

Rio + 20

- United Nations Conference on Sustainable Development, Rio de Janeiro, June 2012
 - 20 years after 1992 Earth Summit in Rio and *Agenda 21*
- ‘a chance to move away from business-as-usual and to act to end poverty, address environmental destruction and build a bridge to the future’..

Rio+20

- ‘smart measures that can reduce poverty while promoting decent jobs, clean energy and a more sustainable and fair use of resources’.
- Two themes:
 1. a green economy in the context of sustainable development and poverty eradication;
 2. the institutional framework for sustainable development.

Rio + 40

- 1972 Stockholm Conference on the Human Environment
- 1972 *The Limits to Growth* (D. H. Meadows *et al.* Club of Rome)
 - 12m copies in 37 languages

What difference does 40 years make?


Deepwater Horizon April 2010

Torrey Canyon, Seven Stones Reef, 1967.




Spaceship Earth

- 1966: 'The closed economy of the future might be called the "spaceman" economy, in which the earth has become a single spaceship, without unlimited reservoirs of anything, either for extraction or for pollution..'
- 'in a space ship, there are no sewers'
 - 'The economics of the coming spaceship earth', by Kenneth E. Boulding, 1966 *Environmental Quality in a Growing Economy*, Johns Hopkins Press



Apollo 8 Dec 21- 27th 1968: First escape from Earth's orbit



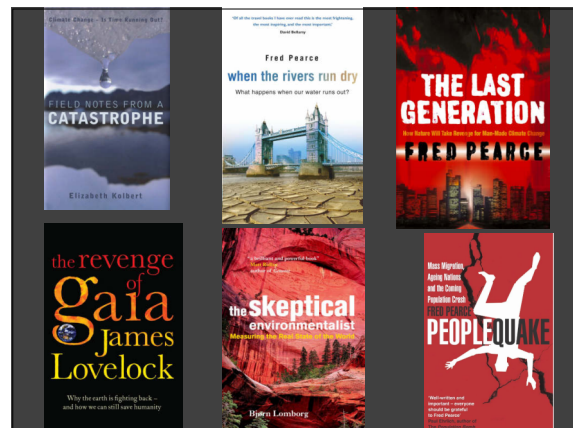
1968: 2001: A Space Odyssey: Stanley Kubrick (Arthur C. Clarke 'The Sentinel', 1948)

Mainstream Sustainable Development

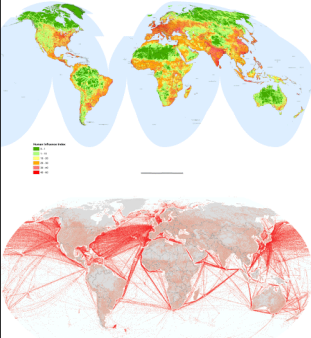
- 1987 World Commission on Environment and Development (Brundtland Report)
- 1992 UN Conference on Environment and Development 1992 (Rio Conference)
- 2002 World Summit on Sustainable Development
- 2012 Rio + 20




New Economics Foundation



The Humanized Biosphere




'Last of the Wild' Project,
Center for International Earth Science Information Network (CIESIN),
Earth Institute at Columbia University.


Kareiva *et al.* 2007 'Domesticated nature'. *Science*.

The Anthropocene

- A new era in geologic time
- The 'age of humankind'
- Paul Crutzen
 - Nobel Prize winner: ozone layer
 - 2002 *Nature* 415: 23
- When did the Anthropocene start?
 - Late 18th century (steam engine 1784)
 - 8000 years BP (agriculture)
- 'Great acceleration' from 1950

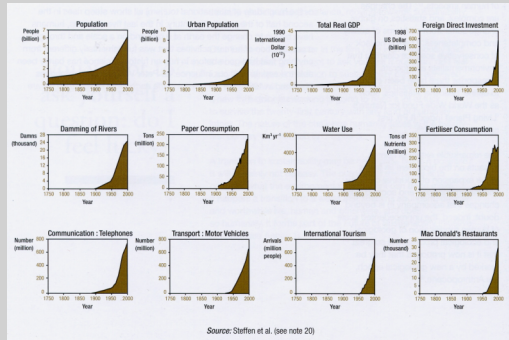


Paul Crutzen



Steam power

The Anthropocene's 'Great Acceleration'



Anthropocene: rate of change

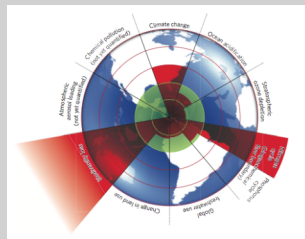
- 'the rates, scales, kinds and combinations of changes occurring now are fundamentally different from those at any other time in history; we are changing the earth more rapidly than we are understanding it'

– Peter Vitousek *et al.* Science 1997



Planetary Boundaries

1. Climate Change
2. Ocean acidification
3. Stratospheric ozone layer
4. Nitrogen and phosphorus cycle
5. Global hydrological cycle
6. Land use change
7. Biodiversity loss
8. Atmospheric aerosol loading
9. Chemical pollution

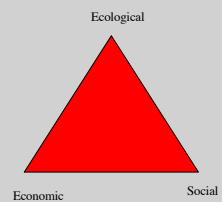


Johan Rockström et al. (2009) *Nature* 461: 472-5

Stockholm Resilience Centre
Research for Governance of Social-Ecological Systems

The Challenge of Sustainable Development

- Three dimensions:
 - Ecological: natural capital
 - Economic: livelihoods
 - Social: inter & intragenerational equity
- One Challenge
 - Rio + 20
 - Millennium Development Goals Review 2015
 - Convention on Biological Diversity
 - 2020 target



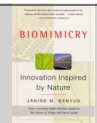
De-carbonise the World Economy

- Reduce fossil fuel use
- De-link energy generation from carbon production,
- De-link energy consumption from economic growth
- De-materialise production



Transform Production

- Technical and procedural innovation:
 - Novel technologies
 - Radical reduction in energy and material intensity
 - Technologies to increase flow of services not products
 - The circular economy
- Regulation:
 - External: drive improvement; level the playing field
 - Internal: move from reactive 'end-of-pipe' solutions to integrated and holistic frameworks for environmental management.

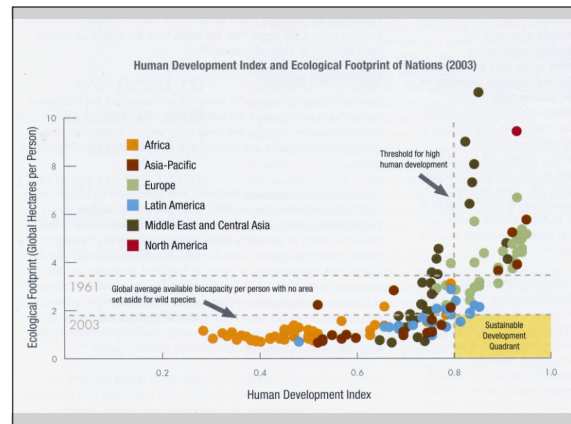


Audi A3 tdi
Green Car Magazine
Car of the year 2010



Transform Consumption

- Reduce consumption: to reduce overall human demands on the biosphere to levels that can be sustained;
- Redirect consumption: to less destructive forms;
- Redistribute consumption: to the less well off



How do you sell contraction and convergence?

- In industrialising countries (China, India, Brazil)?
- In developing countries (Nigeria, Kenya, Somalia)?
- In rich industrialized countries?



Patrick Chapatte



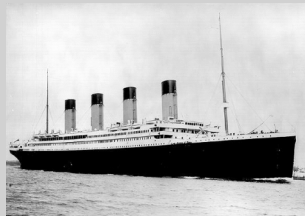
Sustainability and Human Aspiration

- Measurement
 - Beyond GDP
 - Beyond pricing nature
- Regulation
 - Markets and states
- Imagination:
 - Redefining the good life for 21st Century
- Leadership:
 - Inter-governmental organisations?
 - Politicians?
 - Bureaucrats?
 - Business people?
 - Academics?
 - NGOs?



Rearranging deckchairs?

- Setting targets for deckchair occupancy
- Planning how to model optimal deckchair distribution
- Developing the deckchair distribution evidence base



The Anthropocene

- A very uncomfortable place to be

