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Sustainable economies

Stijn De Jonge

Macroeconomy

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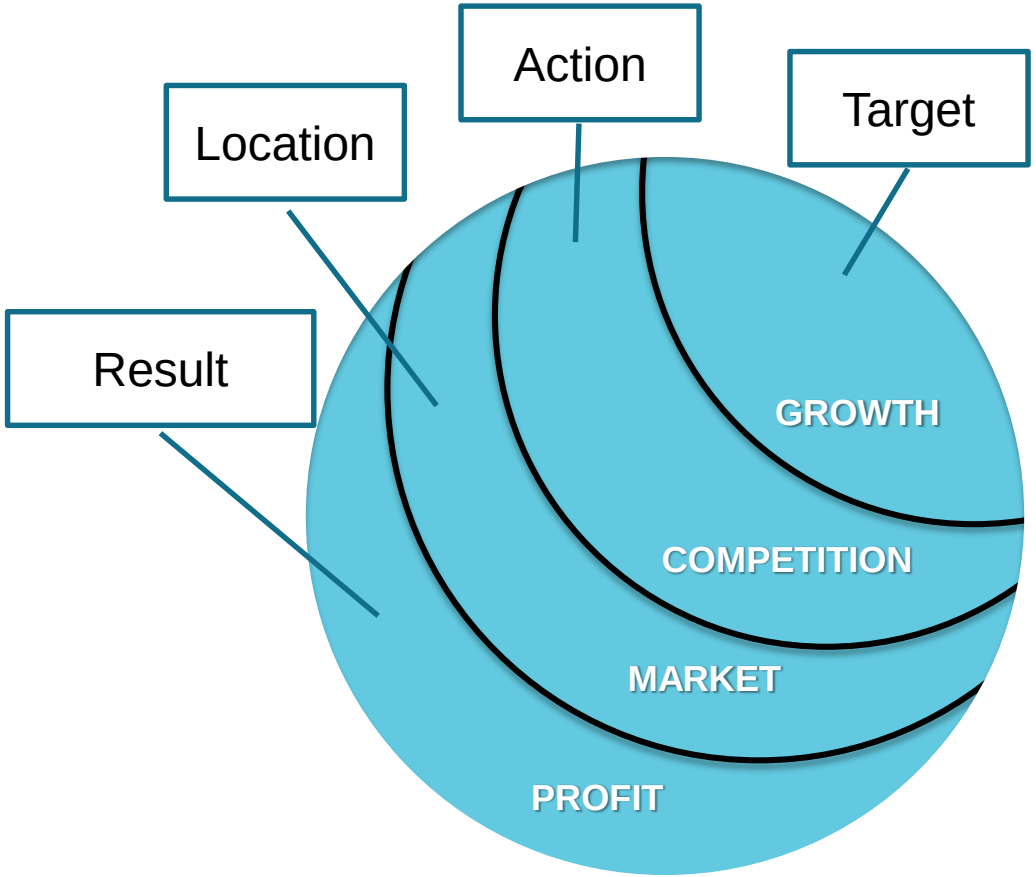
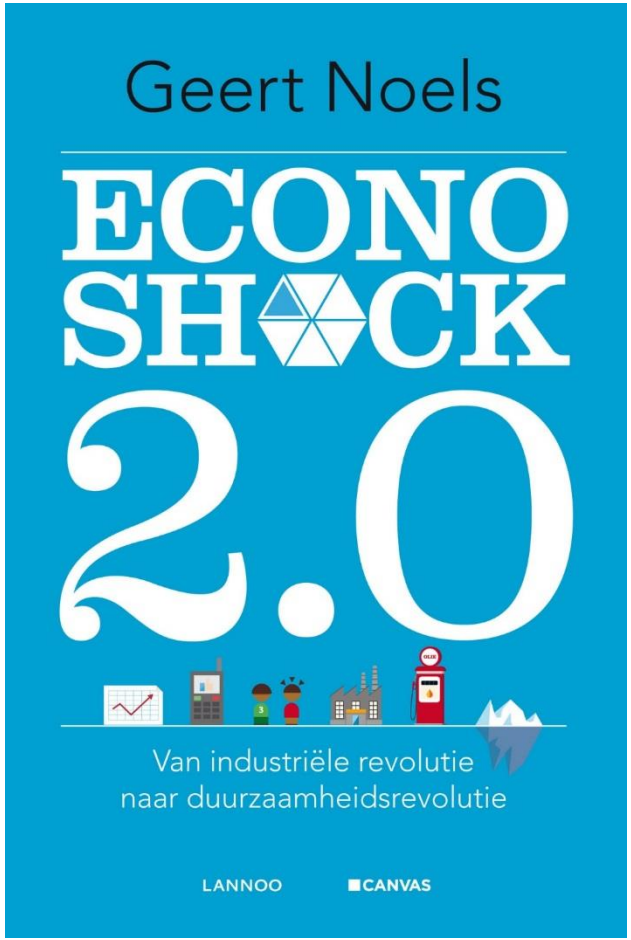
What is Macroeconomics

- Macroeconomics examines economies at the aggregate (international, national, regional) level.
- Some aspects of macroeconomics are about comparing two aggregate economies at the same time.



Profit driven economies



- Financial crisis
- ICT revolution
- Emerging markets
- Demographic evolution
- Energy crisis
- Climate changes

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downturn
uncertainty
bankruptcy
FINANCIAL CRISIS
money
inflation
laundering
recession
conflict
deficit
crash
depression
economic
turmoil

ICT Revolution

- Information is power
- Properties
  - Free (information)
  - Interactive (+1)
  - Global (security laws - mobility)
  - Individual need

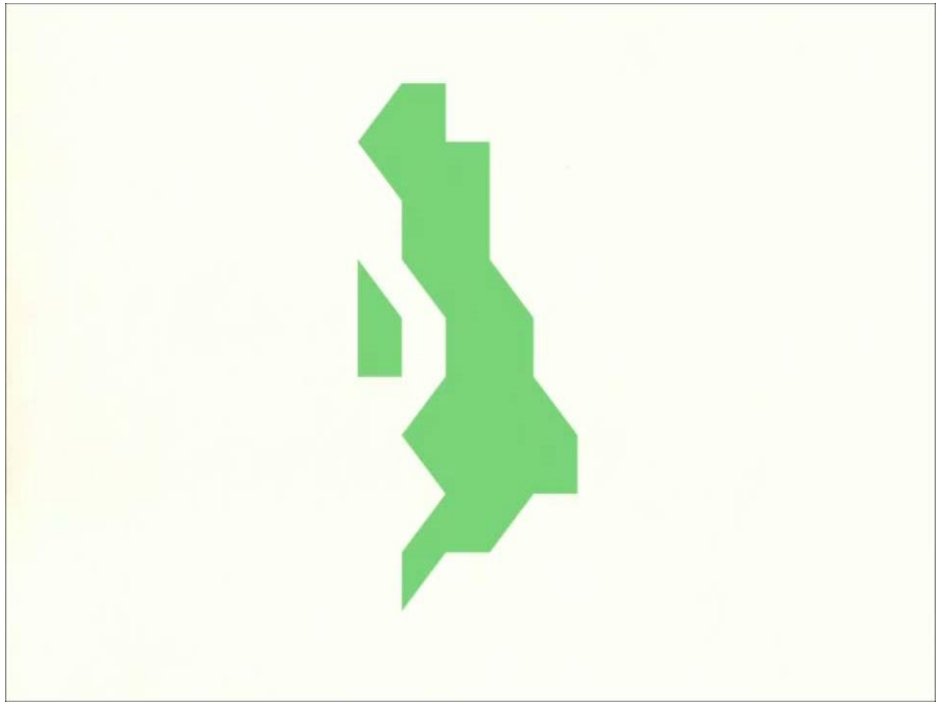
Emerging markets (1)

- Countries with an increasing economical activity and industrialization
- Huge governmental influence

Emerging markets (2)

- Evolution through industry
  - Simple production market (clothes, toys)
  - Know how market (steel, chemistry)
  - High technology market (electronics)
- Evolution through countries
  - Japan → South Korea → China → Maleisia → Laos
  - Growth is addictive

Emerging markets: facts



Demographic evolution

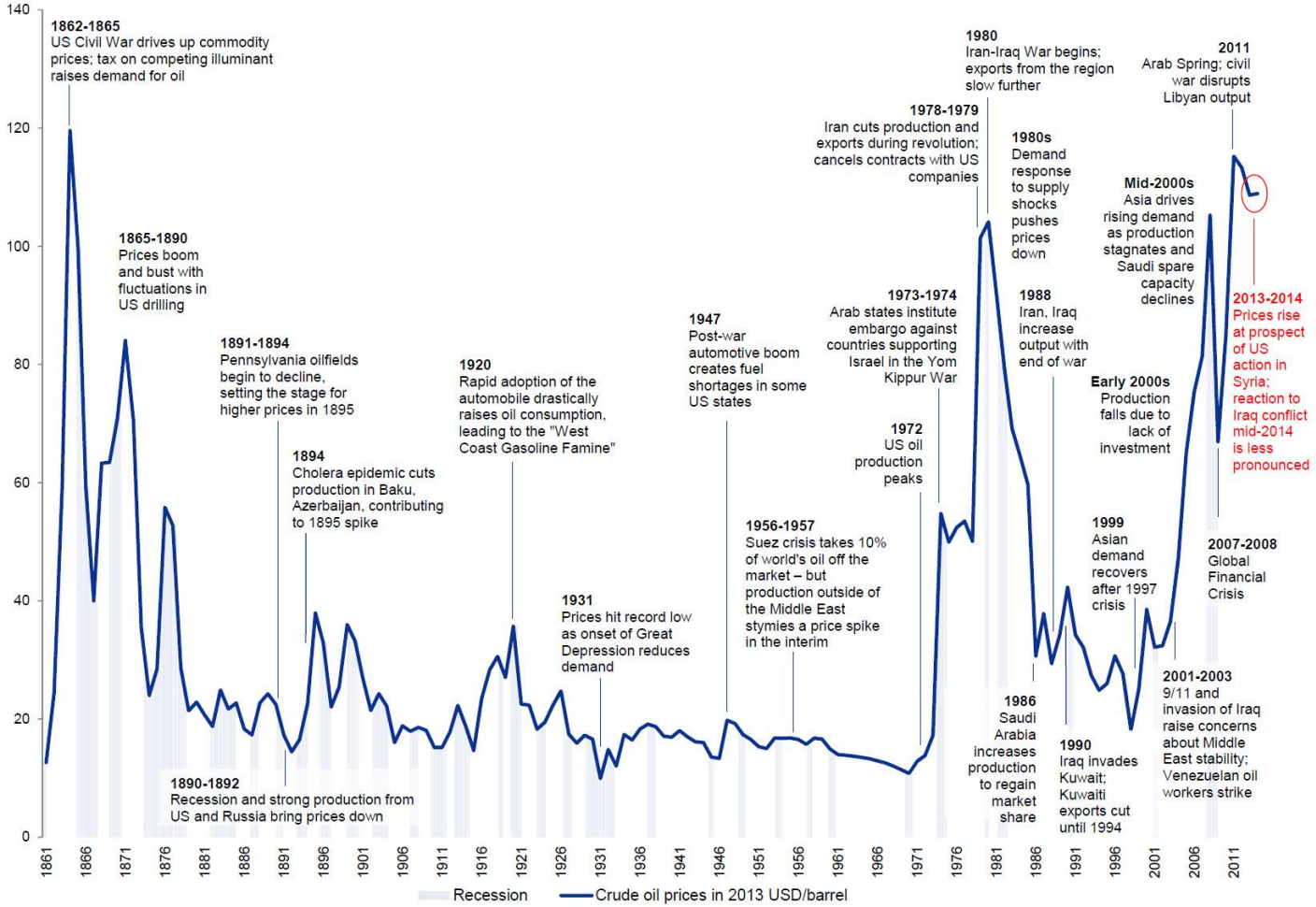
- 3 major evolutions:
  - Growth of world population
  - Movement of population from West to East
  - Population ageing
- 3 subevolutions:
  - Civilzation diseases
  - Urbanization

See more in Sustainable Societies

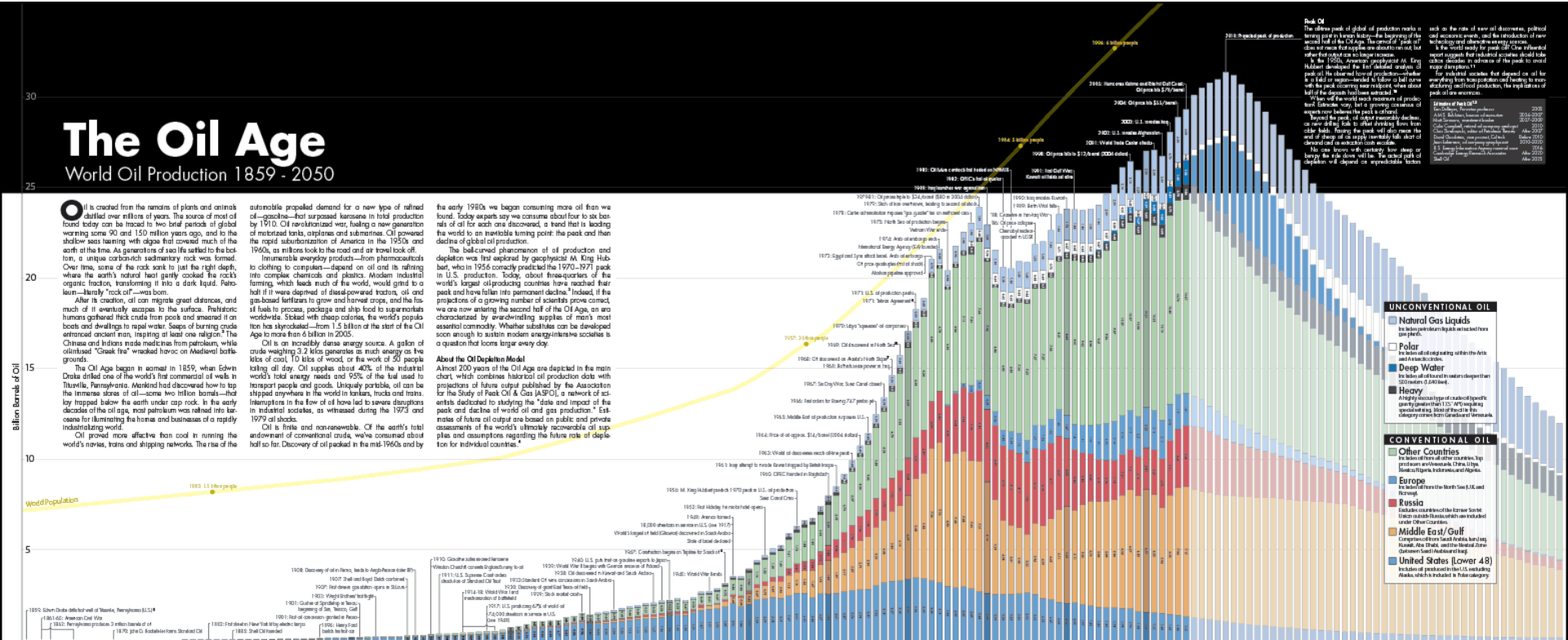

MICHAËL
BRAUNGART
COAUTEUR CRADLE
TO CRADLE

Energy crisis

- Influences on the oil price:
  - Dependent of the USD
  - Geopolitical instability
  - Increasing demand
  - Decreasing supply
  - Speculation


1862-1865
US Civil War drives up commodity prices; tax on competing illuminant raises demand for oil
1865-1890
Prices boom and bust with fluctuations in US drilling
1890-1892
Recession and strong production from US and Russia bring prices down
1891-1894
Pennsylvania oilfields begin to decline, setting the stage for higher prices in 1895
1894
Cholera epidemic cuts production in Baku, Azerbaijan, contributing to 1895 spike
1920
Rapid adoption of the automobile drastically raises oil consumption, leading to the "West Coast Gasoline Famine"
1931
Prices hit record low as onset of Great Depression reduces demand
1947
Post-war automotive boom creates fuel shortages in some US states
1956-1957
Suez crisis takes 10% of world's oil off the market – but production outside of the Middle East stymies a price spike in the interim
1972
US oil production peaks
1973-1974
Arab states institute embargo against countries supporting Israel in the Yom Kippur War
1978-1979
Iran cuts production and exports during revolution; cancels contracts with US companies
1980
Iran-Iraq War begins; exports from the region slow further
1980s
Demand response to supply shocks pushes prices down
1986
Saudi Arabia increases production to regain market share
1988
Iran, Iraq increase output with end of war
1990
Iraq invades Kuwait; Kuwaiti exports cut until 1994
Early 2000s
Production falls due to lack of investment
1999
Asian demand recovers after 1997 crisis
Mid-2000s
Asia drives rising demand as production stagnates and Saudi spare capacity declines
2001-2003
9/11 and invasion of Iraq raise concerns about Middle East stability; Venezuelan oil workers strike
2007-2008
Global Financial Crisis
2011
Arab Spring; civil war disrupts Libyan output
2013-2014
Prices rise at prospect of US action in Syria; reaction to Iraq conflict mid-2014 is less pronounced
140
120
100
80
60
40
20
0
1861
1866
1871
1876
1881
1886
1891
1896
1901
1906
1911
1916
1921
1926
1931
1936
1941
1946
1951
1956
1961
1966
1971
1976
1981
1986
1991
1996
2001
2006
2011
Recession
Crude oil prices in 2013 USD/barrel

PeaK Oil


The Oil Age
World Oil Production 1859 - 2050
Billion Barrels of Oil
World Population
UNCONVENTIONAL OIL
Natural Gas Liquids
Polar
Deep Water
Heavy
CONVENTIONAL OIL
Other Countries
Europe
Russia
Middle East/Gulf
United States (Lower 48)

Climate changes

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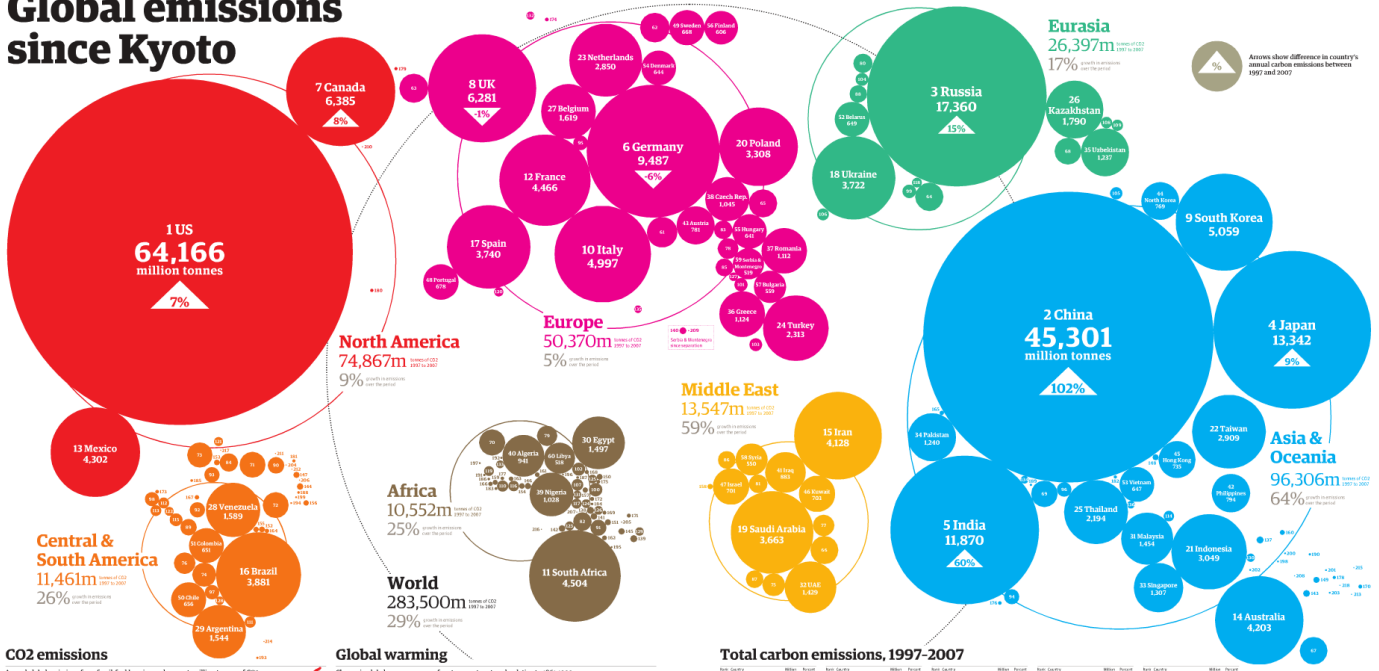
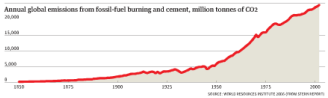
Global emissions since Kyoto



CO2 emissions

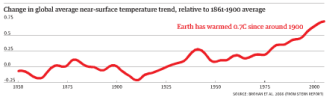
Annual global emissions from fossil-fuel burning and cement, million tonnes of CO2



SOURCE: WORLD RESOURCES INSTITUTE (WRI) CHINA STEEN REPORTS

Global warming

Change in global average near-surface temperature trend, relative to 1864-1900 average



SOURCE: BERNAN ET AL. 2006 (STEEN STEEN REPORTS)

The key issues at Copenhagen

1 Cut carbon in rich world

Scientists say cuts of 25-40% by 2020 are needed, relative to 1990 levels, rising to 80-95% by 2050. Developed countries have grown rich on fossil fuels and still emit vast amounts of CO2 per person, so have a responsibility to make deepest cuts.

2 Curb carbon in developing world

Emissions from fast-growing economies such as China and India are surging, yet their citizens have small carbon footprints and millions live in poverty. So they'll argue they need to be allowed to pollute for a while yet as they improve their citizens' lives.

3 Pay the price for climate change

All agree that the poorest nations need urgent aid, having done nothing to pollute the atmosphere. It will also cost a lot to create the clean technology essential for slashing global emissions. In both cases, rich nations will be expected to pick up the tab.

4 Keep tabs on funds and emissions

Poorer nations want to continue Kyoto's top-down approach, with clear responsibilities placed on rich countries. Developing nations also want climate funds distributed by the UN, whereas developed countries would prefer the World Bank.

5 Slow the speed of deforestation

About 17% of the carbon emitted by human activity comes from razing forests. But paying people not to fell trees soon becomes complex... Who really owns them? Were they actually going to be chopped down? How do you verify the whole process?

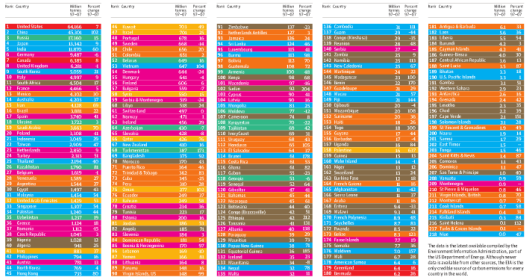
6 Clean technology

Paying for clean technology is just the start, as the products and services required must be developed and deployed rapidly and efficiently all over the globe. But nations differ on whether a strong international body is needed, or just an advisory one.

Checklist of success

- ☐ Rich nations commit to a combined reduction in greenhouse gases of 25-40% by 2020. **Chance of success: Middling**
- ☐ Developing nations commit to a 15-30% cut on the emissions levels expected in 2020. **Chance of success: Good**
- ☐ Richer nations commit to funding poorer ones, and clean technology, to tune of $200bn+ per year. **Chance of success: Low**
- ☐ Deal done on who monitors countries' carbon emissions and distributes the money. **Chance of success: Low**
- ☐ Agreement which delivers cash to forested nations, meaning far fewer trees are cut down. **Chance of success: Good**
- ☐ Deal that delivers a radical overhaul in the deployment of clean technology. **Chance of success: Fair**

Total carbon emissions, 1997-2007



The summit in numbers

15,000
Number of delegates expected to attend official Copenhagen summit

40,500
Tonnes of carbon dioxide predicted to be emitted by those delegates while at the summit

700,000
Cost in euros of replacing outdated brick kilns in Bangladesh, paid for by Danish government to offset those emissions

$62m+
Estimated cost to Danish government of staging the event

65%
Minimum proportion of food and drink provided to delegates that will be organic

DATA: ROBIN KINGSEL, GRAPHIC: PAUL SLEATH

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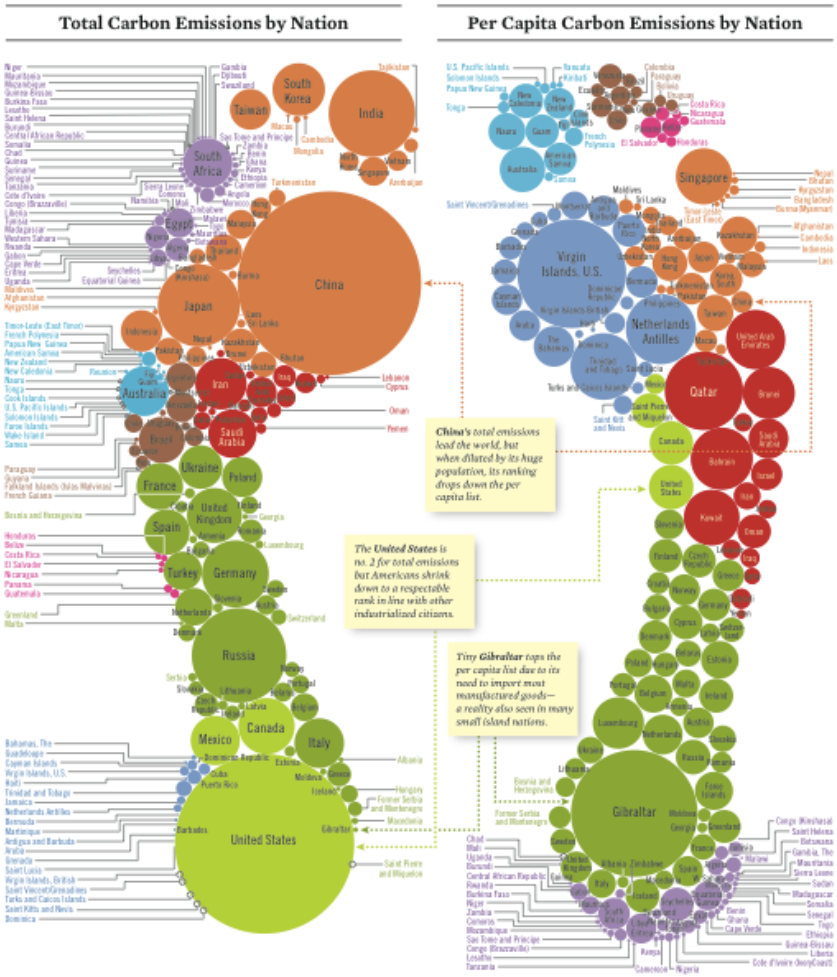
Total Carbon Emissions by Nation
Per Capita Carbon Emissions by Nation
China
United States
India
Russia
Japan
Germany
South Korea
Canada
Iran
Saudi Arabia
Mexico
South Africa
Italy
France
Ukraine
Australia
Spain
Poland
United Kingdom
Taiwan
Turkey
Egypt
Brazil
Gibraltar
Qatar
Singapore
Virgin Islands, U.S.
Netherlands Antilles
China's total emissions lead the world, but when dilated by its huge population, its ranking drops down the per capita list.
The United States is no. 2 for total emissions but Americans shrink down to a respectable rank in line with other industrialized citizens.
Tiny Gibraltar tops the per capita list due to its need to import most manufactured goods—a reality also seen in many small island nations.

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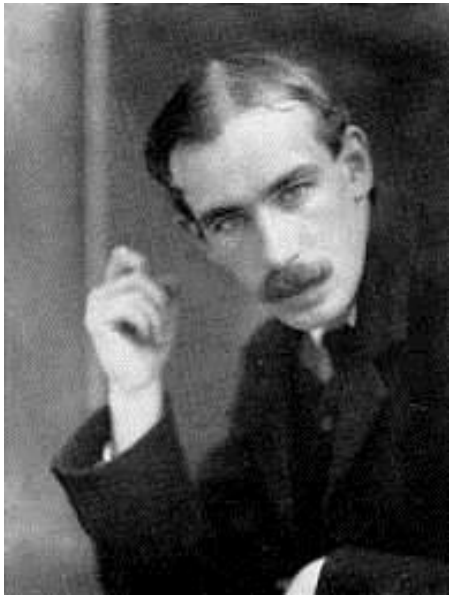

VS

Keynes

Hayek

Keynes

- Theories are reform liberal
- Economy driven by aggregate demand (total demand for goods and services in the economy at a given time and price level)
- Government should intervene when the economy is in a downturn, taking actions such as cutting taxes, subsidizing housing, or lowering interest rates so people can have access to spending money.

Keynes

- Giving people the power to buy will multiply that invested money in the economy (multiplier effect)
- WARNING from Keynes: If money being saved is greater than what is being invested – which happens when interest rates are too high – unemployment will rise

Hayek

- Theories are classical liberal
- The “invisible hand” of the free market will prevent and cure economic cycles (“laissez-faire” economics)
- Government should not control the money supply
- Unnatural adjustments of interest rates artificially displace capital (money) - “easy money” causes people to change their normal spending habits, and leads to inflation

Hayek

- WARNING from Hayek: Socialism (what he believed to Keynesian economics) requires central economic planning and that will lead to totalitarianism
  - The government will control our social lives!
- Despite his laissez-faire beliefs, Hayek did believe that wealthy nations should provide a safety net without endangering freedom – basic food/shelter/clothing

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Economic growth (1)

- Economic growth is the increase in the market value of the goods and services produced by an economy over time.
- Percent rate of increase in real gross domestic product (GDP) or gross national product (GNP)
  - GDP: The value of output produced within a country during a time period
  - GNP: The value of output produced within a country plus net property income from abroad

Economic growth (2)

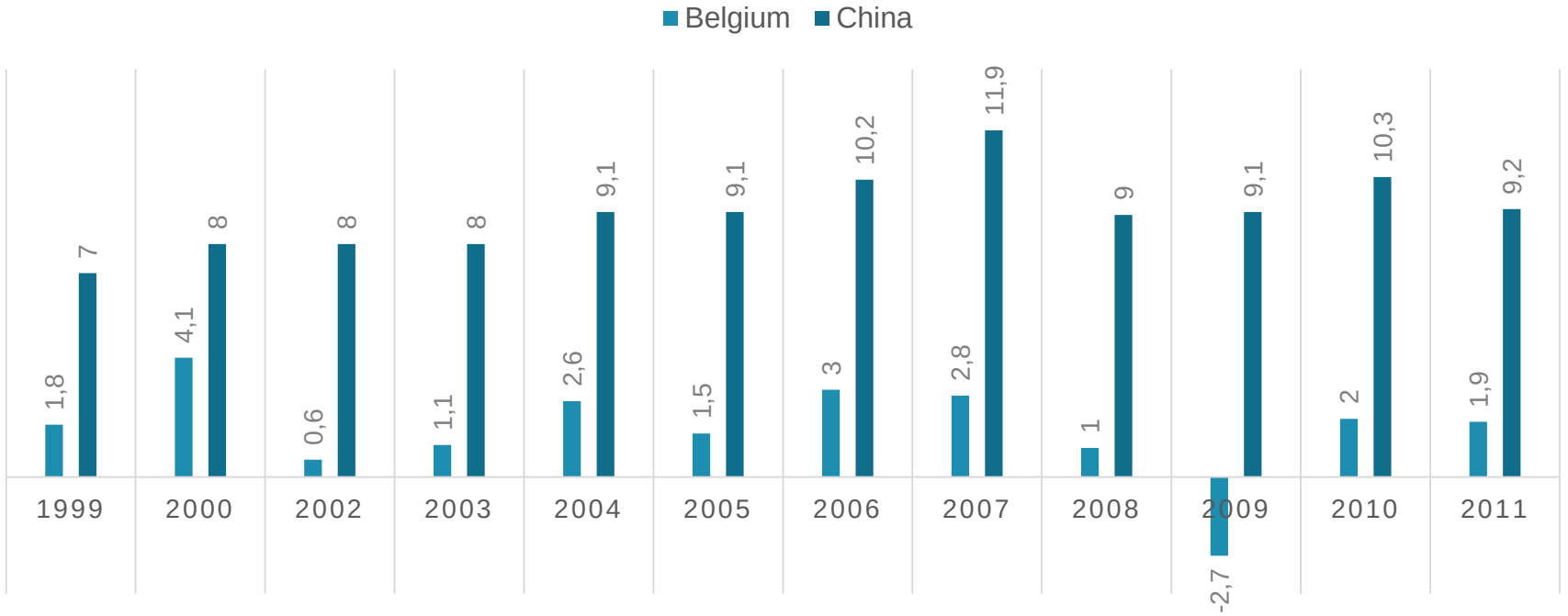
- Intensive growth: increase in per capita income
- Extensive growth: growth caused only by increases in population or territory

GDP/capita (2012)

Rank	Country	GDP/capita (USD)
1	Luxembourg	91 388
2	Qatar	83 460
3	Norway	65 640
4	Singapore	61 803
5	Switzerland	53 367
6	Brunei	53 348
7	United States	49 965
8	Kuwait	44 988
9	Australia	44 598
10	Austria	44 208

Rank	Country	GDP/capita (USD)
12	Netherlands	43 198
18	Belgium	39 788
92	China	9 233
127	India	3 876
169	Ethiopia	1 139
177	Liberia	655
178	Eritrea	566
179	Burundi	560
180	Congo, Dem. Rep.	422
	World	**12 213**

GDP growth



http://www.indexmundi.com/

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Economic growth

Advantages

- Increase of available products
- Technological innovation
- High standard of living
- High degree of employment
- Increased trust of companies and consumers

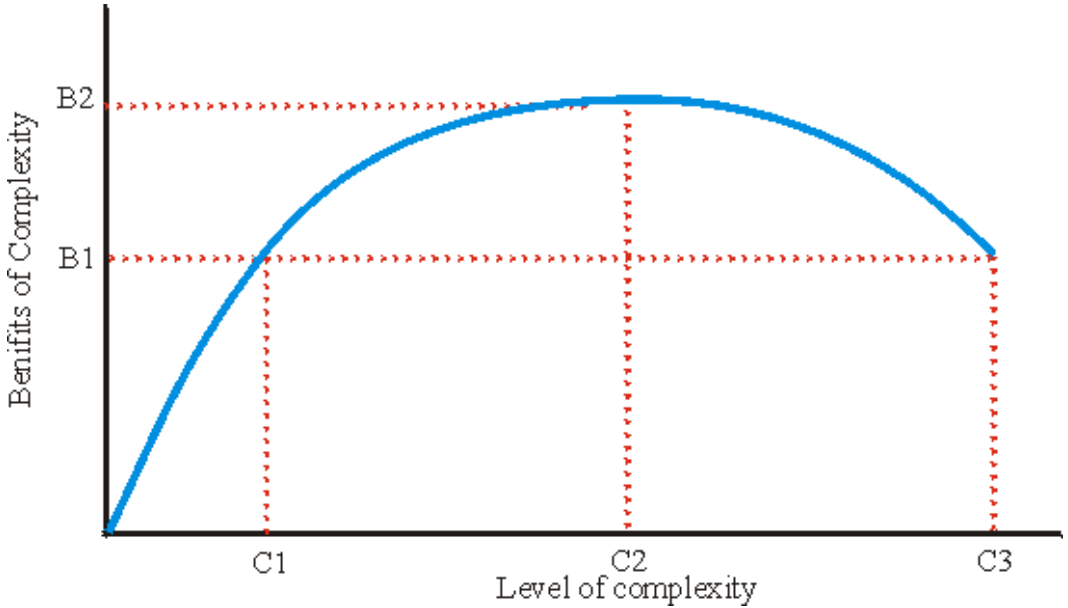
Disadvantages

- Increased amount of environmental pollution
- Depletion of natural resources
- Creation of artificial needs
- Inequal distribution of income and welfare

Diminishing returns on social complexity

- … societies collapse when their investements in social complexity reach a point of diminishing marginal returns.
- While climate change, invasions, crop failures, disease or environmental degradation may be the apparent causes of societal collapse, the ultimate cause is usually an economic one, inherent in the structure of society rather than in external shocks whch may batter them: diminishing returns on investments in social complexity [Joseph A. Tainter (1988)]

Benefits versus Level of complexity



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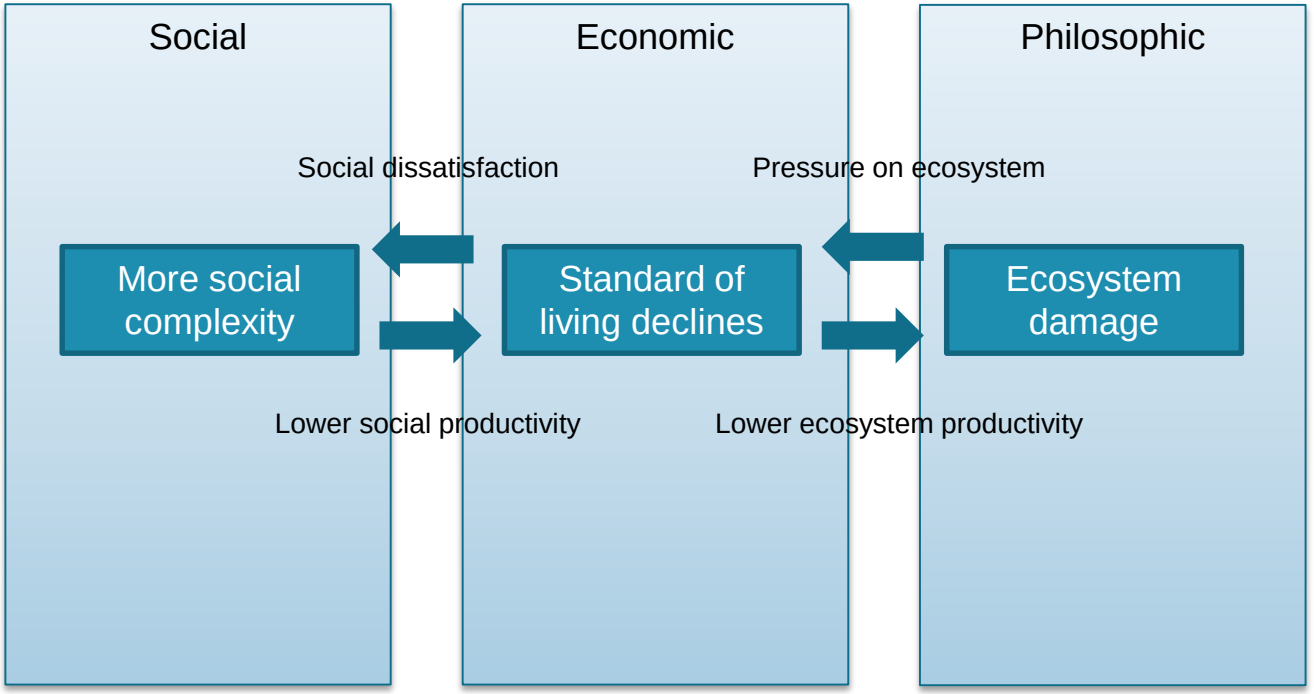
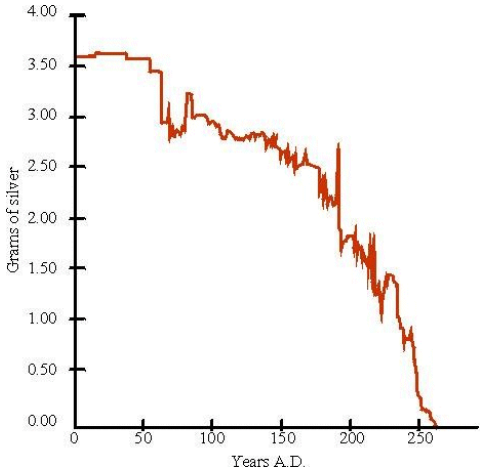
Interactions



The collapse of the Roman Empire

Peak gold



North Korea

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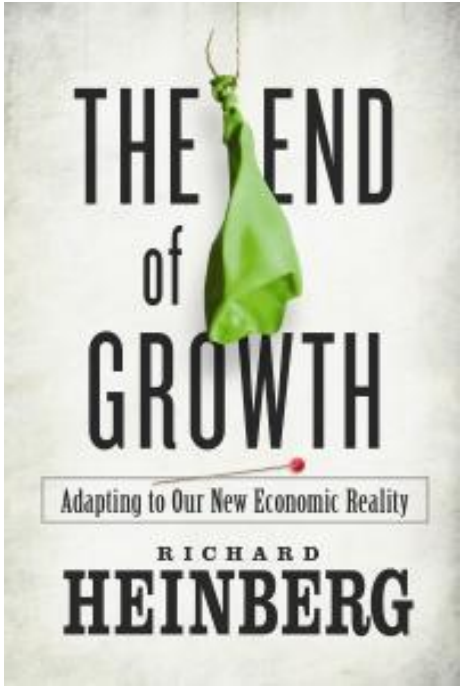
Growth versus Development

- Economic growth may be one aspect of economic development but is not the same
- Economic growth:
  - A measure of the value of output of goods and services within a time period
- Economic Development:
  - A measure of the welfare of humans in a society

➔ Gross National Happiness (GNH)



Economic value

- Economic value is the maximum amount of money a specific actor is willing and able to pay for the good or service
- Who determines the “real” value of a product?
  - Government: taxes, education
  - Consumer: democratic choice (if enough financial opportunities)
  - Producer: marketing, long term strategy


LESS IS
MORE!
RAPANUI
ALL TEES DOWN
TO £19. FOREVER!

Energy savings

If 10% energy reduction

- 25 million each year available
- 650 jobs
- 8 windmills
- free Rock Werchter for everybody

➔ And many more side effects

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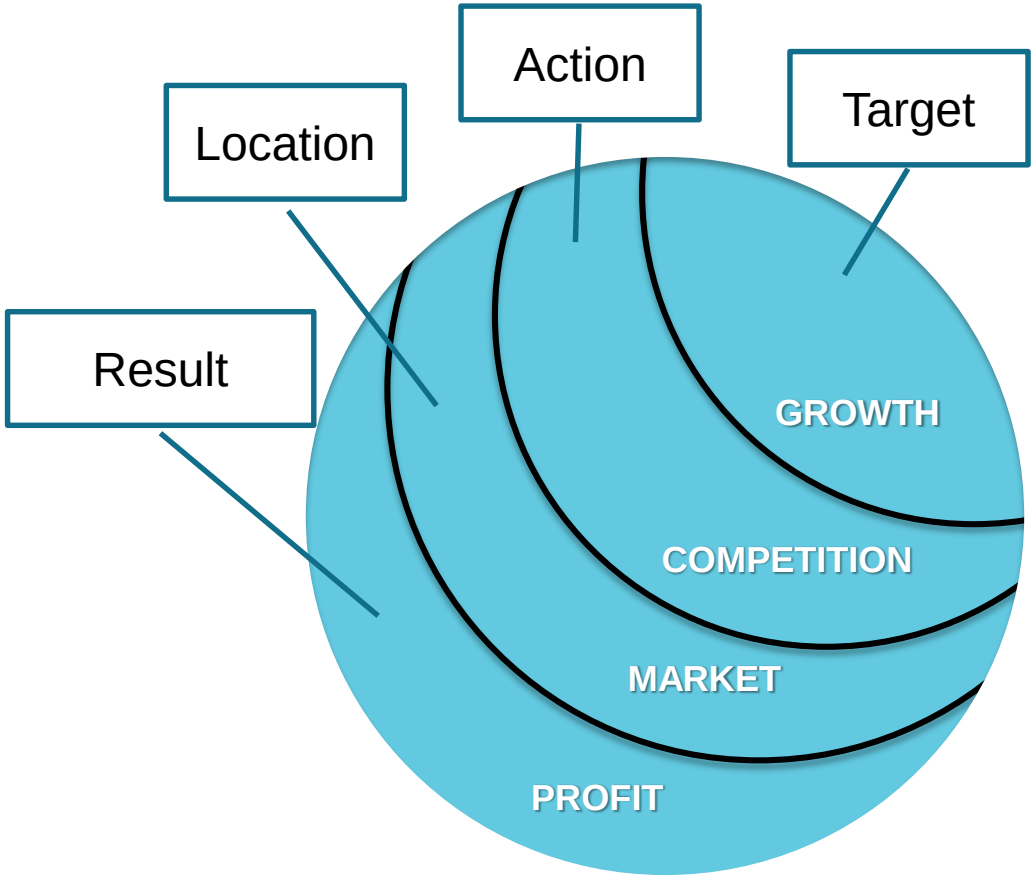
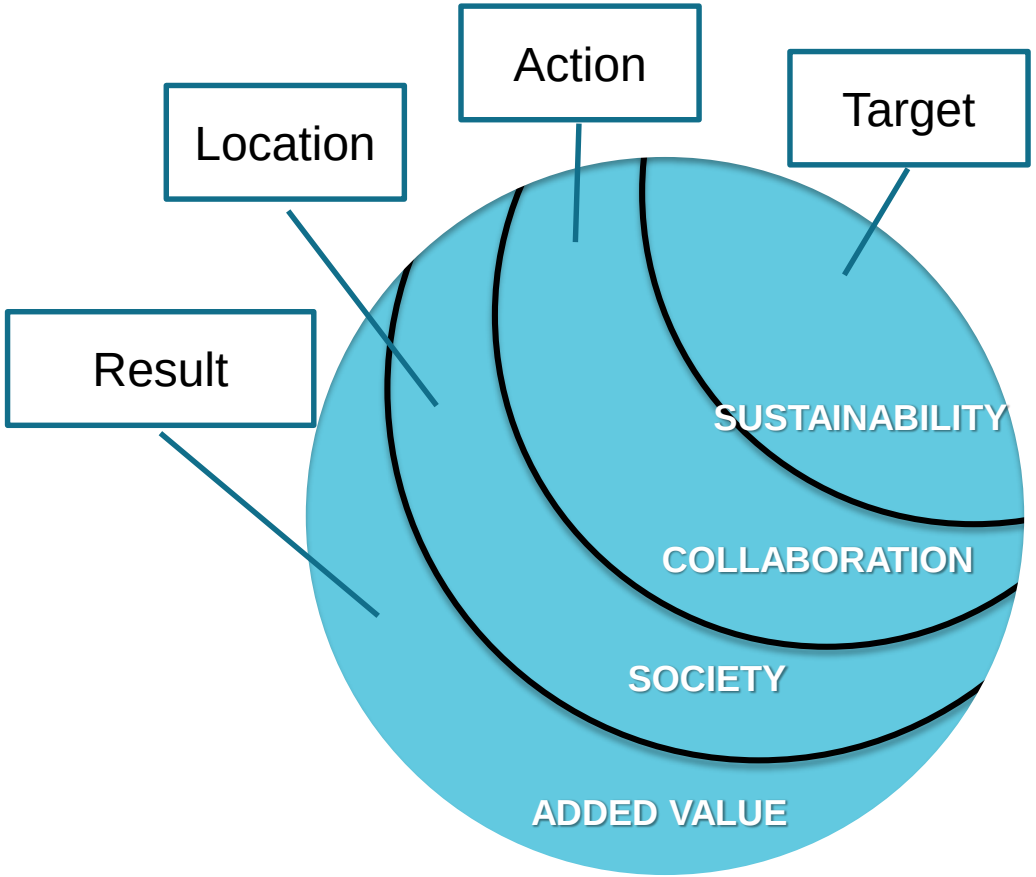


Profit driven economies



Mission driven economies

What is economics?

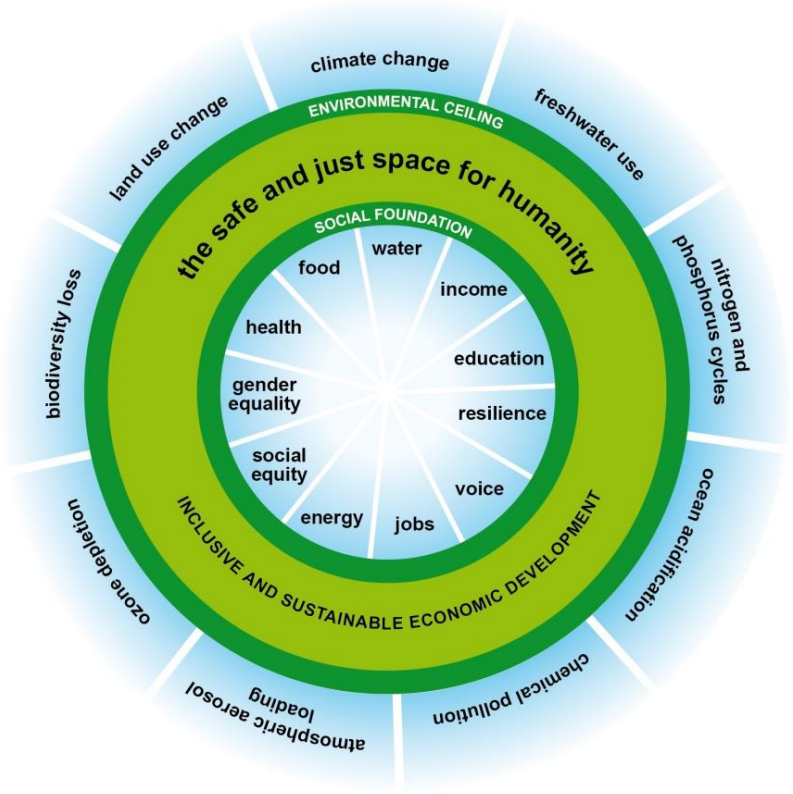
Why the discipline of economics depends on your worldview

Part 2

Kate Raworth

Senior Visiting Research Associate
Environmental Change Institute
Oxford University

Doughnut economy – Kate Raworth



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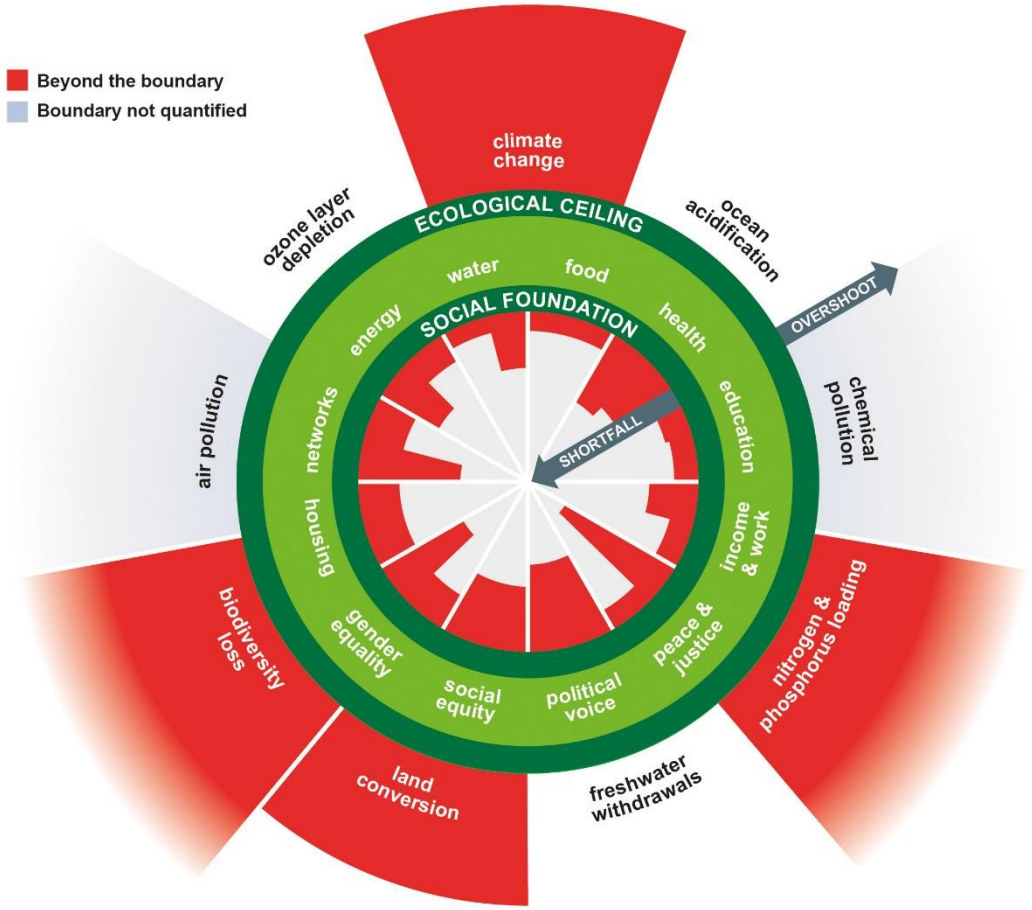
Beyond the boundary
Boundary not quantified
climate change
ocean acidification
chemical pollution
nitrogen & phosphorus loading
freshwater withdrawals
land conversion
biodiversity loss
air pollution
ozone layer depletion
ECOLOGICAL CEILING
SOCIAL FOUNDATION
OVERSHOOT
SHORTFALL
water
food
health
education
income & work
peace & justice
political voice
social equity
gender equality
housing
networks
energy

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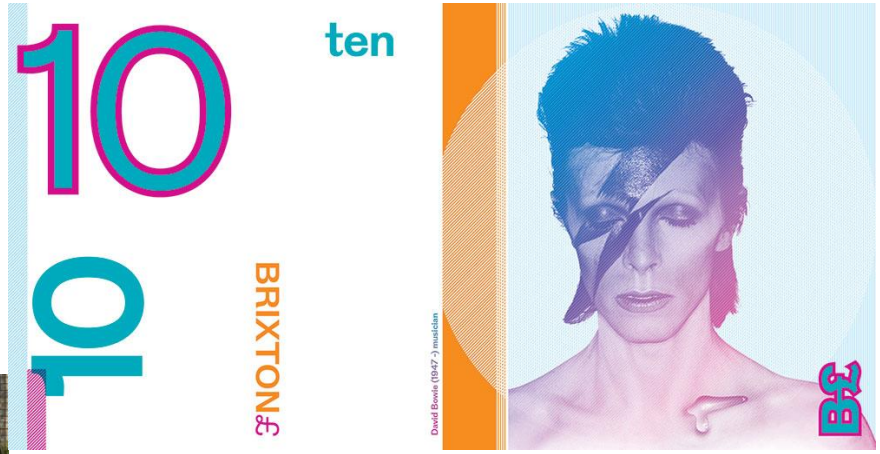
Co-operative

- Defintion: A co-operative is an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise.

Co-operative principles

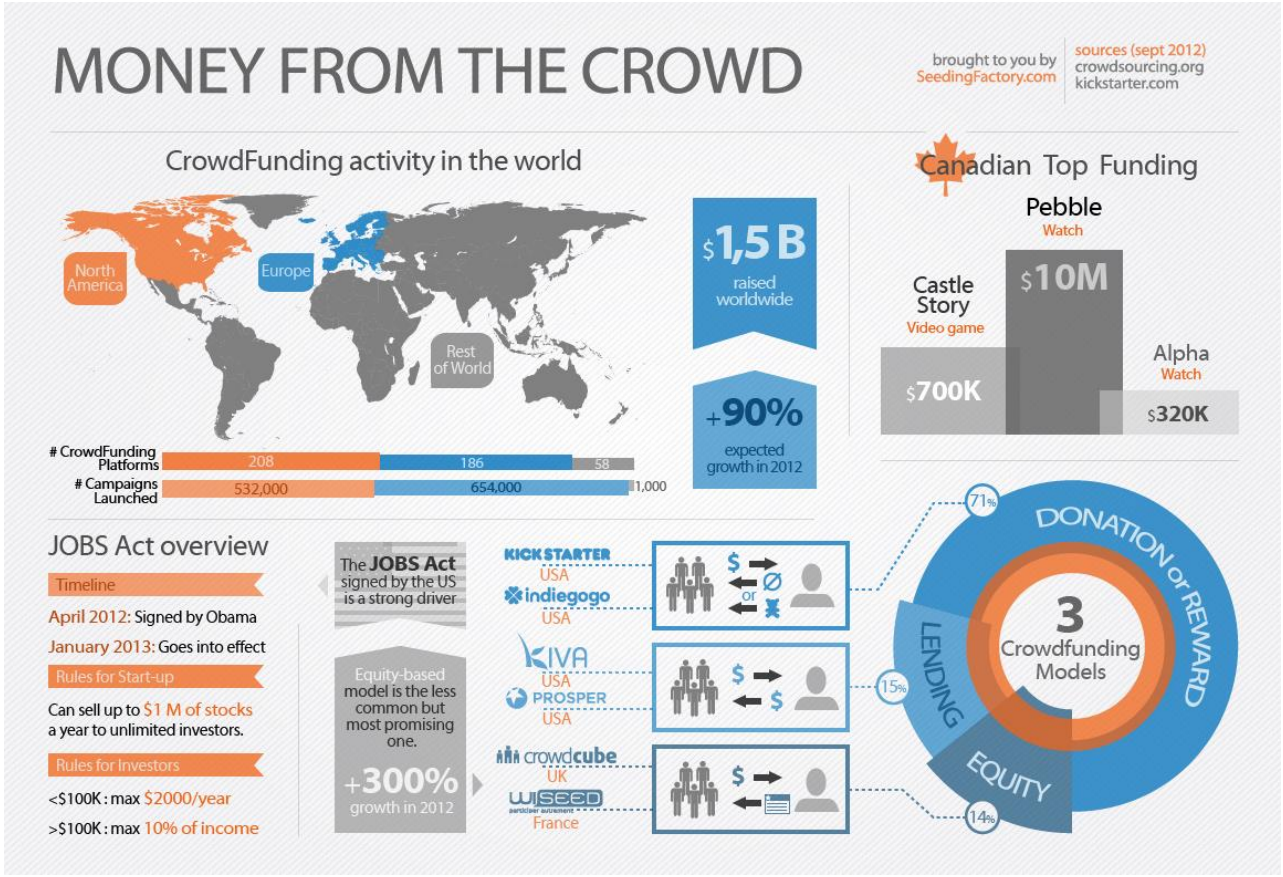
- Voluntary and Open Membership
- Democratic Member Control
- Member Economic Participation
- Autonomy and Independence
- Education, Training and Information
- Co-operation among Co-operatives
- Concern for Community

Local currencies



Bank of Dave

Phone blocks


MONEY FROM THE CROWD
brought to you by SeedingFactory.com
sources (sept 2012) crowdsourcing.org kickstarter.com
CrowdFunding activity in the world
North America
Europe
Rest of World
CrowdFunding Platforms
208
186
58
Campaigns Launched
532,000
654,000
1,000
$1,5 B raised worldwide
+90% expected growth in 2012
Canadian Top Funding
Pebble Watch
$10M
Castle Story Video game
$700K
Alpha Watch
$320K
JOBS Act overview
Timeline
April 2012: Signed by Obama
January 2013: Goes into effect
Rules for Start-up
Can sell up to $1 M of stocks a year to unlimited investors.
Rules for Investors
<$100K : max $2000/year
>$100K : max 10% of income
The JOBS Act signed by the US is a strong driver
Equity-based model is the less common but most promising one.
+300% growth in 2012
KICKSTARTER USA
indiegogo USA
KIVA USA
PROSPER USA
crowdcube UK
WISEED France
71%
DONATION or REWARD
15%
LENDING
EQUITY
14%
3 Crowdfunding Models

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Are we today throwing away the resources of tomorrow?
TAKE
MAKE
DISPOSE
LINEAR ECONOMY
VS
MAKE
30 Zn
27 Co
CIRCULAR ECONOMY
USE
RETURN

BMIX **THE BUSINESS MODEL INNOVATION GRID**

8 STRATEGIES & 100 CASES
TO CAPTURE THE FULL POTENTIAL OF THE RESOURCE REVOLUTION

PLAN C

8 STRATEGIES & 100 CASES

TO CAPTURE THE FULL POTENTIAL OF THE RESOURCE REVOLUTION

TECHNOLOGICAL			SOCIAL			ORGANISATIONAL	
							
Optimization	Circularity	Substitution with renewables	Functionality, not ownership	Stewardship	Slow consumption	Co-creation	Social entre-preneurship
LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE	LEARN MORE

EXAMPLES

Increased functionality	Circular economy, closed loop	Move from non-renewable to renewable sources	Product-oriented PSS - maintenance, extended warrantee	Radical transparency about eco or societal impacts	Consumer education (models); communication and awareness	Collaborative approaches (sourcing, production, lobbying)	Not for profit
Lean manufacturing	Cradle-to-cradle	Green chemistry	Use oriented PSS - rental, lease, shared	Resource stewardship	Responsible product distribution or promotion	Incubators and entrepreneur support models	Localisation
Additive manufacturing	Industrial symbiosis	Blue economy	Result oriented - pay per use	Choice editing by retailers	Slow fashion	Licensing, franchising	Alternative ownership: cooperative, mutual, (farmers) collectives

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