

The role of sustainable development in the 21st century



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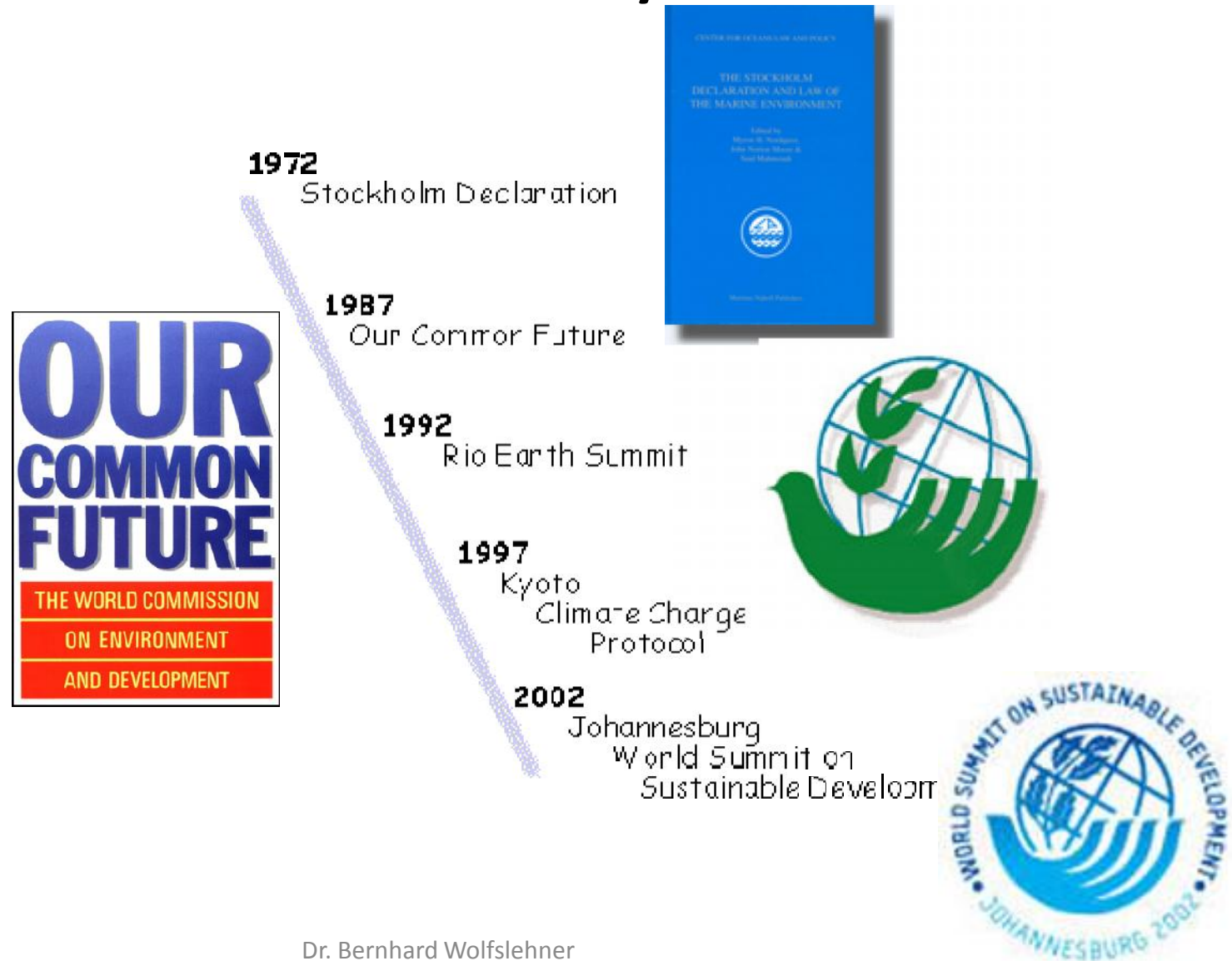
Who am I?

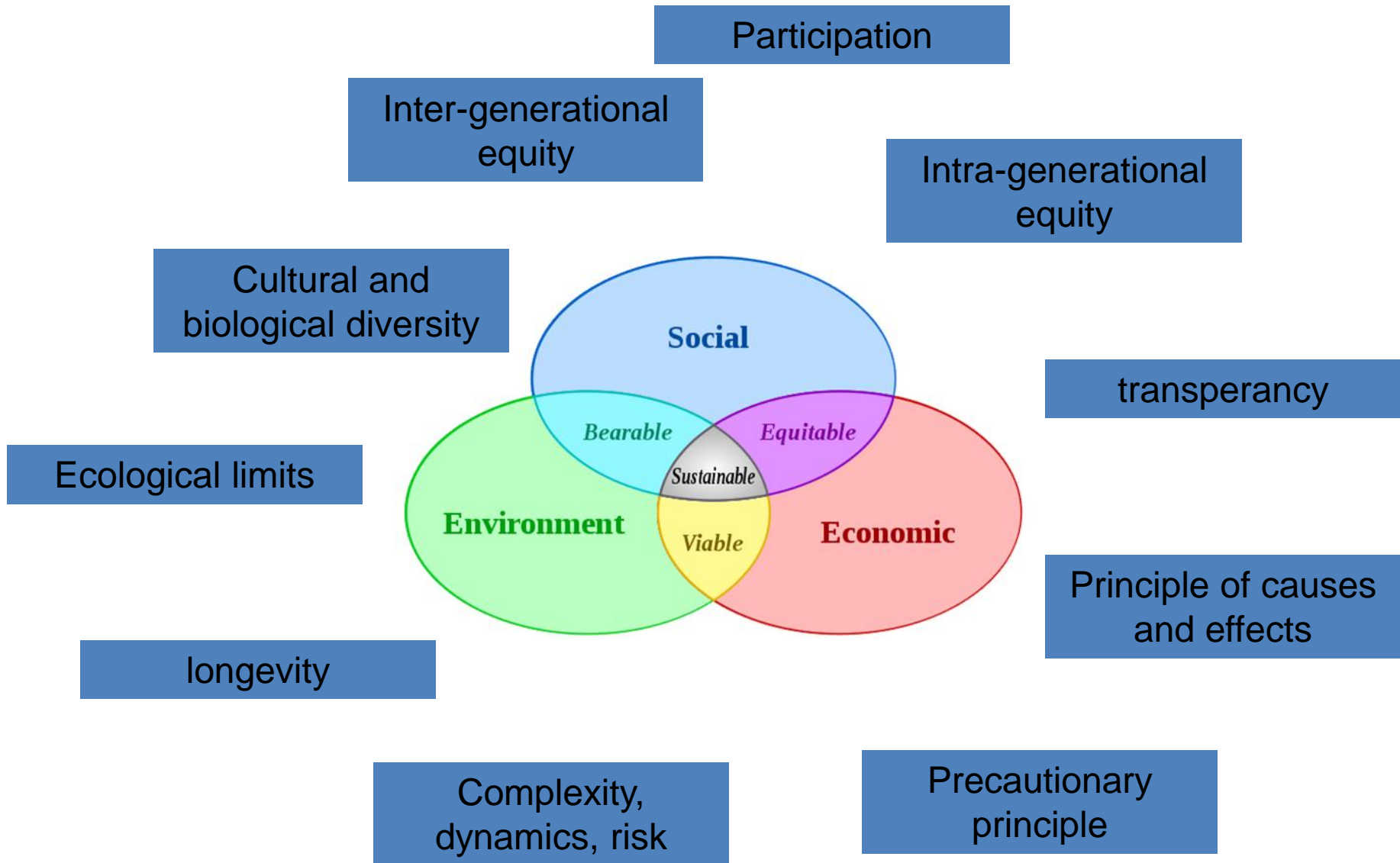


Sustainable development: Development that meets the needs of the present without compromising the ability of future generations to meet their own needs ("Our Common Future", 1987)



Raw history



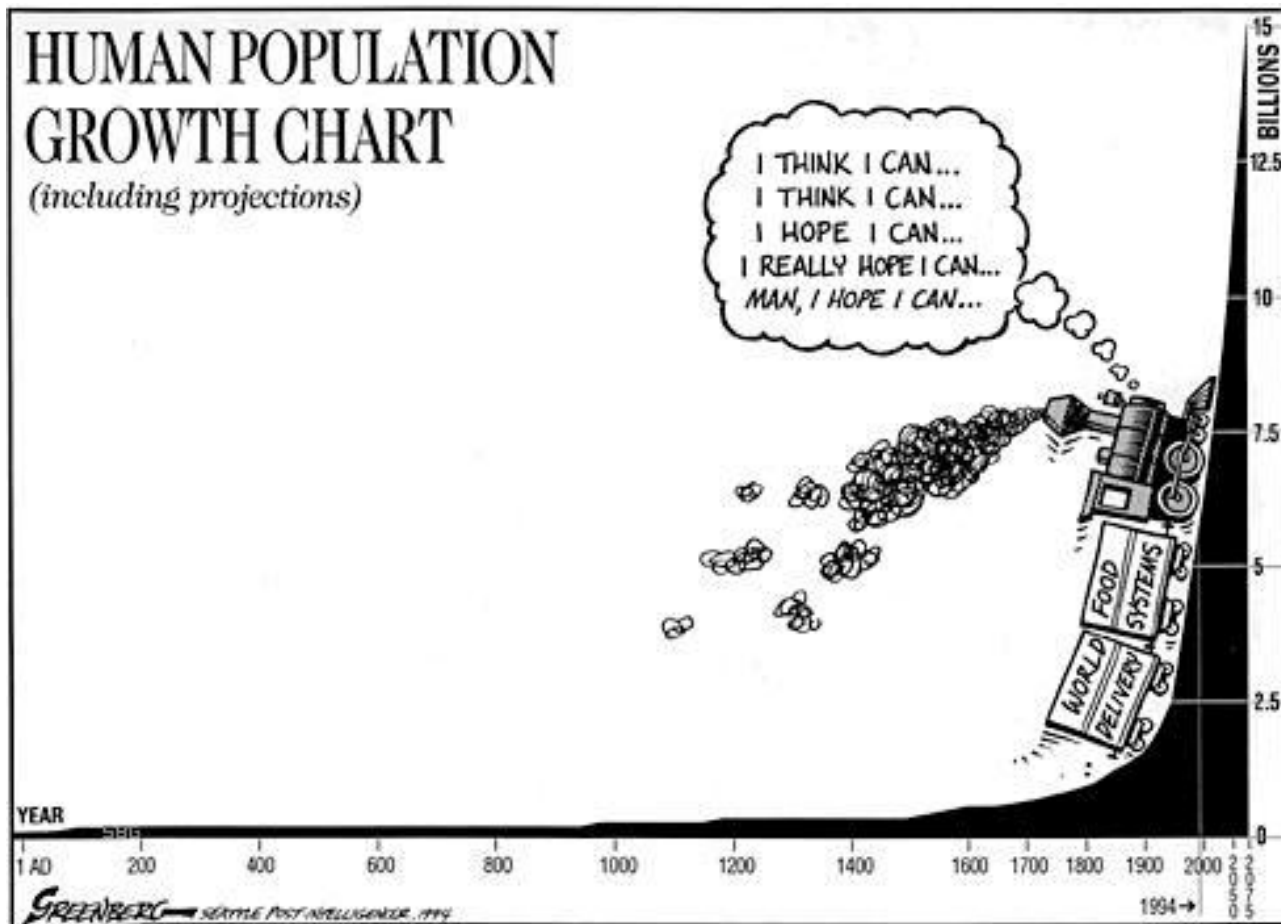


Sustainable development...

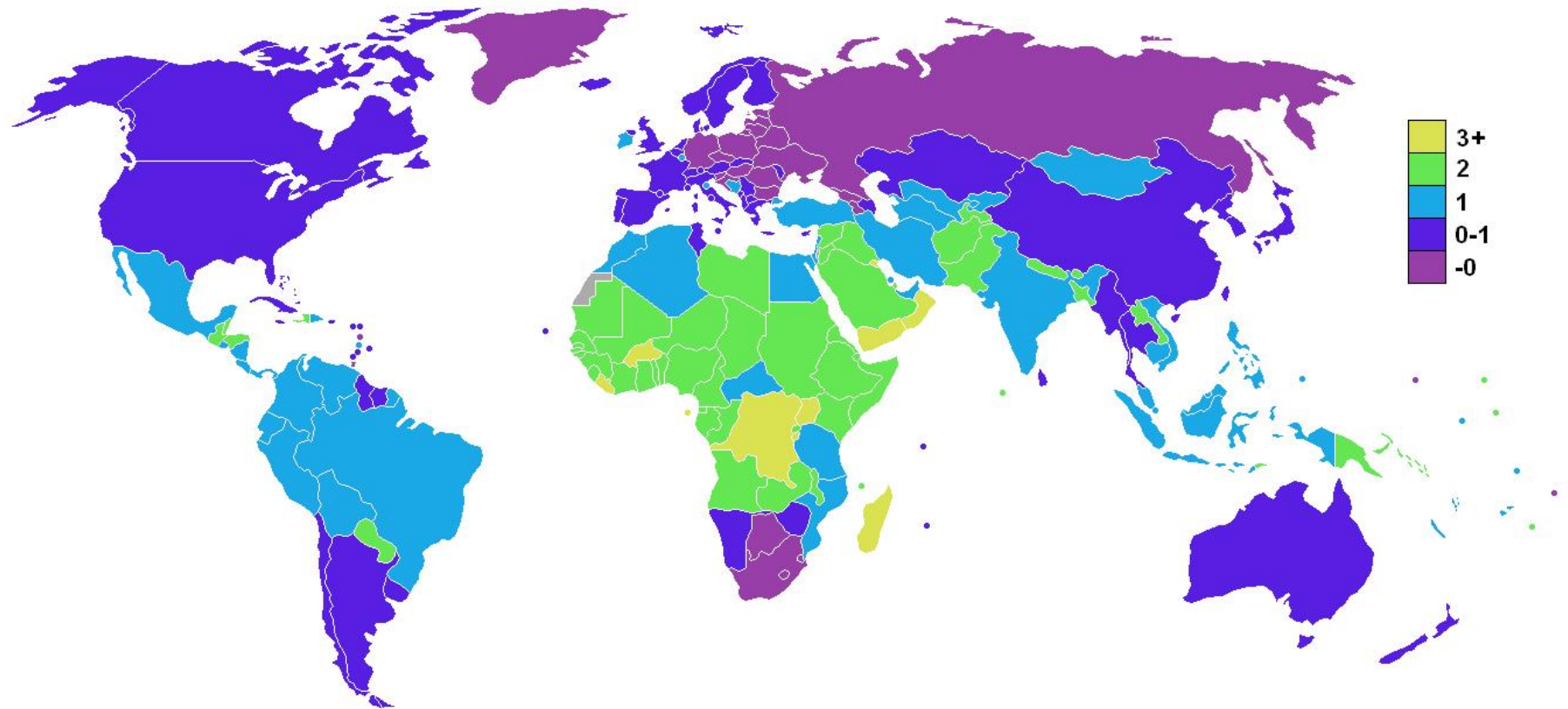
- anthropocentric
- resource-oriented
- use-oriented
- system-oriented

The first law of sustainability: population growth and/or growth in the rate of consumption of resources cannot be sustained (Albert Bartlett, University of Colorado, 2006)





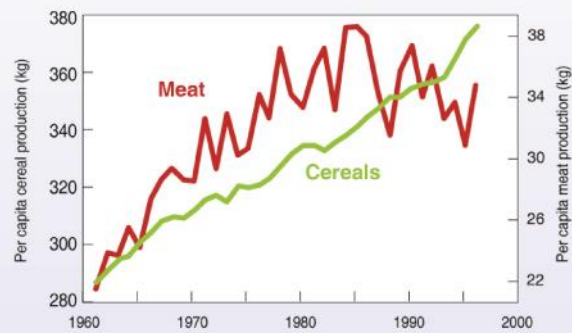
Population development



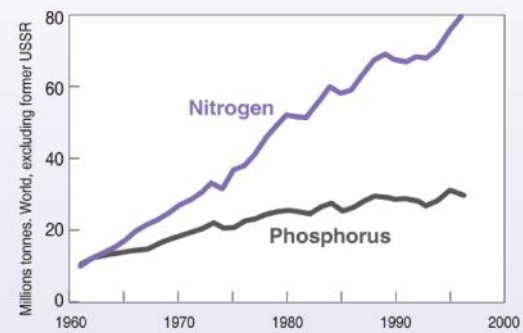
Agriculture is perhaps the most inherently sustainable of all human activities, using natural fertility of the land, sunlight, water and human labour to produce the basic necessities for survival (Mark Overton, 1999)



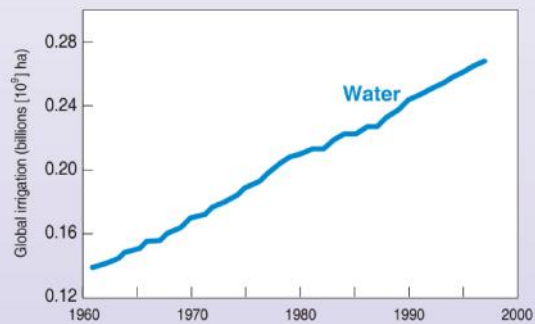
Global trends in cereal and meat production



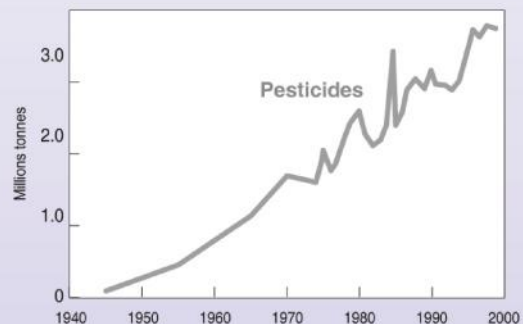
Global total use of nitrogen and phosphorus fertilizers.



Increased use of irrigation

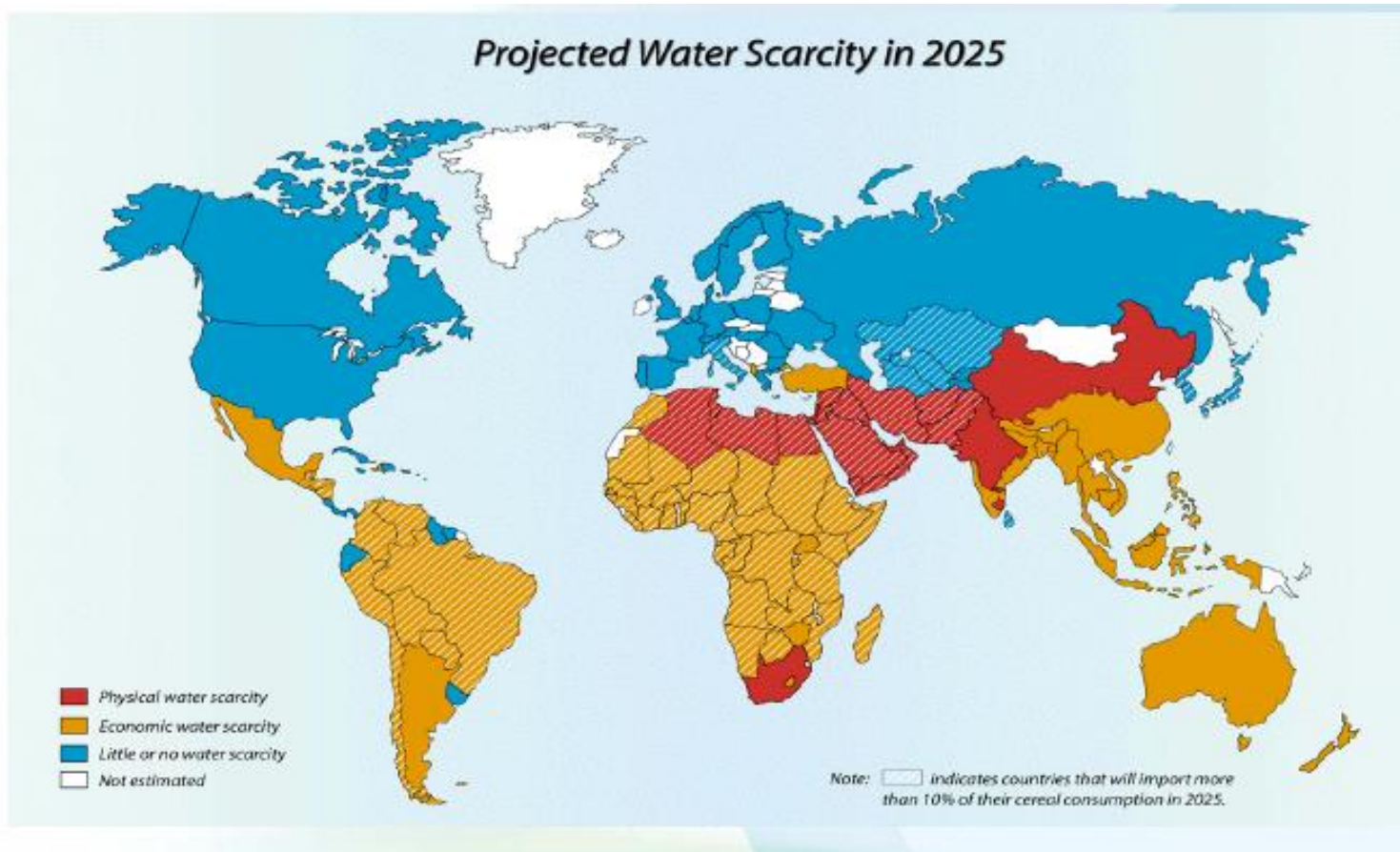


Total global pesticides production

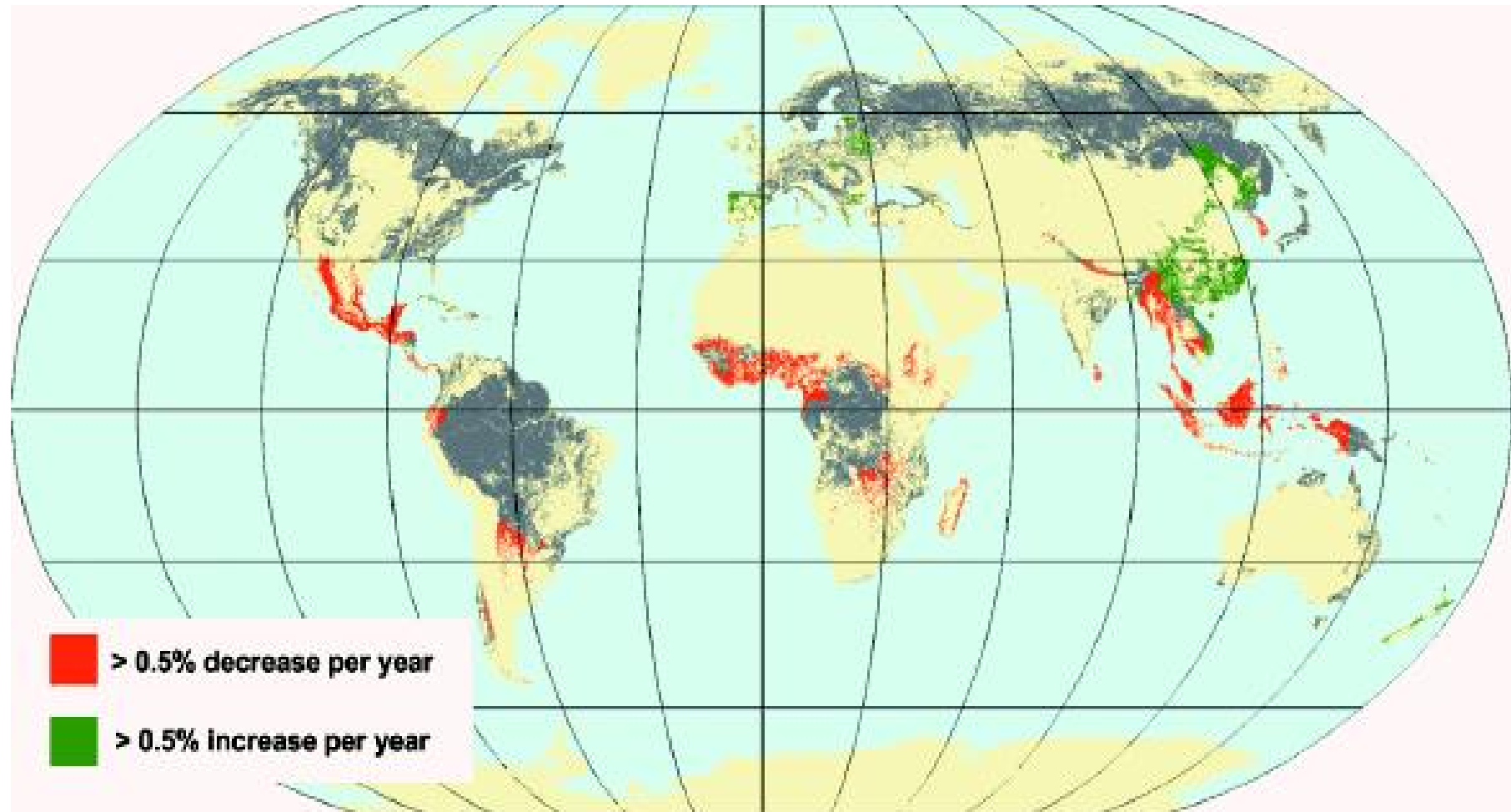


SOURCE: Tilman et al., 2002

IAASTD/Ketill Berger, UNEP/GRID-Arendal



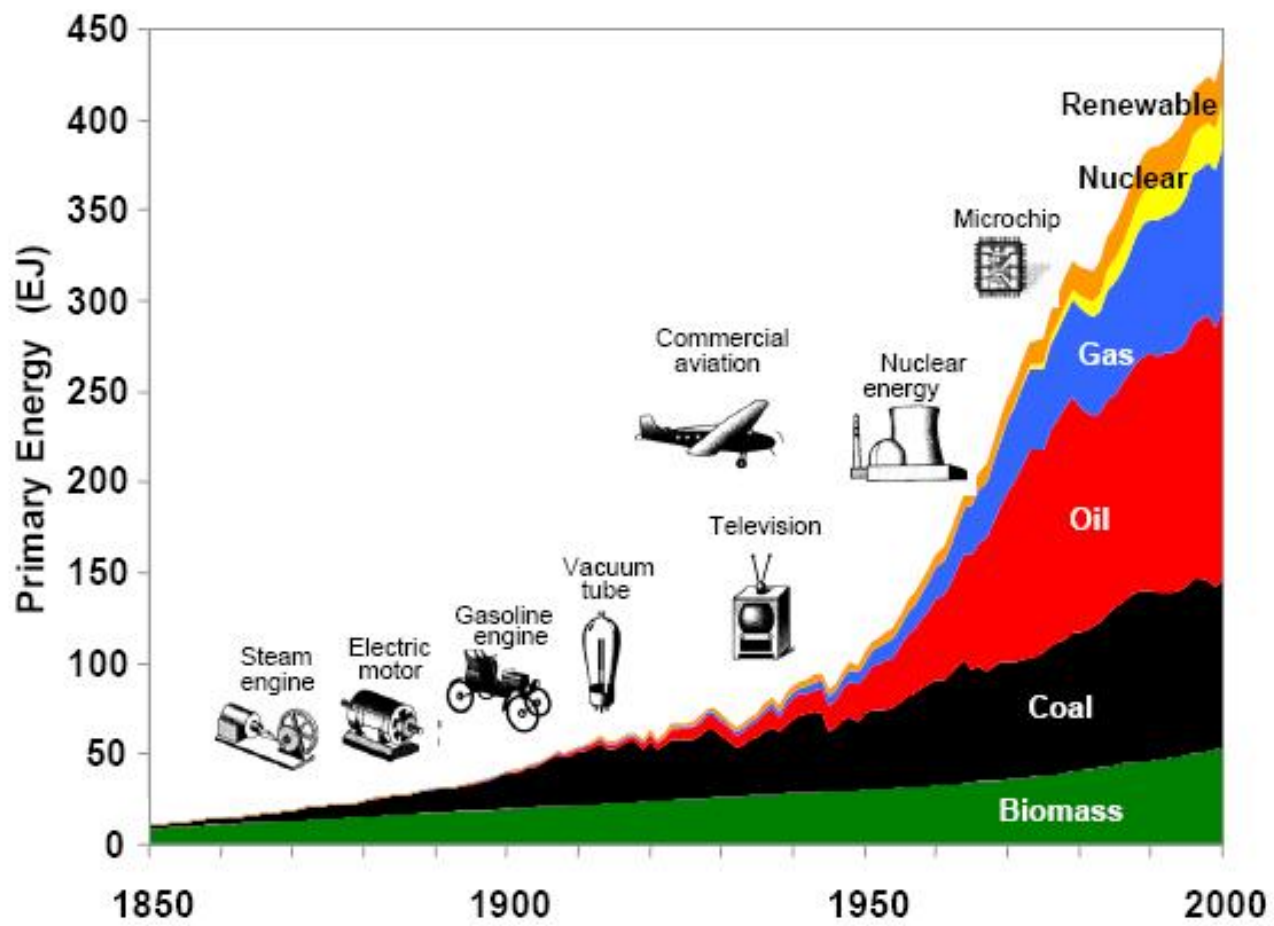
Forest cover changes



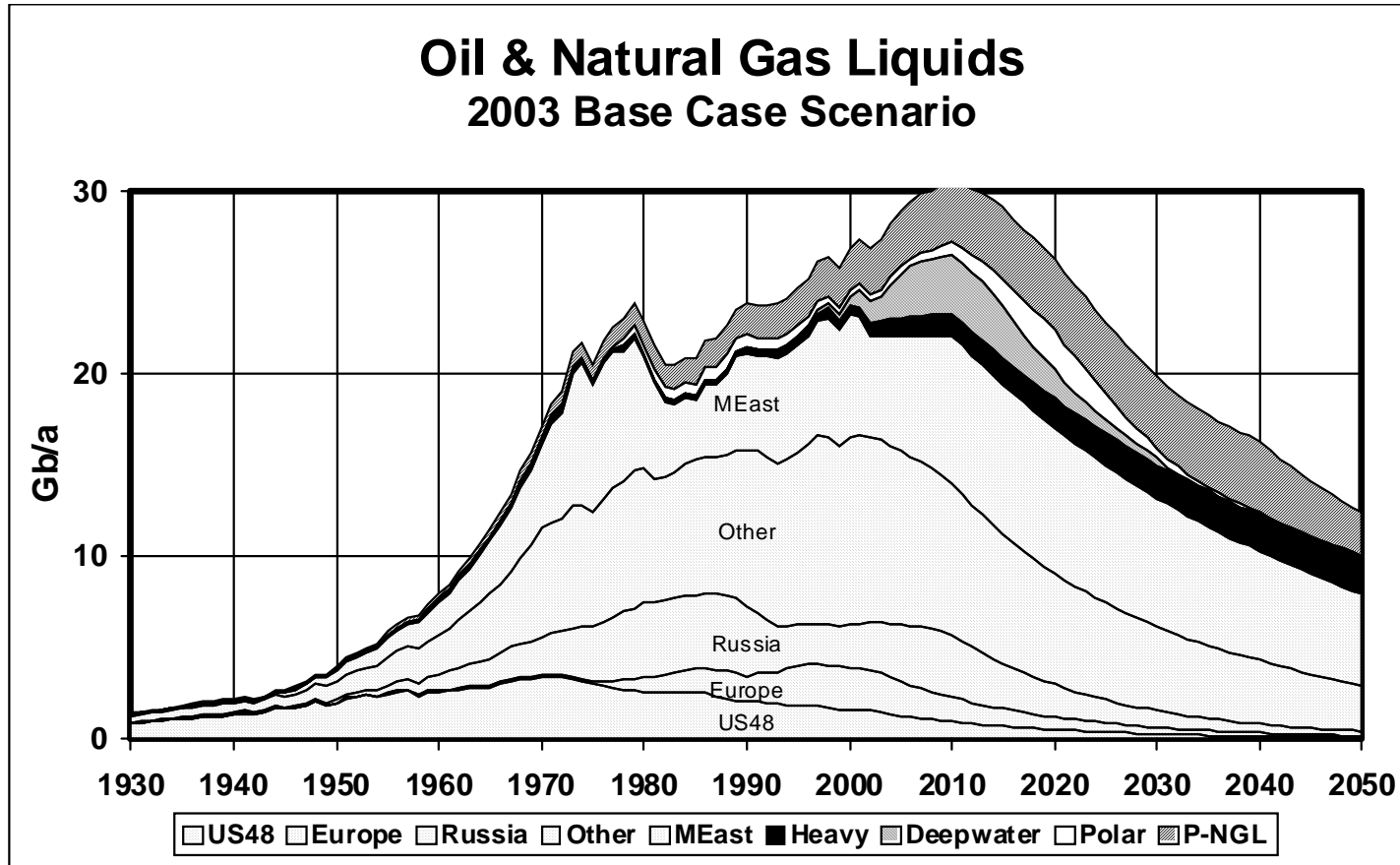
Source: FAO

There can be no sustainable development without sustainable energy development (Margot Wallstrom, European Union Environmental Commissioner, 2004)



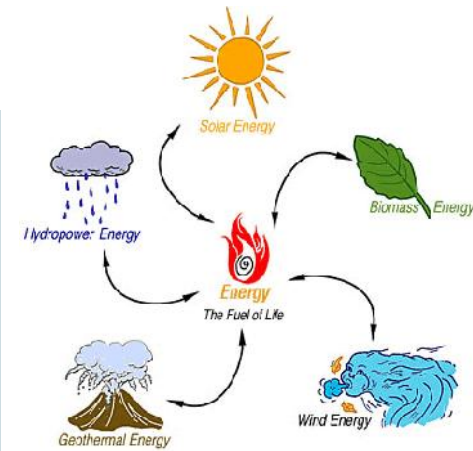
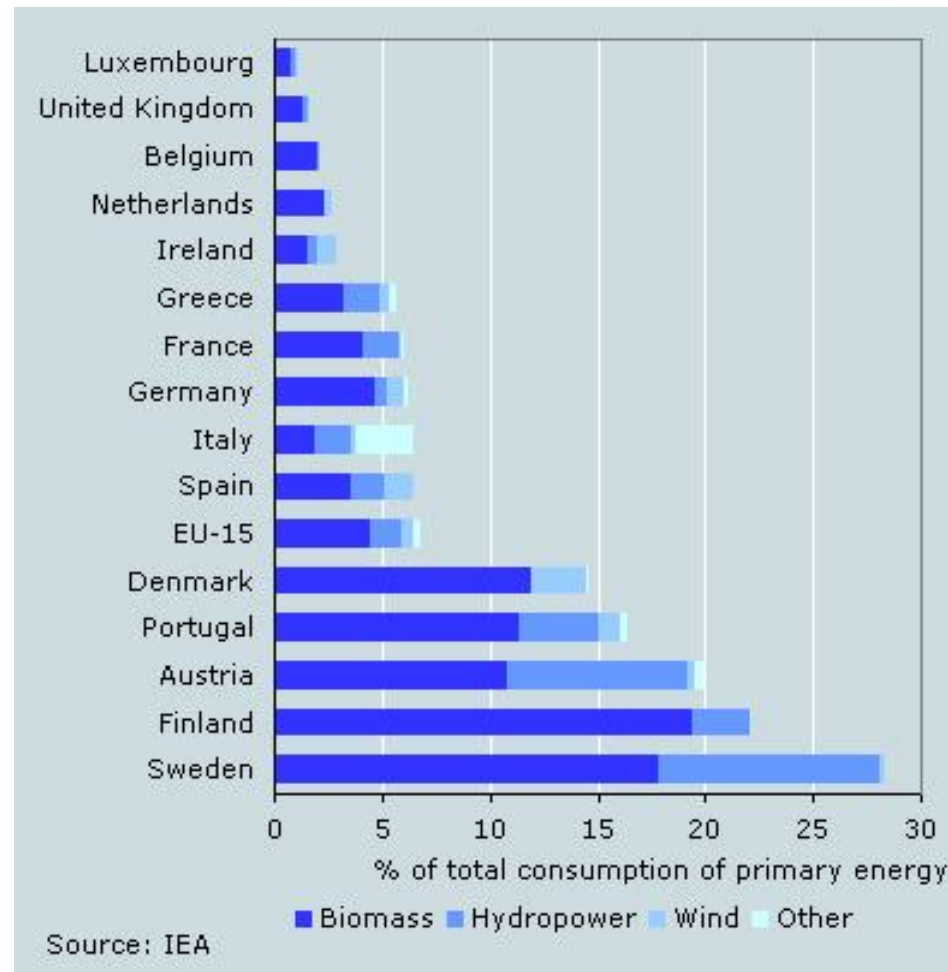


Peak oil



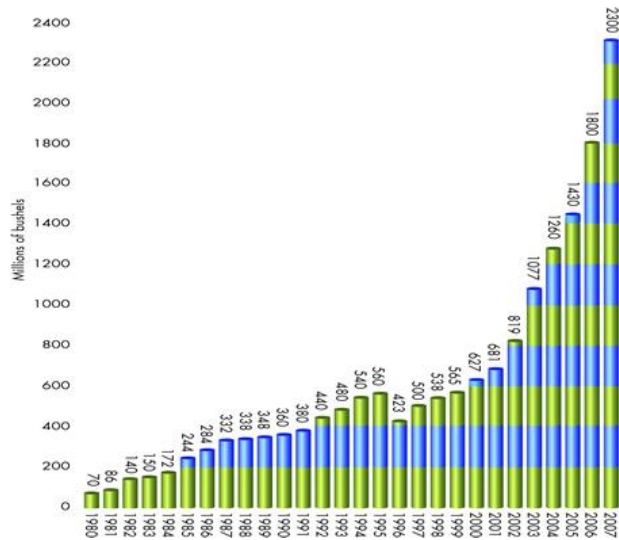
Renewable energy

Consumption of primary renewable energy in the EU-15, 2006*

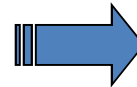


Potential conflicts

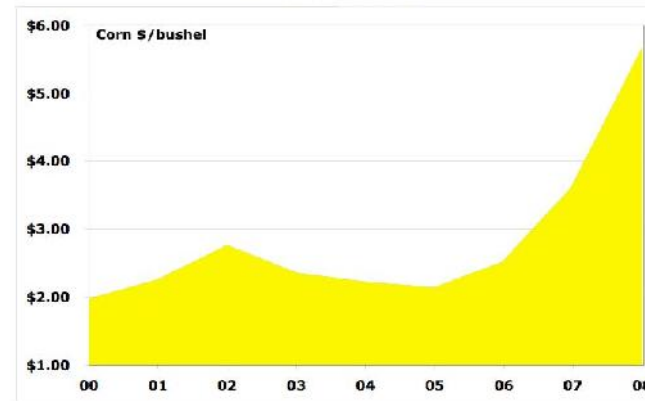
Corn Utilized in Ethanol Production



Source: National Corn Growers Association/RFA

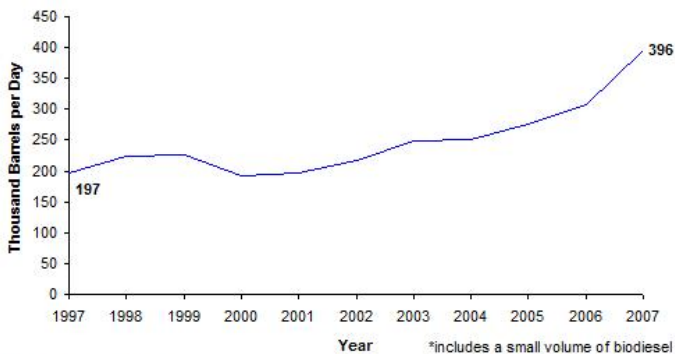


Corn Prices



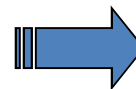
Source: U.S. Department of Agriculture, Bloomberg

Brazil's Ethanol* Production



Source: latest EIA estimates

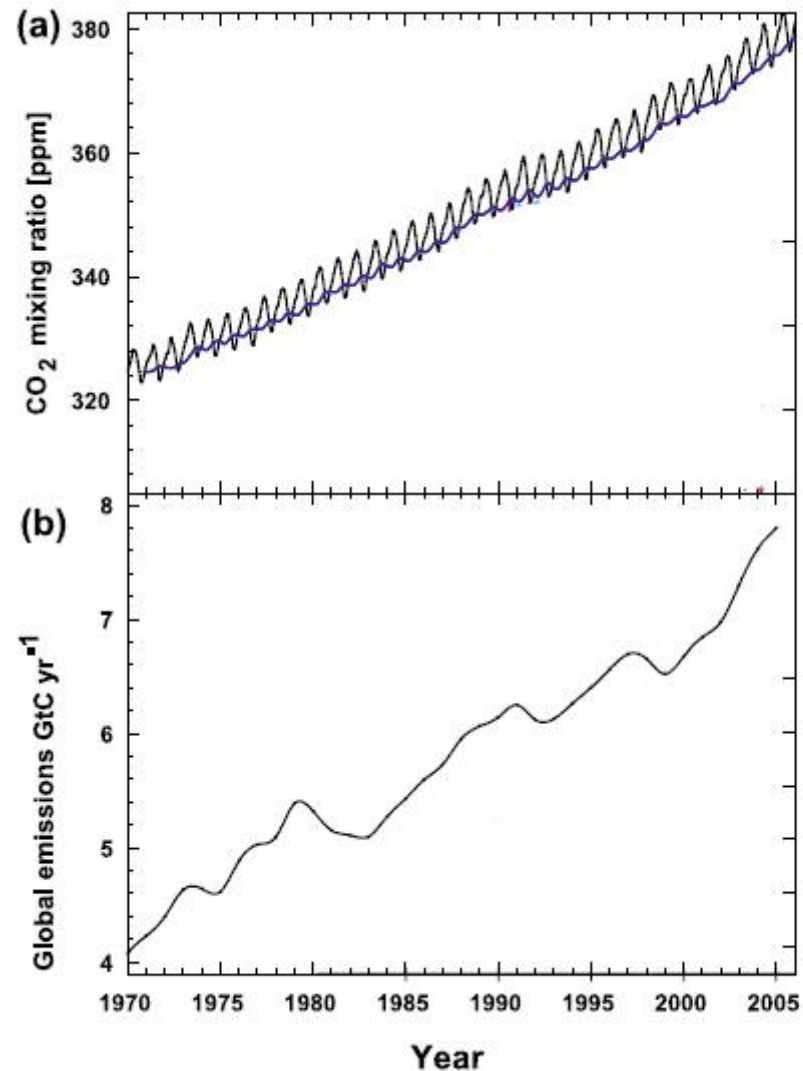
*includes a small volume of biodiesel



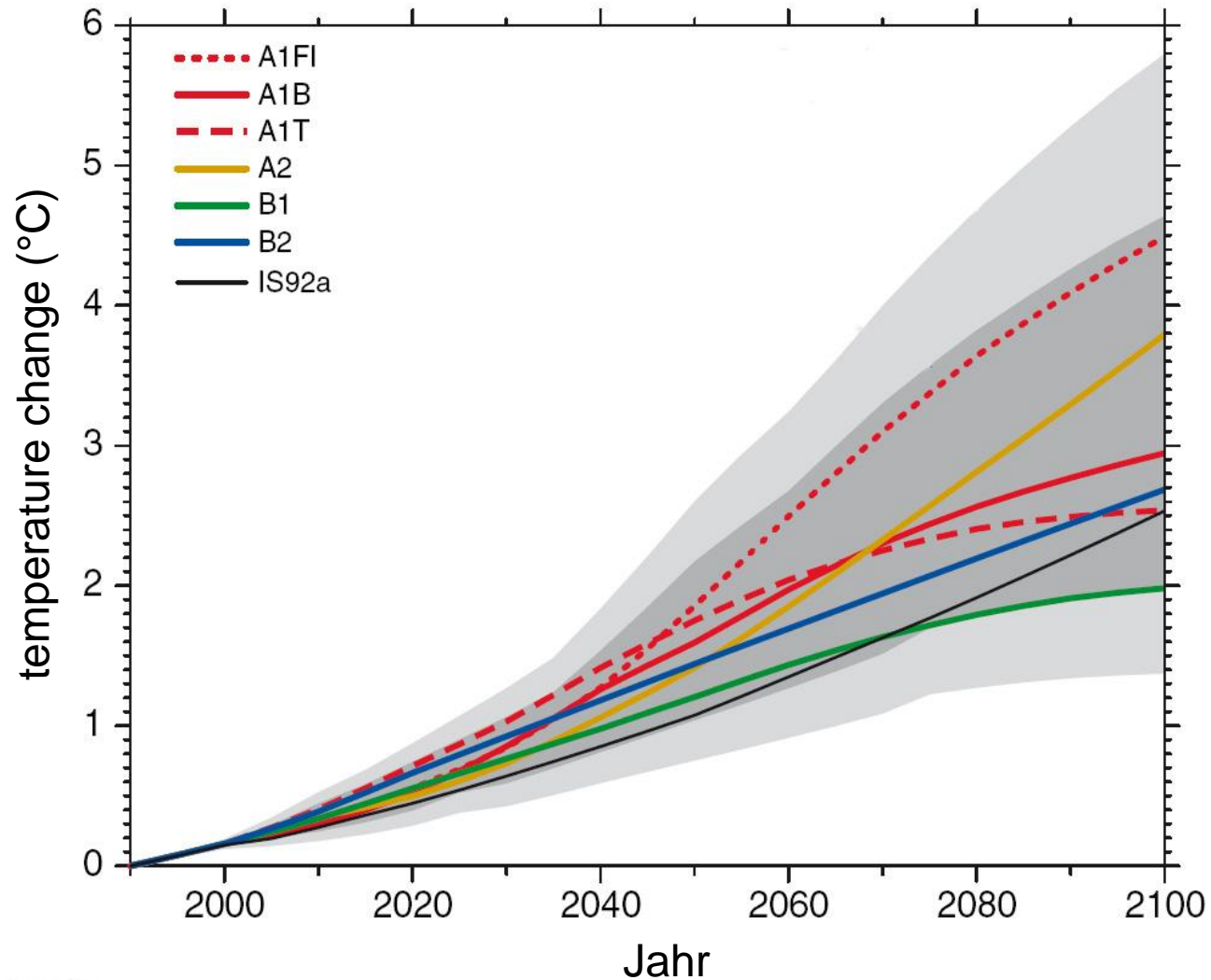
Climate change represents the greatest and widest-ranging market failure ever seen ('The Stern Review' into economics of climate change, October 2006)



Man and climate system



potential futures



When you warn people about the dangers of climate change, they call you a saint. When you explain what needs to be done to stop it, they call you a communist (George Monbiot, 2007)



Some observations

glaciers
e.g.
Wurtenkees

1983



1988



1994



Quelle: Böhm 2006

Flowering of cherries
phenology

1988: 22. April



Dr. Bernhard Wolfslehner

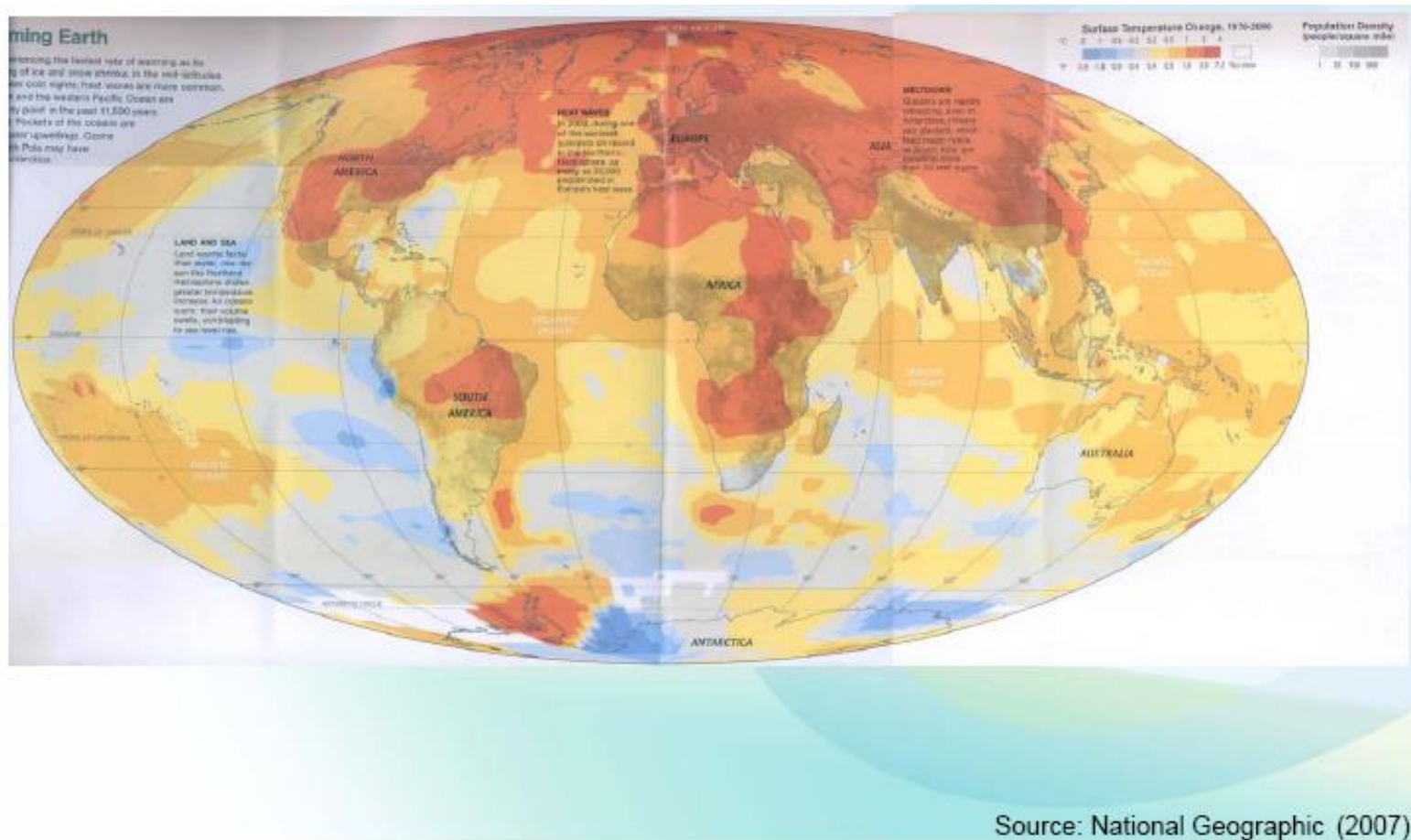
1998: 16. April

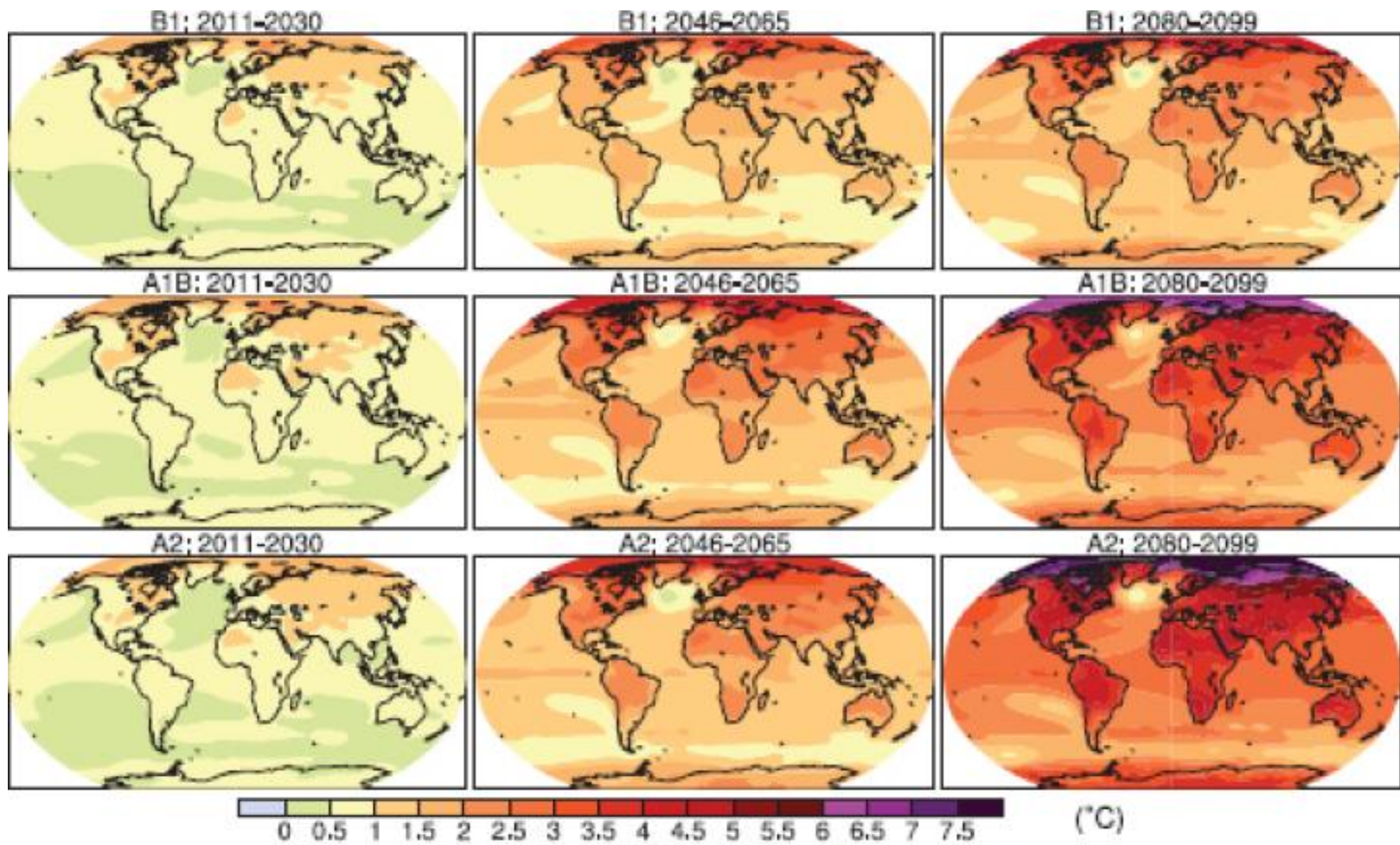


Quelle: Rutishauser und Studer 2007; Seidl 2008

June 3, 2011, Rosalia

Climate Change (1976-2006)



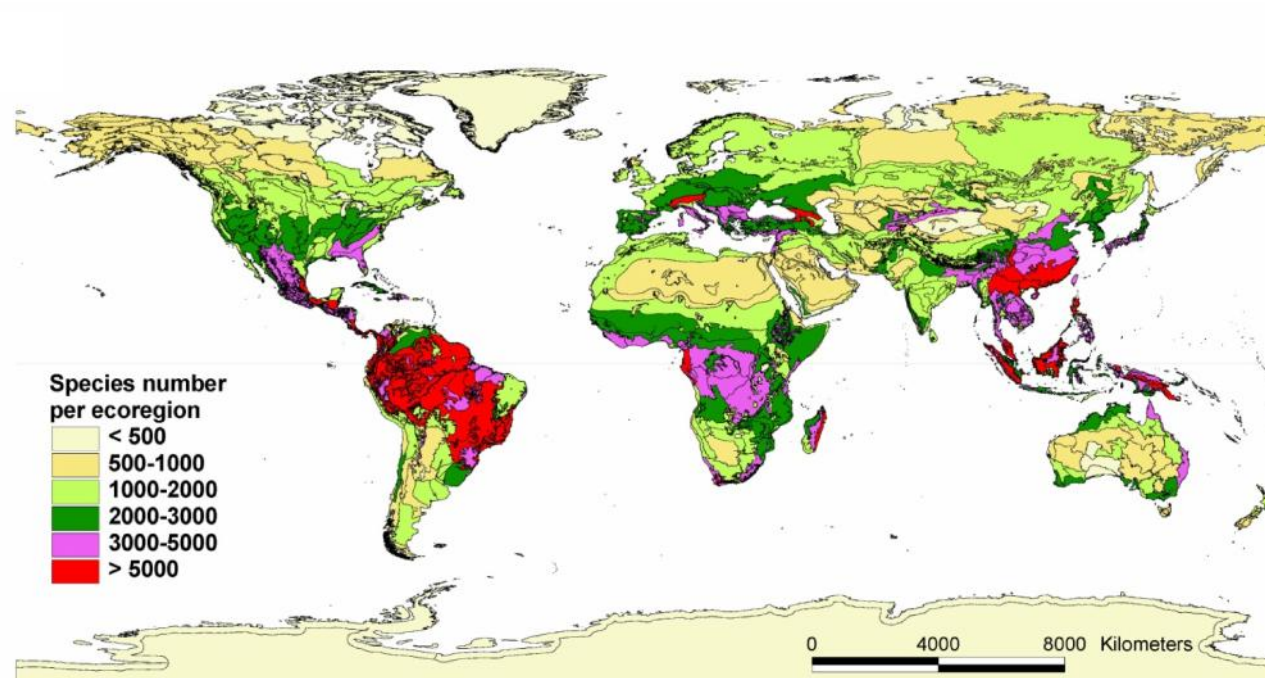


Source: IPCC (2007)



Sustainable development is like teenage sex - everybody claims they are doing it but most people aren't, and those that are, are doing it very badly (unknown)

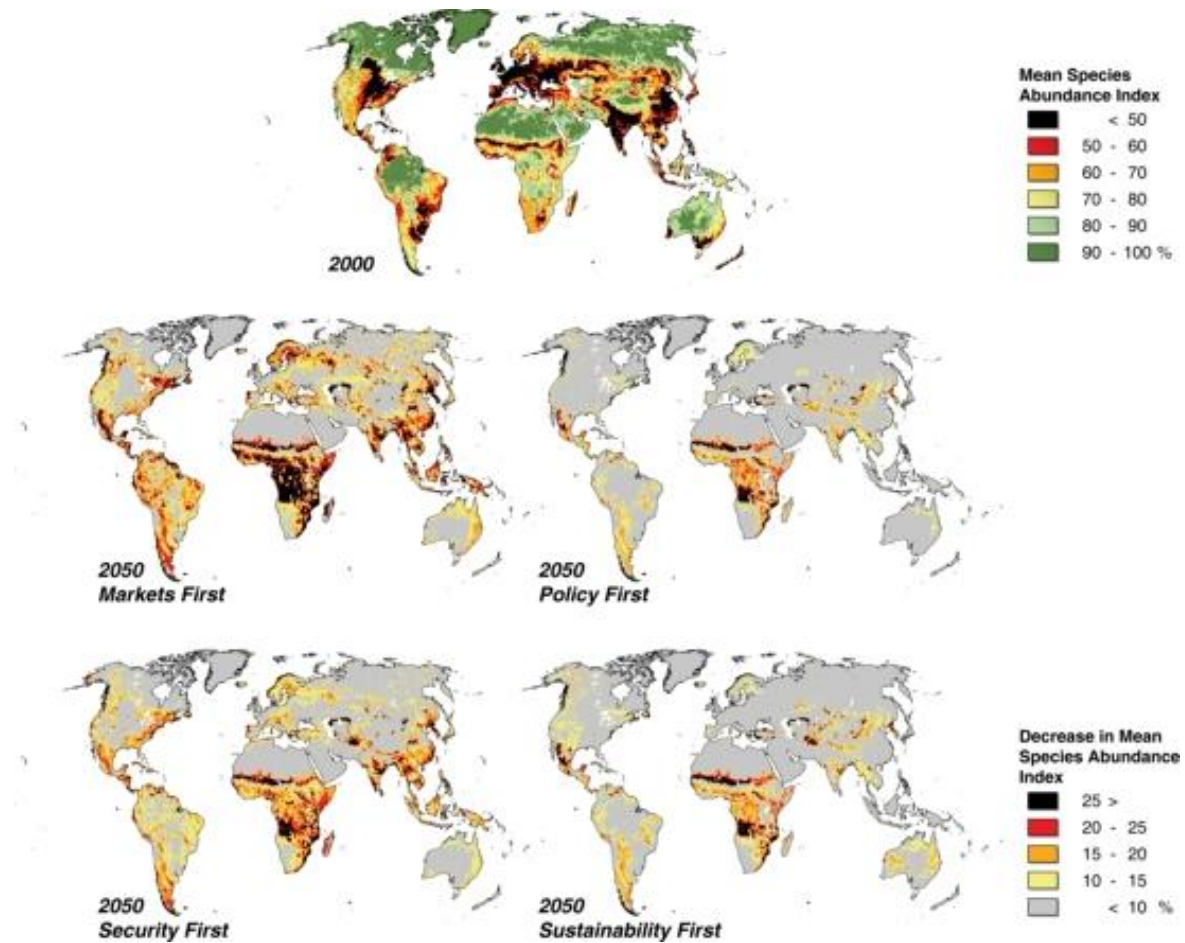
biodiversity – for what reasons?



biodiversity ->use value+existency value+option value+quasi-option value+....

<http://www.uni-bonn.de/Aktuelles/Presseinformationen/2005/166/bilder/figure1a.jpg>

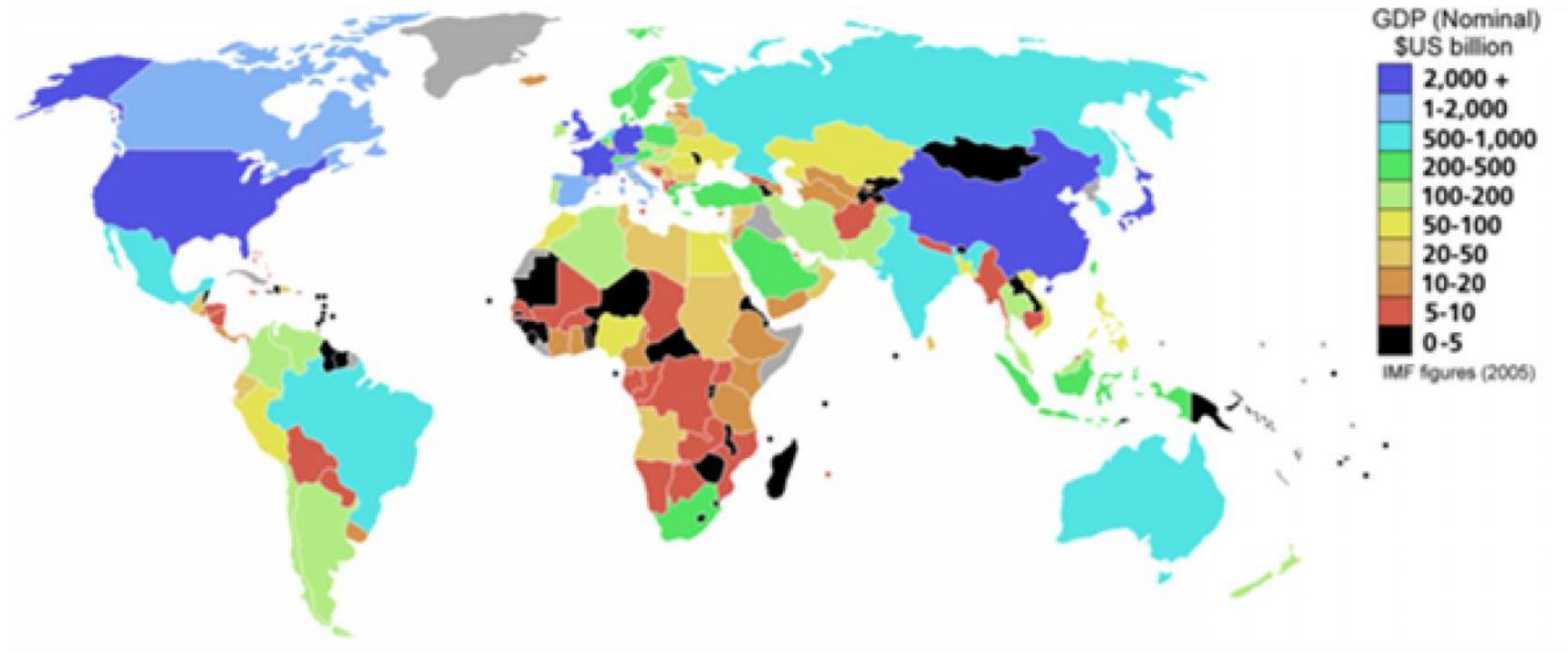
Biodiversity scenarios



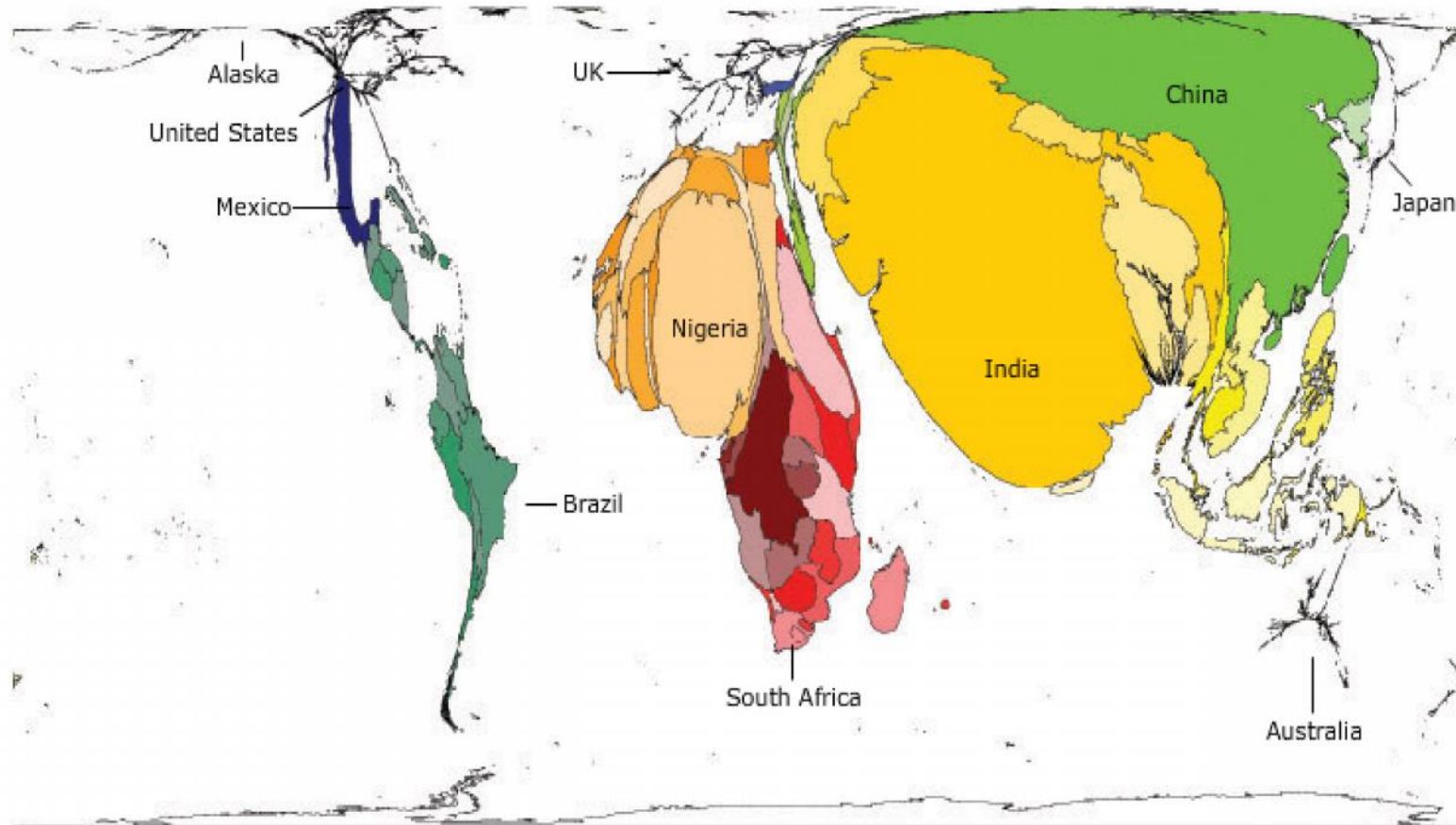
UNEP 2007



GDP shares



Worldmapper.org: An animation, from the world sized by people living on less than \$1 a day, to those earning over \$200



Less than \$1 a day

www.worldmapper.org

Financial crisis



- 2200 billion \$ loss (IWF)
- 51 Mio. Jobs temporarily threathened(ILO)
- 4,3 Mio. Americans lost homes untill 2010 (Moody's Economy.com))



You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete (Buckminster Fuller 1895 - 1983)



Weak sustainability

Neoclassical environmental economy

- Environmental problems are allocation problems
 - Environment has a monetary value
 - Environment is replaceable and can be compensated
- Production factors and capital forms can be substituted
- Everlasting growth is possible (economic blackbox)
- Economic welfare

Critique

- Uncertainty and nescience about consequences of loss of natural capital
- Loss of natural capital may be irreversible
- Market failure and externalities are insufficiently addressed
- Man is perceived as pure consumer, not as individual with preferences, options, stakes

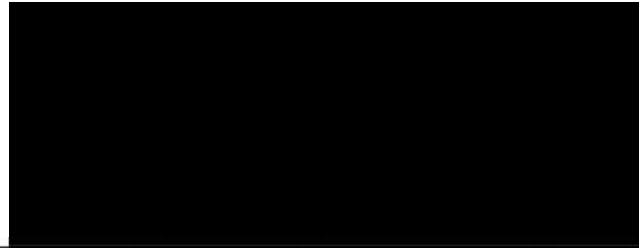
Strong sustainability

Ecological economics

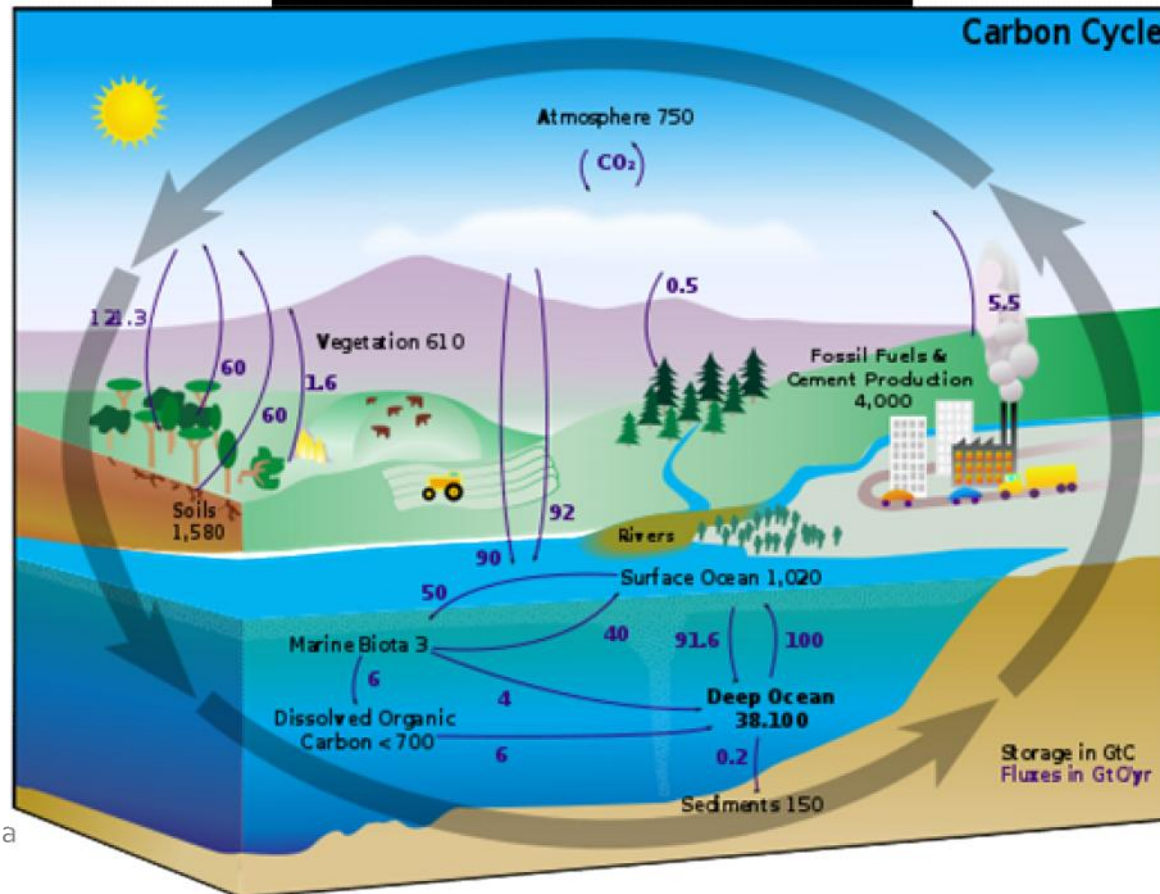
- Substitution very limited (also due to incommensurability and incomparability),
- There is a critical natural capital; going beyond means irreversible loss
- Economic processes are dependent from bio-physical and entropic processes

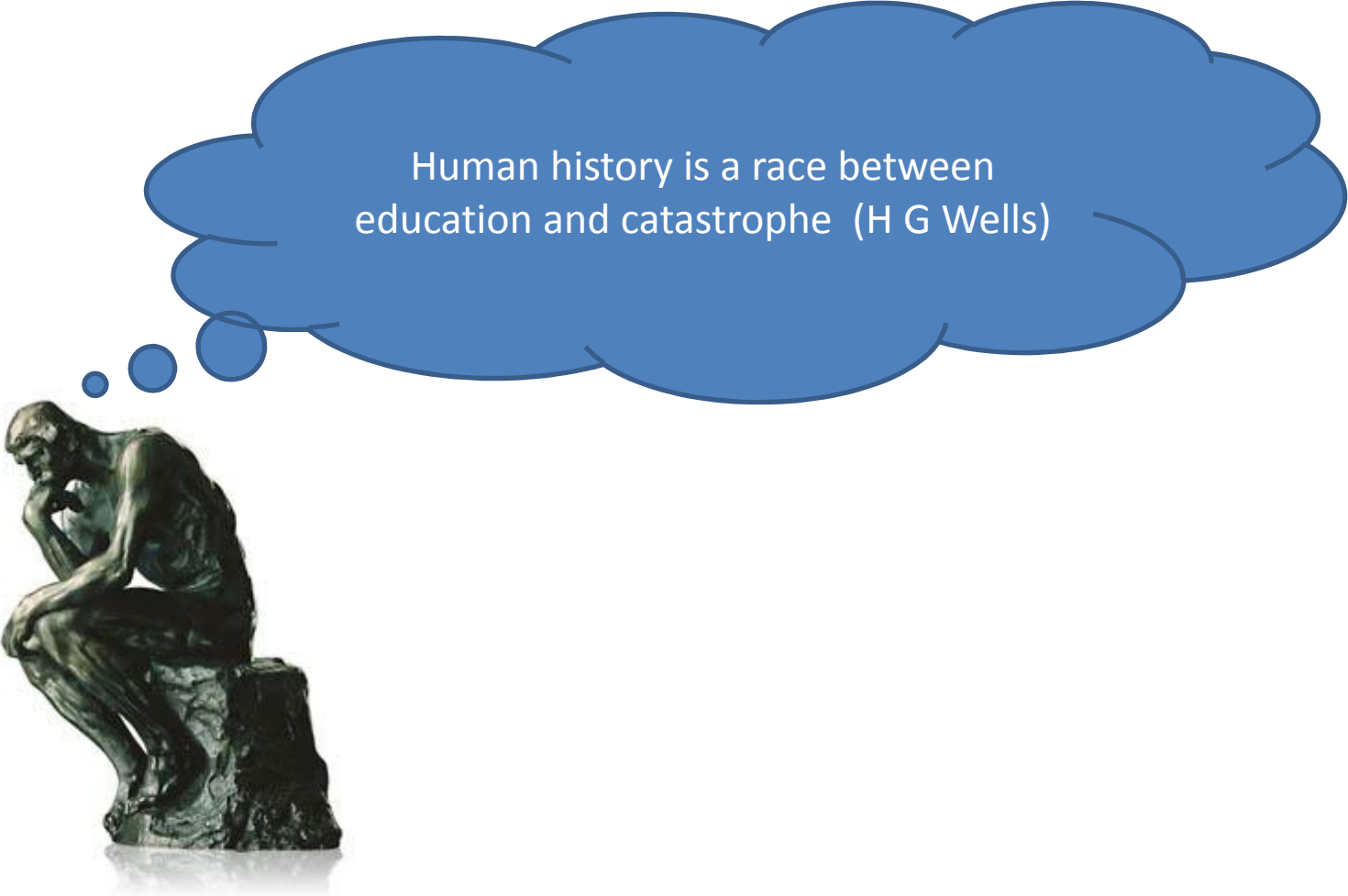
Systems instead black-boxes

Input



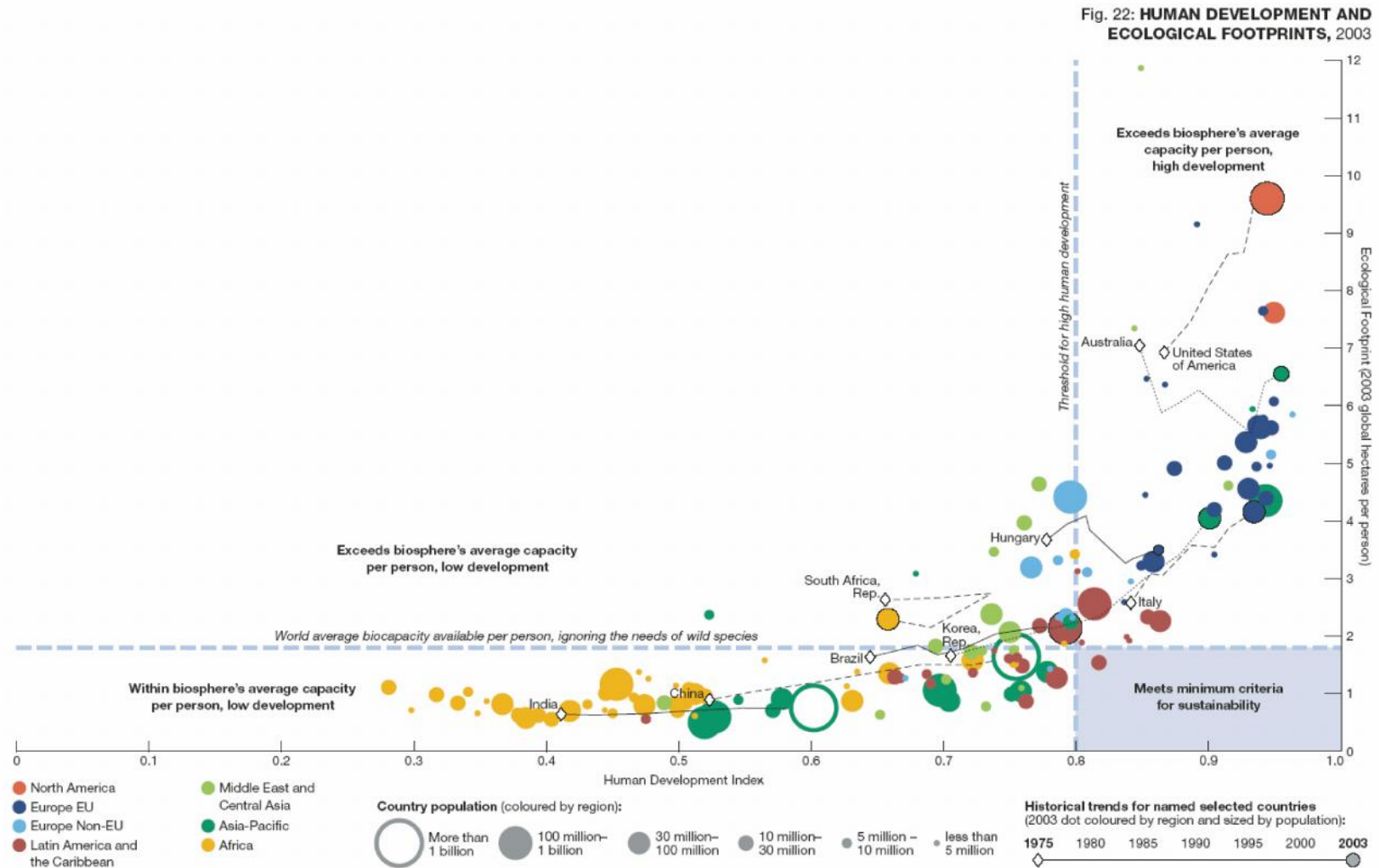
Output





Human history is a race between
education and catastrophe (H G Wells)

Ecological footprint



Sustainability/Environmental Performance Index



JUNE 3, 2011, ROSALIND

Dr. Bernhard Wolfstein

<http://epi.yale.edu/>

Sustainability is a political choice, not a technical one. It's not a question of whether we can be sustainable, but whether we choose to be (Gary Lawrence, Director of Seattle Planning Department)



Political instruments

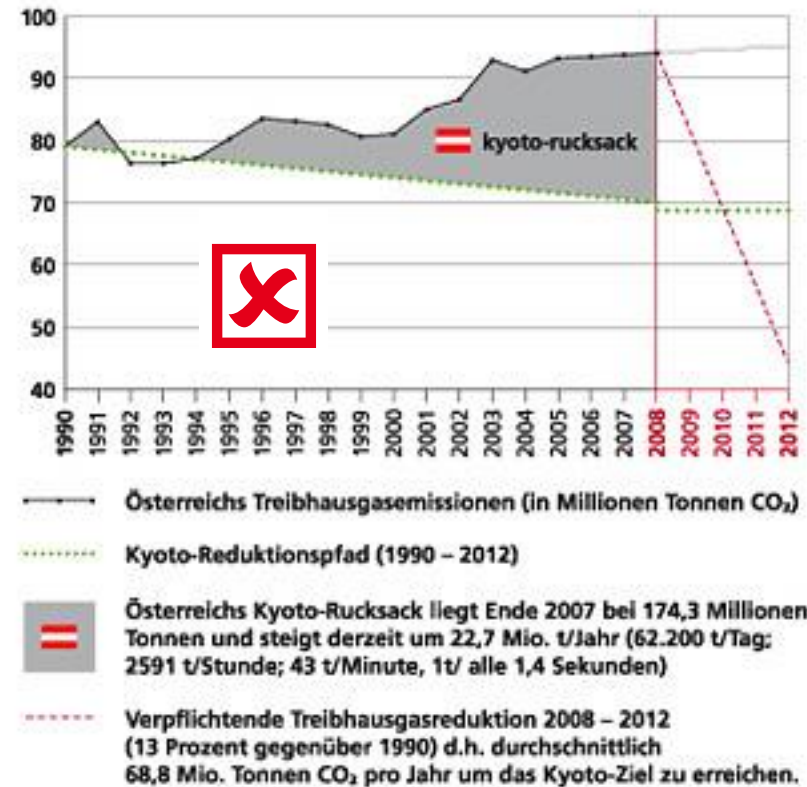
- International responsibility (e.g., Kyoto-Protocol)
- National implementation (strategies)
- Logistic, financial & informational instruments
- Harmonisation of sectoral initiatives

Quite ok?

Rank	Country	Score
1	Switzerland	95.5
2	Sweden	93.1
3	Norway	93.1
4	Finland	91.4
5	Costa Rica	90.5
6	Austria	89.4
7	New Zealand	88.9
8	Latvia	88.8
9	Colombia	88.3
10	France	87.8
11	Iceland	87.6
12	Canada	86.6
13	Germany	86.3
14	United Kingdom	86.3
15	Slovenia	86.3
16	Lithuania	86.2
17	Slovakia	86.0
18	Portugal	85.8
19	Estonia	85.2
20	Croatia	84.6



kyoto-rucksack österreichs

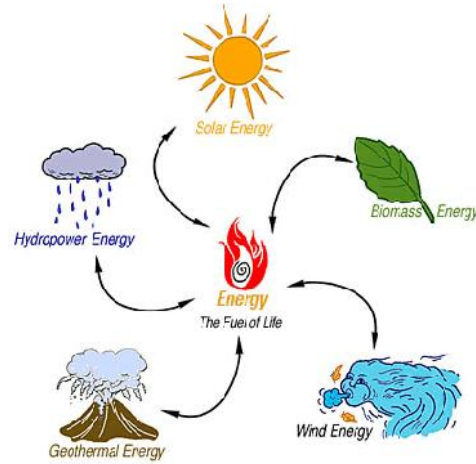


You [...] believe to get a grip on climate change by means of regulations. God bless you! What we need, are inventors in their garages (Michael Friedman, 2009)

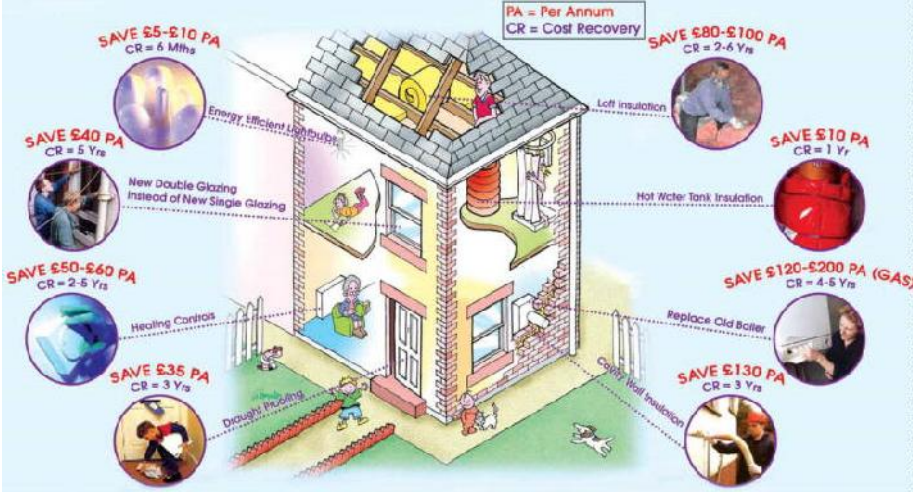


Science & technology

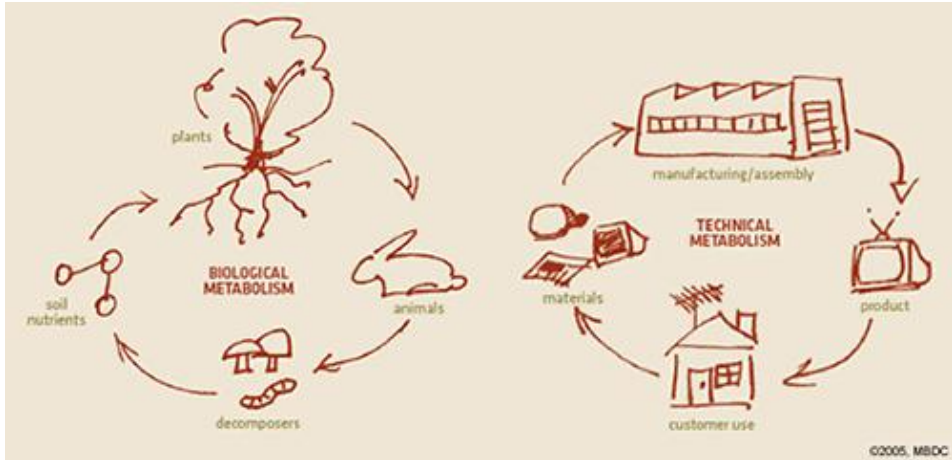
Erneuerbare Ressourcen



Energy efficiency



Ressource efficiency



economics

- Sustainable management systems
- Sustainability labels and certification



SGS-FM/COC-0850 FSC Trademark ©1996
Forest Stewardship Council A.C.



June 3, 2011, Russia

Bernhard Wolfslehner

46



Homo oeconomicus


"I'll keep it **short and sweet** --
Family. Religion. Friendship.
These are the three demons
you must **slay** if you wish to
succeed in business."



Homo naturalis

Homo sustinens

Wissen – Bewusstsein – Vorsorge - Verantwortung



There are no passengers on Spaceship
Earth. We are all crew (Marshall
McLuhan)



Thank you.

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