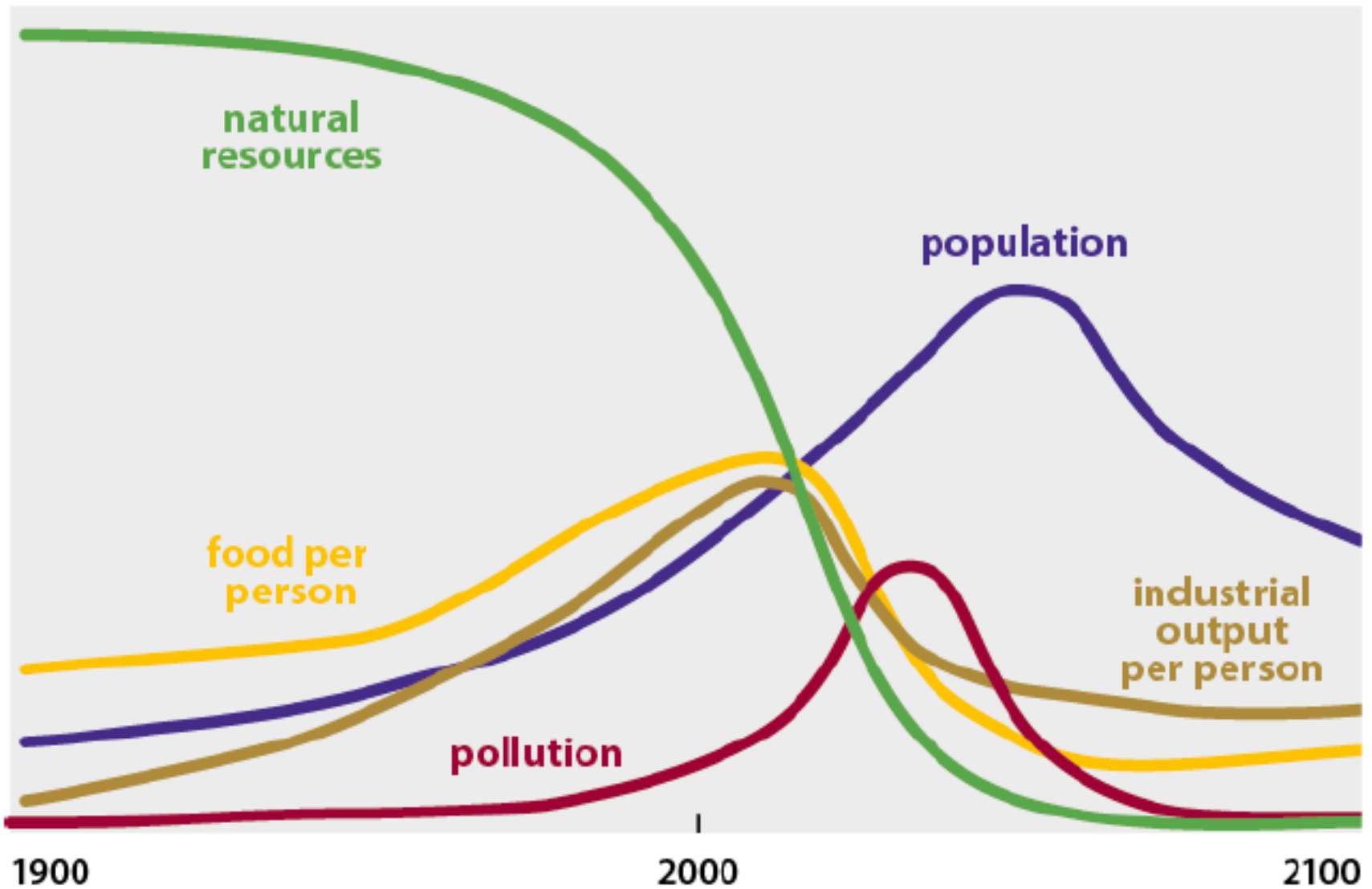


Come On! – Part 1

*The “Problematique”
State of the art, 50 years later*

Carlos Alvarez Pereira

Meeting CoR-CIRCE – CaixaForum – Zaragoza, 4 May 2017



"Limits to Growth" Model, standard run

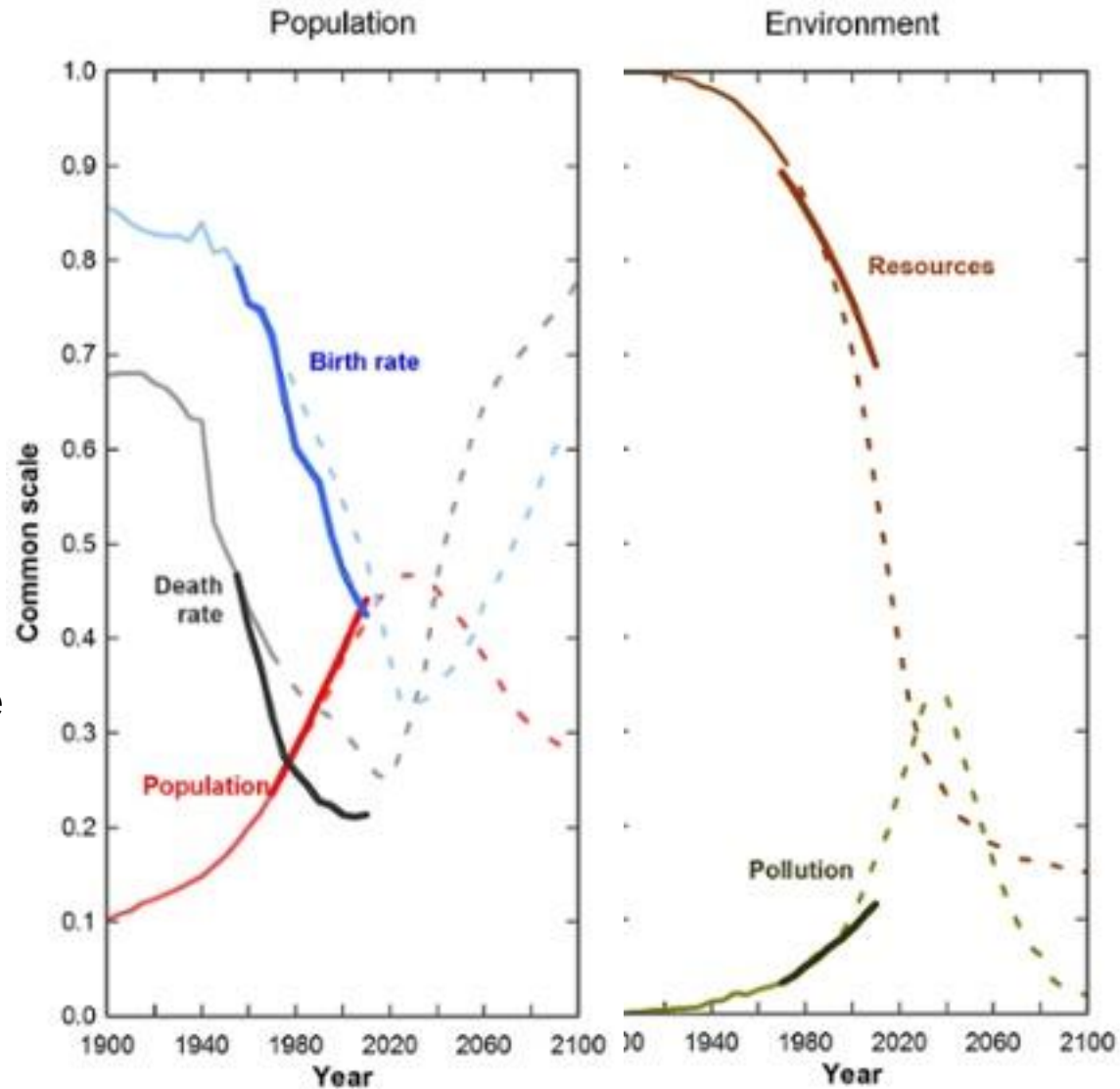
Anticipation

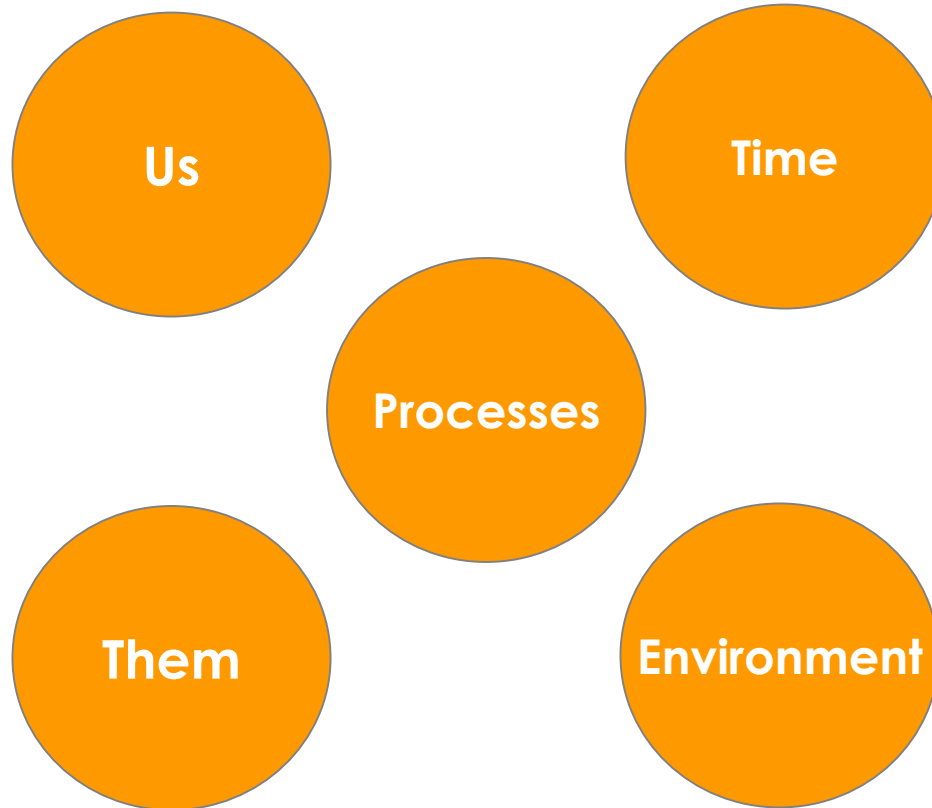
“The Guardian”

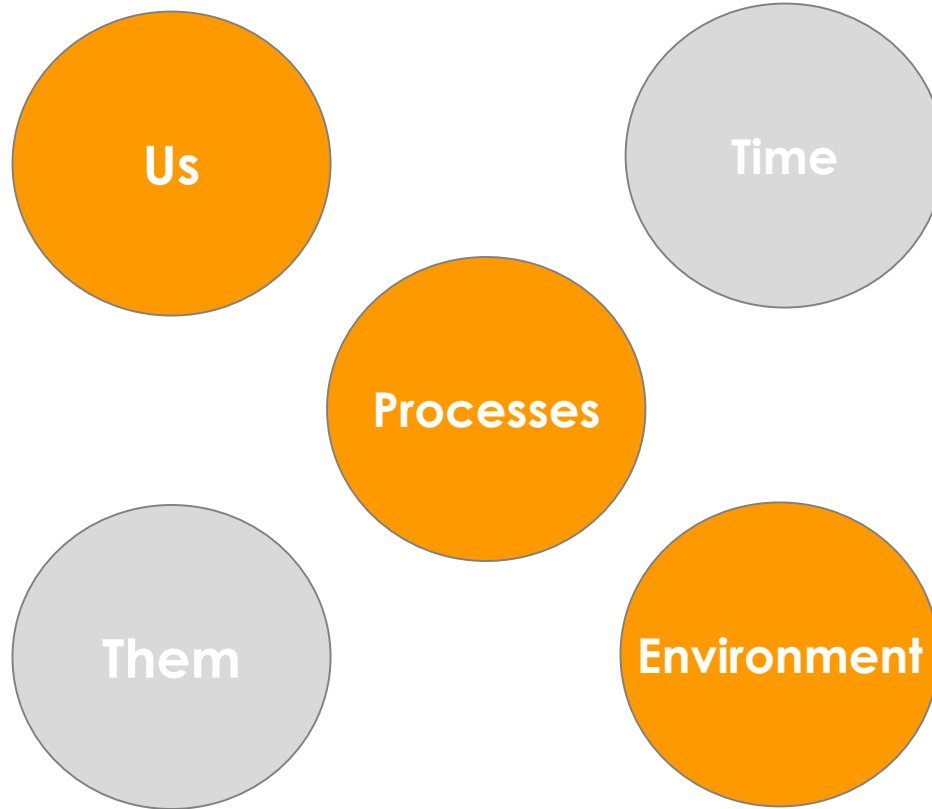
2 September 2014

“Limits to Growth” was right.
New research shows we're
nearing collapse.

“Four decades after the book was
published, Limit to Growth’s
forecasts have been vindicated by
new Australian research. Expect the
early stages of global collapse to
start appearing soon.”

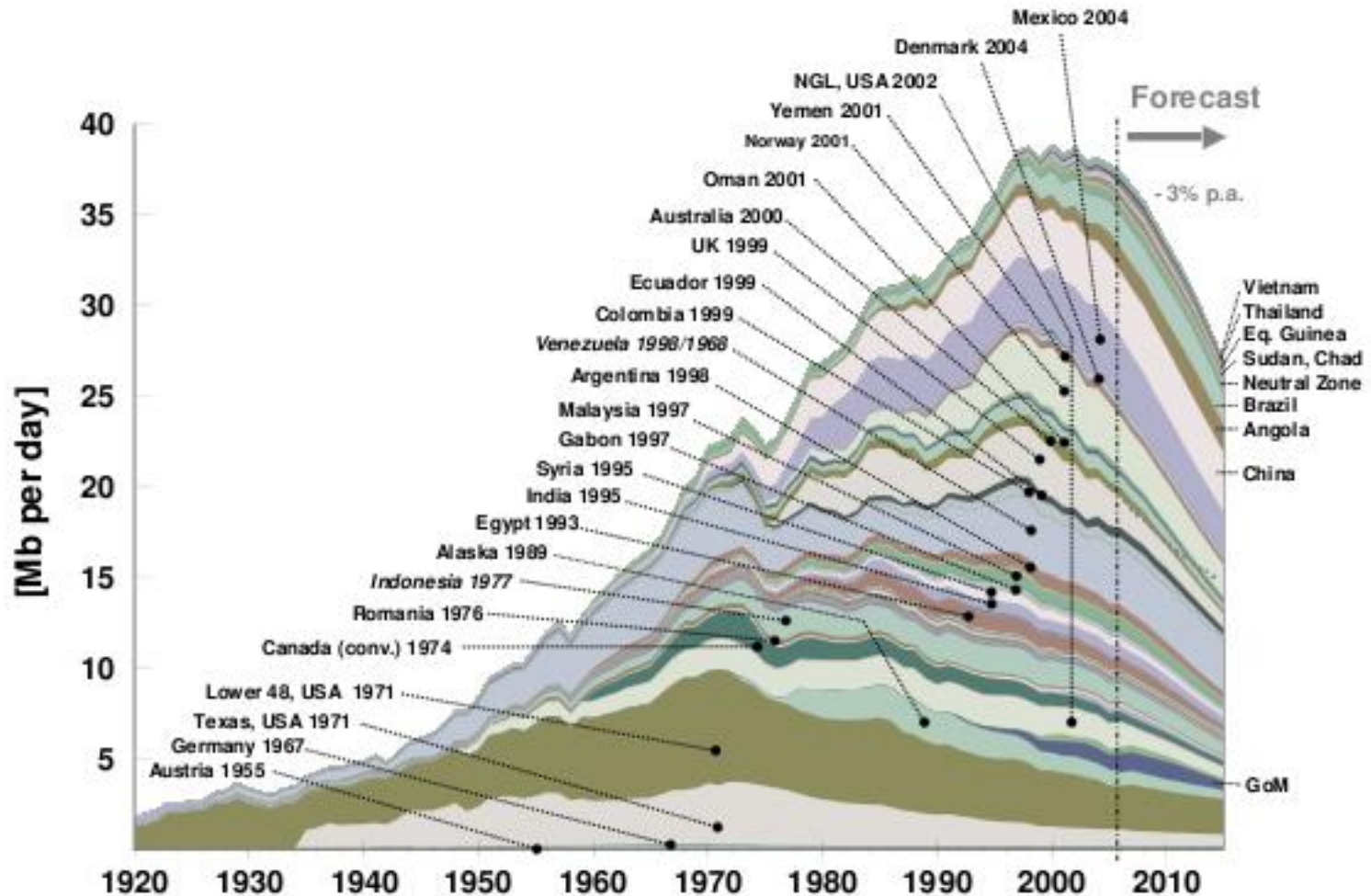






Finitude

Figure 5: Oil producing countries past peak

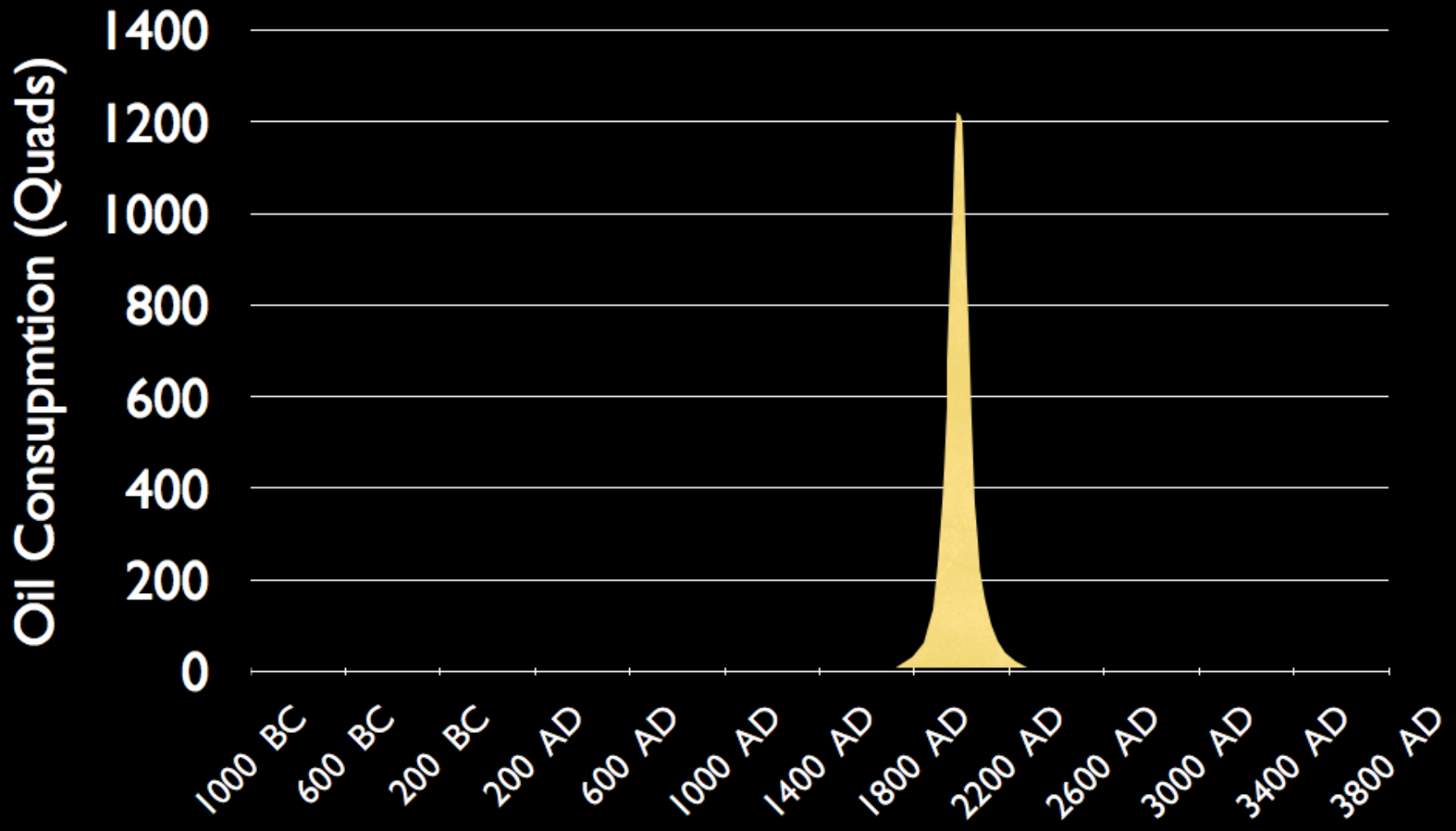


Ludwig-Bölkow-Systemtechnik GmbH, 2007

Source: IHS 2006; PEMEX, petrobras; NPD, DTI, ENS(Dk), NEB, RRC, US-EIA, January 2007

Forecast: LBST estimate, 25 January 2007

Peak Oil – The Big Picture



Finitude

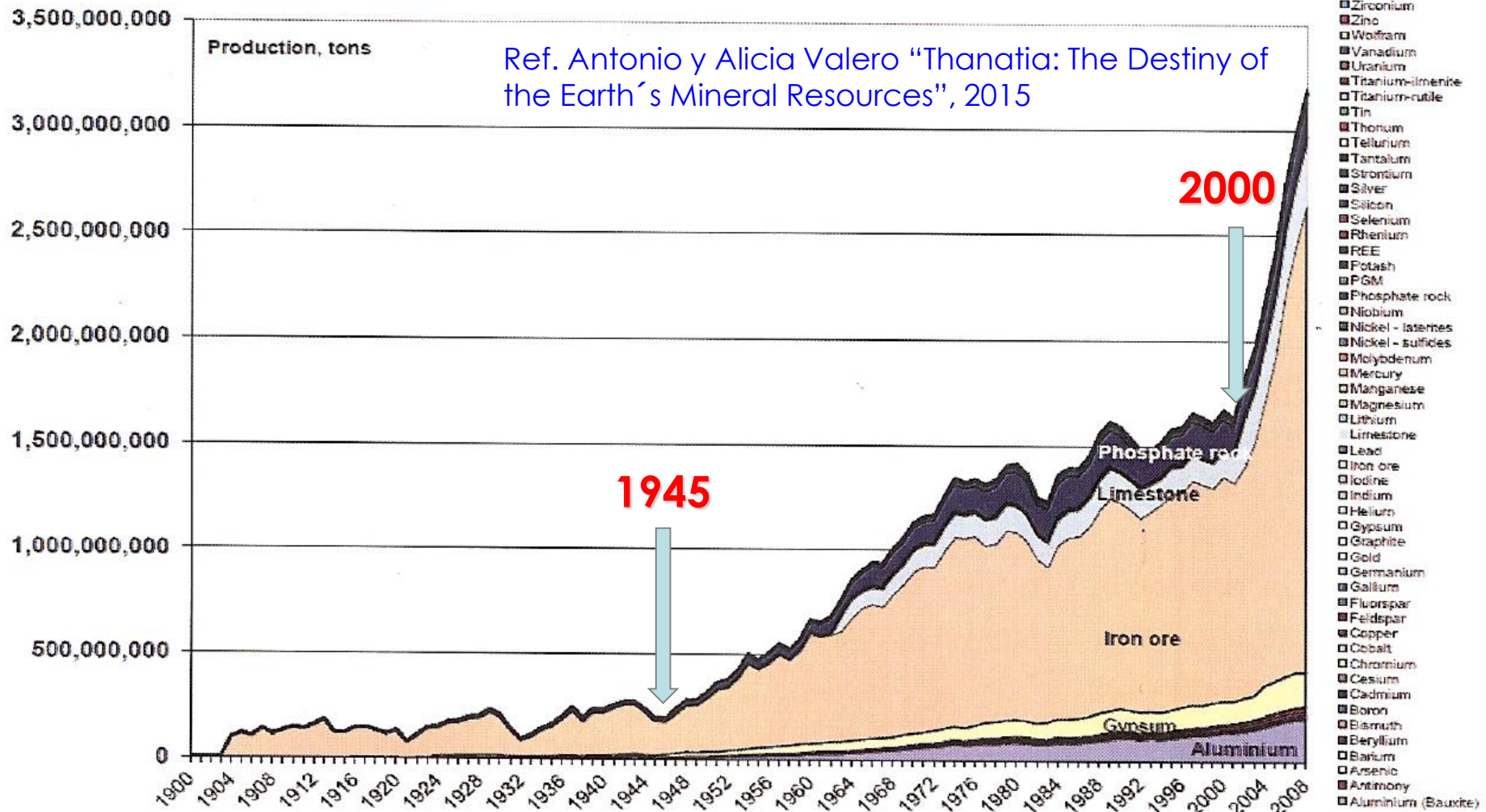
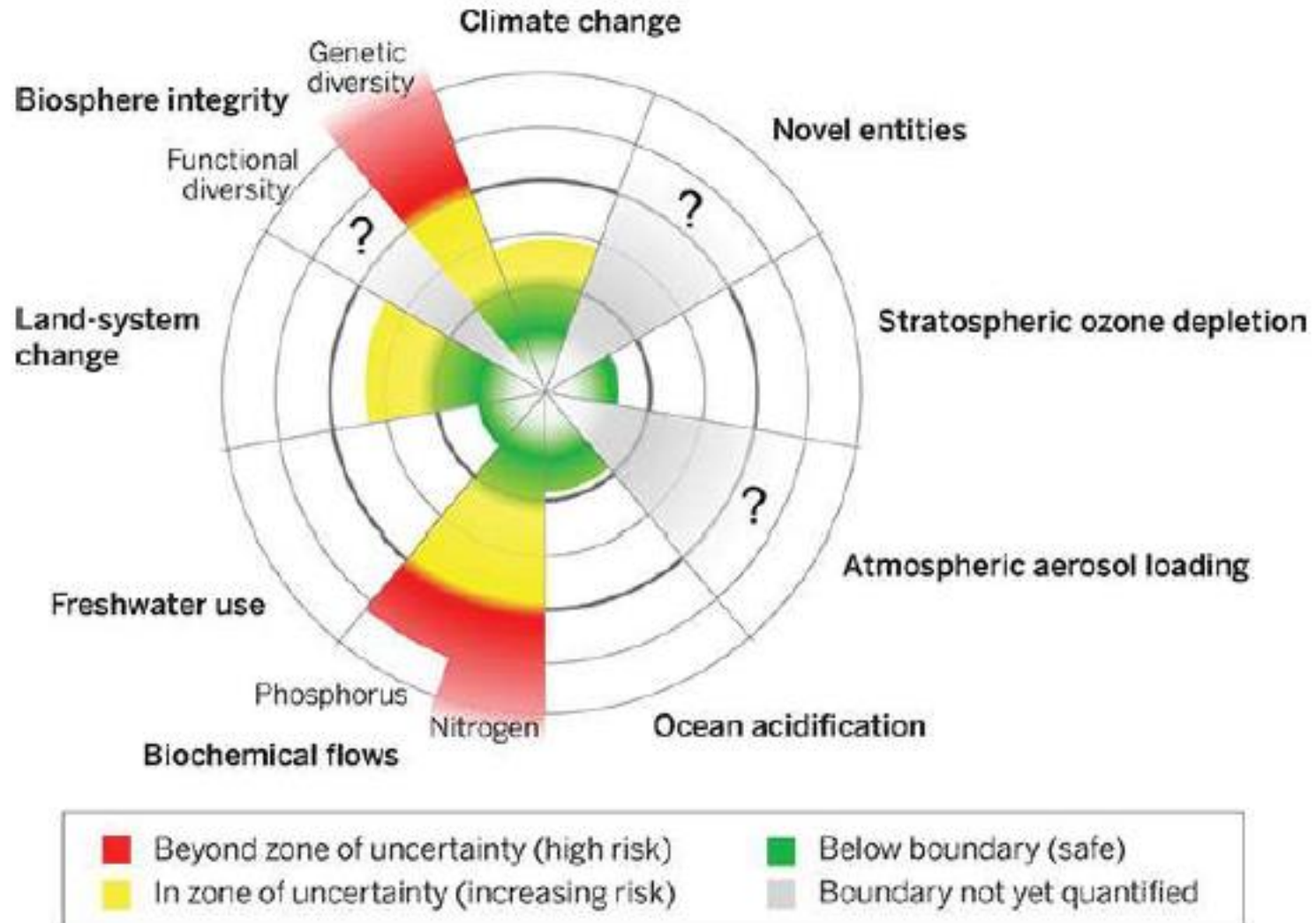


Fig. 1.1 Production of the main non-fuel mineral commodities on Earth in the 20th century

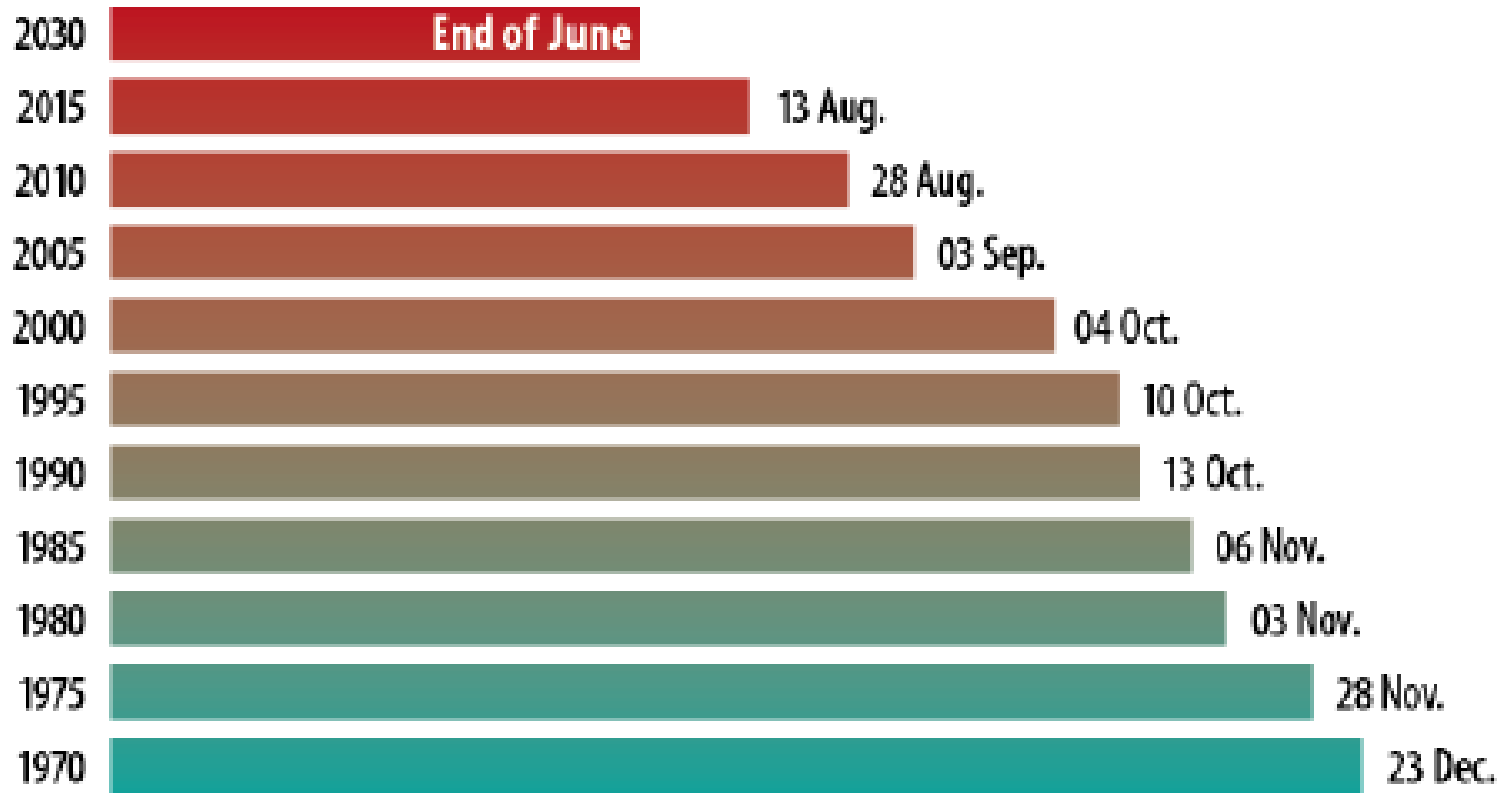
Planetary boundaries

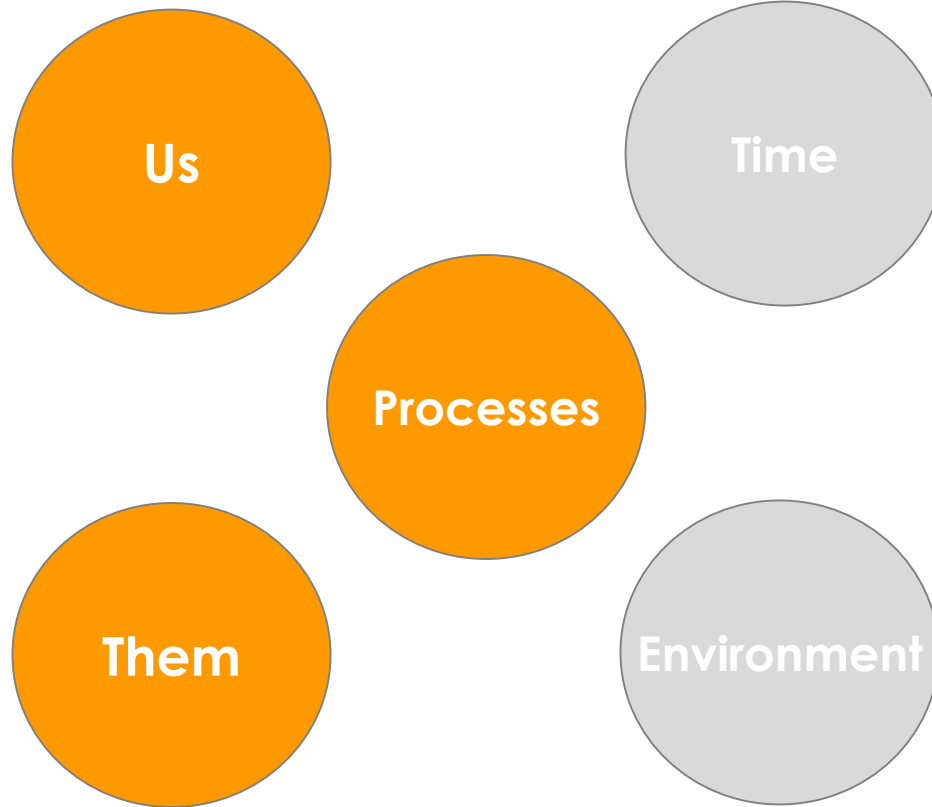


Ref. Steffen et al "Planetary Boundaries: Guiding human development on a changing planet", Science, 16/1/15

Earth Overshoot Day

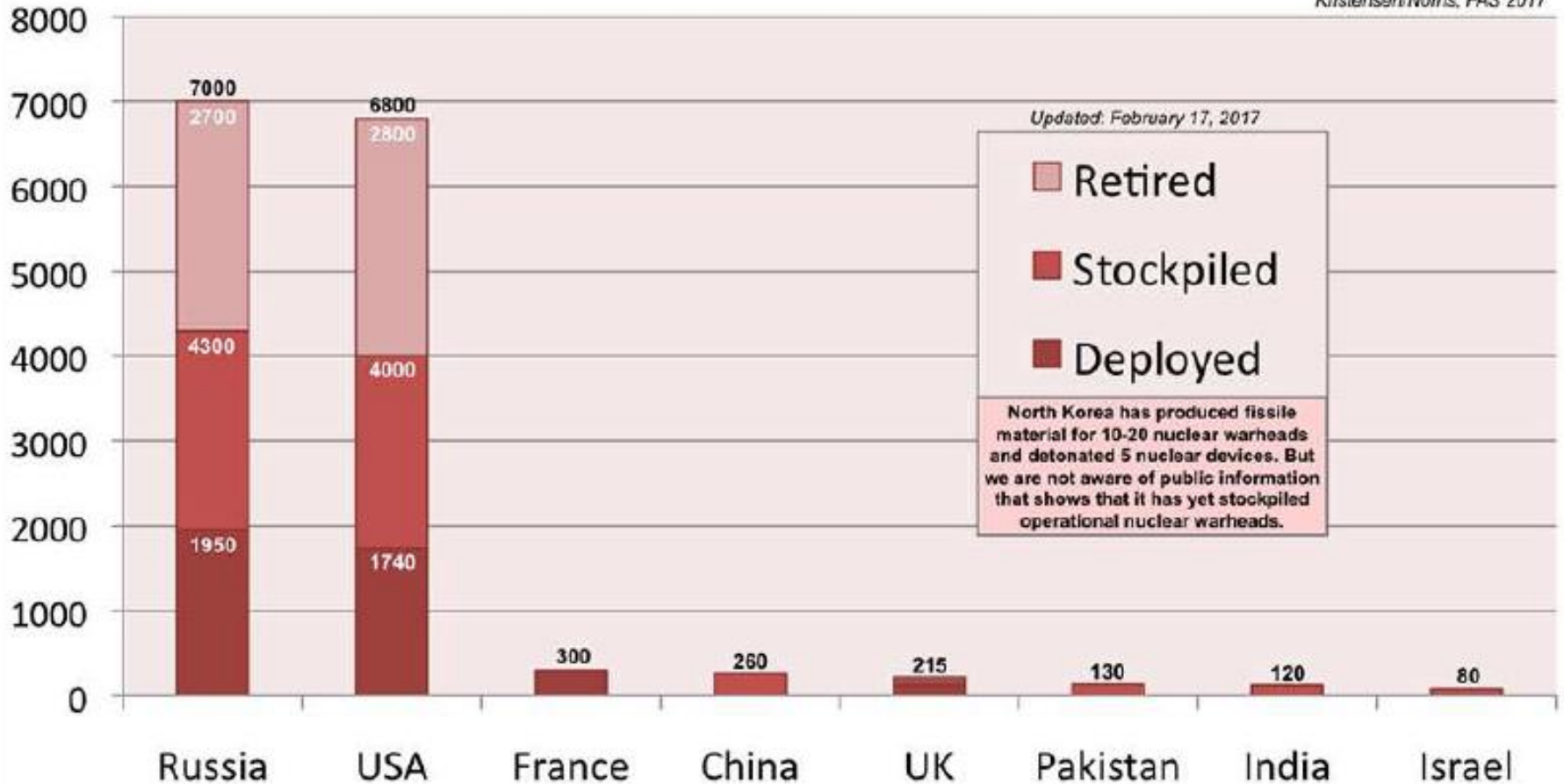
Date when humanity's demands exceed what Earth can regenerate in that year



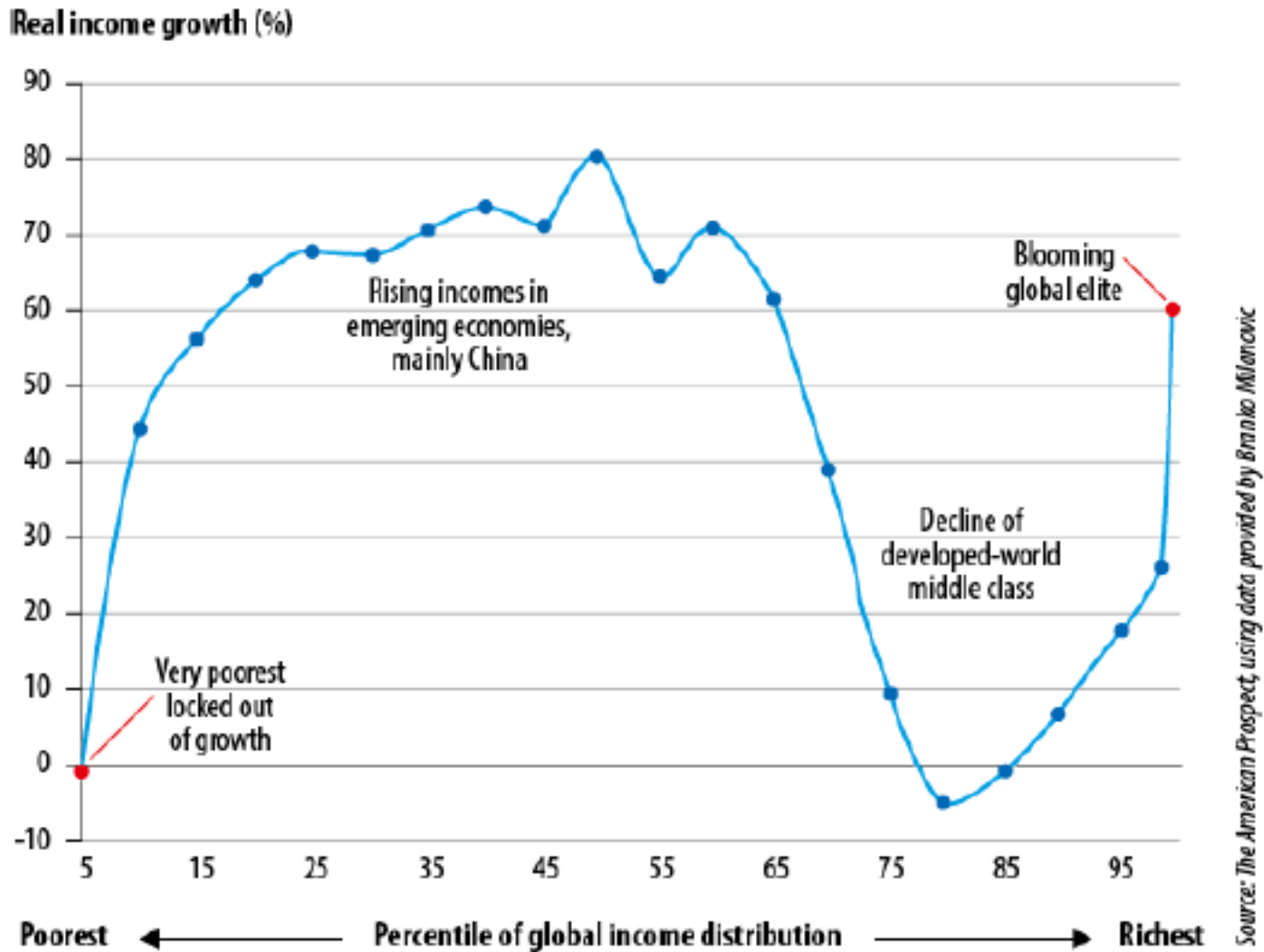


Estimated Global Nuclear Warhead Inventories, 2017

Kristensen/Norris, FAS 2017

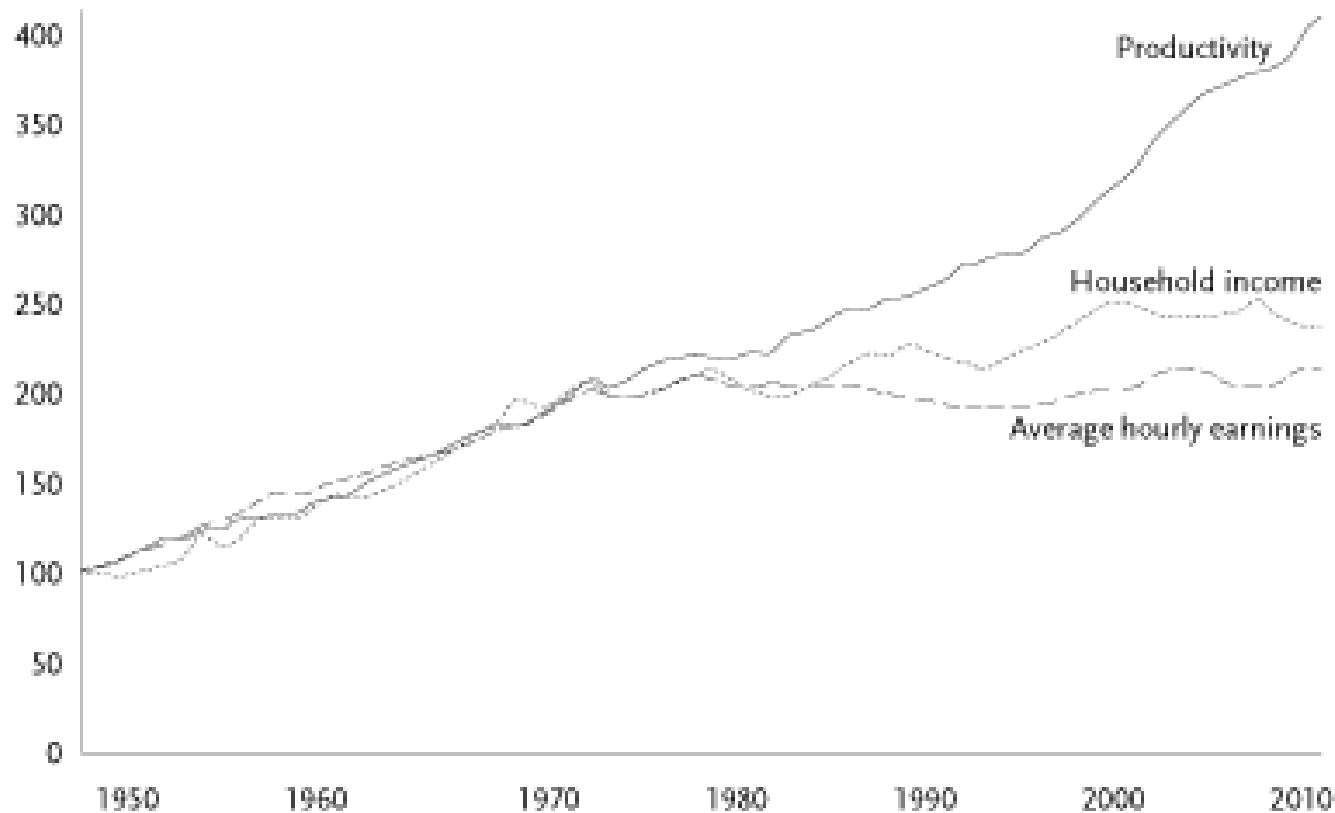


Growing inequality

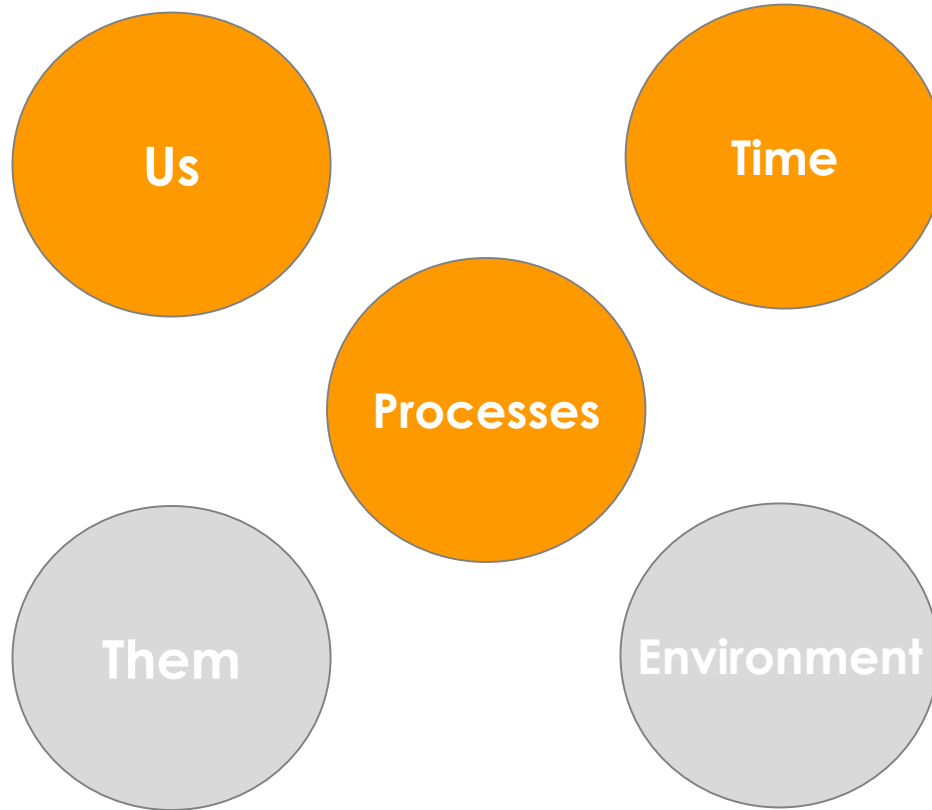


Growing inequality

FIGURE 7: *The broken social contract, US, 1947–present*

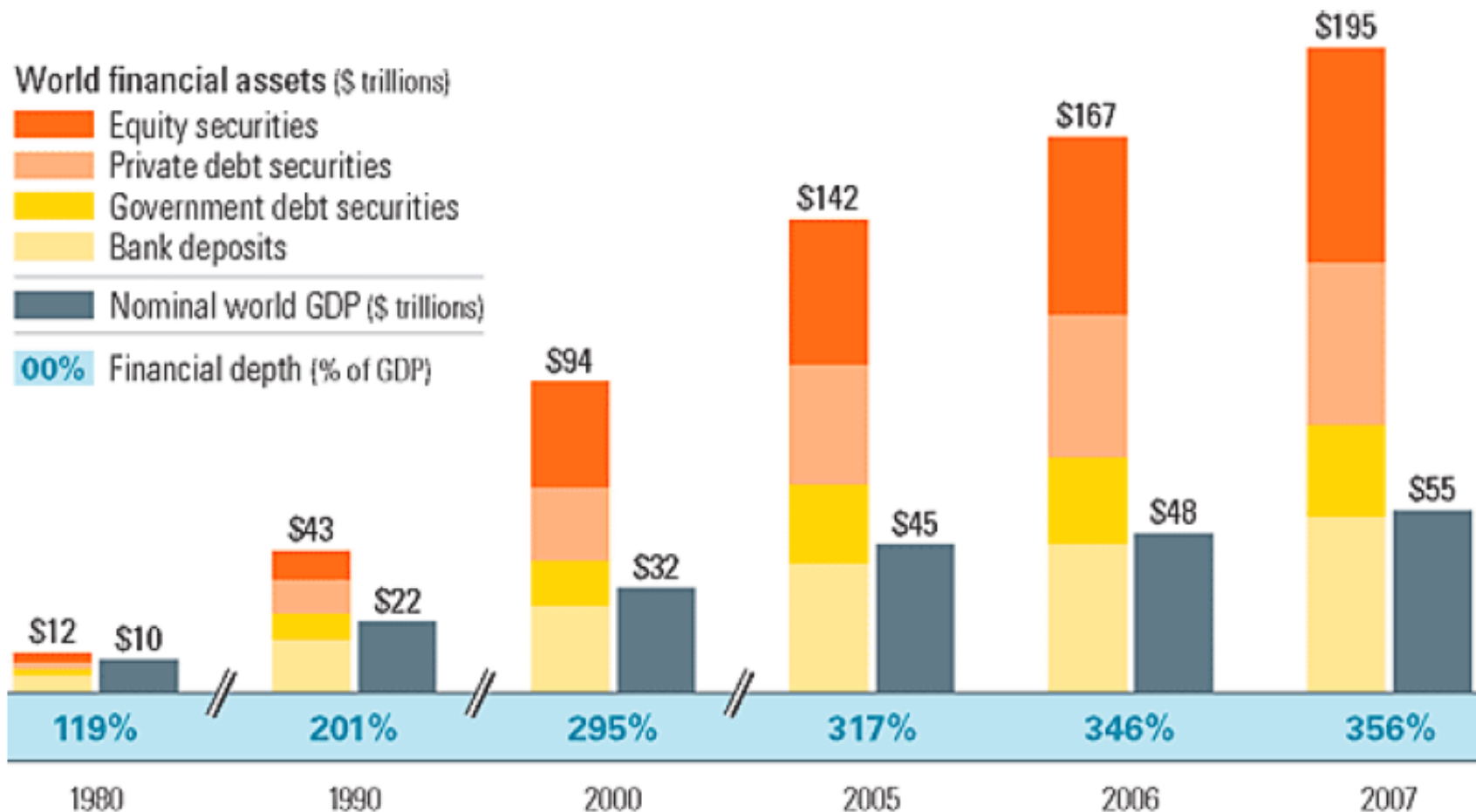


Source: Thomas Kochan, 'The American Jobs Crisis and the Implications for the Future of Employment Policy', *International Labor Relations Review*, vol. 66, no. 2, 2013.

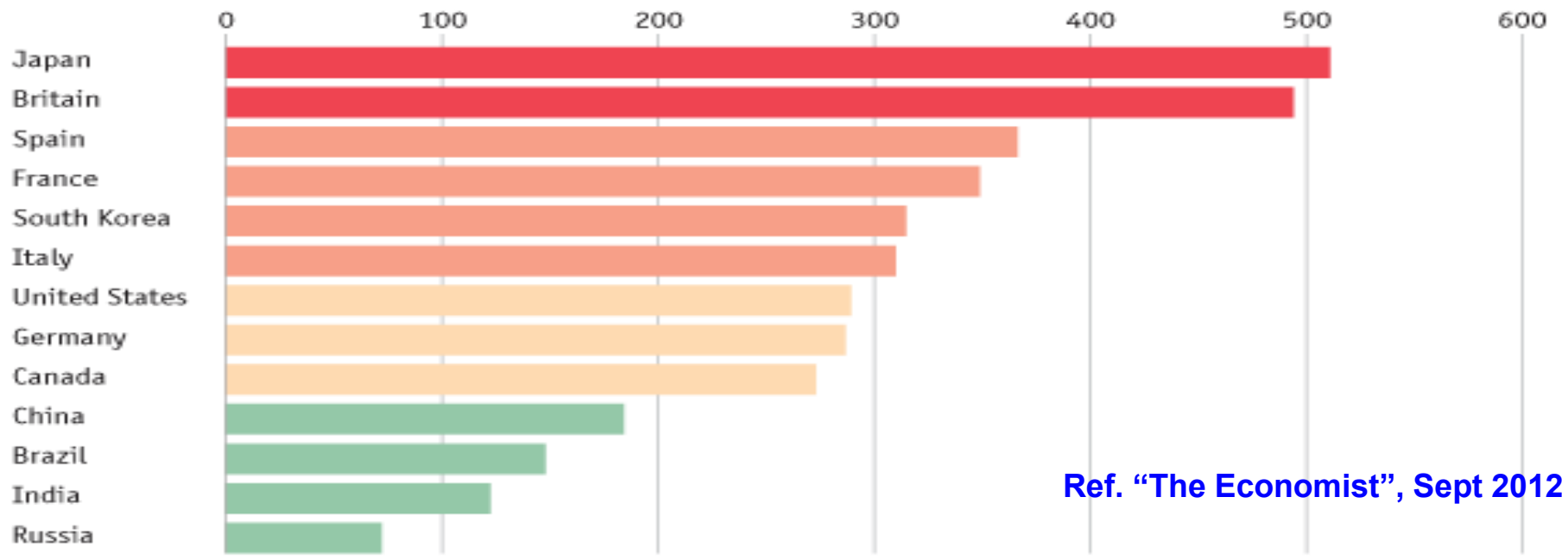


World financial assets

More than three times higher than GDP



Note: Asset and GDP figures have been rounded for simplicity. Financial depth percentages were calculated using nonrounded figures. Source: McKinsey Global Institute



Ref. "The Economist", Sept 2012

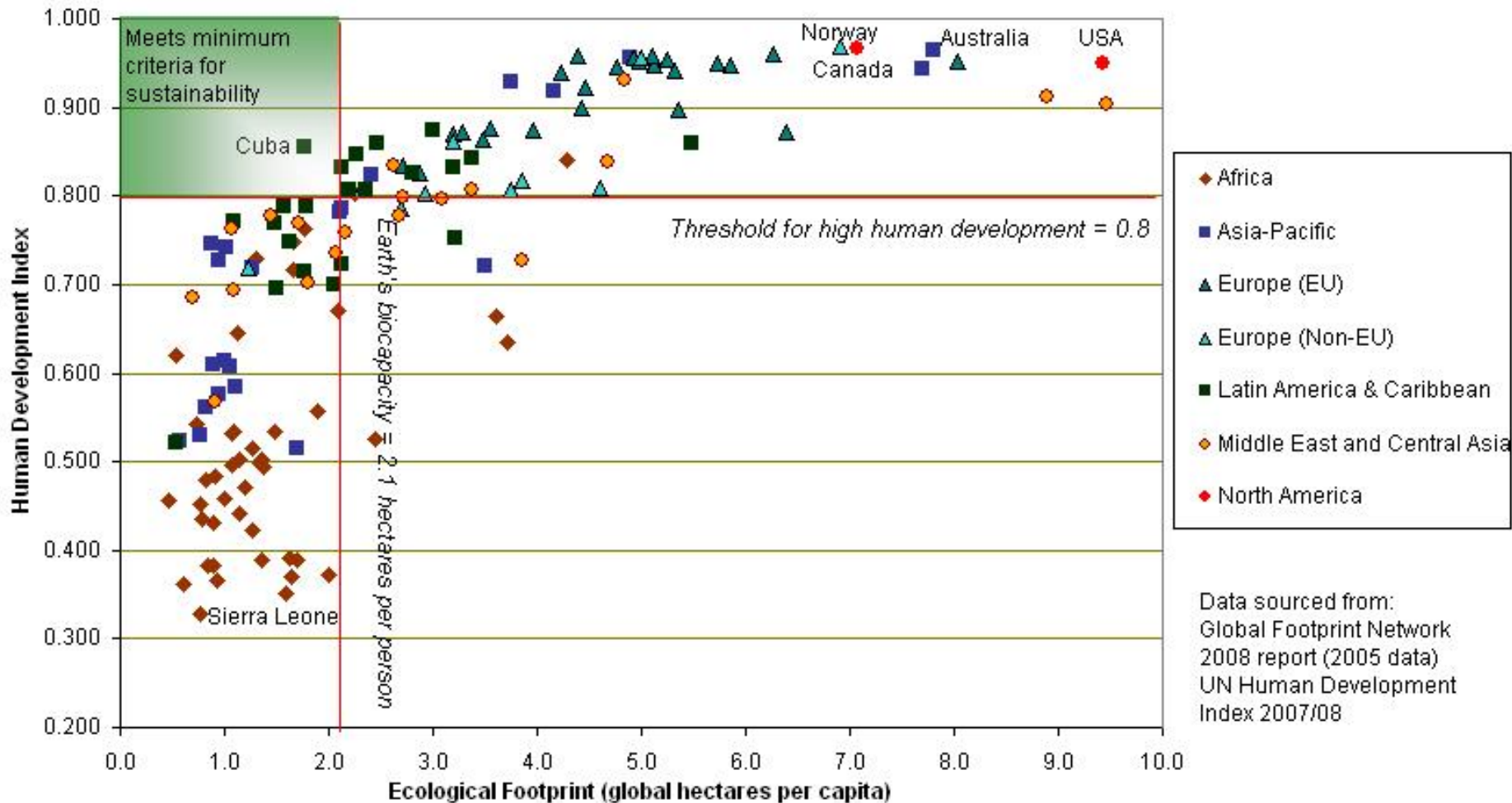
SUSTAINABLE DEVELOPMENT GOALS



Goal n°8 “Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all”

A huge transition

Human Welfare and Ecological Footprints compared



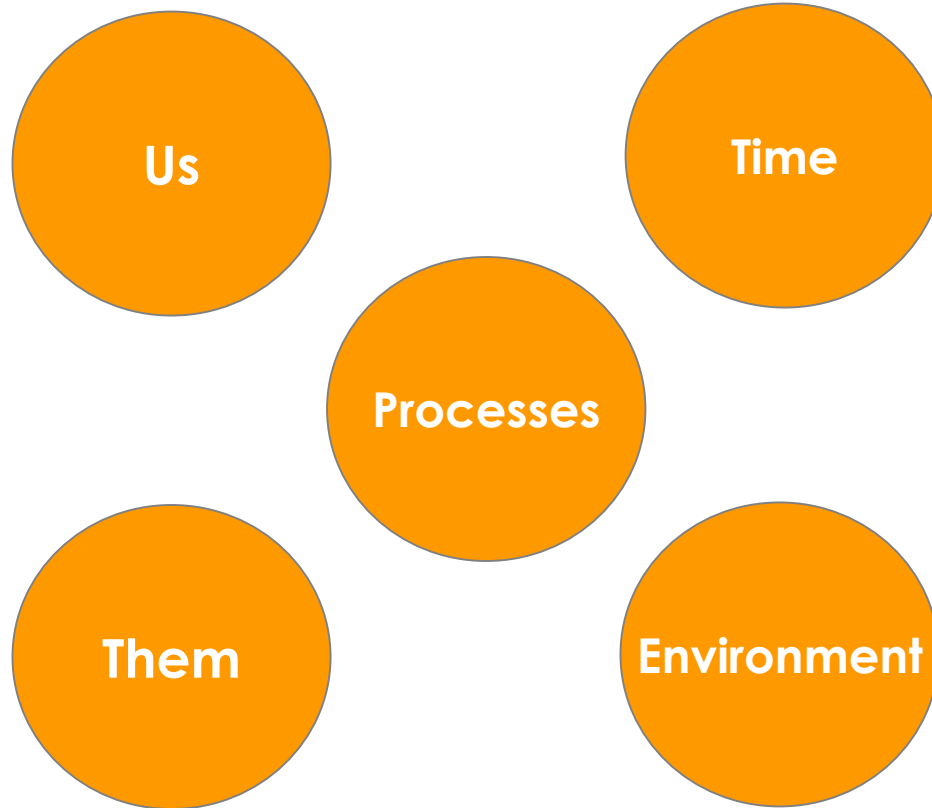
Epistemological gap

“The human **ability to do** has vastly outstripped the **ability to understand**.

As a result, civilization is faced with a **perfect storm**...

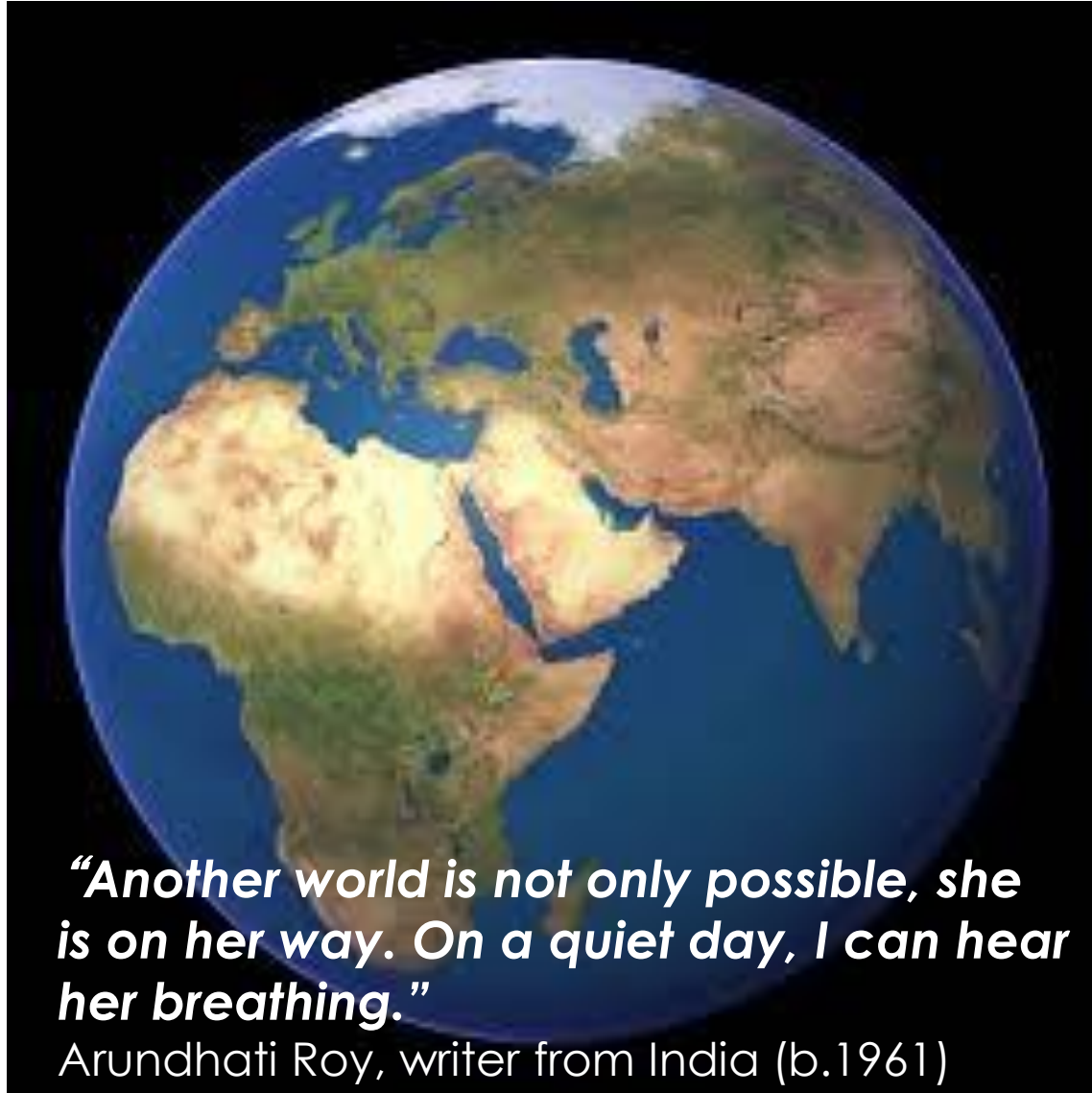
...a global society infected by the **irrational belief that physical economies can grow forever.**”

Gro Harlem Brundtland, Paul Ehrlich et al
“Imperative to Act” (2012)





Hope



“Another world is not only possible, she is on her way. On a quiet day, I can hear her breathing.”

Arundhati Roy, writer from India (b.1961)