LEADER 11 October 2017

It looks like an oxymoron, but Earth optimism is worth a try

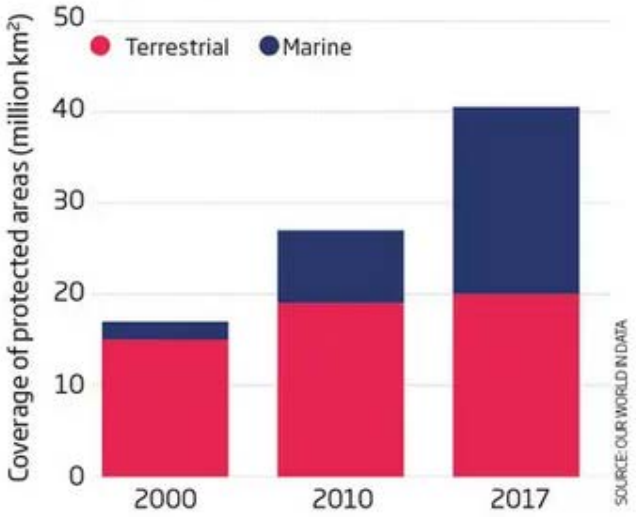
Decades of environmental doom-mongering have fallen on deaf ears. Maybe a new environmental campaign with a message of hope is just what we need

FEATURE 11 October 2017

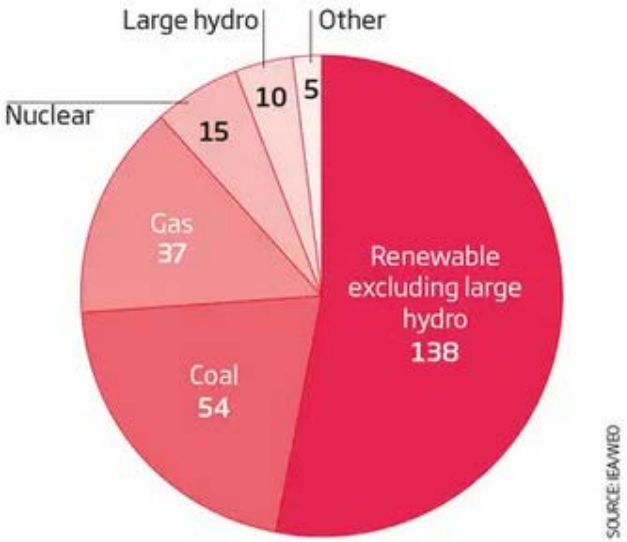
Is positive thinking the way to save the planet?

Move over doom and gloom, there is a new environmental movement in town. Earth optimists say focusing on small successes is the way forward

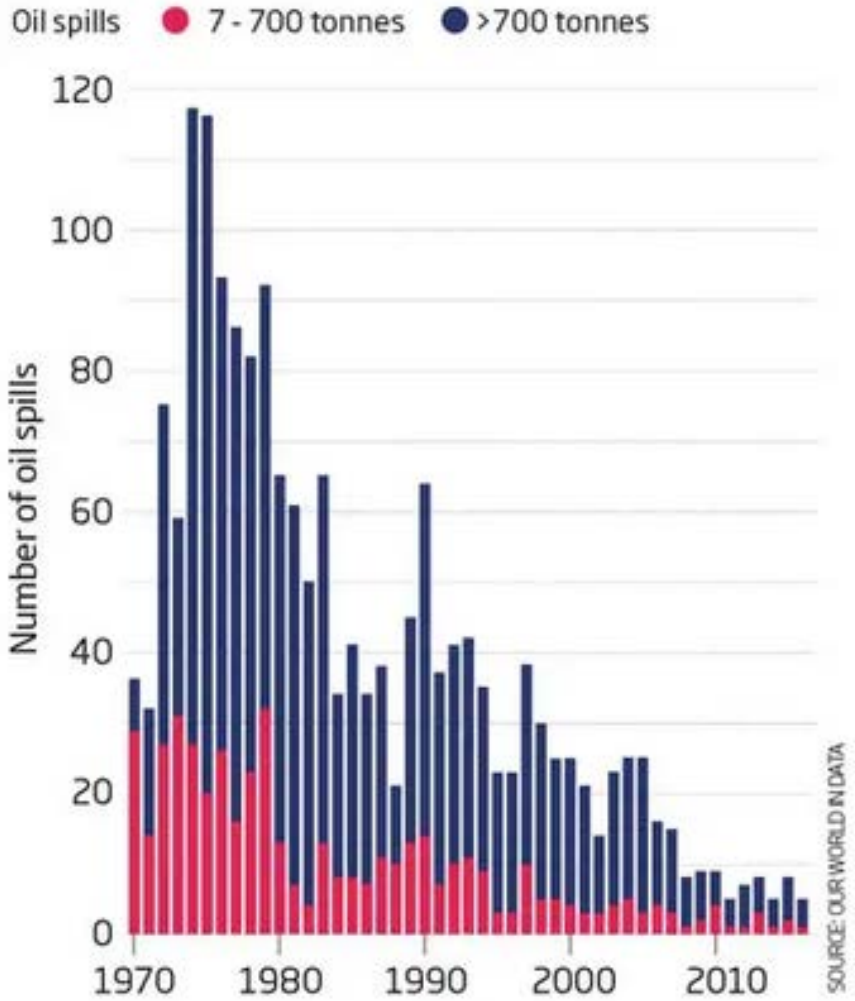
The extent of protected areas is increasing, particularly in the oceans



In 2016, for the second year in a row, renewables accounted for more than half of the new power capacity added globally (in gigawatts)



The number of oil spills has dropped markedly in recent decades



What feelings does such information evoke in you?

Top

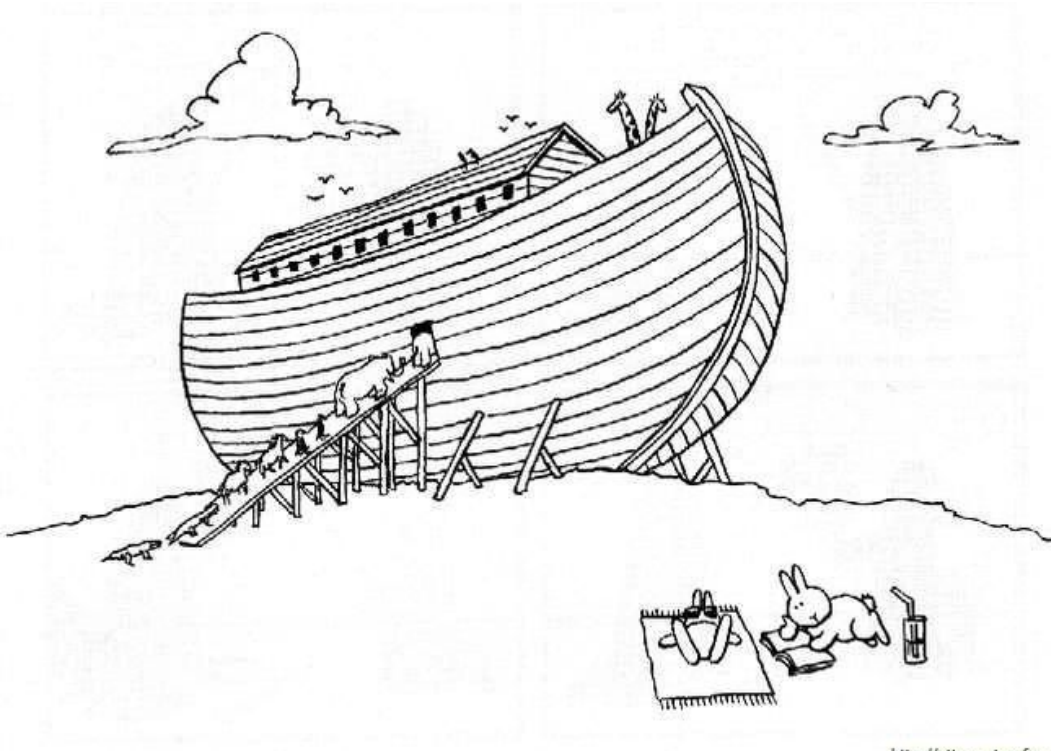

FUTURE
PAST
PRESENT

History of the Sustainable Development concept

Possible reaction to global challenges

1) Ignoring or downplaying

- attitude that the global issues (climate change, poverty, biodiversity loss, etc.) is not worthy of concern
- it results in inactivity, and „business-as-usual“ behaviour
- it does not solve the issues, they exacerbate and become more difficult to solve



Env. reasons of the Western Roman Empire fall

- highly increasing prosperity of the Roman society
- deforestation, excessive grazing, water overuse and salinisation
- the growth of urban population by the migration of peasants due to taxes and hard work on the more and more degraded fields
- consequences: food and water shortages, illnesses → social weakening

Date	Population	Date	Population
800 BCE	5,000	1084	15,000
800-500	80,000	1377	17,000
400	300,000	1527	55,000
200	300,000	1550	60,000
100	800,000	1748	150,000
100 CE	1,000,000	1800	153,000
500	500,000	1870	226,000
600	100,000	1895	450,000
700	80,000	1950	1,000,000
900	35,000	1980	3,000,000

The city of Rome's population rose and fell dramatically between 200 BCE and 600 CE.

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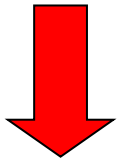
Decreasing of positive energy balance

EROEI *– Energy Return On Energy Invested*

• still increasing E-dependency



Today?

• agriculture
• resources extraction
• western lifestyle in general

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2) Recognizing seriousness of the issue, but not solving it

- we are afraid of disaster, but do not believe that we can change anything by ourselves
- we remain passive in the fear of what will come and hope that „it will be resolved somehow"
- or the “flood after us” approach - grab what can be grabed

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„By postponing, simple problems become complex, and then difficult to solve"
General Ferdinand Foch

7000 BC–1800 BC 	Mesopotamia/Sumer *Salinization and waterlogging of Sumer's agroecosystem*	Around 7000 BC, people in this region (now, largely, Iraq) began to modify the natural environment. Lacking adequate rainfall, land had to be irrigated for cultivation, and the demand for food increased as the population grew. The irrigated land became salinized and waterlogged. Records noting "the earth turned white" with salt date back to 2000 BC. By 1800 BC, the agricultural system—the foundation of Sumerian civilization—collapsed.
2500 BC–900 	Mayan Empire *Soil erosion, loss of agroecosystem viability, and water siltation in Central America*	Mayans lived in what are now parts of Mexico, Guatemala, Belize, and Honduras. The agriculture techniques they used were creative and intensive—clearing hillsides of jungle, terracing fields to contain soil erosion, draining swamps by digging ditches and using the soil from the ditches to form raised fields. Eventually too much was demanded of this system. Soil erosion reduced crop yields, and higher levels of silt in rivers damaged the raised fields. Decreased food production and competition for the remaining resources may have led to that civilization's demise.
50 BC–450 	Roman Empire *Desertification and loss of agroecosystem viability in North Africa*	The challenge of providing food for the population of Rome and its large standing armies plagued the empire. The North African provinces, once highly productive granaries, gradually became degraded as Roman demands for grain pushed cultivation onto marginal lands, prone to erosion. Scrub vegetation spread and some intensively cultivated areas became desertified. The irrigation systems the Romans used depended on watersheds that have since been deforested, and now yield less runoff, reducing the chance of restoring productivity.

1400–1600 	Canary Islands *Human and natural resource exploitation, degradation and extinctions in many regions*	Originally from North Africa, the Guanches were a people who inhabited the Canary Islands for more than 1,000 years before the Spanish arrived in the 1400s. The Spanish enslaved the Guanches, cleared the forests, and built sugar cane plantations. By 1600 the Guanches were dead, victims of Eurasian diseases and plantation conditions. As in the Canary Islands, regions in the Americas, Africa, and Asia where people were forced to grow and export cash crops such as sugar, tobacco, cotton, rubber, bananas, or palm oil, continue to suffer from deforestation, soil damage, biodiversity losses, and economic dependency instituted during colonization.
1800 	North America *Conversion, loss of habitat, and unrestrained killing of wildlife in North America*	As land was cleared for settlement and cultivation around the world, animal habitats of almost every kind were reduced; animals were killed for food, hides, or recreation as commerce spread. In North America, herds of bison, totaling perhaps as many as 50 million, were hunted to near extinction by the end of the 19th century. Aquatic as well as terrestrial species became targets of exploitation and extincition. In the 19th century, whales were killed in large numbers to support industrializing economies in need of whale oil in great quantity, mainly for lighting and lubricants. On the northwest coast of North America, whale populations were on the verge of extinction by the 20th century.
1900 	United States and Canada *Soil erosion and loss of biodiversity in the United States and Canada*	The Great Plains of the United States and Canada were ploughed in the late 19th and early 20th centuries and planted with new forms of drought-resistant wheat. Once the protective original grass cover was destroyed, drought in the 1930s enabled high, persistent wind storms to blow away much of the dry soil. Soil conservation methods were subsequently introduced such that when wind erosion again affected the area in the 1950s and in the 1970s, the consequences were less severe.

3) Recognizing seriousness of the issue, and effort to solve it actively

- making an effort to stop and reverse adverse trends to avoid or mitigate the anticipated consequences

- the concept of Sustainable Development is such an effort that gives us a hope!

- **We are not responsible for the result, but for the invested effort!**

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Sustainable Development – first ideas

The Constitution of the Iroquois Nations (circa 14. century)

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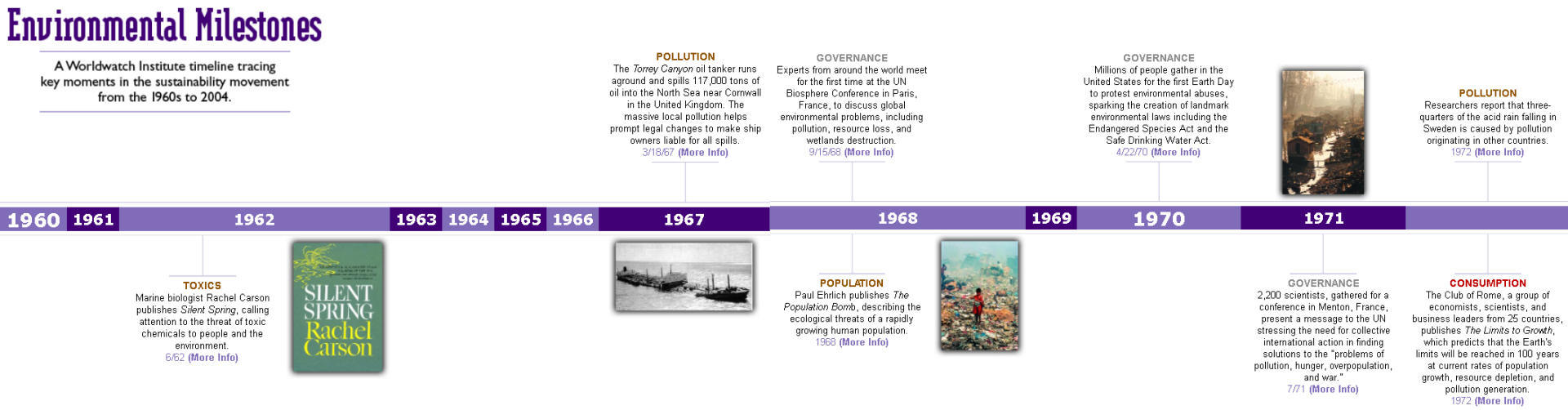
The Constitution of the Iroquois Nations

In all of your deliberations in the Confederate Council, in your efforts at law making, in all your official acts, self interest shall be cast into oblivion. Cast not over your shoulder behind you the warnings of the nephews and nieces should they chide you for any error or wrong you may do, but return to the way of the Great Law which is just and right. Look and listen for the welfare of the whole people and have always in view not only the present but also the coming generations, even those whose faces are yet beneath the surface of the ground -- the unborn of the future Nation."

1960 - 1972

The advent of the modern environmental movement

- influence on the revision of the development strategy
- actual development strategy - break free from life in poverty



Limits to Growth

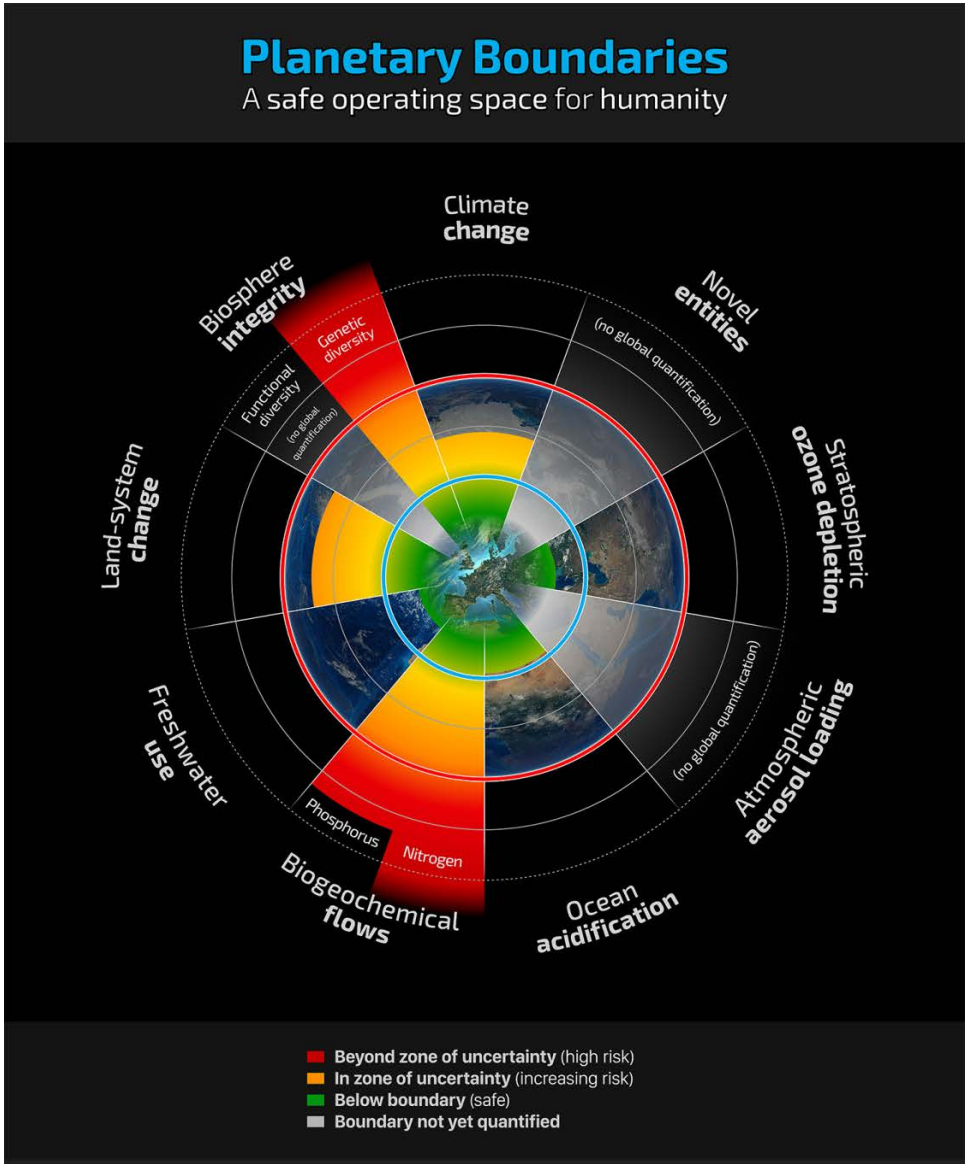
- what are the limits of the Earth???

Have you ever heard about any book, report, paper describing limits of the Earth?

Limits to Growth

- **what are the limits of the Earth???**

2009, 2015



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– group of intellectuals engaged in global issues

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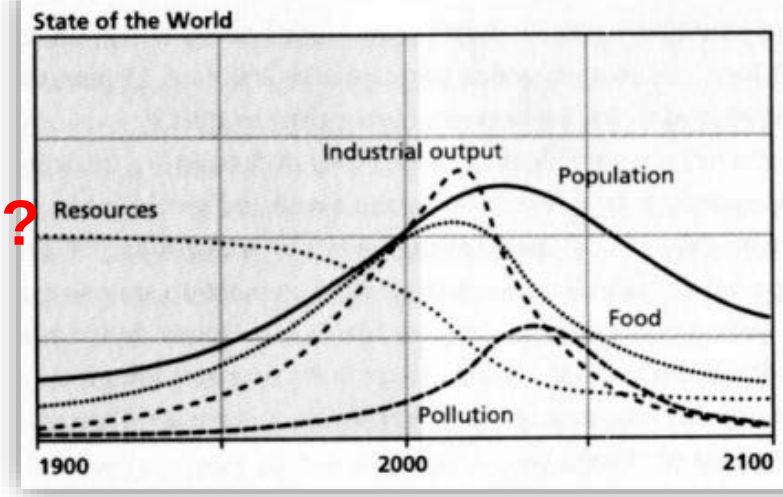

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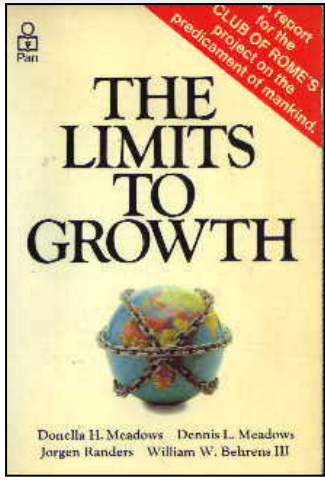
1972 – *Limits to growth* (Meadows et al.)

- Earth limits in perspective of the exponential growth
- **World3** – a feedback model
- variables: population, industrial output, food, pollution, resources consumption



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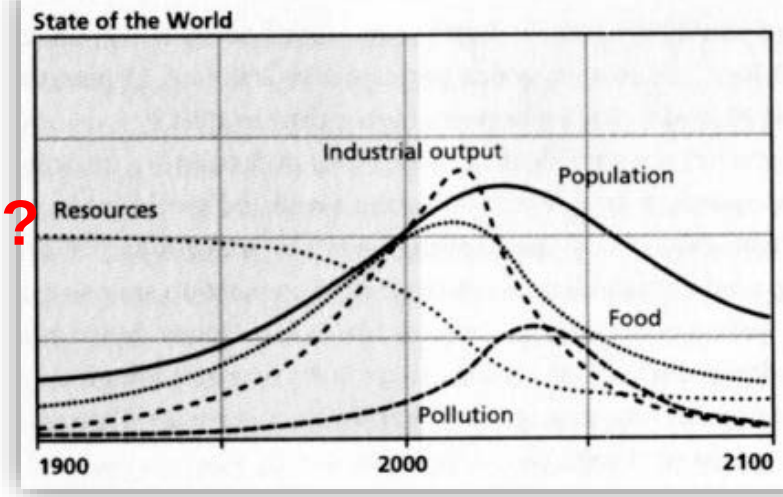

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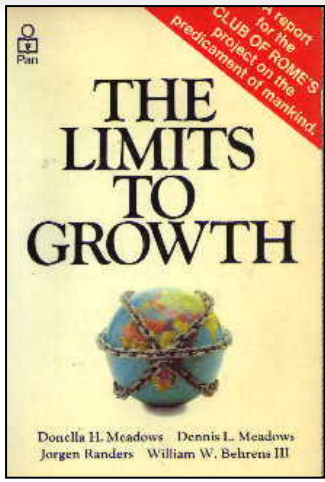
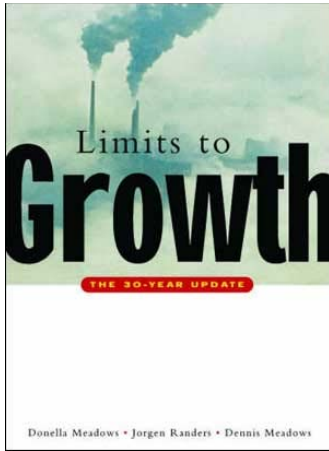


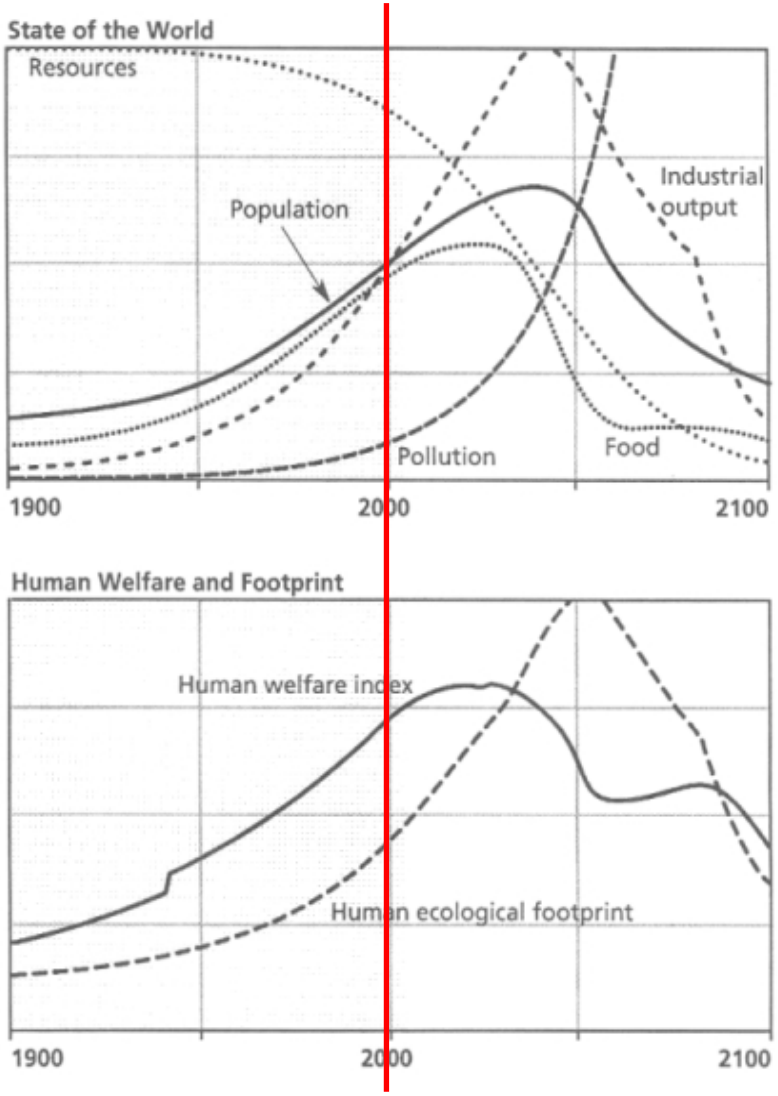
2002 – *Limits to growth - 30 year update*

- update based on actual data

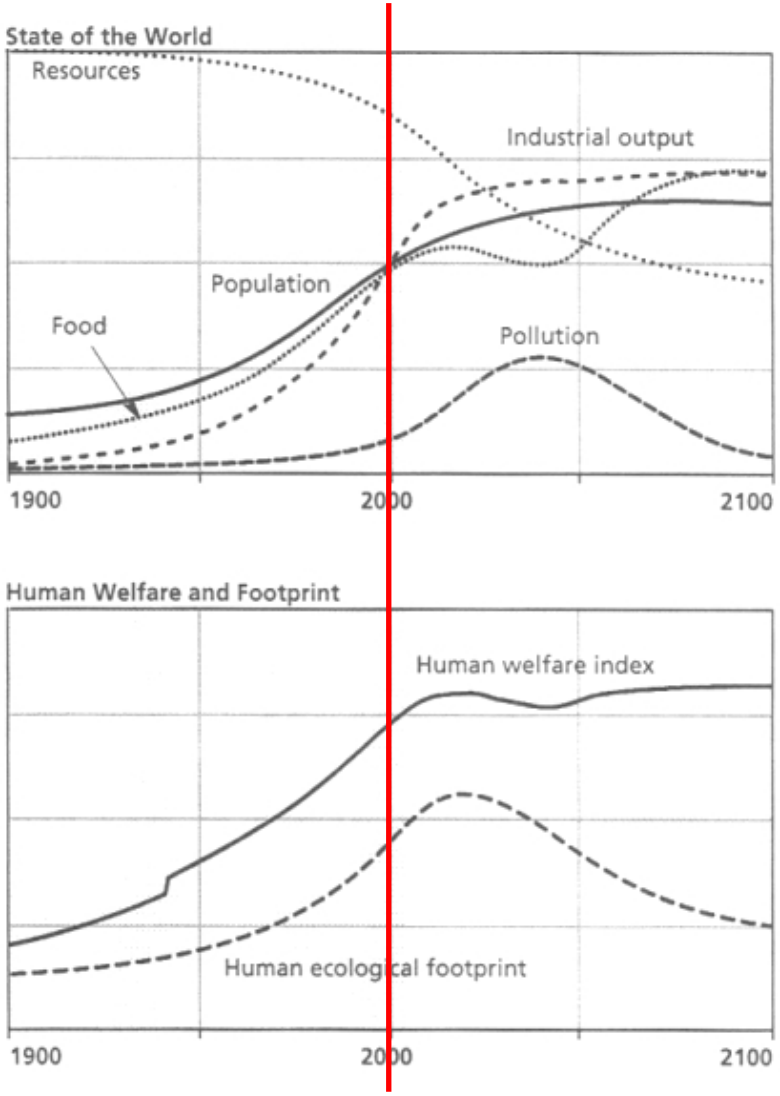


Model WORLD3 – prognosis of development

Scenario 1 – without any changes (***Business-as-Usual***)



Scenario 2 – change towards the **Sustainable Society**

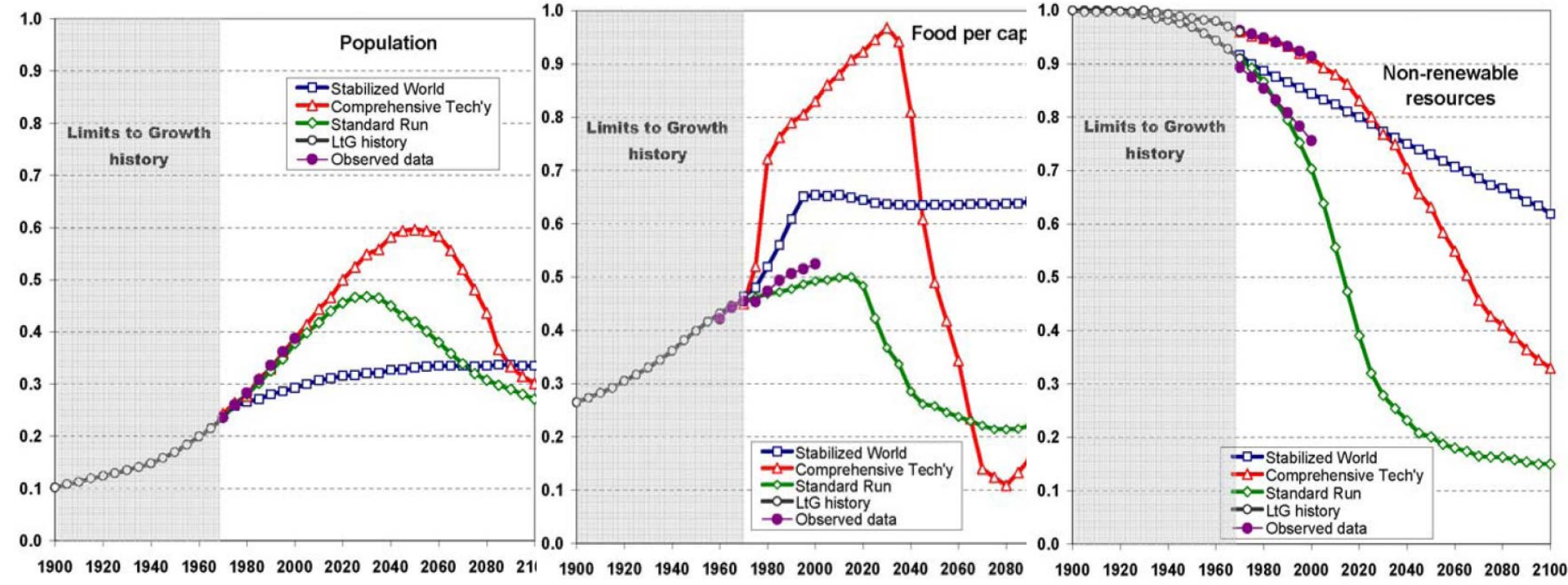


Reality x predictions of model WORLD3

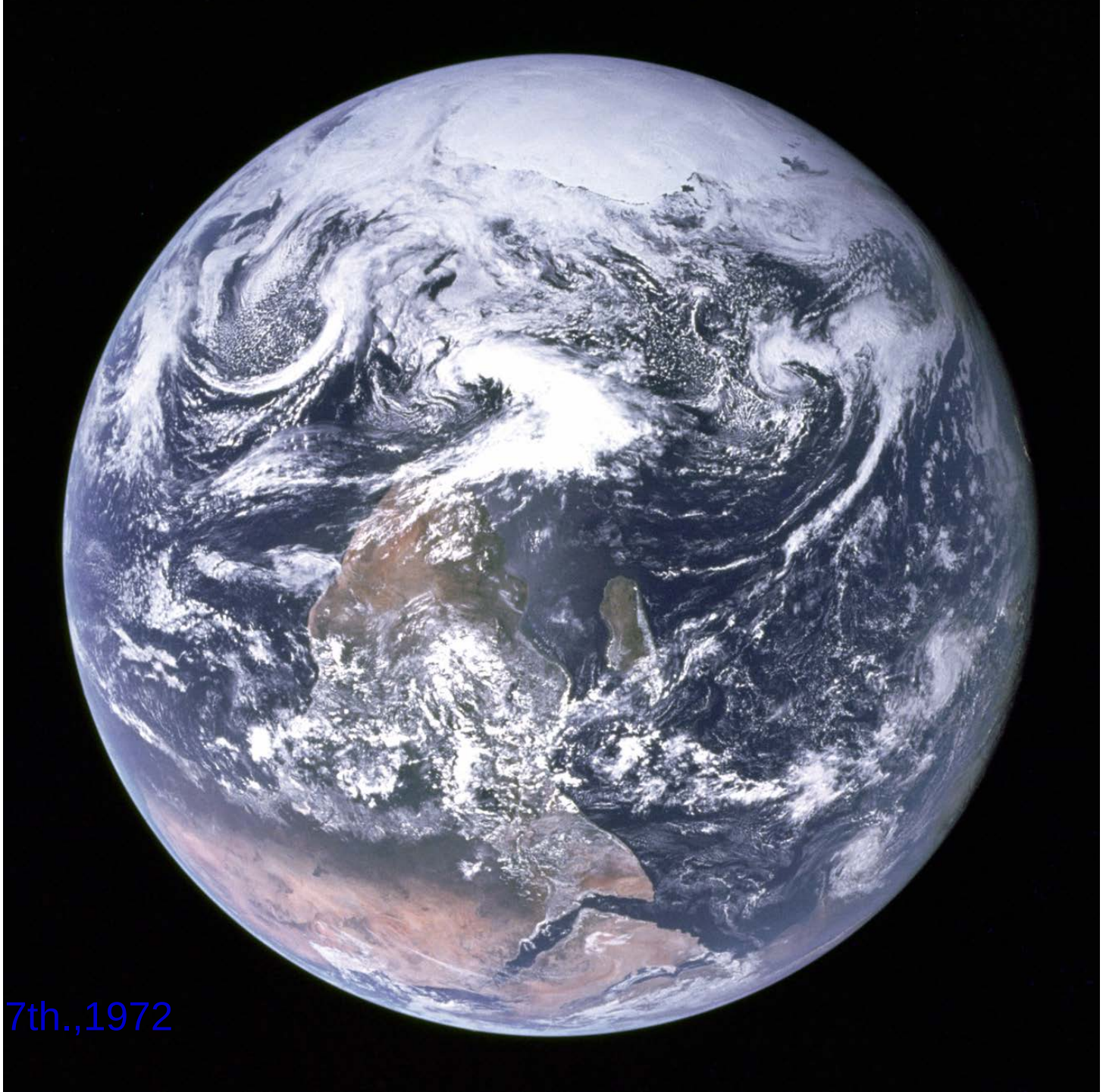
Graham Turner (*Global Environmental Change)* 2008

A comparison of the Limits to Growth with 30 year reality, 2008

„The analysis shows that 30 years of historical data compares favorably with key features of a business-as-usual scenario…“



December 7th.,1972
Apollo 17



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Apollo 17

1972 – Stockholm

UN Conference on the Human Environment (UNCHE)

- world's first policy response to the global issues
- determination of global env. issues threatening the existence of people on the Earth

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UN Conference on the Human Environment (UNCHE)

- **world's first policy response to the global issues**
- **determination of global env. issues threatening the existence of people on the Earth**

1) production of hazardous gaseous, liquid or solid wastes in excess of the acceptable level endangering human health and nature.
2) risks of disrupting life-giving planetary systems such as the hydrological cycle, the O_3 layer and the climate systems.
3) threatened by overexploitation and over-utilization of renewable and non-renewable resources
4) reduction of planet's biological richness - genetic basis of individual plant and animal species, number of species, and diversity of ecosystems

1972 – Stockholm

- representatives from 113 countries, 19 intergov. agencies and more than 400 NGOs were present – total >1200 delegates
- UNCHE called for immediate action to protect the environment at both national and international level

Only the one "Minister of the Environment" attended the conference?

The others had not free time - they had to solve other urgent env. issues.

The others did not considered that it is necessary.

No more "MoE" were over the world.

1972 – Stockholm

- representatives from 113 countries, 19 intergov. agencies and more than 400 NGOs were present – total >1200 delegates
- UNCHE called for immediate action to protect the environment at both national and international level
- followed by the establishment of environmental ministries
- **established UN Environment Programme – UNEP**

1972 – Stockholm

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- pointed out to the great contradiction in the view of the developed vs. the developing countries

- ***„Poverty is the worst form of pollution“*** **Indira Gandhi**

- if people deal with existential issues, then the concern for the environment stands apart
- priority: to survive here and now
- concern for good environment, biodiversity preservation, etc. is a privilege especially in rich countries that are no longer addressing the poverty issues
- investment in roads, dams, irrigation, infrastructure etc.

1973

1973

ISRAELI ARTILLERI ON SYRIAN FRONT

Oil crisis

- OPEC sharply increases oil prices in the 1970s
- price of oil from Abu Dhabi - $ 2.54 (1972) x $ 36.56 (1981) per barrel
- sharp price increases and supply constraints as a result of support of western countries to Israel in the Arab-Israeli conflict

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Consequences

- queues at petrol stations,
- panic among business investors
- recession and uncontrollable inflation
- USA severely affected
  → 1977 - 70% of oil imports from OPEC

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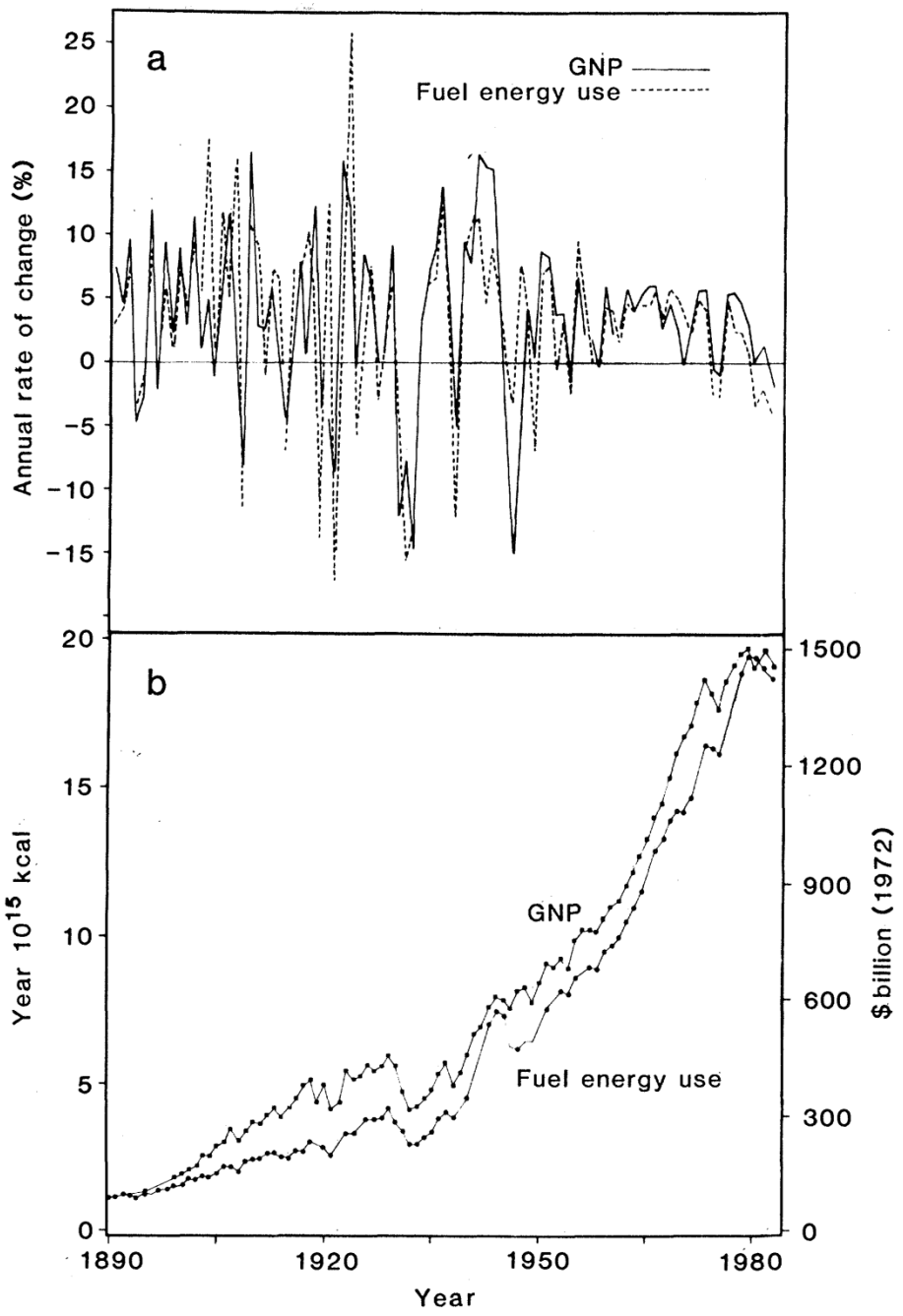
- reassessing energy performance
- investment in energy savings
- increasing production efficiency
- investment in R&D of renewable sources



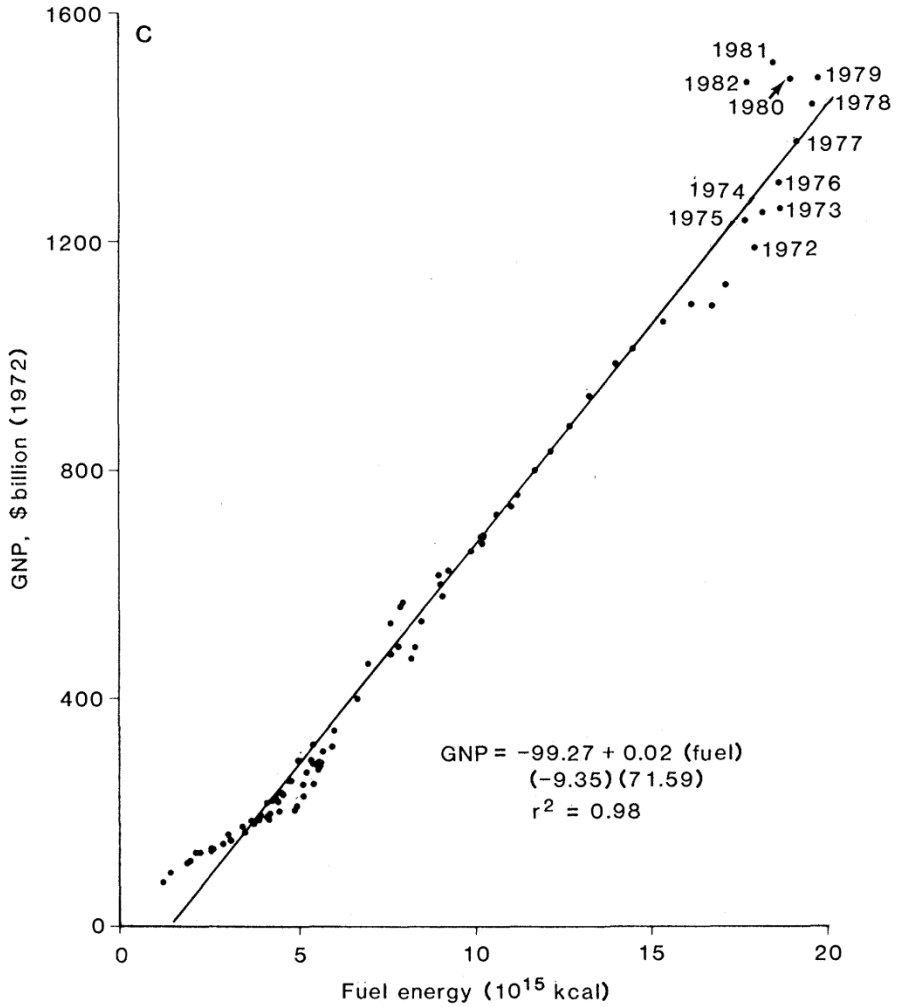


Fig. 1. (a) Annual rate of change in fuel use and real GNP in the United States from 1890 to 1982 (*55*, *56*). Fuel use includes fossil fuels, nuclear, and hydropower. (b) Fuel use and real GNP per year. (c) Results of linear regression model between fuel use and real GNP in the United States from 1890 to 1982. The numbers in parentheses are *t*-statistics. Hydro and nuclear power converted to thermal units based on prevailing heat rates at fossil steam electric plants (*55*, *56*).

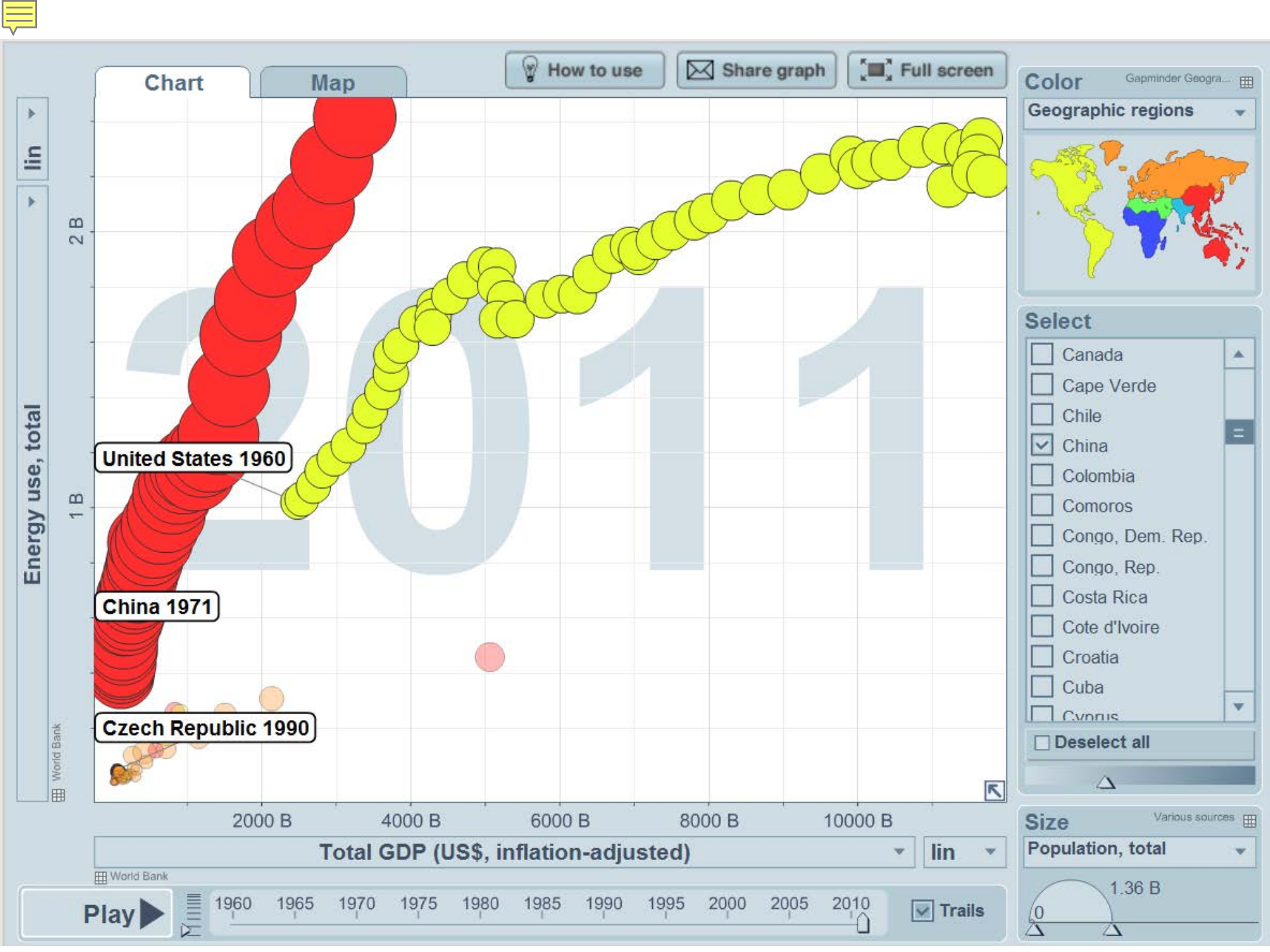


Chart
Map
How to use
Share graph
Full screen
Color
Gapminder Geogra...
Geographic regions
Select
Canada
Cape Verde
Chile
China
Colombia
Comoros
Congo, Dem. Rep.
Congo, Rep.
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Deselect all
lin
Energy use, total
World Bank
2 B
1 B
2011
United States 1960
China 1971
Czech Republic 1990
2000 B
4000 B
6000 B
8000 B
10000 B
Total GDP (US$, inflation-adjusted)
lin
World Bank
Size
Various sources
Population, total
1.36 B
0
Play
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005
2010
Trails

1983 - World Commission on Environment and Development (WCED)

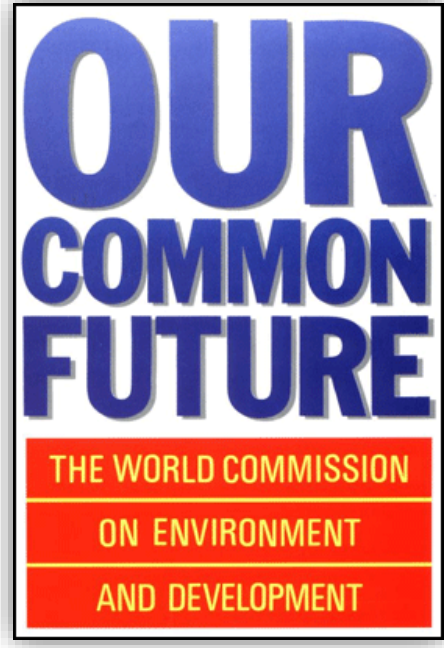
- founded by the UN decision based on finding that people are increasingly deteriorating life-essential environment and destroys resources
- the aim of this scientific commission:
„to find ways how to put global development on the road sustainable until the 21st century “

- led by Norwegian prime minister Gro Harlem Brundtland *(„Brundtland commission“)*

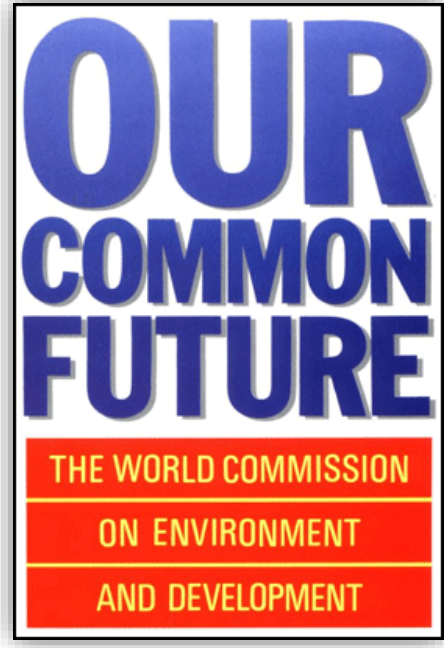
Brundtland commision - 1987

- **result**:
  1987 – report „***Our common future***“

- groundbreaking document in the env. protection
- **SD concept defined here**



Brundtland commision - 1987



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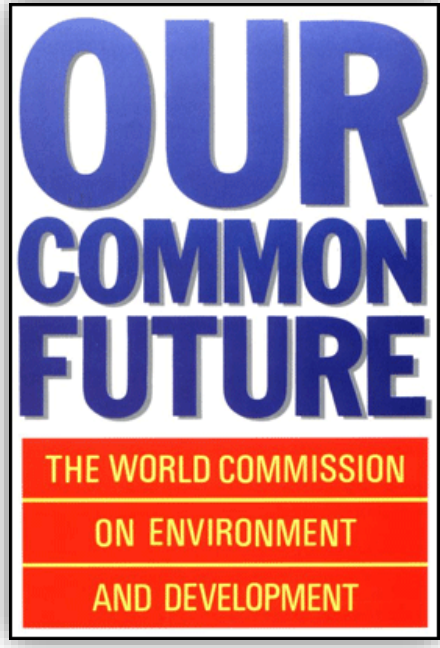

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„Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

It contains within it two key concepts:

- *the concept of 'needs', in particular the essential needs of the world's poor, to which overriding priority should be given; and*

- *the idea of limitations imposed by the state of technology and social organization on the environment's ability to meet present and future needs.*

1992 – Rio de Janeiro

United Nations Conference on Environment and Development (UNCED) – The Earth Summit

- representatives of 172 countries (108 presidents / prime ministers), 2400 NGO representatives
- parallel NGO Global Forum - 17,000 participants
- UN seeks ways to support re-assessment of national economic development and stop destruction of non-renewable resources and planetary pollution


THE '92
GLOBAL
FORUM
TOGETHER WE WILL
MAKE IT HAPPEN

1992 – Rio de Janeiro

- governments recognized the need to regulate national and international plans where all economic decisions should consider all environmental consequences

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UN expressed support to governments in the following areas:

- *production patterns* - reassessing the production of toxic substances such as lead in gasoline and toxic waste
- *alternative energy sources* - to replace fossil fuels associated with the development of climate change
- *the public transport system* - a method of reducing transport emissions, congestion in cities and health problems from smog
- addressing the alarming increase in *water scarcity*

Do you know any of the important conventions or documents accepted in this conference?

Top

1992 – Rio de Janeiro

- accepted 5 important treaties:
- The **Rio Declaration** on Environment and Development
- **Agenda 21**
- Convention on **Biological Diversity** (B)
- UN Framework Convention on **Climate Change** (B)
- The **Forest Principles**

- established „The UN Commission on SD“

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Take-home message of the Earth Summit

„To achieve the necessary changes needs nothing less than a change in our attitudes and behaviour"

2000 – New York

Millennium Summit

- expressed support for the intention of the international community to "develop genuinely sustainable„

- respect for nature declared as a fundamental value

2000 – New York

Millennium Summit

- expressed support for the intention of the international community to "develop genuinely sustainable„
- respect for nature declared as a fundamental value
- 8 Millennium Development Goals developed after the summit
- main focus is to eradicate poverty and other ills of the world

2015 x 1990

Goals and Targets	Africa		Asia				Oceania	Latin America and the Caribbean	Caucasus and Central Asia
	Northern	Sub-Saharan	Eastern	South-Eastern	Southern	Western			
GOAL 1 | Eradicate extreme poverty and hunger									
Reduce extreme poverty by half	low poverty	very high poverty	low poverty	moderate poverty	high poverty	low poverty	—	low poverty	low poverty
Productive and decent employment	large deficit	very large deficit	moderate deficit	large deficit	large deficit	large deficit	very large deficit	moderate deficit	small deficit
Reduce hunger by half	low hunger	high hunger	moderate hunger	moderate hunger	high hunger	moderate hunger	moderate hunger	moderate hunger	moderate hunger
GOAL 2 | Achieve universal primary education									
Universal primary schooling	high enrolment	moderate enrolment	high enrolment	high enrolment	high enrolment	high enrolment	high enrolment	high enrolment	high enrolment
GOAL 3 | Promote gender equality and empower women									
Equal girls' enrolment in primary school	close to parity	close to parity	parity	parity	parity	close to parity	close to parity	parity	parity
Women's share of paid employment	low share	medium share	high share	medium share	low share	low share	medium share	high share	high share
Women's equal representation in national parliaments	moderate representation	moderate representation	moderate representation	low representation	low representation	low representation	very low representation	moderate representation	low representation
GOAL 4 | Reduce child mortality									
Reduce mortality of under-five-year-olds by two thirds	low mortality	high mortality	low mortality	low mortality	moderate mortality	low mortality	moderate mortality	low mortality	low mortality
GOAL 5 | Improve maternal health									
Reduce maternal mortality by three quarters	low mortality	high mortality	low mortality	moderate mortality	moderate mortality	low mortality	moderate mortality	low mortality	low mortality
Access to reproductive health	moderate access	low access	high access	moderate access	moderate access	moderate access	low access	high access	moderate access
GOAL 6 | Combat HIV/AIDS, malaria and other diseases									
Halt and begin to reverse the spread of HIV/AIDS	low incidence	high incidence	low incidence	low incidence	low incidence	low incidence	low incidence	low incidence	low incidence
Halt and reverse the spread of tuberculosis	low mortality	high mortality	low mortality	moderate mortality	moderate mortality	low mortality	moderate mortality	low mortality	moderate mortality
GOAL 7 | Ensure environmental sustainability									
Halve proportion of population without improved drinking water	high coverage	low coverage	high coverage	high coverage	high coverage	high coverage	low coverage	high coverage	moderate coverage
Halve proportion of population without sanitation	moderate coverage	very low coverage	moderate coverage	low coverage	very low coverage	high coverage	very low coverage	moderate coverage	high coverage
Improve the lives of slum-dwellers	low proportion of slum-dwellers	very high proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	moderate proportion of slum-dwellers	—
GOAL 8 | Develop a global partnership for development									
Internet users	moderate usage	low usage	high usage	moderate usage	low usage	high usage	low usage	high usage	high usage

The progress chart operates on two levels. The text in each box indicates the present level of development. The colours show progress made towards the target according to the legend below:

- Target met or excellent progress.
- Good progress.
- Fair progress.
- Poor progress or deterioration.
- Missing or insufficient data.

2002 – Johannesburg

The World Summit on Sustainable Development

Five key topics of the conference:
1) globalization
2) harmonizing development and the environment protection
3) poverty and the MDGs
4) consumption and production models
5) protection of biodiversity and natural resources

- a critical assessment of the journey to SD was expected
- the result rather disappointing
- instead of confirming and supporting the SD, the delegates went rather "Sustainable" way of discussions, statements and commitment to the world's problems ;-(

2002 – Johannesburg

- main output: ***Plan of Implementation***
-it contains goals and a timetable in the discussed SD areas
- support for SD by big multinational companies (NGOs in Rio)

Main achievement:

- **global support to fulfilling of 8MDGs**

2012 – Rio+20

UN Conference on Sustainable Development (June 20-22, 2012)

RIO+20
United Nations Conference on Sustainable Development

- two main topics:

1) Institutional framework for SD

2) Green economy within the SD and poverty eradication

- **ad 1) Institutional framework for SD**

- UN Commission for sustainable development (CSD) as the main body covering the issue of SD in the UN, has a very weak mandate (abolish or replace it with a stronger one)

- as well as UNEP (env. pillar) - in comparison with ILO (social pillar) or WTO (economic pillar) has a weak position - it is "only" program

The United Nations System

UN Principal Organs

- General Assembly
- Security Council
- Economic and Social Council
- Secretariat
- International Court of Justice
- Trusteeship Council[6]

Subsidiary Bodies

Main and other sessional committees
Disarmament Commission
Human Rights Council
International Law Commission
Standing committees and ad hoc bodies

Funds and Programmes[1]

UNCTAD United Nations Conference on Trade and Development
- **ITC** International Trade Centre (UNCTAD/WTO)

UNDP United Nations Development Programme
- **UNCDF** United Nations Capital Development Fund
- **UNV** United Nations Volunteers

UNEP United Nations Environment Programme
UNFPA United Nations Population Fund
UN-HABITAT United Nations Human Settlements Programme
UNHCR Office of the United Nations High Commissioner for Refugees
UNICEF United Nations Children's Fund
UNODC United Nations Office on Drugs and Crime
UNRWA[2] United Nations Relief and Works Agency for Palestine Refugees in the Near East
UN-Women United Nations Entity for Gender Equality and the Empowerment of Women
WFP World Food Programme

Research and Training Institutes

UNICRI United Nations Interregional Crime and Justice Research Institute
UNIDIR[2] United Nations Institute for Disarmament Research
UNITAR United Nations Institute for Training and Research
UNRISD United Nations Research Institute for Social Development
UNSSC United Nations System Staff College
UNU United Nations University

Other Entities

UNAIDS Joint United Nations Programme on HIV/AIDS
UNISDR United Nations International Strategy for Disaster Reduction
UNOPS United Nations Office for Project Services

Related Organizations

CTBTO Preparatory Commission Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization
IAEA[1,3] International Atomic Energy Agency
OPCW Organisation for the Prohibition of Chemical Weapons
WTO[1,4] World Trade Organization

Subsidiary Bodies

Counter-terrorism committees
International Criminal Tribunal for Rwanda (ICTR)
International Criminal Tribunal for the former Yugoslavia (ICTY)
Military Staff Committee
Peacekeeping operations and political missions
Sanctions committees (ad hoc)
Standing committees and ad hoc bodies

Advisory Subsidiary Body

Peacebuilding Commission

Specialized Agencies[1,5]

FAO Food and Agriculture Organization of the United Nations
ICAO International Civil Aviation Organization
IFAD International Fund for Agricultural Development
ILO International Labour Organization
IMF International Monetary Fund
IMO International Maritime Organization
ITU International Telecommunication Union
UNESCO United Nations Educational, Scientific and Cultural Organization
UNIDO United Nations Industrial Development Organization
UNWTO World Tourism Organization
UPU Universal Postal Union
WHO World Health Organization
WIPO World Intellectual Property Organization
WMO World Meteorological Organization

World Bank Group
- **IBRD** International Bank for Reconstruction and Development
- **ICSID** International Centre for Settlement of Investment Disputes
- **IDA** International Development Association
- **IFC** International Finance Corporation
- **MIGA** Multilateral Investment Guarantee Agency

Functional Commissions

Crime Prevention and Criminal Justice
Narcotic Drugs
Population and Development
Science and Technology for Development
Social Development
Statistics
Status of Women
Sustainable Development
United Nations Forum on Forests

Regional Commissions

ECA Economic Commission for Africa
ECE Economic Commission for Europe
ECLAC Economic Commission for Latin America and the Caribbean
ESCAP Economic and Social Commission for Asia and the Pacific
ESCWA Economic and Social Commission for Western Asia

Other Bodies

Committee for Development Policy
Committee of Experts on Public Administration
Committee on Non-Governmental Organizations
Permanent Forum on Indigenous Issues
United Nations Group of Experts on Geographical Names
Other sessional and standing committees and expert, ad hoc and related bodies

Departments and Offices

EOSG Executive Office of the Secretary-General
DESA Department of Economic and Social Affairs
DFS Department of Field Support
DGACM Department for General Assembly and Conference Management
DM Department of Management
DPA Department of Political Affairs
DPI Department of Public Information
DPKO Department of Peacekeeping Operations
DSS Department of Safety and Security
OCHA Office for the Coordination of Humanitarian Affairs
OHCHR Office of the United Nations High Commissioner for Human Rights
OIOS Office of Internal Oversight Services
OLA Office of Legal Affairs
OSAA Office of the Special Adviser on Africa
SRSG/CAAC Office of the Special Representative of the Secretary-General for Children and Armed Conflict
SRSG/SVC Office of the Special Representative of the Secretary-General on Sexual Violence in Conflict
UNODA Office for Disarmament Affairs
UNOG United Nations Office at Geneva
UN-OHRLLS Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing States
UNON United Nations Office at Nairobi
UNOV United Nations Office at Vienna

Notes:

1 The United Nations, its Funds and Programmes, the Specialized Agencies, IAEA and WTO are all members of the United Nations System Chief Executives Board for Coordination (CEB).

2 UNRWA and UNIDIR report only to the General Assembly (GA).

3 IAEA reports to the Security Council and the GA.

4 WTO has no reporting obligation to the GA, but contributes on an ad hoc basis to GA and Economic and Social Council (ECOSOC) work on, inter alia, finance and development issues.

5 Specialized Agencies are autonomous organizations whose work is coordinated through ECOSOC (intergovernmental level) and CEB (inter-secretariat level).

6 The Trusteeship Council suspended operation on 1 November 1994, as on 1 October 1994 Palau, the last United Nations Trust Territory, became independent.

- **ad 2) Green economy**

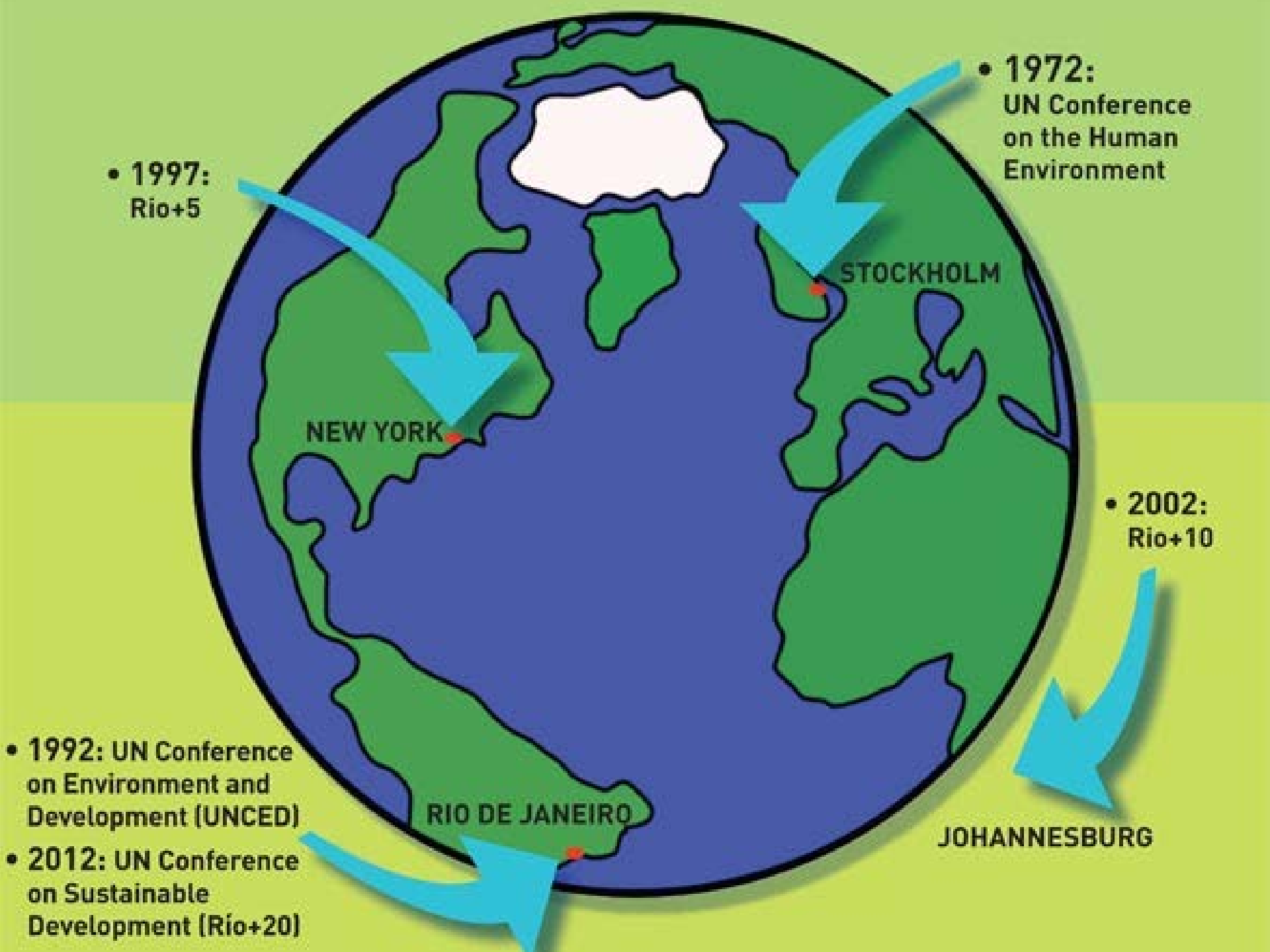
„A green economy is low-carbon, resource efficient, and socially inclusive.“

- measuring the success (now GDP) must be reassessed, taking account of pollution, resource depletion, ecosystem decline. services, and the effects of this on the poor

Biodiversity	Ecosystem goods and services (examples)	Economic values (examples)
Ecosystems (variety & extent/area)	• Recreation • Water regulation • Carbon storage	Avoiding greenhouse gas emissions by conserving forests: US$ 3.7 trillion (NPV)
Species (diversity & abundance)	• Food, fiber, fuel • Design inspiration • Pollination	Contribution of insect pollinators to agricultural output: ~US$ 190 billion/year
Genes (variability & population)	• Medicinal discoveries • Disease resistance • Adaptive capacity	25-50% of the US$ 640 billion pharmaceutical market is derived from genetic resources

Table 1: Natural capital – Underlying components and illustrative services and values

Source: Eliasch (2008); Gallai et al. (2009); TEEB (2009)


• 1972:
UN Conference
on the Human
Environment
STOCKHOLM
• 1997:
Rio+5
NEW YORK
• 2002:
Rio+10
JOHANNESBURG
• 1992: UN Conference
on Environment and
Development (UNCED)
RIO DE JANEIRO
• 2012: UN Conference
on Sustainable
Development (Rio+20)

2015 - 2030

Sustainable development goals (SDG)


SUSTAINABLE DEVELOPMENT GOALS
1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

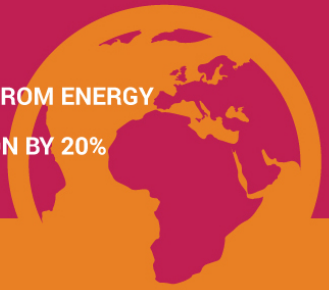
Smarter Global Targets to 2030

PEOPLE

- LOWER CHRONIC CHILD MALNUTRITION BY 40%
- HALVE MALARIA INFECTION
- REDUCE TUBERCULOSIS DEATHS BY 90%
- AVOID 1.1M HIV INFECTIONS THROUGH CIRCUMCISION
- CUT EARLY DEATH FROM CHRONIC DISEASE BY 1/3
- REDUCE NEWBORN MORTALITY BY 70%
- INCREASE IMMUNIZATION TO REDUCE CHILD DEATHS BY 25%
- MAKE FAMILY PLANNING AVAILABLE TO EVERYONE
- ELIMINATE VIOLENCE AGAINST WOMEN AND GIRLS

PLANET

- PHASE OUT FOSSIL FUEL SUBSIDIES
- HALVE CORAL REEF LOSS
- TAX POLLUTION DAMAGE FROM ENERGY
- CUT INDOOR AIR POLLUTION BY 20%



PROSPERITY

- REDUCE TRADE RESTRICTIONS (FULL DOHA)
- IMPROVE GENDER EQUALITY IN OWNERSHIP, BUSINESS AND POLITICS
- BOOST AGRICULTURAL YIELD GROWTH BY 40%
- INCREASE GIRLS' EDUCATION BY TWO YEARS
- ACHIEVE UNIVERSAL PRIMARY EDUCATION IN SUB-SAHARAN AFRICA
- TRIPLE PRESCHOOL IN SUB-SAHARAN AFRICA

COPENHAGEN CONSENSUS CENTER