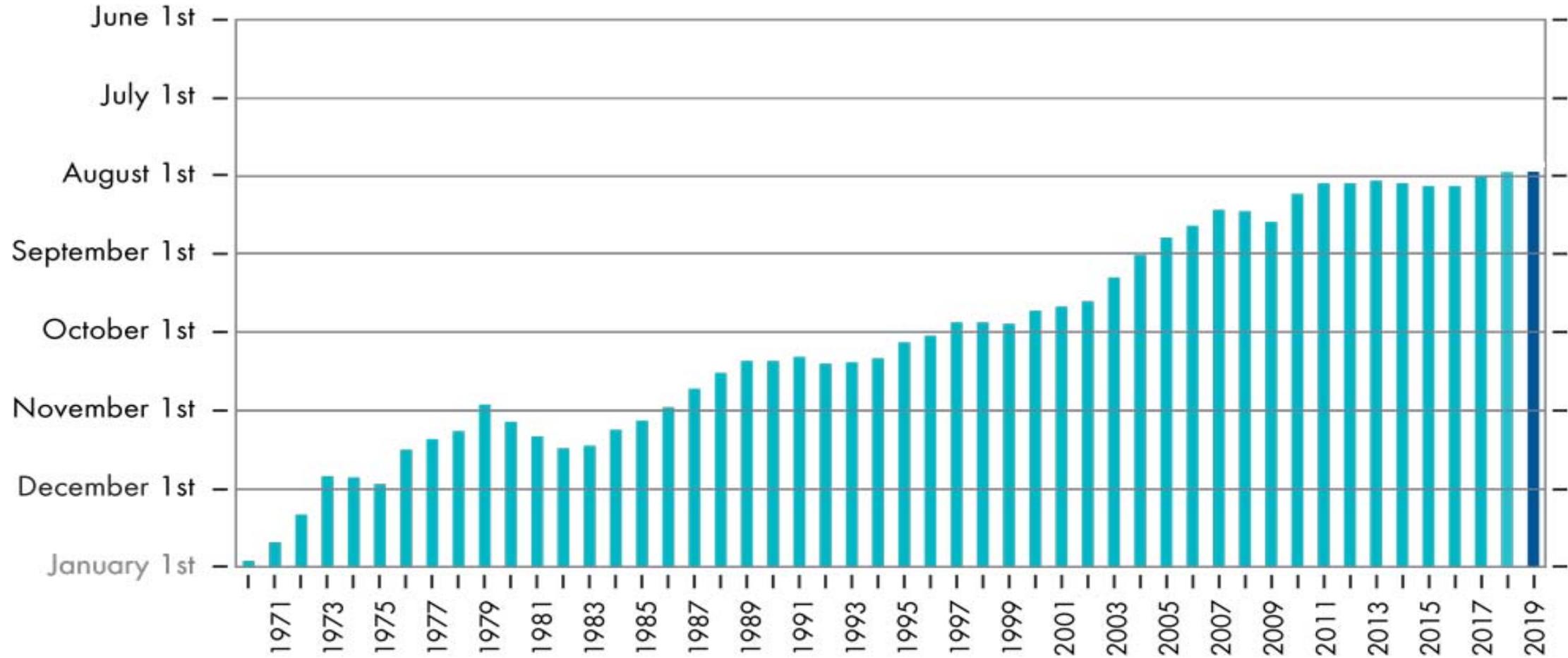


1 Earth

Earth Overshoot Day 1970-2019



1.75 Earths



Source: Global Footprint Network National Footprint Accounts 2019

Your personal Earth Overshoot Day is:

July 1 

If everyone lived like you, we would need

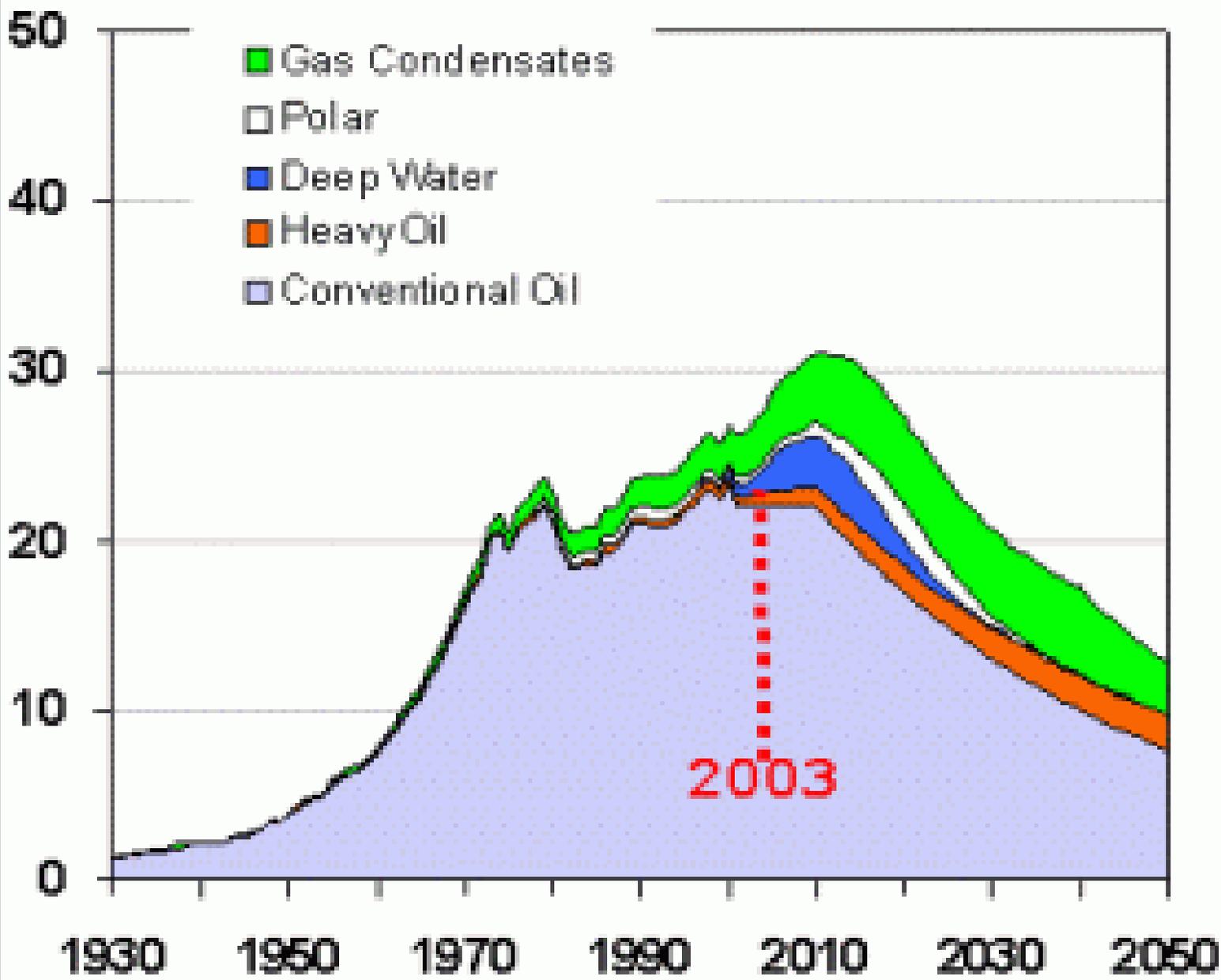
3.5 Earths



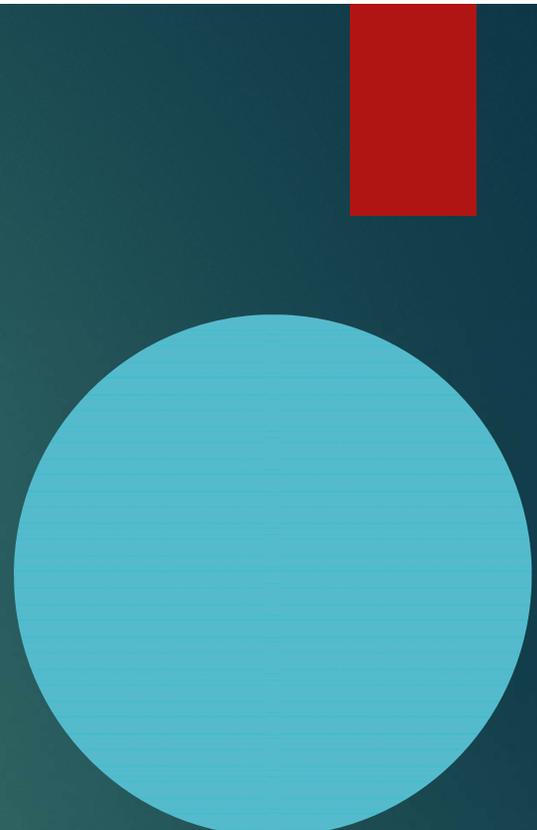
[See Details](#)

SHARE:





Increasing Inequality



BHP CEO pay

1890s peaked at 75 x average earnings

1970s, varied around 6-7 x average

NOW: 150 – 250 x average !

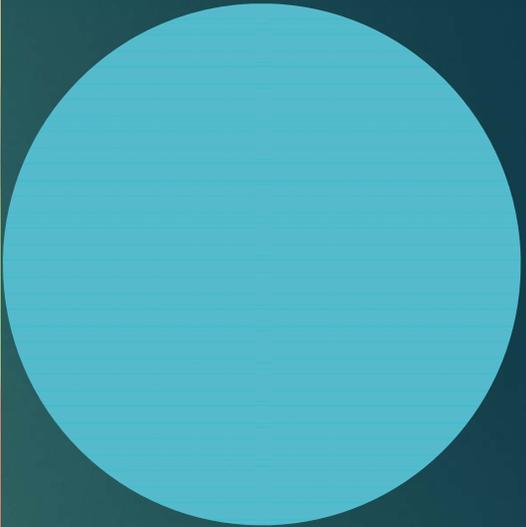
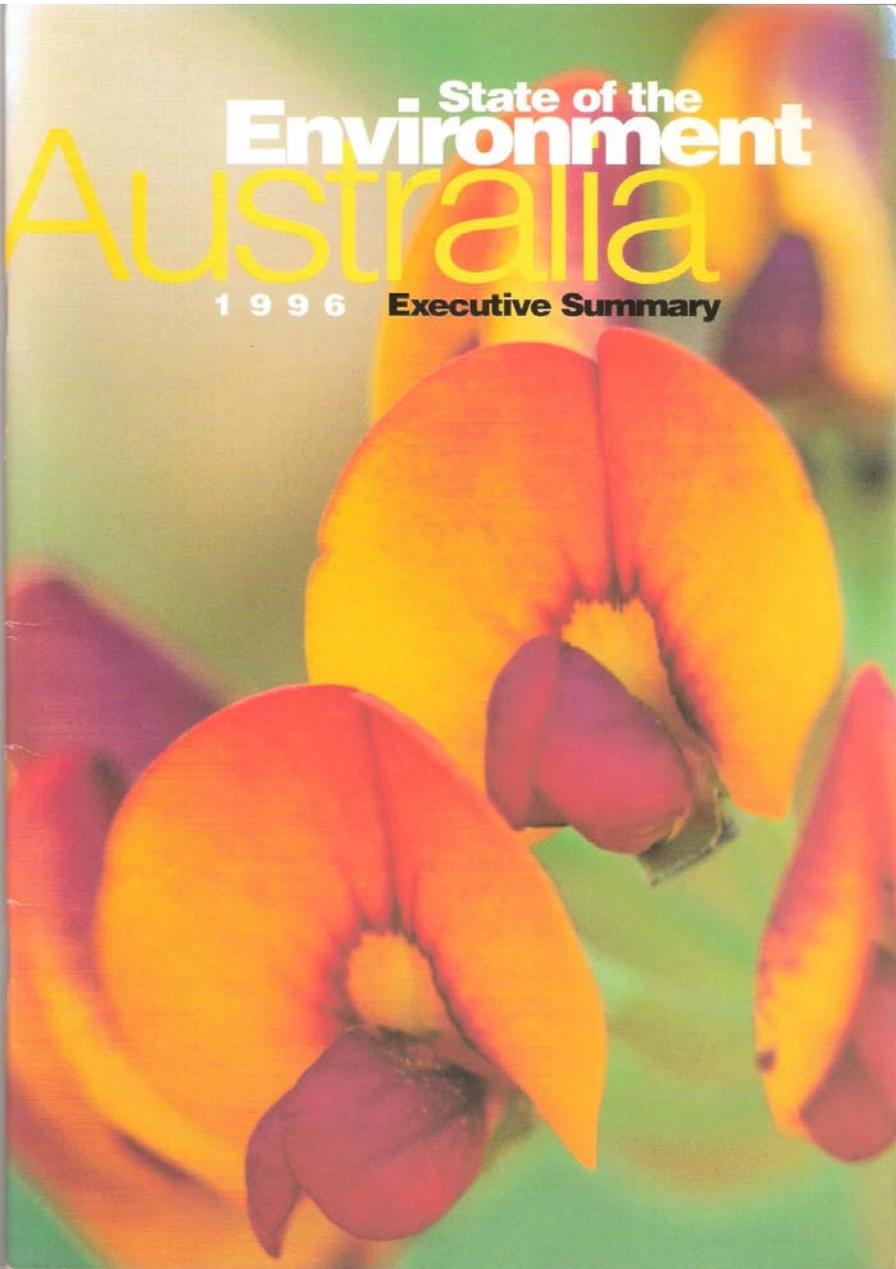
- M. Pottenger & A. Leigh (2018)

Since 2003, average wealth of top 20 % **UP 53 %** after inflation

Average wealth of lowest 20 % **DOWN 9 %**

- ACOSS

State of the
Environment
Australia
1996 Executive Summary



Report summary

- ▶ “Australia has some **very serious environmental problems**. If we are to achieve our goal of ecological sustainability, these problems need to be dealt with **immediately**.”
- ▶ “The problems are the cumulative consequences of **population growth and distribution**, lifestyles, technologies and demands on natural resources”

The five big problems



- ▶ Loss of our unique biodiversity
 - ▶ Pressures on the coastal zone
 - ▶ State of most inland rivers
 - ▶ Degradation of rural land
 - ▶ Greenhouse gas emissions
- 



World Scientists' Warning to Humanity: a Second Notice

W. Ripple et al : 15,364 scientist
signatories from 184 countries



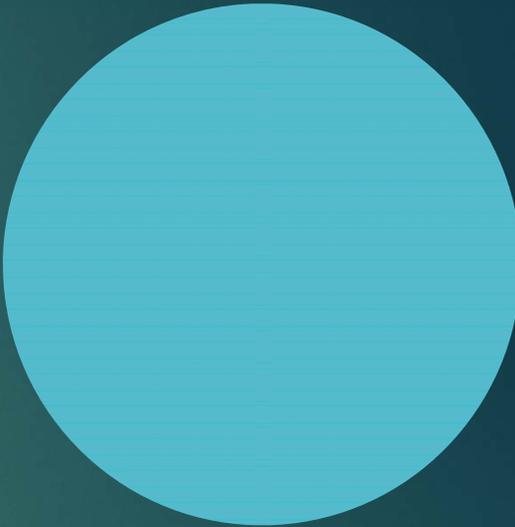
BioScience, Volume 67, Issue 12, 1 December 2017, Pages 1026–1028,

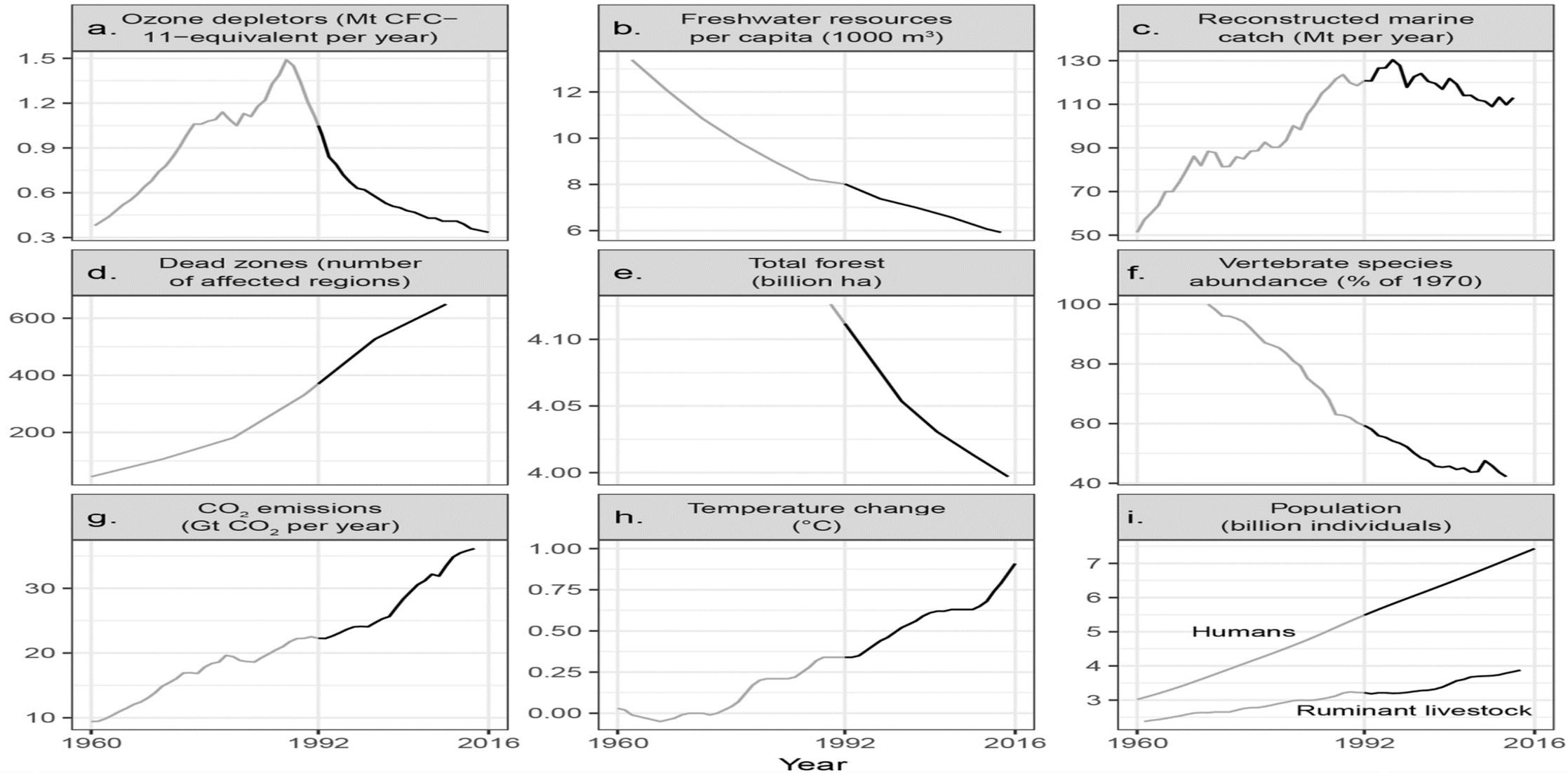
<https://doi.org/10.1093/biosci/bix125>

Published: 13 November 2017



“Since 1992, with the exception of stabilizing the stratospheric ozone layer, humanity has failed to make sufficient progress in generally solving these foreseen environmental challenges, and alarmingly, **most of them are getting far worse.**”





From: World Scientists' Warning to Humanity: A Second Notice

BioScience. 2017;67(12):1026-1028. doi:10.1093/biosci/bix125

BioScience | © The Author(s) 2017. Published by Oxford University Press on behalf of the American Institute of Biological Sciences. All rights reserved. For permissions, please e-mail: journals.permissions@oup.com



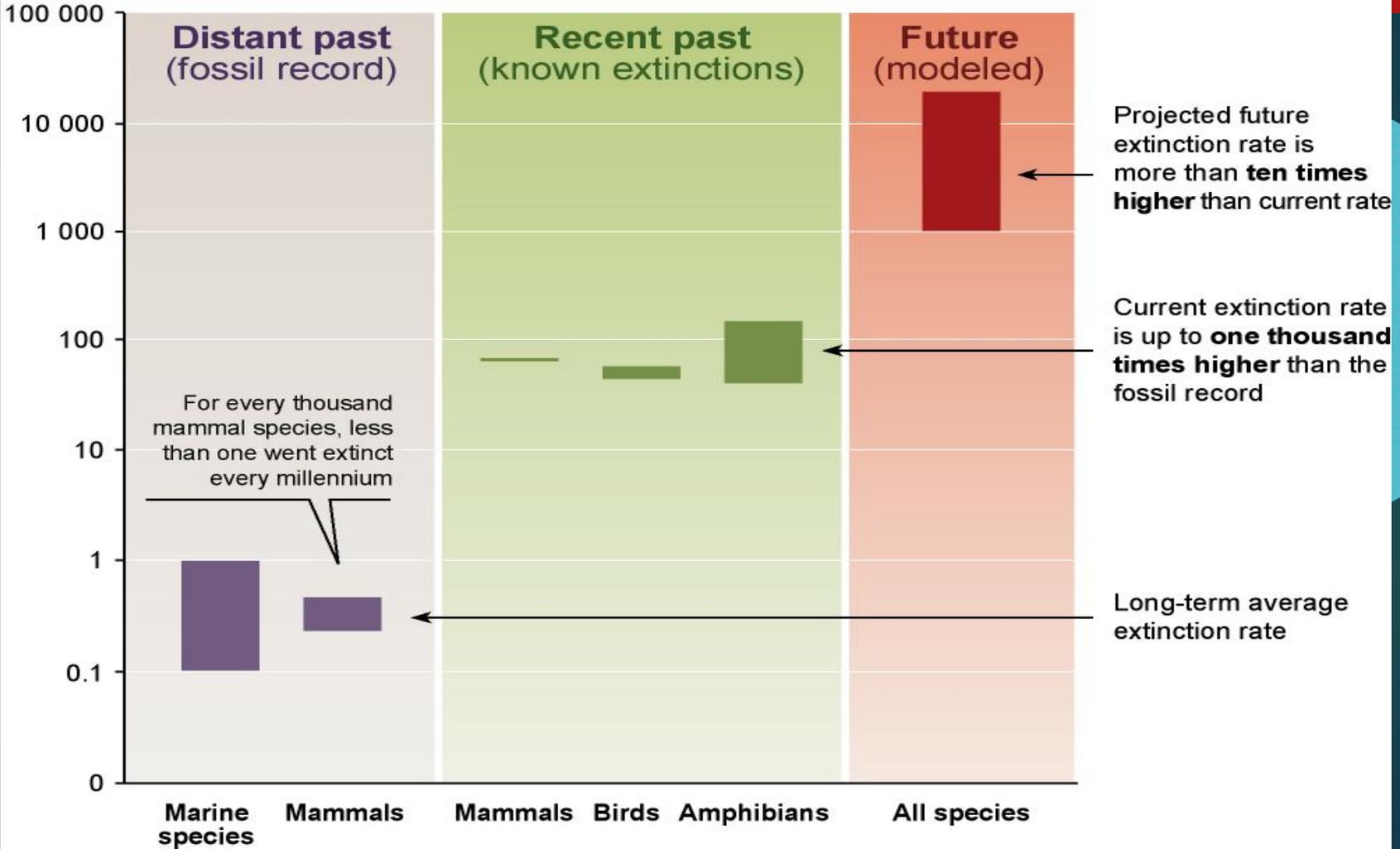
“Especially troubling is the current trajectory of potentially catastrophic climate change...”



“we have unleashed a mass extinction event, the sixth in roughly 540 million years... many current life forms could be annihilated or at least committed to extinction by the end of this century.”

Loss of species diversity

Extinctions per thousand species per millennium



Source: Millennium Ecosystem Assessment

The Limits to Growth – 1972!

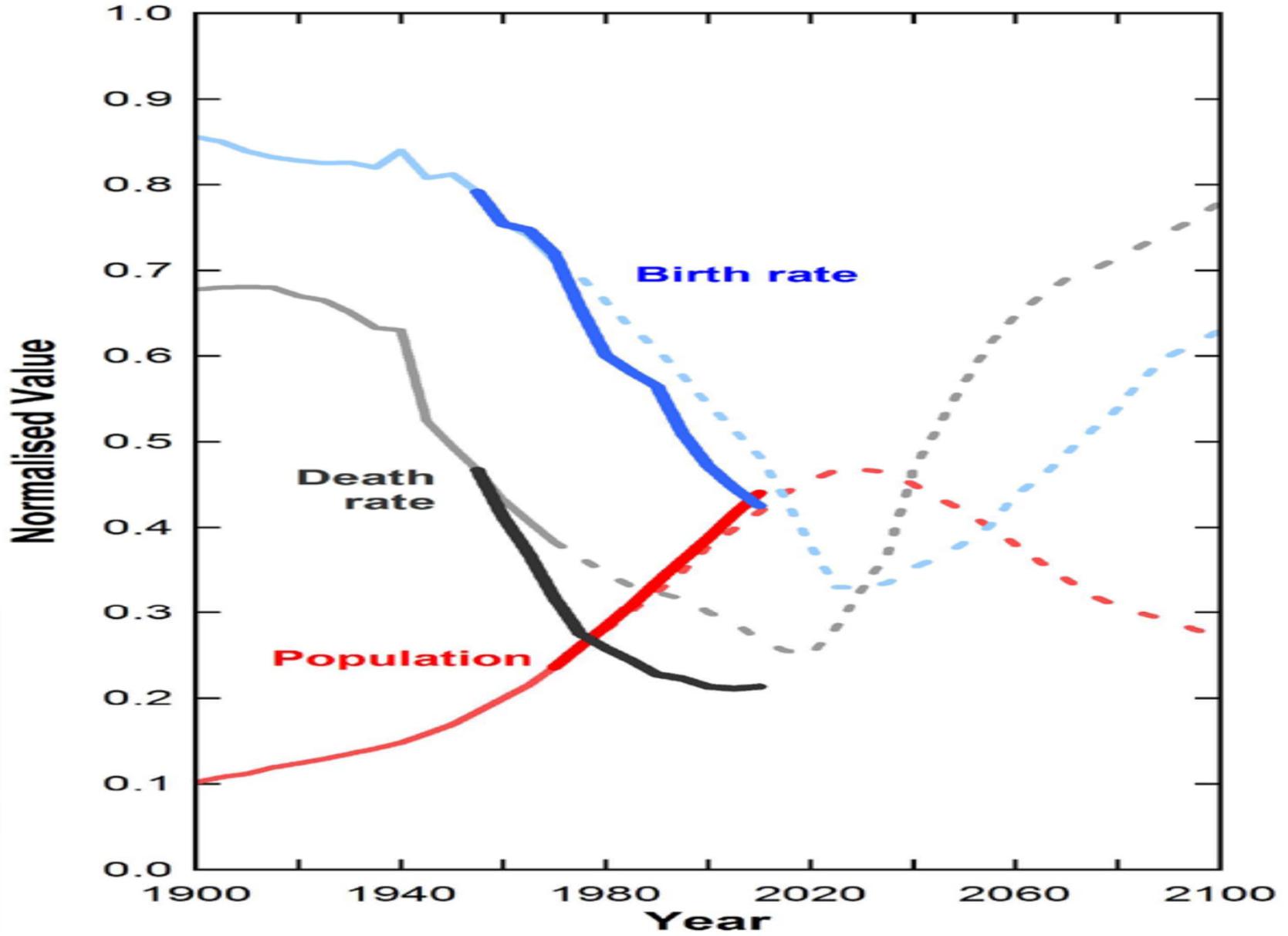
- ▶ If trends of growth in population, resource use, industrial production, agricultural output and pollution all continue, **we will reach limits to growth within a hundred years**
- ▶ The likely outcome would be economic, social and environmental decline, starting about 2030
- ▶ **These trends are not inevitable**

Limits to Growth + 40 years data

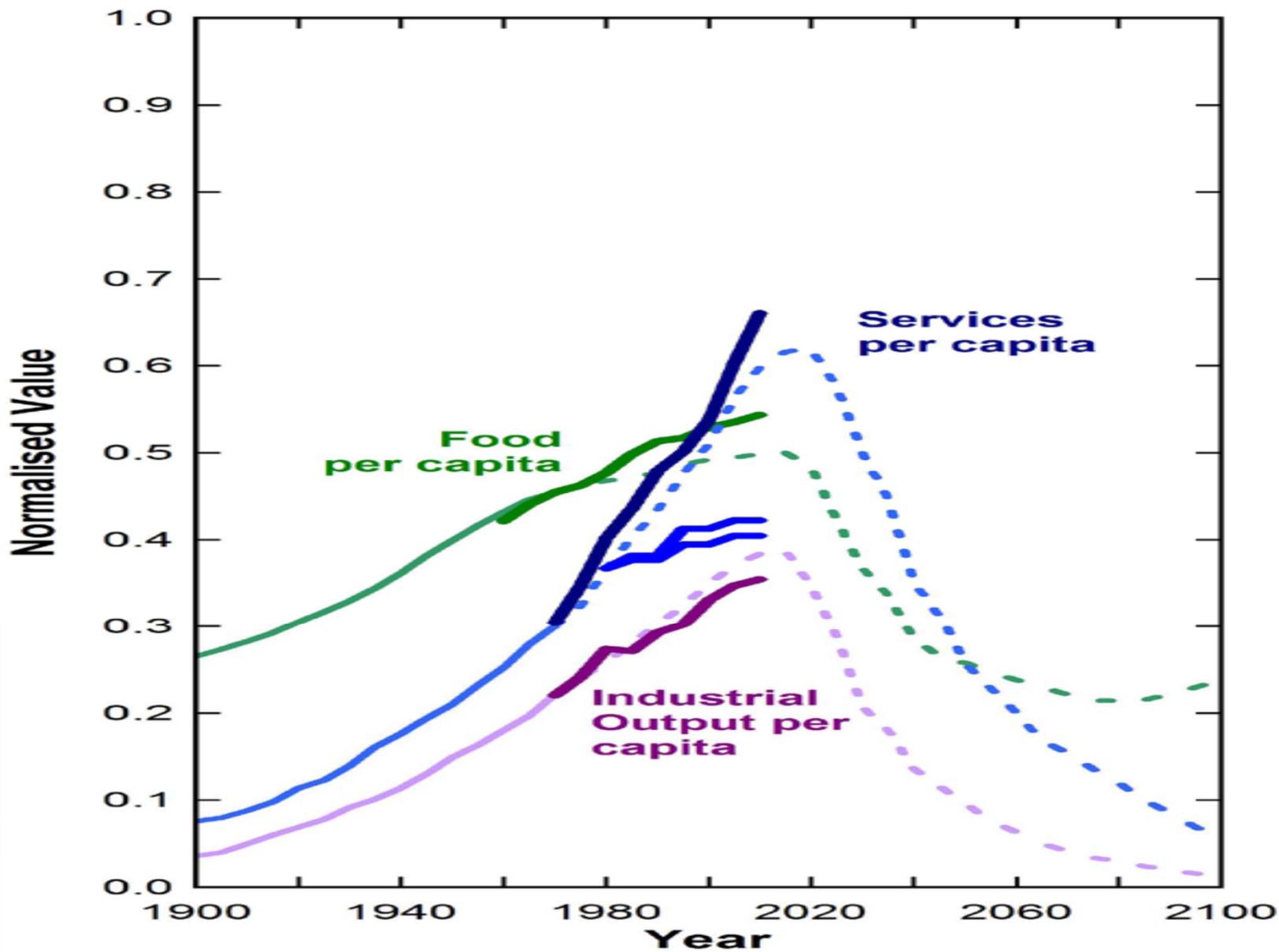
On *all* key parameters [population, resource use, industrial output, agricultural production and pollution] we are tracking the “standard run” which leads to economic and ecological collapse before 2050.

“No-one has to change. Survival is optional”

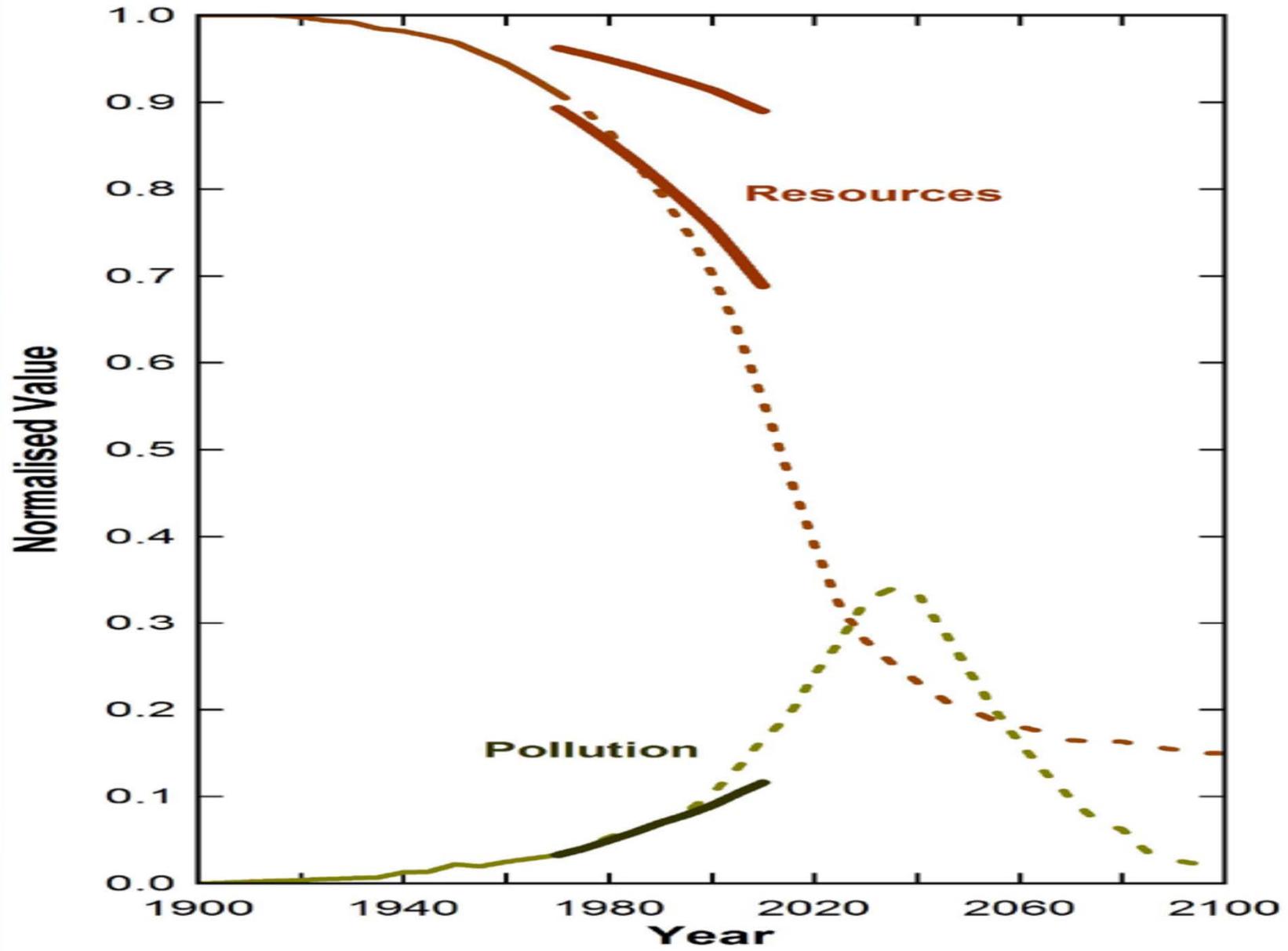
Population



Economy



Environment





“these 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 Summit on Global Agenda, Dubai 2008

WEF Global Agenda Summit



- ▶ “ecosystems and biodiversity being degraded at an alarming rate”
 - ▶ “historical approaches to water use will not work in the future”
 - ▶ “we need ...a new energy paradigm”
 - ▶ “transformation in how we manage the urban environment is needed”
 - ▶ “we will not be able to supply our future food needs”
- 

“We are jeopardising our future”

We need to reduce our level of material consumption

We need to recognise rapid population growth is a primary driver of ecological threats



“To prevent widespread misery and catastrophic biodiversity loss, humanity must practise a more environmentally sustainable alternative to business as usual... Soon it will be too late to shift course away from our failing trajectory, and time is running out.”

To “safeguard our imperilled biosphere”
we must:

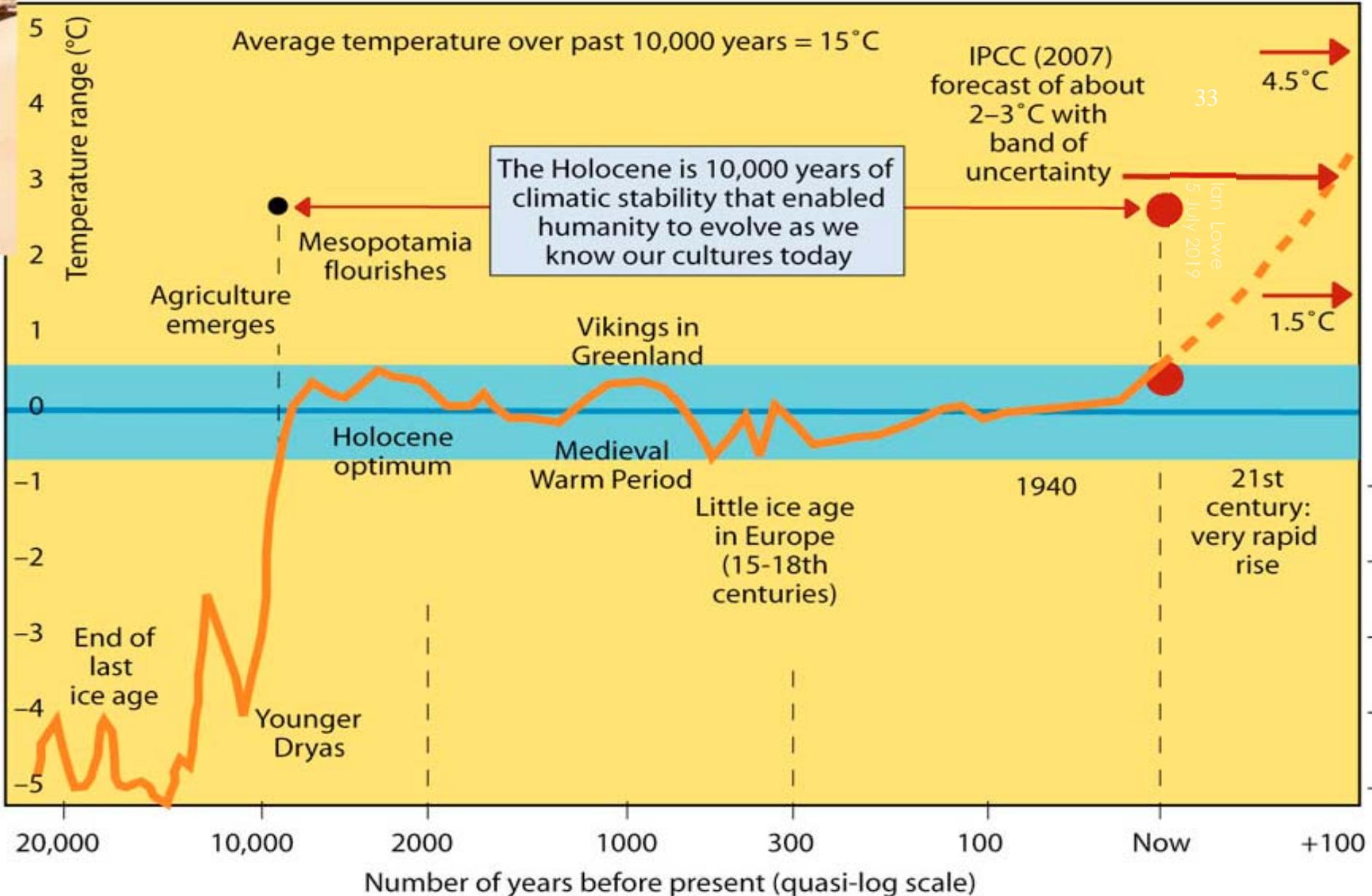
- ▶ **limit population growth**
- ▶ **develop an economic framework not assuming perpetual growth**
- ▶ **reduce greenhouse gases**
- ▶ **promote renewable energy**
- ▶ **“protect habitat, restore ecosystems, curb pollution, halt defaunation, and constrain invasive alien species.”**

Responding to climate change

32

Jan Lowe
5 July 2019



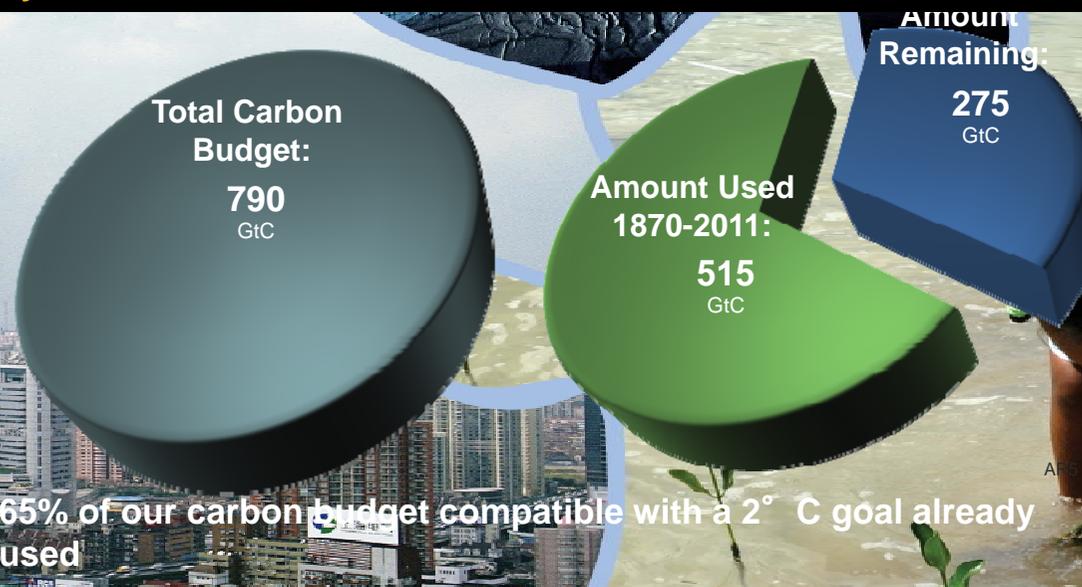


To have a **better than even** chance of keeping global average temperature rise below 2°C, the world would need to be emitting **less than half** the 2000 amount of CO₂ by 2050.

So global emissions need to peak by **2020** and 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'



Current emissions

- ▶ 36 billion tonnes per year
- ▶ $275 / 36 = 8$ years
- ▶ Even $485 / 36 = 13.5$ years
- ▶ At current use, total budget used by ~ 2030
- ▶ **Obvious conclusion:** 88% coal, 50% gas and 35% oil reserves must be left in the ground
- ▶ So no new coal mines or coal-fired power stations

Improving efficiency



- ▶ “hot showers and cold beer”
 - ▶ By far the most cost – effective response
 - ▶ NFEE (2003) 30 % reduction
- 

Cost of new power

(CSIRO / AEMO 2018)

38

- ▶ Wind farm ~ \$40 / MWh
- ▶ Large scale solar ~ 40
- ▶ Wind or solar + storage ~ 60
- ▶ Baseload gas 90

- ▶ New coal-fired 120

- ▶ Current NSW avge wholesale \$82 / MWh

Jan Lowe
5 July 2019



Renewables can't supply our needs ?

39

- ▶ Wind & solar supplied over 50 % of total power consumption of South Australia last year
- ▶ On many days it met 100 % of demand [& exported surplus]
- ▶ Ellison, McGill & Diesendorf: all power needs now can be met from a mix of renewables

Jan Lowe
5 July 2019

Baldwin, Blakers & Stock, ANU 2018

40

Jan Lowe
5 July 2019

- ▶ Wind, solar plus storage
- ▶ Some solar thermal with storage
- ▶ Pumped hydro, ~50 new sites [of 22,000!]
- ▶ Water demand: ~ 0.1% irrigation use
- ▶ **Total cost ~ BAU approach**
- ▶ NSW government road map for 2040



Transport



- ▶ No city has ever solved the problem by more roads
- ▶ Urban planning, driving alone in a 1.5 tonne car
- ▶ Train or bus $\frac{1}{2}$ energy, tram $\frac{1}{4}$, bicycle 2 %
- ▶ Electric transport, powered by renewables
- ▶ Hydrogen ?

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.

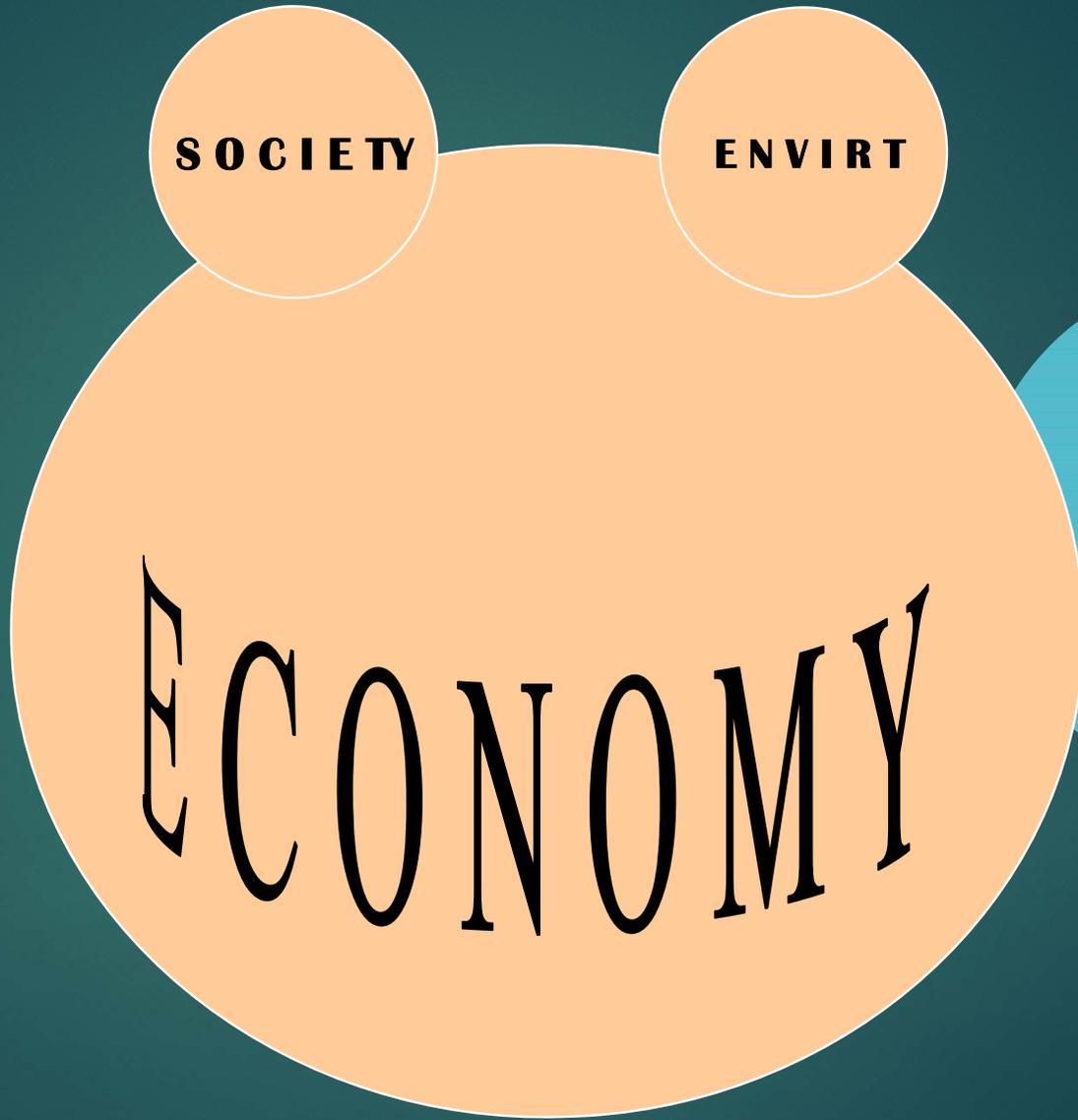
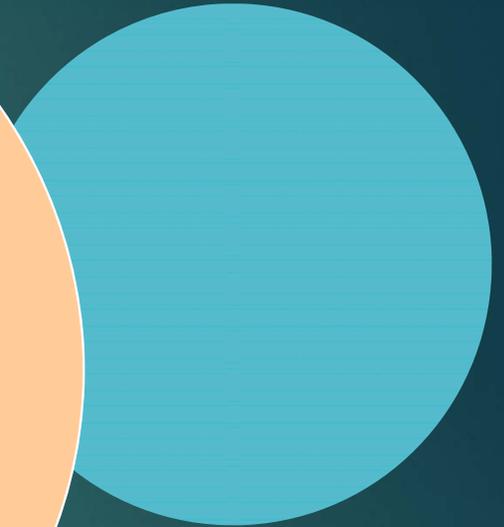
Supporting our Economy

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

ENVIRT

ECONOMY



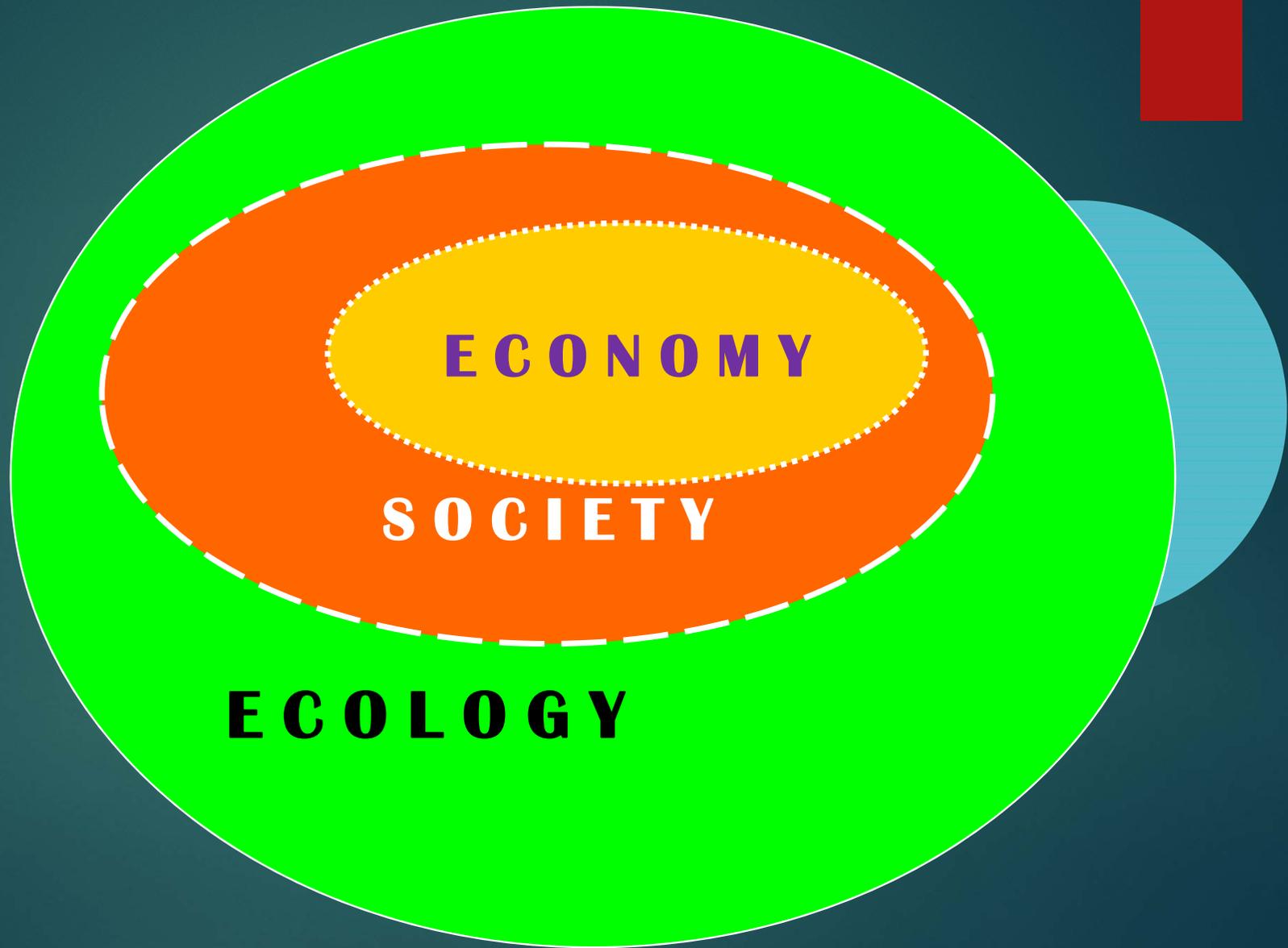


Markets give us things
many of us want



**NATURAL SYSTEMS GIVE
US THINGS WE ALL
REALLY NEED**





ECONOMY

SOCIETY

ECOLOGY

Three alternative responses

[Richard Eckersley]

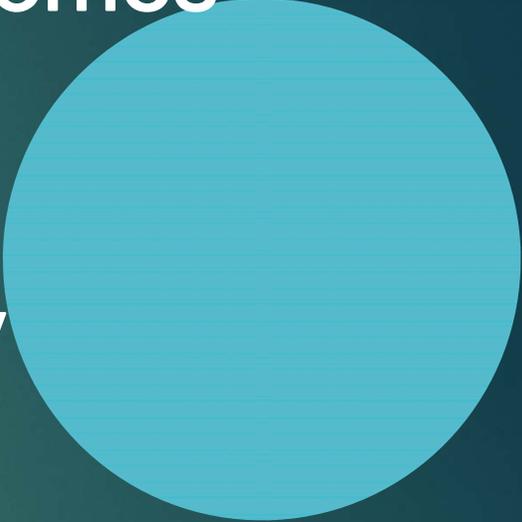
- ▶ Denial: Don't change, instead try to prove that change is not necessary [John Kenneth Galbraith]
- ▶ “The problem is that the status quo is suicide” – Antonio Guterres
- ▶ Avoidance: “Don't under-estimate the power of distraction” [Woody Allen]
- ▶ Take responsibility for change: a small group can change the world [Margaret Mead]

The underlying drivers of unsustainable development



- ▶ Population growth
 - ▶ Consumption per person
 - ▶ Societal values
- 

New set of values



- ▶ Domination of nature becomes *ecological sensitivity*
- ▶ Consumerism replaced by *quality of life*
- ▶ Individualism -> *human solidarity*

So criteria for sustainable futures



- ▶ Stabilised population
 - ▶ Stabilised per capita consumption
 - ▶ Circular economy
 - ▶ Renewable resources sustainably used
 - ▶ Stabilised global climate
 - ▶ Biodiversity loss halted
 - ▶ More equitable society
 - ▶ New ethical basis
- 

Utopian?



- ▶ 1800: end slavery
- ▶ 1900: votes for women
- ▶ 1989: South Africa without apartheid
Apology to stolen generations
African-American US president
Female political leaders
Same – sex marriage
Good coffee, civilised licensing laws in Qld !
- ▶ **Practically all features of modern life**

Conclusion

- ▶ Despite CoAG, no overall vision or national policy
- ▶ In its absence, environmental decline continues
- ▶ Biodiversity loss most critical problem
- ▶ Slowing climate change most urgent problem
- ▶ Addressing **driving forces** should be a priority
- ▶ So stabilising population an essential goal
- ▶ Much more efficient use of resources
- ▶ Moving toward a steady-state, circular economy
- ▶ More equitable access to essential services



a better story