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TSHWANE UNIVERSITY OF TECHNOLOGY

Capitalistic Constraints on Sustainable Development

Rasigan Maharajh

An Alternative @ Rio+20: Peoples' Sustainability Treaties & the Manifesto

18th October 2012, Ramapo College.

Outline of Presentation

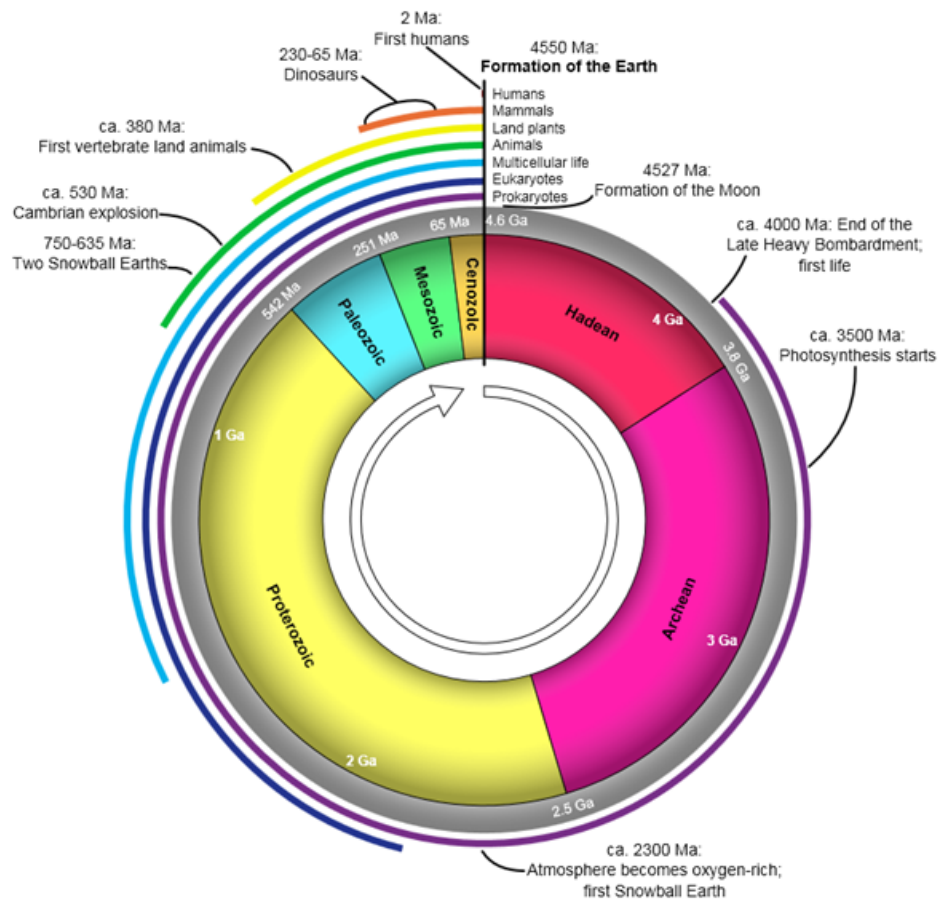
1. Introduction
2. Contemporary Crises
3. Developmental Impacts
4. Emergent Challenges

Introduction

- Concurrent crises all emanate from the current mode of production and consumption, waste, and environmental degradation
- Accelerated distribution through neo-liberal globalisation
- Hegemonic World System, Unilateralism & State violence

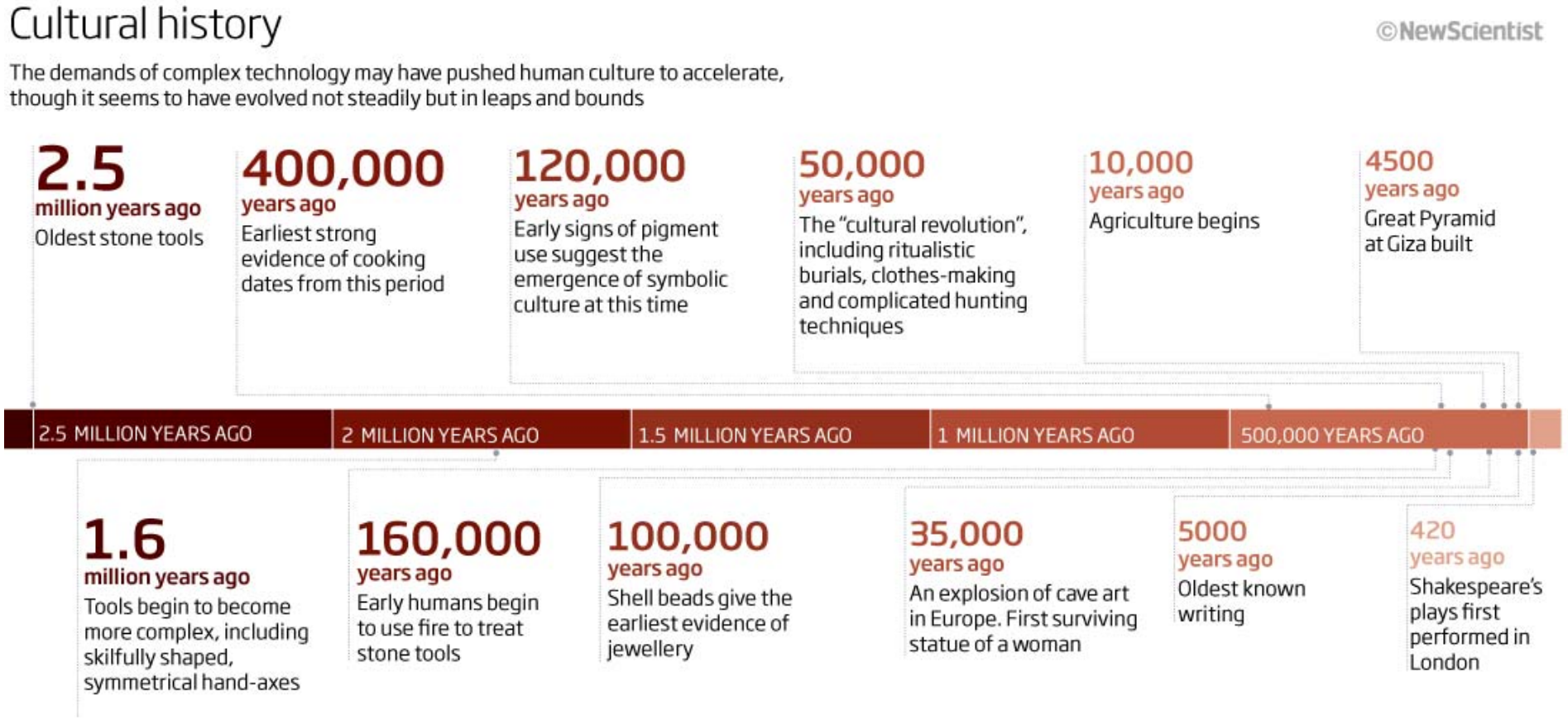
- *"the issue is not what will magically solve the immediate dilemmas of our world-system but the basis on which we shall create the successor world-system"*
  - Wallerstein (2005)

Longer history

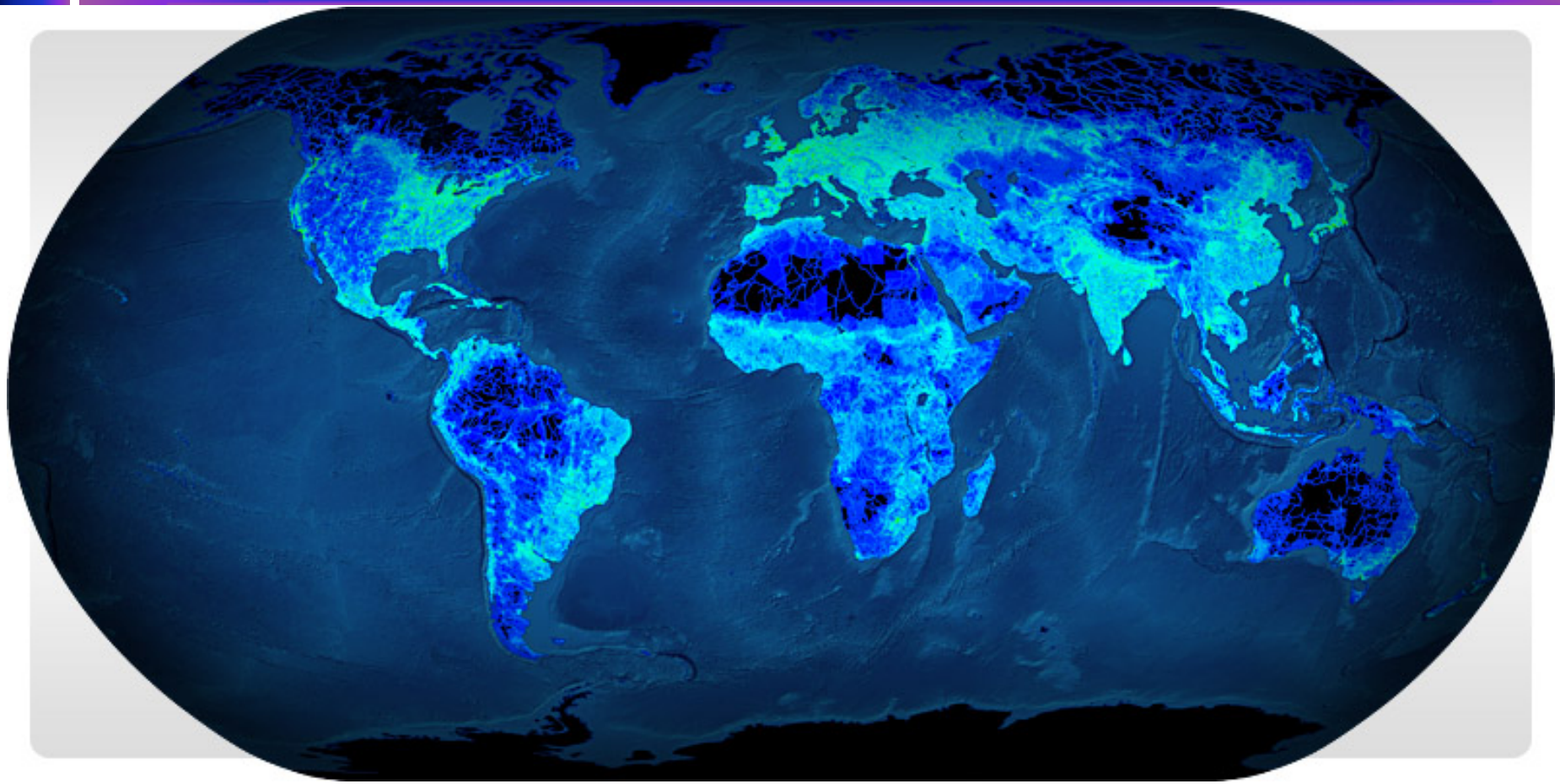


- Long geological timescales
- Evolutionary change punctuated by revolutionary transformations:
- Palaeolithic – Neolithic – Urban-Industrial – *GREEN …*

Long history



21st Century CE Challenges



Anthromes

Used

Dense Settlements
- Urban
- Mixed settlements

Villages
- Rice villages
- Irrigated villages
- Rainfed villages
- Pastoral villages

Croplands
- Residential irrigated croplands
- Residential rainfed croplands
- Populated croplands
- Remote croplands

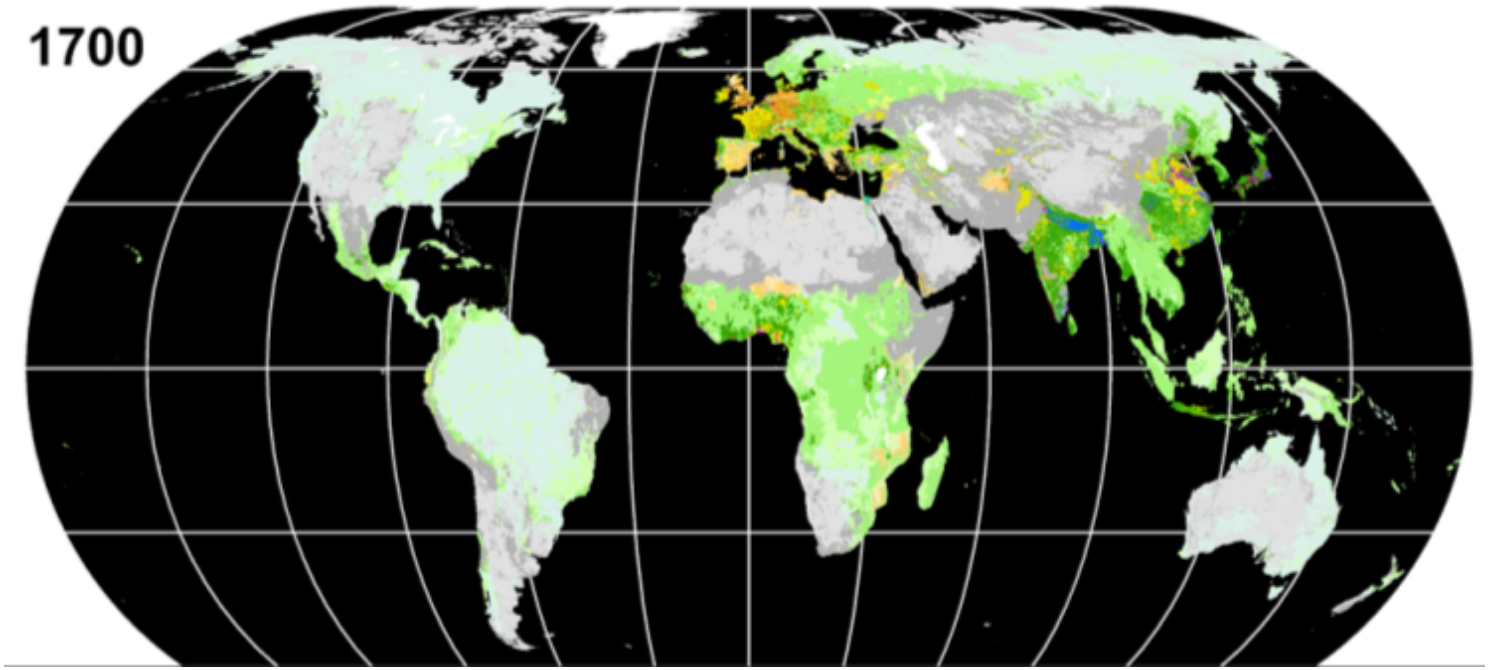
Rangelands
- Residential rangelands
- Populated rangelands
- Remote rangelands

Seminatural

Seminatural
- Residential woodlands
- Populated woodlands
- Remote woodlands
- Inhabited treeless & barren lands

Wild

Wildlands
- Wild woodlands
- Wild treeless & barren lands



Ellis, E. C., K. Klein Goldewijk, S. Siebert, D. Lightman, and N. Ramankutty. 2010. Anthropogenic transformation of the biomes, 1700 to 2000. *Global Ecology & Biogeography*

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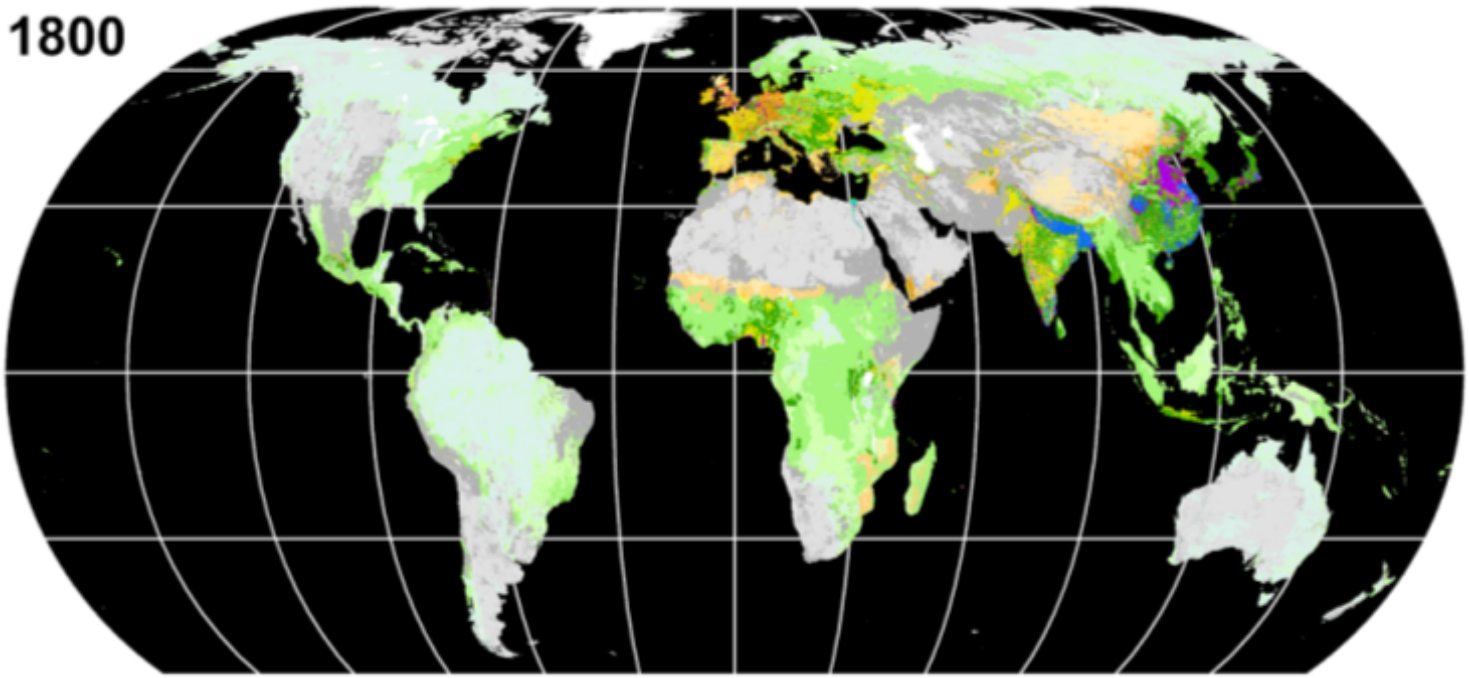

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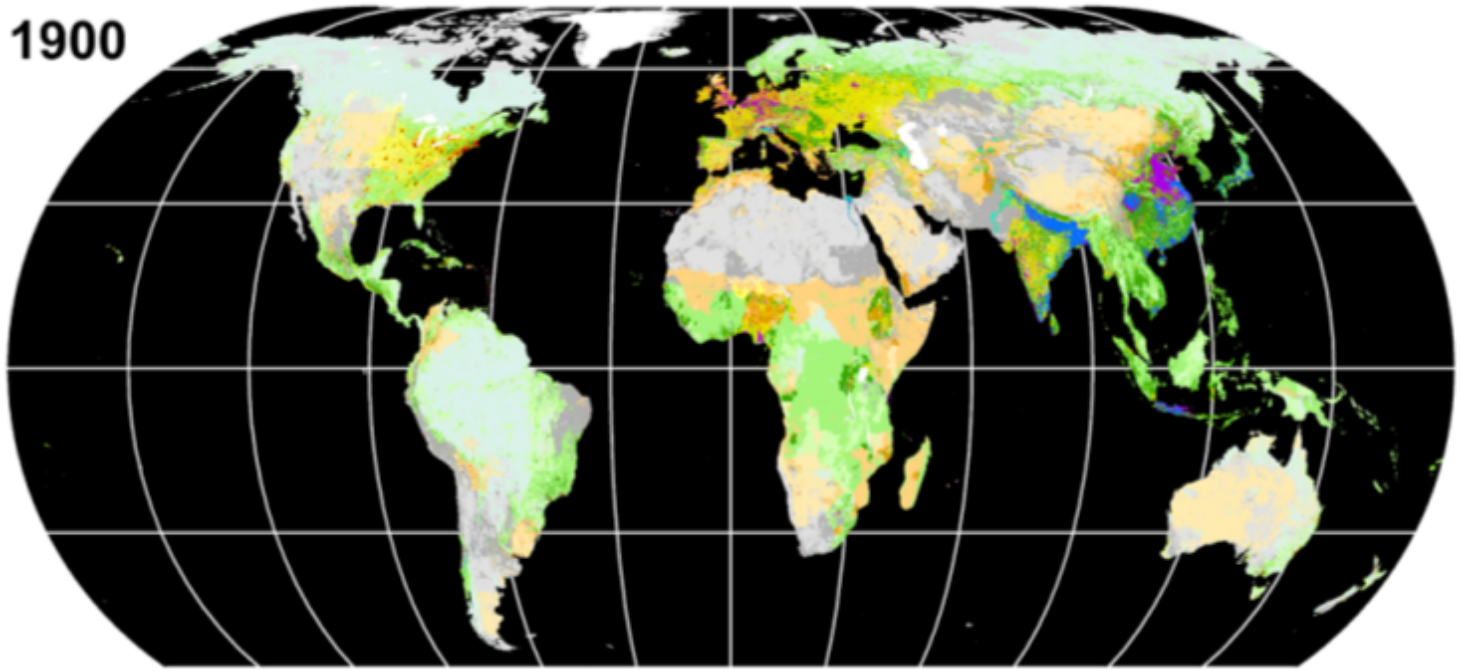

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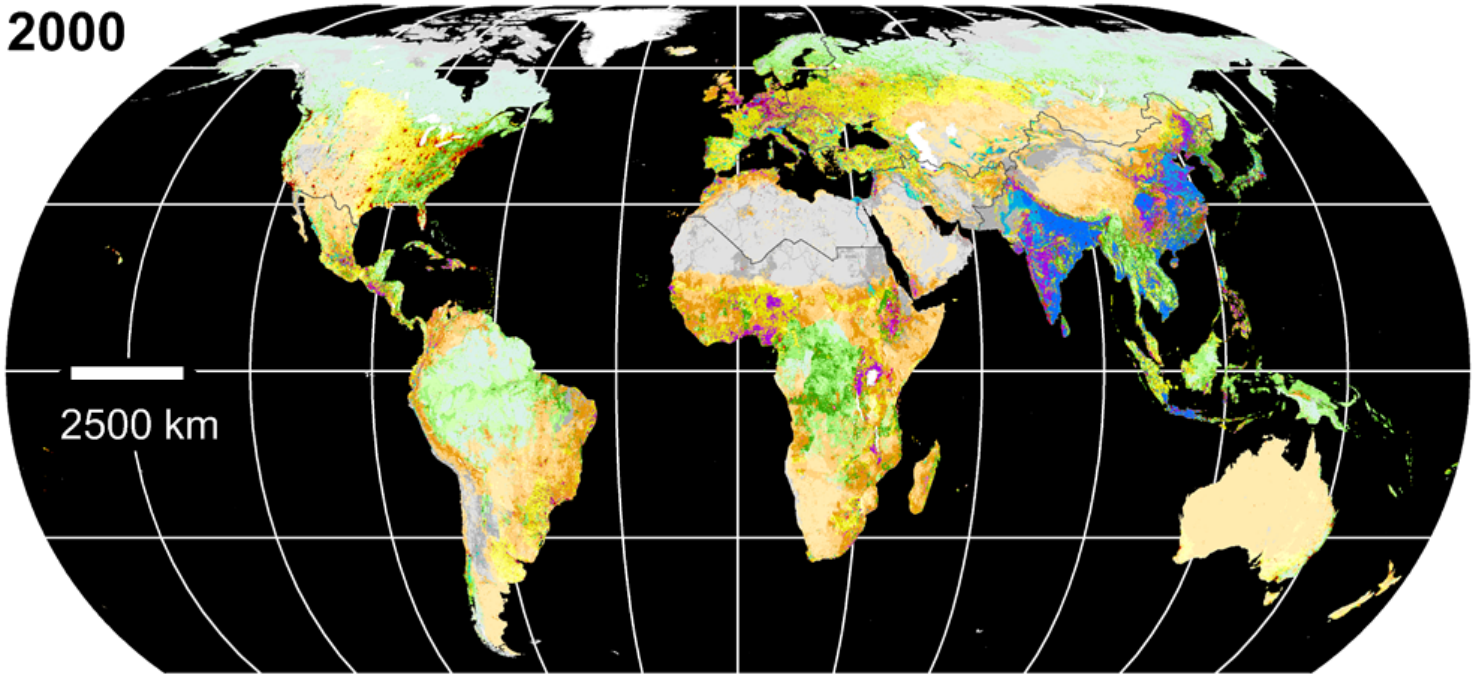

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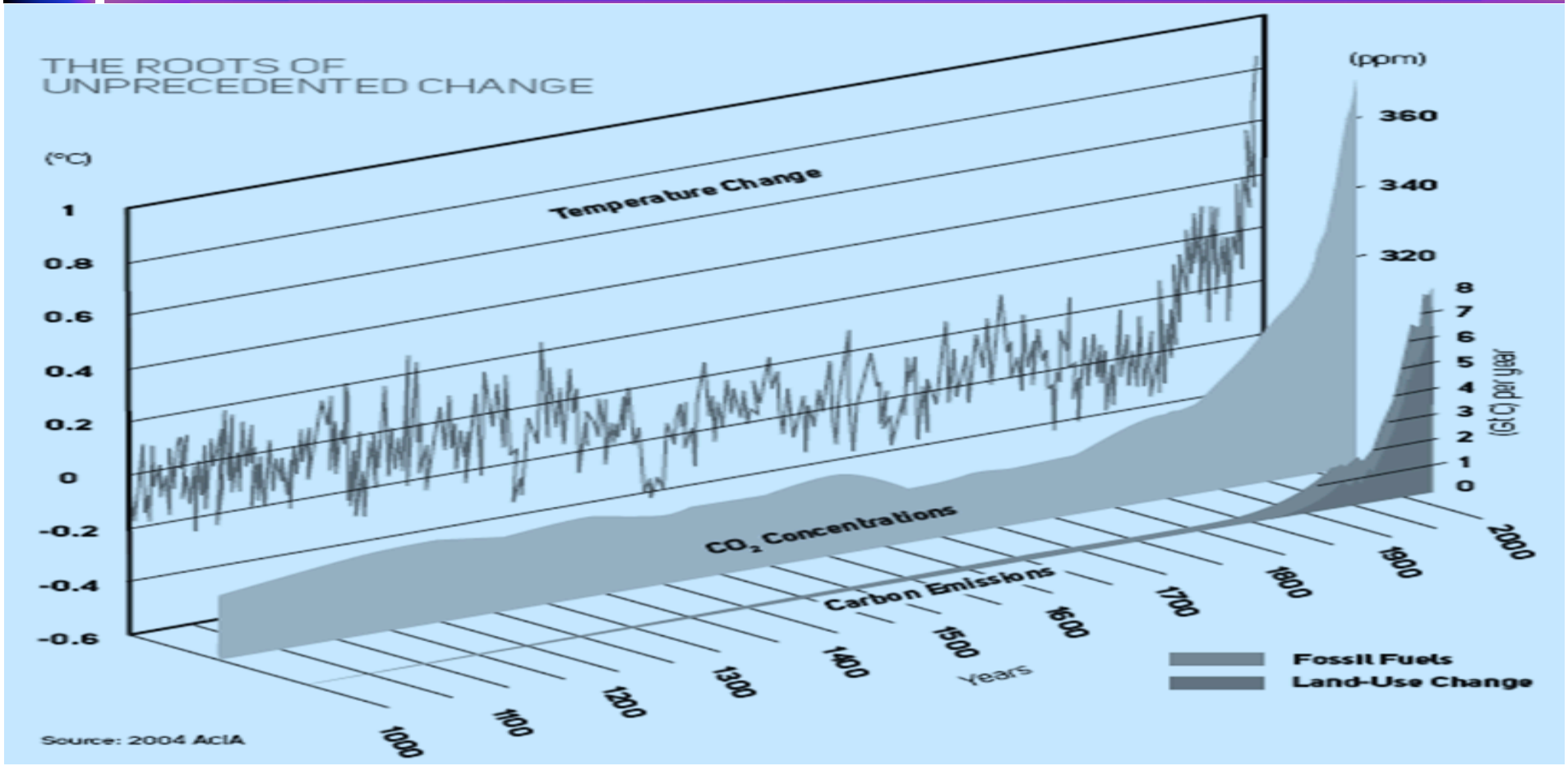
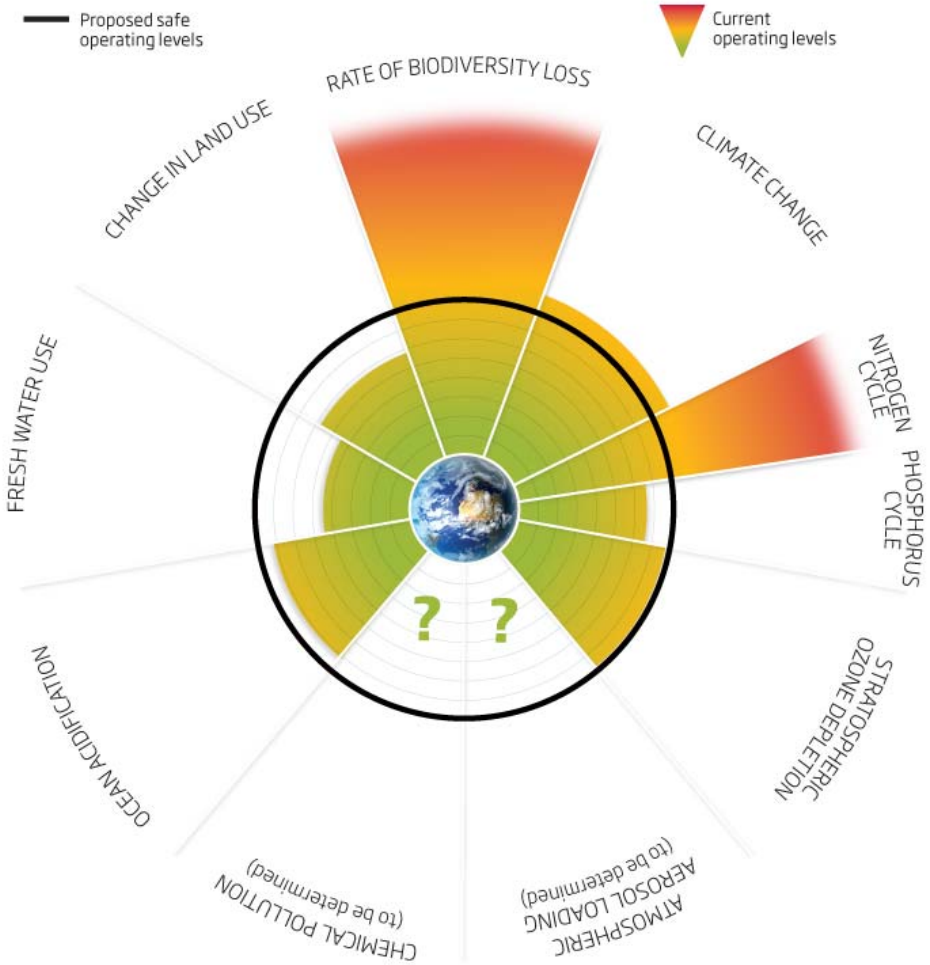
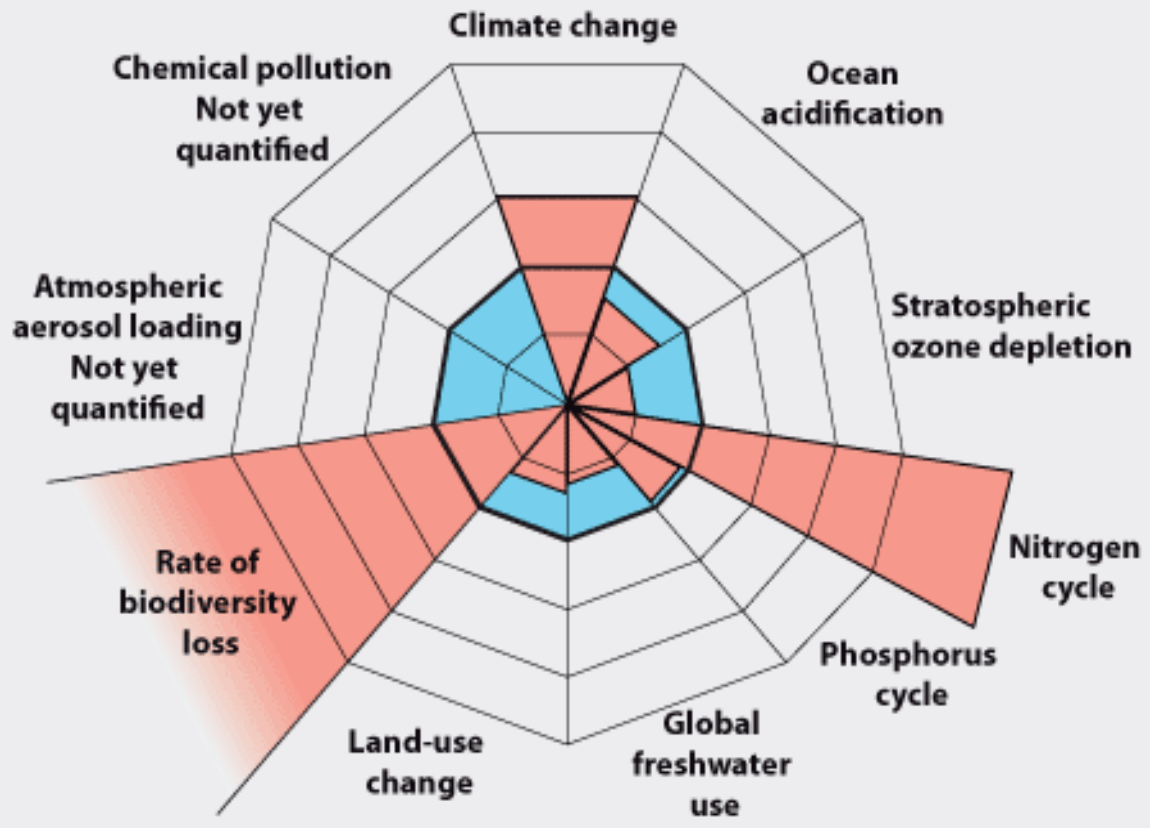
Contemporary Global Dynamics



Planetary Thresholds



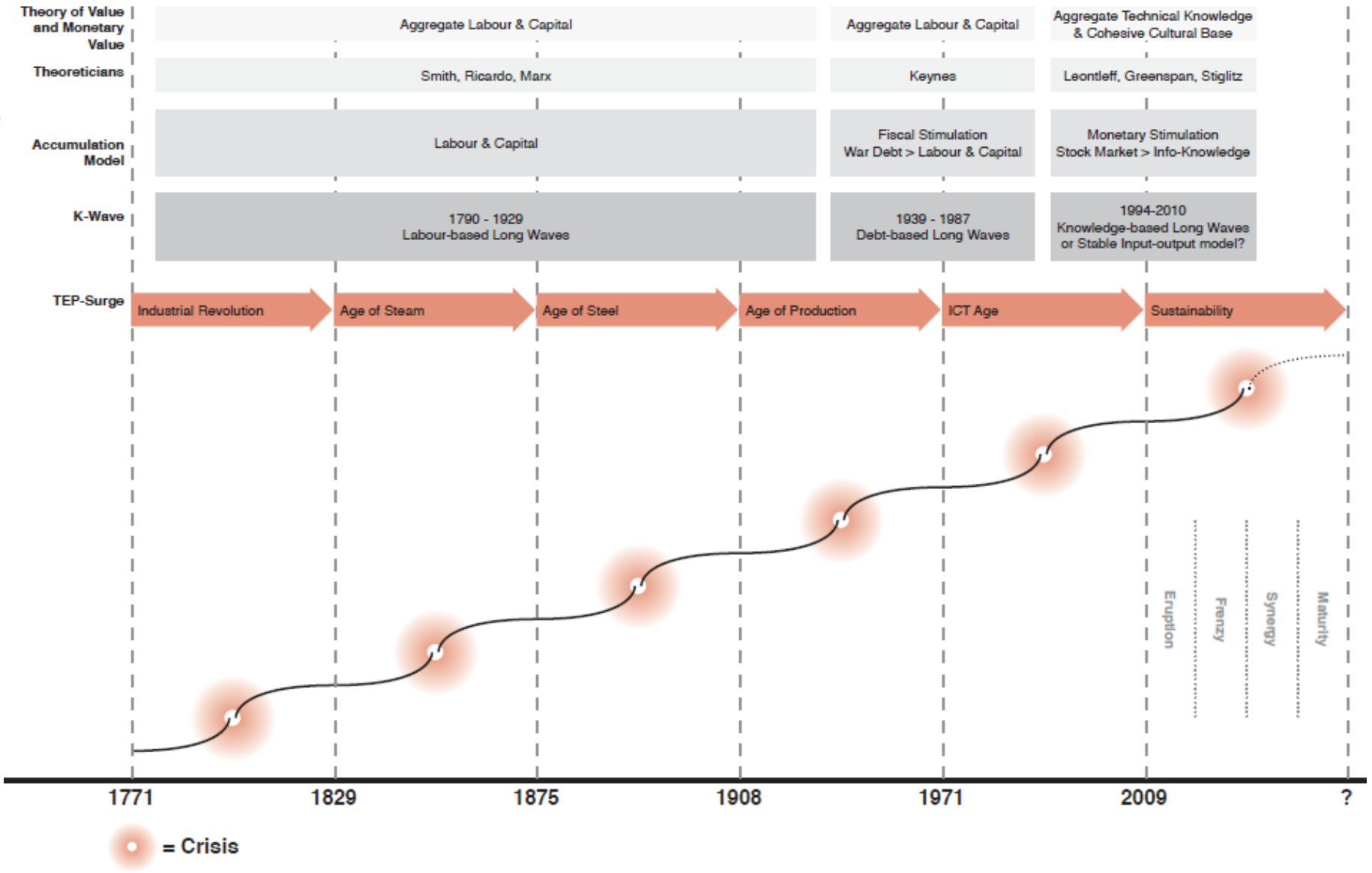
Planetary Boundaries



Earth-system process	Parameters	Proposed boundary	Current status	Pre-industrial value
Climate change	(i) Atmospheric carbon dioxide concentration (parts per million by volume)	350	387	280
	(ii) Change in radiative forcing (watts per metre squared)	1	1.5	0
Rate of biodiversity	Extinction rate (number of species per million species per year)	10	>100	0.1-1
Nitrogen cycle	Amount of N2 removed from the atmosphere for human use (millions of tonnes per year)	35	121	0
Phosphorus cycle	Quantity of P flowing into the oceans (millions of tonnes per year)	11	8.5–9.5	-1
Statospheric ozone depletion	Concentration of ozone (Dobson unit)	276	283	290
Ocean acidification	Global mean saturation state of aragonite in surface sea water	2.75	2.90	3.44
Global freshwater use	Consumption of freshwater by humans (km^3 per year)	4000	2600	415
Change in land use	Percentage of global land cover converted to cropland	15	11.7	low
Atmospheric aerosol loading	Overall particulate concentration in the atmosphere, on a regional basis	to be determined		
Chemical pollution	For example, amount emitted to or concentration of persistent organic pollutants, plastics, endocrine disrupters, heavy metals and nuclear waste in the global environment, or the effects on ecosystem and functioning of the Earth system	to be determined		

Boundaries for processes in red have been crossed. Data source: Rockström *et al.* (2009) *Nature*

Kondratieff Waves & Techno-economic Paradigms



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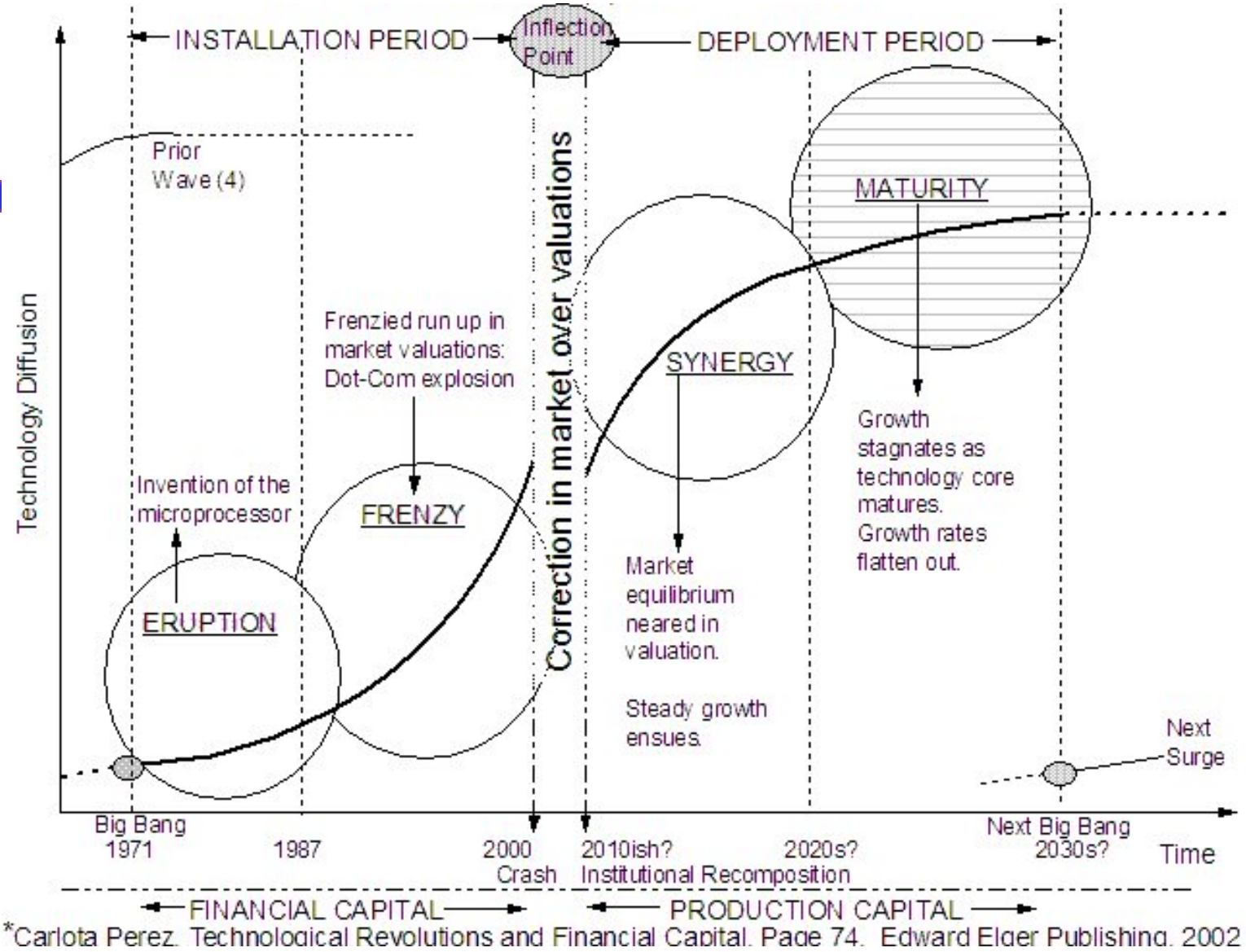
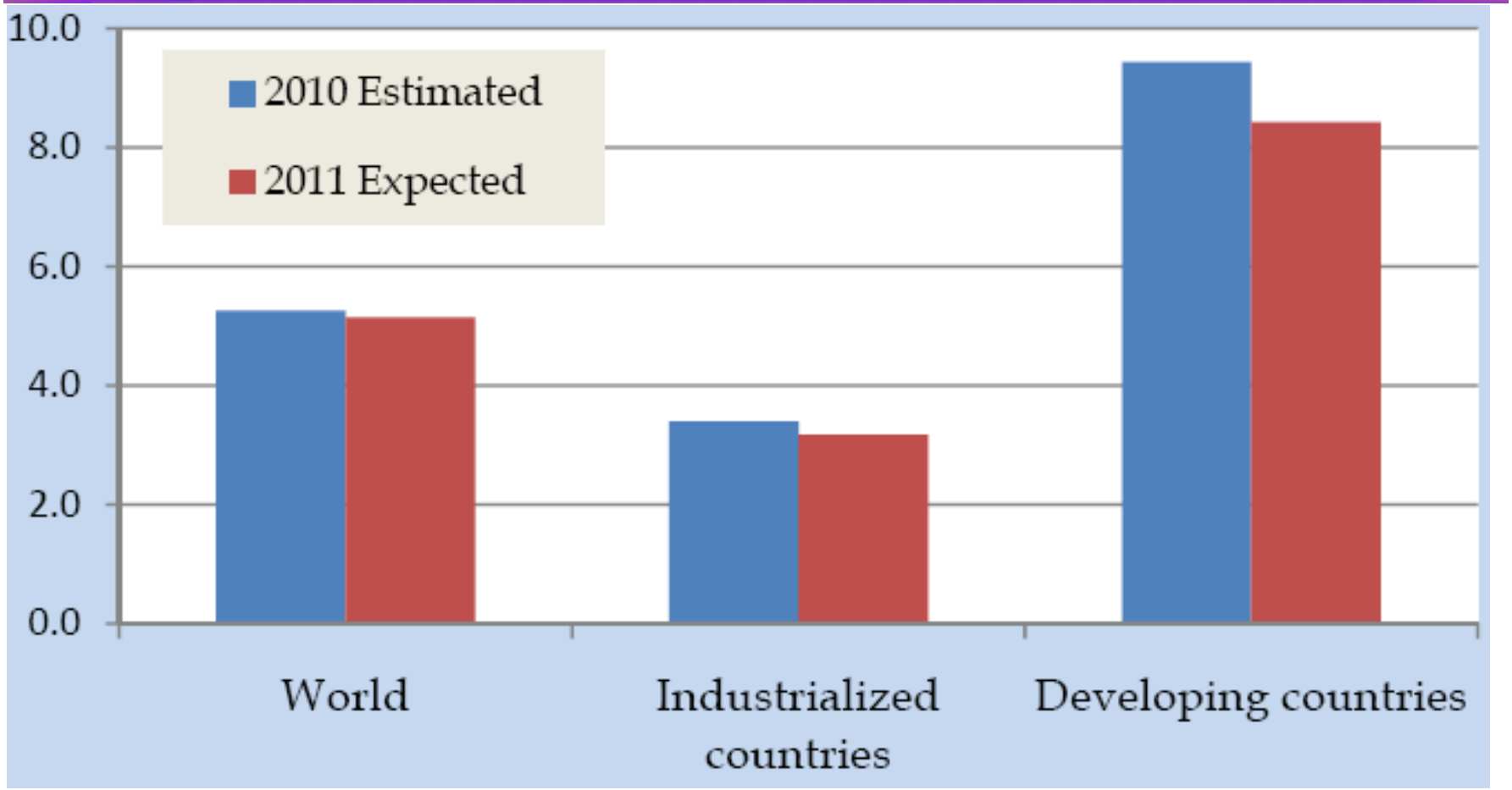
Techno-Economic Paradigms

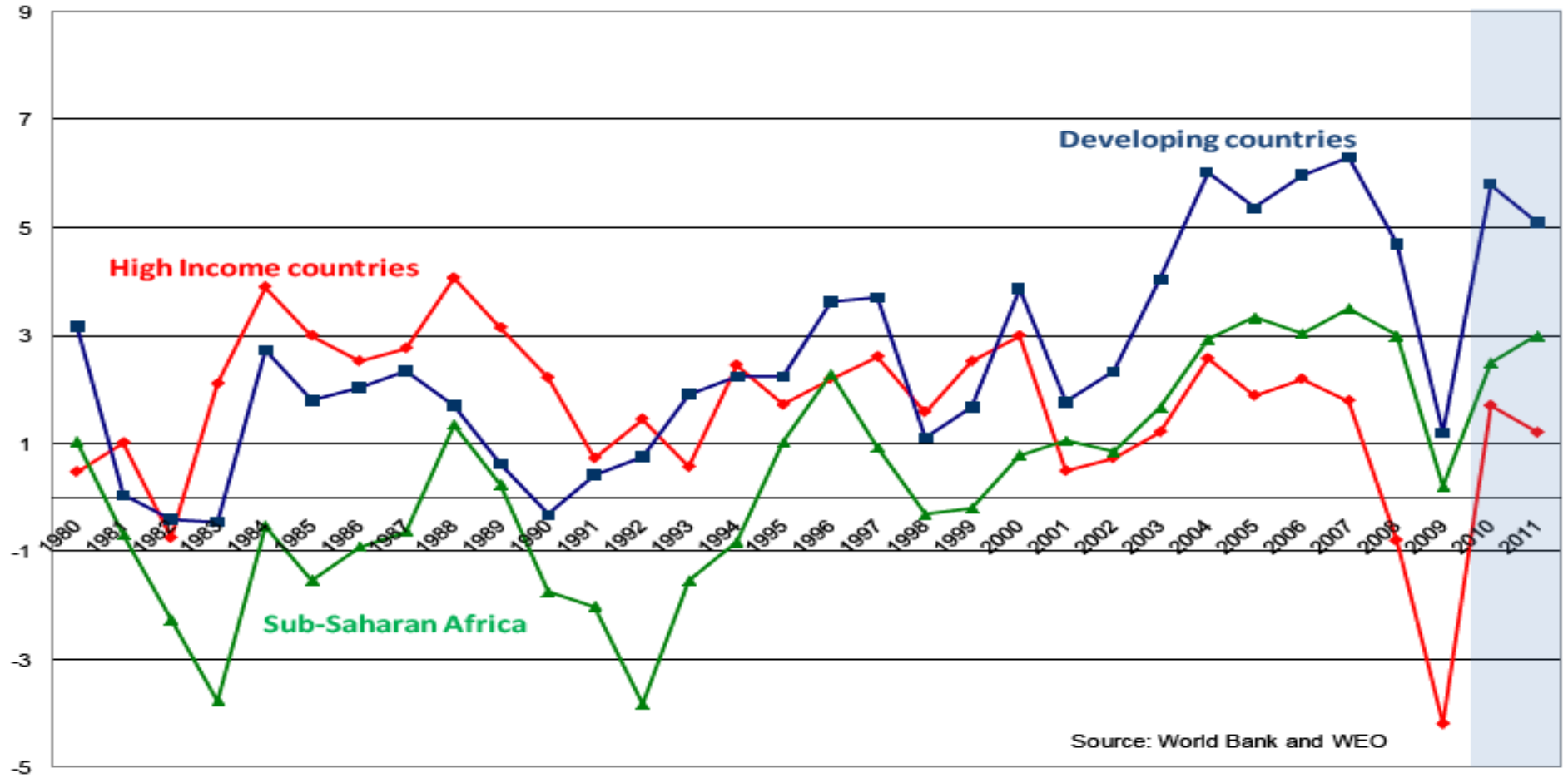


*Carlota Perez. Technological Revolutions and Financial Capital. Page 74. Edward Elgar Publishing. 2002

Expected growth estimates of world MVA at constant 2000 US$

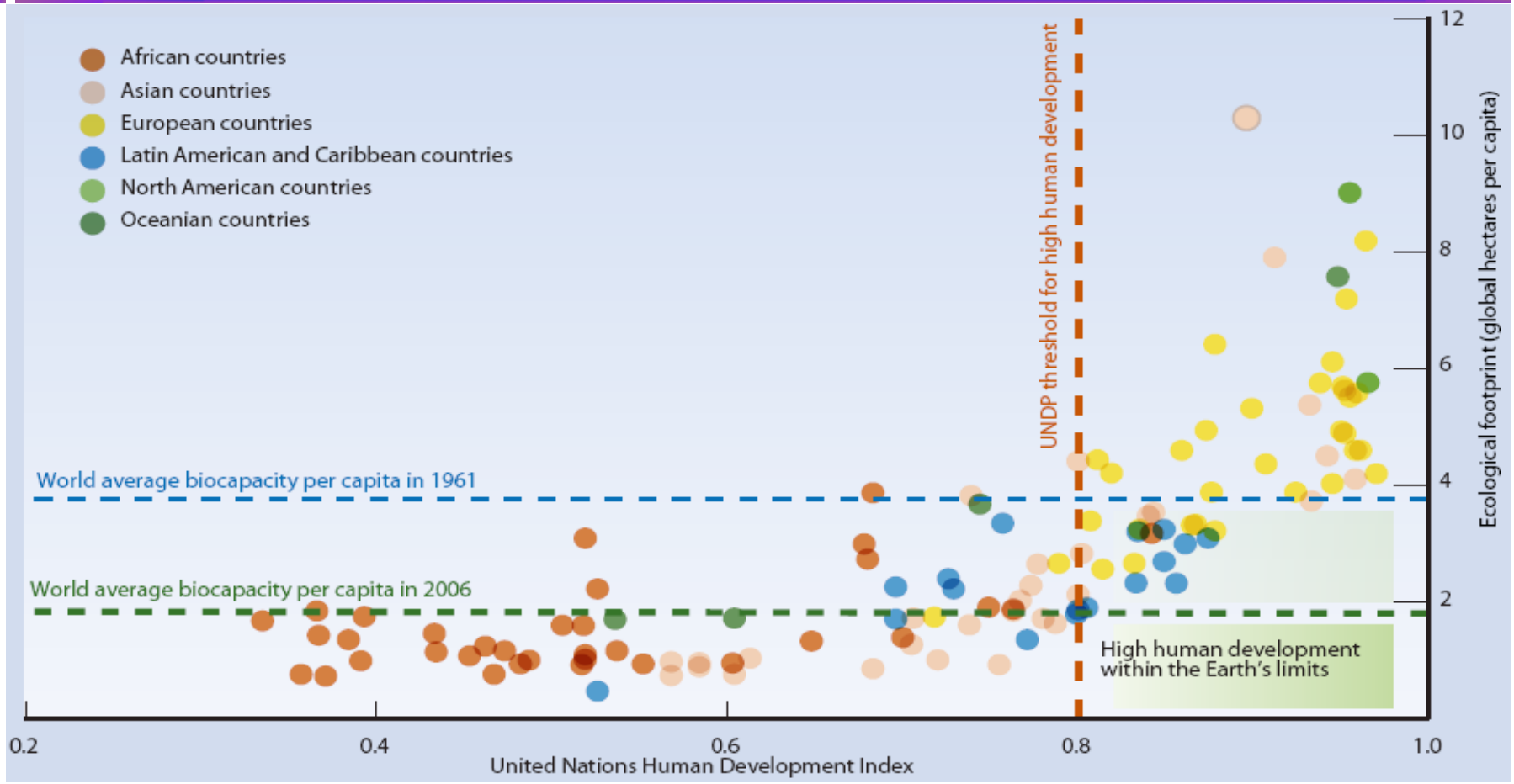


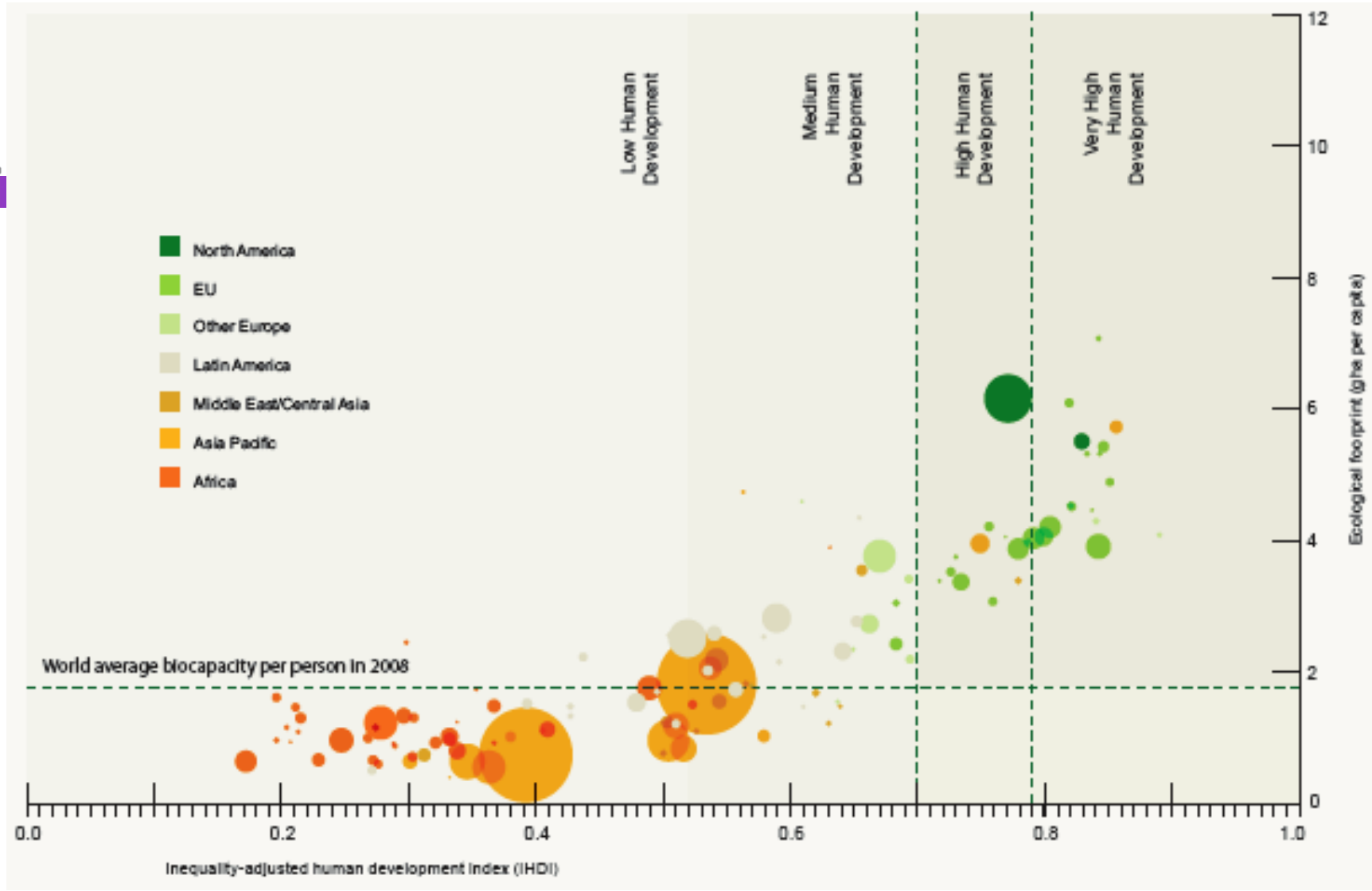
GDP per Capita: Annual Growth Rates (%)



Ecological Footprints and Human Development

Source: UNEP (2011)





Source: UNEP (2012)

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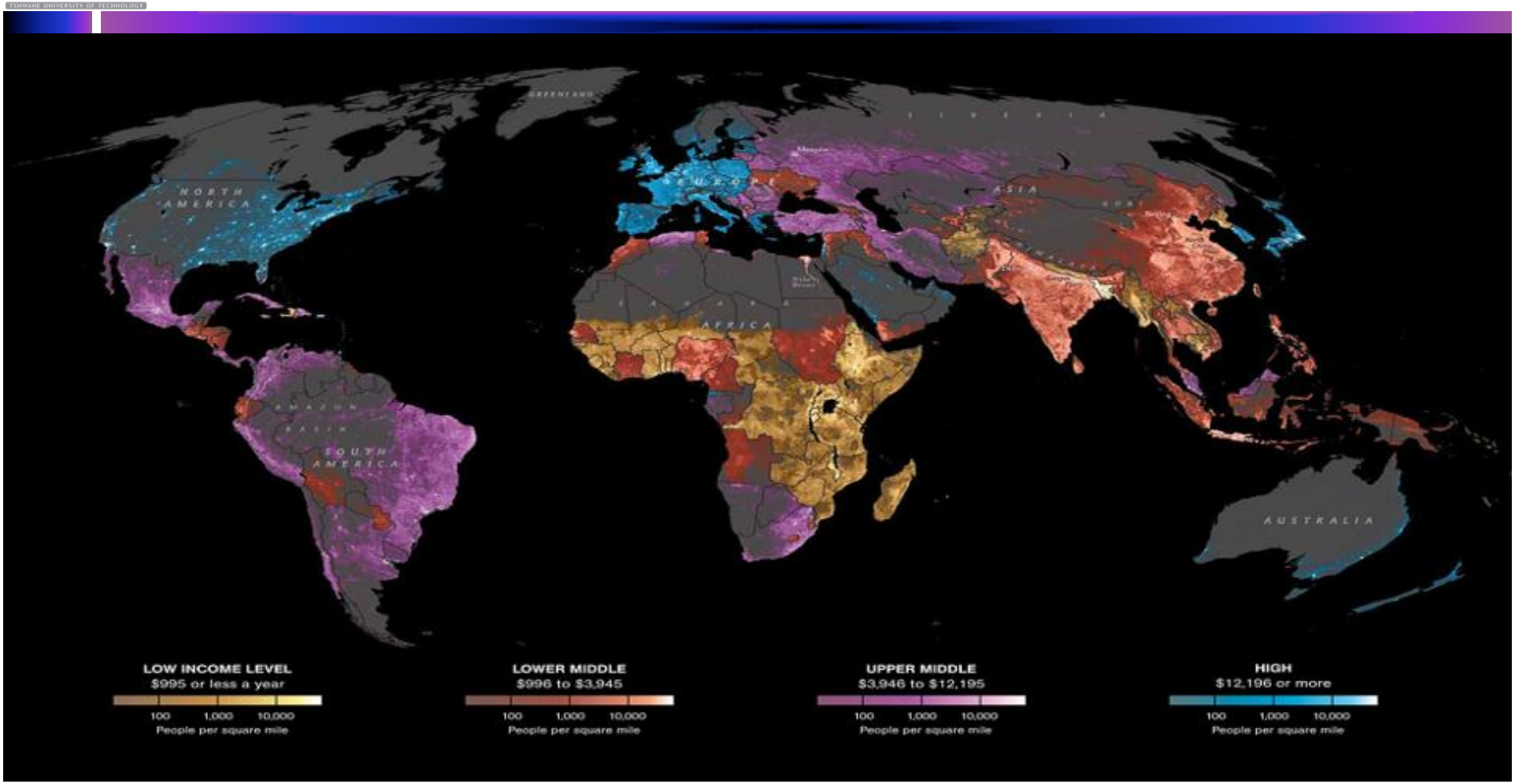
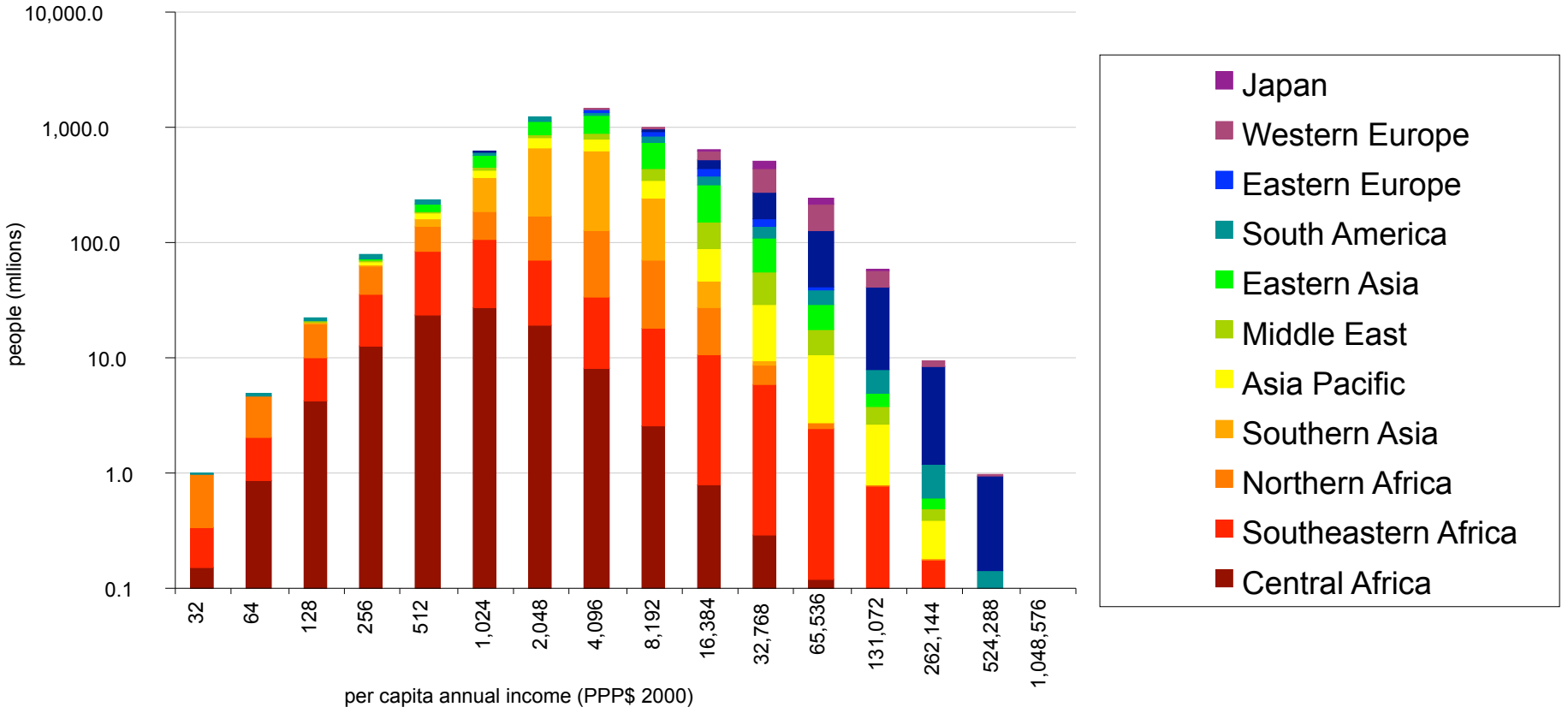
Global Division of Labour (2011)

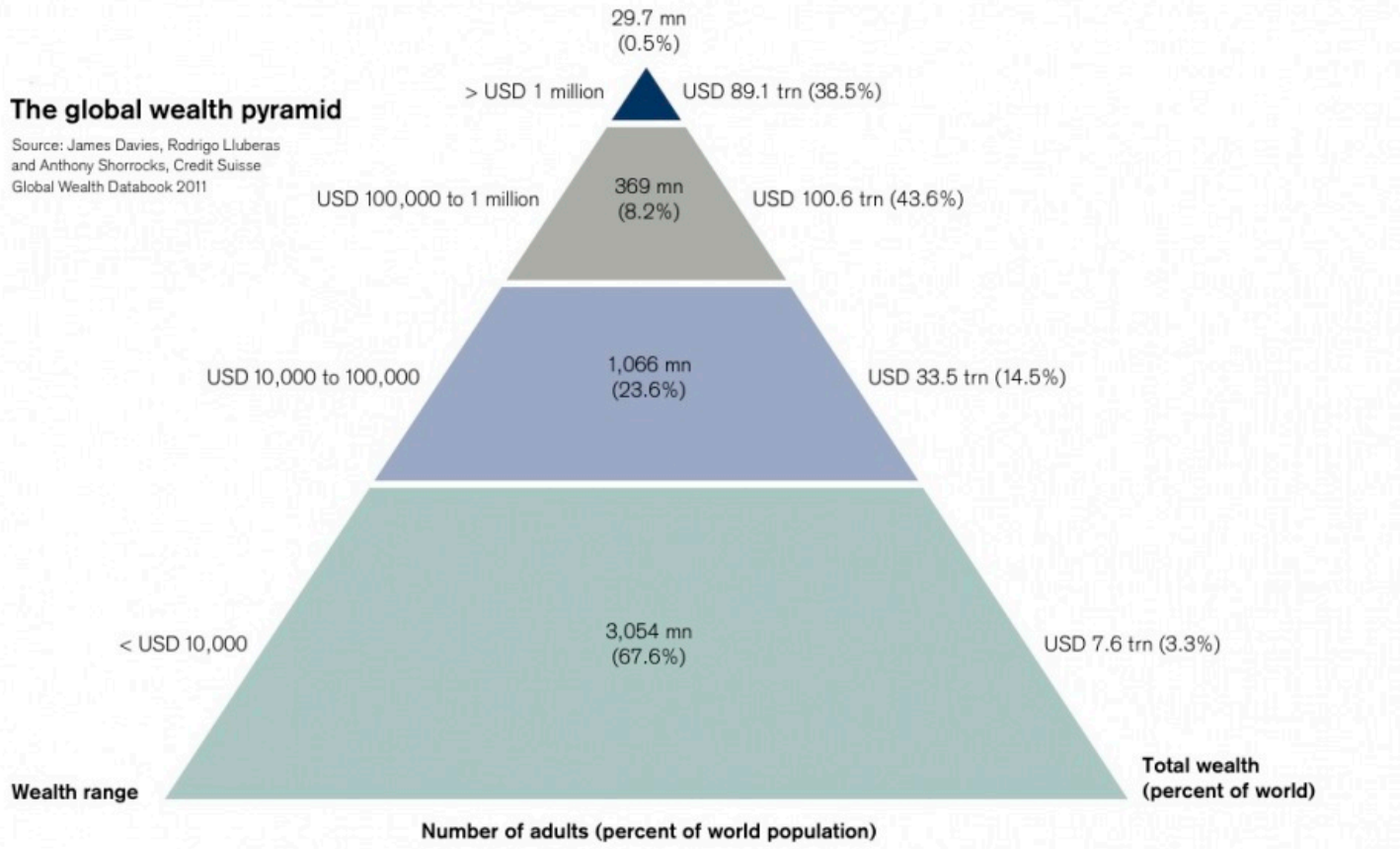


Global Equity [2008]

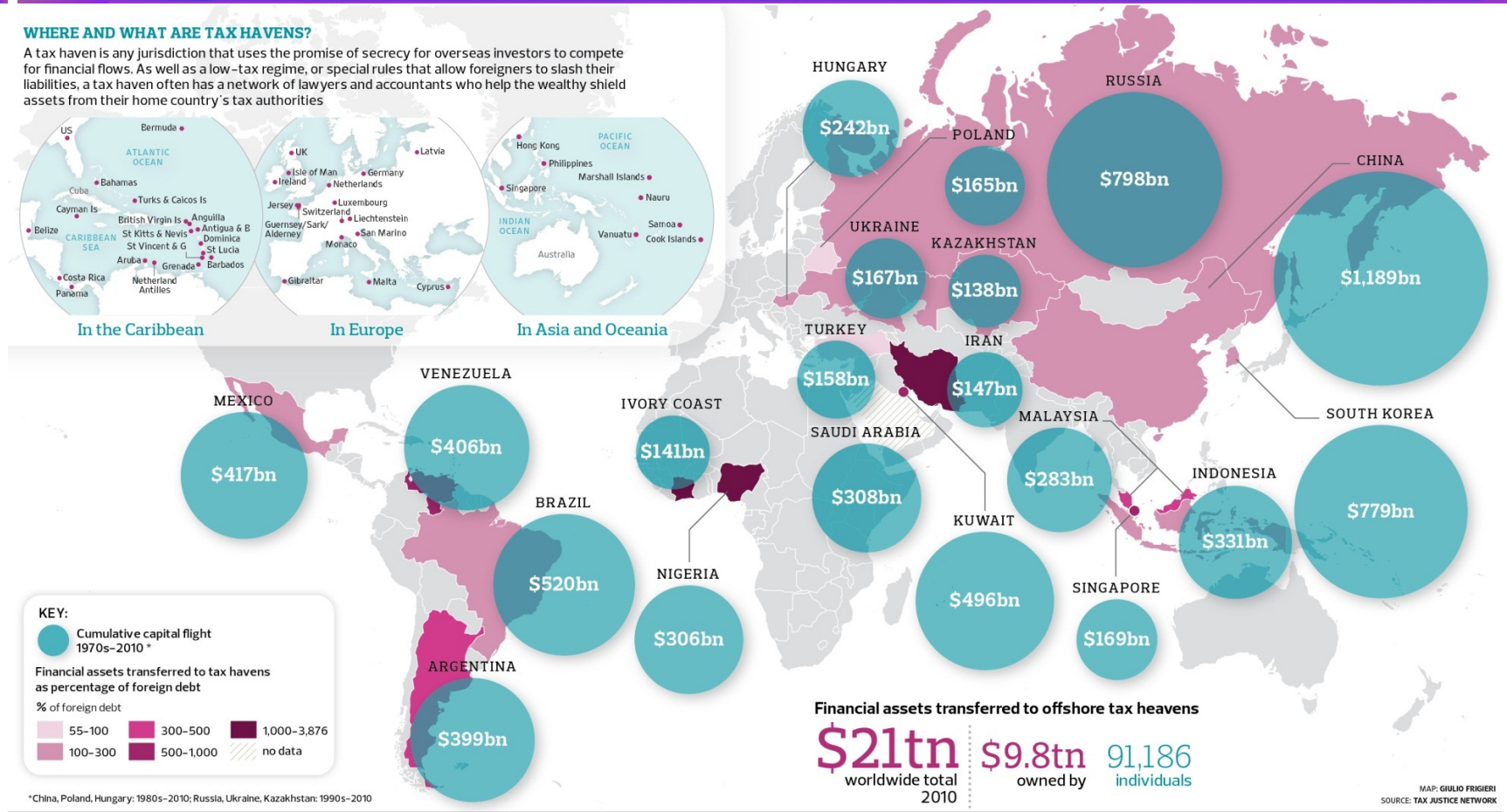


Source: Dorling (2009)

Global Inequality (2011)



Contemporary Capital Flight

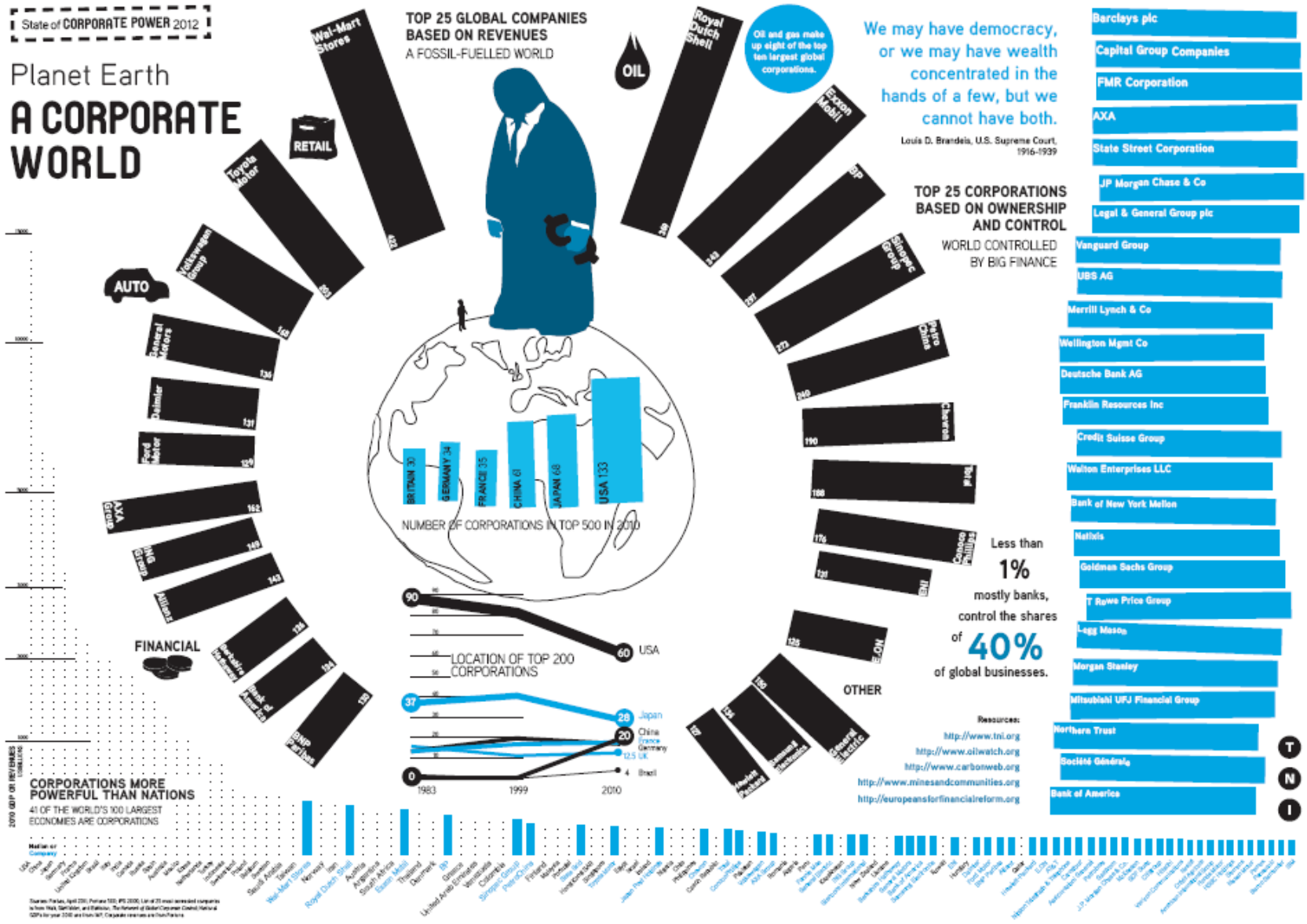


World's Largest Economies based on 2010 GDP or Revenues in US$ Billions

1	USA	29	Austria	57	Czech Republic	85	Hewlett-Packard
2	China	30	Argentina	58	Total	86	E.ON
3	Japan	31	South Africa	59	ConocoPhillips	87	AT&T
4	Germany	32	Exxon Mobil	60	Pakistan	88	Nippon Telegraph & Telephone
5	France	33	Thailand	61	Volkswagen		
6	United Kingdom	34	Denmark	62	AXA Group	89	Carrefour
7	Brazil	35	BP	63	Romania	90	Assicurazioni Generali
8	Italy	36	Greece	64	Algeria	91	Petrobras
9	India	37	United Arab Emirates	65	Peru	92	Gazprom
10	Canada	38	Venezuela	66	Fannie Mae	93	J.P. Morgan Chase & Co.
11	Russia	39	Colombia	67	General Electric	94	McKesson
12	Spain	40	Sinopec Group	68	Kazakhstan	95	GDF Suez
13	Australia	41	PetroChina	69	ING Group	96	Citigroup
14	Mexico	42	Finland	70	Glencore International	97	Hitachi
15	Korea	43	Malaysia	71	New Zealand	98	Verizon Communications
16	Netherlands	44	Portugal	72	Ukraine	99	Nestlé
17	Turkey	45	State Grid	73	Berkshire Hathaway	100	Crédit Agricole
18	Indonesia	46	Hong Kong SAR	74	General Motors	101	American International Group
19	Switzerland	47	Singapore	75	Bank of America		
20	Poland	48	Toyota Motor	76	Samsung Electronics	102	Honda Motor
21	Belgium	49	Egypt	77	Kuwait	103	HSBC Holdings
22	Sweden	50	Israel	78	ENI	104	Siemens
23	Saudi Arabia	51	Ireland	79	Hungary	105	Nissan Motor
24	Taiwan	52	Japan Post Holdings	80	Daimler	106	Pemex
25	Wal-Mart Stores	53	Nigeria	81	Ford Motor	107	Panasonic
26	Norway	54	Chile	82	BNP Paribas	108	Banco Santander
27	Iran	55	Philippines	83	Allianz	109	IBM
28	Royal Dutch Shell	56	Chevron	84	Qatar		

Source: TNI, 2012.

Largest "Economies"



Ecological Catastrophe [2008]

- US$ 6.6 trillion
- US$ 2.15 trillion
- >50%

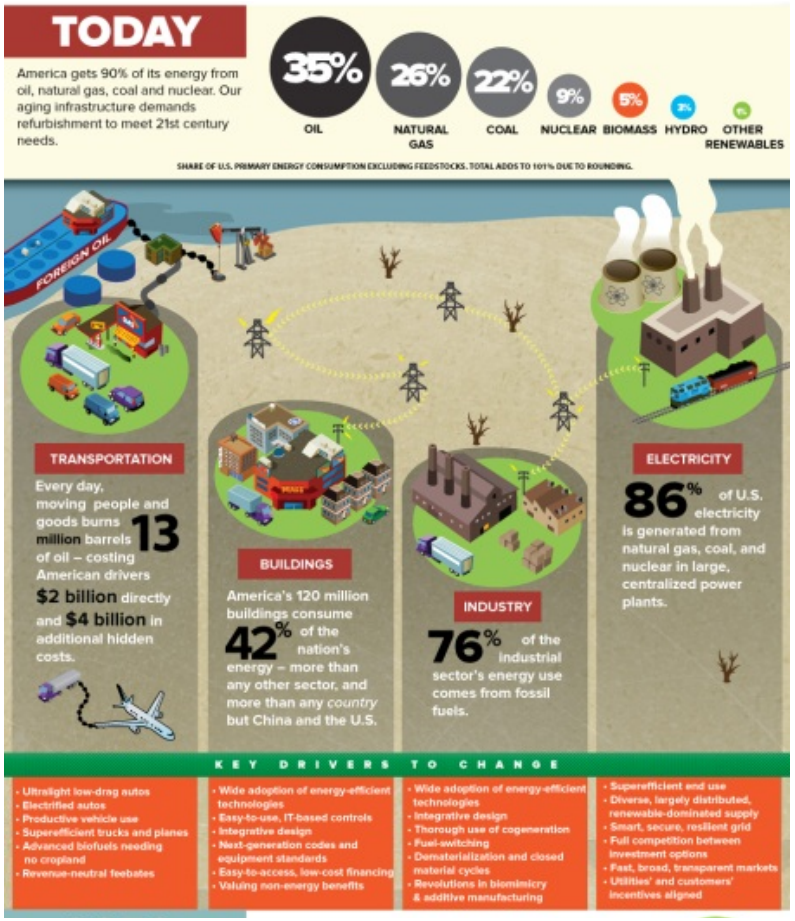
- The estimated annual environmental costs from global human activity equating to 11% of global GDP
- The cost of environmental damage caused by the world's 3,000 largest publicly-listed companies (7% of Revenue)
- The proportion of company earnings that could be at risk from environmental costs in an equity portfolio weighted according to the MSCI All Country World Index

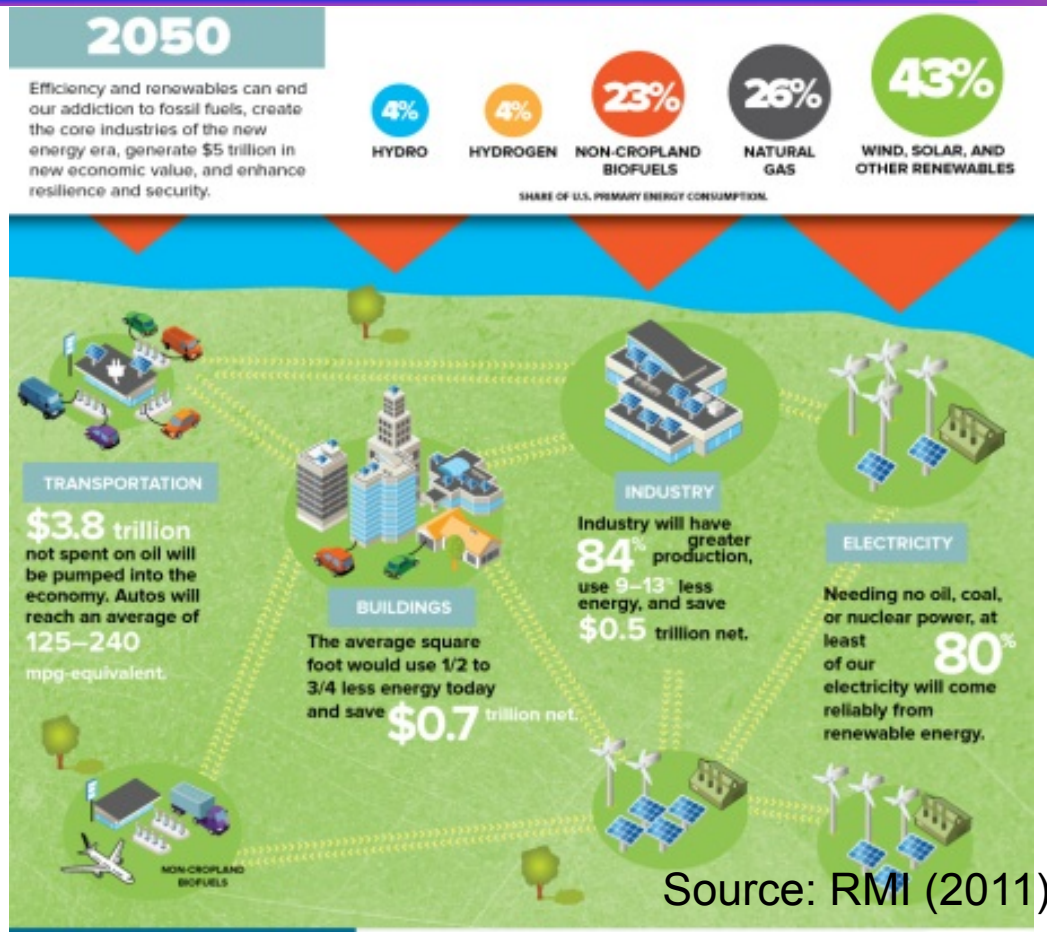
Source: Trucost, PRI & UNEP (2011)

Energy in Flux

SELECTED INDICATORS		2008	→	2009	→	2010
Global new investment in renewable energy (annual)	*billion USD*	130	→	160	→	211
Renewables power capacity (existing, not including hydro)	*GW*	200	→	250	→	312
Renewables power capacity (existing, including hydro)	*GW*	1,150	→	1,230	→	1,320
Hydropower capacity (existing)	*GW*	950	→	980	→	1,010
Wind power capacity (existing)	*GW*	121	→	159	→	198
Solar PV capacity (existing)	*GW*	16	→	23	→	40
Solar PV cell production (annual)	*GW*	6.9	→	11	→	24
Solar hot water capacity (existing)	GW_{th}	130	→	160	→	185
Ethanol production (annual)	*billion liters*	67	→	76	→	86
Biodiesel production (annual)	*billion liters*	12	→	17	→	19
Countries with policy targets	#	79	→	89	→	96
States/provinces/countries with feed-in policies[1]	#	71	→	82	→	87
States/provinces/countries with RPS/quota policies	#	60	→	61	→	63
States/provinces/countries with biofuels mandates	#	55	→	57	→	60

Alternative futures





Source: RMI (2011)

China and the 'Green Economy'

- China has the highest public market financing in the clean energy sector
- The United States ranks 3rd in total clean energy investment in 2010, behind China and Germany. In 2008, the United States ranked first
- China has secured $47.3 billion of asset financing in 2010 for clean energy projects. The U.S. attracted $21 billion in 2010
- 60% of all clean energy technology IPOs in the world in 2010 were from Chinese companies
- According to Ernst and Young, for the first time, China beat the U.S. in terms of its attractiveness for renewable energy investment
- China received 20% of total global clean energy investment in 2010, while the U.S. saw 19%. In 2004, China only had 3% of the total, while the U.S. received 20% of investment.7
- China attracted $54.4 billion clean energy financing in 2010, a 39% increase over 2009 and equal to the entire amount of clean energy investment worldwide in 2004. Similar financing in the U.S. stagnated last year at $34.4 billion, approximately equal to 2007 levels
- China is expected to lead the world in overall number of patents filed in 2011, surpassing the United States and Japan for the first time
- China ranks 2nd in estimated number of people engaged in scientific and engineering research and development
- China has seen the largest increase of any nation in its innovation score over the last decade, up 19.5 points (compared to a 2.7 point increase in U.S. score)
- China is creating 16 national energy research and development centres intended specifically to drive innovation in the clean energy sector
- By the end of 2011, national Chinese R&D expenditures are targeted to rise 11% over levels earlier in the year
- Eight of ten companies with the largest R&D budgets have established R&D facilities in China, India, or both
- There has been a 600% increase in the number of college graduates in science fields in China between 1995 and 2005

- **Third Way (2011)**

Systemic Obstacles

- Inequality, Unemployment & Poverty
- Neo-liberalism, Corruption & the 'hollowed-out' State
- Monopolies, Oligopolies and Cartels
- Financialisation & Commodification of Life/Nature …

Systemic Challenges

- Rebuilding, Reskilling and Retooling
- Employment & Production
- Localisation & Global Governance

Concluding Notes

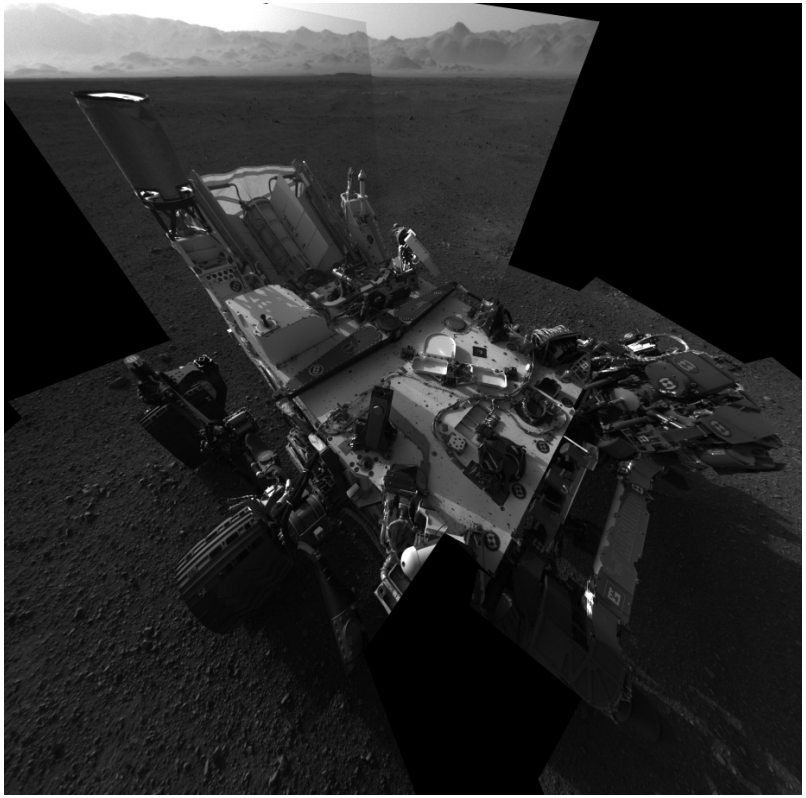
- ***Inflexion Point***
- Persistence of Inequality, Material Deprivation, & Violence
- Geopolitical Hegemon Treats
- Neo-liberalism, Corruption and the 'hollow' state
- Monopolies, Oligopolies and Cartels
- Financialisation

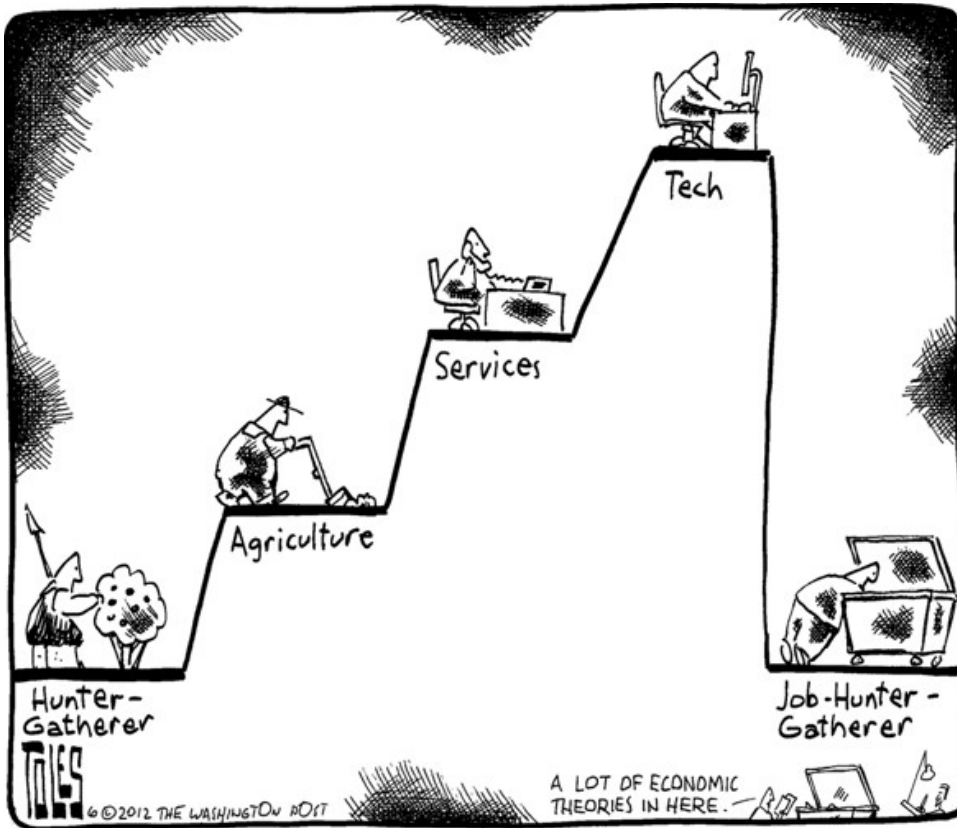
- ***Emergent yet Unclear Alternative Paradigm***
- *Evolutionary Political Economics*
  - *Creative Destruction*
  - *Learning*
  - *Cooperation*
- *Systems of Innovation*
  - *Local & Productive*
  - *Global Public Goods (Knowledge Commons)*

Conclusions

- ***Participatory Planning, Regulation, Monitoring, Evaluating and Learning***
- Facilitate Equality, Redress & Sustainable Developmental Outcomes
- Support, consolidate & expand public goods
- Advance anti-Hegemonic Geo-political coalitions and alliances for Cooperation & Solidarity

Post-script





Source: NASA/JPL-Caltech

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