Sustainable Development and National Strategies

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2014

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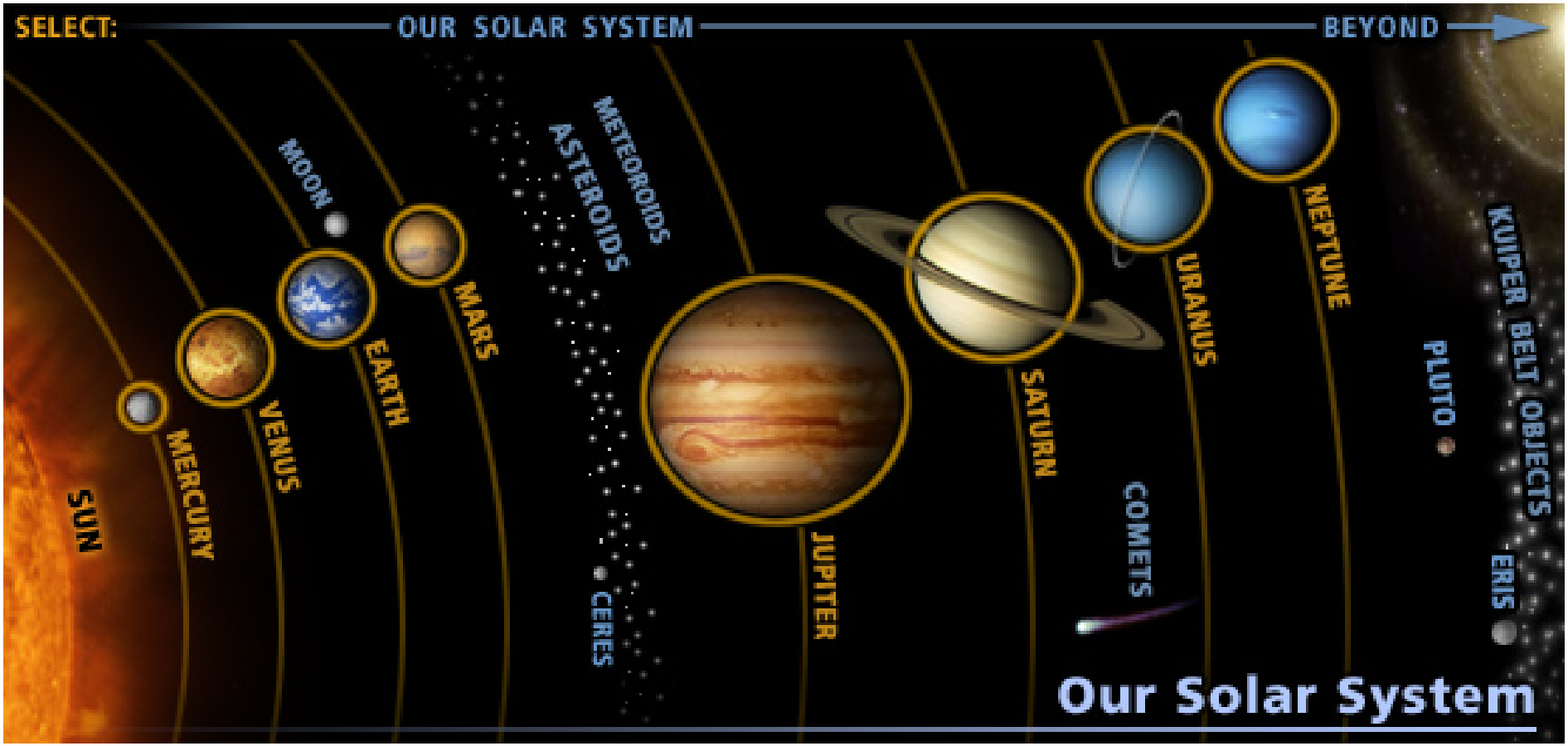
Facebook: https://www.facebook.com/groups/
see: Sustainable Development and Macroeconomics

Overview

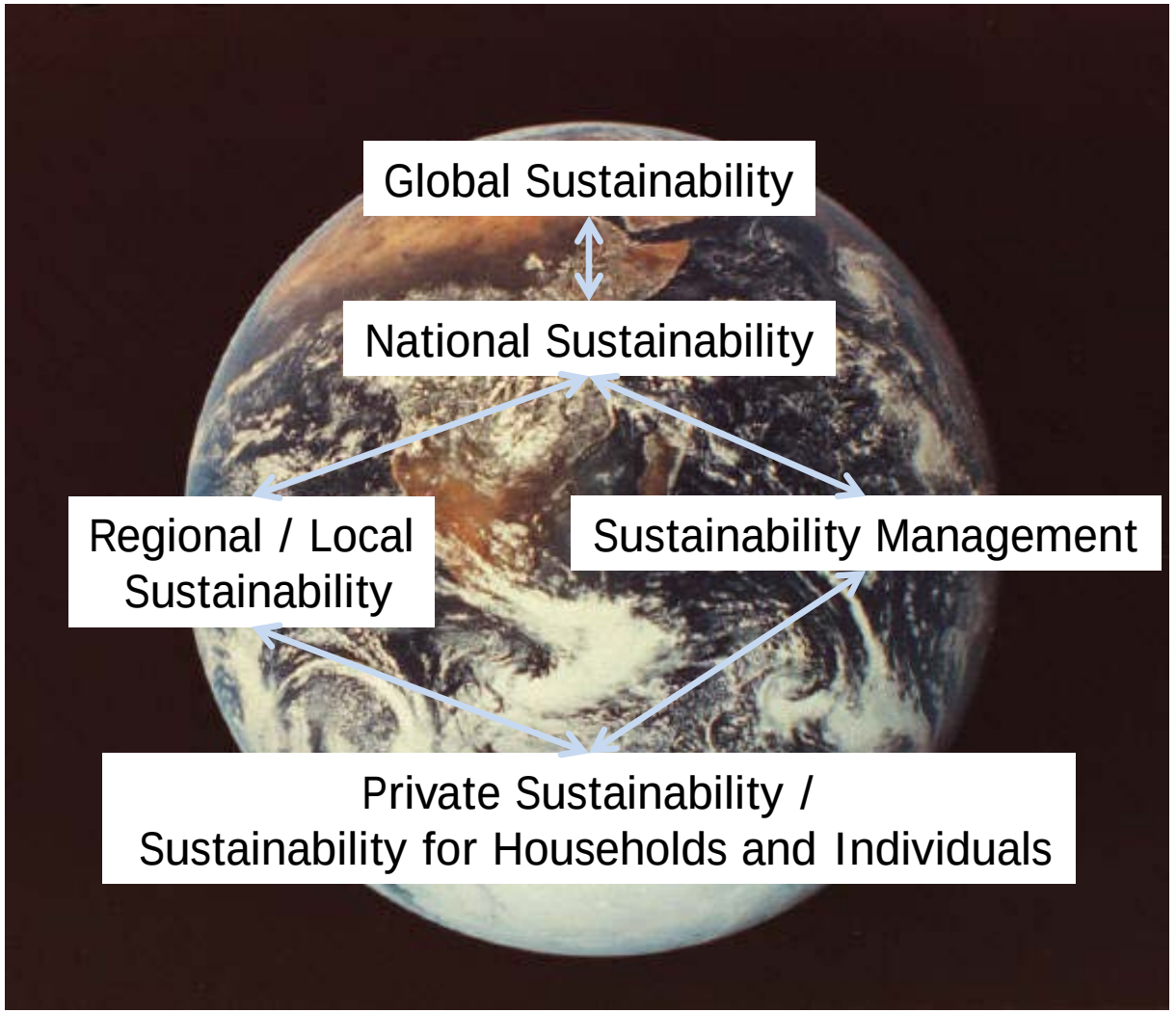
Sustainable Development - Introduction



Planet Earth – unique for human beings

1. Right distance from sun;
2. comfortable global average temperature;
3. existence of an atmosphere;
4. existence of fertile soil (for production of food);
5. existence of water;
6. existence of the protective ozone layer

Classification



Overview

I. Introduction

II. Sustainable Development – Definition and History

III. Sustainable Development – Governance

IV. Sustainable Development – A New Approach?

V. Why Sustainable Development?

VI. Major Objective: A Sustainable World

VII. Summary and Conclusions

What is Sustainability?

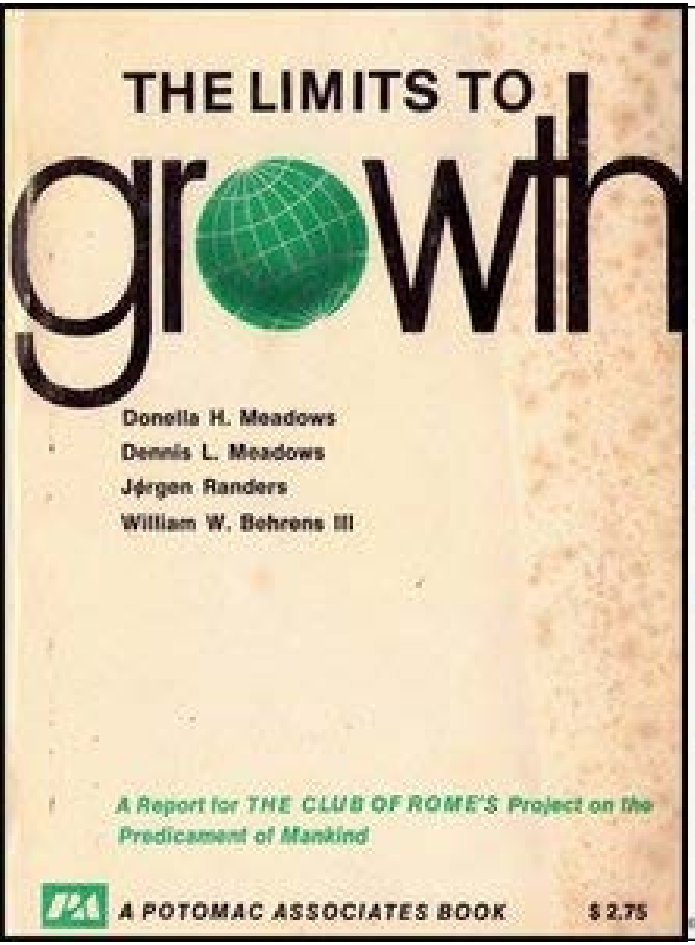
"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

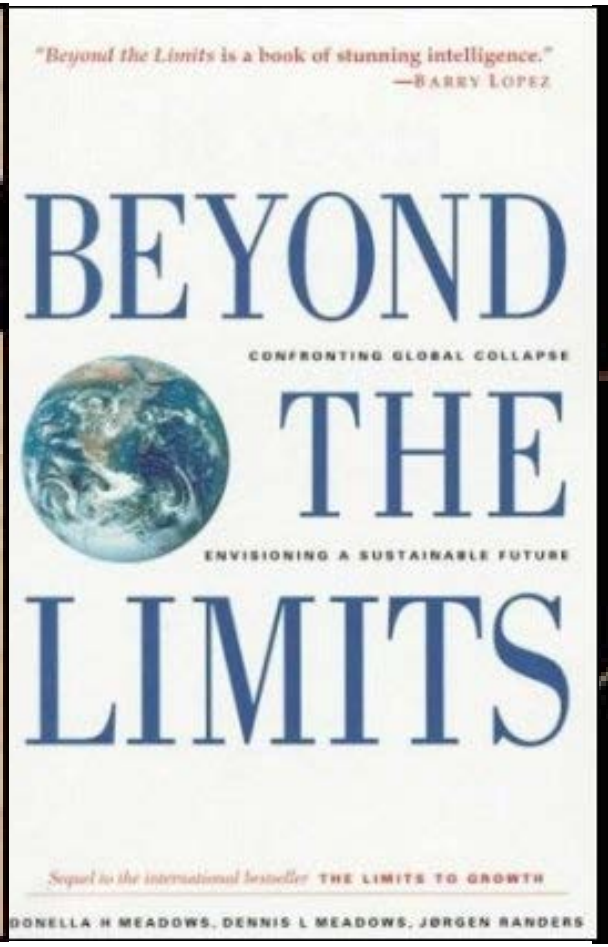
Source: WCED (Brundtland-Report), Our Common Future, 1987.

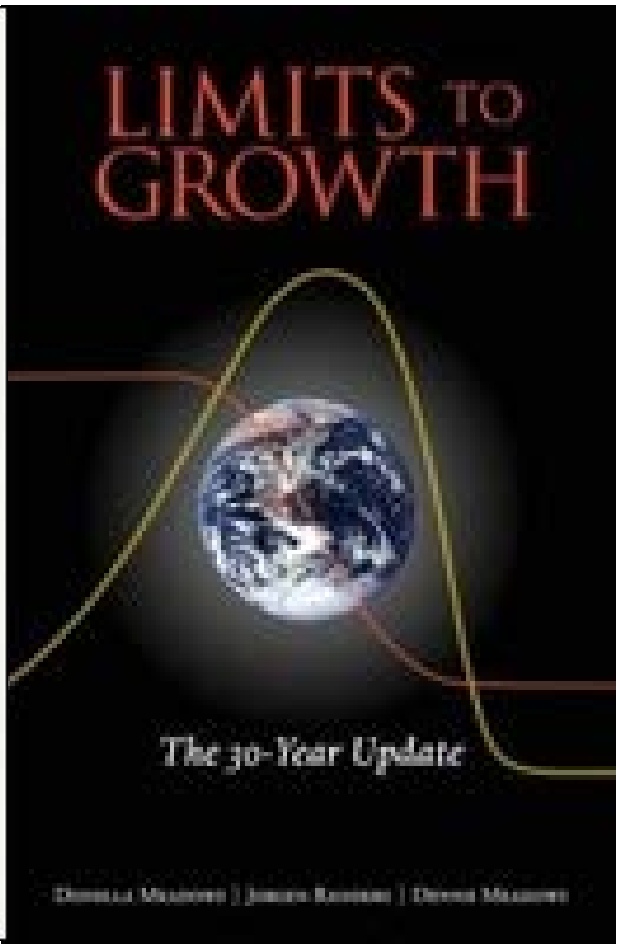
History of Sustainable Development

Science	Politics
Club of Rome's "Limits to Growth" (1972)	United Nations Conference on the Human Environment (1972)
	International Union for Conservation of Nature and Natural Resources (IUCN) (1980): “World Conservation Strategy “
	World Commission on Environment and Development (WCED) (1987): “Our Common Future”
Club of Rome's “Beyond the Limits" (1992)	United Nations Conference on Environment and Development (UNCED) (1992)
Club of Rome's "Limits to Growth – The 30-Year-Update" (2004)	World Summit on Sustainable Development (WSSD) (2002)
J. Randers “2052" (2012)	United Nations Conference on Sustainable Development (UNCSD) (2012)

Meadows et al.







1972 *1992* *2004*

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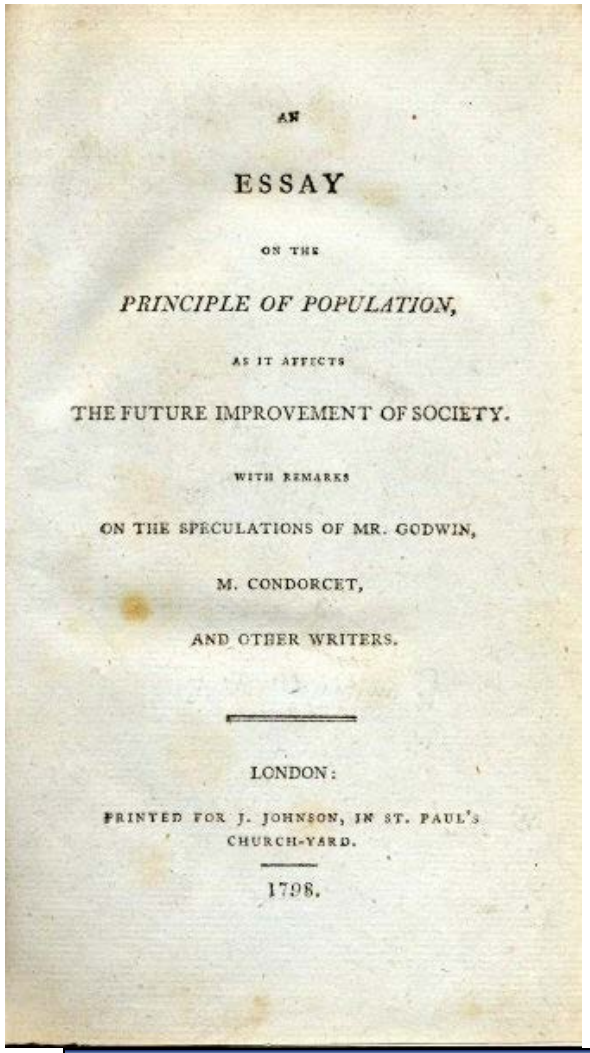
Malthus (1798)



AN

ESSAY

ON THE

PRINCIPLE OF POPULATION,

AS IT AFFECTS

THE FUTURE IMPROVEMENT OF SOCIETY.

WITH REMARKS

ON THE SPECULATIONS OF MR. GODWIN,

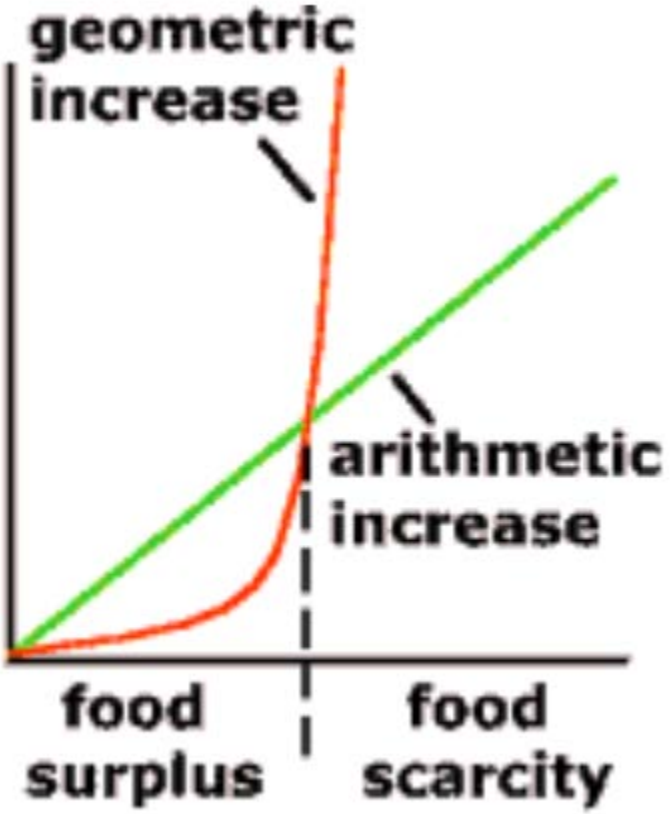
M. CONDORCET,

AND OTHER WRITERS.

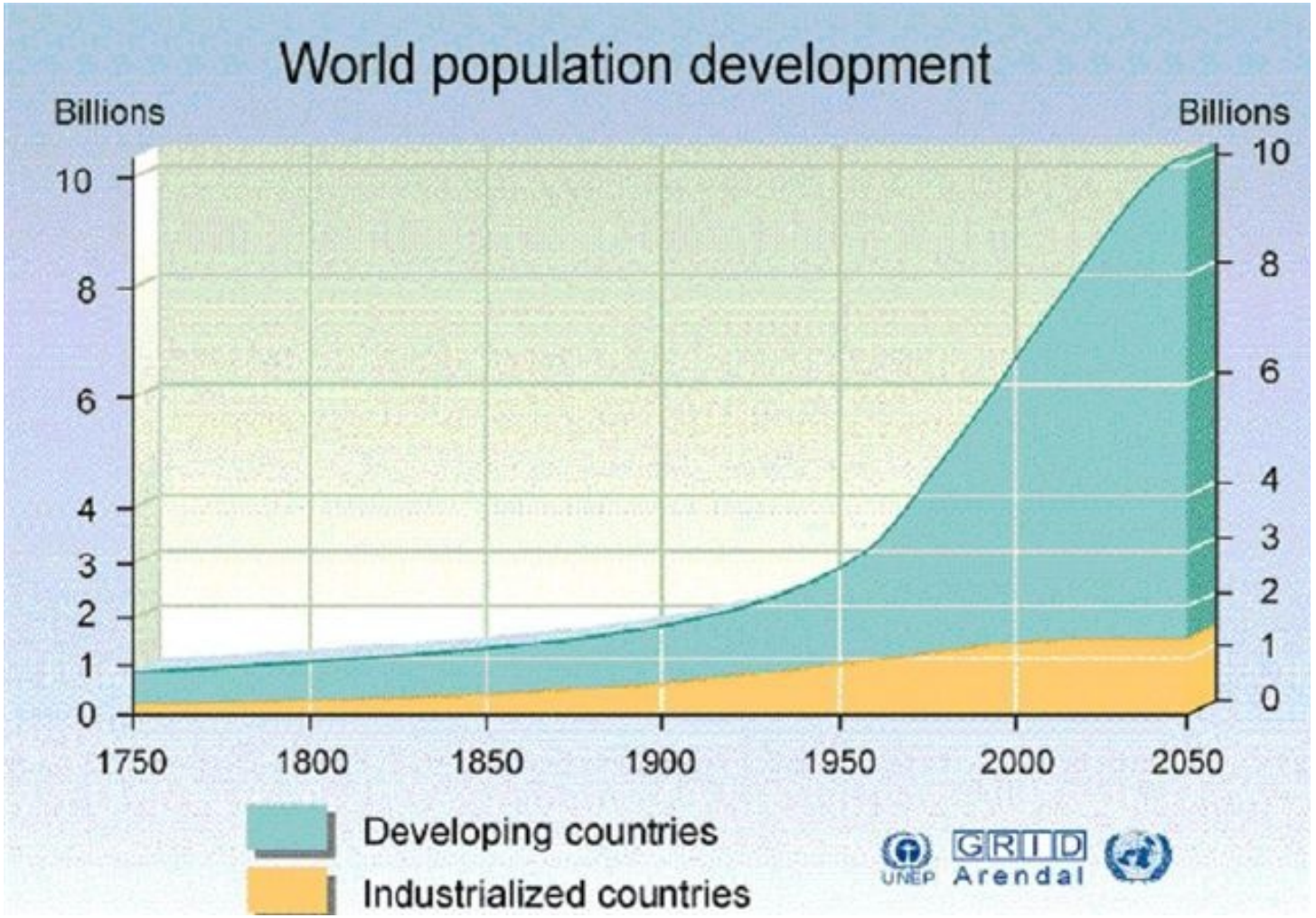
LONDON:

PRINTED FOR J. JOHNSON, IN ST. PAUL'S CHURCH-YARD.

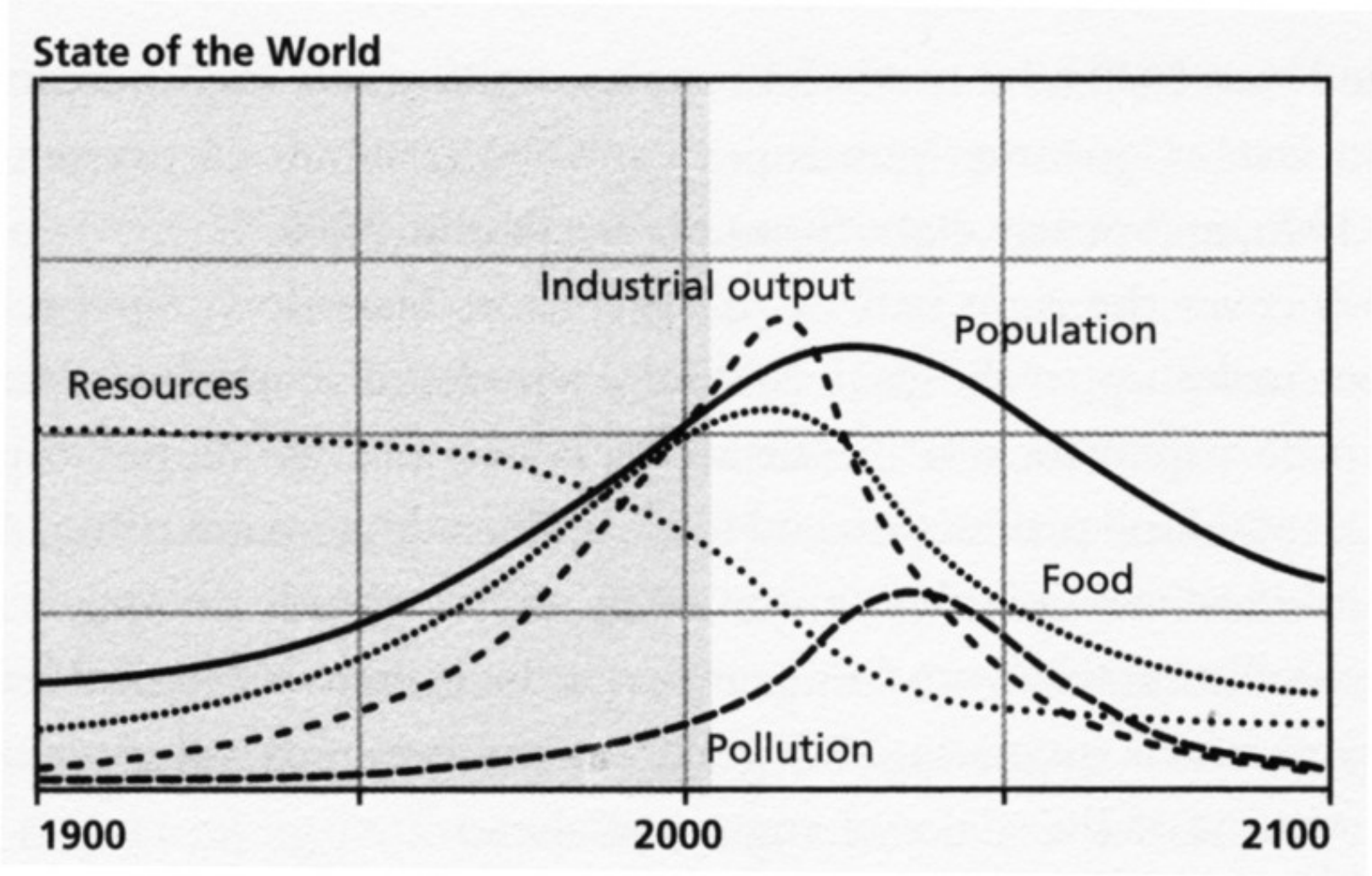
1798.



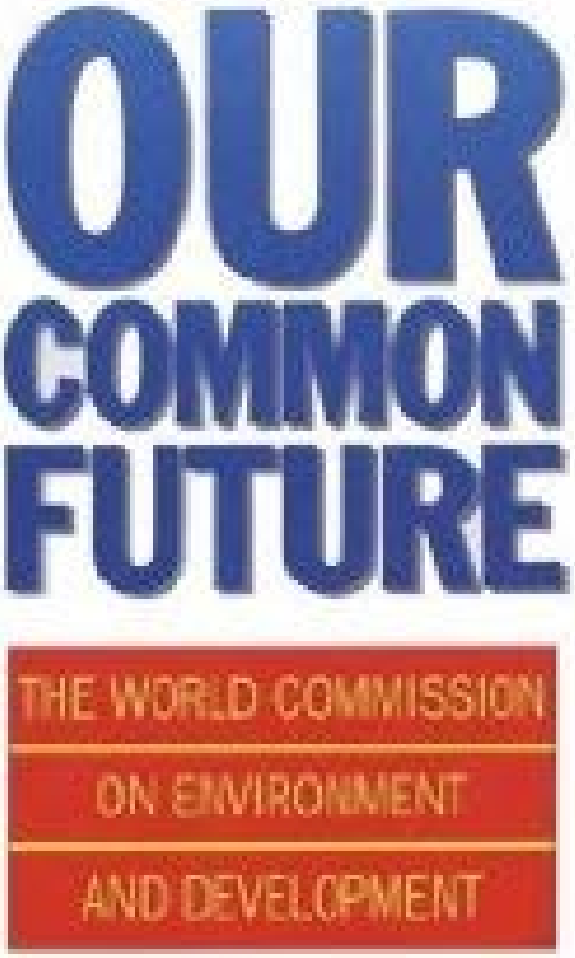
World Population



Meadows et al.



Brundtland Report (1987)



UNEP - 1972

UNEP = major institutional legacy of the Stockholm Conference

Mission:

To provide leadership and encourage partnership in *caring for the environment* by inspiring, informing, and enabling nations and people to *improve their quality of life without compromising that of future generations*.

Rio 1992

The Earth Summit resulted in the following documents:
- *Rio Declaration on Environment and Development*
- *Agenda 21*
- *Convention on Biological Diversity*
- *Forest Principles*
- *Framework Convention on Climate Change (UNFCCC)*.

Both *Convention on Biological Diversity* and *Framework Convention on Climate Change* were set as legally binding agreements.

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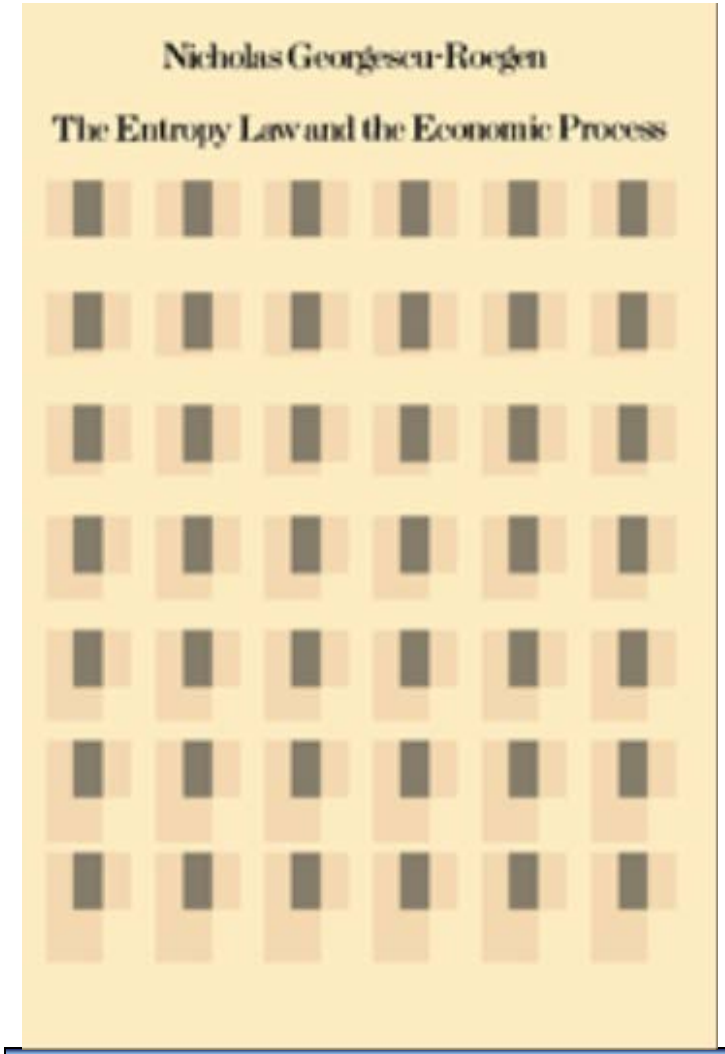
“The almost fabulous comfort … of many past and present societies made us forget the most elementary reality of economic life, the fact that, among all the things that are required for our living, only the purely biological ones are indispensable for our survival.”

Nicholas Georgescu-Roegen, 1971

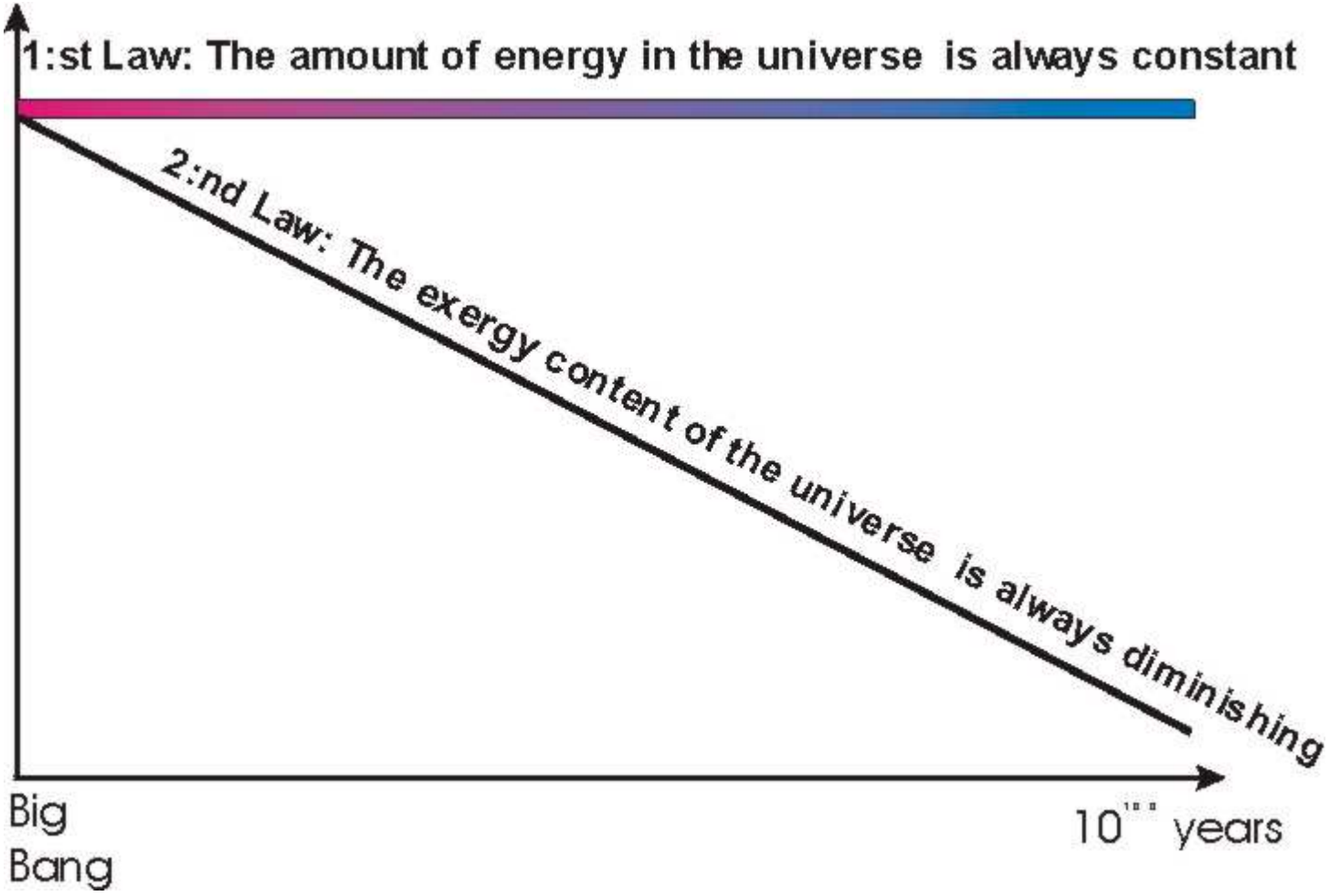
Nicholas Georgescu-Roegen (1971)



Laws of Thermodynamics:

1. **Energy can neither be created nor destroyed**
2. **In all energy transformations, *energy quality* will be consumed**

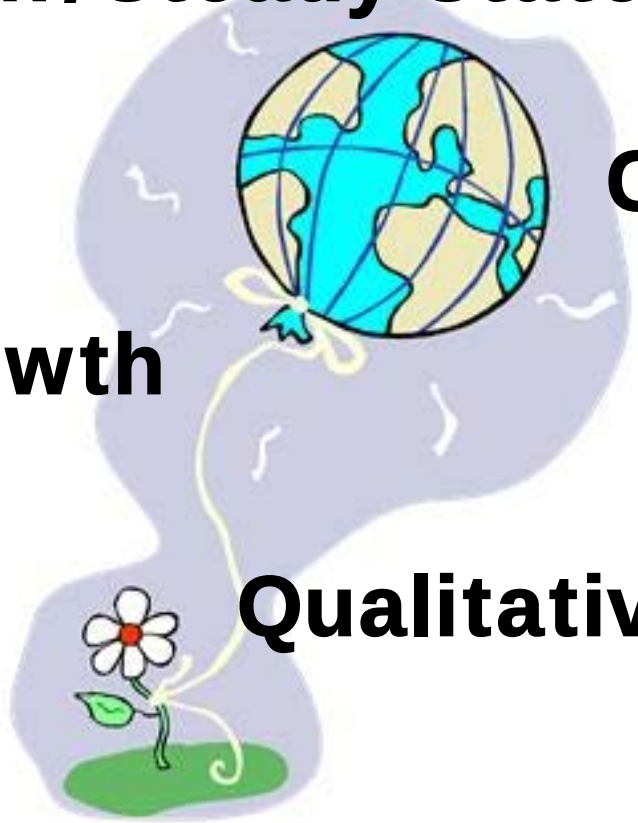
Summary



Source: http://www.holon.se/folke/kurs/Distans/Ekofys/fysbas/exergy/exergybasics.shtml

The growth debate

Zero Growth / Steady State Economy



GDP

Degrowth

Qualitative Growth

Is there a sustainable growth?

"For growth we need resources and the rate of depletion of resources cannot be matched with the regenerating capacity of earth, as it is finite, not-growing and materially closed. Therefore, Sustainable growth is an impossible theorem!"

IUCN (2007): Report, Sustainable Development

Sustainable Growth

Sustainable growth means:

- building a **more competitive low-carbon economy**
- **protecting the environment**
- developing **new green technologies** and production methods
- introducing **efficient smart electricity grids**
- **harnessing EU-scale networks**
- **improving the business environment**
- **helping consumers** make well-informed choices

Source: European Commission

Brundtland-Report (1987)

"What is needed now is a new era of economic growth – growth that is forceful and at the same time socially and environmentally sustainable."

Brundtland-Report (1987)

"What is needed now is a new era of economic growth – growth that is forceful and at the same time socially and environmentally sustainable."

3 Key Areas:

1. Economic Growth and Equity
2. Social Development
3. Conserving Natural Resources and the Environment

Degrowth – Definition by Kallis (2011)

"Sustainable degrowth can be defined from an ecological-economic perspective as a socially sustainable and equitable reduction of society's throughput."

(Troughput = materials and energy a society extracts, processes, transports and distributes, to consume and return back to the environment as waste.)

Qualitative Growth

A few steps toward Qualitative Growth (according to Fritjof Capra, 2009):

1. Need to be formulated by multi-disciplinary teams
2. Tax systems need to be restructured
3. Companies need to reassess their production processes
4. Reforming international finance and monetary systems

Post-Growth Economy

http://postgrowth.org/

Creating global prosperity
without economic growth

Growth - Development

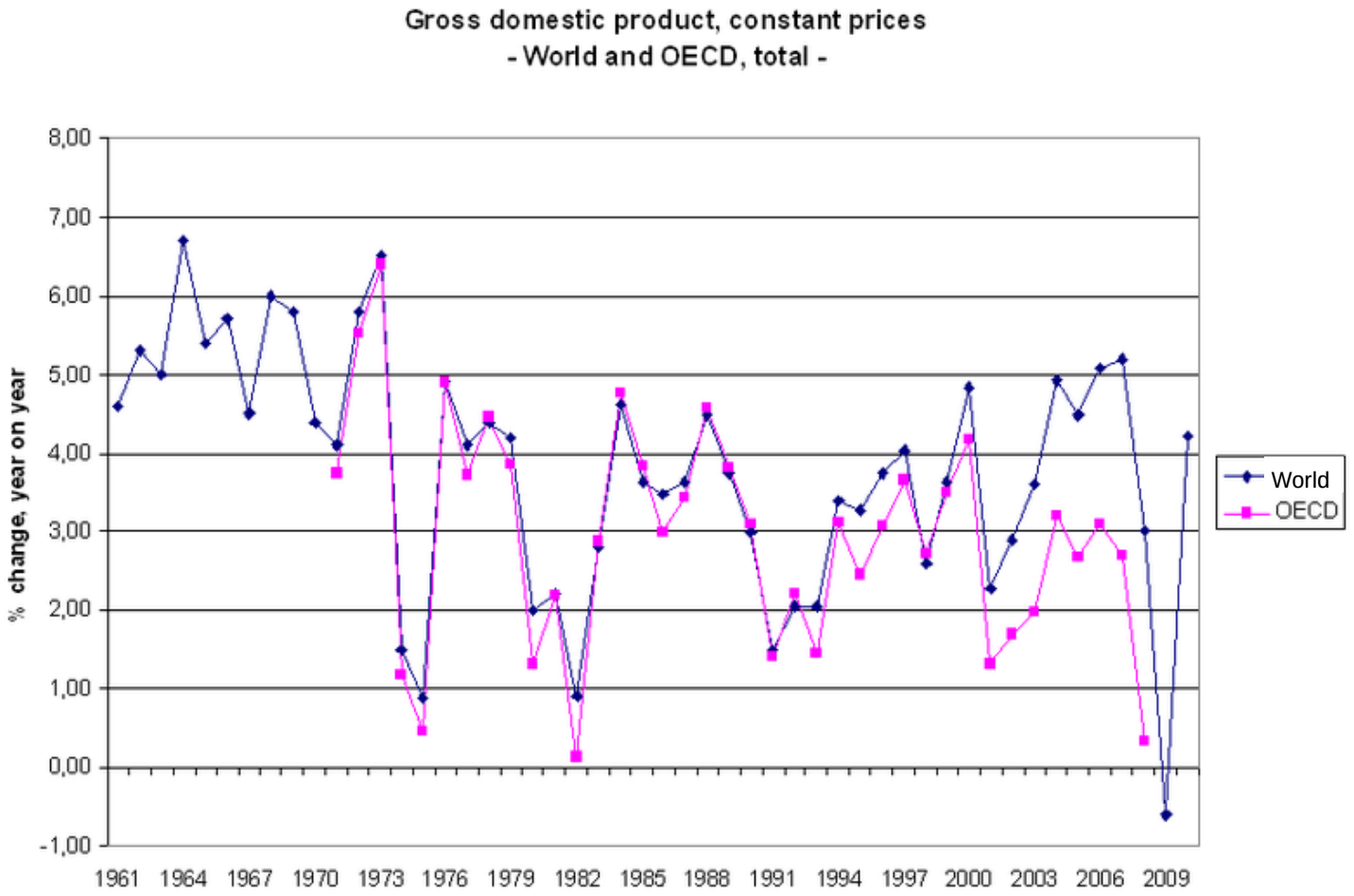
- **Growth** – the *quantitative* increase in size or throughput of biophysical matter. Daly has argued economic growth is based on the “limitless transformation of natural capital into man-made capital”.

- **Development** – the *qualitative* improvement in economic welfare from increased quality of goods and services as defined by their ability to increase human well-being. This infers promoting increased economic activity only insofar as it does not exceed the capacity of the ecosystem to sustain it.

Source: Daly, H.E. (1990) Toward some operational principles of sustainable development. In: Ecological Economics, Vol. 2, Iss. 1, pp. 1-6.

GDP

Gross domestic product (GDP) refers to the market value of all final goods and services produced within a country in a given period. It is often considered an indicator of a country's standard of living.



Source: http://en.wikipedia.org/wiki/File:WeltBIPWorldgroupOECDengl.PNG

International comparison – per capita GDP

All figures are in current international dollars.

World Bank (2005–11)[3] [hide]

Rank	Country	Intl. $	Year
1	Luxembourg	89,992	2011
2	Qatar	88,919	2011
—	*Macau*	77,607	2011
3	Norway	61,882	2011
4	Singapore	61,103	2011
5	Kuwait	54,654	2011
6	Brunei	50,506	2010
—	*Hong Kong*	49,990	2011
7	Switzerland	49,151	2011
8	United States	48,442	2011
9	United Arab Emirates	48,222	2011
10	Netherlands	42,834	2011
11	Austria	42,225	2011
12	Ireland	41,543	2011
13	Sweden	41,300	2011
14	Denmark	40,983	2011
15	Canada	40,440	2011
16	Australia	39,438	2011
17	Germany	39,211	2011
160	Burkina Faso	1,310	2011
161	Nepal	1,256	2011
162	Guinea-Bissau	1,251	2011
163	Rwanda	1,251	2011
164	Afghanistan	1,202	2010
165	Haiti	1,179	2011
166	Guinea	1,128	2011
167	Comoros	1,117	2011
168	Ethiopia	1,116	2011
169	Mali	1,099	2011
170	Togo	1,042	2011
171	Mozambique	982	2011
172	Madagascar	972	2011
173	Malawi	918	2011
174	Sierra Leone	877	2011
175	Central African Republic	816	2011
176	Niger	732	2011
177	Burundi	608	2011
178	Eritrea	589	2011
179	Liberia	577	2011
180	Congo, Dem. Rep.	375	2011

http://en.wikipedia.org/wiki/List_of_countries_by_GDP_%28nominal%29

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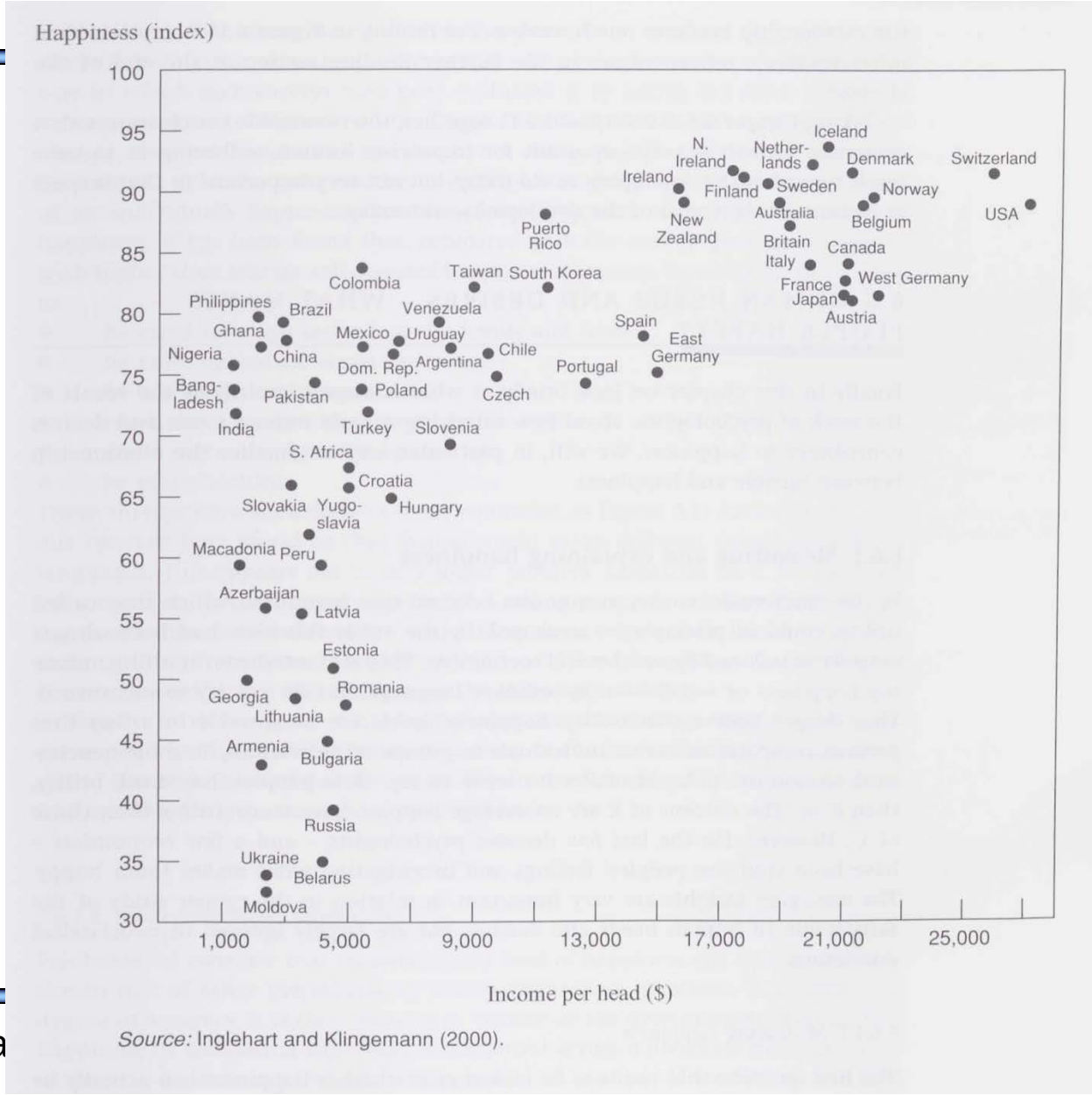
What makes people happy?

- To measure happiness is the result of the work of psychologists.
- How does the satisfaction of human needs and desires contributes to happiness?
- Psychologists and a few economists have been studying peoples‘ feelings.

Can happiness be measured?

- Happiness is a state of mind, of feeling.
- Psychologists ask people by a survey how they feel.

What makes people happy? – Happiness and GDP per capita



Source: Inglehart and Klingemann (2000).

Well-being Indicators (see UNDP)

Life expectancy

Infant mortality

Calories per day

Adult literacy

Well-being Indicators

Where to find?

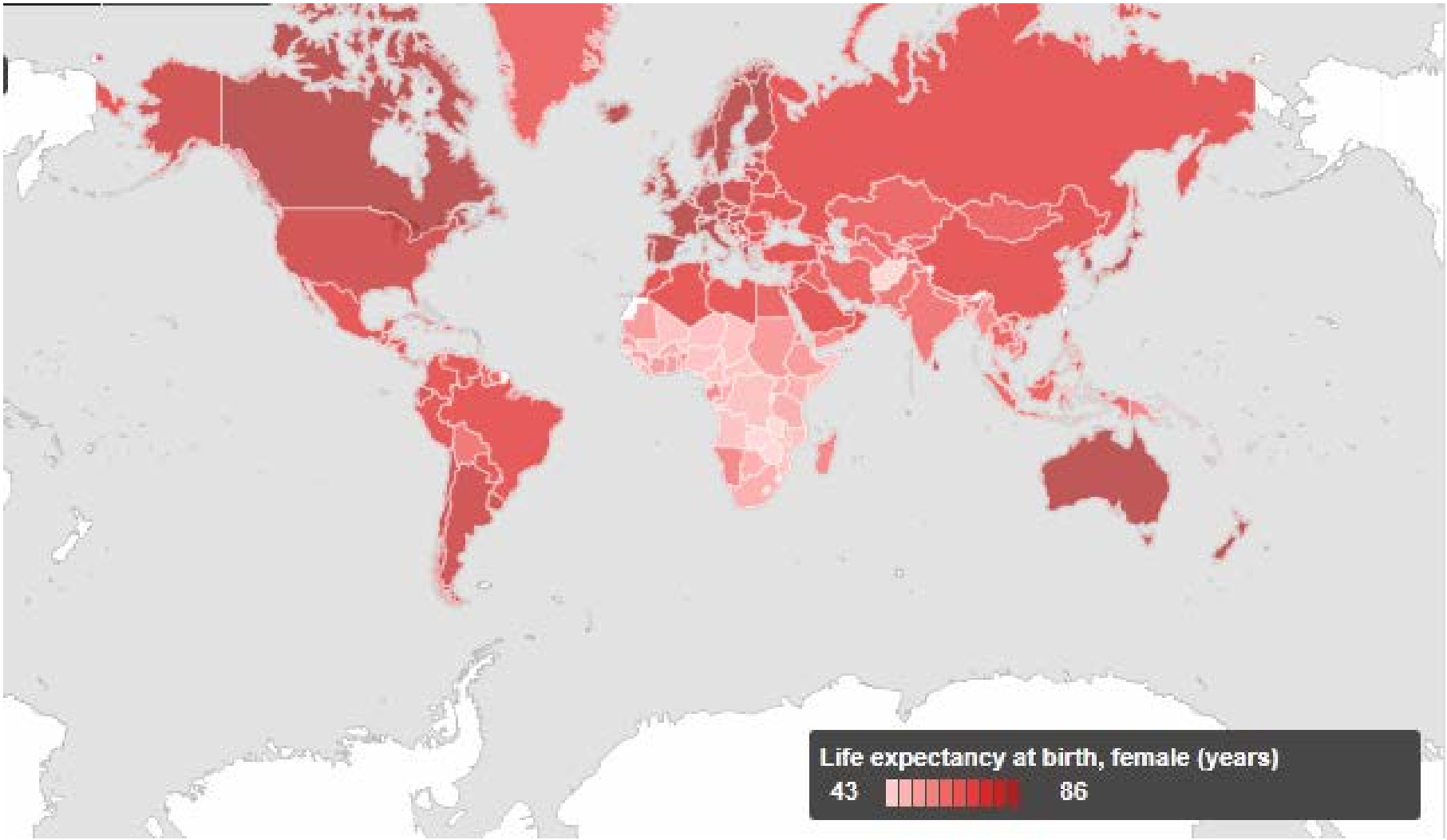
- Most important source:
  Human Development Report (HDR)
- HDR: since 1990, every year
- Latest report: HDR 2013 (see
  http://hdr.undp.org/en/media/HDR_2013_EN_complete.pdf/)
- Published by UNDP

What makes people happy? – Basic Indicators of Well-being

	Life Expectancy	Infant Mortality	Adult Literacy
High income OECD	78.2	6	Data not available
Developing	64.7	61	73.7
Least developed	51.9	98	52.8
Sub-Saharan Africa	48.7	135	61.5

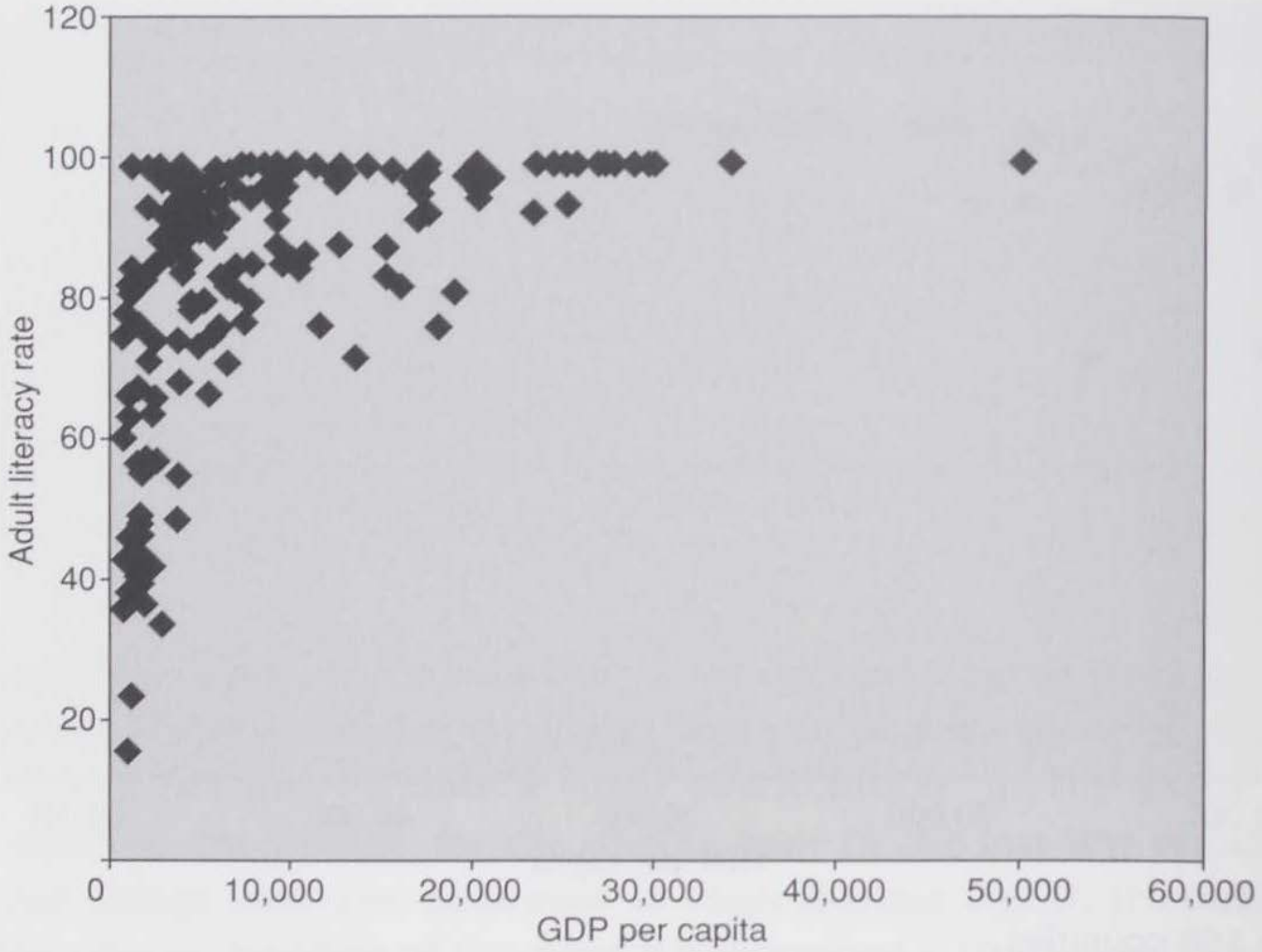
Source: Common/Stagl, 2005, p. 195.

World Life Expectancy



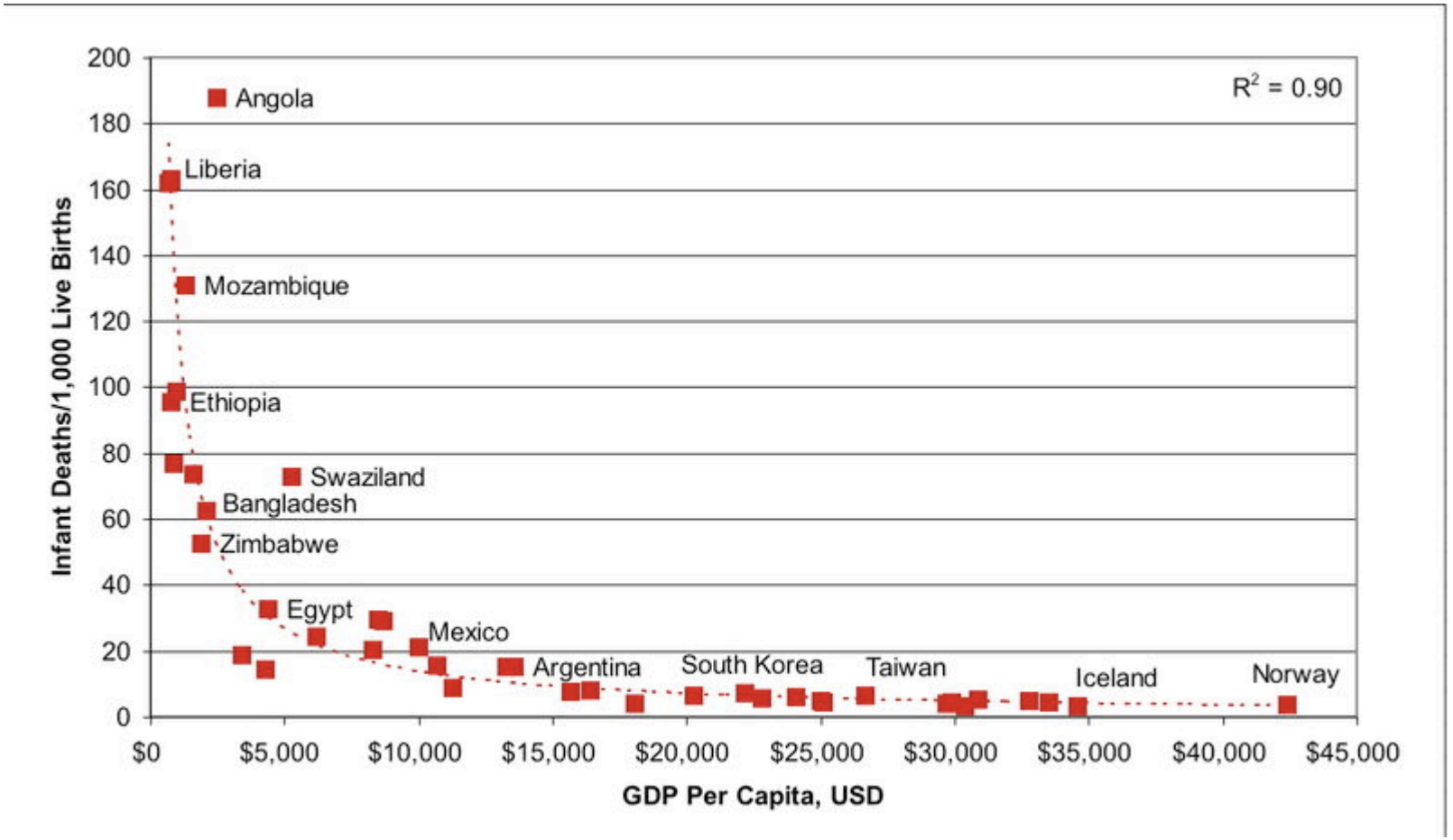
Source: United Nations

Literacy (as well-being indicator) and GDP per capita



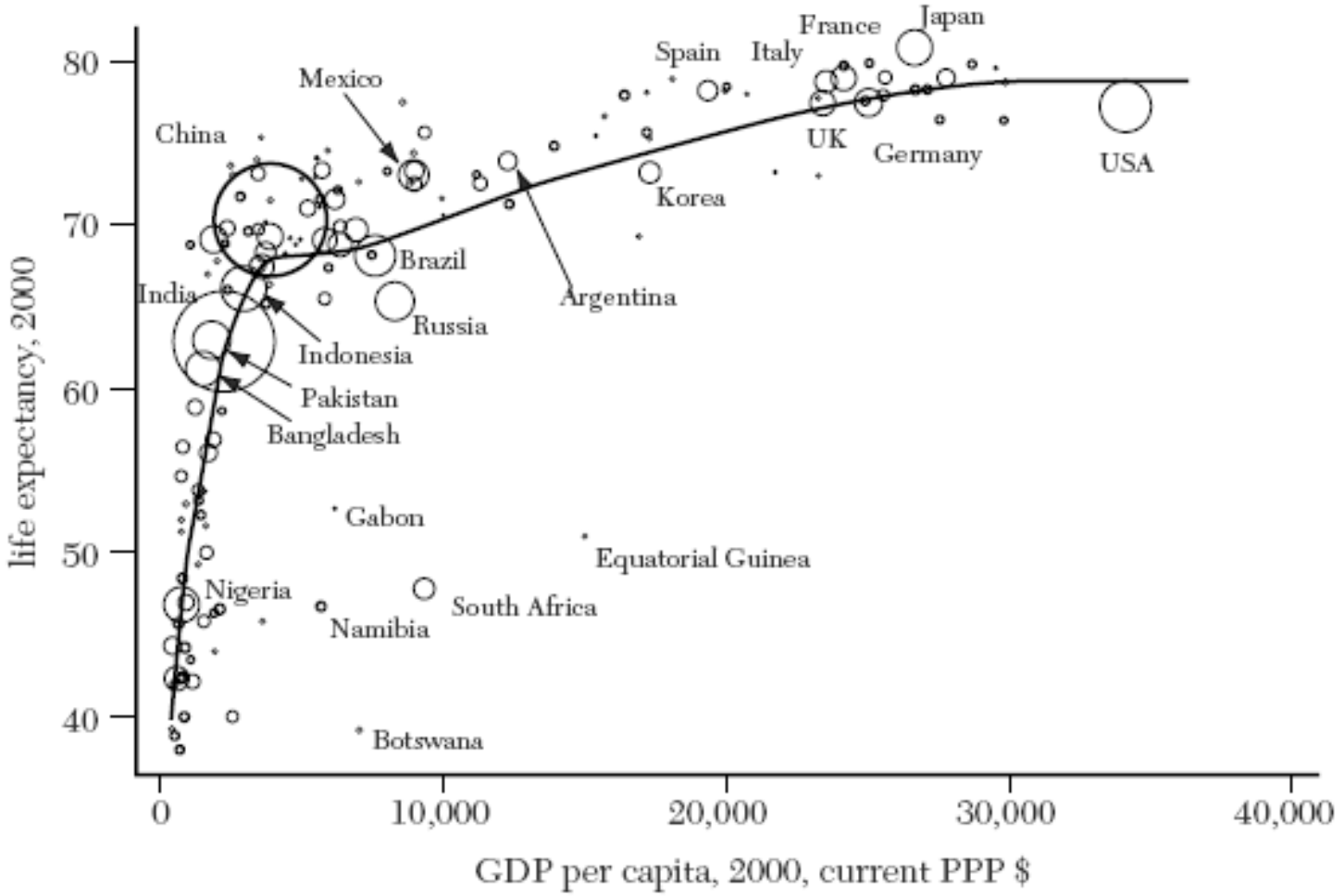
Note: data points from 166 countries.

Infant mortality and GDP per capita



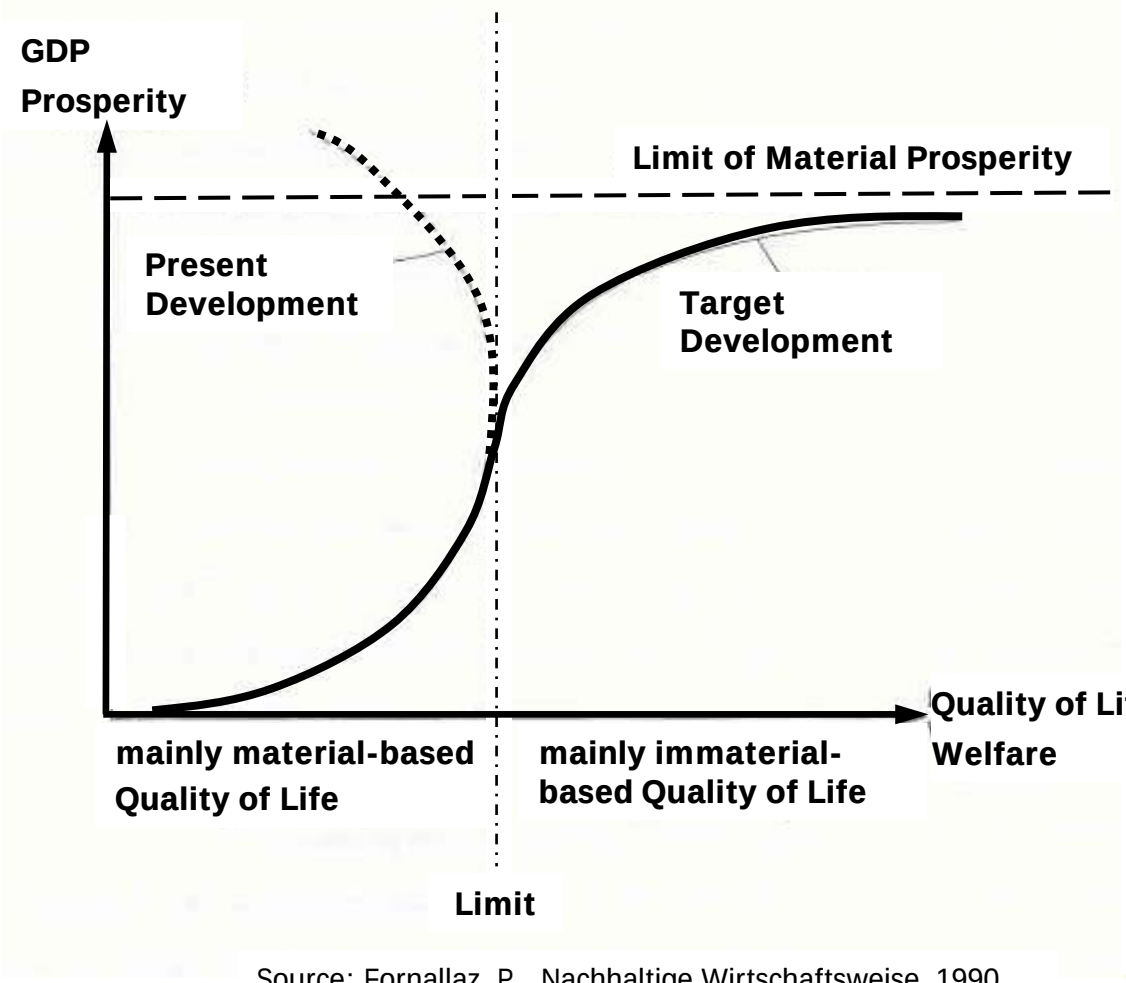
Source: http://filipspagnoli.wordpress.com/stats-on-human-rights/statistics-on-gross-domestic-product-correlations/

Life Expectancy and GDP per capita



Source: http://citizenactionmonitor.wordpress.com

Relationship between GDP, Quality of Life and Welfare



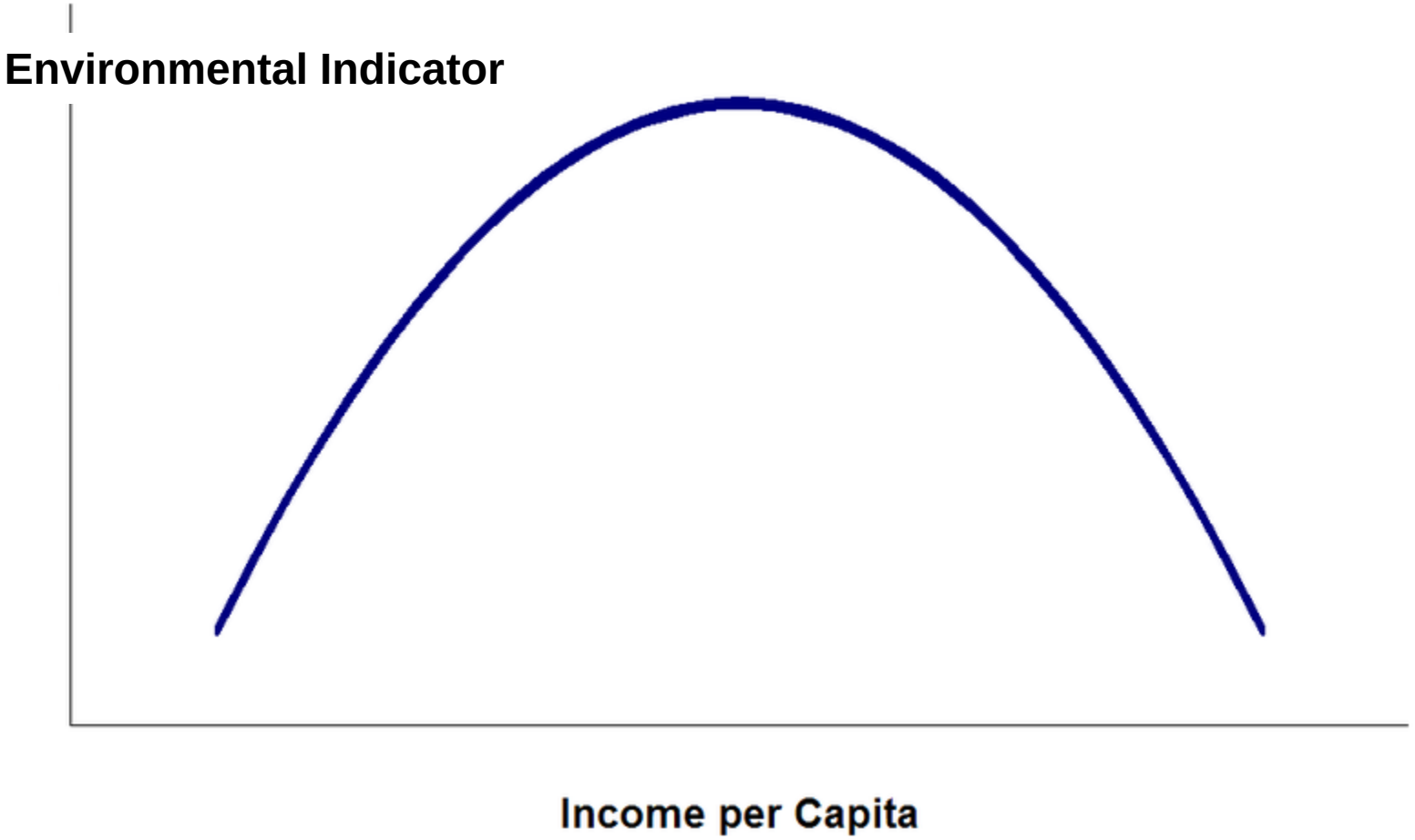
Source: Fornallaz, P., Nachhaltige Wirtschaftsweise, 1990.

Quality of Life:

Material-based:
Income, Property and Goods

Immaterial-based:
Housing, Working Conditions, Social Integration, Living in a Safe Area, Medical Insurance , Job Security

Environmental Kuznets Curve



Source: according to Simon Smith Kuznets

In Search of Indicators

- Gross National Happiness (GNH)
- Consultative Group on SD Indicators
- Human Development Index (HDI)
- Environmental Sustainability Index
- Global Scenario Group
- Ecological Footprint (EF)
- Genuine Progress Indicator
- U.S. Interagency Working Group on SD Indicators
- Costa Rica System of Indicators for SD
- Boston Indicators Project
- Happy Planet Index (HPI)

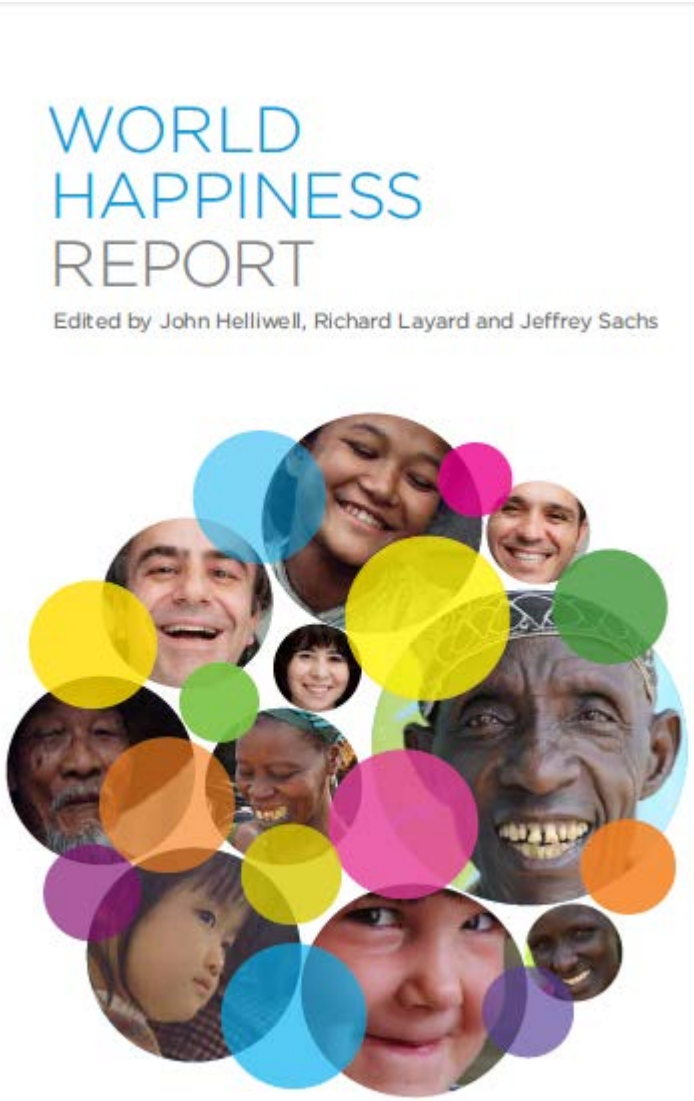
Gross National Happiness (GNH)

- 1972: King of Bhutan
- attempt to measure quality of life or social progress in more holistic and psychological terms than GDP
- refers to the concept of well-being and happiness

Gross National Happiness (GNH)

- 2006: second-generation of GNH
- Seven development areas: Economic Wellness, Environmental Wellness, Physical Wellness, Mental Wellness, Workplace Wellness, Social Wellness, and Political Wellness
- 2009: 33 indicators
- See: http://www.grossnationalhappiness.com/

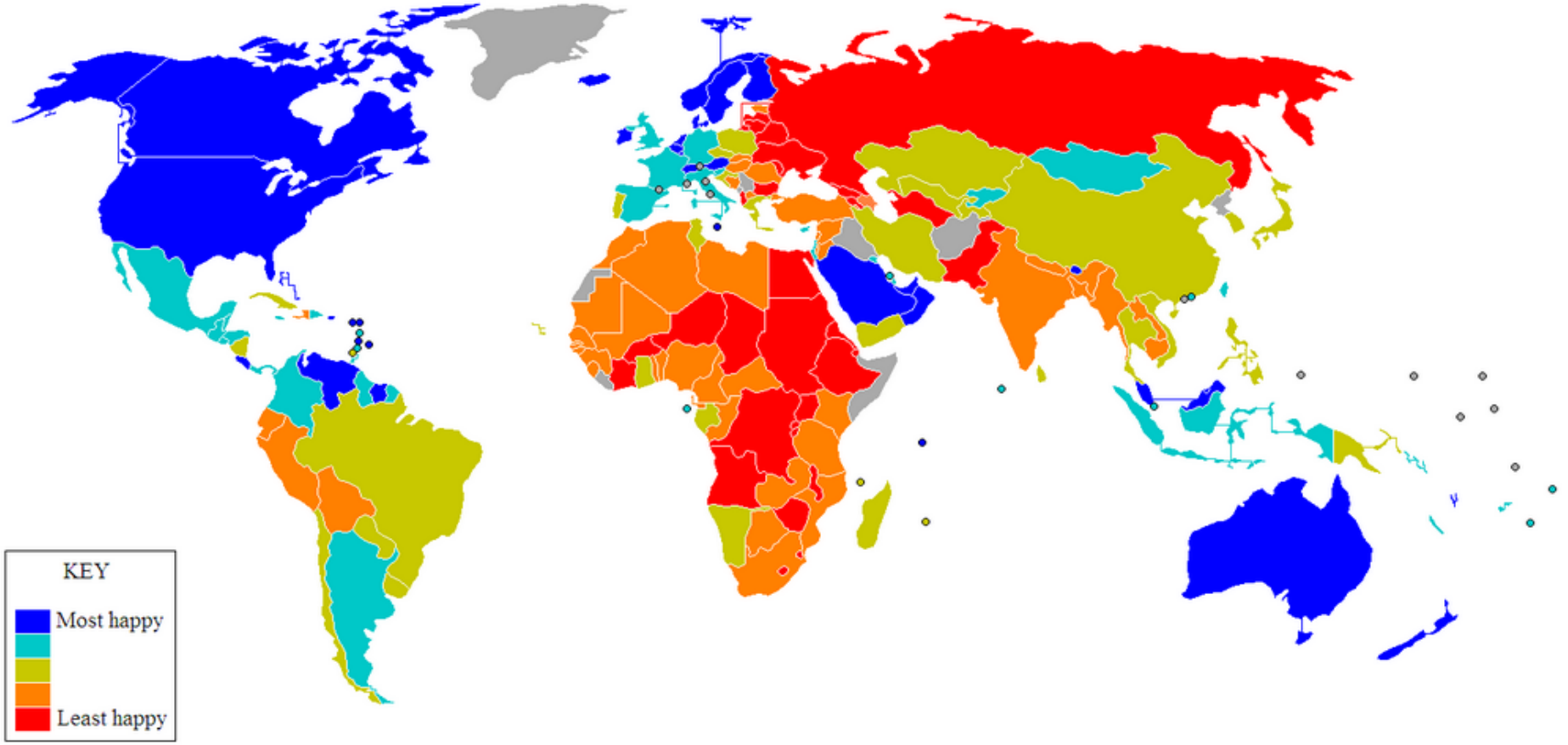
World Happiness Index - Indicators



2012 World Happiness Report Launched at the United Nations

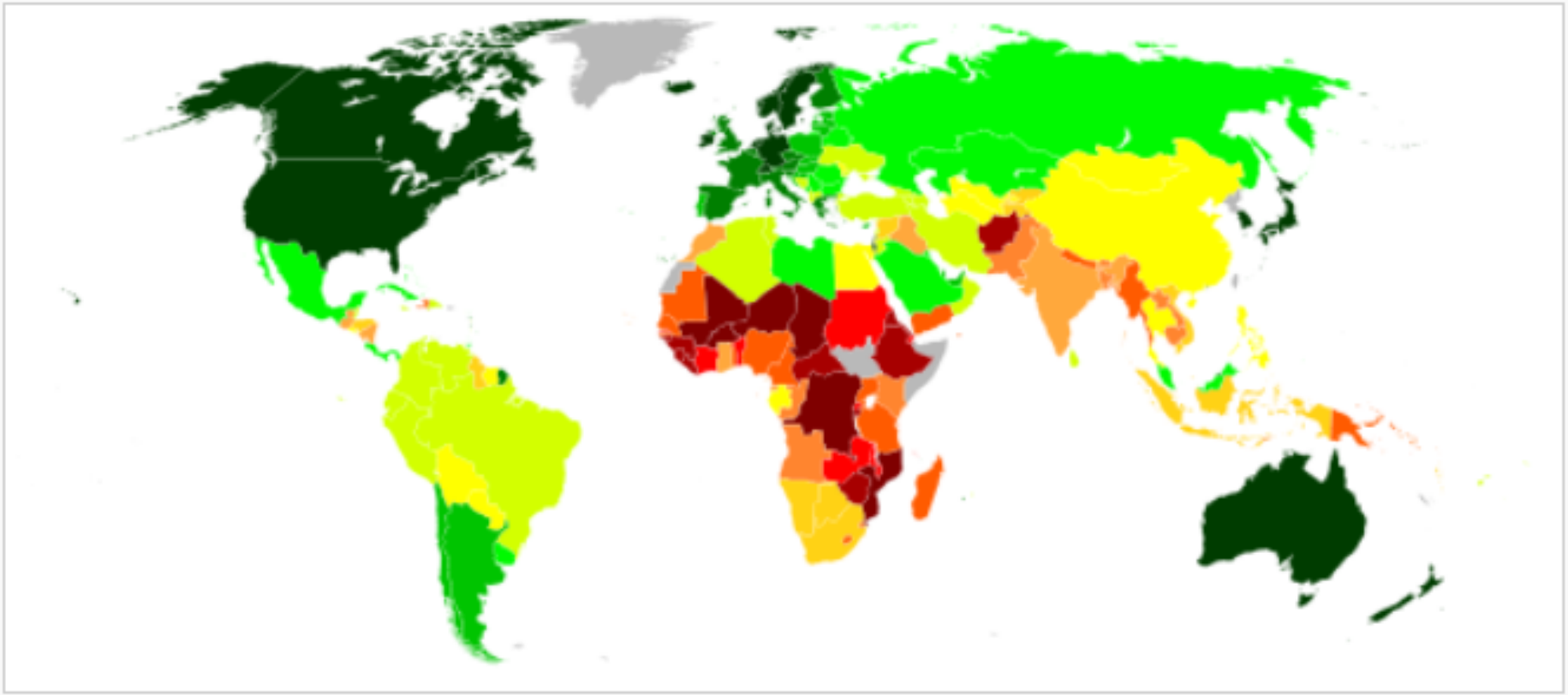
Figure 1: The nine domains and 33 indicators of the GNH

Gross National Happiness (GNH)



Human Development Index (HDI)

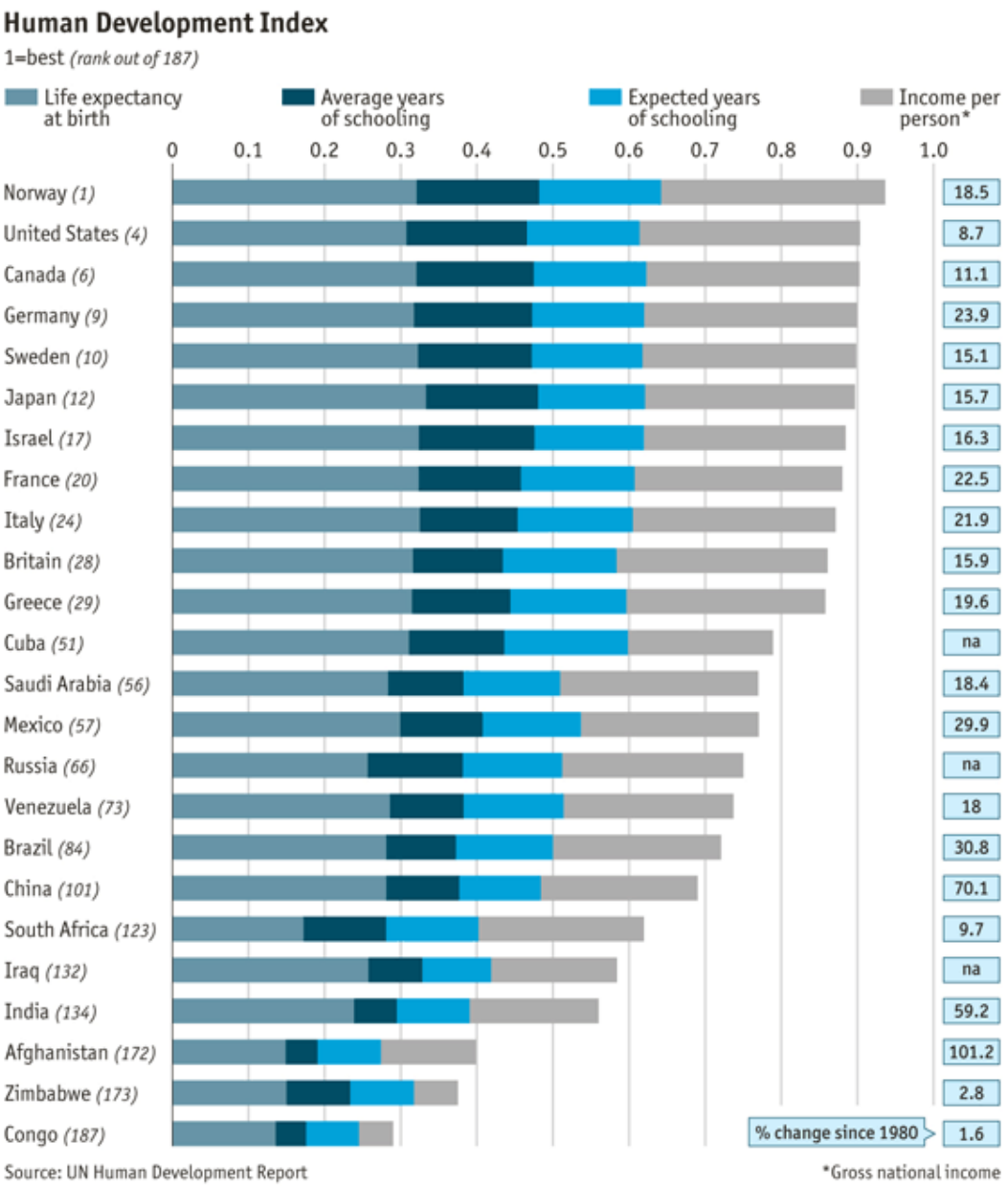
- Created in 1990
- Published: HDR by UNDP
- 3 dimensions: life expectancy, education and standard of living

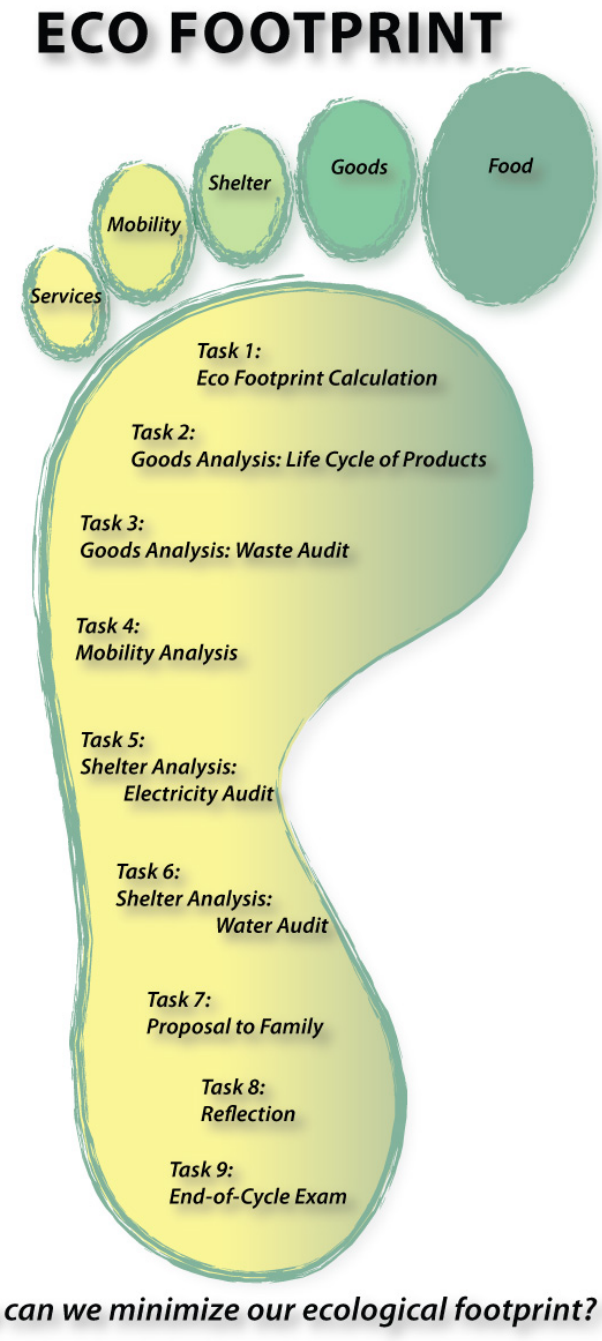


World map indicating the Human Development Index (based on 2012 data, published on 14 Mar 2013).[1]

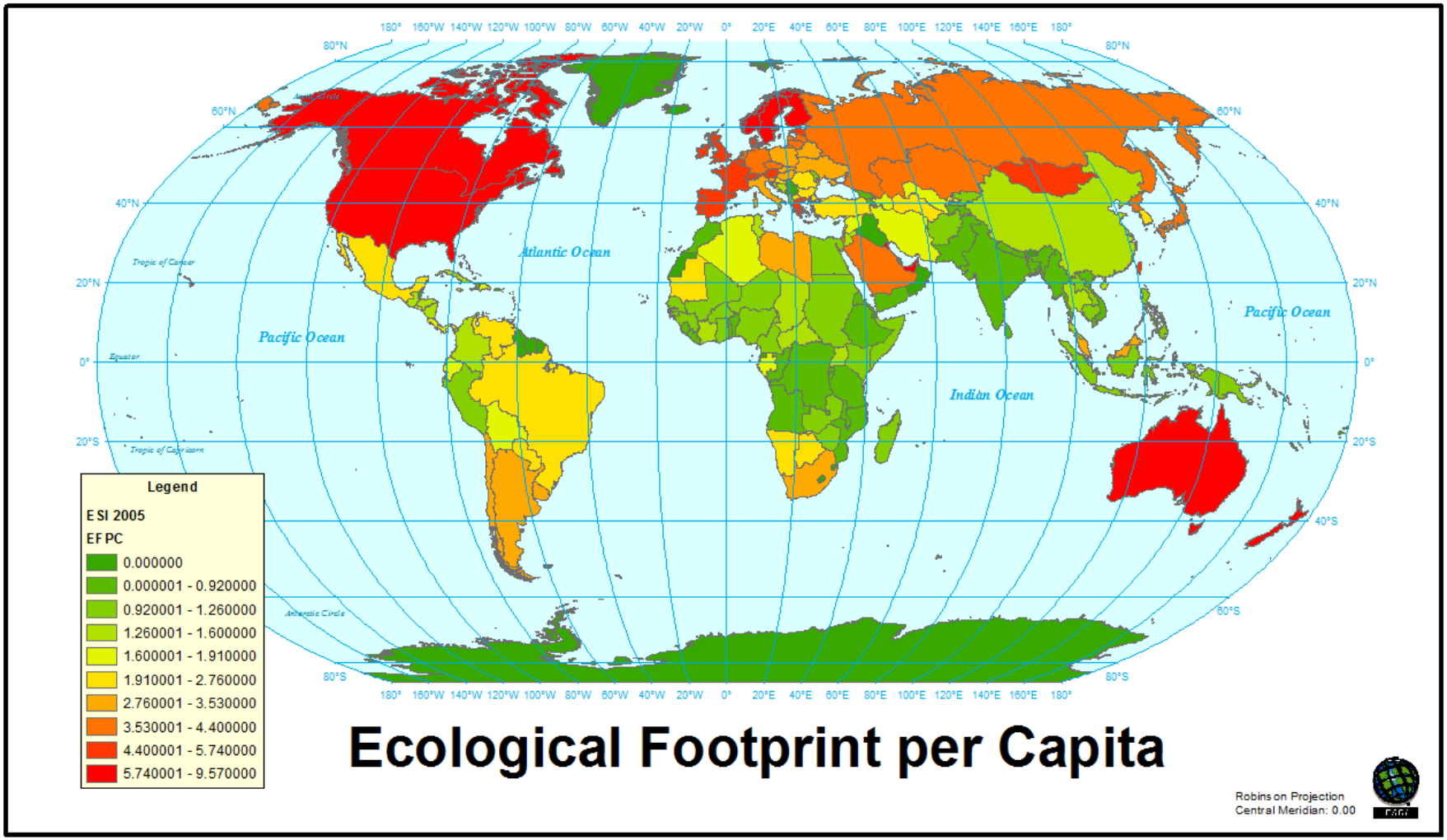
0.900 and over	0.650–0.699	0.400–0.449
0.850–0.899	0.600–0.649	0.350–0.399
0.800–0.849	0.550–0.599	0.349 and under
0.750–0.799	0.500–0.549	Data unavailable
0.700–0.749	0.450–0.499	

Human Development Index HDI





Ecological footprint analysis compares human demands on nature with the biospere‘s ability to regenerate resources and provide services.



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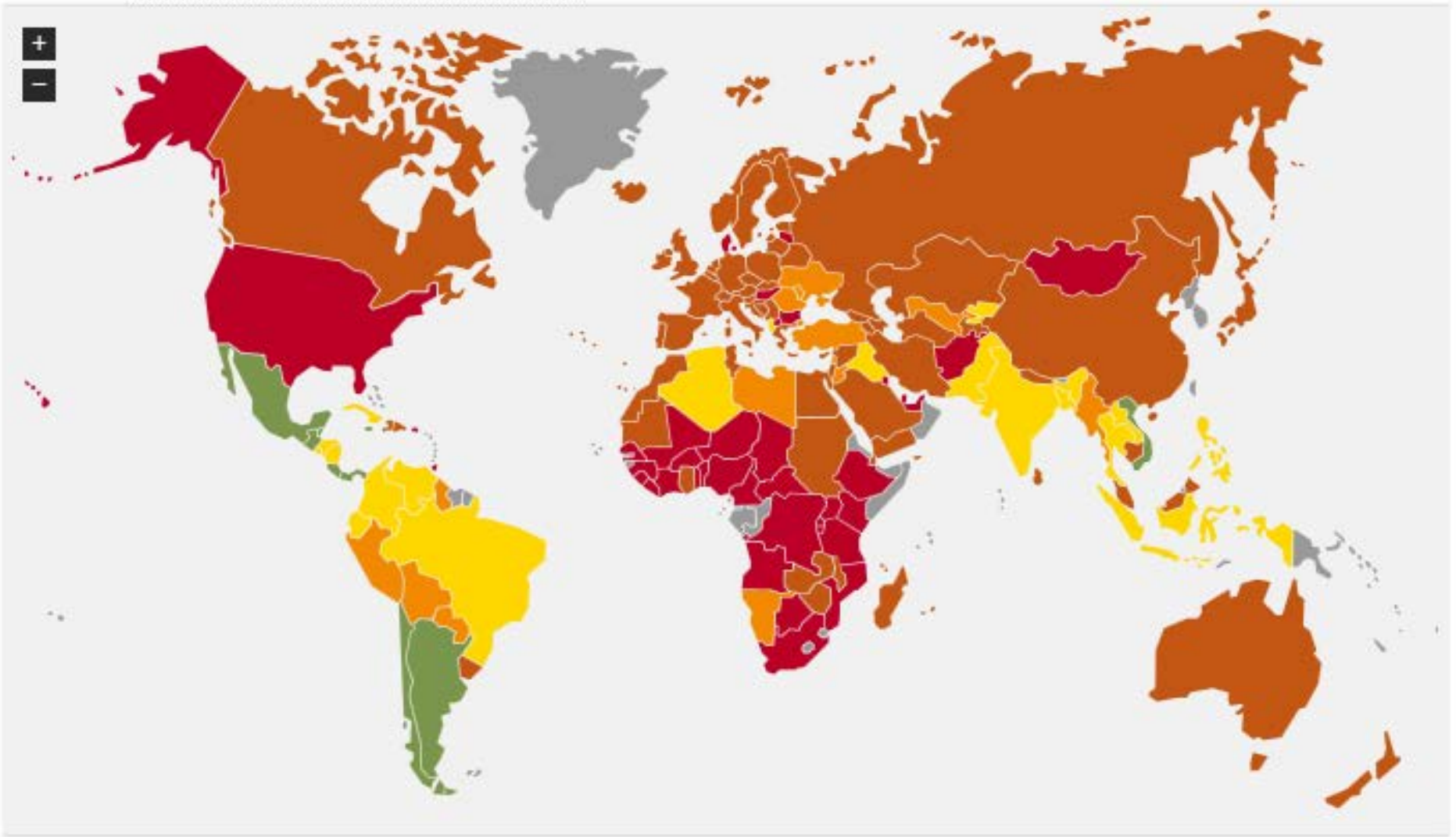
The Happy Planet Index (HPI)

- Introduced in 2006 by NEF (New Economics Foundation)
- Index of human well-being and environmental impact
- Innovative new measure that shows the ecological efficiency with which human well-being is delivered country by country, where people live long and happy lives

Happy Planet Index 2007

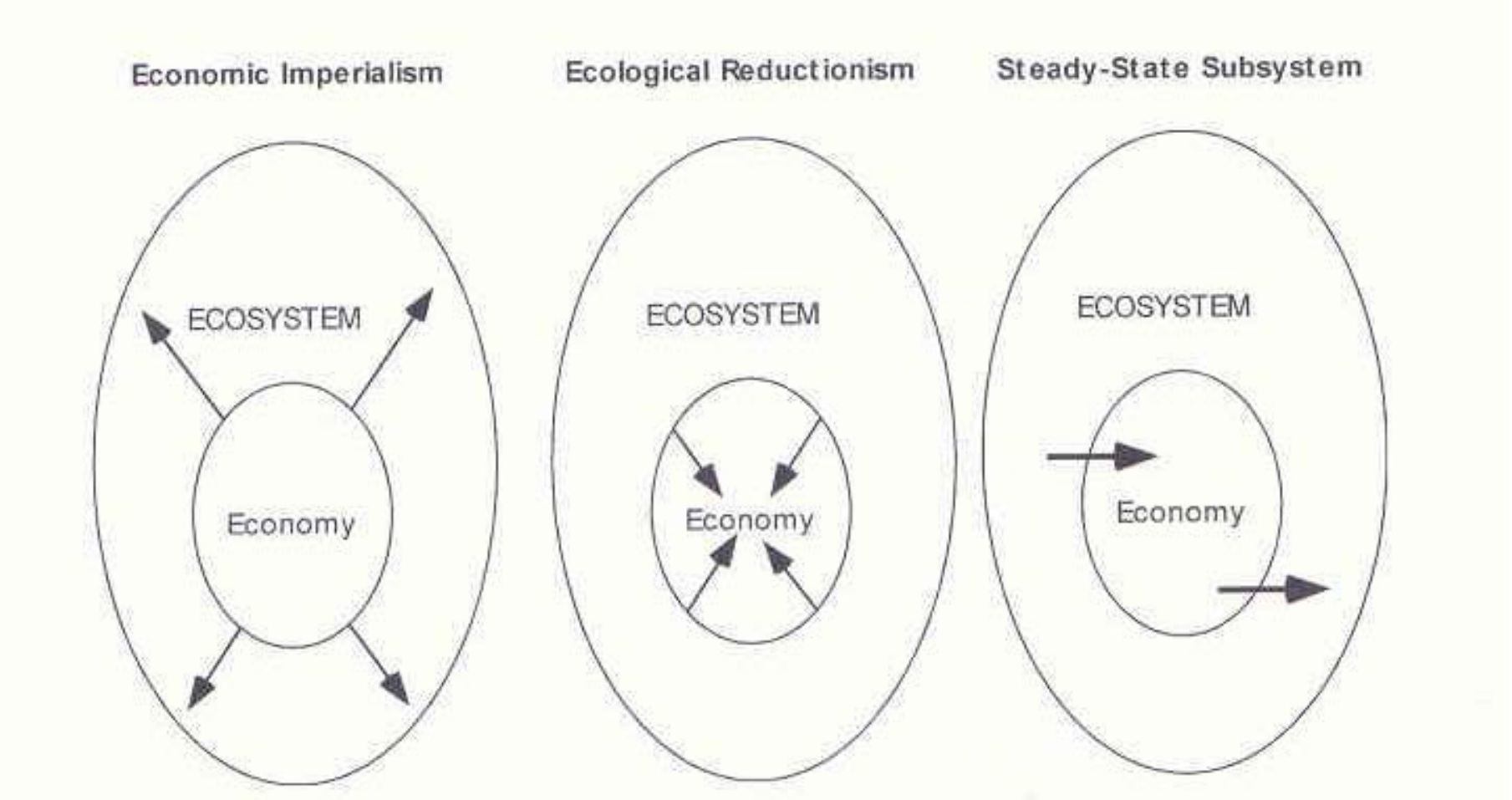


Sustainable Development Index

Country	Ecological Footprint	Human Development Index	Happy Planet Index
Denmark	9.88	ranking 15	36.1
Germany	6.31	ranking 5	47.2
Greece	5.58	ranking 29	40.5
Hong Kong SAR	2.2	ranking 13	37.5
Italy	5.51	ranking 25	46.4
Netherlands	6.19	ranking 4	43.1
Mexico	2.69	ranking 61	52.9
Indien	1.06	ranking 136	50.9
Togo	0.6	ranking 159	28.2

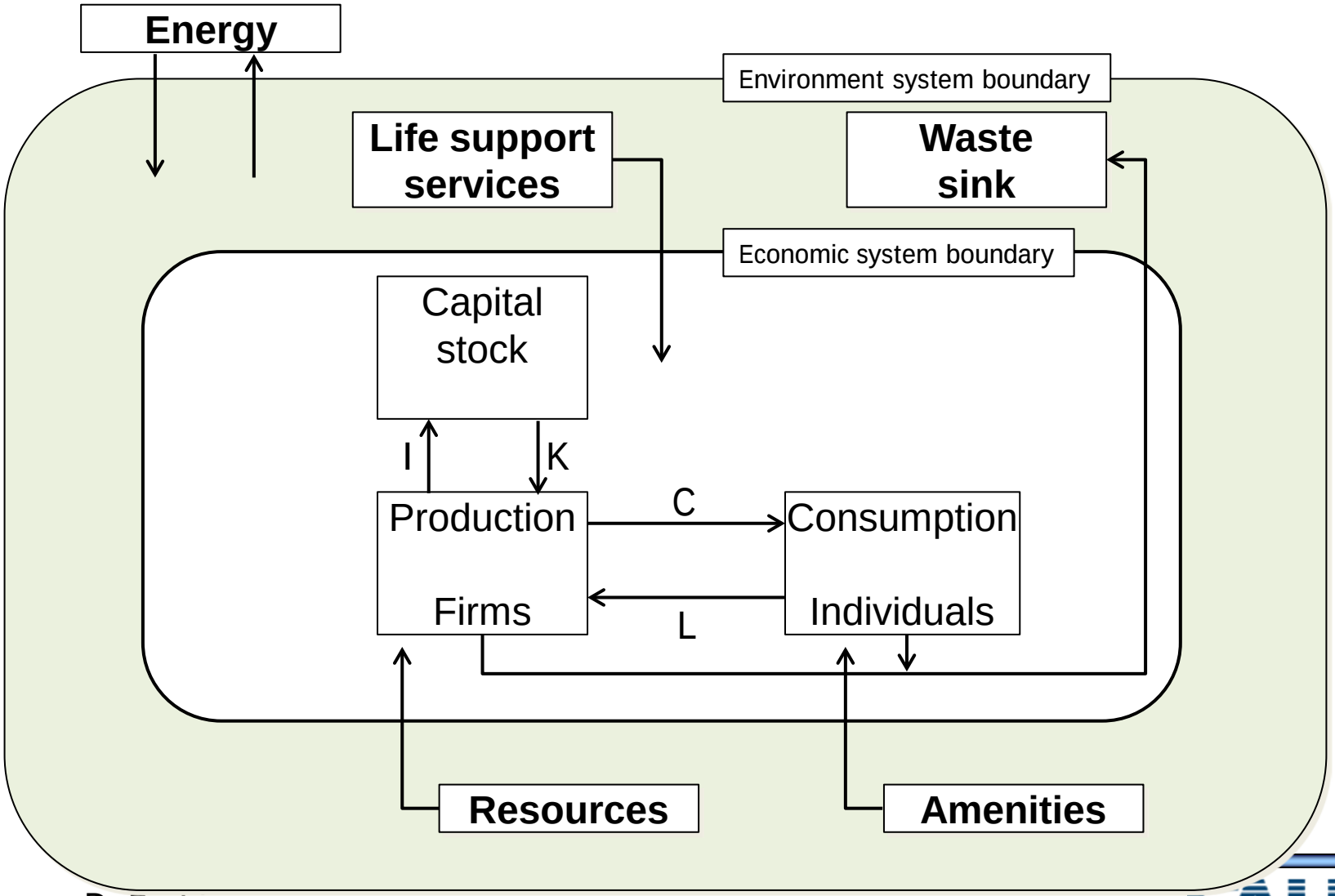
http://www.go-green.ae/footprint/countries.php , http://www.happyplanetindex.org/ , http://hdr.undp.org/en/data/profiles/

Three Strategies for Integrating Ecology and Economics



Source: Daly, H.E. and Farley, J., Ecological Economics, 2011, p.51.

Economy-environment interdependence



Legend:
C = Consumption
I = Investment
K = Capital
L = Labour

Source: Common/Stagl (2005), Ecological Economics, p. 87

Interdependence of Economy and Environment

1. The environment is the source of inputs of natural resources to production;
2. The sinks for the wastes arising in production and consumption;
3. A source of amenity services to consumption;
4. The source of life support services to humans (Natural Elements Necessary to Sustain Life).

Source: Common/Stagl (2005), Ecological Economics, p. 337.

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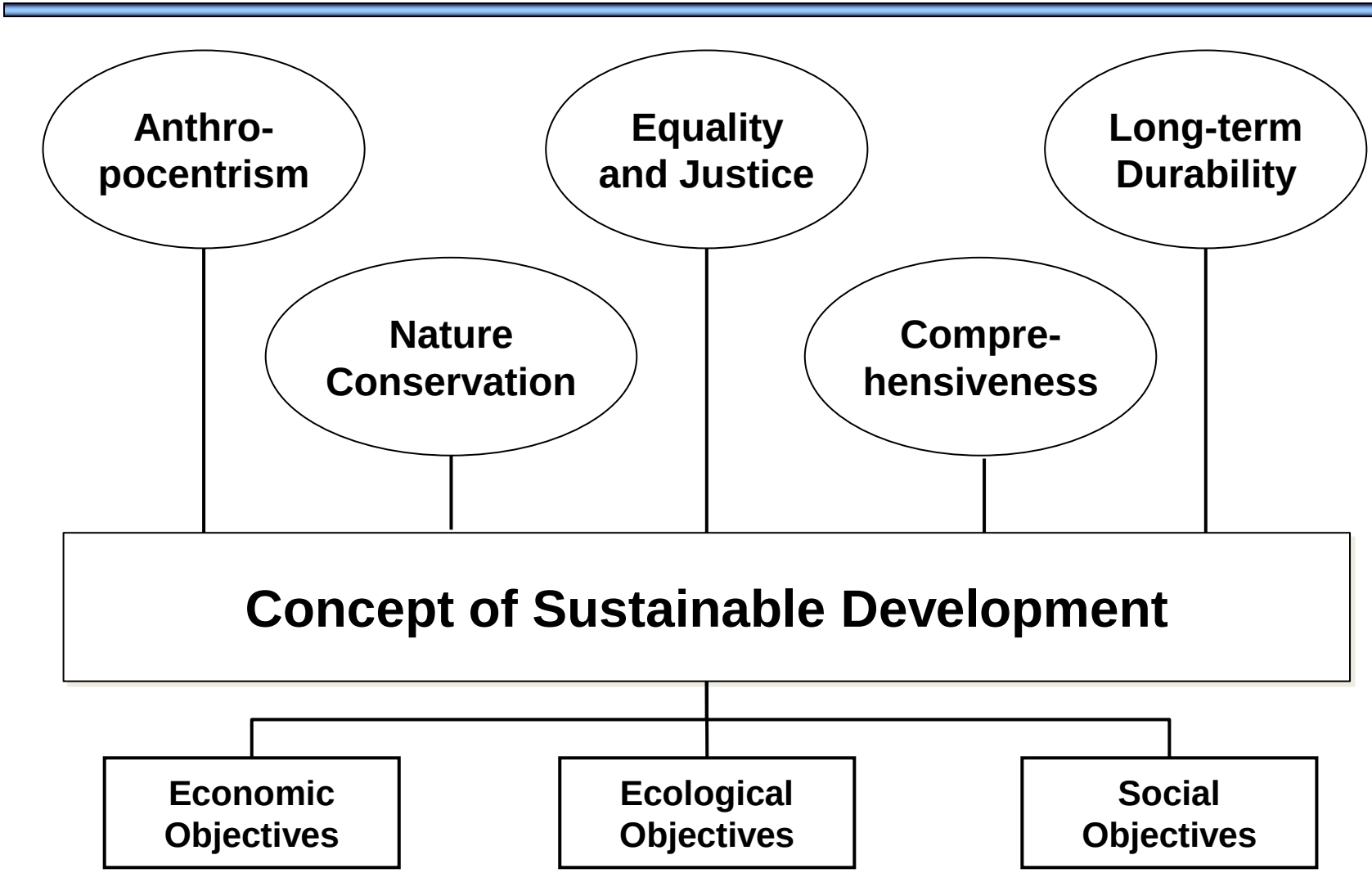


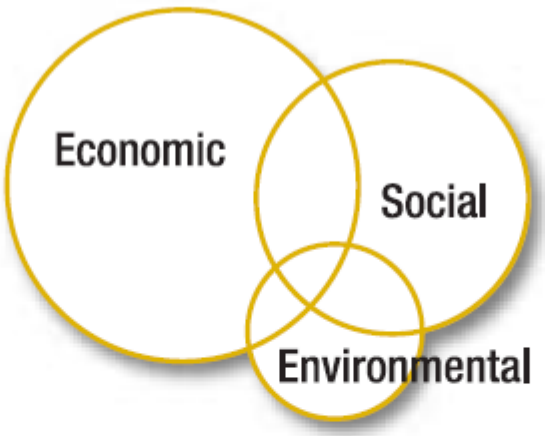
Source: Barbian, D., 2001, p. 64 and Vornholz, G., 1997, p. 47.

Theory of Intergenerational Equity (Brown Weiss, 1989)

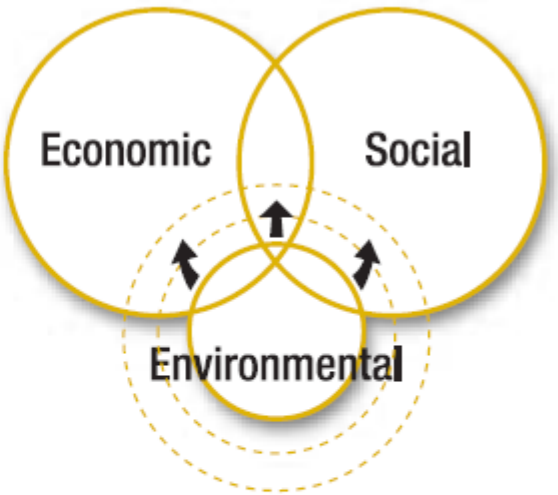
"At any given time, each generation is both a custodian and trustee of the planet for future generations and a beneficiary of its fruits. This imposes obligations upon us to care for the planet and gives us certain rights to use it."

Three Pillars of Sustainable Development

THE THEORY



NOW

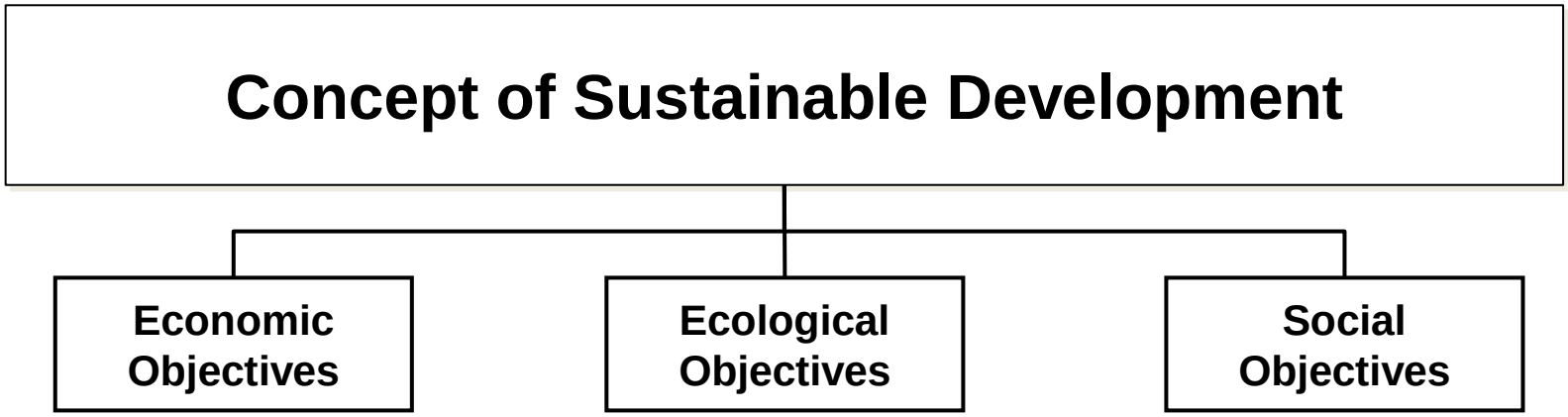


THE CHANGE NEEDED

The three pillars of sustainable development, from left to right, the theory, the reality and the change needed to better balance the model

Source: IUCN (2004)

The three pillars



Cost reduction
Profit increase
Taxes
Income
...

Improvement of water quality
Reforestation
Water and waste water treatment
...

Invest in human capital
Improve health system
Improve work conditions
No child work
...

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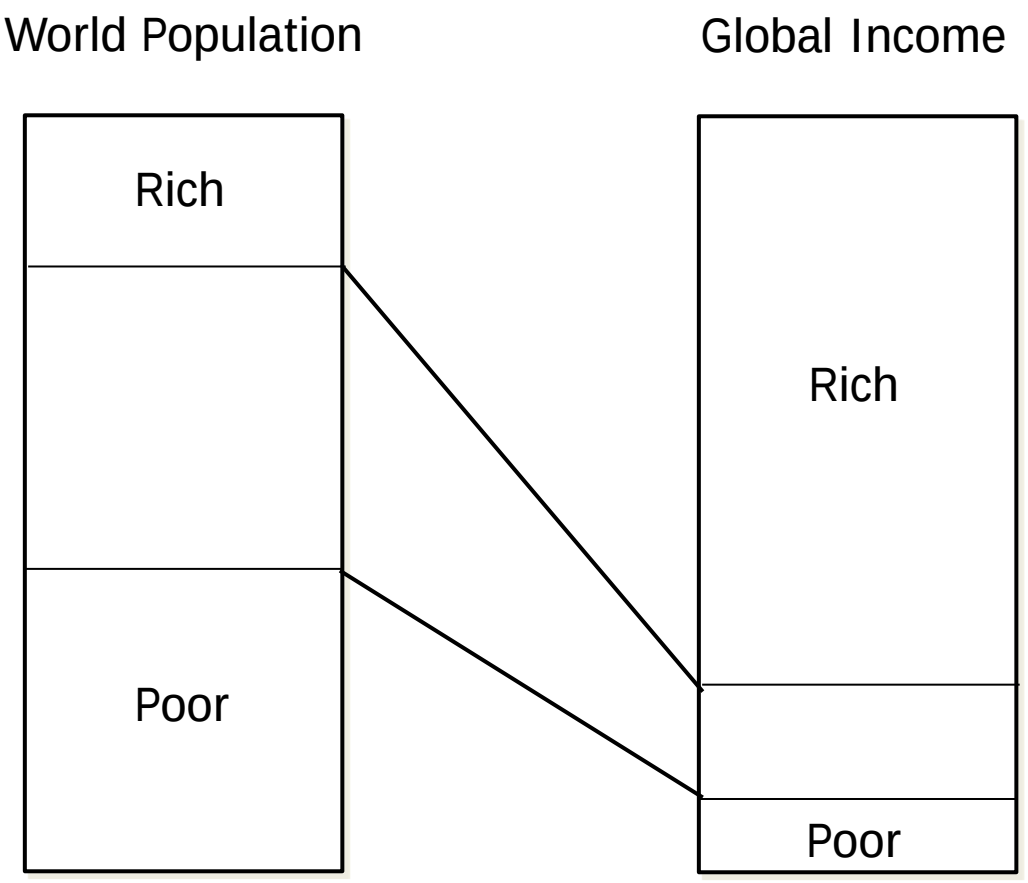
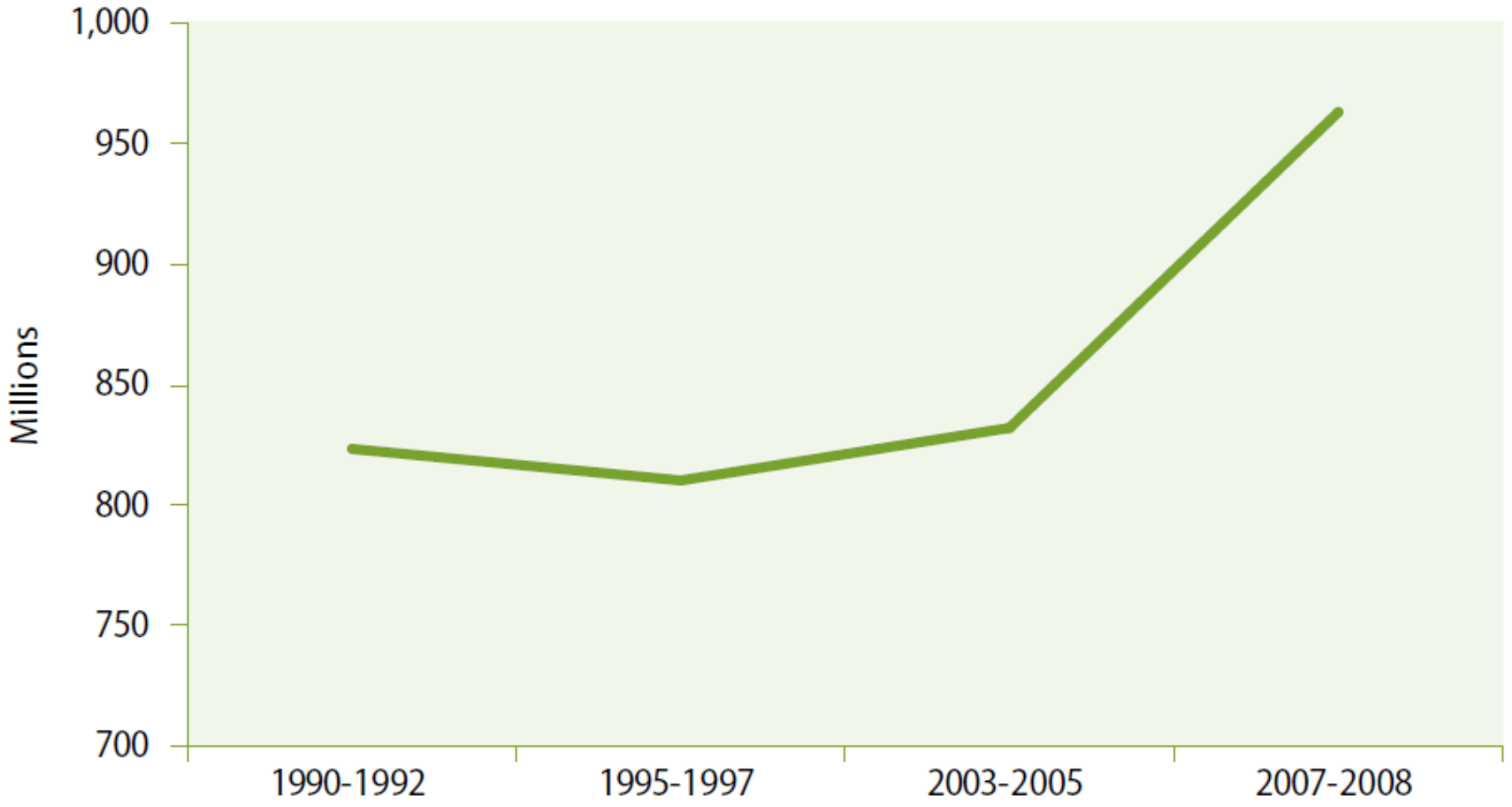
Relationship: World Population and Global Income



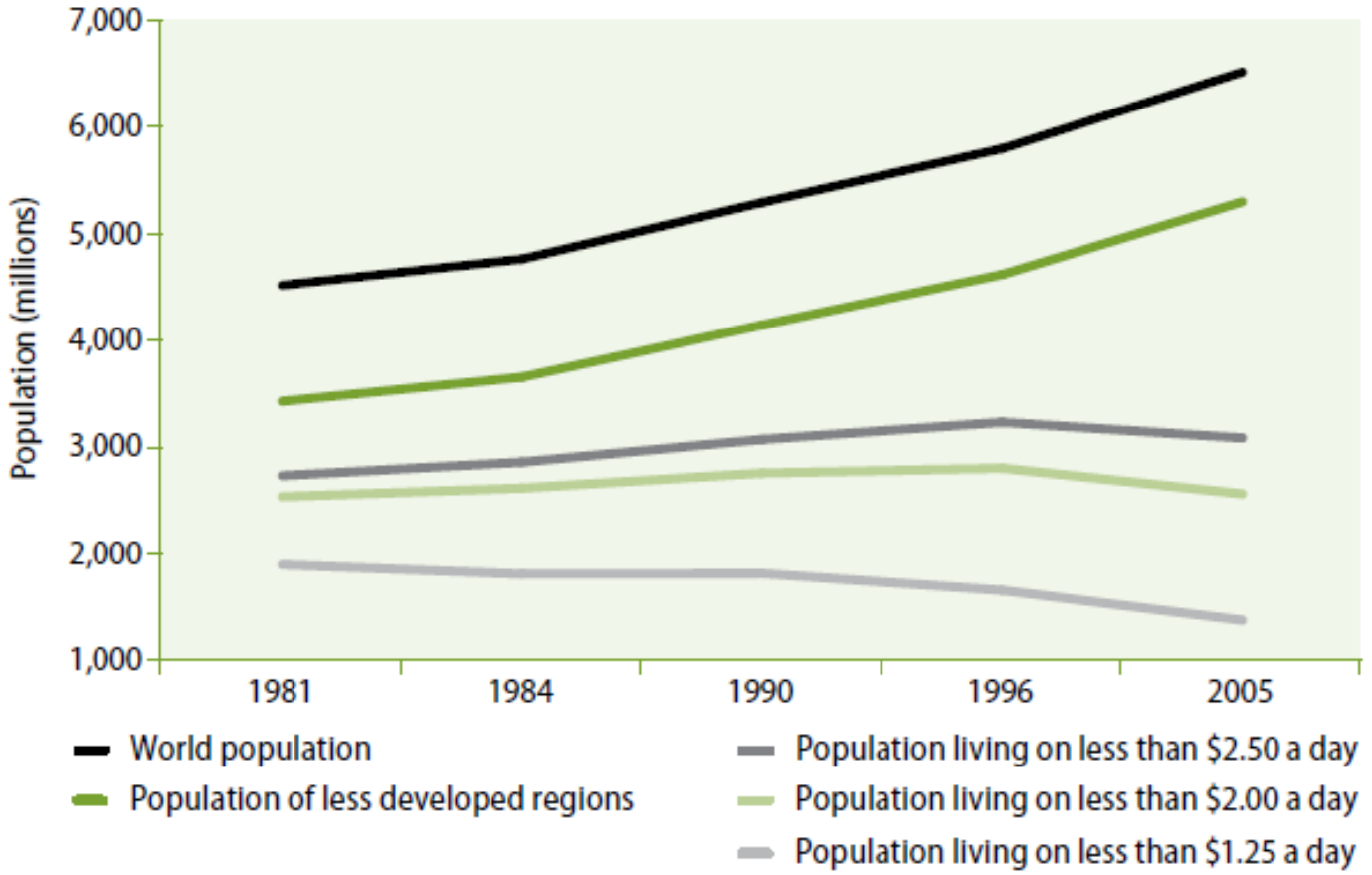
Source: United Nations Development Programme

Undernourished people in the developing world, 1990-2008



Source: United Nations, Rethinking Poverty, Report on the World Social Situation 2010.

World Population and People Living in Poverty, 1981-2005

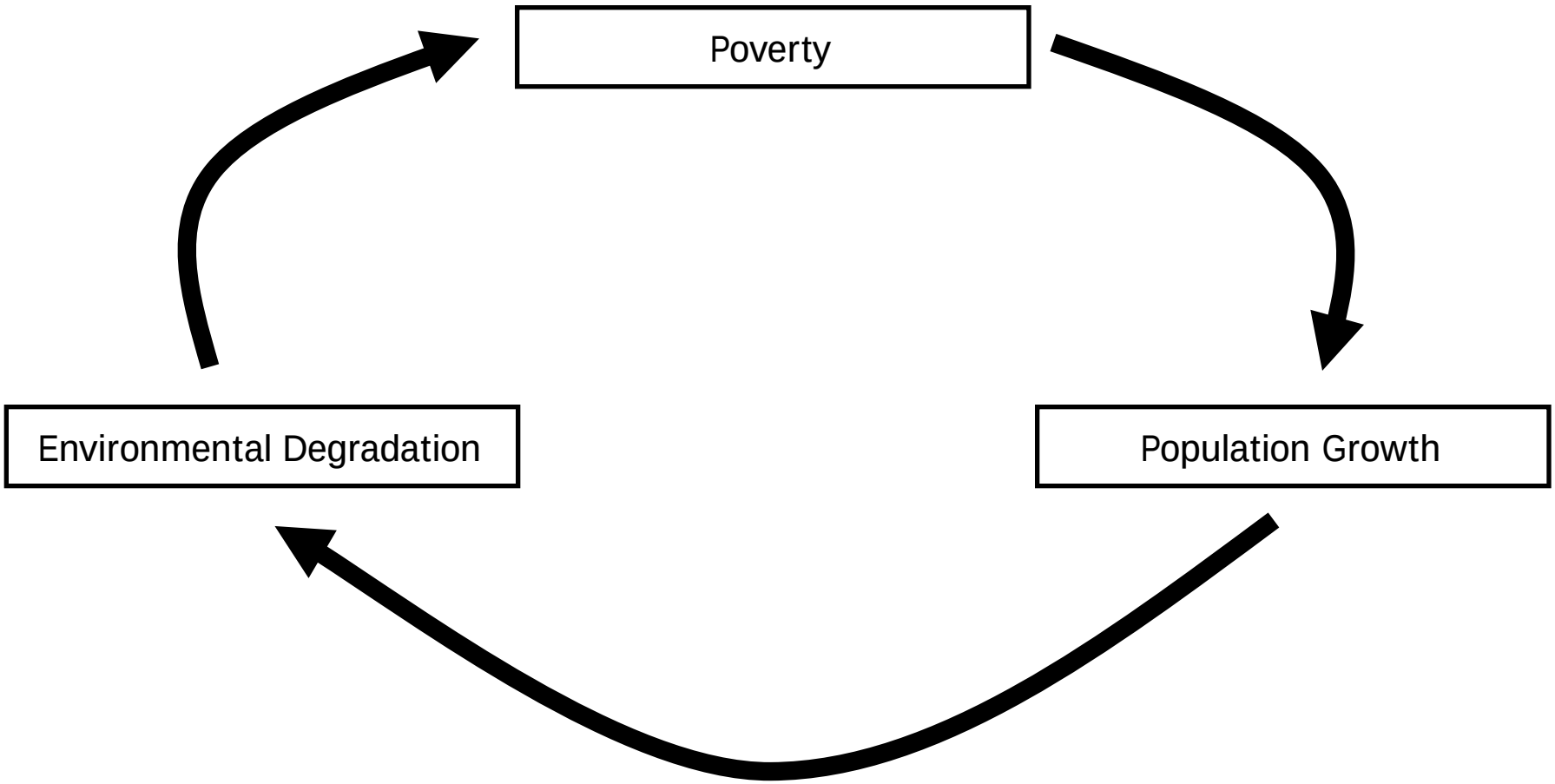


Sources: United Nations, Department of Economic and Social Affairs, Population Division; and World Bank, Development Research Group (2009).

Effects of Human Overpopulation

- Inadequate fresh water
- Depletion of natural resources
- Increased levels of air pollution, water pollution, soil contamination and noise pollution
- Deforestation and loss of ecosystems
- Changes in atmospheric composition and consequent global warming
- Irreversible loss of arable land and increases in desertification
- Mass species extinctions
- High infant and child mortality
- Intensive factory farming
- Increased chance of the emergence of new epidemics and pandemics
- Starvation and malnutrition
- Low life expectancy
- Unhygienic living conditions
- Elevated crime rate
- Increased levels of warfare
- Less personal freedom/more restrictive laws

Main Problem of Developing Countries



Source: Barbian, D., 2001, p. 76.

Sierra Leone

(1) Income per capita: $ 311

(2) Mining provides income

(3) Population: 6.4 million

(4) 46% of child deaths are due to malnutrition

(5) 25% of kids die before 5

(6) 33% of adults are illiterate

(7) Houses are constructed with mud bricks

Togo

(1) Population: 6.6 million

(2) Income per capita: $ 900

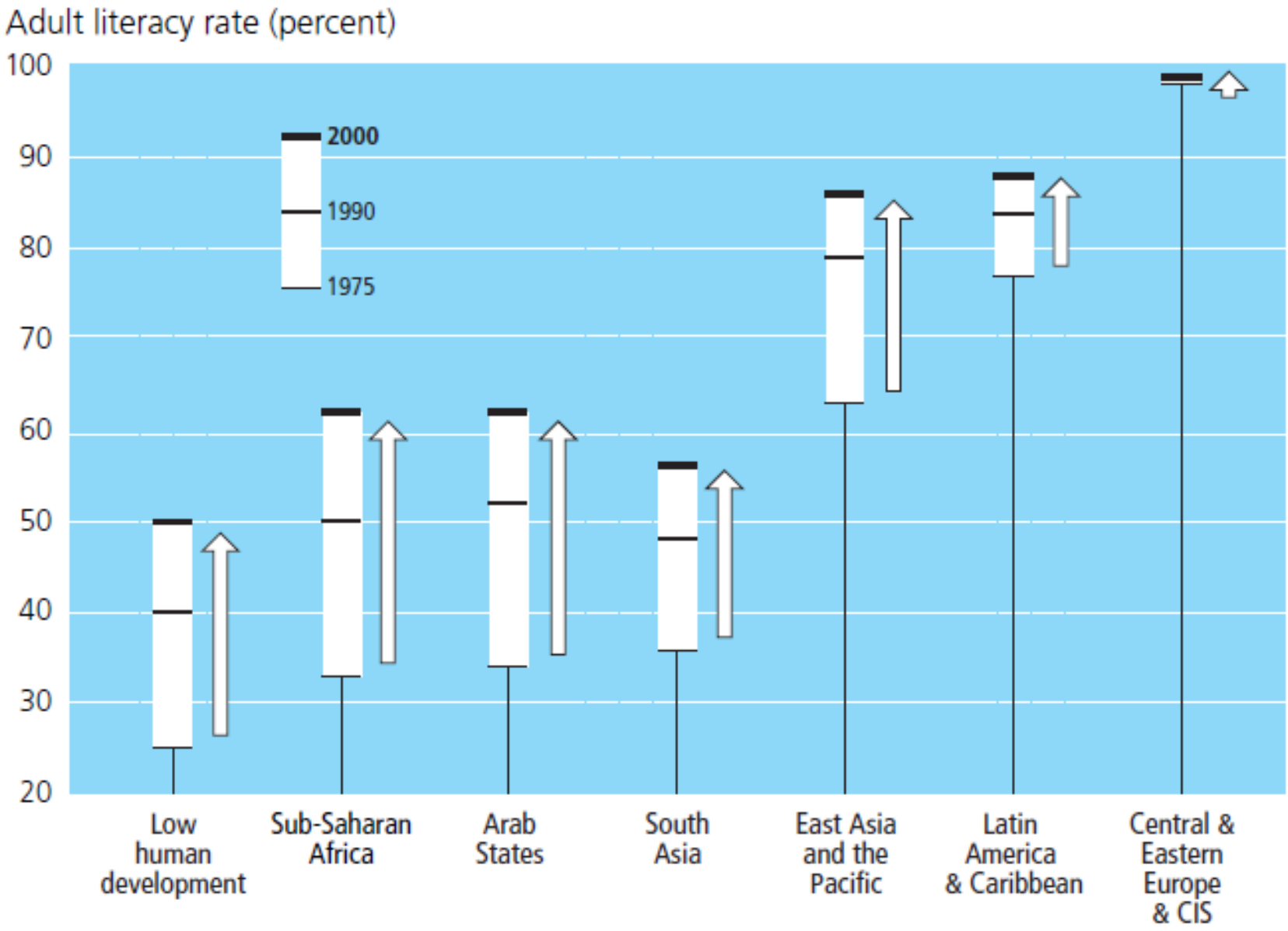
(3) The infant mortality rate: appr. 50 deaths per 1,000 children (2012)

(4) Male life expectancy at birth: 60.6 (2012), 65.8 for females (2012)

(5) Appr. one half of the population lives below the international poverty line of US$1.25 a day

FIGURE 1.11

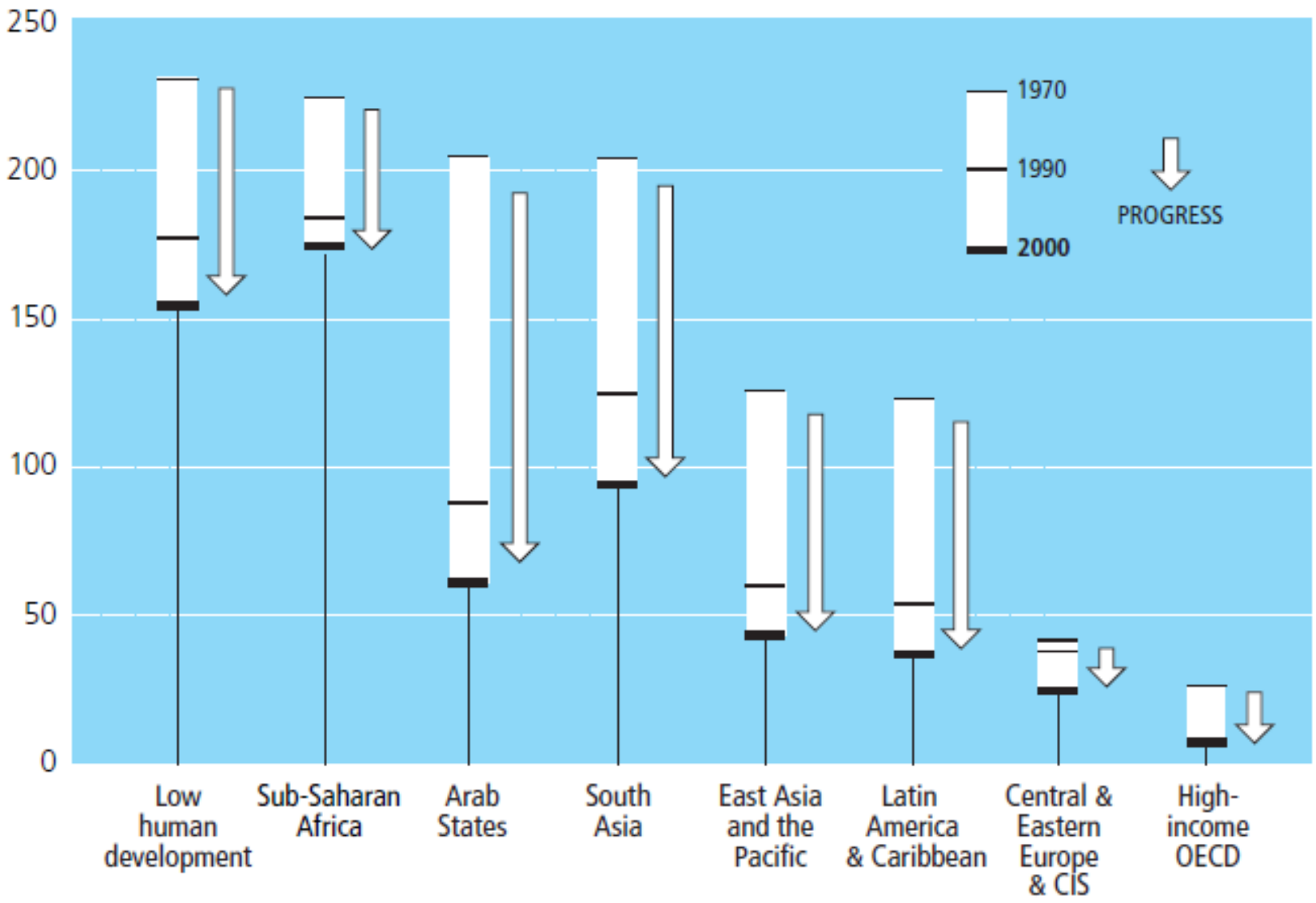
Global disparities in literacy



Source: Human Development Report Office calculations based on UNESCO 2002.

FIGURE 1.12

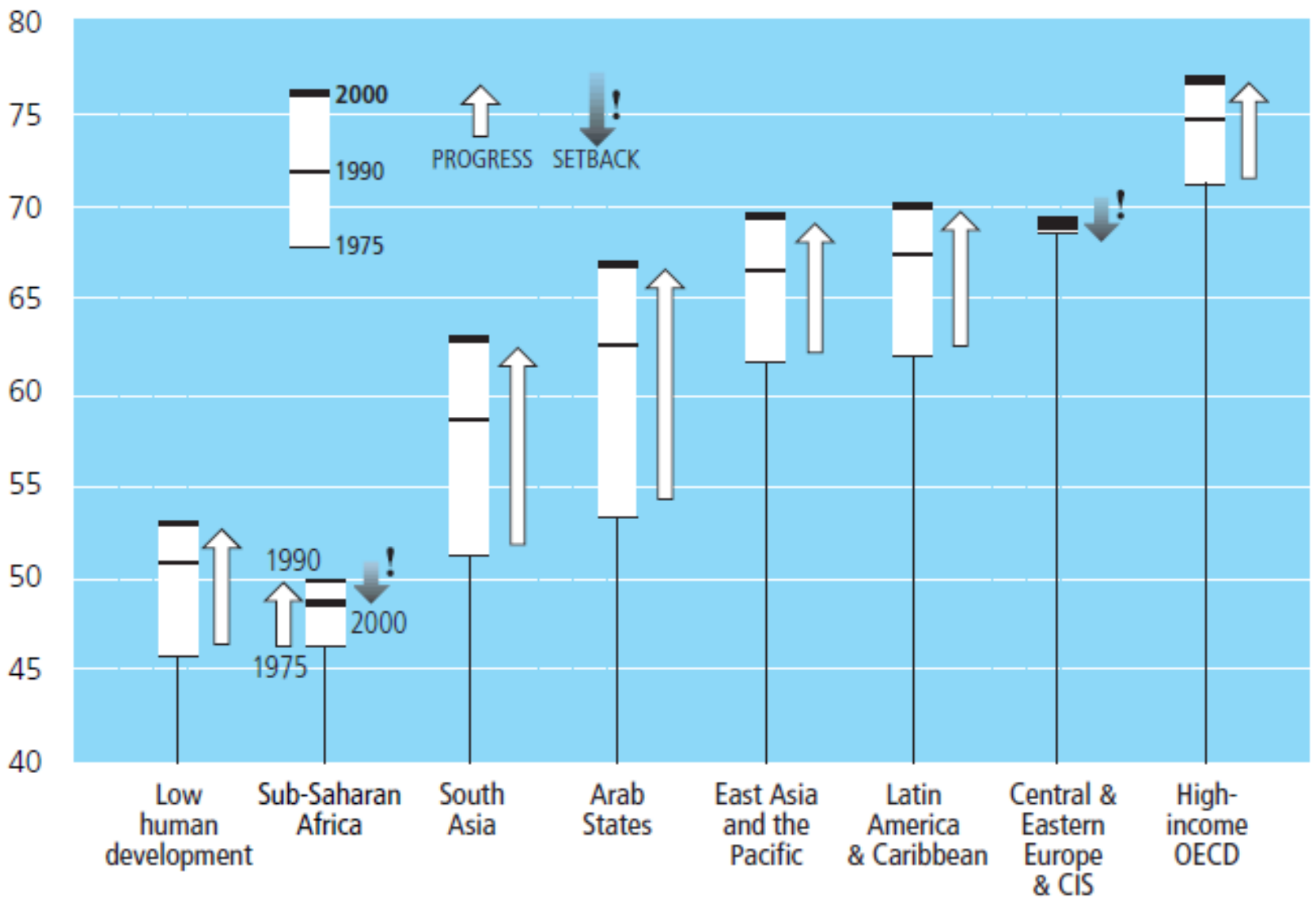
Global disparities in under-five mortality



Source: Human Development Report Office calculations based on UNICEF 2002.

FIGURE 1.13

Global disparities in life expectancy

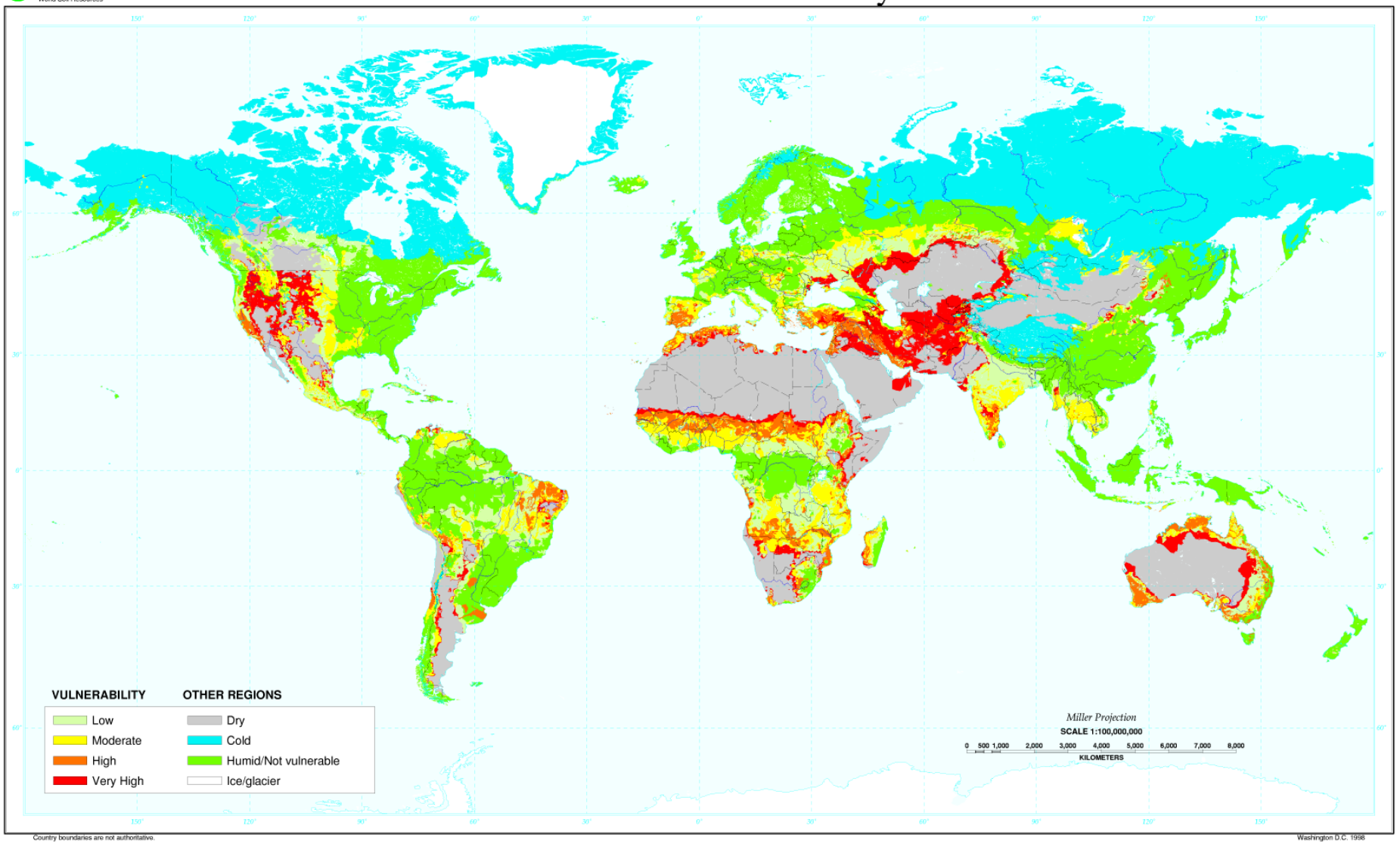


Source: Human Development Report Office calculations based on UN 2001d.

More Threats to Sustainability

U.S. Department of Agriculture
Natural Resources Conservation Service
Soil Survey Division
World Soil Resources

Desertification Vulnerability



D. Barbian

FRIEDRICH-ALEXANDER
UNIVERSITÄT
ERLANGEN-NÜRNBERG

Loss of Species – The Caspian Sea

- is the largest enclosed body of water on Earth by area
- surface area of 371,000 km^2
- is bounded to the north by Russia, to the south by Iran, western Azerbaijan, and eastern Kazakhstan and Turkmenistan
- has a salinity of approximately 1.2%, about a third the salinity of most seawater

Meanwhile, biodiversity is seriously threatened by the impact of human activities: 30 percent of amphibians, 23 percent of mammals and 12 percent of birds are under threat of extinction, while one in 10 of the world's large rivers run dry every year before they reach the sea.

In numbers:

- 45 thousand square miles of forest are lost across the world each year
- 60 percent of the world's major rivers have been dammed or diverted
- 34 percent: the amount by which the world's population has grown in the last 20 years
- 75 thousand people a year are killed by natural disasters
- 50 percent: The percentage by which populations of fresh fish have declined in 20 years
- 20 percent: How much the energy requirements of developed countries such as the United States have increased in the period

Source: Global Environment Outlook 2007

Biodiversity and Species Loss

IUCN: International Union for Conservation of Nature (see: www.iucn.org)

IUCN

Five Priority Areas
(see http://www.iucn.org/about/work/programmes/gpap_home/

→ GPAP Global Protected Areas Programme):

IUCN

Red List:

Most comprehensive information source on the status of wild species and their links to livelihoods;
was first conceived in 1963 and set a standard for species listing and conservation assessment efforts;
Lists species officially classified as "threatened" and "endangered";
Aim: to convey the urgency and scale of conservation problems to the public and policy makers; and
to motivate the global community to work together to reduce species extinctions.


Total sea-level rise if all ice melts 216 feet
Contribution from Greenland ice sheet 25 feet
GREENLAND AND THE ARCTIC OCEAN
In a few decades the Arctic Ocean may be ice free in summer. The ice sheet that covers nearly all of Greenland is up to two miles thick and will last far longer. But it's still at risk. It shrank or vanished during earlier interglacial periods, when Earth was only a few degrees warmer than it is today. Since 1992 it has lost more than 140 billion metric tons of ice a year on average.
WEST ANTARCTICA
Like the Greenland ice sheet, the West Antarctic one was apparently much smaller during earlier warm periods. It's vulnerable because most of it sits on bedrock that's below sea level. The warming ocean is melting the floating ice shelves that buttress it and could eventually melt the ice sheet itself from below, causing it to collapse. Since 1992 it has averaged a net loss of 65 billion metric tons of ice a year.
Contribution from West Antarctic ice sheet 14 feet
EAST ANTARCTI
The East Antarc
large—it contains
the ice on Earth
unmeltable. It su
periods intact. L
thickening slight
warming. The wa
holds more wate
as snow on East
this behemoth is
a return to an Ea
Vancouver
Seattle
Portland
San Francisco
Los Angeles
San Diego
Montréal
Halifax
Boston
New York
Philadelphia
Baltimore
Washington, D.C.
Norfolk
Pine Bluff
Charleston
Tallahassee
Jacksonville
Houston
New Orleans
Orlando
Tampa
Miami
Havana
Cancún
Veracruz
Port-au-Prince
There are more than five million cubic miles of ice on Earth, and no one really knows how long it would take to melt it all. Probably more than 5,000 years, some scientists say. But if we burn all the coal, oil, and gas, adding some five trillion more tons of carbon to the atmosphere, we'll very likely create an ice-free planet. It would be a hot planet, with an average temperature of perhaps 80 degrees Fahrenheit instead of the current 58. Large swaths of it might become too hot for humans; deserts would doubtless expand. The maps here don't show such changes. They show the world as it is now, with only one difference: All the ice on land has melted and drained into the sea, raising it 216 feet.
A HISTORY OF ICE
The last time Earth was free of ice was more than 34 million years ago, in the Eocene epoch. Alligators swam in Arctic swamps. But the planet slowly cooled as carbon dioxide rained from the air and was locked up in seafloor sediments. Continental ice sheets formed first in Antarctica, but over the past few million years they've repeatedly surged across northern continents too. We're living in a warm interglacial period—20,000 years ago Chicago, New York, and London were buried under ice.
Millions of years ago
70
60
50
40
30
No ice
Partial or ephemeral formation
Full-scale formation

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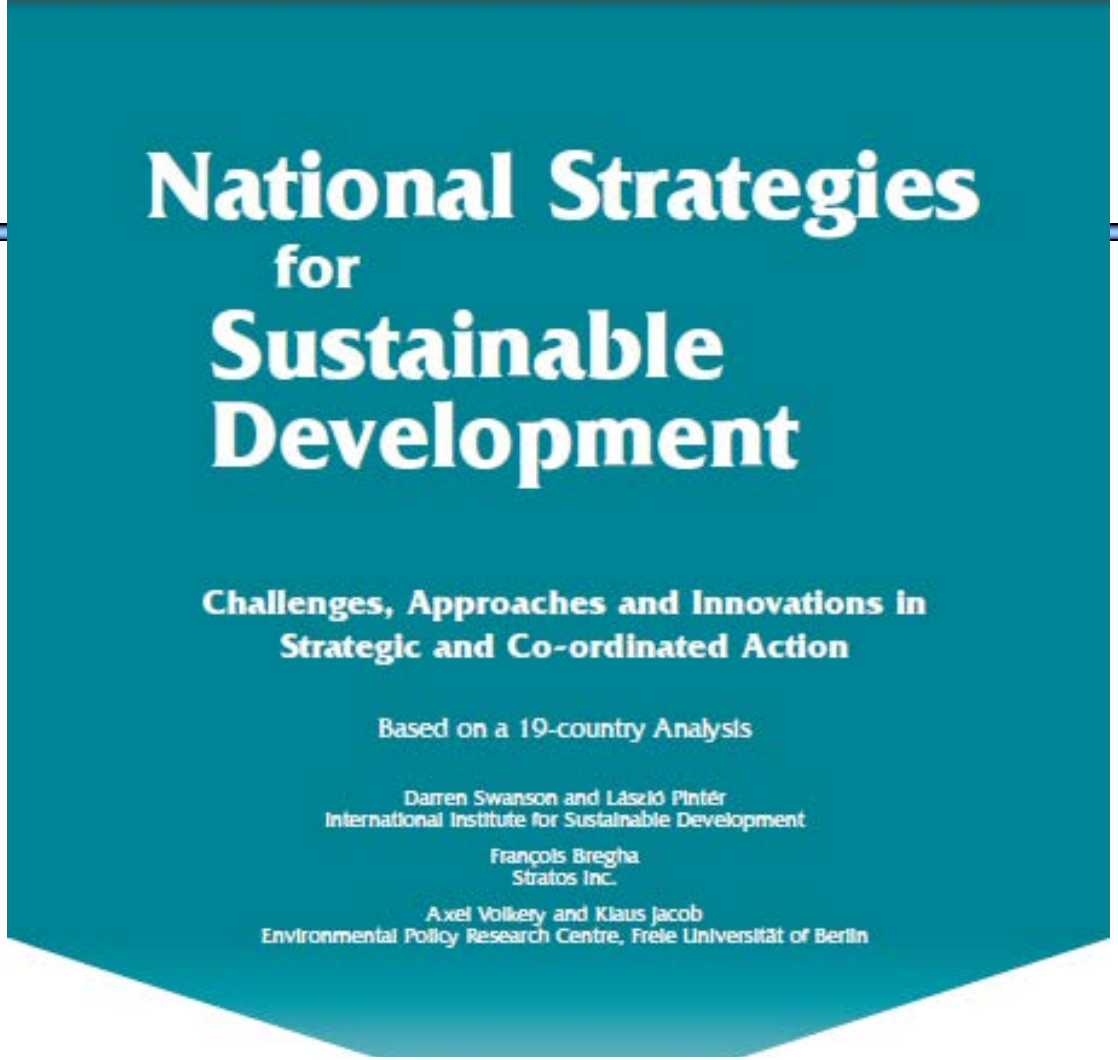

See http://www.iisd.org/pdf/2004/measure_nat_strategies_sd.pdf

19 Case Studies

- Brazil Case Study
- Cameroon Case Study
- Canada Case Study
- China Case Study
- Costa Rica Case Study
- Denmark Case Study
- European Union Case Study
- Germany Case Study
- India Case Study
- Republic of Korea Case Study
- Madagascar Case Study
- Mexico Case Study
- Morocco Case Study
- Philippines Case Study
- Poland Case Study
- South Africa Case Study
- Sweden Case Study
- Switzerland Case Study
- United Kingdom Case Study

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1. Our World and our Limits
2. Implementing Sustainability
3. Consequences for World Countries
4. A Sustainable World

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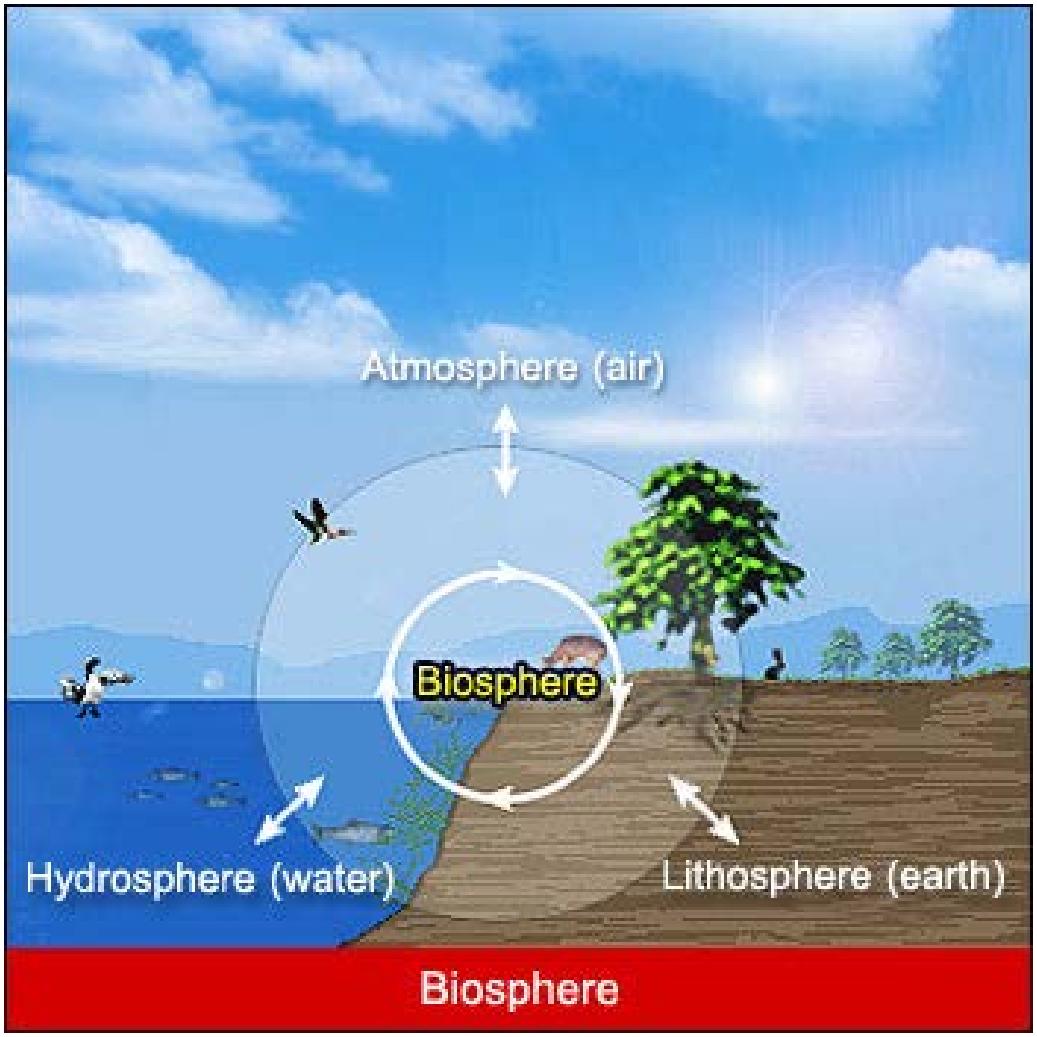
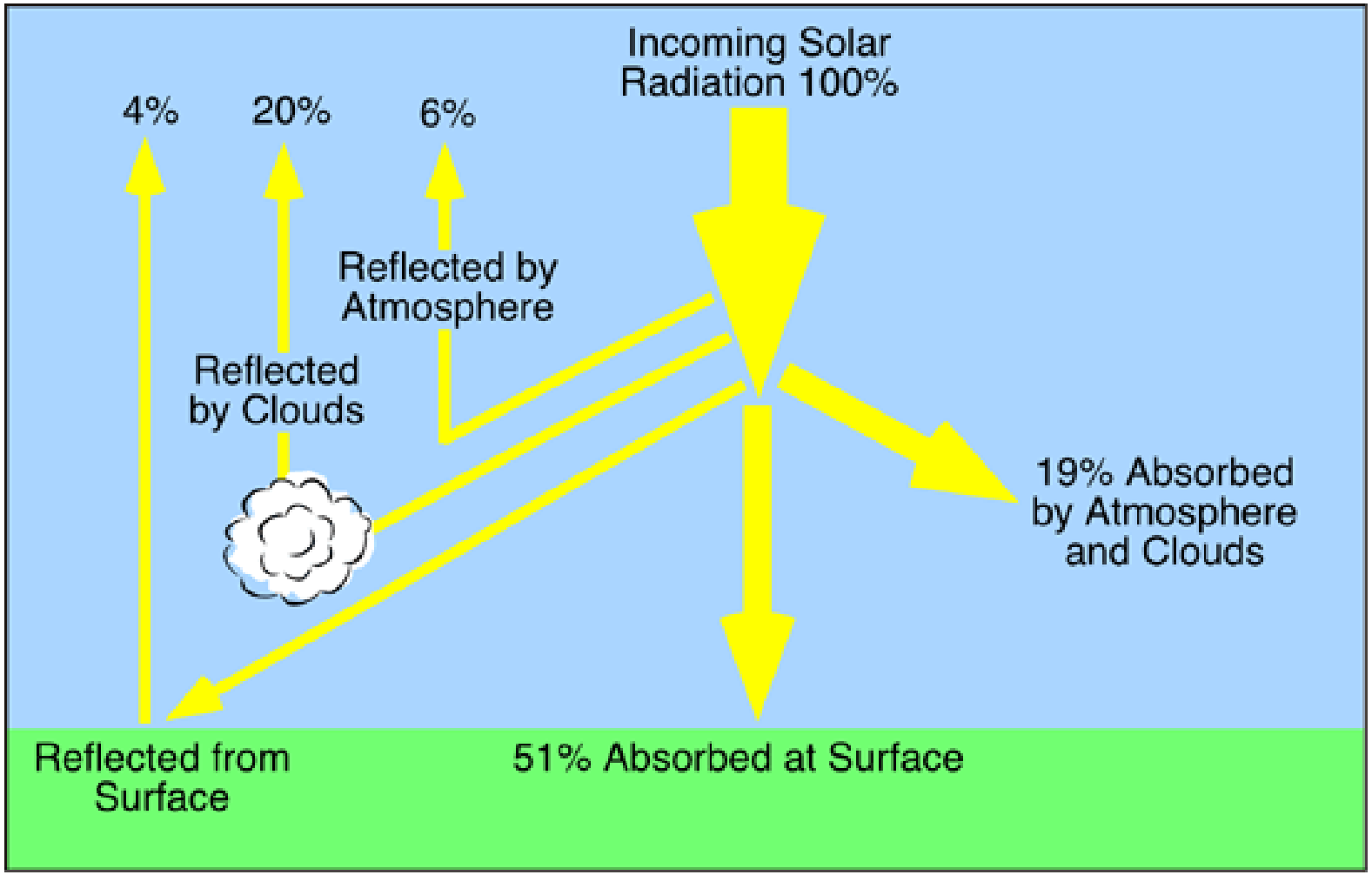
Interacting Systems



Source: http://library.thinkquest.org/09jan-oracle-n-001/02242/page_490783175.html

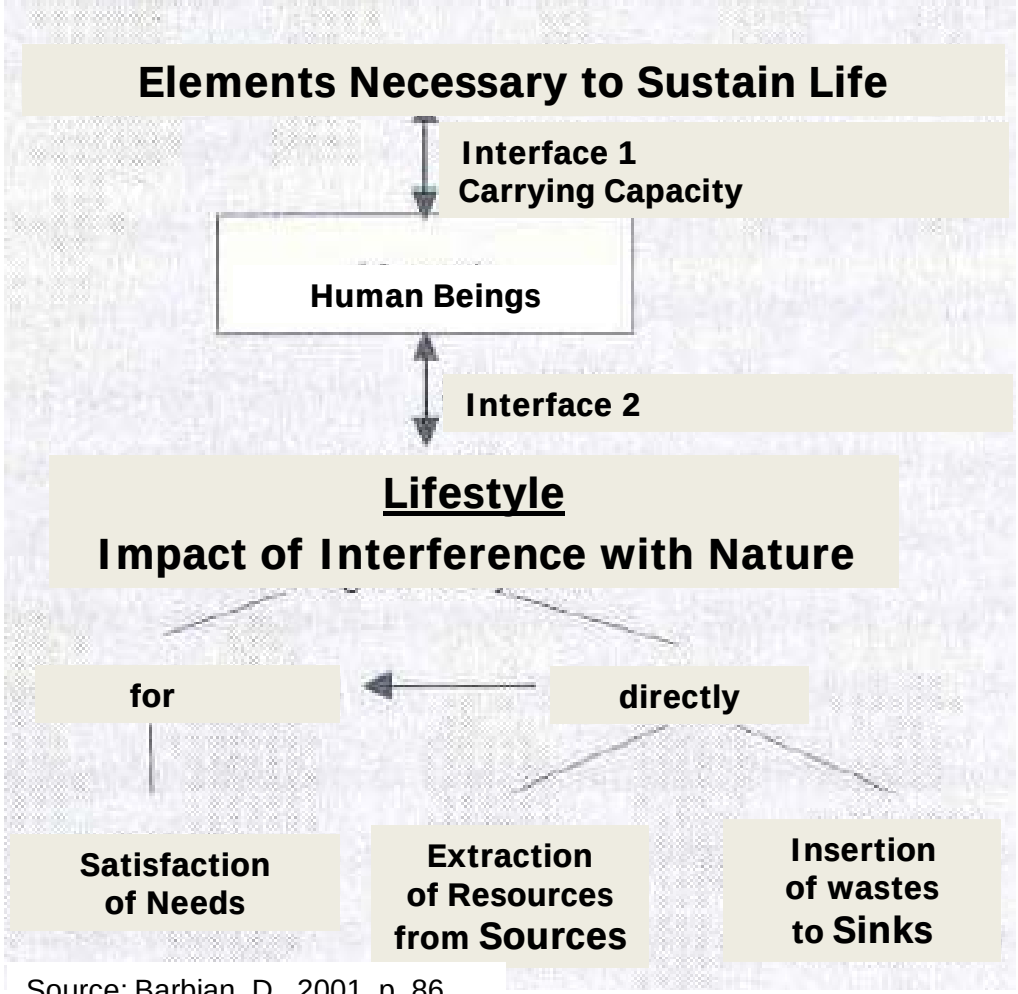
Energy Flows between Sun and Earth



D. Barbian

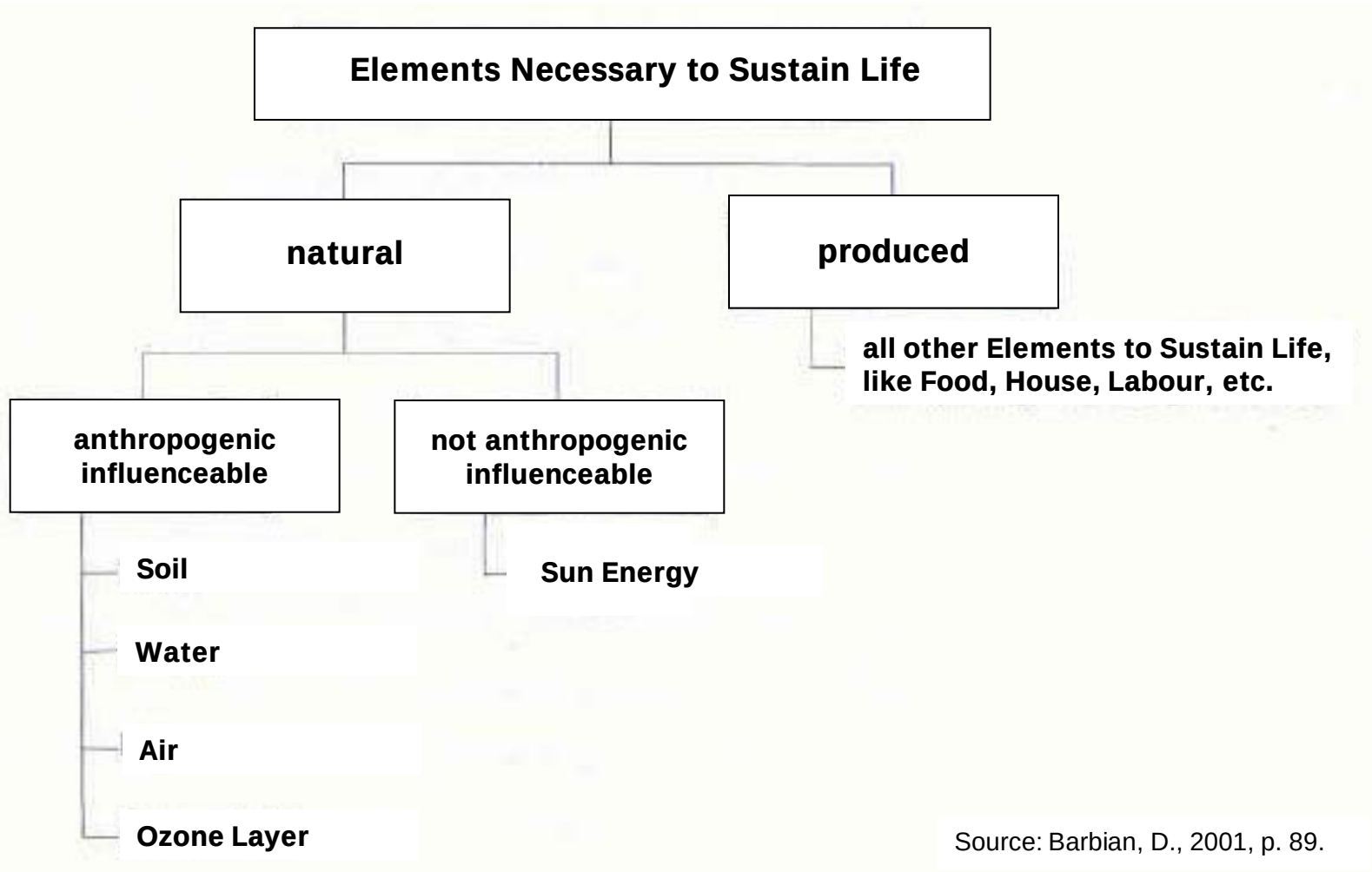
Source: http://www.physicalgeography.net/fundamentals/7f.html

Interfaces between Environment and Human Beings



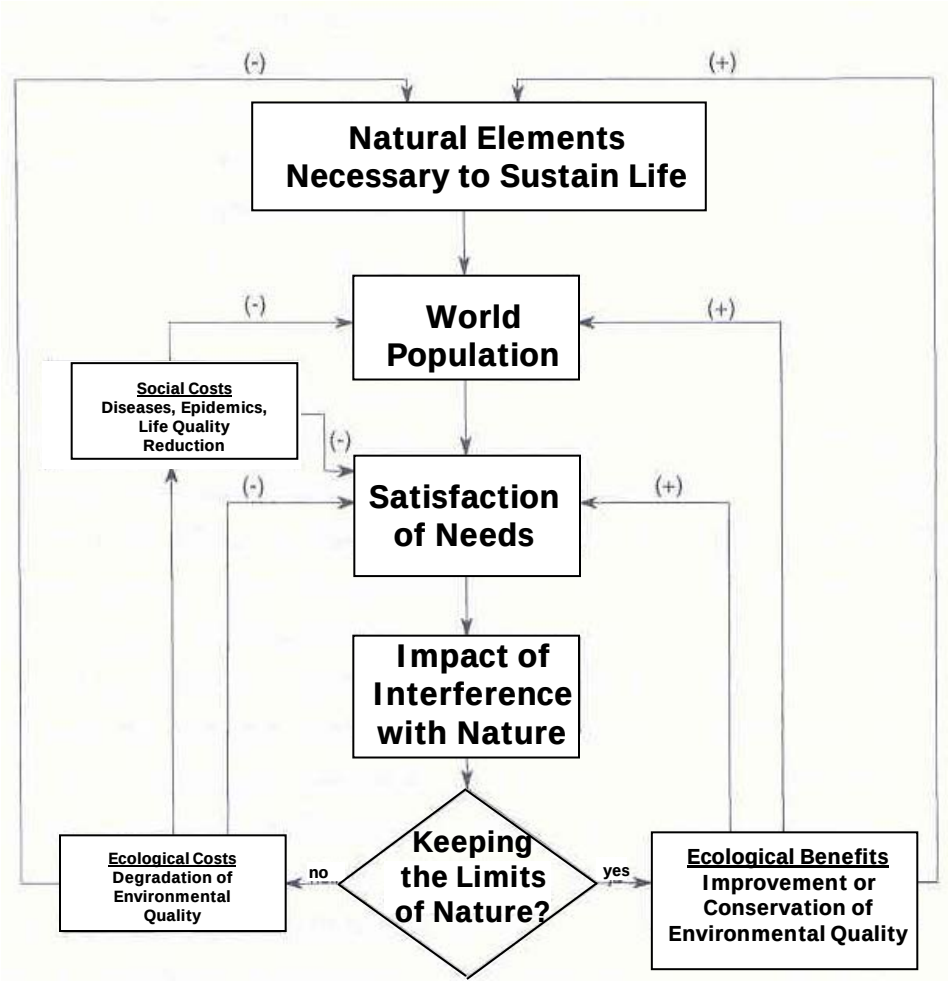
Source: Barbian, D., 2001, p. 86.

Specification of the Elements to Sustain Life



Source: Barbian, D., 2001, p. 89.

Influencing Factors to the Natural Elements Necessary to Sustain Life



Source: Barbian, D., 2001, p. 91.

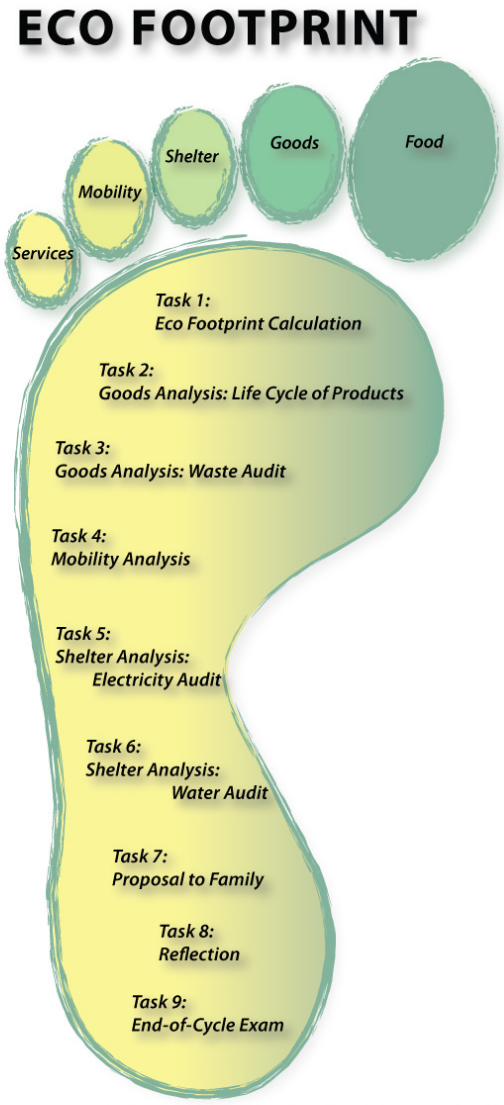
D. Barbian

Development of the Carrying Capacity for Humans

10,000 B.C.	**Hunters and Gatherers**	**6 million Humans**
1 A.D.	**Hunters and Gatherers,** **simple Agriculture**	**300 million Humans**
appr. 1780 A.D.	**Pre-industrial agrarian society**	**750 million Humans**
appr. 1830 A.D.	**Early industrial societies**	**1 billion Humans**
appr. 2000 A.D.	**Modern industrial societies**	**> 6 billion Humans**

Source: according to Dobias, P., 1991, p. 31.

Ecological Footprint



Source: http://tarahobson.com/documents

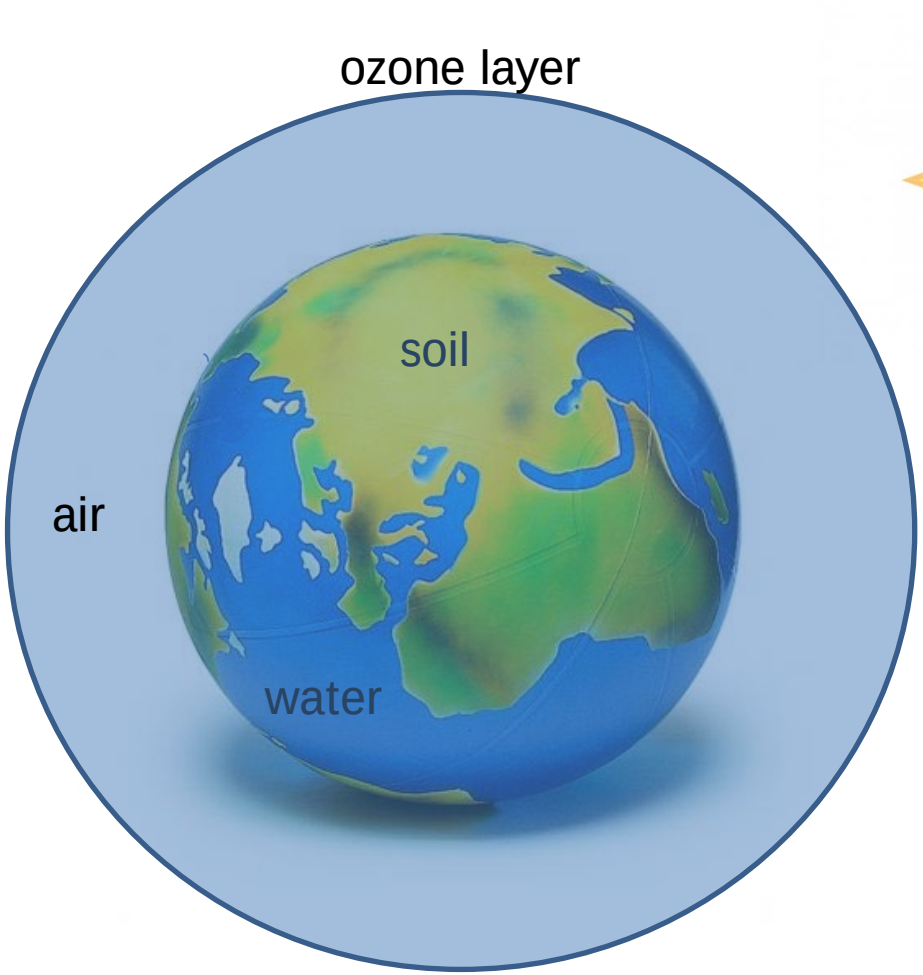
How BIG is Your Ecological Footprint?

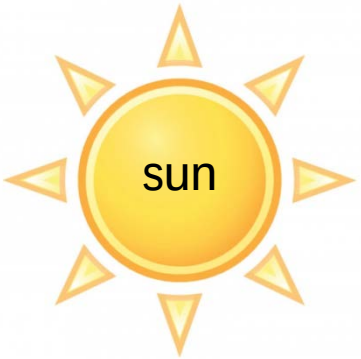
See: http://myfootprint.org/

Postel (1994)

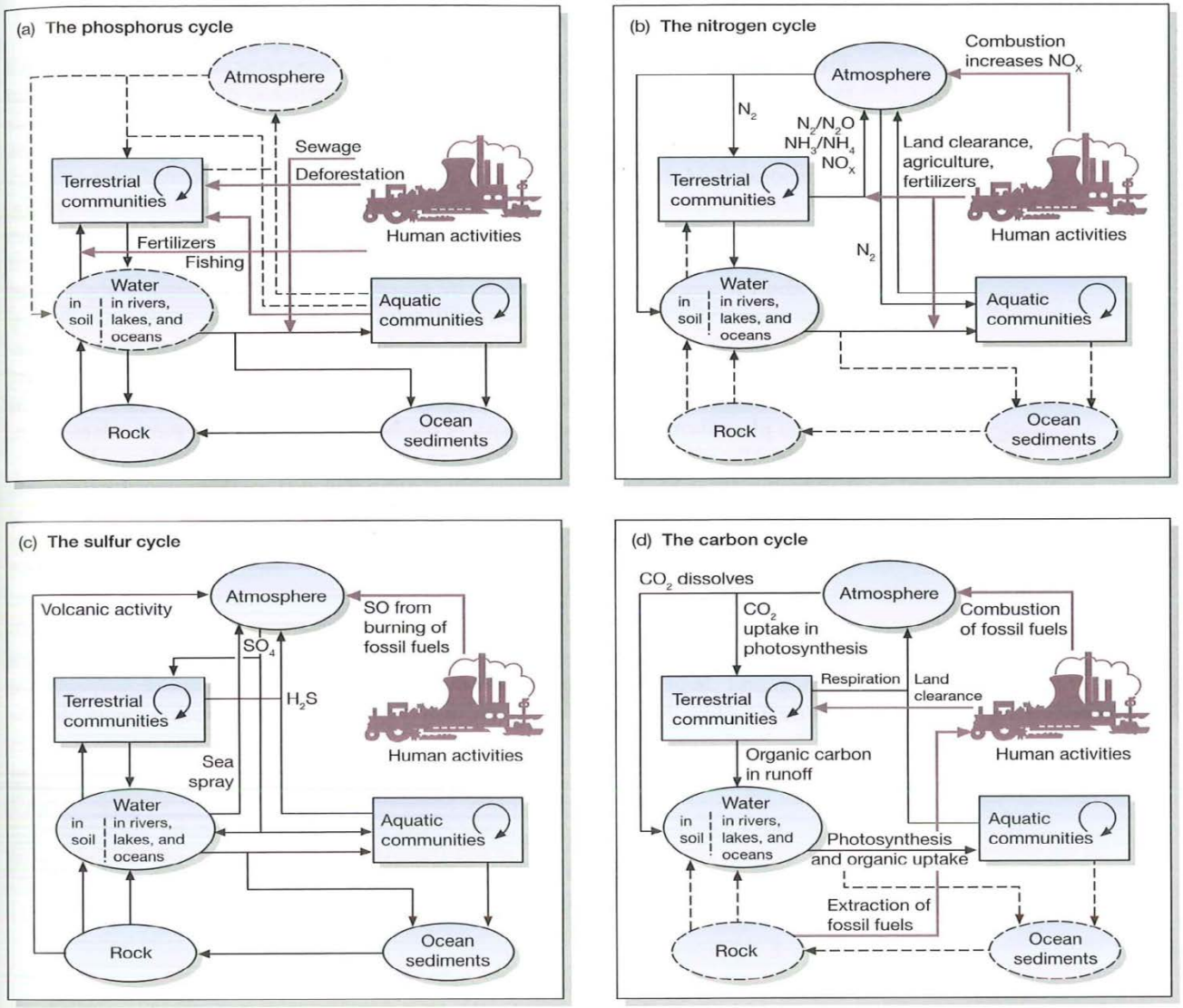
"The earth's capacity to support humans is determined not just by our most basic food requirements but also by our levels of consumption of a whole range of resources, by the amount of waste we generate, by the technologies we choose for our varied activities, and by our success at mobilizing to deal with major threats."

A Simple World Model





Source: according to Barbian, D., 2001, p. 96 ff.

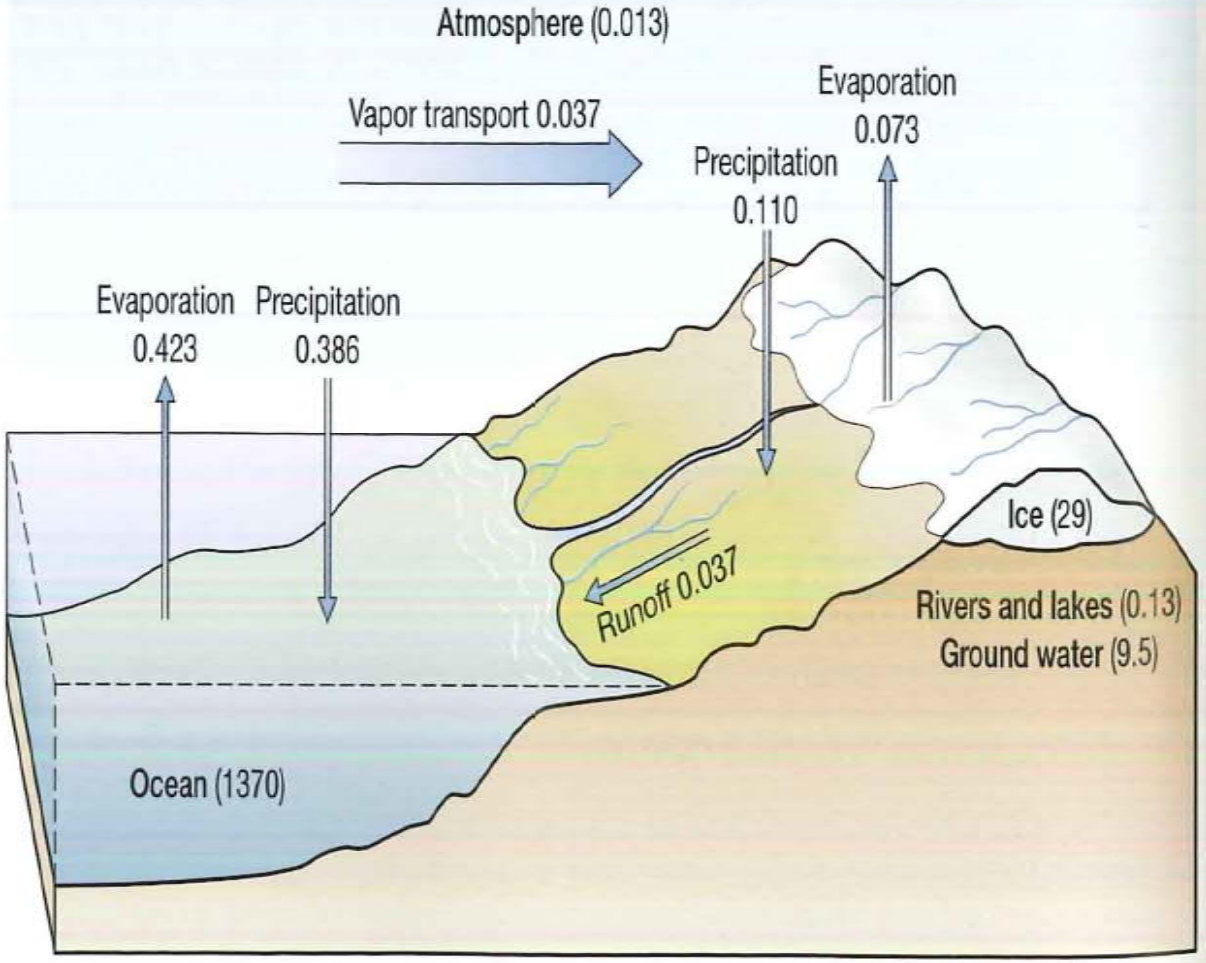


The major global pathways of nutrients between the abiotic 'reservoirs' of atmosphere, water (hydrosphere) and rock and sediments (lithosphere), and the biotic 'reservoirs' constituted by terrestrial and aquatic communities. Human activities (maroon arrows) change nutrient fluxes in terrestrial and aquatic communities by releasing extra nutrients into both atmosphere and water. Cycles are presented for four important nutrient elements: (a) phosphorus, (b) nitrogen, (c) sulfur and (d) carbon. Insignificant compartments and fluxes are represented by dashed lines.

Source: Townsend, C. R., Begon, M. and Harper, J. L., Essentials in Ecology, 2008, p. 381.

Figure 11.15

The hydrological cycle, showing volumes of water in the 'reservoirs' of oceans, ice (polar and glacier), rivers and lakes, ground water and atmosphere (units of 10^6 km^3), and on the move as precipitation, runoff, evaporation and vapor transport (arrows: units of 10^6 km^3 yr^{-1}).



Source: Townsend, C. R., Begon, M. and Harper, J. L., Essentials in Ecology, 2008, p. 380.

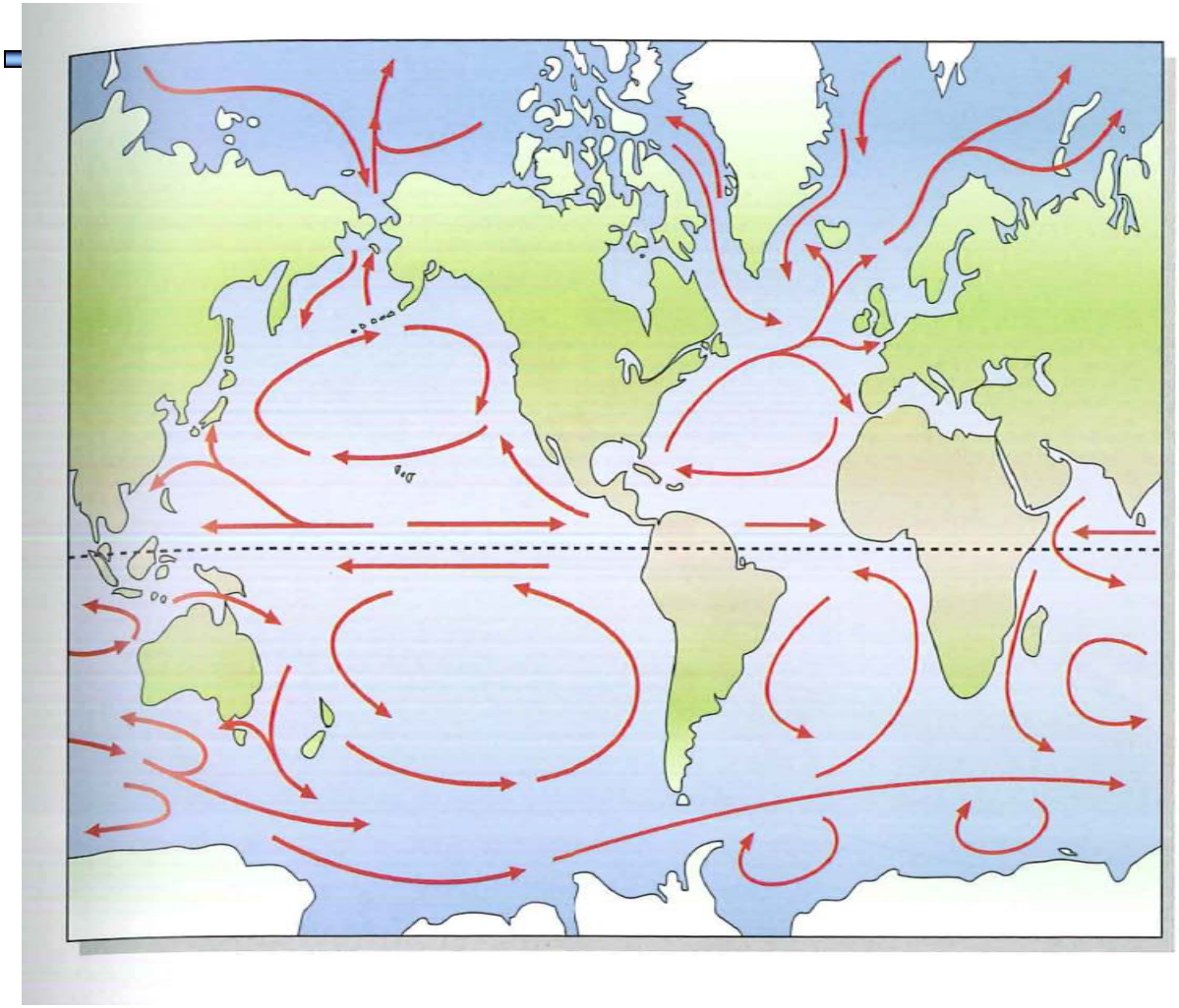
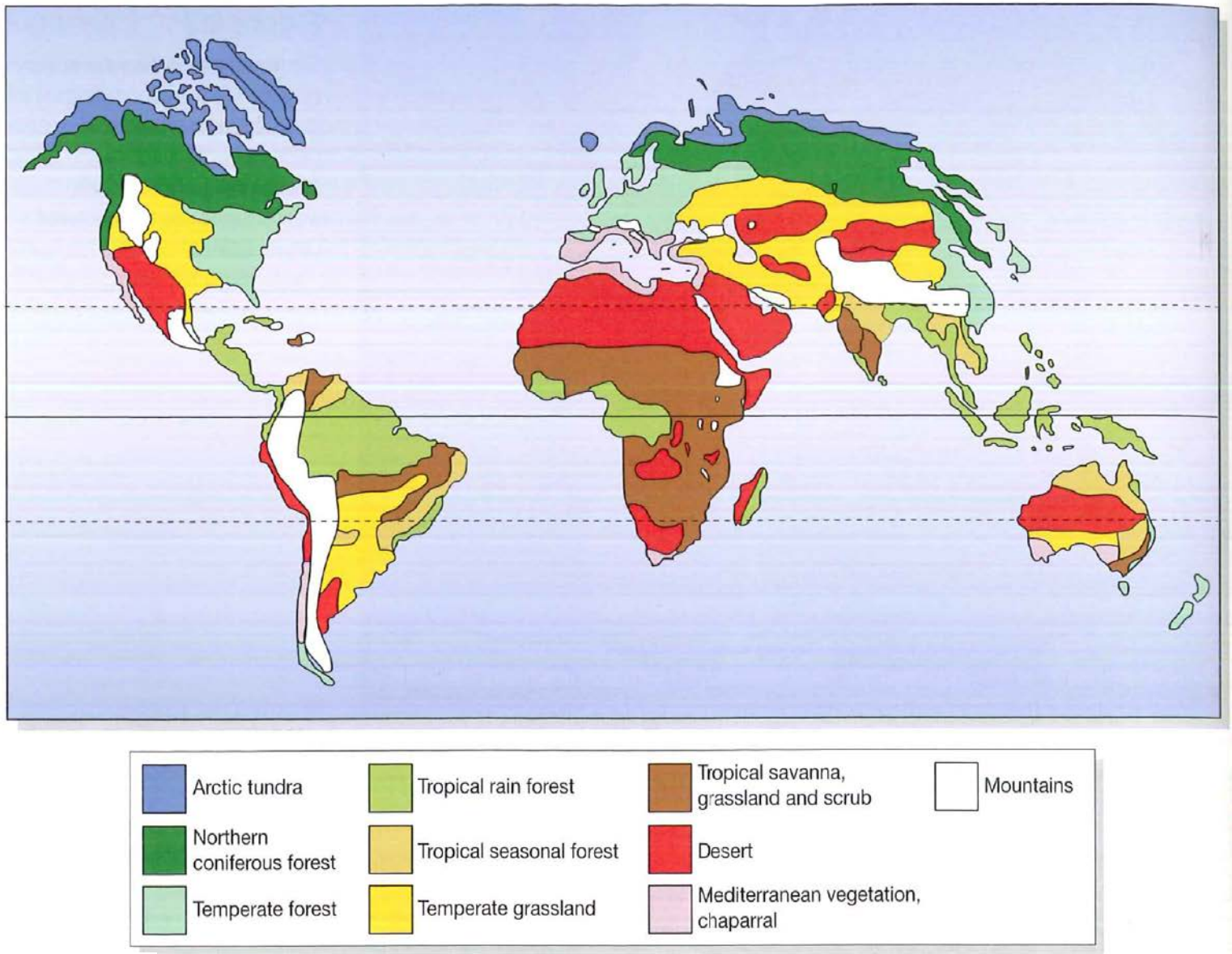


Figure 4.2

The movements of the major ocean currents. The general circulation in the northern hemisphere is clockwise, in the southern hemisphere counterclockwise, with consequences for continental climate patterns.

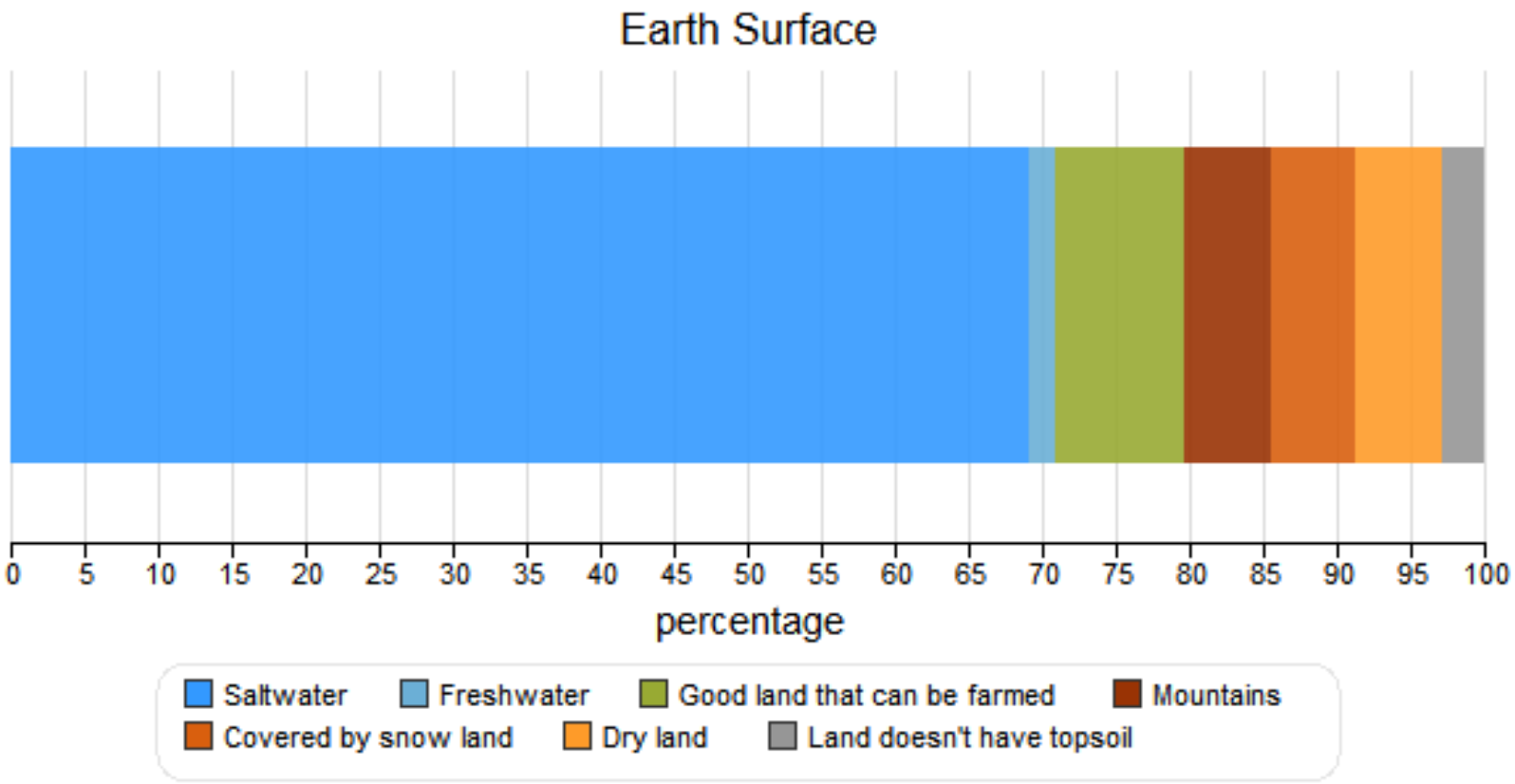
Source: Townsend, C. R., Begon, M. and Harper, J. L., Essentials in Ecology, 2008, p. 113.



World distribution of the Earth's biomes.

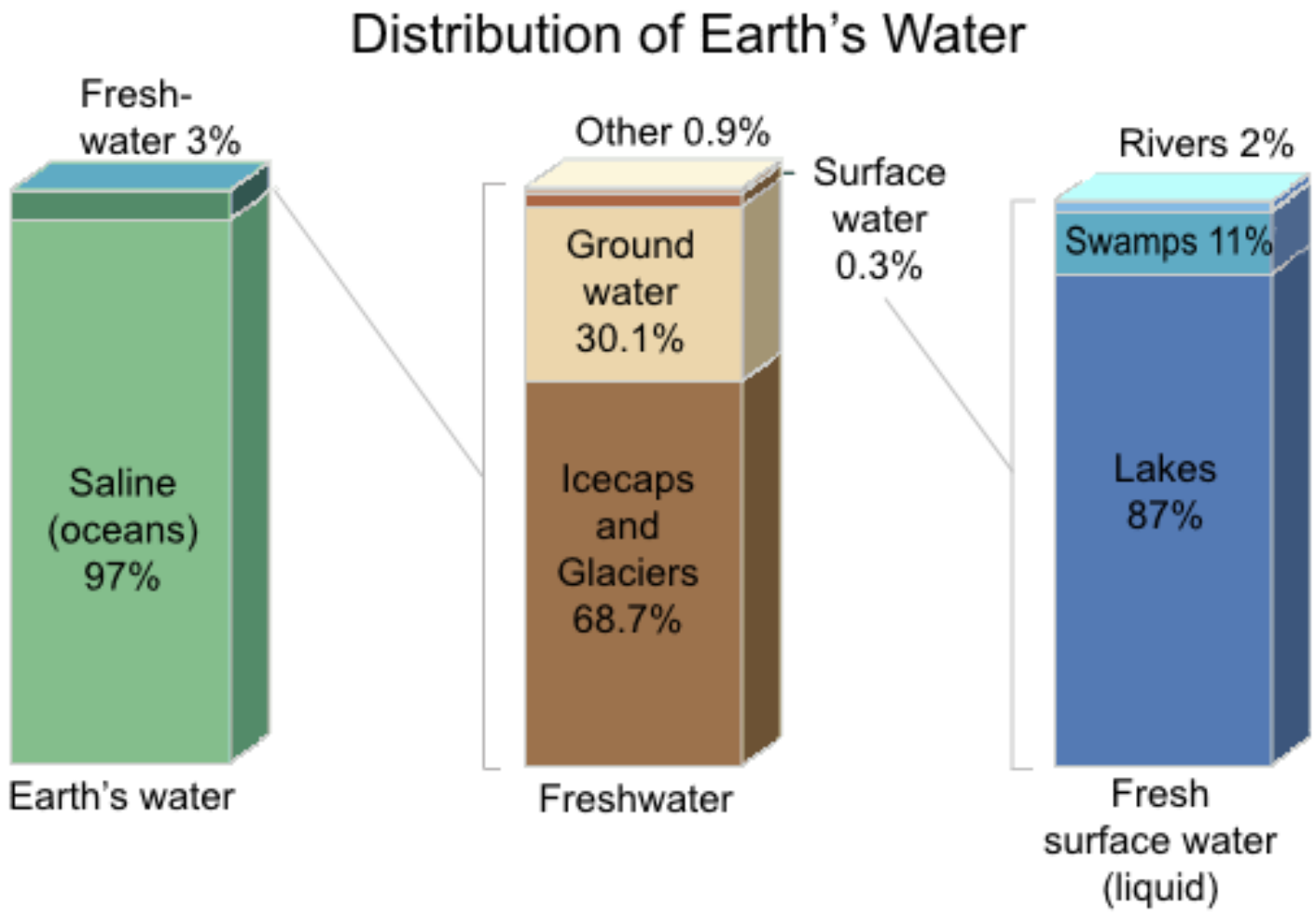
Source: Townsend, C. R., Begon, M. and Harper, J. L., Essentials in Ecology, 2008, p. 114.

Soil



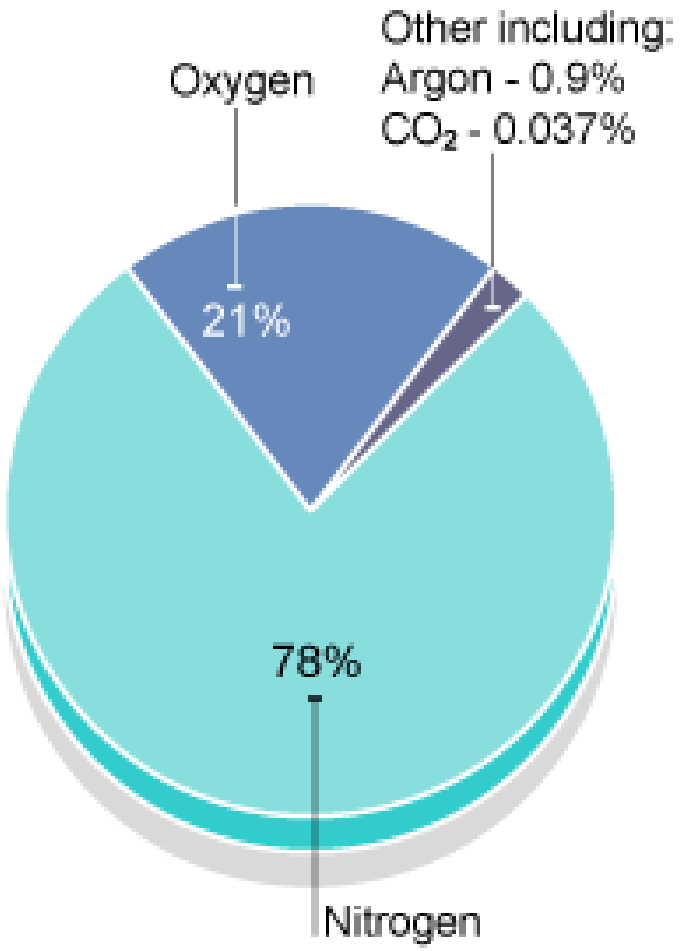
Source: http://chartsbin.com/view/1840

Water



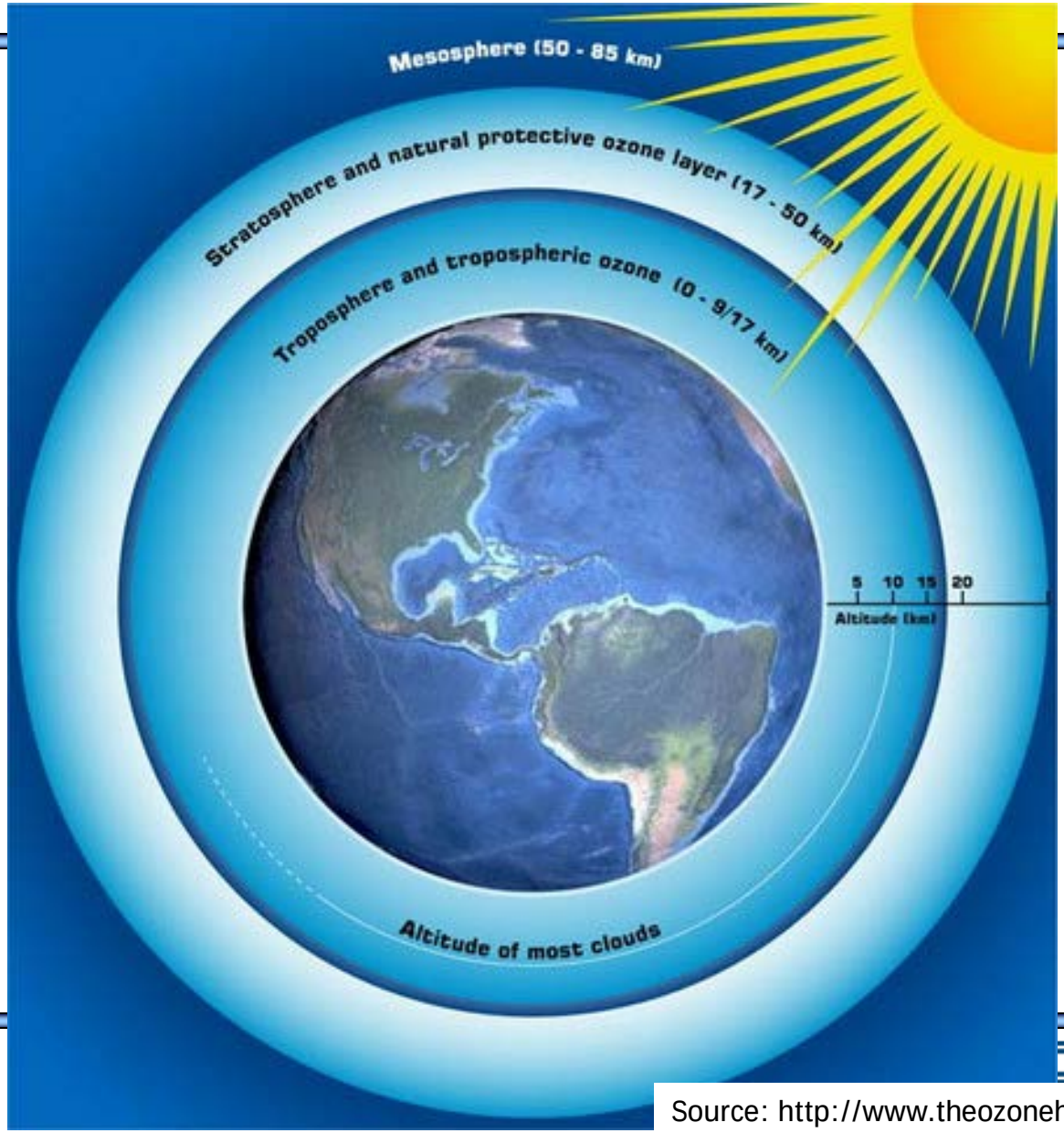
Source: http://upload.wikimedia.org/wikipedia/commons/5/58/Earth%27s_water_distribution.svg

Composition of Air



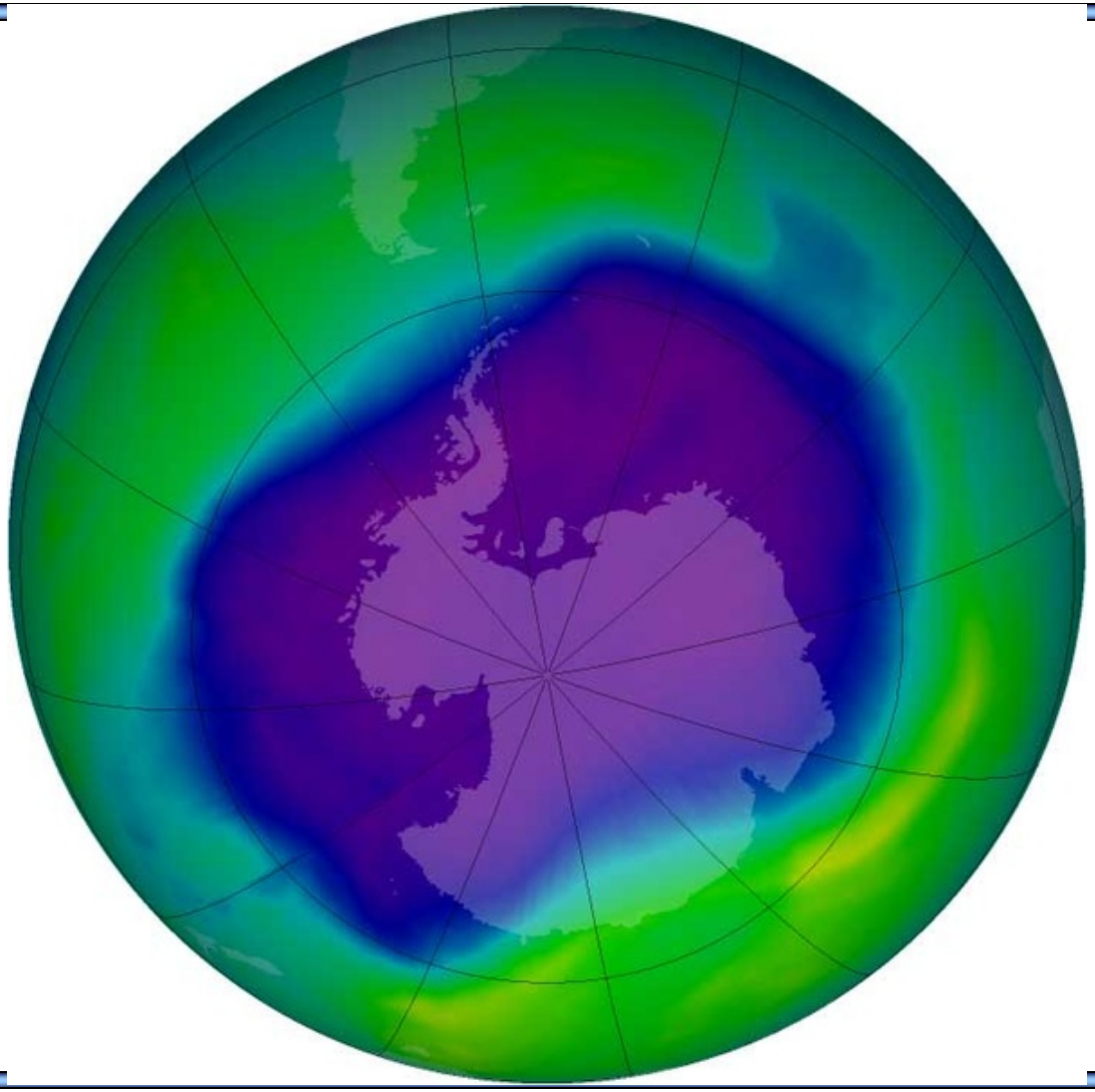
Source: http://www.bbc.co.uk/schools/gcsebitesize/science/edexcel_pre_2011/oneearth/usefulproductsrev1.shtml

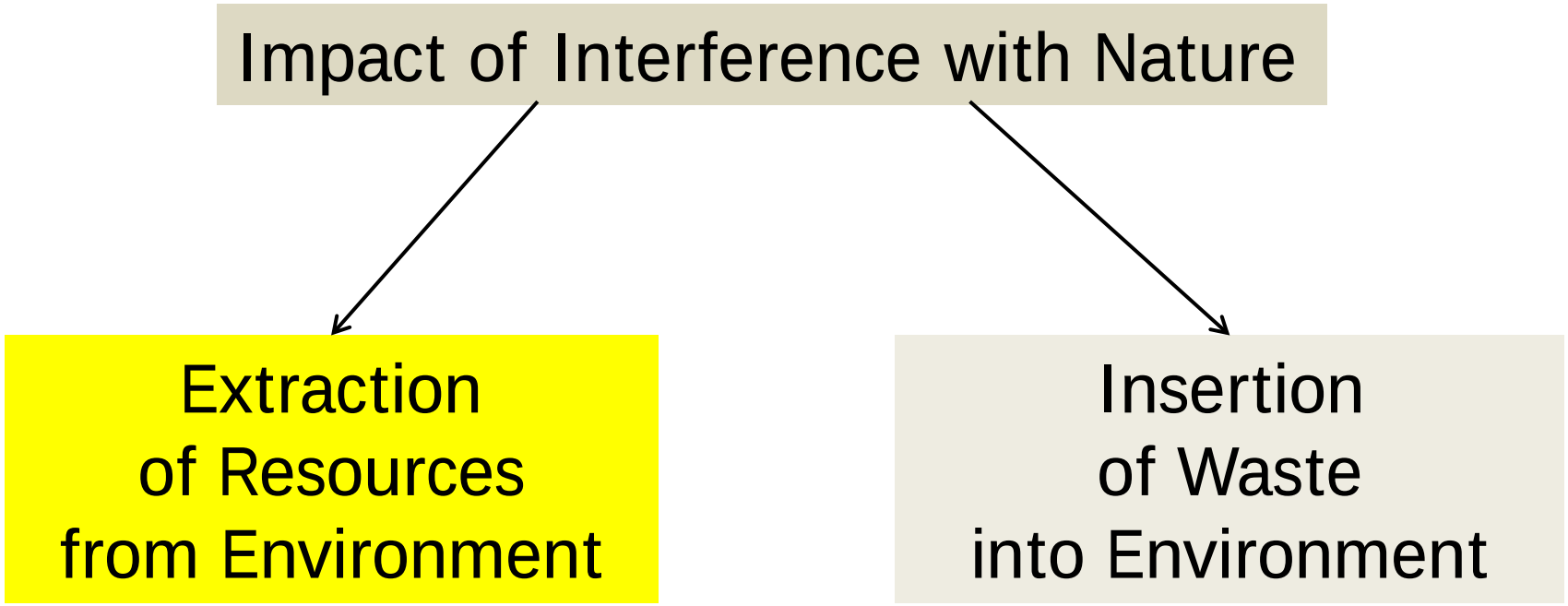
Ozone Layer



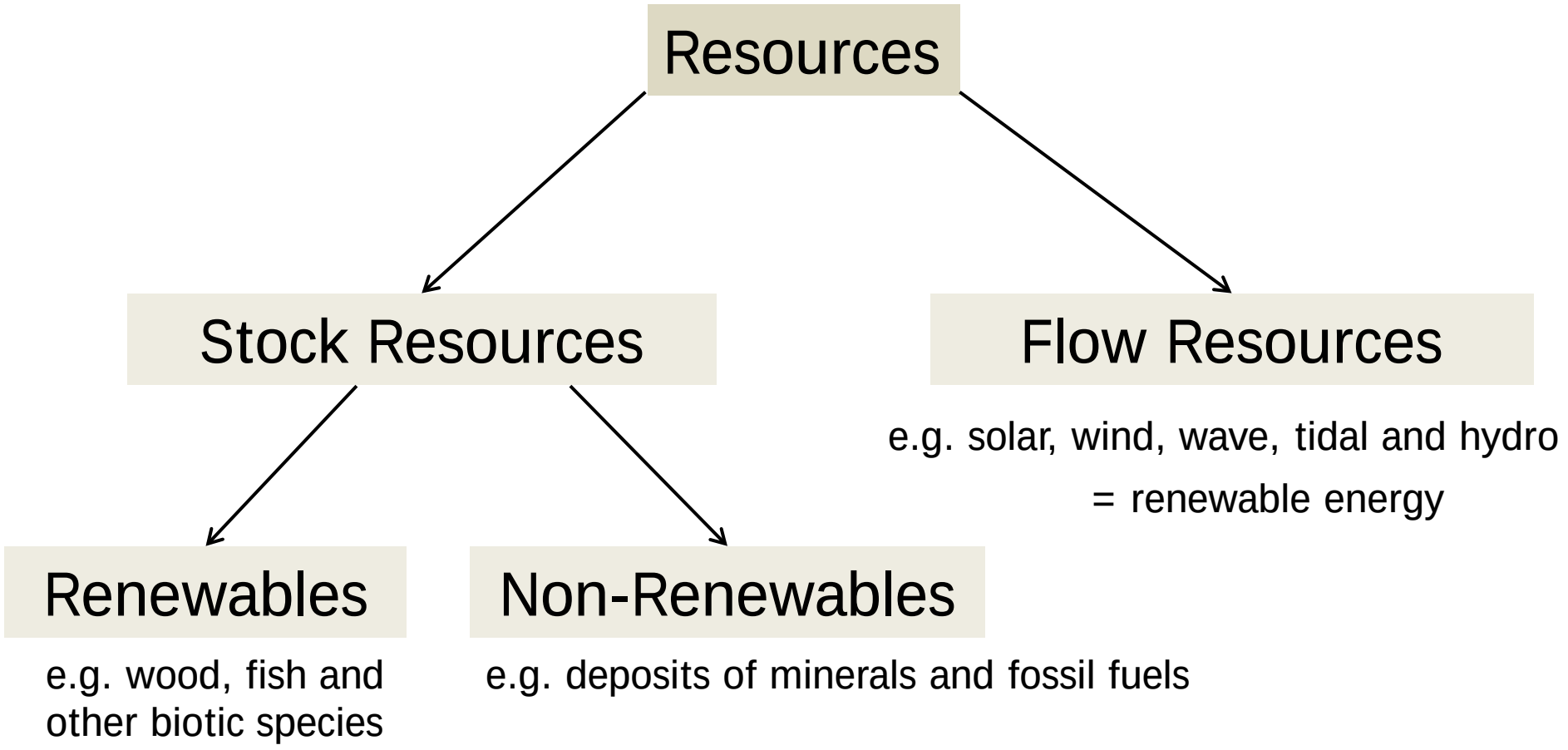
Source: http://www.theozonehole.com/ozonelayer.htm

Image of the largest Antarctic ozone hole ever recorded (September 2006).

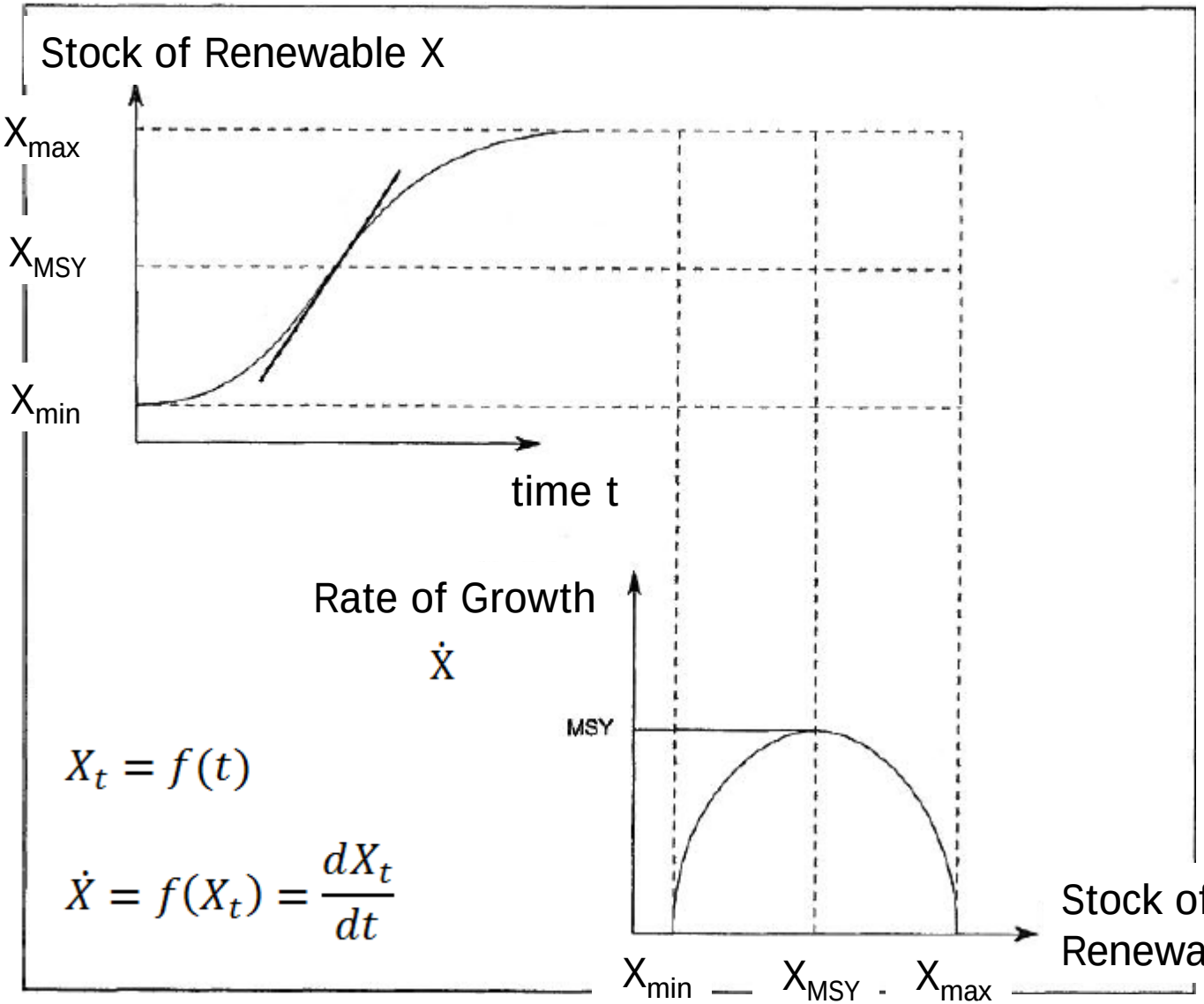



Impact of Interference with Nature
Extraction of Resources from Environment
Insertion of Waste into Environment

Resource Extraction from Nature – Management of Resources

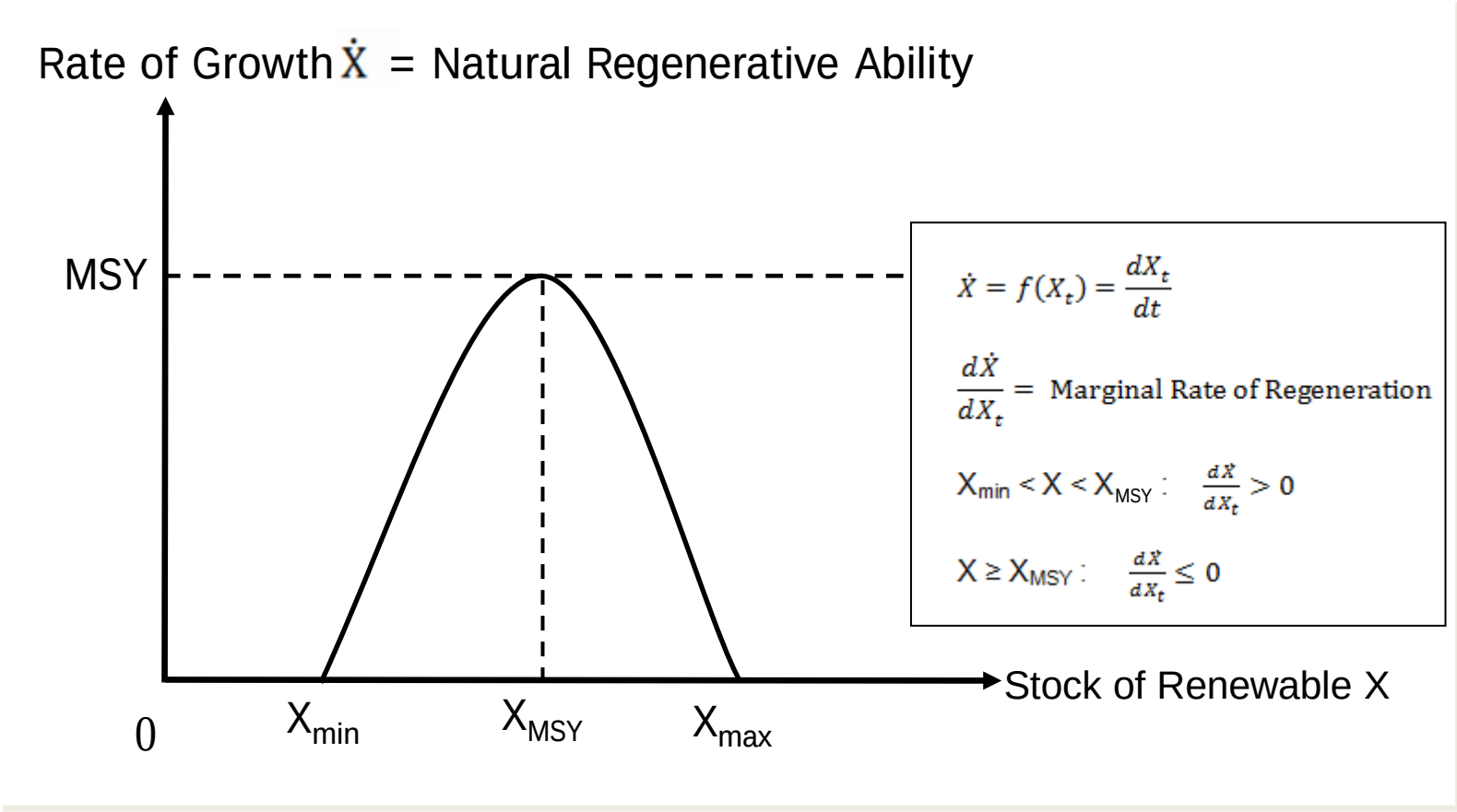


Stock of Renewables and Rate of Growth



Source: Barbian, D., 2001, p. 113; and Pearce/Turner, 1990, p. 242.

Management of Renewable Resources – Function of Regeneration



MSY = Maximum Sustainable Yield

Harvest of Renewable Resources (1)

Harvest Rate = MSY is the highest feasible harvest

Case A $(X = X_{MSY})$

- no stock reduction
- rate of harvest at rate of natural regeneration
- stock of renewables is available for future generations

Case B $(X_{\min} < X < X_{MSY})$

- partial stock reduction
- consumption is higher than natural regeneration
- reduced stock of renewable with reduced natural regenerative ability

Case C $(X = X_{\min})$

- stock is heavily reduced
- natural regenerative ability is just zero
- no availability for future generations

Harvest of Renewable Resources (2)

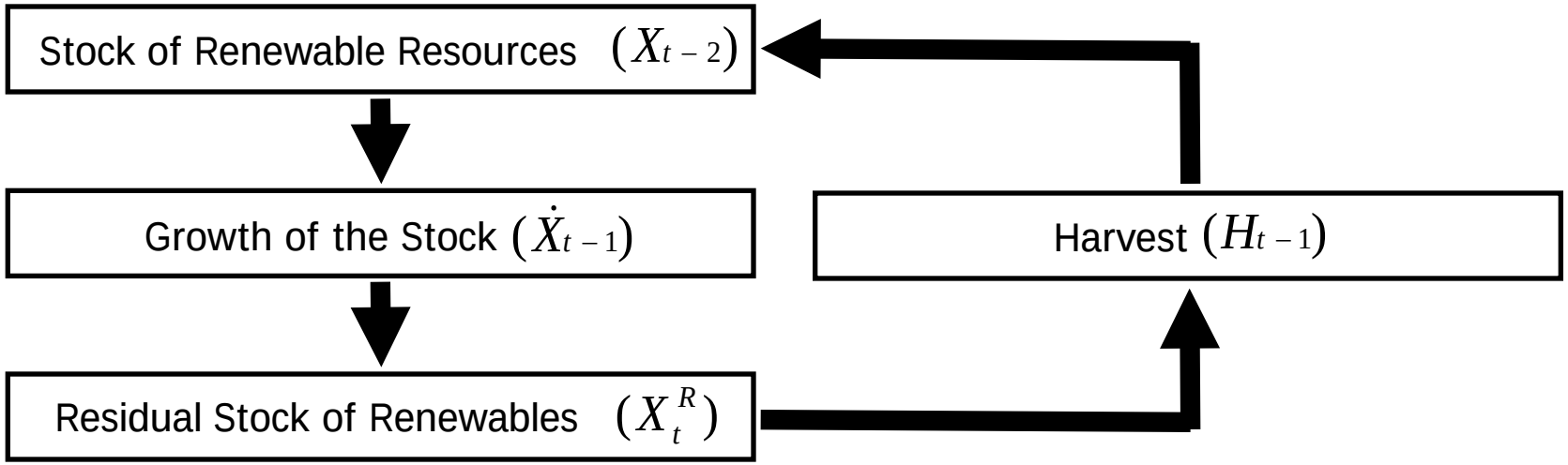
Case D $\left(X_{MSY} < X < X_{\max}\right)$

- partial stock reduction
- consumption is higher than natural regeneration
- reduced stock of renewable, but with remaining natural regenerative ability

Case E $\left(X = X_{\max}\right)$

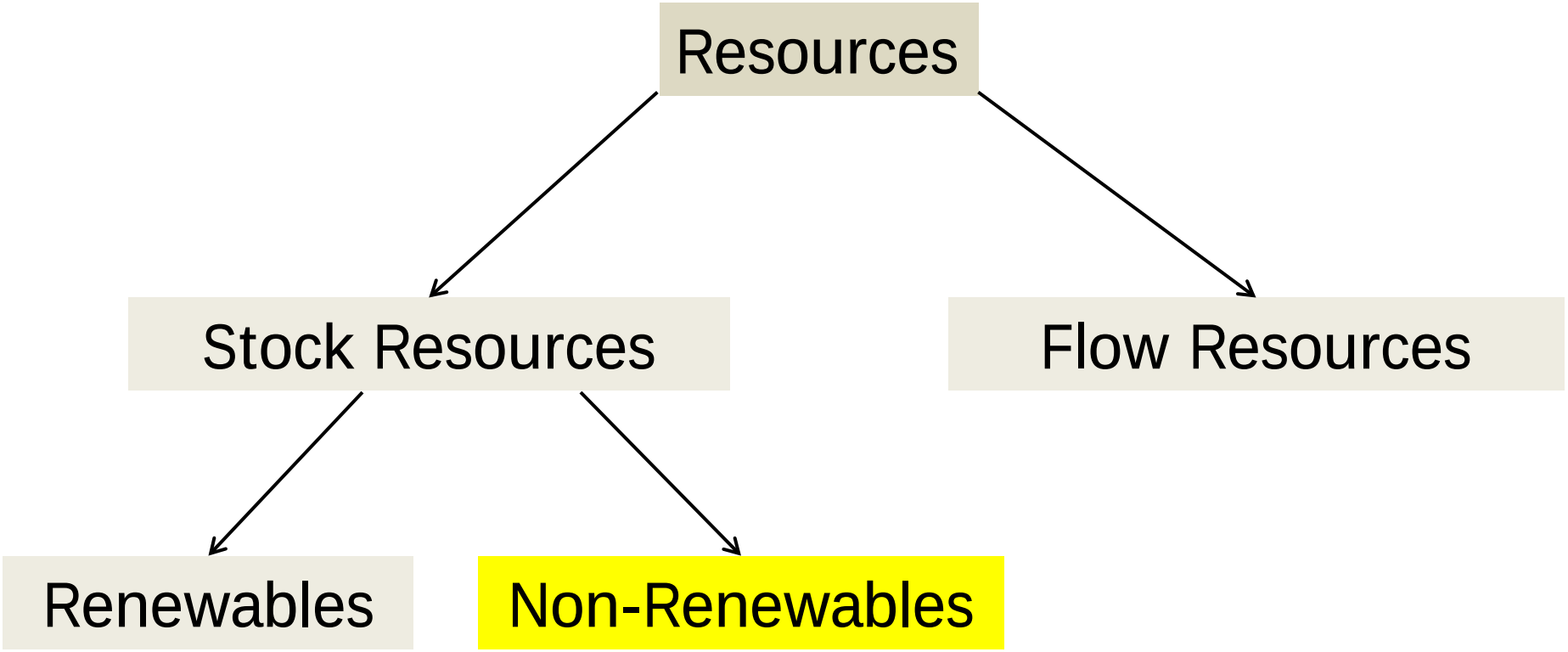
- stock is at saturation level
- natural regenerative ability is just zero
- remaining availability for future generations

Harvest of Renewable Resources according to time t

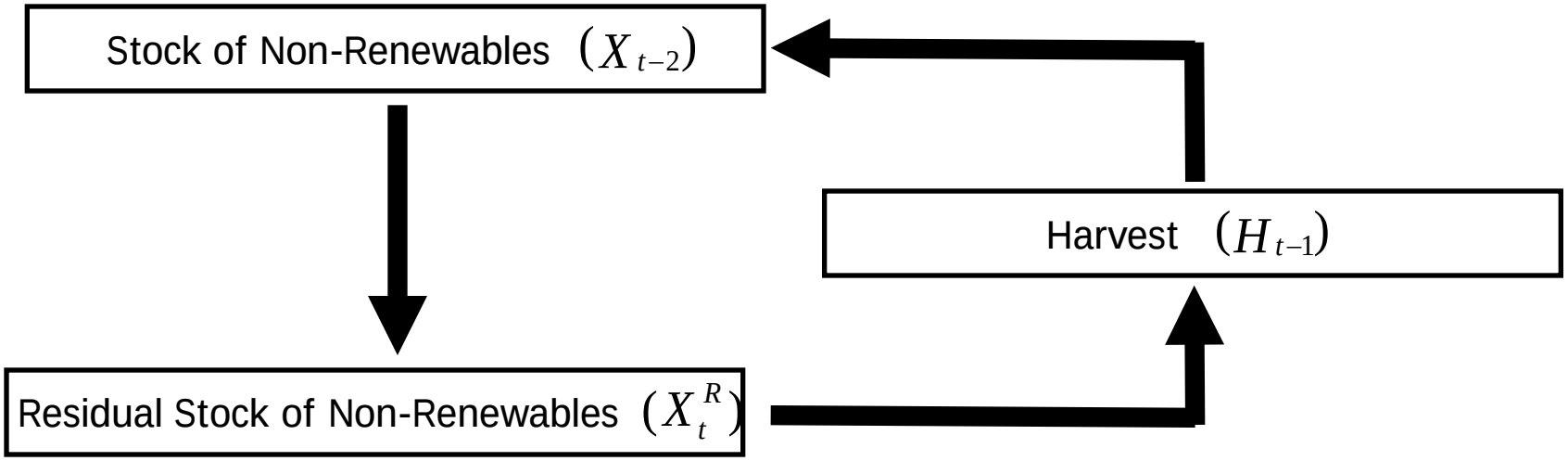


Formula: $X_t^R = X_{t-2} + \dot{X}_{t-1} - H_{t-1}$

Resource Extraction from Nature – Management of Resources



Management of Non-Renewable Resources



Formula: $X_t^R = X_{t-2} - H_{t-1}$

Harvest of Non-Renewables

Consequences

- every consumption by current generation reduces the availability for future generations
- the higher current consumption rate, the lower future availability

Additional Problems

- no secure information about existing stocks
- uncertainty about future preferences, demands, technical substitution

Intergenerational Use of Non-Renewables

$$\lim_{g \to \infty} \frac{X}{g} = 0$$

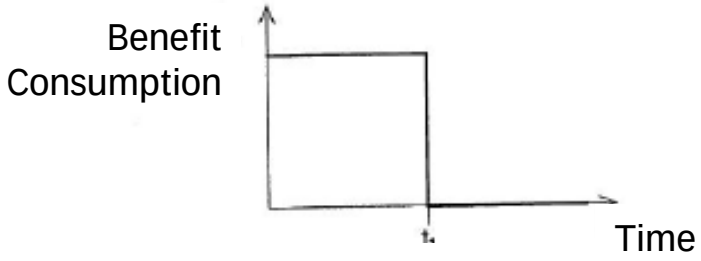
with

X = Stock of Non-Renewable

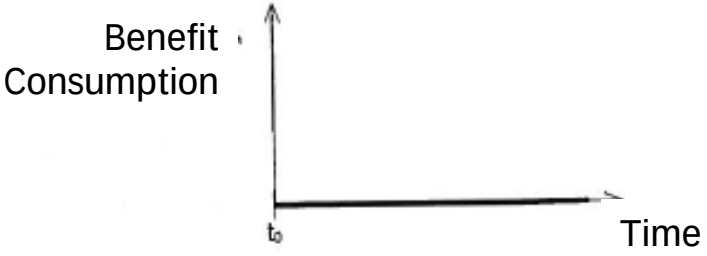
g = Number of Generations

Management of Non-Renewables

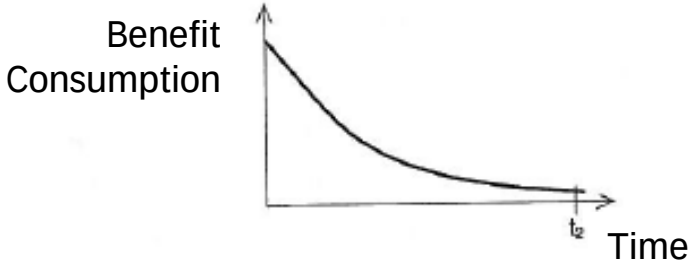
a) Overexploitation



b) No Exploitation

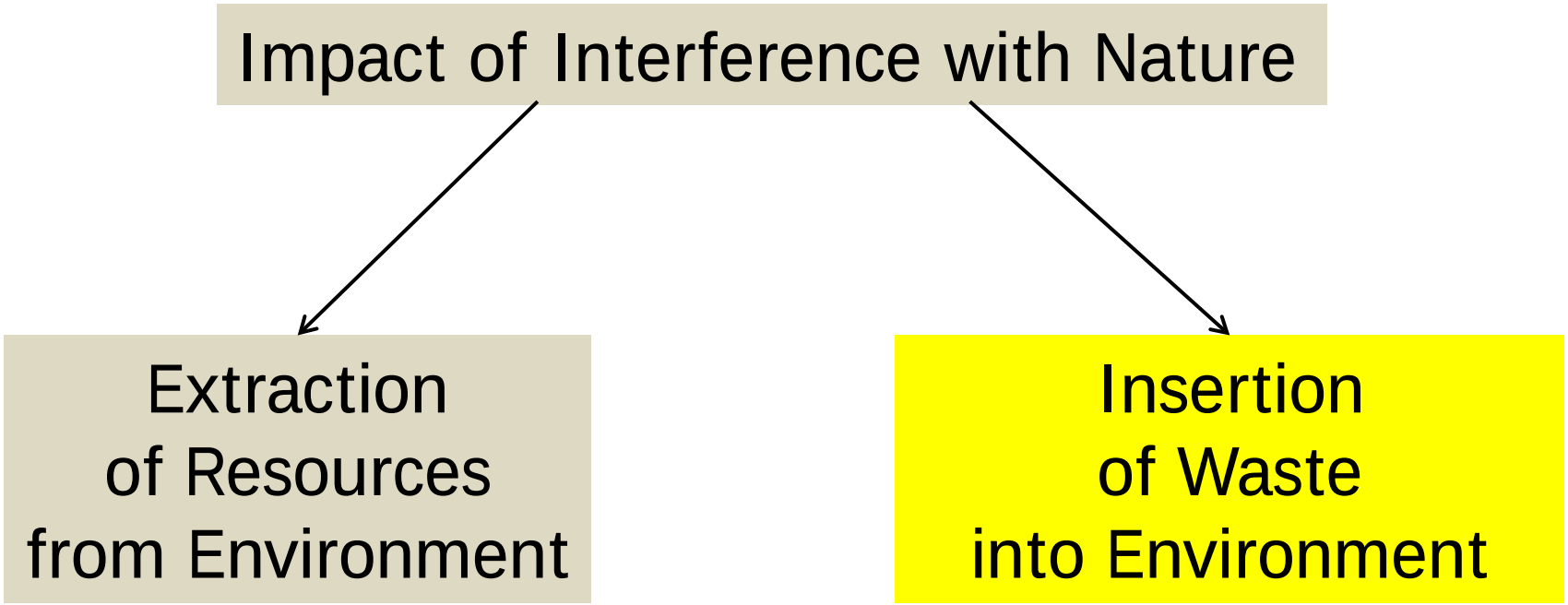


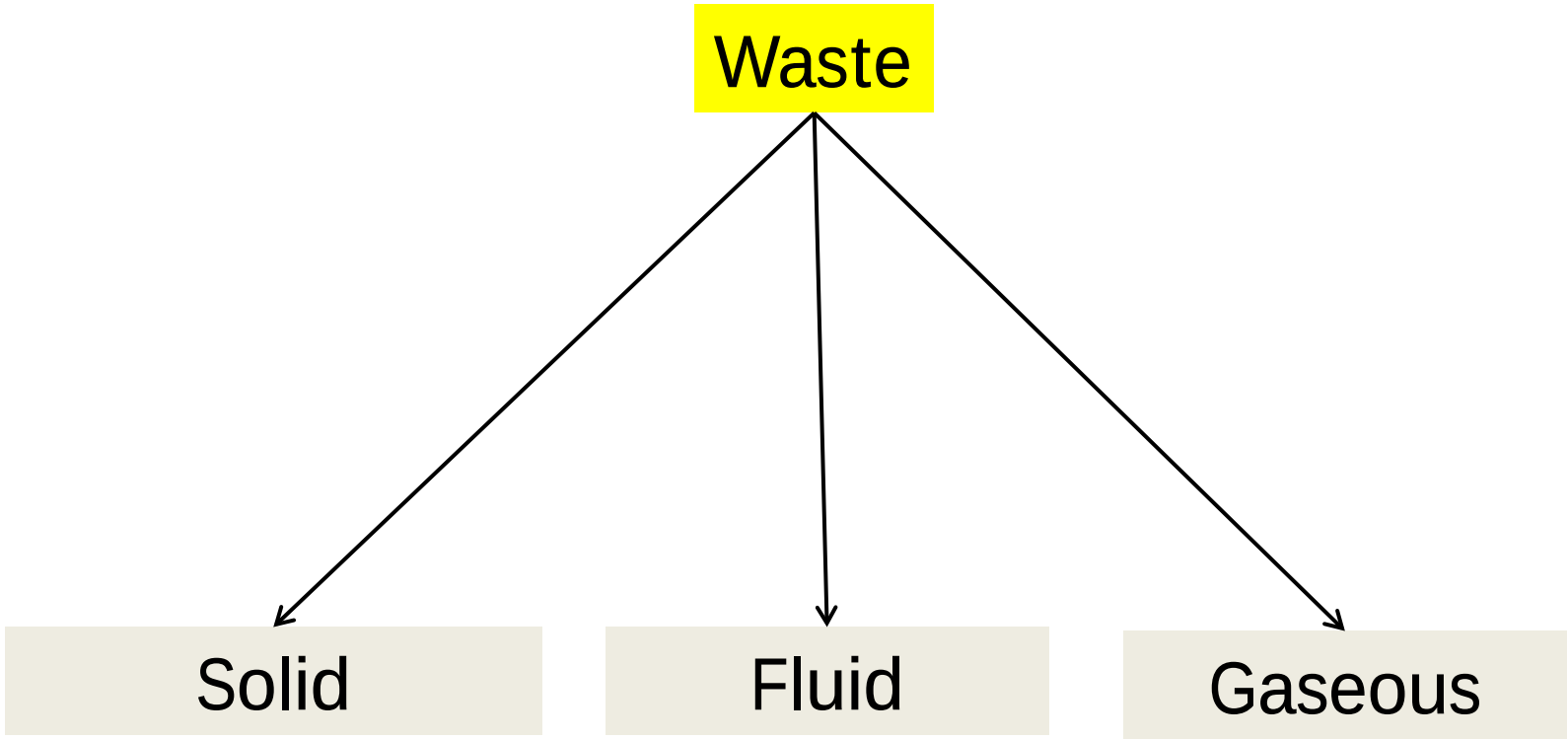
c) Relative Exploitation



$t_0 < t_1 < t_2$

Source: Barbian, D., 2001, p. 170.


Impact of Interference with Nature
Extraction of Resources from Environment
Insertion of Waste into Environment



Source: Common/Stagl (2005) Ecological Economics, p. 337ff.

Waste – Emission and Pollution

Common and Stagl (2005, p. 98):

Waste: unwanted by-product of economic activity

Emission: flow of waste into environment

Pollution: waste can lead to pollution, when the emission is harmful to any living organism

Management of Wastes

waste treatment: the modification of waste before its discharge into the environment so as to reduce the damage arising (Common and Stagl, 2005, p. 106)

Overview

VI. Major Objective: A Sustainable World

1. Our World and our Limits

1.1 Basics

1.2 Elements to Sustain Life and Carrying Capacity

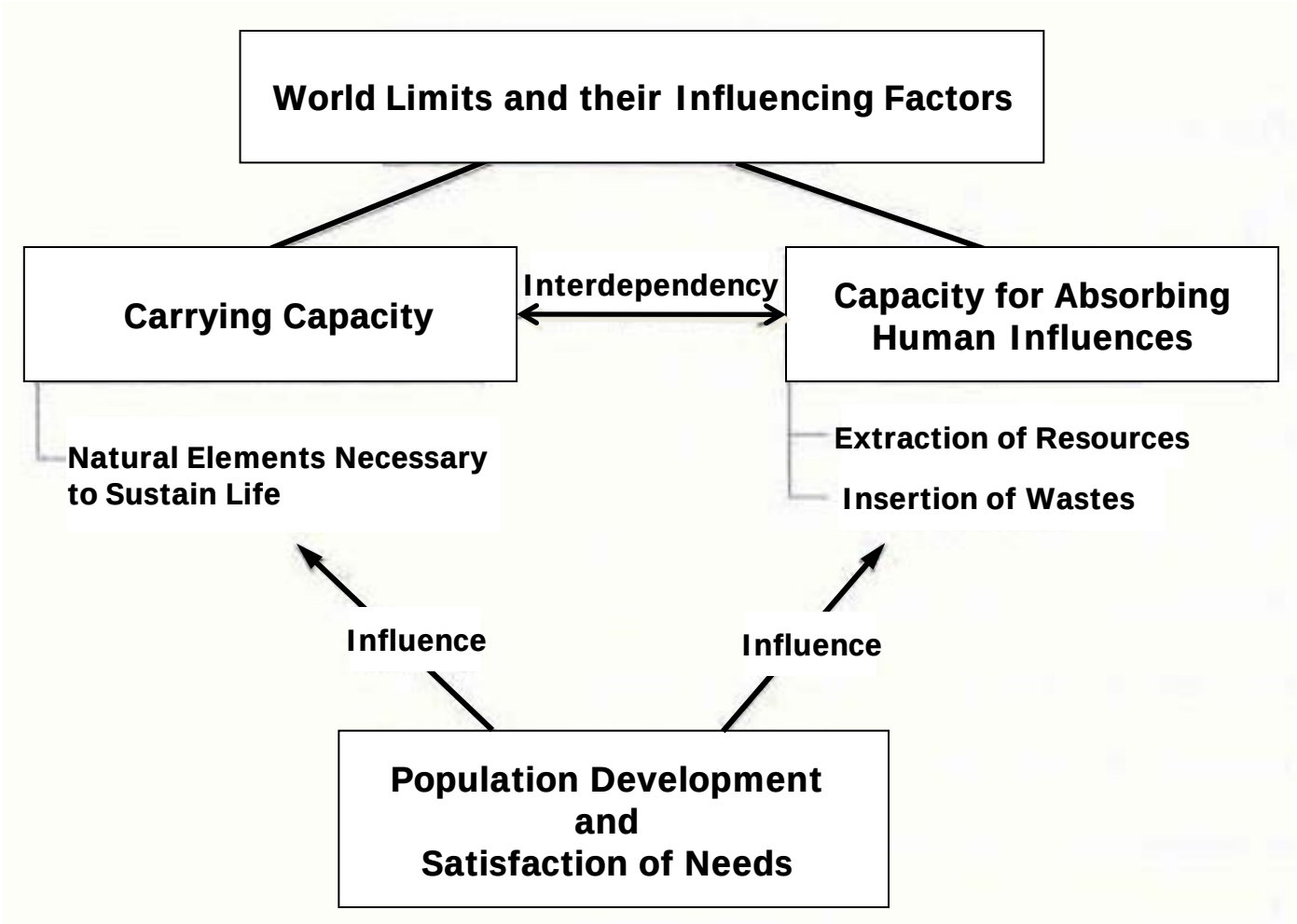
1.3 Impact of Interference with Nature

a) Resource Extraction from Ecological System

b) Waste Insertion into Ecological System

1.4 Influencing Factors to Ecological System

Limits and Influencing Factors

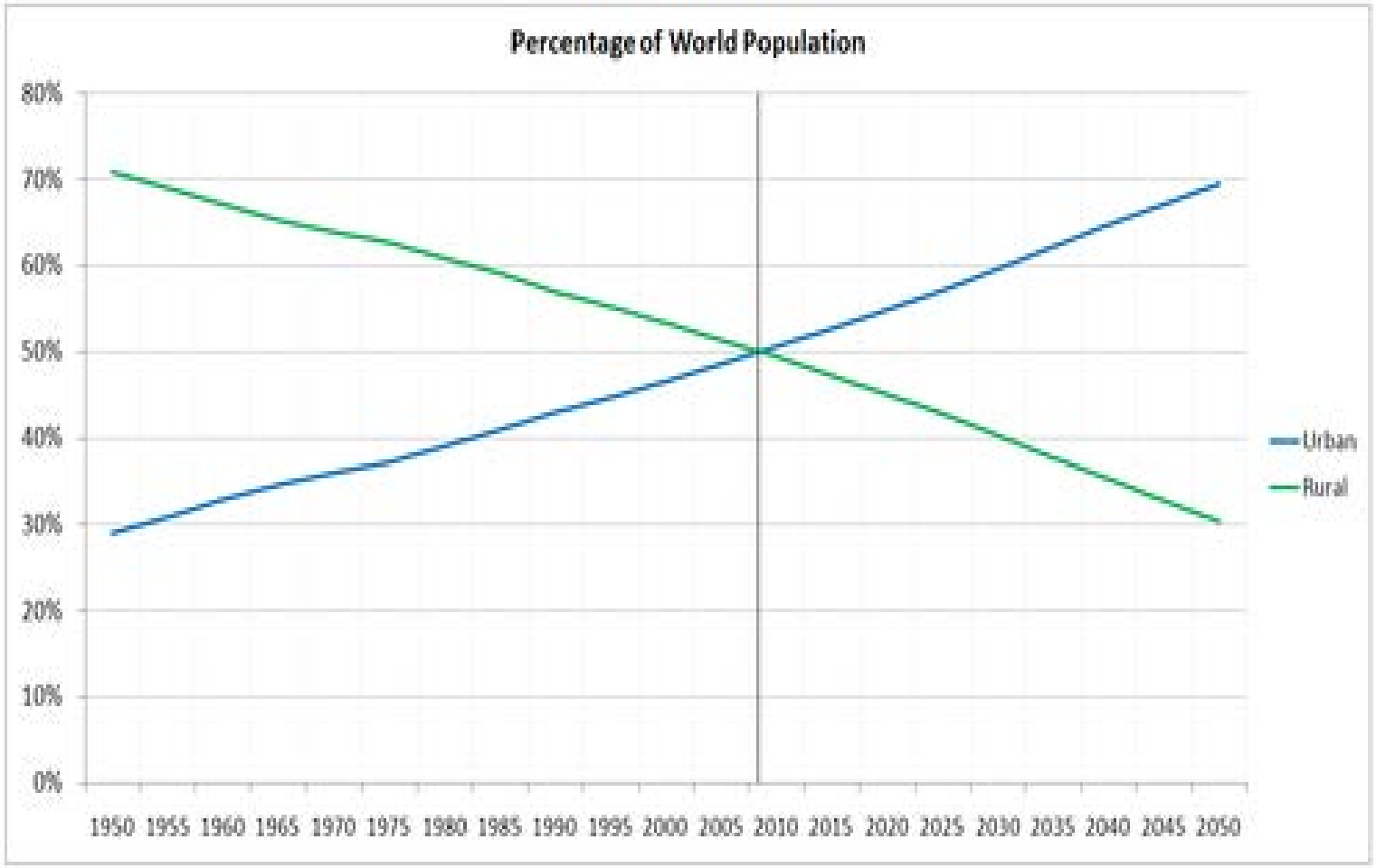


Source: Barbian, D., 2001, p. 200.

Causes and Effects for Environmental Degradation

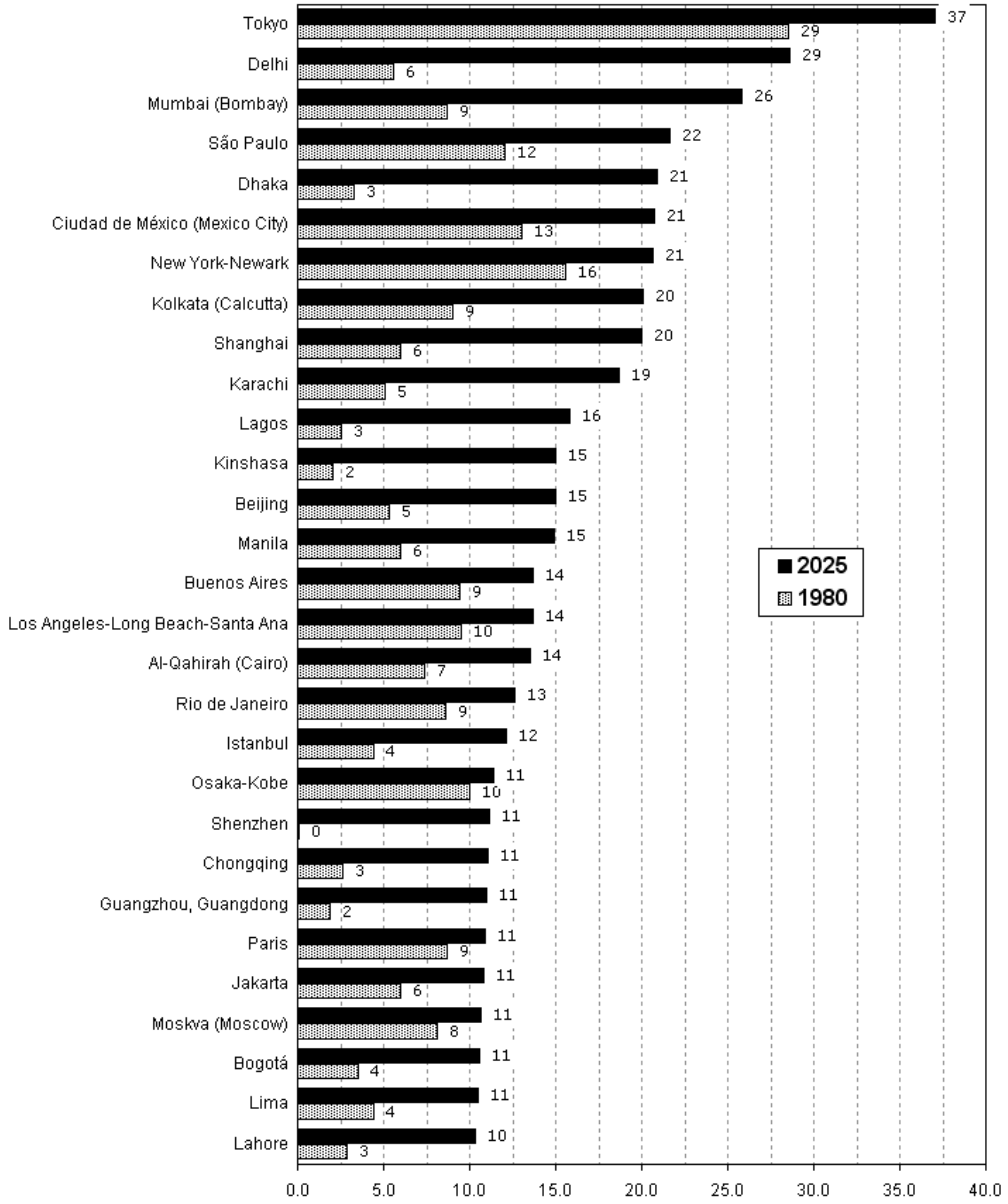
Source: Barbian, D., 2001, p. 164.

Percentage of World Population: Urban vs. Rural



Data Source: United Nations, http://esa.un.org/unup/p2k0data.asp

Population of the 29 urban agglomerations that are expected to become mega-cities in 2025



Source: United Nations, Department of Economic and Social Affairs, Population Division: *World Urbanization Prospects, the 2009 Revision*. New York, 2010

D. Bar

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

Satisfying Needs

Need: something that is necessary for organisms for survival and to live a healthy life

Want: something that a person would like to have

Source: http://www.socialstudiesforkids.com/articles/economics/wantsandneeds1.htm

Maslow's hierarchy of needs

Some Basic Needs – What is enough? What makes people happy?

Health

Wealth Clothes Food Clean Water

Heating

Lighting Energy

Cooling Transportation

Communication

FAO (World Food Summit 1974): „Every man, woman and child has the inalienable right to be free from hunger and malnutrition in order to develop their physical and mental faculties.“

Some Basic Needs – Focus: Food (incl. Water) and Energy

Health

Wealth Clothes Food Clean Water

Heating

Lighting Energy

Cooling Transportation

Communication

FAO Hunger Map 2013

PROPORTION OF Total Population Undernourished

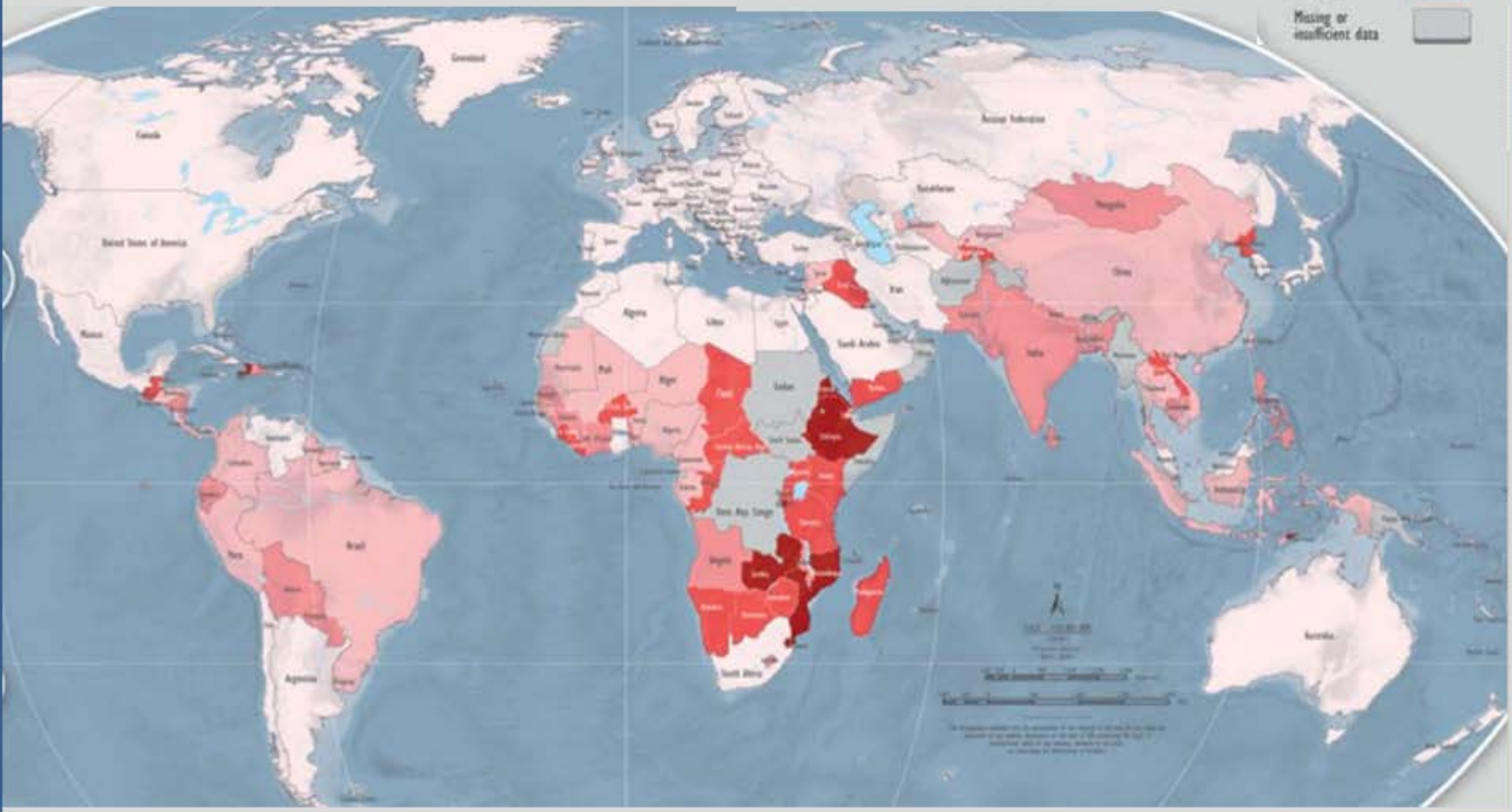
IN 2011 - 2013

Progress in reducing hunger is assessed against two key targets: the 1996 World Food Summit (WFS) target aims at halving the **number** of undernourished by 2015, while the first Millennium Development Goal (MDG) aims at halving the **proportion** of hungry people by 2015.

- In 2011–13 a total of 827 million people were hungry in developing regions. This number has fallen by 169 million, or 17 percent, since 1990–92.
- More than 60 countries have reached or are expected to reach the MDG hunger target. Significant reductions have occurred in most countries of Eastern and South-Eastern Asia, and in Latin America.
- The World Food Summit target is out of reach, at least at the global level. Yet approximately 20 countries have met the target or are estimated to do so by 2015.
- In 16 countries, undernourishment estimates for 2011–13 either point to a lack of progress or a deterioration of food security conditions since 1990–92. Nine of these countries are in sub-Saharan Africa, the region with the highest prevalence of undernourishment and where only modest progress has been made in recent years.

Legend

- < 5% Very low
- 5 —▸ 14.9% Moderately low
- 15 —▸ 24.9% Moderately high
- 25 —▸ 34.9% High
- 35% and over Very high
- Missing or insufficient data



FAO

Achieving food security for all is at the heart of FAO's efforts – to make sure people have regular access to enough high-quality food to lead active, healthy lives.

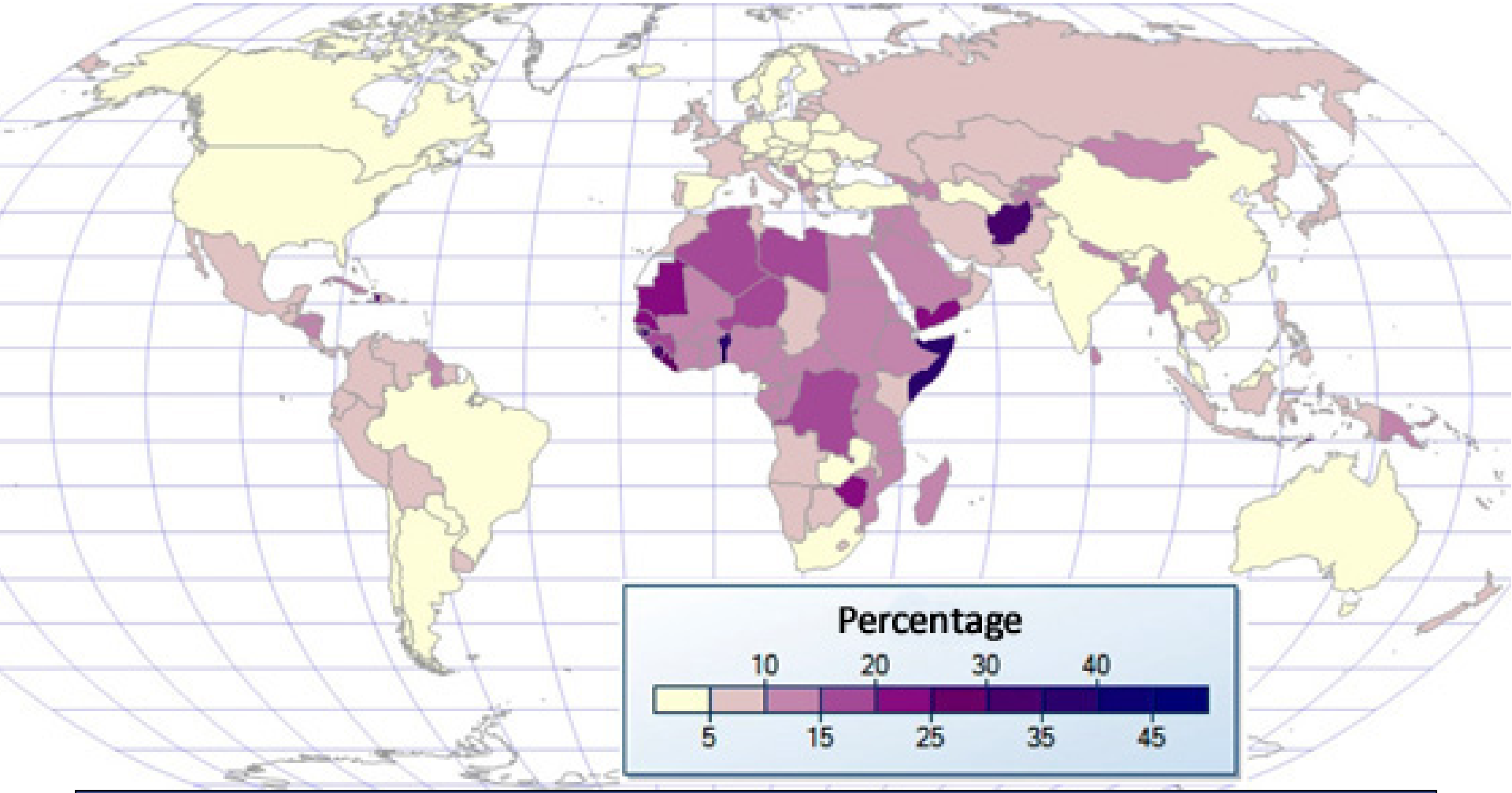
Our mandate is to improve nutrition, increase agricultural productivity, raise the standard of living in rural populations and contribute to global economic growth.

Our strategic objectives

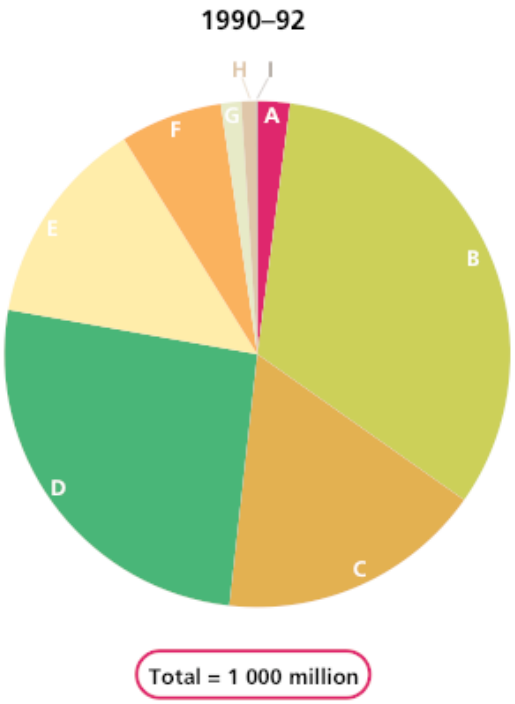
Help eliminate hunger, food insecurity and malnutrition	Make agriculture, forestry and fisheries more productive and sustainable	Reduce rural poverty	Enable inclusive and efficient agricultural and food systems	Increase the resilience of livelihoods from disasters

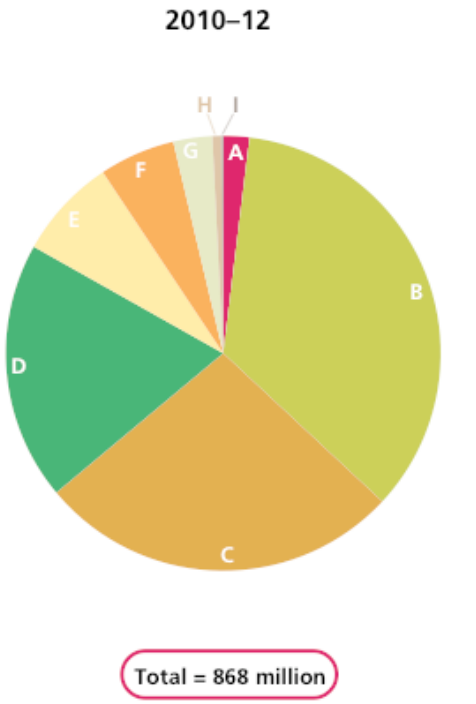
was founded in 1945 in Quebec

Food Insecurity



The distribution of hunger in the world is changing
Number of undernourished by region, 1990–92 and 2010–12





Number of undernourished *(millions)*	1990–92	2010–12
A Developed regions	20	16
B Southern Asia	327	304
C Sub-Saharan Africa	170	234
D Eastern Asia	261	167
E South-Eastern Asia	134	65
F Latin America and the Caribbean	65	49
G Western Asia and Northern Africa	13	25
H Caucasus and Central Asia	9	6
I Oceania	1	1

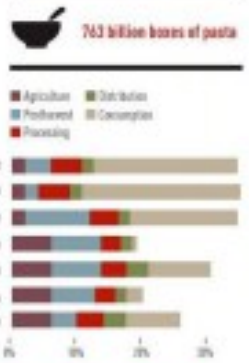
Source: FAO, 2012

HALF THE WORLD WASTES ENOUGH FOOD TO FEED THE OTHER HALF.
CHARLES EISENSTEIN

30% CEREALS FOOD LOSSES

In industrialized countries, consumers throw away 286 million tonnes of cereal products.

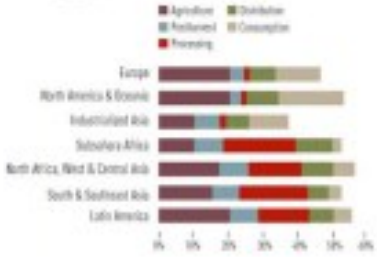
763 billion boxes of pasta



45% FRUIT & VEGETABLES FOOD LOSSES

Along with roots and tubers, fruit and vegetables have the highest wastage rates of any food products: almost half of all the fruit and vegetables produced are wasted.

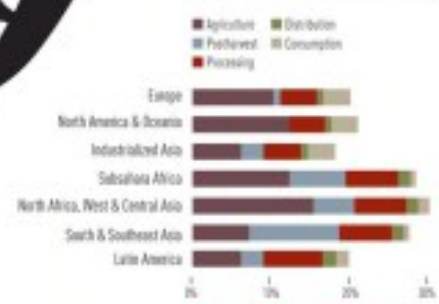
3.7 trillion apples.



20% OILSEEDS & PULSES FOOD LOSSES

Every year, 22% of the global production of oilseeds and pulses is lost or wasted.

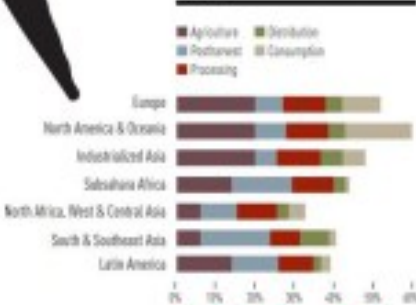
This is the same as the olives needed to produce enough olive oil to fill nearly 11,000 Olympic-sized swimming pools.



45% ROOTS & TUBERS FOOD LOSSES

In North America & Oceania alone, 5,814,000 tonnes of roots and tubers are wasted at the consumption stage alone.

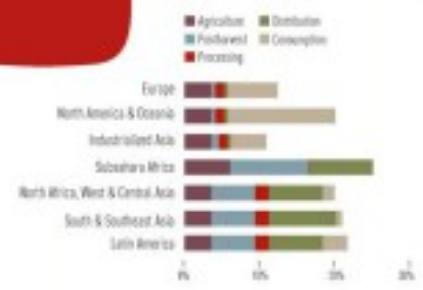
This equates to just over 1 billion bags of potatoes.



20% DAIRY FOOD LOSSES

In Europe alone, 29 million tonnes of dairy products are lost or wasted every year.

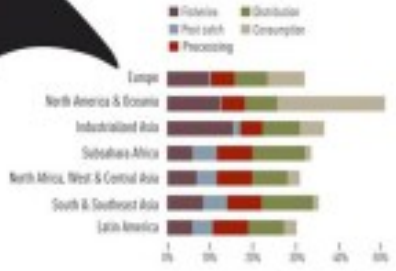
This is the same as 574 billion eggs.



30% FISH & SEAFOOD FOOD LOSSES

8% of fish caught globally is thrown back into the sea. In most cases they are dead, dying or badly damaged.

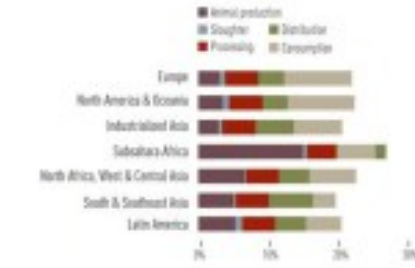
This is equal to almost 3 billion Atlantic salmons.



20% MEAT FOOD LOSSES

Of the 263 million tonnes of meat produced globally, over 20% is lost or wasted.

This is equivalent to 75 million cows.



"The world currently produces enough food for everybody, but many people do not have access to it."

"There is enough food in the world today for everyone to have the nourishment necessary for a healthy and productive life."

The world produces 17% more food per person today than 30 years ago.

208 recipes against hunger

success stories for the future of agriculture

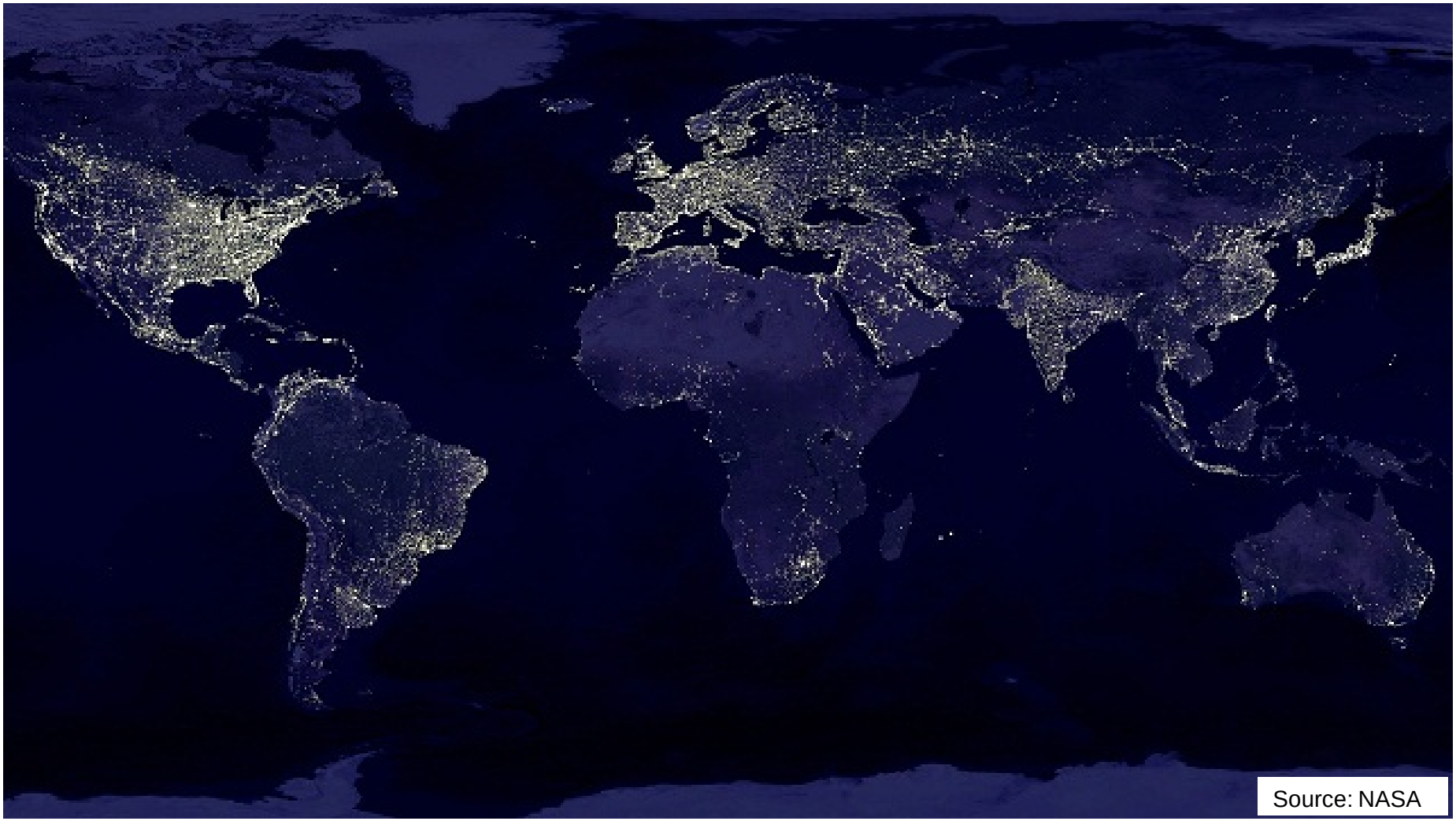
august 2001

Bees – more than honey

¾ of food production depends on bees

'If the bee *disappeared* off the face of the earth, man would only have four years left to live.'
(Albert Einstein)

World Energy Situation



Important Institutions

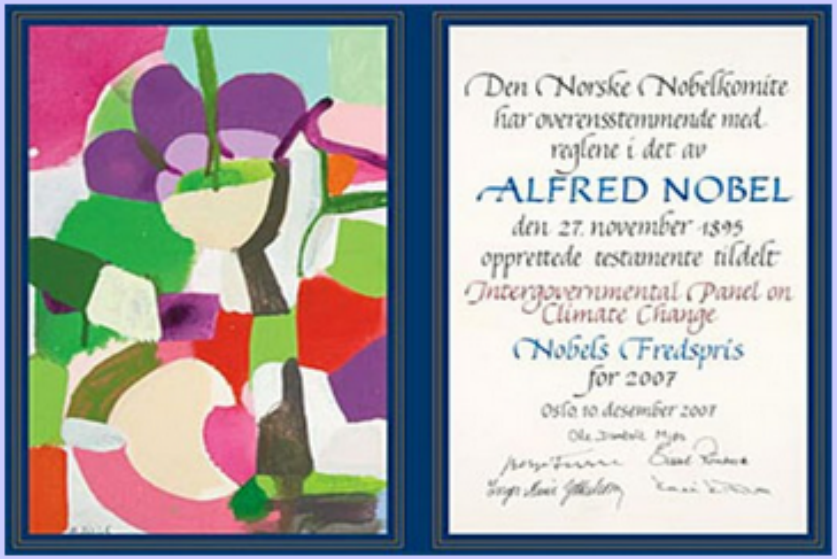
1. World Energy Council: http://www.worldenergy.org/
2. EIA, Energy Information Administration: http://www.eia.gov/
3. IPCC: http://www.ipcc.ch/
4. Berkeley Earth: http://berkeleyearth.org/

IPCC – Intergovernmental Panel on Climate Change

= leading international body for the assessment of climate change

Observed Changes in the Climate System since 1950:

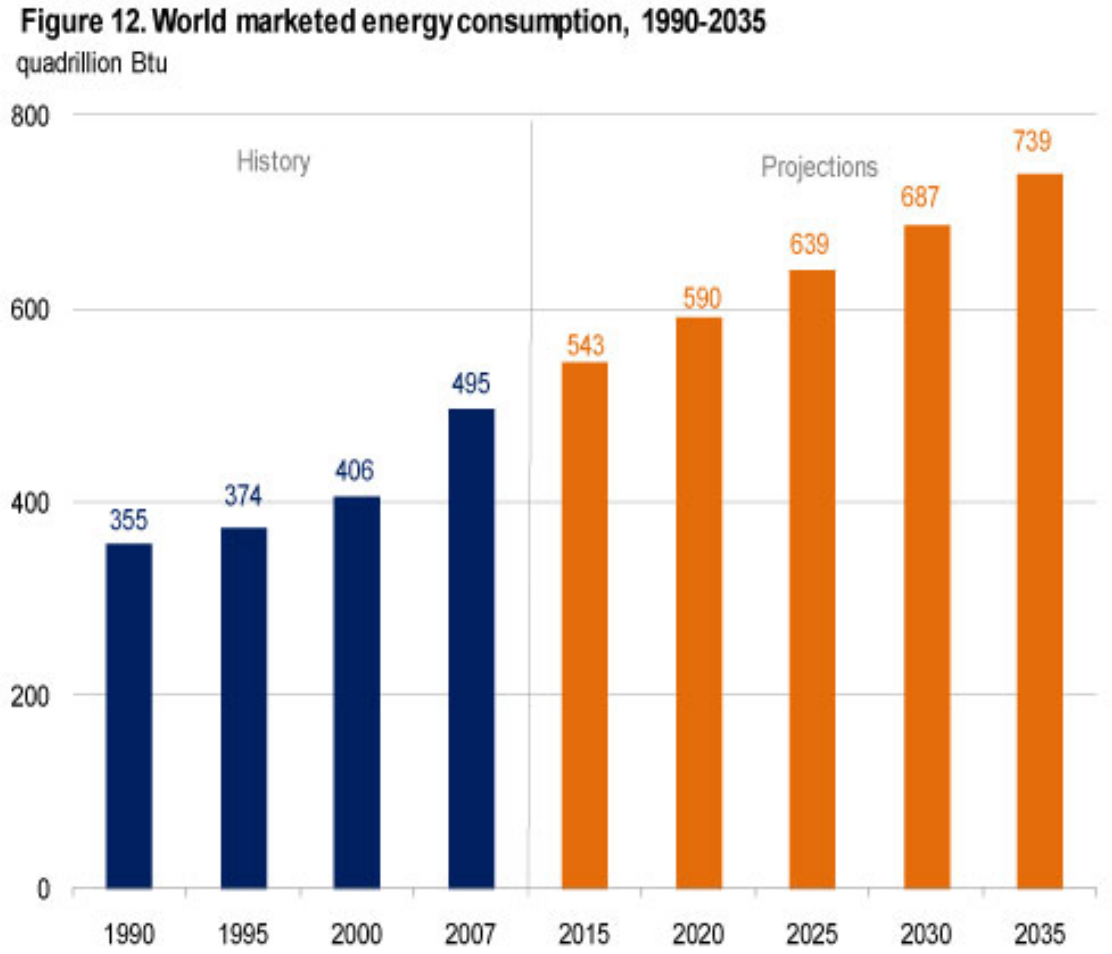
- **atmosphere and ocean have warmed**
- **the amounts of snow and ice have diminished**
- **sea level has risen**
- **the concentrations of greenhouse gases have increased**



Oslo, 10 December 2007

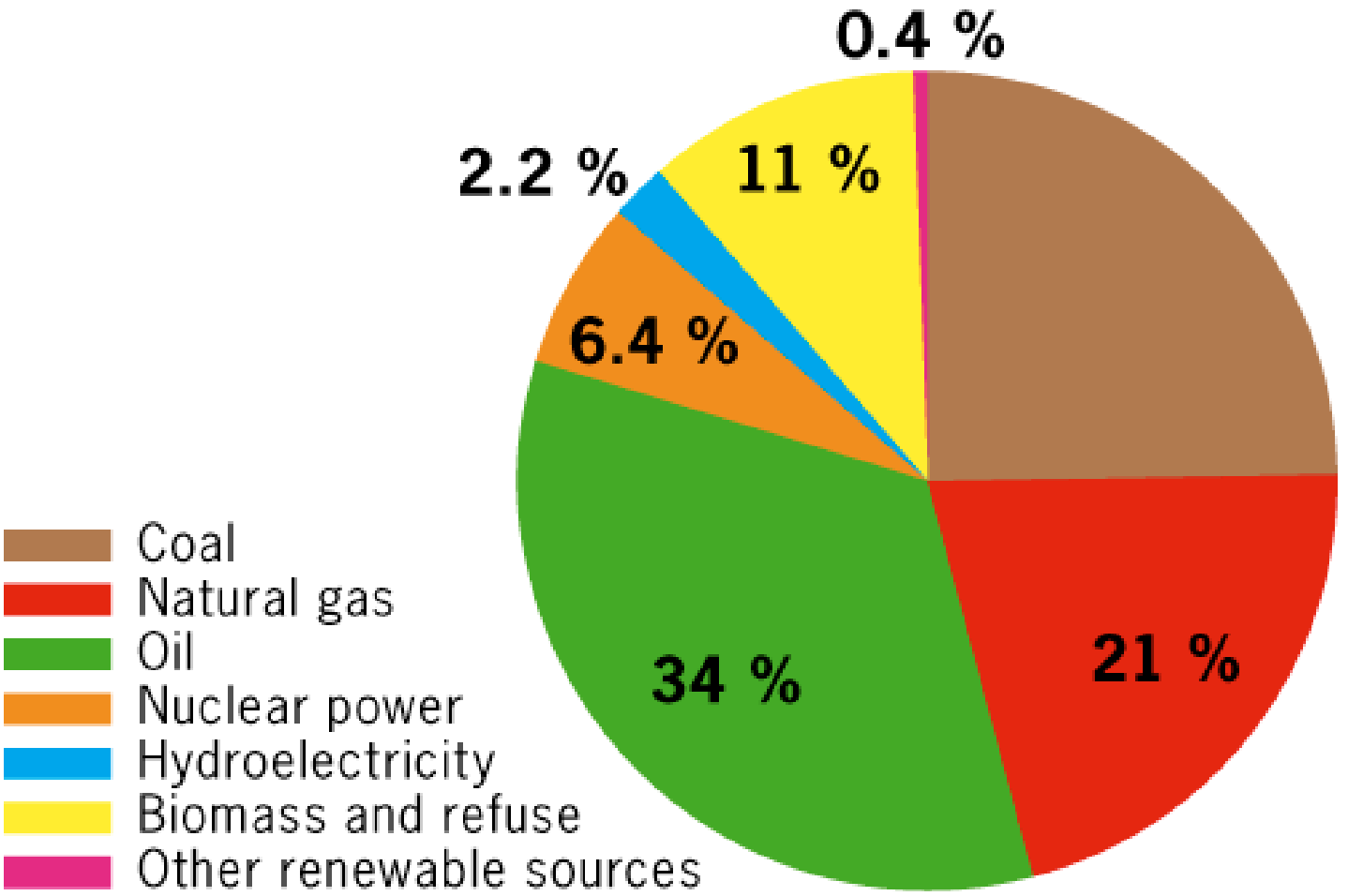
The Intergovernmental Panel on Climate Change and Albert Arnold (Al) Gore Jr. were awarded the Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change".

World Energy Consumption



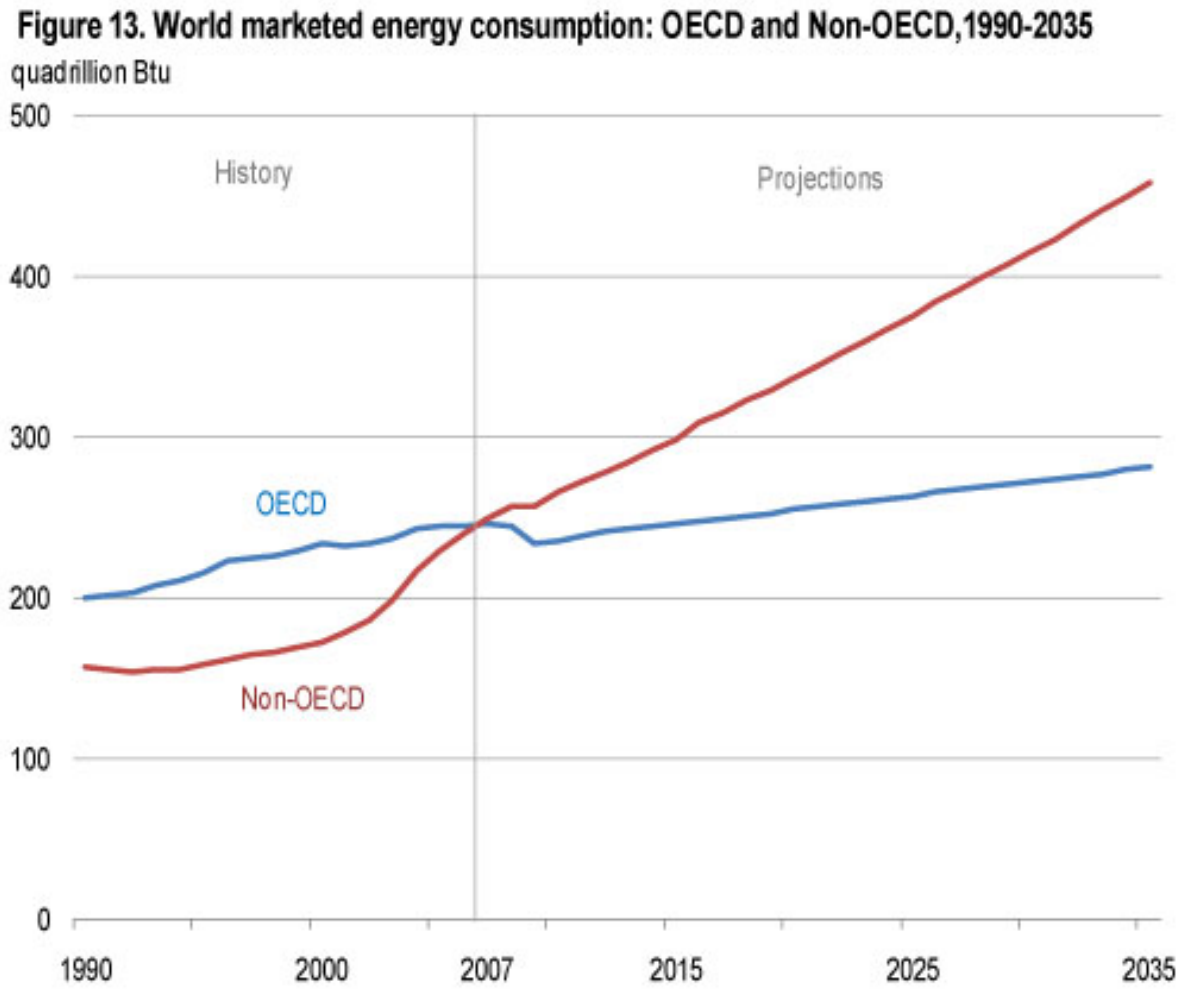
Source: EIA, International Energy Statistics database , www.eia.gov/emeu/international (2010).

World Energy Consumption by Energy Source

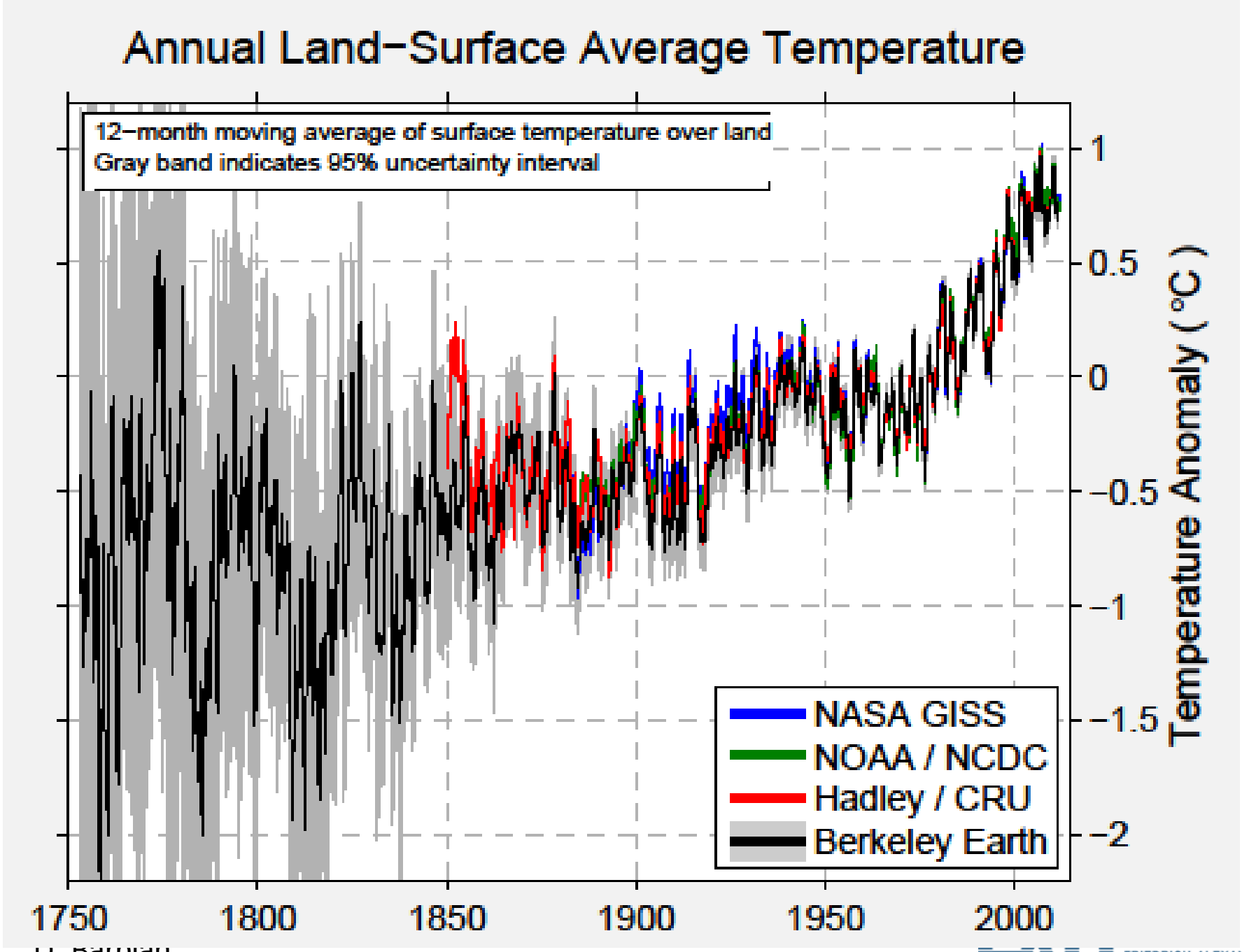


Source: EIA, International Energy Statistics database , www.eia.gov/emeu/international (2010).

World Energy Consumption of OECD and Non-OECD

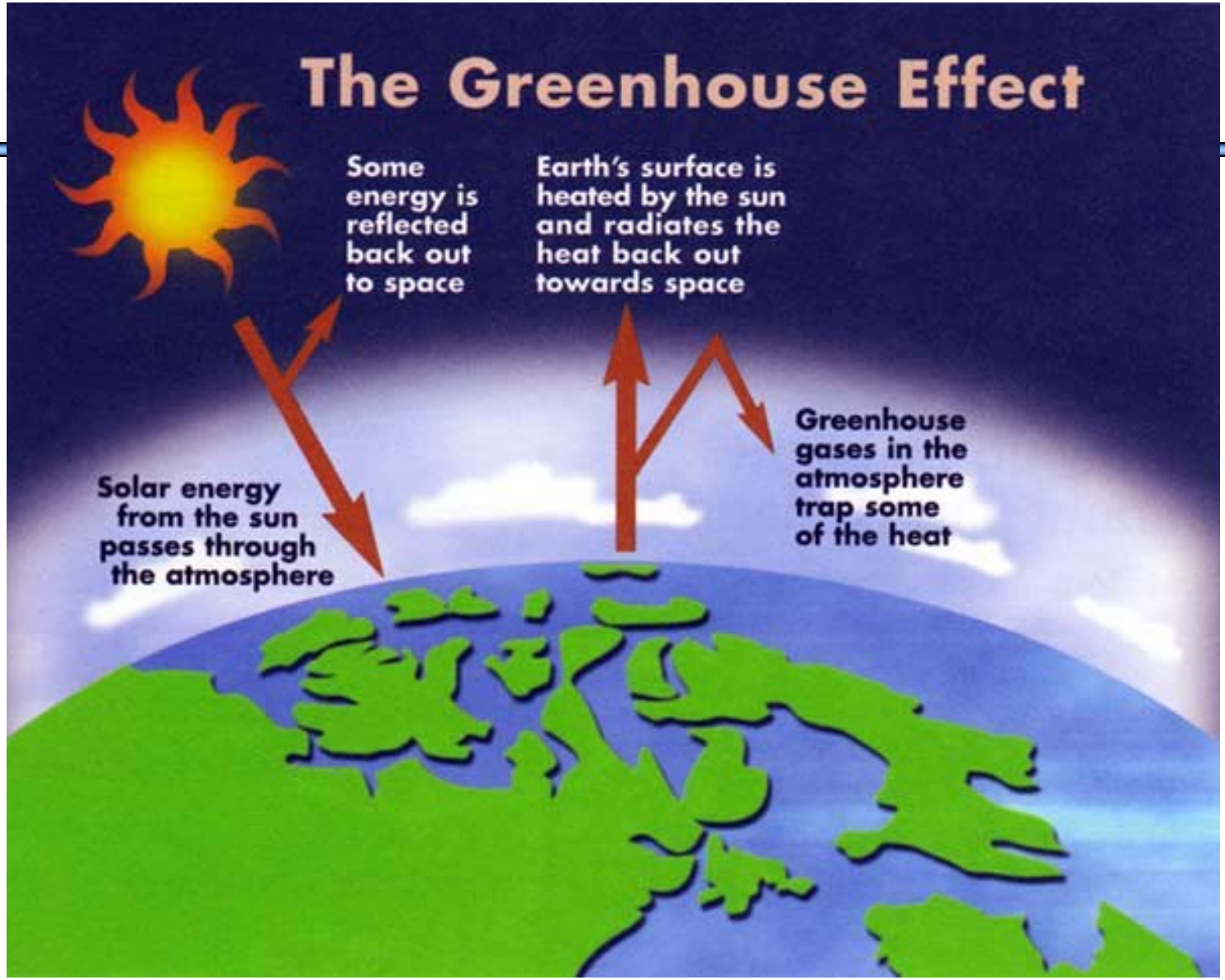


Source: EIA, International Energy Statistics database , www.eia.gov/emeu/international (2010).

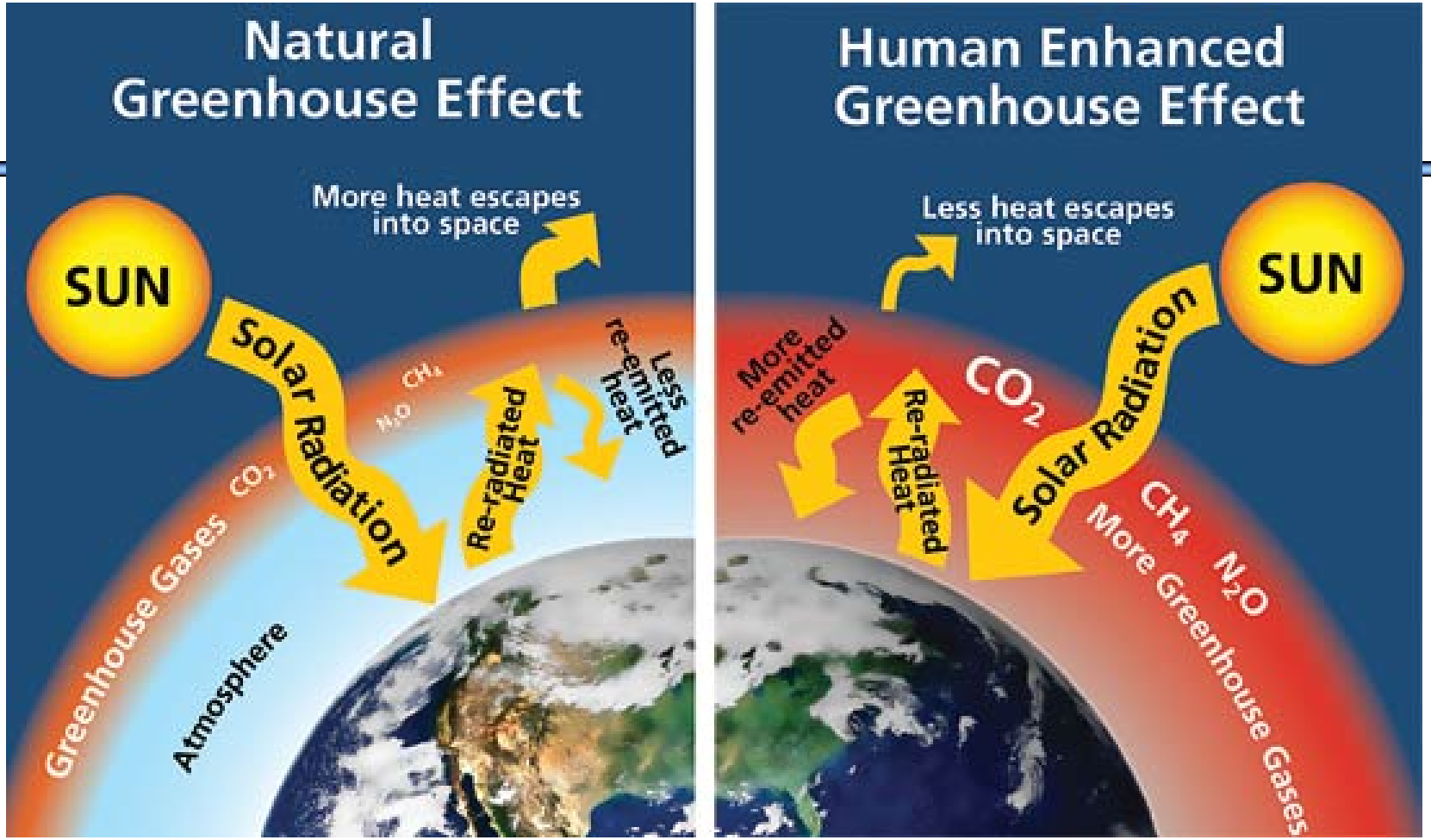


D. Barbian

Source: http://www.berkeleyearth.org



 Source: http://www.teachscienceandmath.com/2009/05/05/greenhouse-effect-investigation/



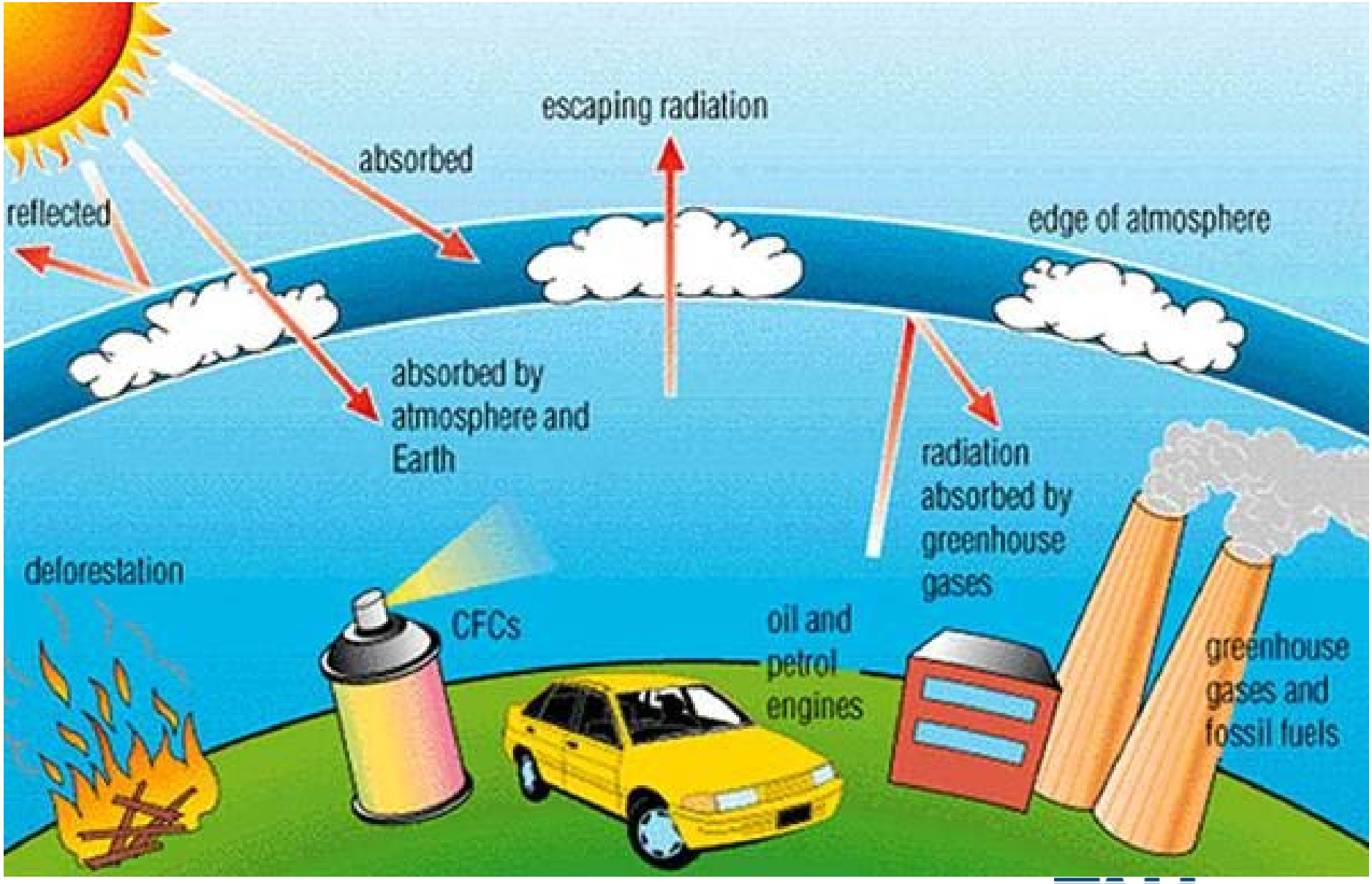
Left - Naturally occurring greenhouse gases—carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O)—normally trap some of the sun's heat, keeping the planet from freezing.

Right - Human activities, such as the burning of fossil fuels, are increasing greenhouse gas levels, leading to an enhanced greenhouse effect. The result is global warming and unprecedented rates of climate change.

Source: http://www.nps.gov/goga/naturescience/climate-change-causes.htm

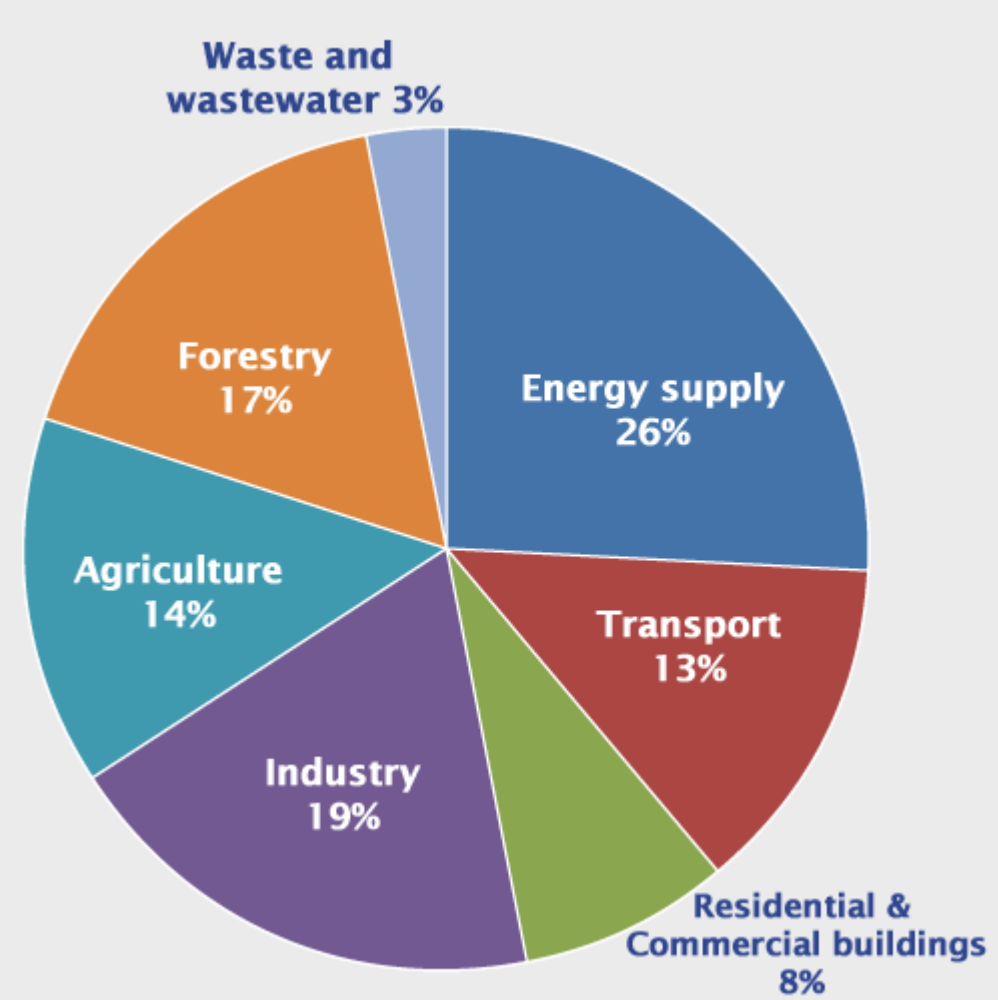
Greenhouse Gases in Earth's Atmosphere

Gas	Formula	Contribution (%)
Water vapor	H2O	36 – 72 %
Carbon dioxide	CO2	9 – 26 %
Methane	CH4	4 – 9 %
Ozone	O3	3 – 7 %



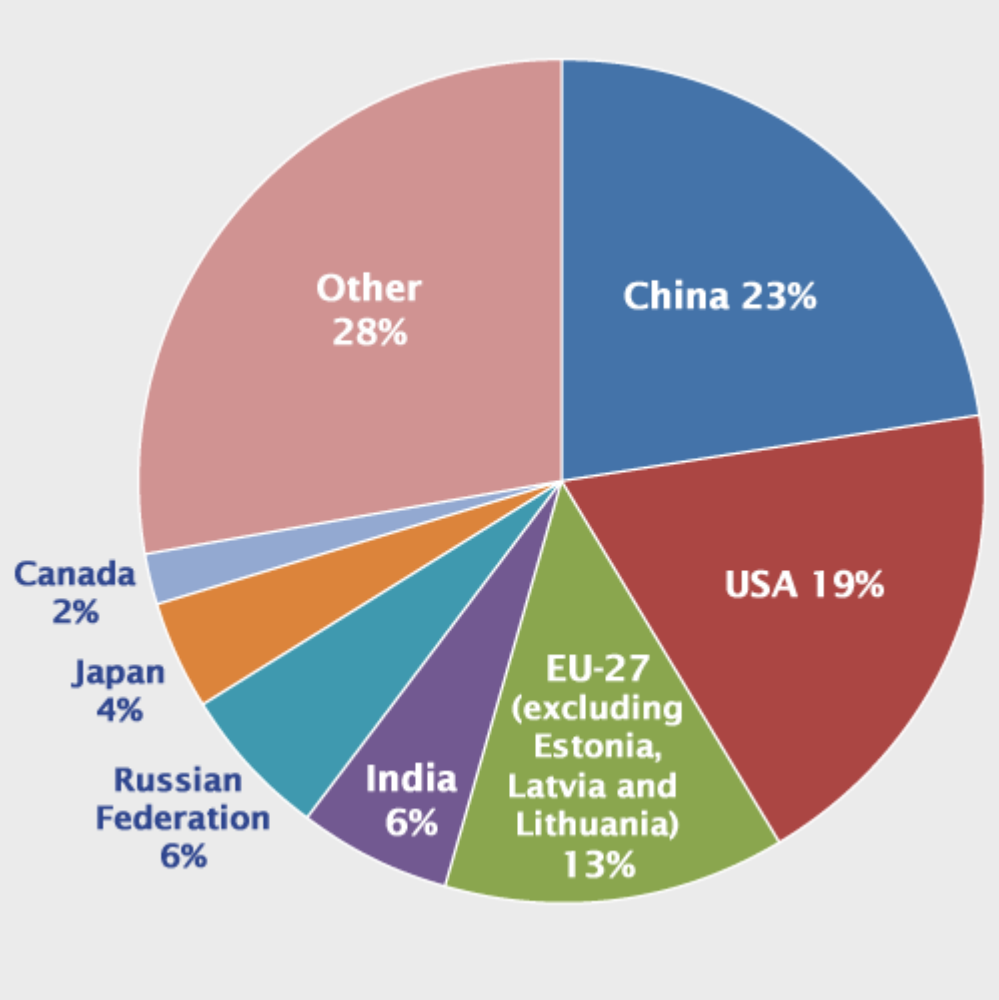
D. Barbian

Global Greenhouse Gases by Source



Source: IPCC

Global Greenhouse Gases by Country

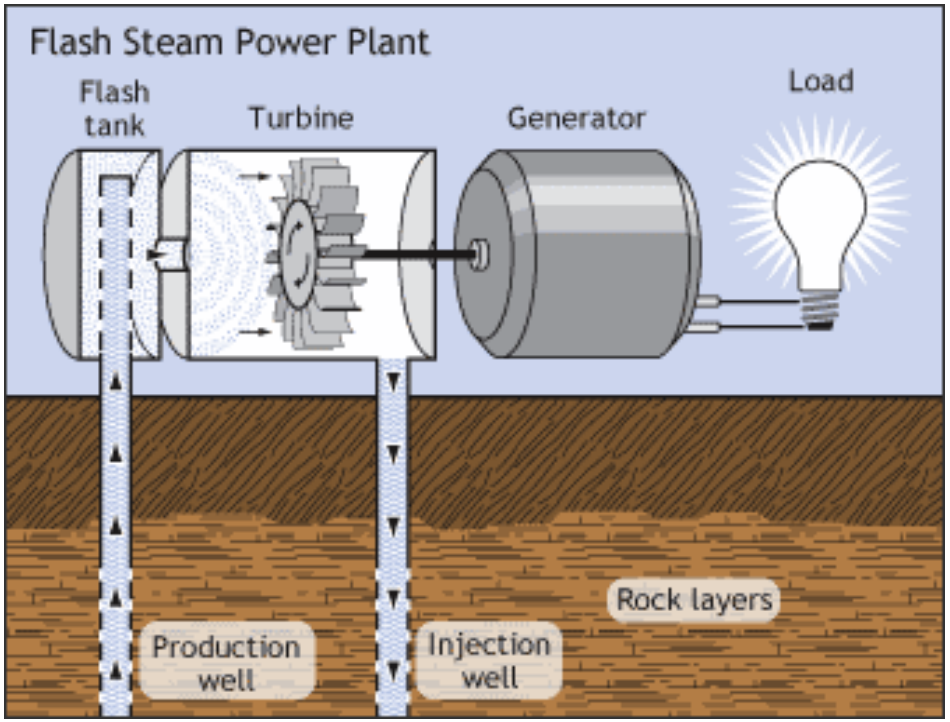


Source: IPCC

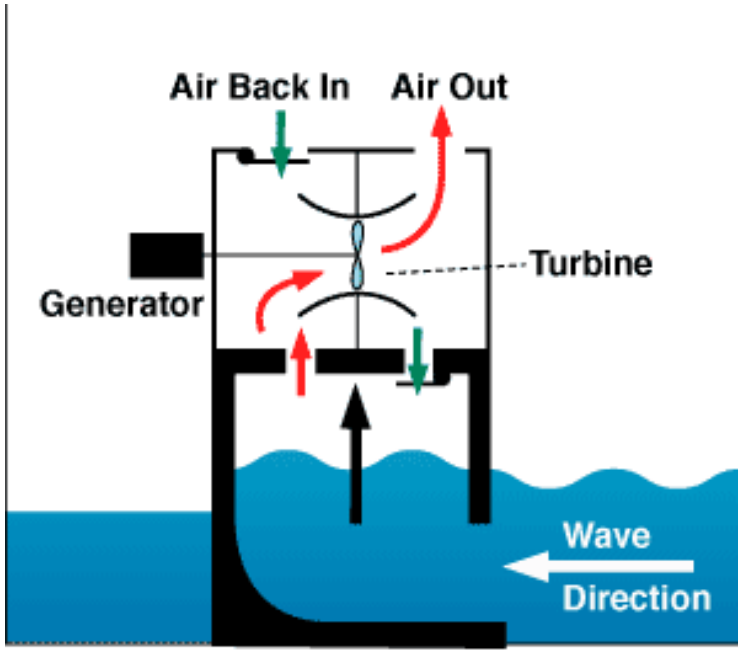
Renewable Energy

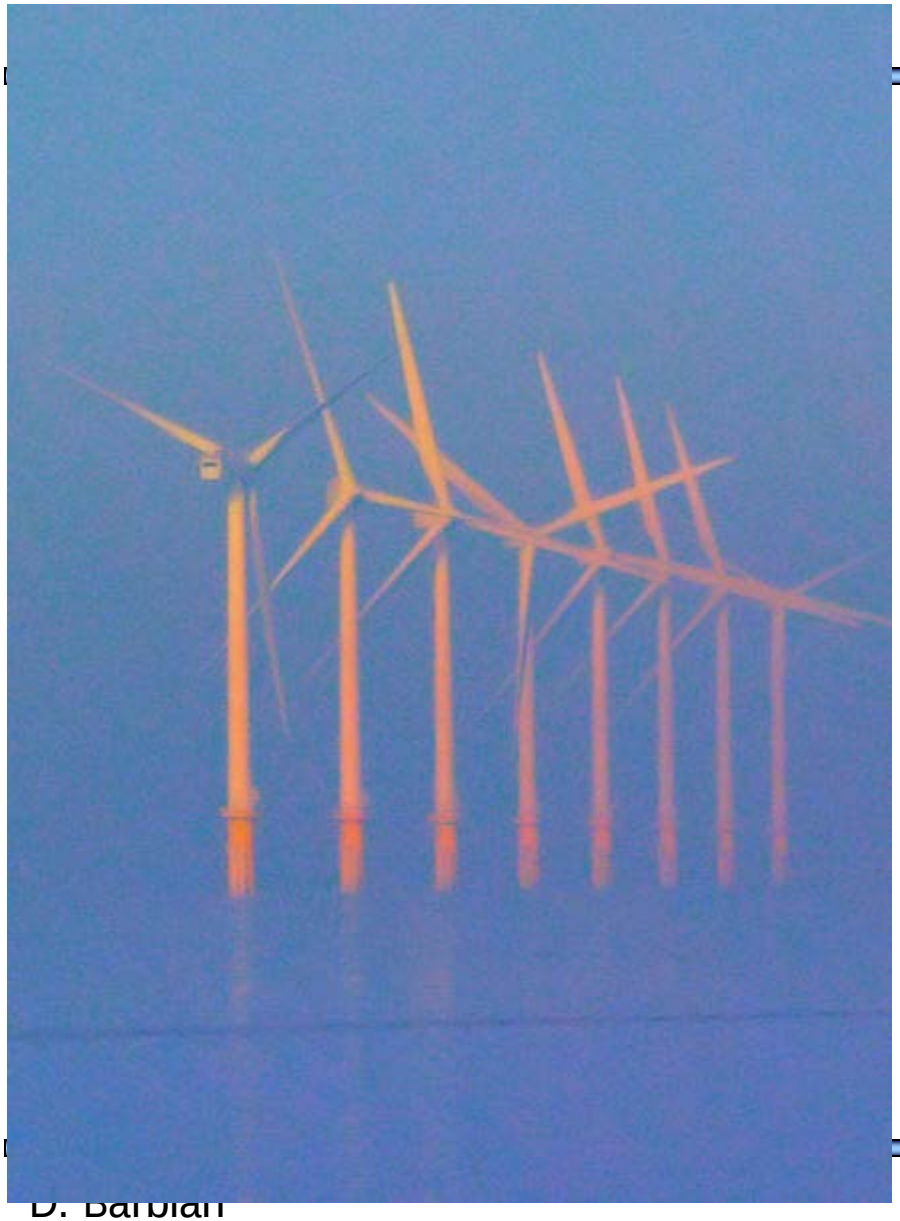
1. Geothermal
2. Wave Energy (Tidal)
3. Wind Power
4. Hydro Energy
5. Biomass
6. Solar Energy

Geothermal power plant in the Imperial Valley, California.



Wave Energy Device





Windmills are typically installed in favourable windy locations

Tûranor PlanetSolar - Katamaran

May 2012: it became the first ever solar electric vehicle to circumnavigate the globe

Cost: €12.5 million

Speed:
14 knots (26 km/h; 16 mph) (max)
7.5 knots (13.9 km/h; 8.6 mph) (cruising)

Source: http://techyum.com/2011/02/solar-powered-boat-breaks-world-distance-record/

Even in Seattle, which averages 226 cloudy days a year, this rooftop array of solar panels—which required a variance from the city to stretch out over the sidewalk—is designed to generate a surplus of energy from March through September to power the building throughout the year

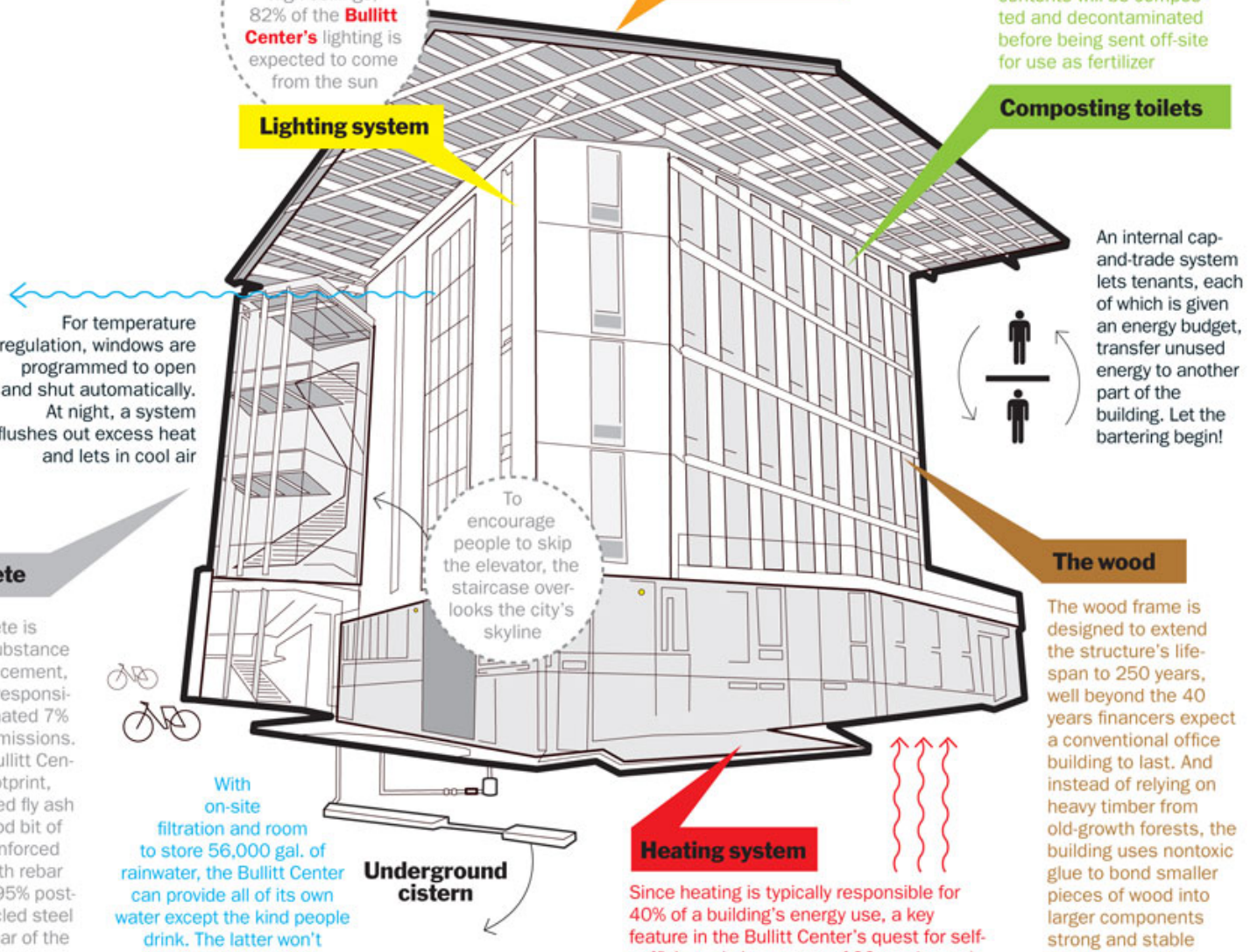
Solar panels

The building's goal of harvesting and treating all water on-site includes wastewater, hence the special toilets whose contents will be composted and decontaminated before being sent off-site for use as fertilizer

Composting toilets

With oversize windows and high ceilings, 82% of the **Bullitt Center's** lighting is expected to come from the sun

Lighting system



For temperature regulation, windows are programmed to open and shut automatically. At night, a system flushes out excess heat and lets in cool air

An internal cap-and-trade system lets tenants, each of which is given an energy budget, transfer unused energy to another part of the building. Let the bartering begin!

To encourage people to skip the elevator, the staircase overlooks the city's skyline

The concrete

Ordinary concrete is bound with a substance called Portland cement, which alone is responsible for an estimated 7% of global CO_2 emissions. To shrink the Bullitt Center's carbon footprint, the builders used fly ash to replace a good bit of the cement, reinforced the concrete with rebar that is roughly 95% post-consumer recycled steel and steered clear of the harmful chemicals commonly used to improve the workability of the mix

The wood

The wood frame is designed to extend the structure's lifespan to 250 years, well beyond the 40 years financers expect a conventional office building to last. And instead of relying on heavy timber from old-growth forests, the building uses nontoxic glue to bond smaller pieces of wood into larger components strong and stable enough to span the distance between support beams

With on-site filtration and room to store 56,000 gal. of rainwater, the Bullitt Center can provide all of its own water except the kind people drink. The latter won't happen unless the city changes its codes for potable water

Underground cistern

Heating system

Since heating is typically responsible for 40% of a building's energy use, a key feature in the Bullitt Center's quest for self-sufficiency is its system of 26 geothermal wells, each 400 ft. deep, to warm it up in the winter and help cool it down in the summer

D.

LEXANDER
ÜRNBERG

H2Office – Duisburg (Germany)

Geothermal heating

Energy saving devices

Bligh Street, Sydney, Australia

Bligh Street is a skyscraper in Sydney.

The modern style office building is located in the Sydney central business district.

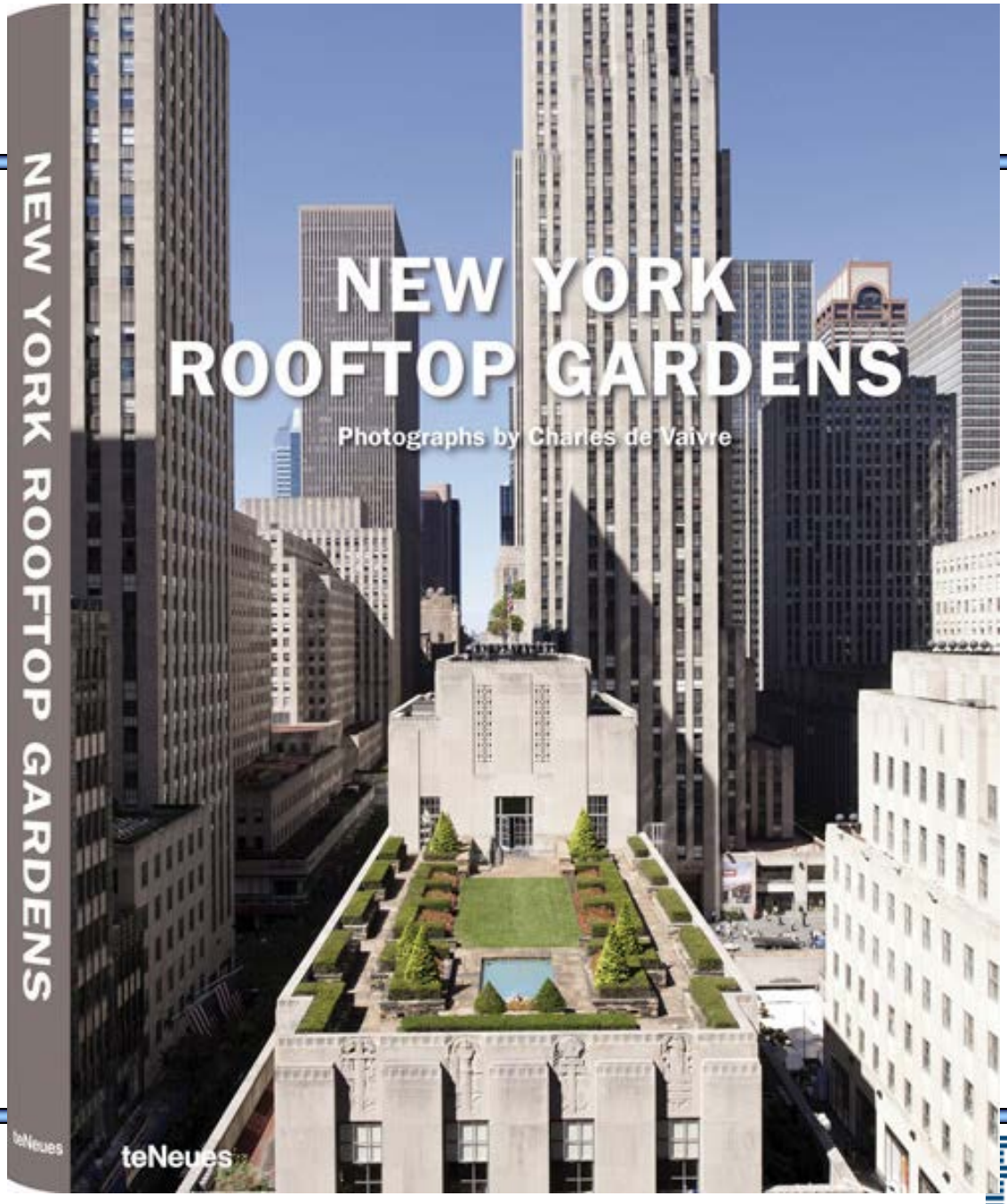
It is an ecologically sustainable development and was awarded six-star green status by the Green Building Council of Australia.
Green features include a basement sewage plant that recycles 90 % of the building waste water, solar panels on the roof and air conditioning by chilled beams.

Volkswagen VW XL1

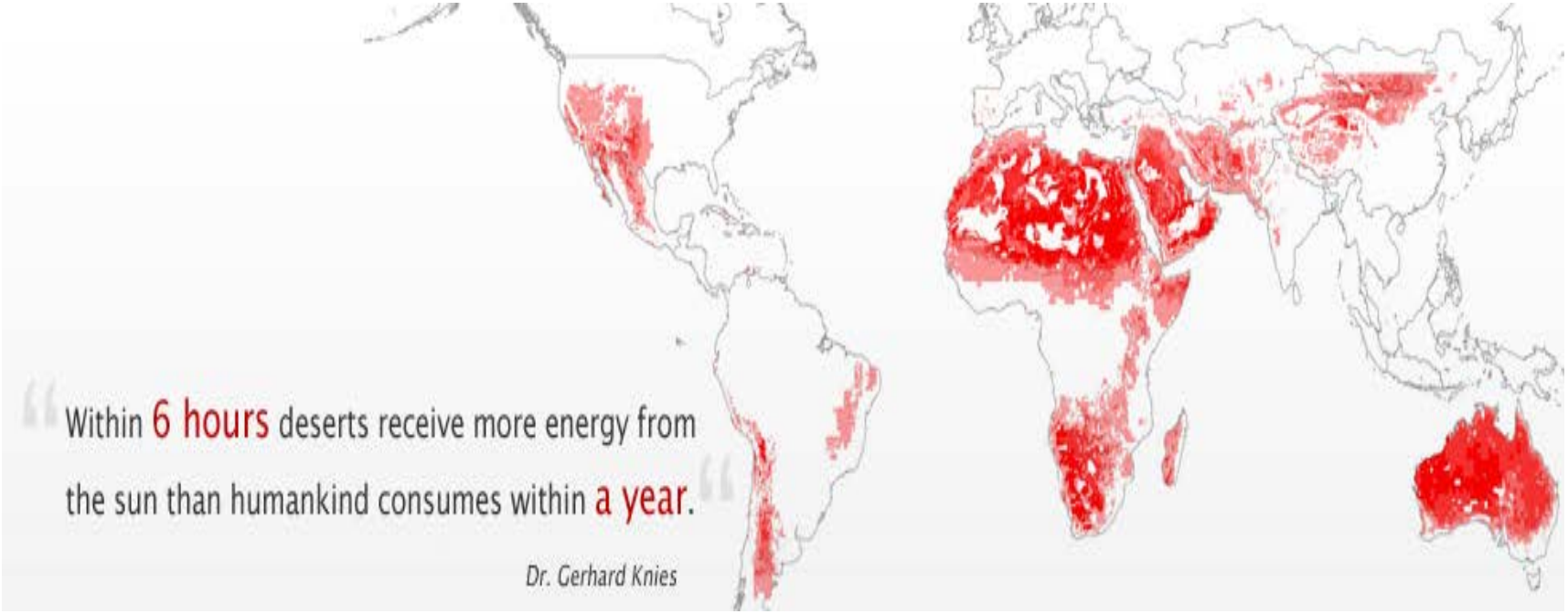
1-Litre-Car

1. The **Volkswagen 1-litre car** is a two-person concept car produced by Volkswagen.
2. The 1-litre car was designed to be able to travel 100 km on 1 litre of diesel fuel (from L/100km: equivalent to 235 miles per U.S. gallon or 282 miles per Imperial gallon), while being both roadworthy and practical.
3. To achieve such economy, it is produced with lightweight materials, a streamlined body and an engine and transmission designed and tuned for economy.

BMW i3

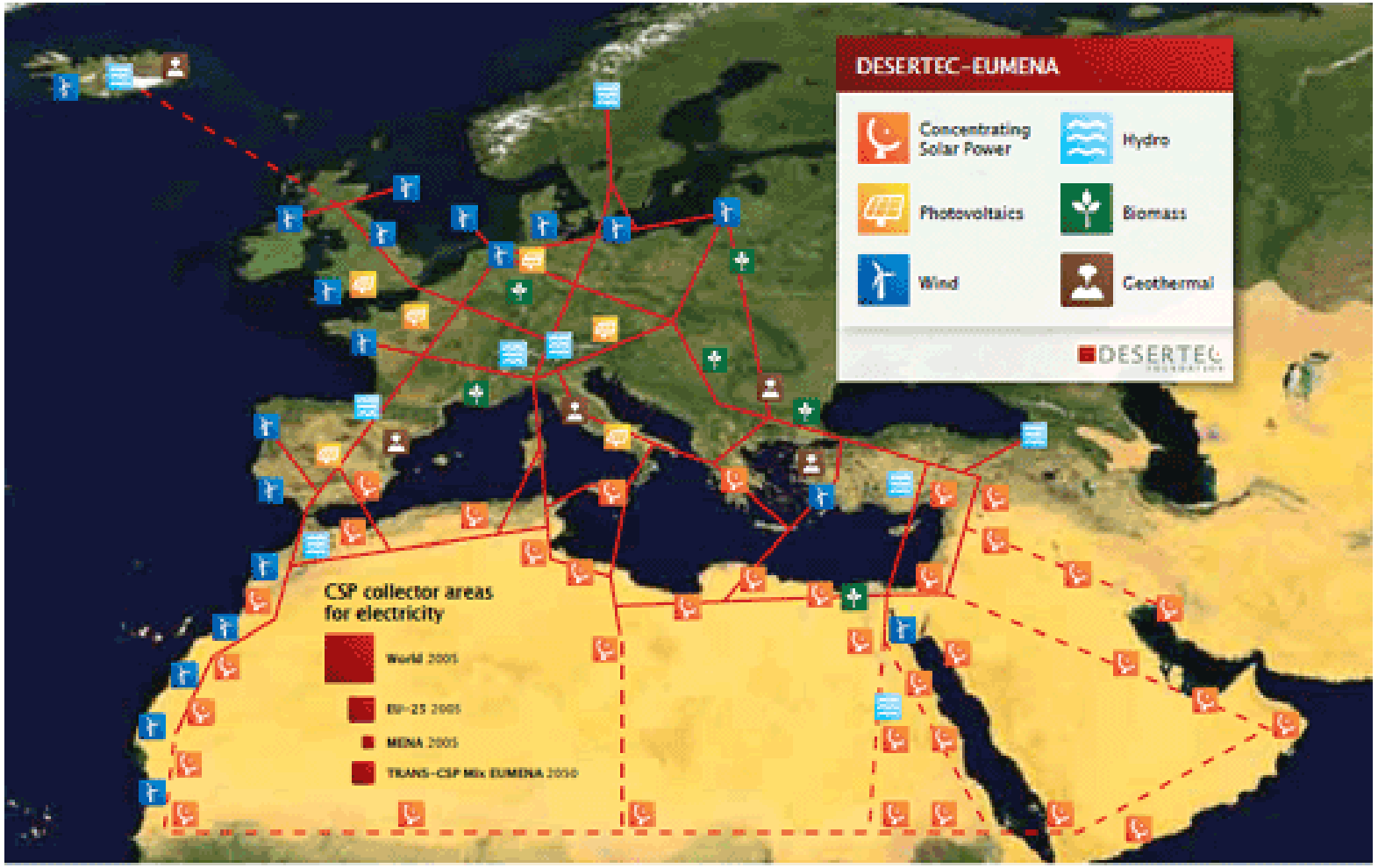

NEW YORK ROOFTOP GARDENS
NEW YORK ROOFTOP GARDENS
Photographs by Charles de Vaivre
teNeues
teNeues

Desertec Project



More information: http://www.desertec.org/

Desertec For Clean Energy in Europe



Solar Cooker

Namibia

Bolivia

Burkina Faso

Solar Oven


SOS-children-village, Nepal

Organic Clothes and Living

- Grüne Erde: http://www.grueneerde.com/
- Hess natur: http://www.hessnatur.com/
- Waschbär: http://www.waschbaer.de/
- Bio wohli: http://www.bio-wohli.de/
- Brinkmann Natur: http://www.naturtextilien-brinkmann.de/
- Avocado Store: http://www.avocadostore.de/oeko-mode
- Fair Queen: http://www.fair-queen.de/
- Deerberg: http://www.deerberg.de/

Literature

- CEP Europäische Verlagsanstalt (2011) Der DESERTEC-Atlas, Weltatlas zu den erneuerbaren Energien
- Randers, J. (2012) 2052: A Global Forecast for the Next Forty Years
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- Armaroli, N. and Balzani, V. (2010) Energy for a Sustainable World: From the Oil Age to a Sun-Powered Future
- Golusin, M. et al (2013) Sustainable Energy Management
- World Energy Council (2012) World Energy Trilemma, Time to get real – the case for sustainable energy policy

Overview

VI. Major Objective: A Sustainable World

1. Our World and our Limits
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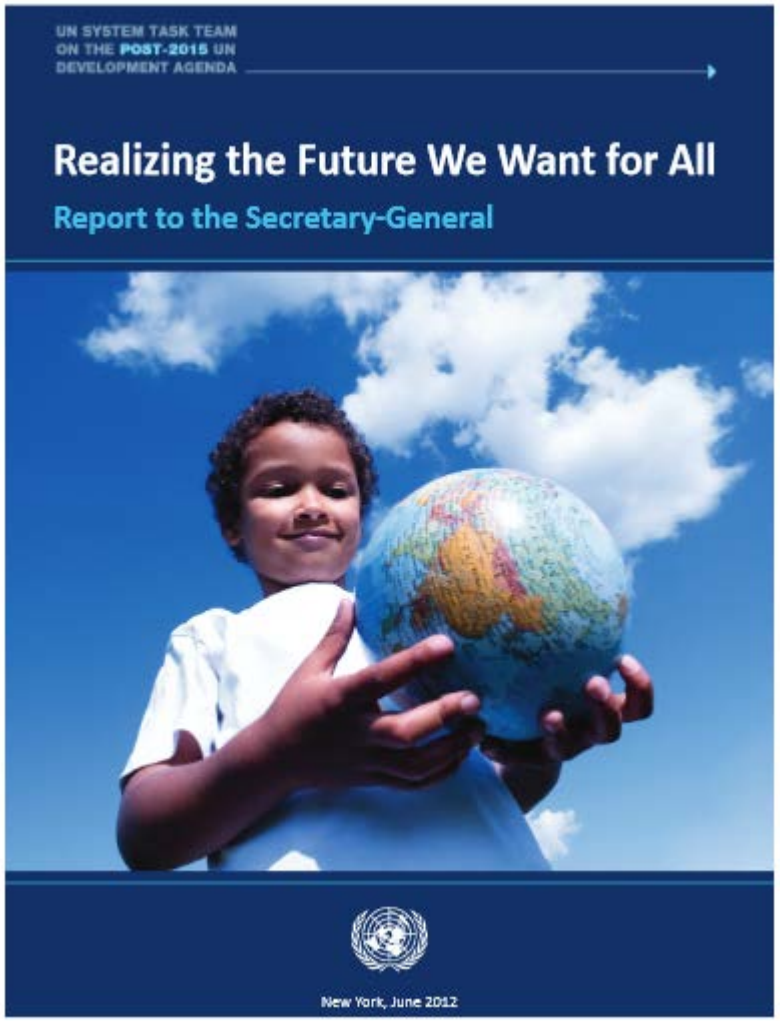
Millennium Development Goals (MDGs)

The MDGs are goals that 192 United Nations member states have agreed to try to achieve by the year 2015.

The MDGs were officially established at the Millennium Summit in 2000, where 189 world leaders adopted the United Nations Millennium Declaration.

See http://www.un.org/millenniumgoals/

Post-2015 MDGs – first report



May 2012, *Realizing the Future We Want for All*:
Task Team outlines a vision for the post-2015 development agenda and suggests four key dimensions:

(1) Inclusive social development;

(2) inclusive economic development;

(3) environmental sustainability; and

(4) peace and security.

Post-2015 MDGs – second report

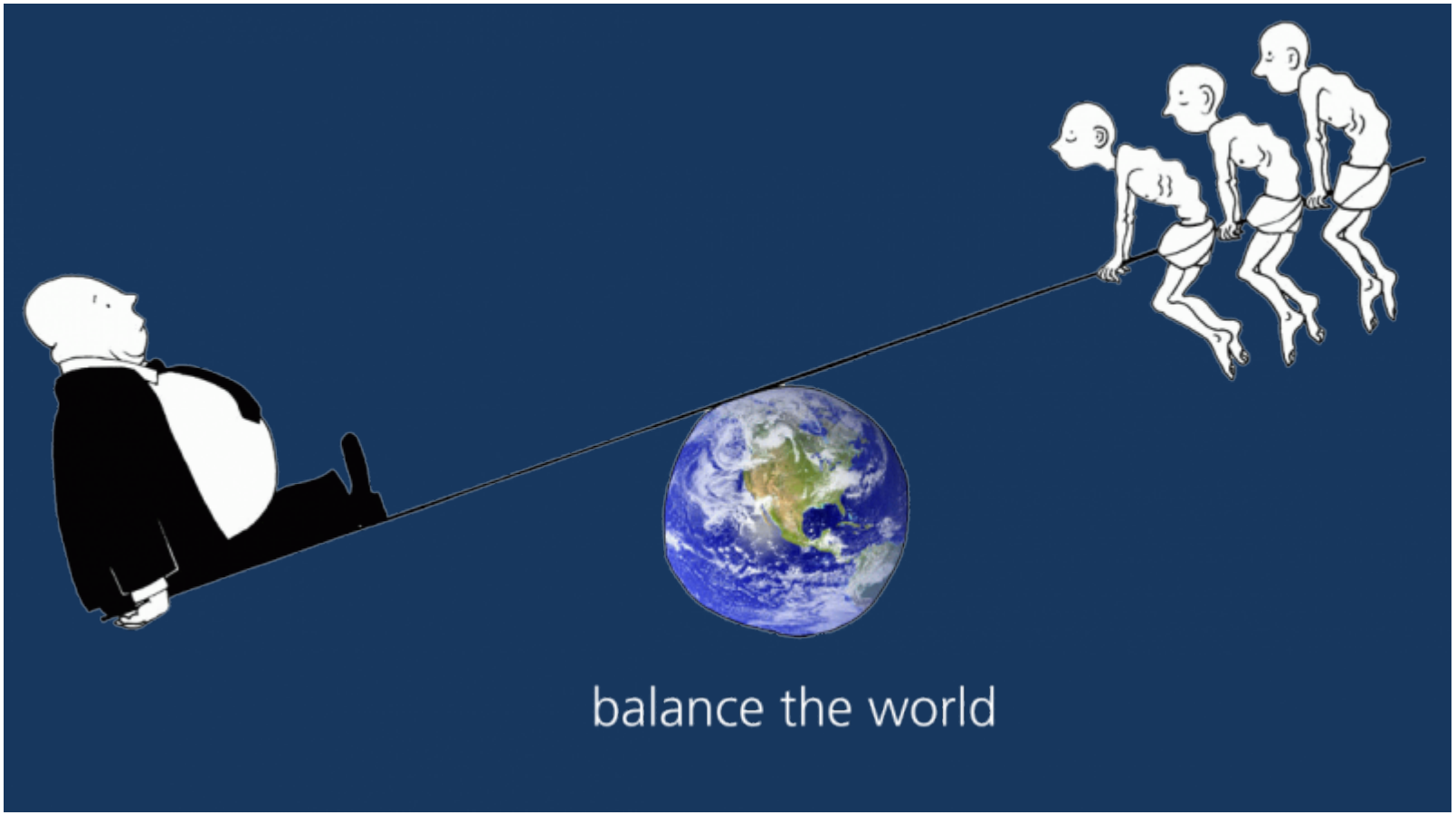
March 2013, *A Renewed Global Partnership for Development*: Task Team published a second report on recommendations on key dimensions and a potential format for a global partnership in the post-2015 era.

Initiative „Plant for the Planet“

- The Plant-for-the-Planet Children´s Initiative was founded in January 2007.
- school presentation about the climate crisis of the - back then - 9-year-old Felix Finkbeiner. Inspired by Wangari Maathai, who planted 30 million trees in Africa, Felix developed the vision that children could plant one million trees in each country of the world to create a CO_2 balance.
- During the following years a worldwide move: approx. 100,000 children in over 100 countries pursue this goal. They understand themselves as an initiative for climate justice.

See http://plant-for-the-planet.org/en

The Global Marshall Plan Initiative

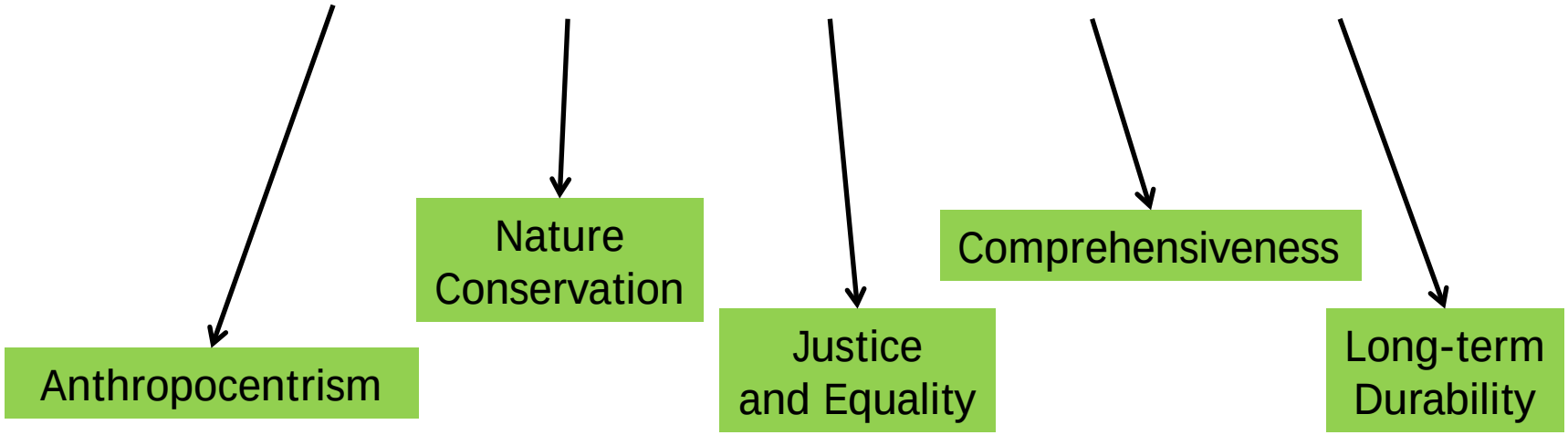


See http://www.globalmarshallplan.org/en

What is sustainability? - Implementation

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

Source: WCED (Brundtland-Report), Our Common Future, 1987.



Anthropocentrism

Rio Declaration (1992) - Principle 1:

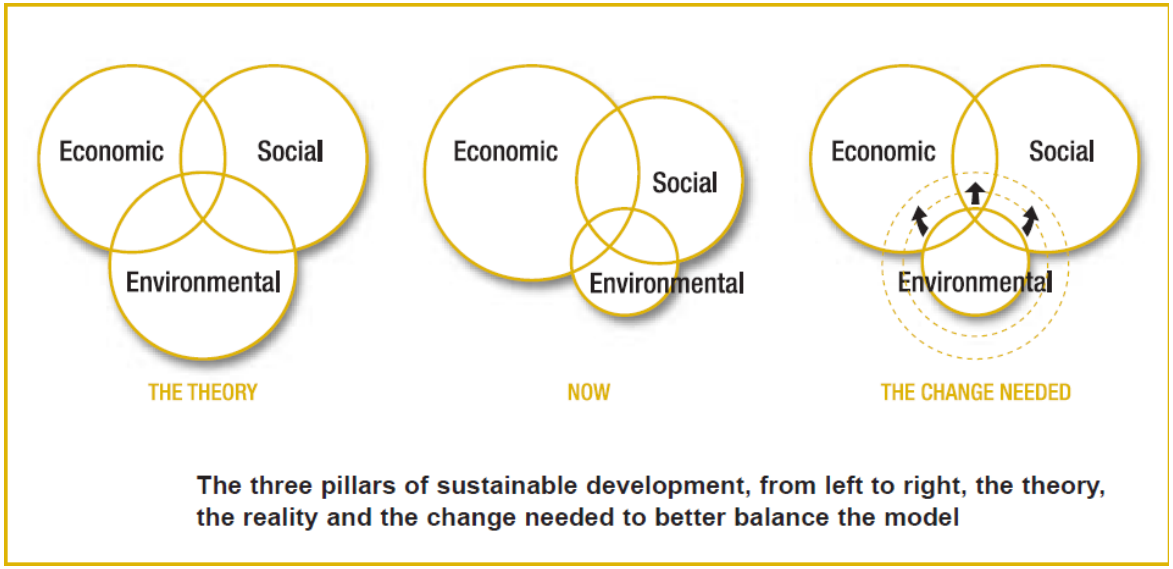
“Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.”

Anthropocentrism

Article 25 adopted by the UN General Assembly (1948):

"Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and the necessary social services and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control."

Implementation – The three pillars



The three pillars of sustainable development, from left to right, the theory, the reality and the change needed to better balance the model

UN Conference on Environment and Development (UNCED), held in Rio in 1992, called for sustainable development "to ensure **socially** responsible **economic** development while protecting the resource base and the **environment** for the benefit of future generations".

Implementation and the Carrying Capacity of the Ecosystem

- respect regenerative ability of ecological system
- respect assimilative ability of ecological system to absorb waste
- respect the natural elements necessary to sustain life (soil, air, water, ozone layer)

Implementation and Environmental Degradation

The United Nations International Strategy for Disaster Reduction defines **environmental degradation** as “The reduction of the capacity of the environment to meet social and ecological objectives, and needs”.

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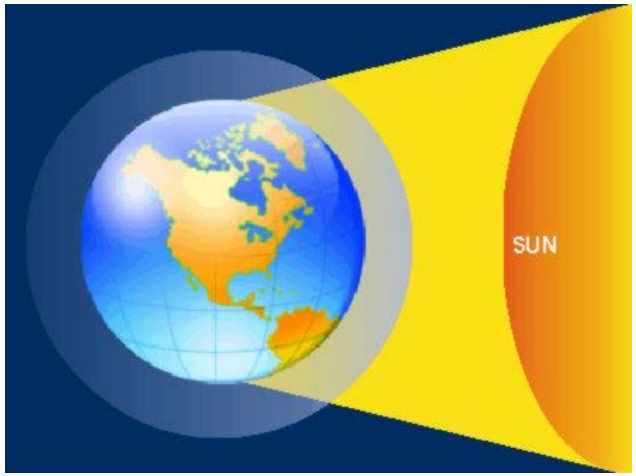
Implementation – Protection of the natural elements

Air

Water

Soil



Ozone Layer

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Environmental Problems (Examples)

Dimension	Environmental Problems
International	Ozon hole, enhanced greenhouse effect, rainforest deforestation, ocean overfishing, plastic waste in oceans
National	Acid rain, soil degradation, air pollution, water degradation
Regional	Waste, waste water, exhaust gases, noise

Reducing Environmental Problems

1. Complying with limit values
2. Improving environmental efficiency
3. Respecting the natural regenerative ability

Intergenerational Use of Non-Renewables

$$\lim_{g \to \infty} \frac{X}{g} = 0$$

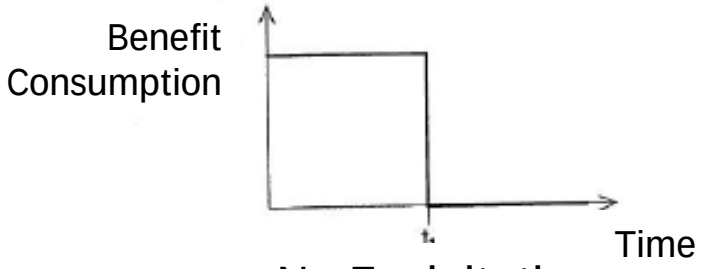
with

X = Stock of Non-Renewables

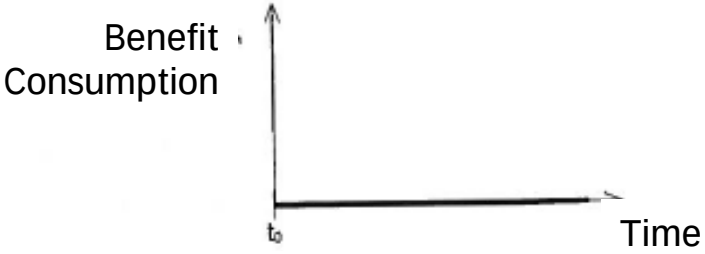
g = Number of Generations

Intergenerational Use of Non-Renewables

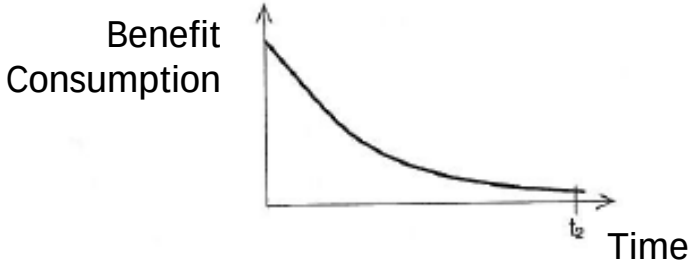
Overexploitation



No Exploitation



Relative Exploitation



$t_0 < t_1 < t_2$

Intergenerational Use of Non-Renewables

$$X_t = X_0 \cdot q^t \qquad \text{with } q = 1 - \frac{p}{100}$$

with

X_t = Stock of Non-Renewable at time t (present time)

X_0 = Initial Stock of Non-Renewable

p = Removal per time unit t [in %]

Waste Hierarchy

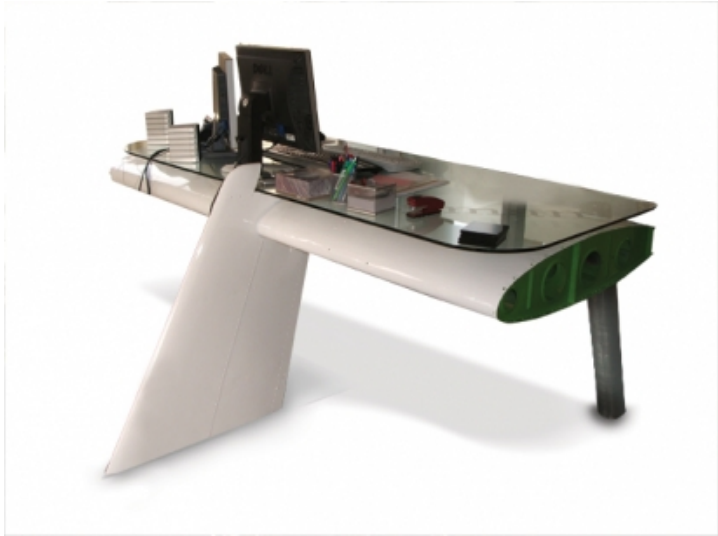
Source: www.wasteandrecycling.rrc

Waste Management is Climate Protection

1. Prevention of waste
2. Repair
3. Waste Collection
4. Preparation for re-use
5. Transport to recovery, recycling or disposal
6. Recovery: Material or energy recovery

Avoid: Edible Packaging

Reuse: www.reestore.com



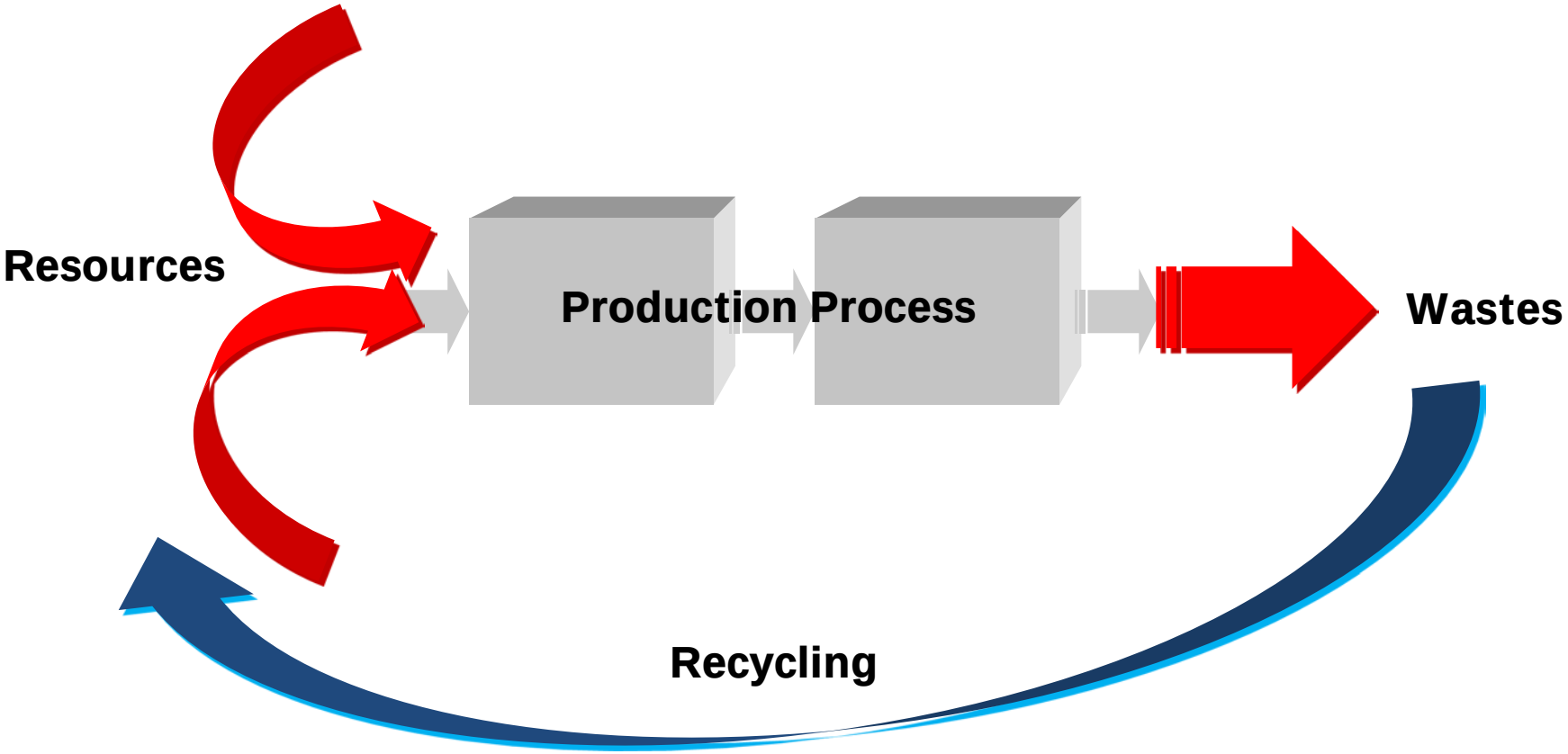
Reuse: www.weupcycle.com/en/

Former wine glass

bird feeder:
former smoothie
bottle

Jeans pocket

Recycling



Recycling – two effects

According to Common and Stagl (2005, p. 105):

1. Amount of waste inserted into the environment is reduced
2. Amount of corresponding resource extracted from the environment is reduced

The Bureau of International Recycling (BIR)

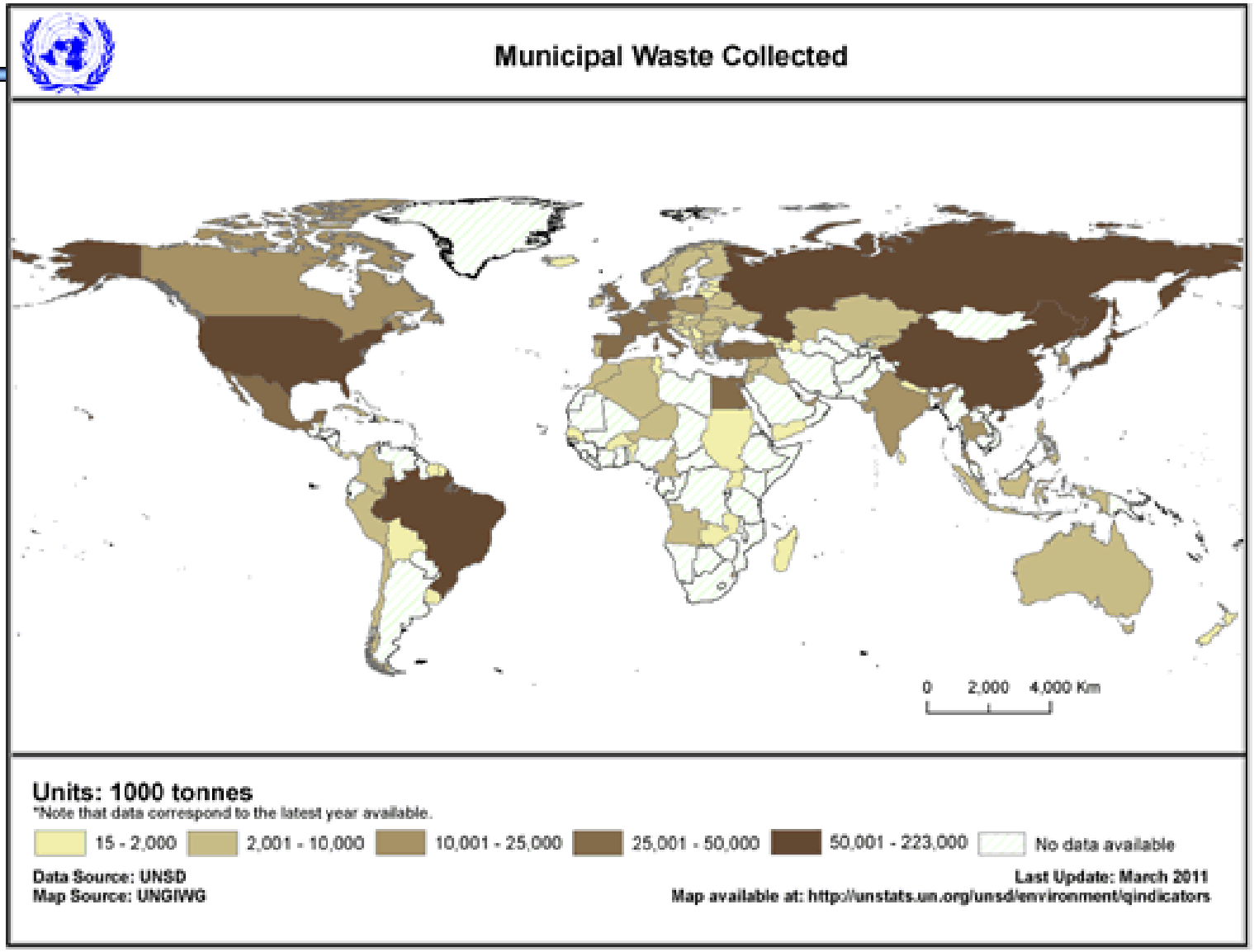
Formation	1948
Legal status	International non-profit organisation constituted under the laws of Belgium
Purpose/focus	To bring together recycling expertise from across the globe and position the industry as a key pillar of global sustainable growth
Location	24 Ave Franklin Roosevelt, 1050 Brussels, Belgium
Region served	Global
Membership	Over 700 companies and 40 national associations
Director General	Alexandre Delacoux
Website	www.bir.org

http://www.bir.org/assets/Documents/publications/ar/BIR-AnnRep-UK.pdf

Energy Savings	
Aluminium	> 95%
Copper	> 85%
Plastic	> 80%
Paper	> 65%
Steel	> 74%
Zinc	> 60%
Lead	> 65%

CO_2 Savings*	
Aluminium	> 92%
Copper	> 65%
Ferrous	> 58%
Paper	> 18%
Nickel	> 90%
Zinc	> 76%
Lead	> 99%
Tin	> 99%

Source: BIR Study on the Environmental Benefits of Recycling, 2009



D. Barbian

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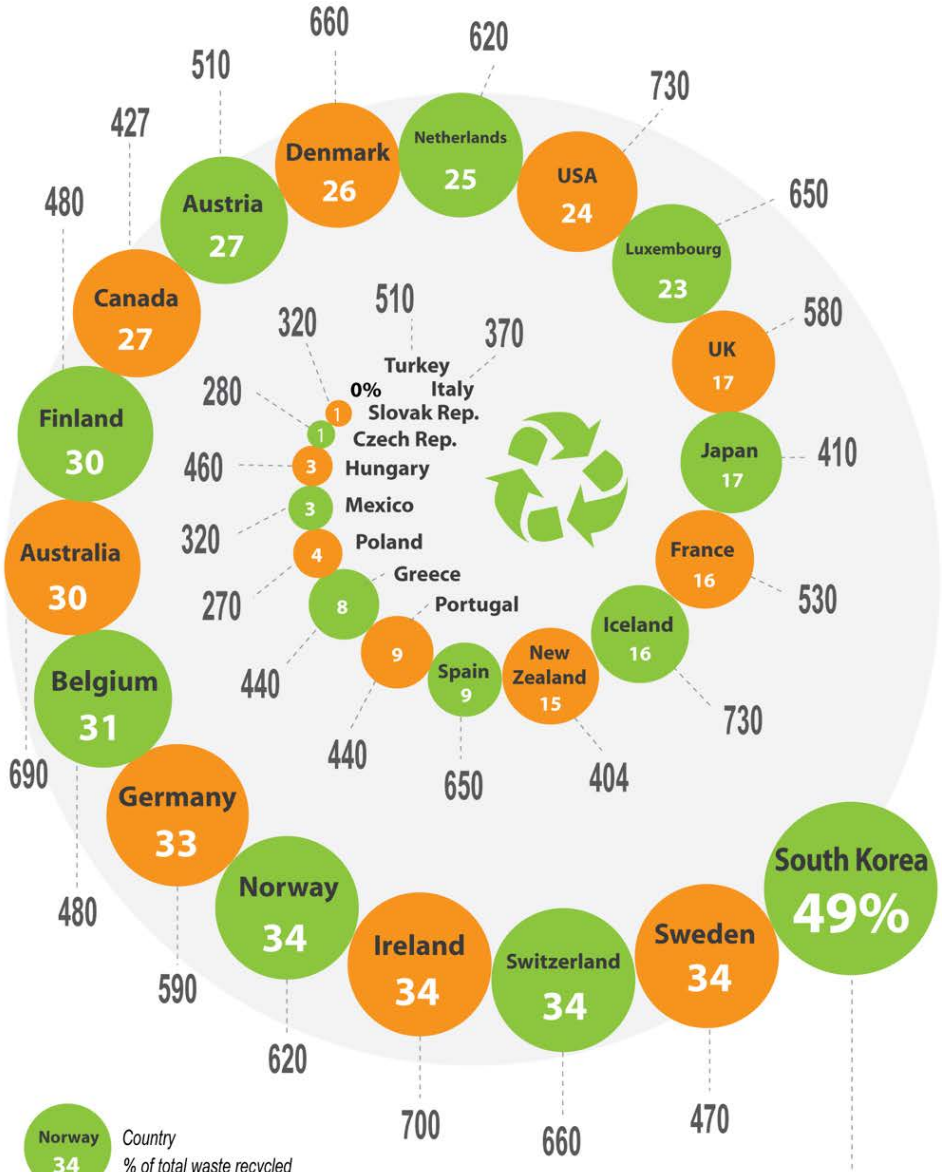
UNIVERSITÄT
ERLANGEN-NÜRNBERG

Recycling Rates of OECD Countries

SOURCE: OECD Environment Statistics
Years of data are variable, between 2003 and 2006, excpet for New Zealand, which is from 1999.



D. Barbian

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IFAT

World‘s Leading Trade Fair for Water, Sewage, Waste and Raw Materials Mangement

- Approximately 125,000 visitors from 180 countries
- 2,939 exhibitors from 54 nations
- Unprecedentedly international profile
- Is held every two years in Munich (Germany)
- Next date: May 5 – 9, 2014
- See: http://www.ifat.de/en

IFAT – Website (www.ifat.de/en)

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Consequences for World Countries

Transportation

Satisfaction of Needs

Fair Trade

Food

Energy

Fair Trade

1) An alternative approach to conventional trade
2) Is based on partnership between producers and consumers
3) Offers producers a better deal and improved terms of trade
4) Fair Trade products show that producers and traders have met Fairtrade Standards

Before you finish eating breakfast in the morning, you‘ve depended on more than half the world.

Martin Luther King

D. Barbian

Bürgerbräu e.V., Postfach
[illegible]
Nürnberg

FRIEDRICH-ALEXANDER UNIVERSITÄT ERLANGEN-NÜRNBERG

What is Fair Trade?

From Wikipedia:
„ *Fair trade* is an organized social movement that aims to help producers in developing countries to make better trading conditions and promote sustainability.“

From WFTO:
„ Fair Trade is a trading partnership, based on dialogue, transparency and respect, that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing the rights of, marginalized producers and workers – especially in the South. “

Fair Trade Labels

http://www.wfto.com/

http://www.fairtrade.net/

http://fairtradeusa.org/

More Fair Trade Labels:
http://www.unctad.info/en/Sustainability-Claims-Portal/Discussion-Forum/Fair-Trade/Web-links/

Fair Trade – four core principles

1) Market access for marginalised producers
2) Sustainable and equitable trading relationship (no forced and no child work)
3) Capacity building and empowerment
4) Consumer awareness raising and advocacy

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Implementation – Main Objectives

To sustain human life on earth

By ensuring the protection of the Elements to Sustain Life

To achieve a situation with no environmental degradation

To achieve a situation where humans can live a healthy life

A Sustainable World

A Sustainable World cares for all Human Beings in all Countries. Natural Elements Necessary to Sustain Life are to be protected. Impact of Interferences to Nature are allowed within the Regenerative Capacity without Harming Nature or Poeple‘s Health. A Sustainable World is of Long-term Durability.

5 Descriptors:
Anthropocentrism, Nature Conservation, Justice and Equality, Comprehensiveness, Long-term durability

3 Pillars:
Economy, Ecology, Social

Protection of Air, Water, Soil and Ozone Layer.

Reduction of Negative Impacts caused by Population Growth and Satisfaction of Needs.

Some Ideas

But ultimately everybody is responsible for a sustainable development!

Switch off the light when leaving a room.
Buy second-hand.
Buy long-lasting products.
Repair instead of throw away.
Avoid travelling by plane and by car. Take the publics or the bike.
Eat vegetarian.
Consume less.
Save energy.
Buy regional products.
Plant a kitchen garden. Plant a tree.