Rio Declaration on Environment and Development

Background Information on the Exhibition Agenda 21 Rio + 10 Rio + 20

Many of us have very little idea of what is meant by the slogans "Agenda 21": Programme for Action for Sustainable Development from the 1992 Rio Conference, "Rio + 10", the Millennium Targets from Johannesburg in 2002, or "Rio + 20" in 2012.

Hardly any of us find the time to work through the extensive publications and grasp the immediate implications for our daily work and our future life.

To bring out key messages of Agenda 21, Rio + 10 and Rio + 20 more clearly and to show the necessity of our work, a number of important statements were presented artistically in the form of a "Visualized Agenda 21 / Rio + 10 / Rio + 20".

The first part of this travelling exhibition was presented for the first time at the EXPO 2000 in Hanover - the second part, incorporating the Millennium Targets, at the Johannesburg Summit in 2002 - and the third part, incorporating key strategies of the Rio de Janeiro Summit in 2012.

60 exhibitions have been put on in response to requests from Argentina, Austria, Belgium, Canada, Cape Verde Islands, China, Costa Rica, Cuba, France, Germany, Hungary, India, Japan, Jordan, Kenya, Malaysia, Singapore, South Africa, Spain, Switzerland, The Netherlands and The Philippines.
The "Visualized Agenda 21 / Rio + 10" has been included up to now at more than 40 national and international congresses, UN conferences, symposia and events.

The Bund-Länder Commission for Educational Planning and Research Promotion in Germany rated this exhibition as "of good educational value".

Exhibition Agenda 21 Rio+10

2000: Hanover, Bonn, Frankfurt

2001: Bonn, Brussels, Geneva, Wiesbaden

2002: Darmstadt, Beijing, Greifswald, Osnabrück, Bonn, Johannesburg

2003: Neu Anspach, Hamburg, Sievershausen, Havanna, Praia (Cape Verde Islands)

2004: Hofgeismar, Munich, Bonn, Monheim, Pernegg (Austria)

2005: Mainz, Amsterdam, Stuttgart, Lyon, Bonn, Manila, Nairobi, Singapore, St. Catharines (Canada), Paris

2006: Gent (Belgium), Amman (Jordan)

2007: Jabalpur (India), Madrid, Göttingen

2008: Sapporo, Hamburg

2009: Göttingen, Bonn, Kiel

2010: Düsseldorf, Hilden, Buenos Aires, Szeged (Hungary)

2011: Kuala Lumpur, Rüdesheim

2012: Bonn, Friedewald

2013: San Jose (Costa Rica), Göttingen, Vechelde

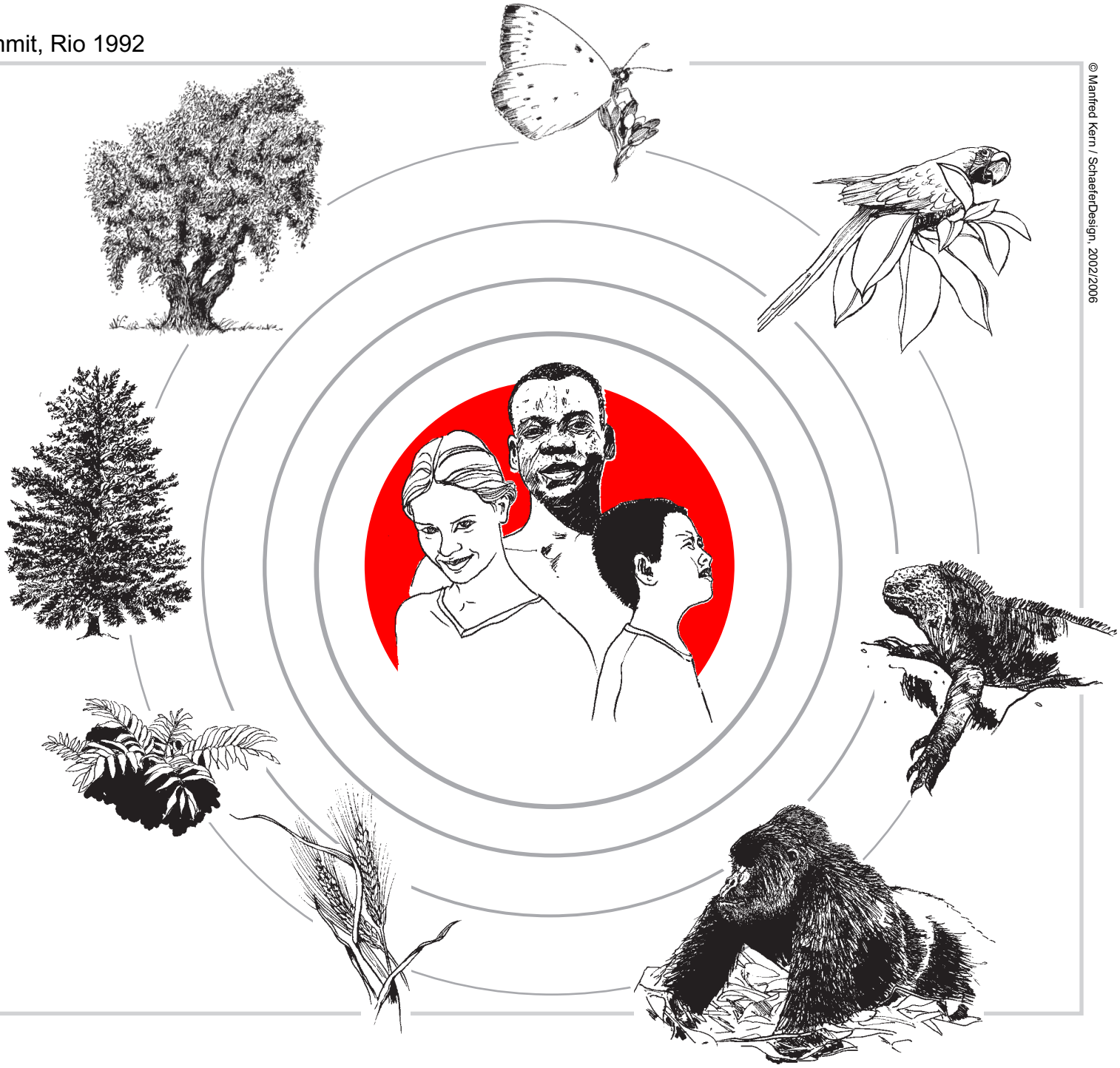
What are the implications of Agenda 21 for us?

Action programme: Sustainable development Rio de Janeiro, Brazil, 1992

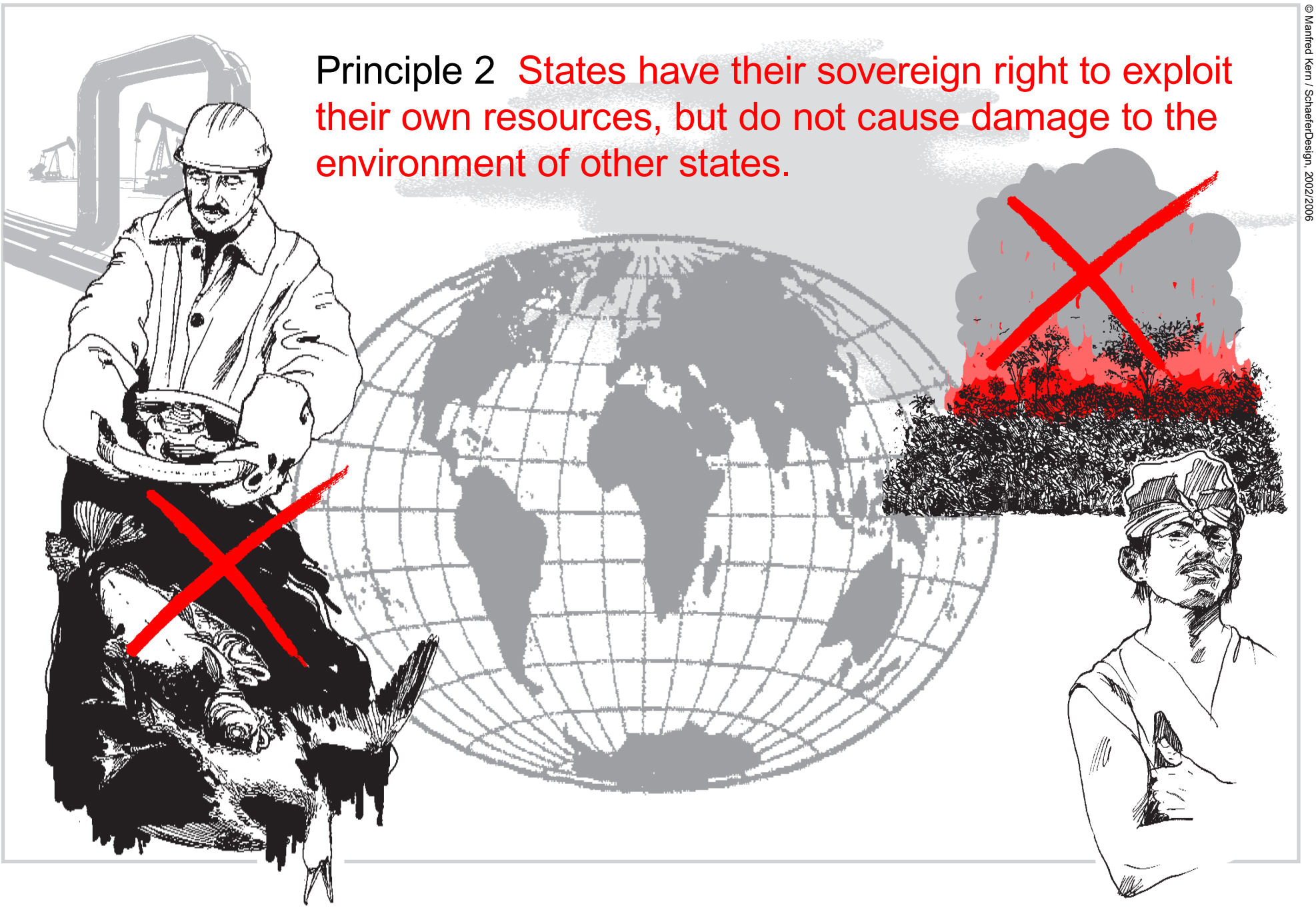
Agenda 21 was passed at the United Nations Conference for Environment and Development in Rio de Janeiro in 1992.
More than 170 countries gave their consent to this environmental policy document for the twenty-first century.
The word Agenda means "what we have to do".
Although many people talk about the Agenda, very few have read it carefully. One of the basic priorities on the Agenda - "sustainable use of resources" - is scarcely ever put together in a set of illustrations.

Principle 1

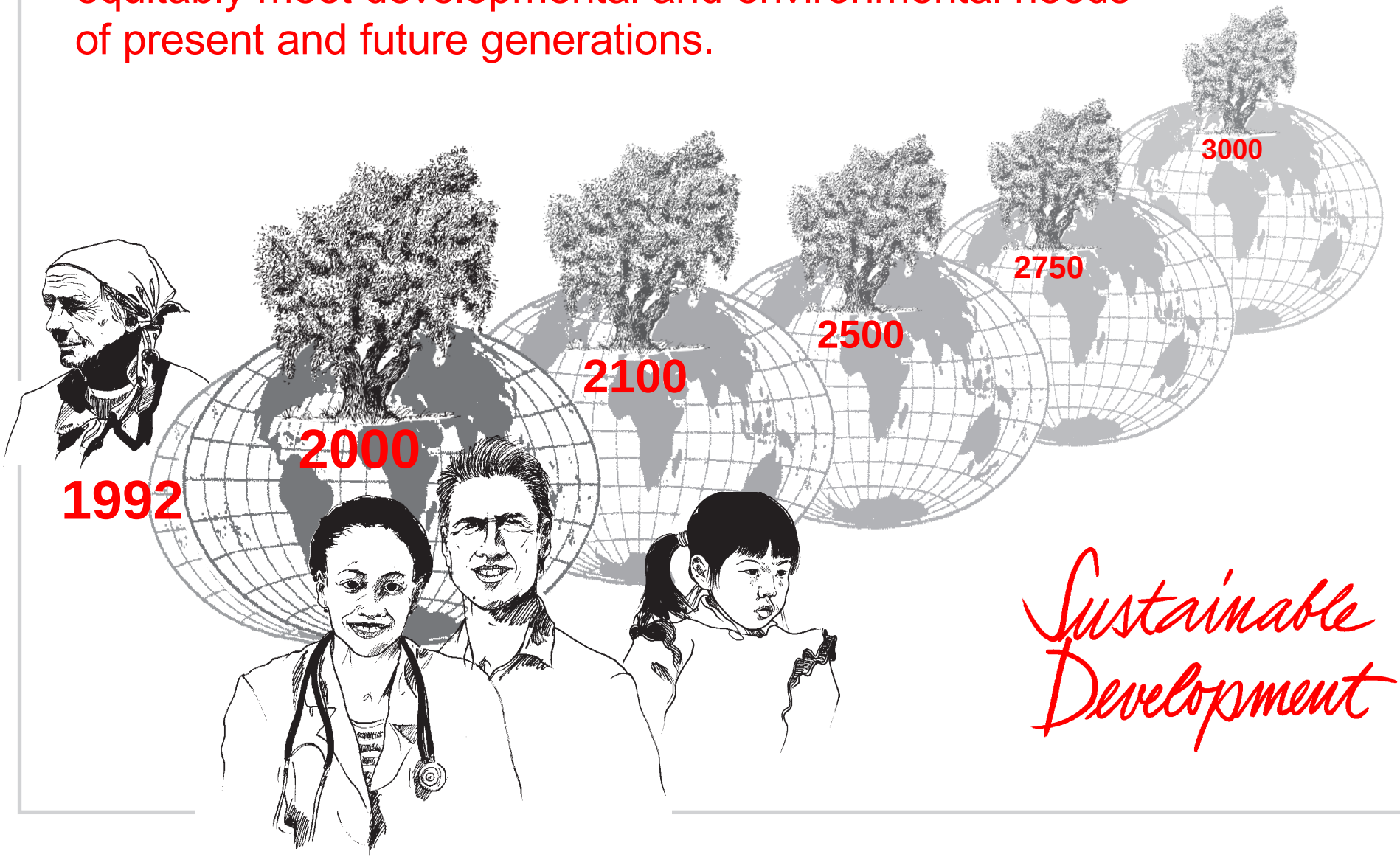
Human beings are the centre of concerns for sustainable development.



Agenda 21 Principle 2, Earth Summit, Rio 1992

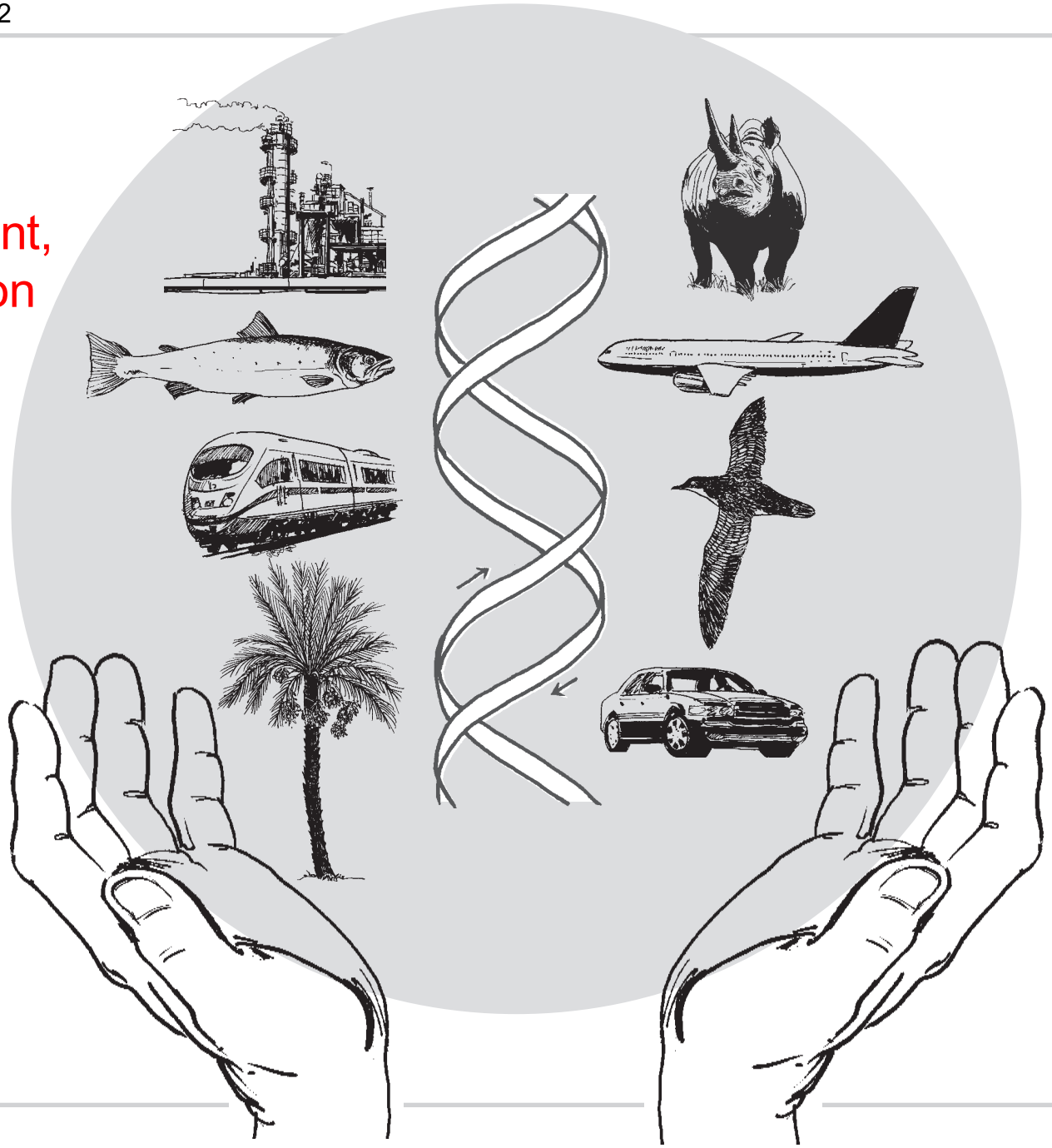


Principle 3 The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.



Principle 4

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.



Principle 5

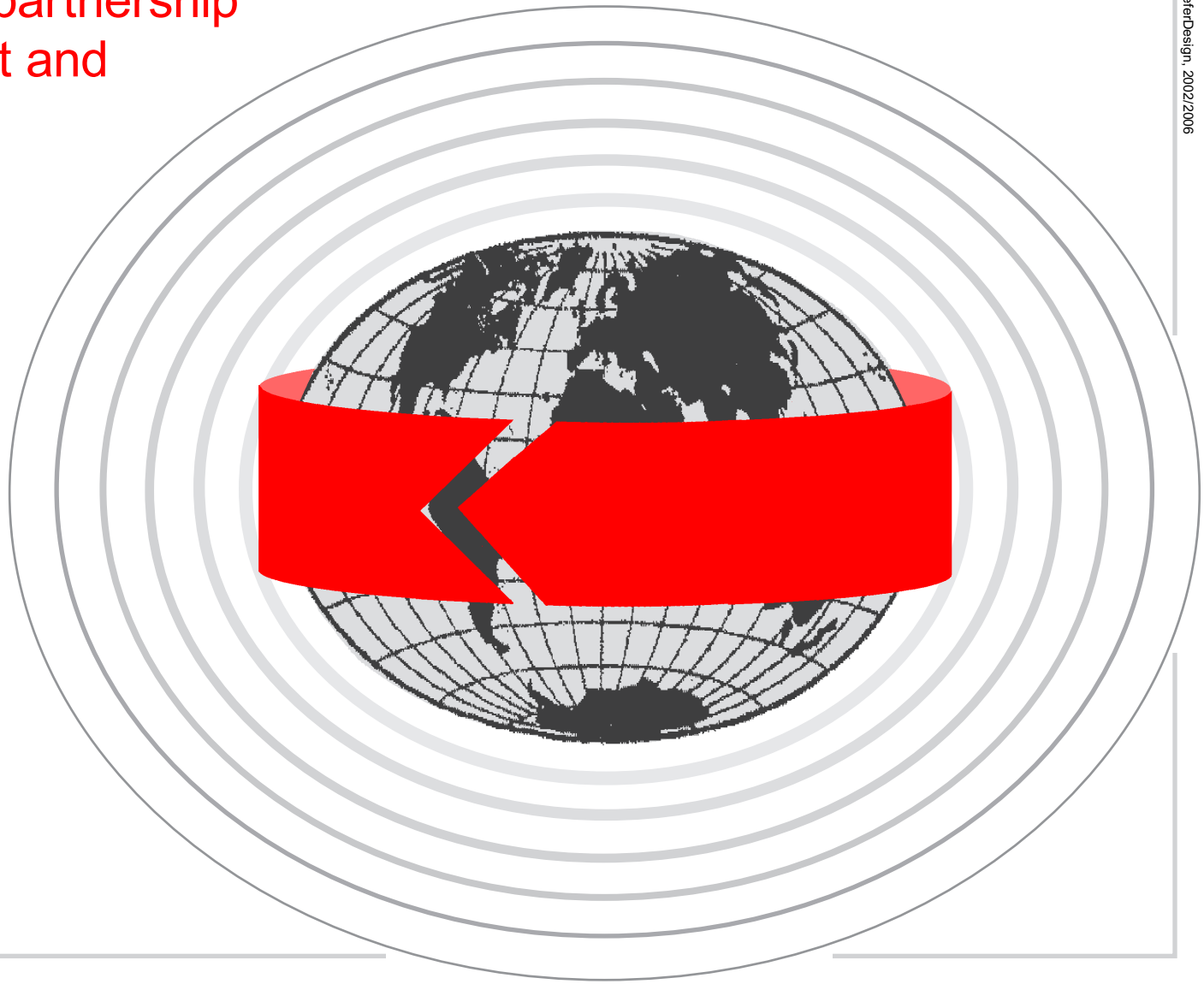
All States and all people
shall cooperate
in the essential task
of eradicating poverty.

Principle 6 The special situation and needs of developing countries, particularly the least developed and those most environmentally vulnerable, shall be given special priority.

Least Developed Countries

+ Haiti
+ Kiribati
+ Vanuatu
+ Samoa
+ Tuvalu

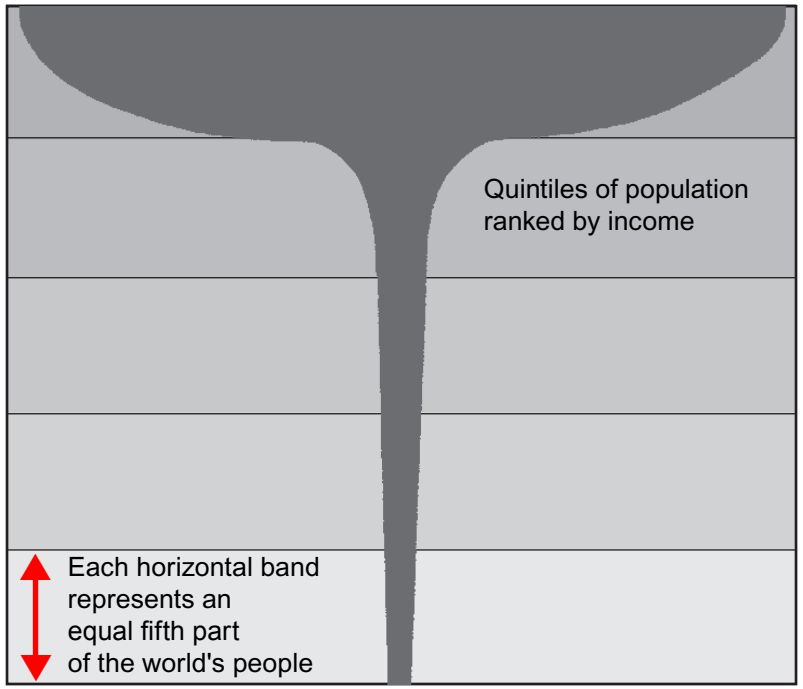
Principle 7 States shall cooperate in a spirit of global partnership to conserve, protect and restore the health and integrity of the Earth's ecosystem.



Principle 8 To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption.

Global Economic Disparities

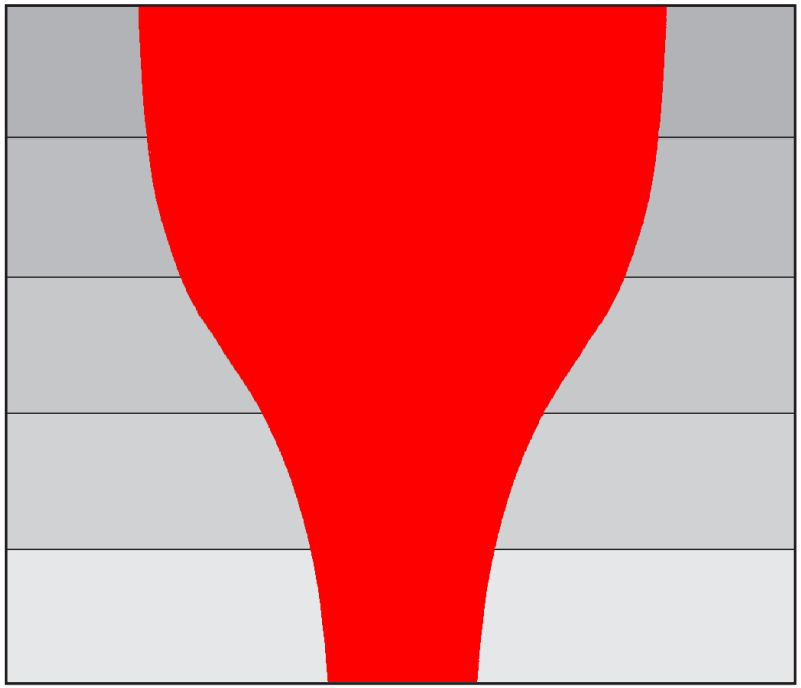
year 2000



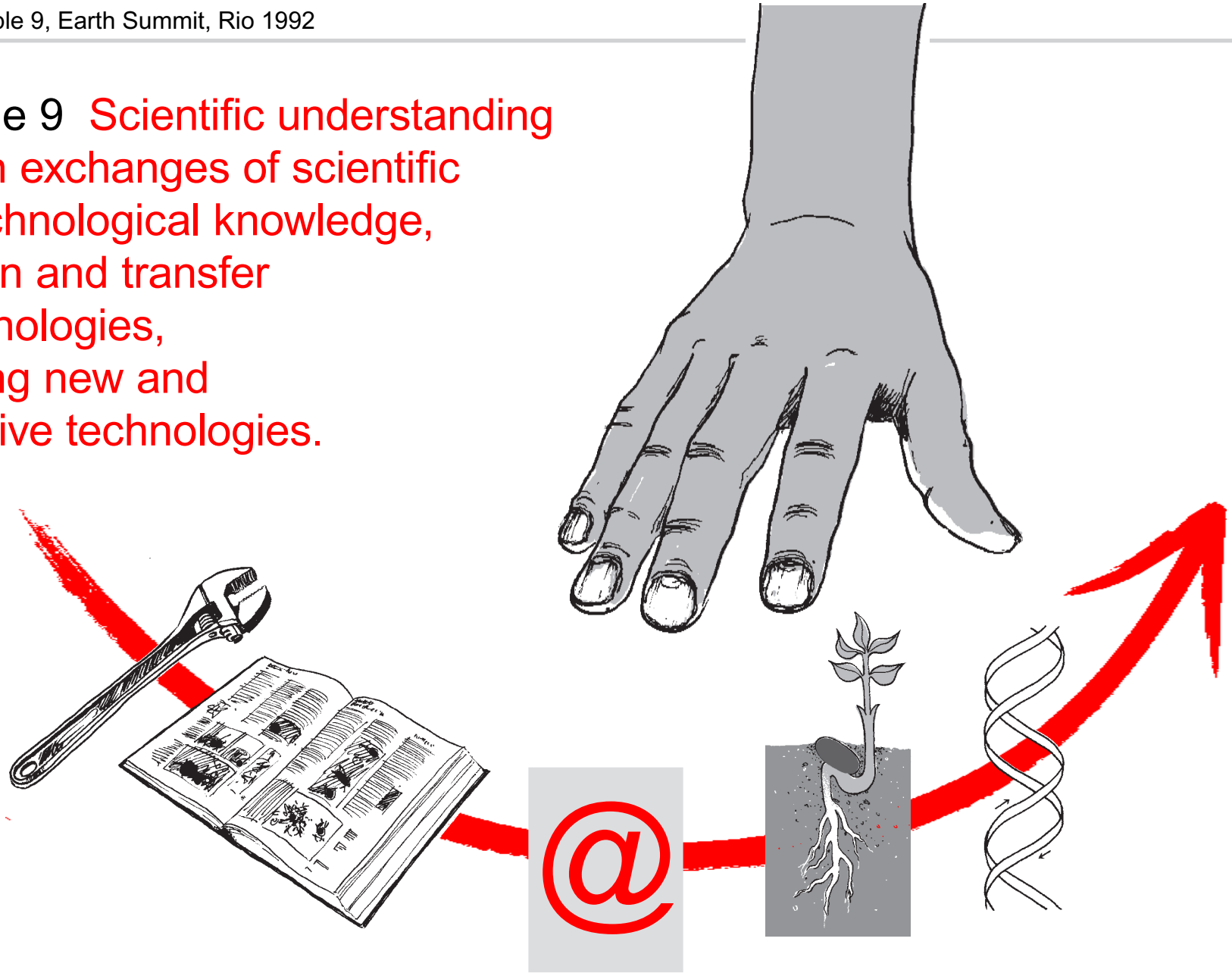
Richest fifth

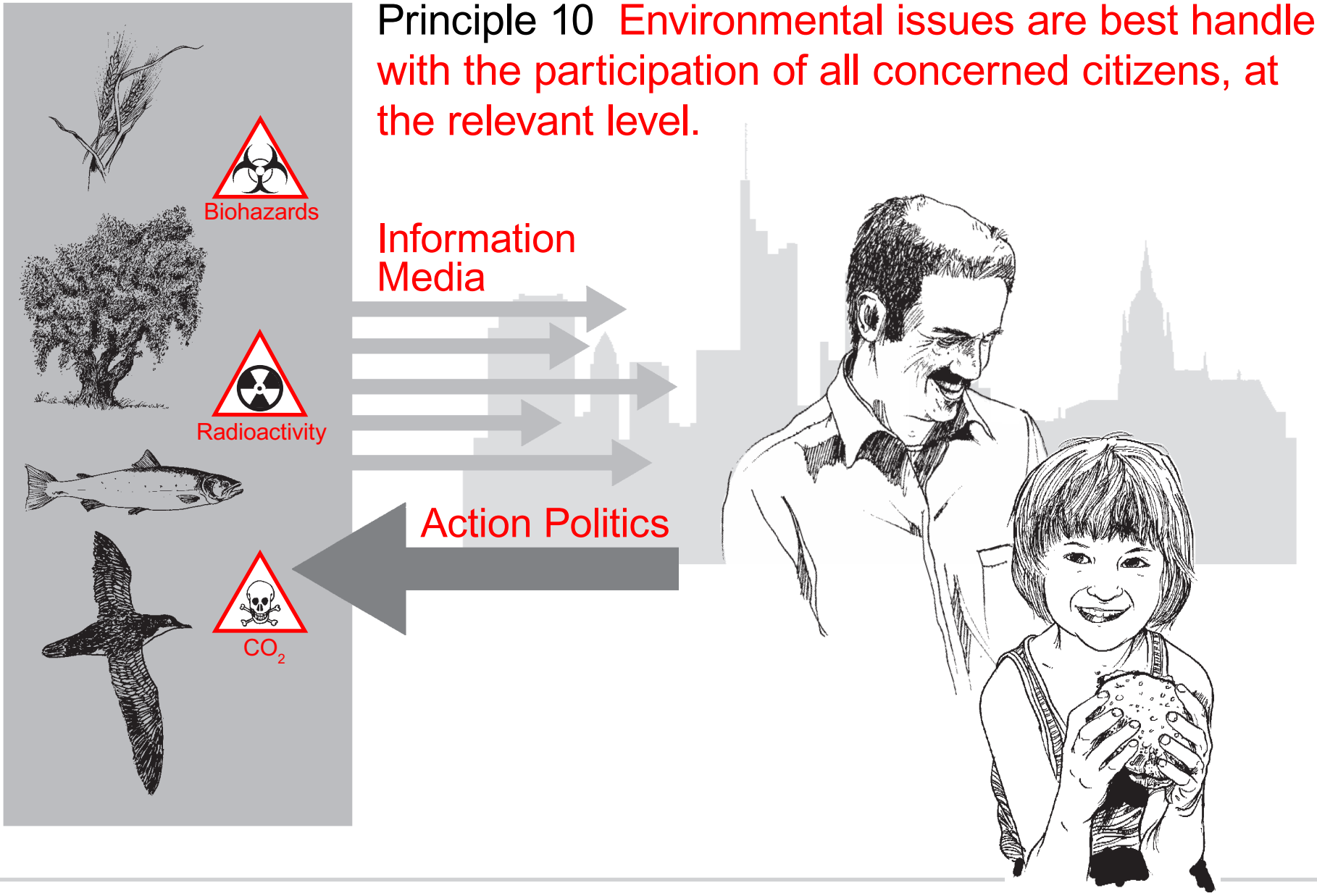
Poorest fifth

year ?



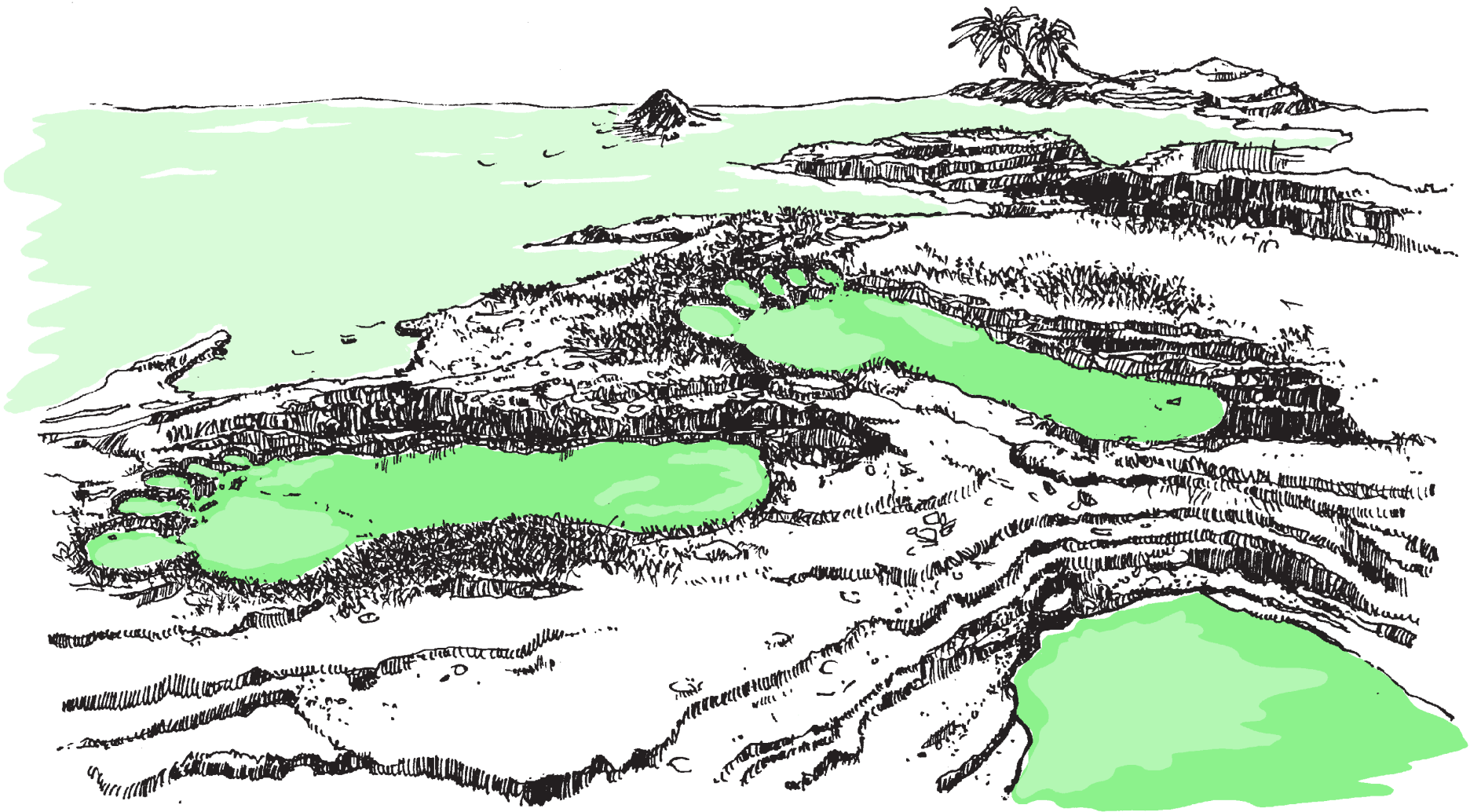
Principle 9 Scientific understanding through exchanges of scientific and technological knowledge, diffusion and transfer of technologies, including new and innovative technologies.





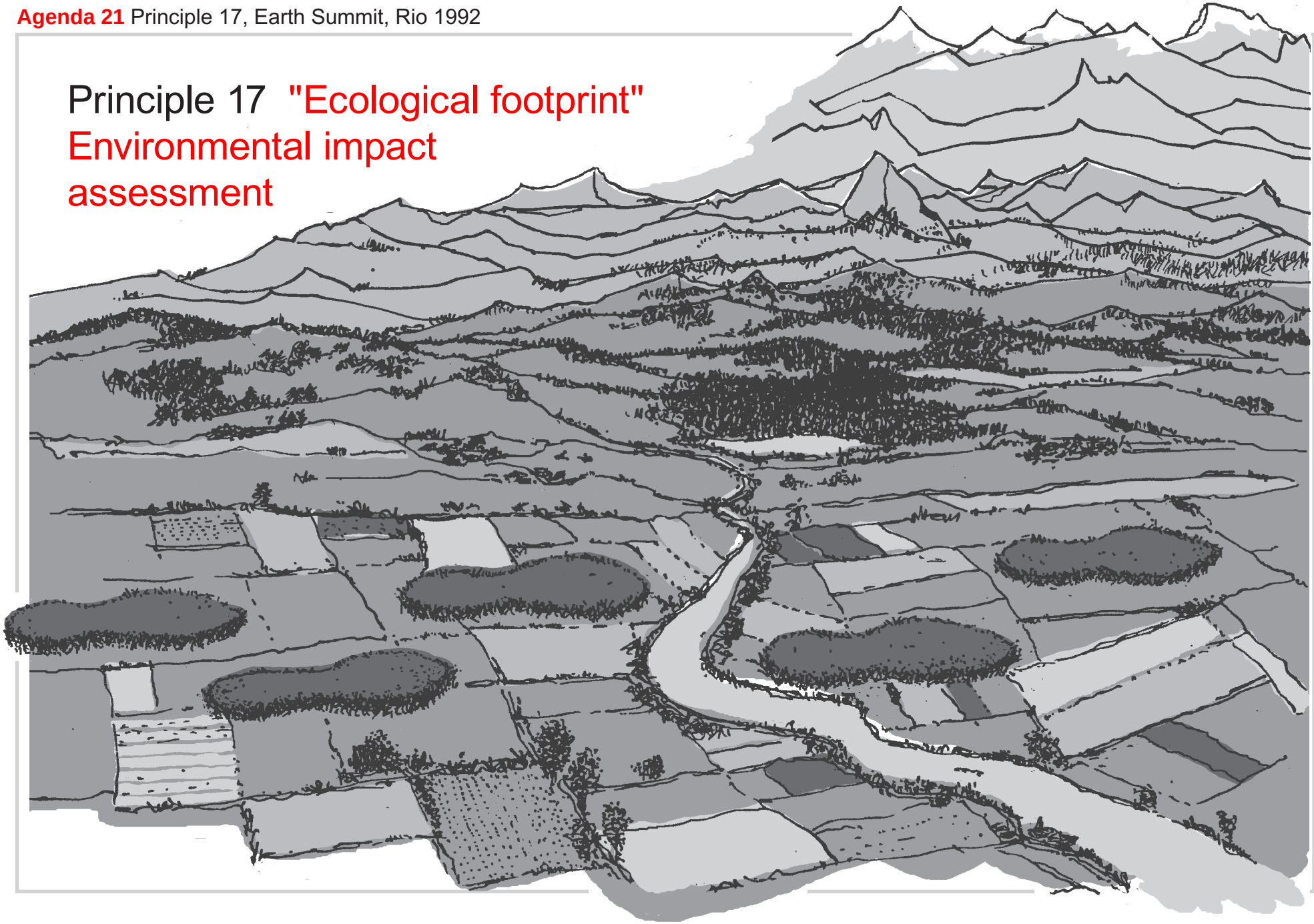
Principle 17 "Water footprint"

Conserve resources, protect the water



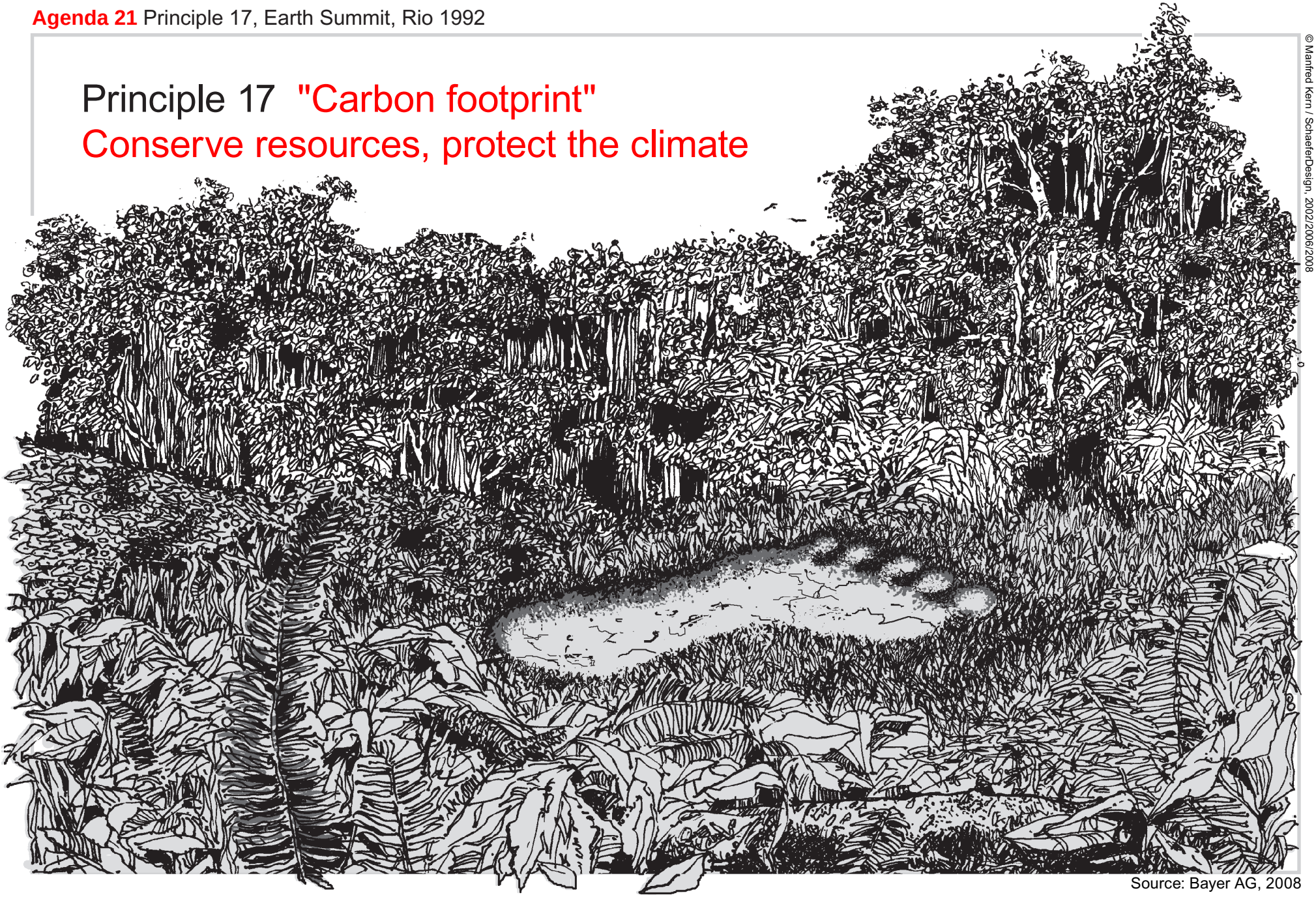
Agenda 21 Principle 17, Earth Summit, Rio 1992

Principle 17 "Ecological footprint" Environmental impact assessment



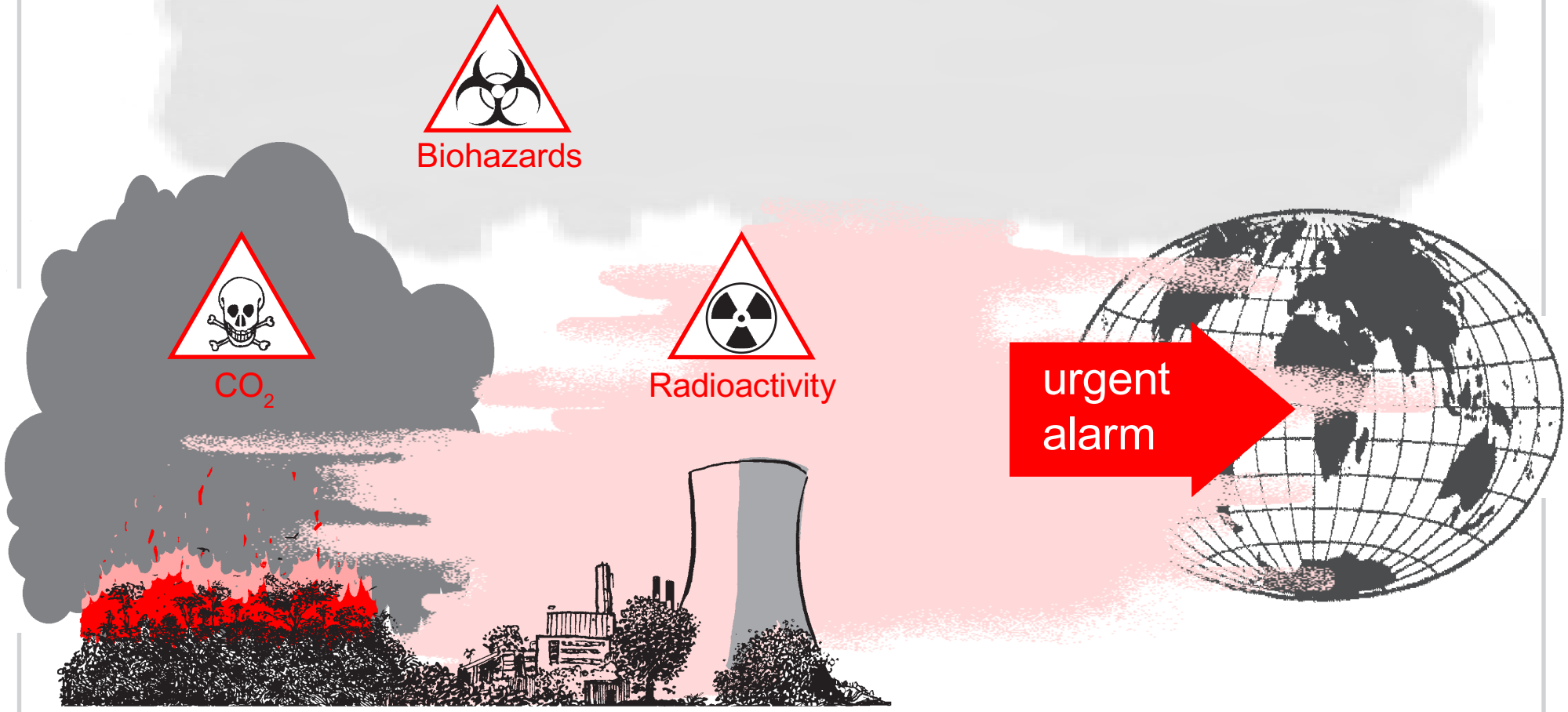
Agenda 21 Principle 17, Earth Summit, Rio 1992

Principle 17 "Carbon footprint"
Conserve resources, protect the climate



Source: Bayer AG, 2008

Principle 18 States shall immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States.



Principle 20

Women have a vital role in environmental management and development. Their full participation is therefore essential to achieve sustainable development.

Principle 21 The creativity, ideals and courage of the youth of the world should be mobilized to ensure a better future for all.

Principle 22

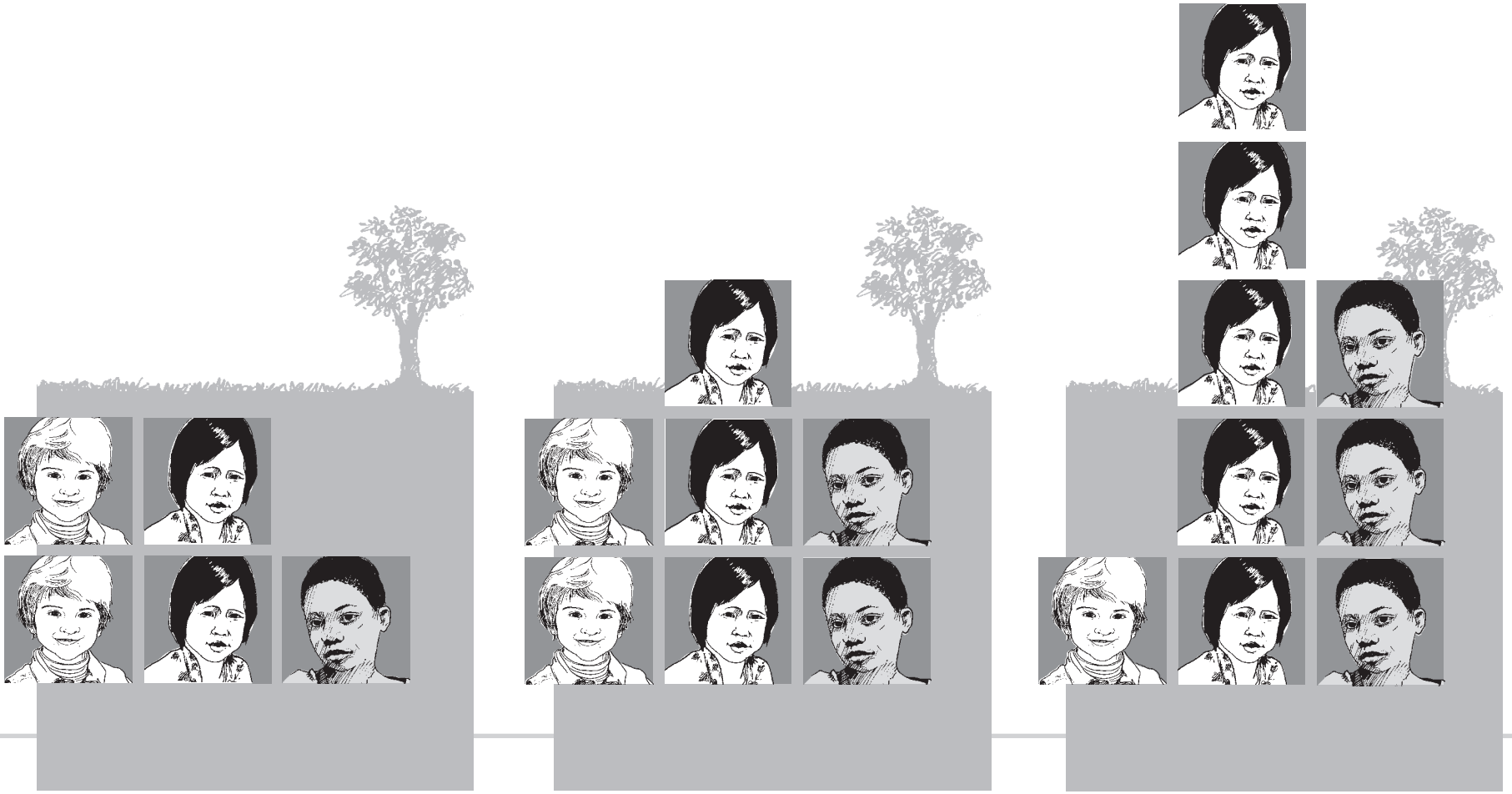
Indigenous people
and their communities
and other local
communities
have a vital role in
environmental
management
and development...
States should
recognize
and duly support
their identity,
culture and
interests.

Land use

1992
5.4 billion people

2000
6.25 billion people

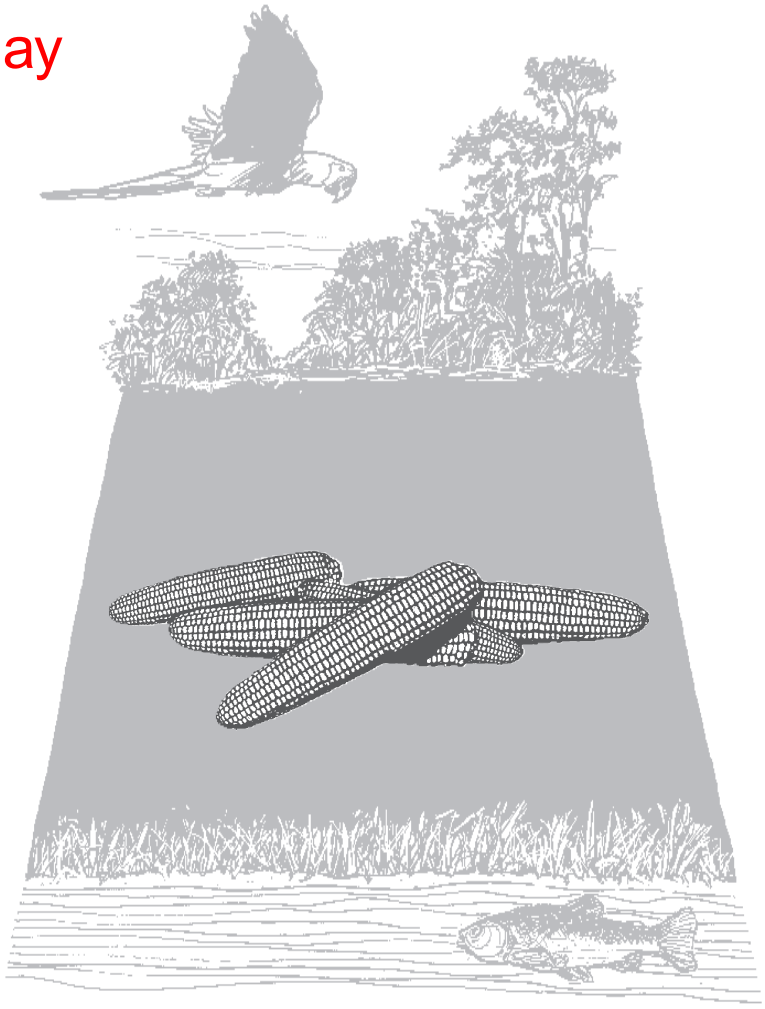
2025
8.3 billion people



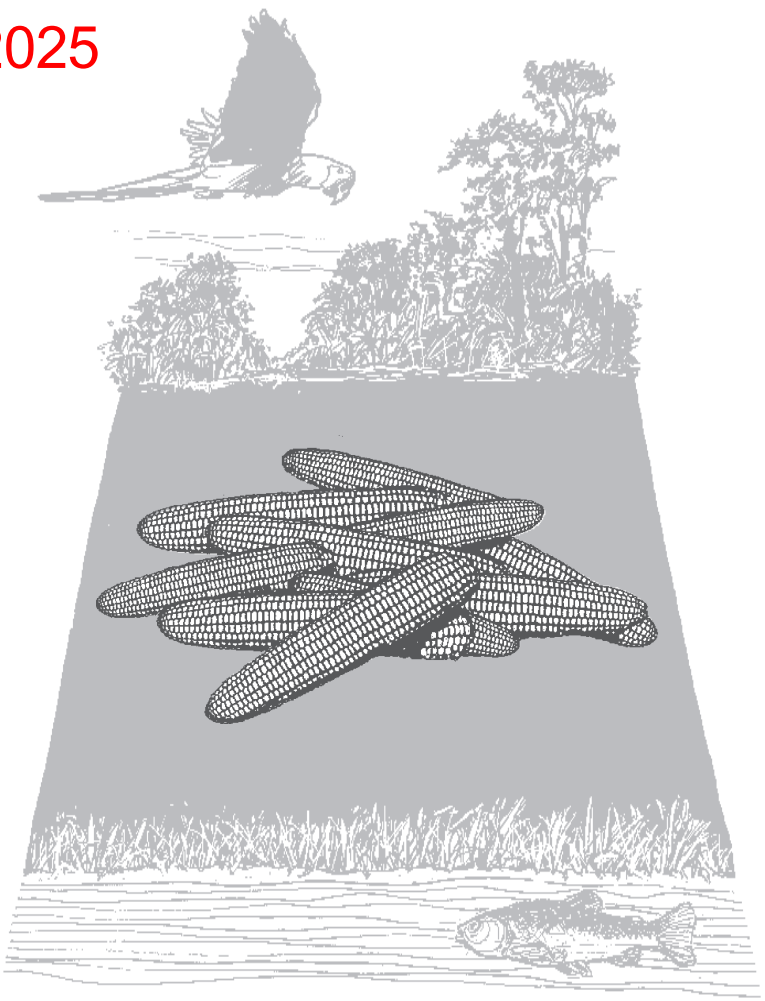
Agenda 21 §14.25 Earth Summit, Rio 1992

Doubling of food production on arable land

today



in
2025

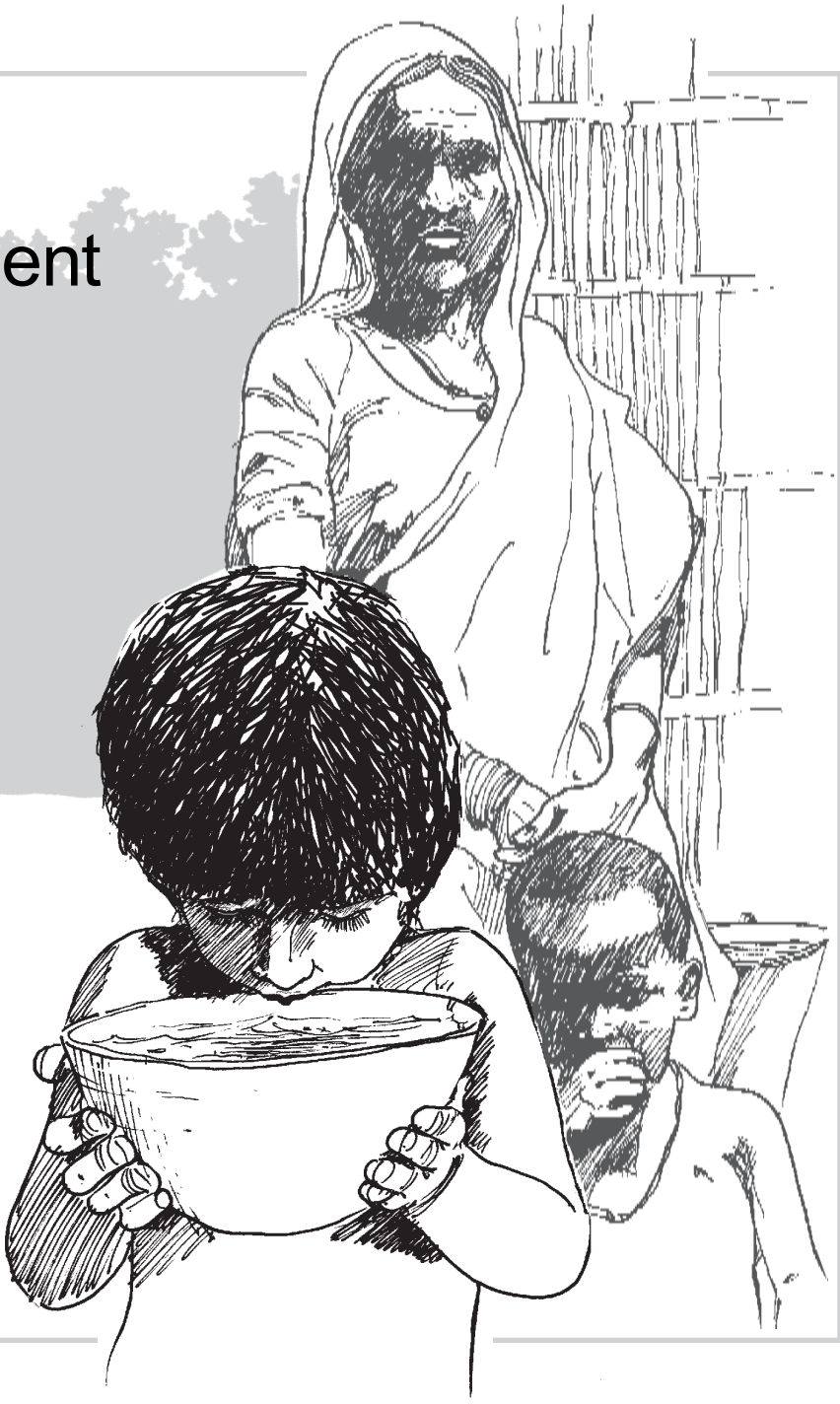


Agenda 21 §18.47 Earth Summit, Rio 1992

Safe water-supplies and sustainable rural development

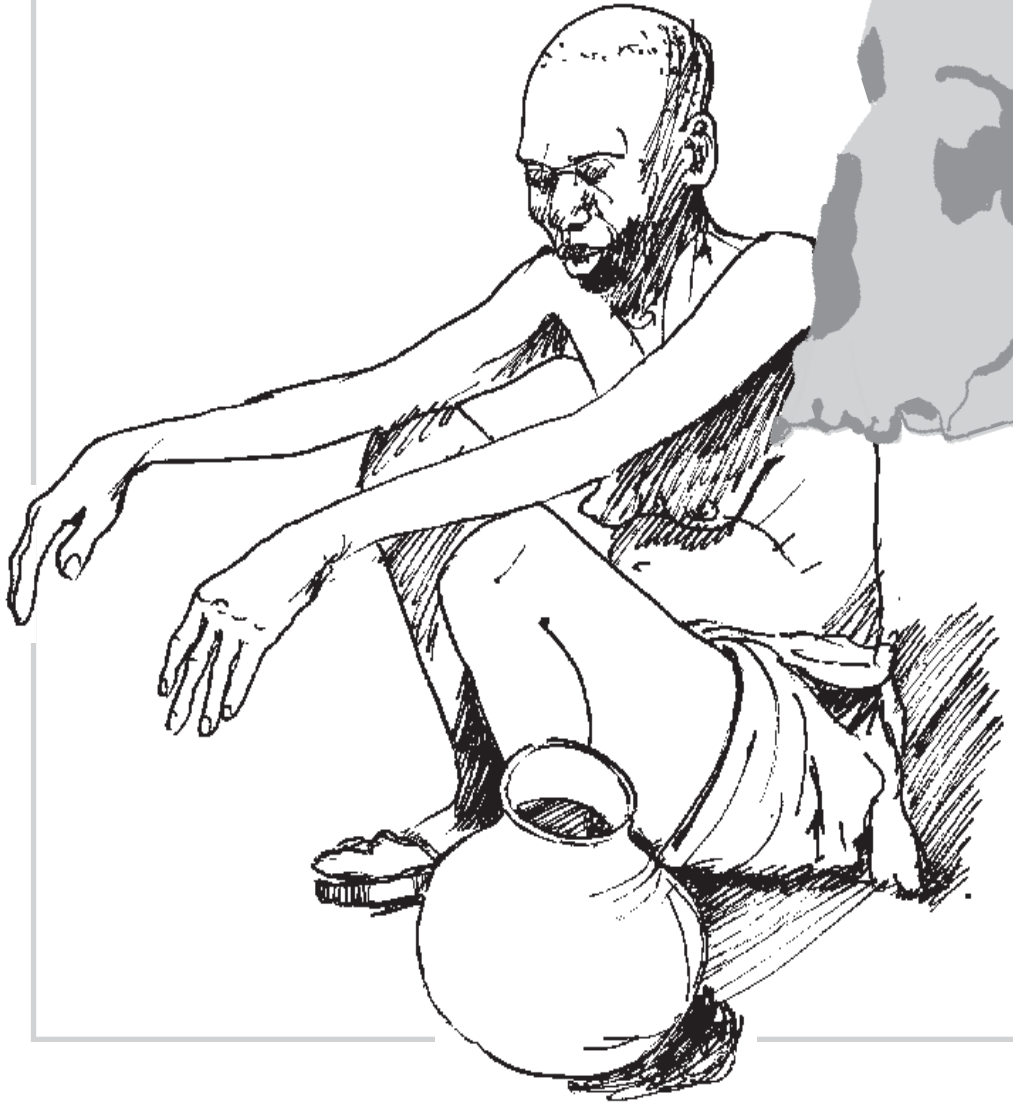
80% of all diseases, over 1/3 of deaths in developing countries are caused by the consumption of contaminated water!

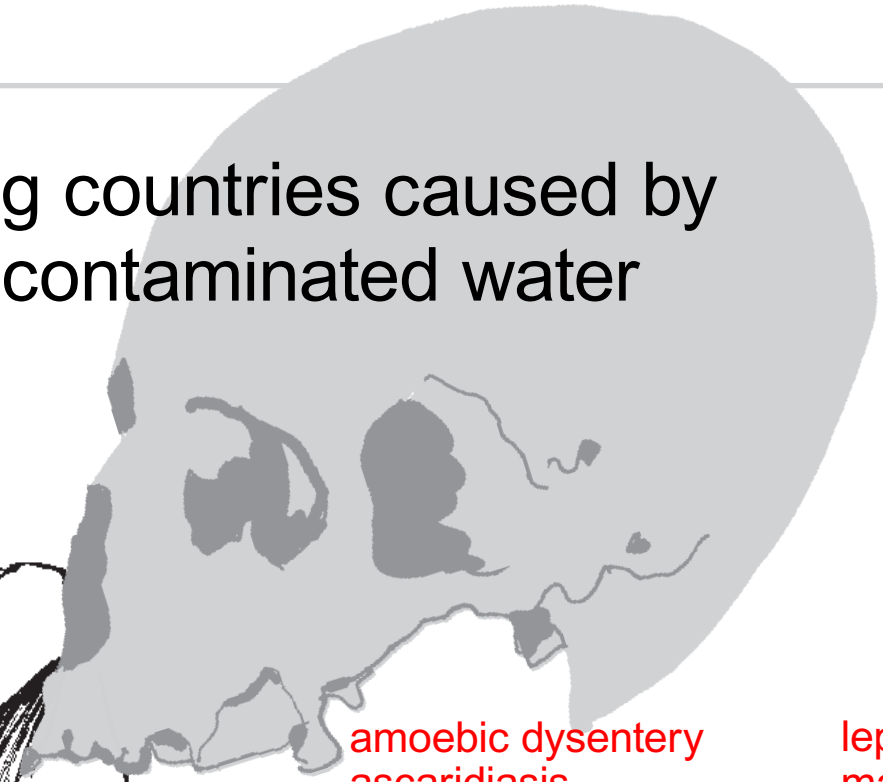
Establishment of protected areas for sources of drinking water supply!



Agenda 21 §18.47 Earth Summit, Rio 1992

Deaths in developing countries caused by the consumption of contaminated water





amoebic dysentery
ascaridiasis
bacillary dysentery
cholera
dengue fever
dracunculosis
diarrhoea
enteroviruses
fascioliasis
filariasis
fish tapeworm diseases
gastroenteritis
infectious hepatitis
leptospirosis
malaria
onchocerciasis
paragonimiasis
paratyphus
Rift Valley fever
schistosomiasis
sickle cell anaemia
sleeping sickness
typhus
yellow fever

Agenda 21 §18.50 Earth Summit, Rio 1992

Drinking-water supply and sanitation

Objectives 2000:
all urban residents should have access to at least 40 litres per capita per day of safe water

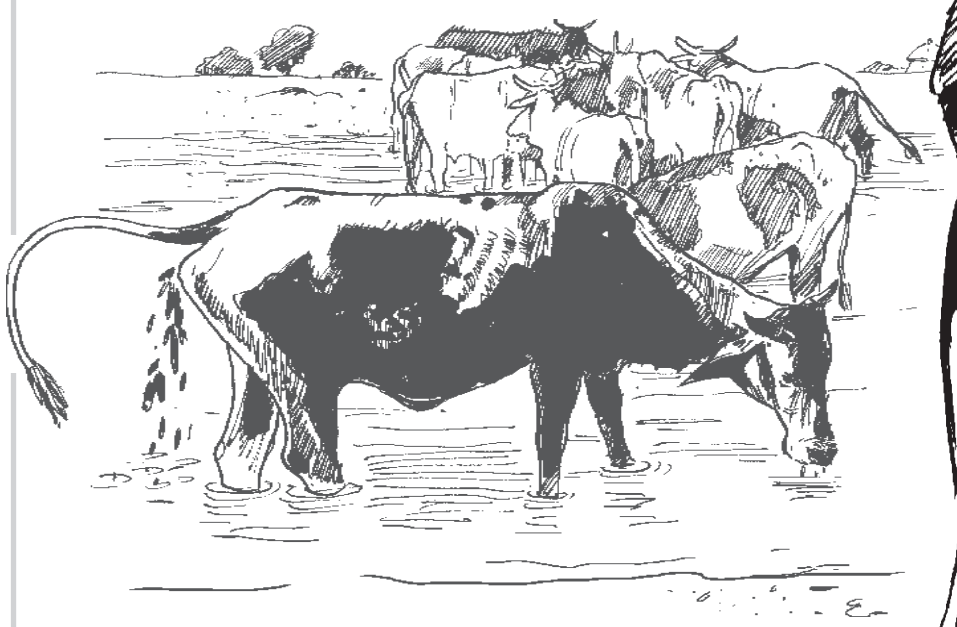
75% of the urban population are provided with on-site or community facilities for sanitation

Agenda 21 §18.66 Earth Summit, Rio 1992

Animal production and suitable drinking-water quality

Developing countries
faeces
microorganisms
nitrate

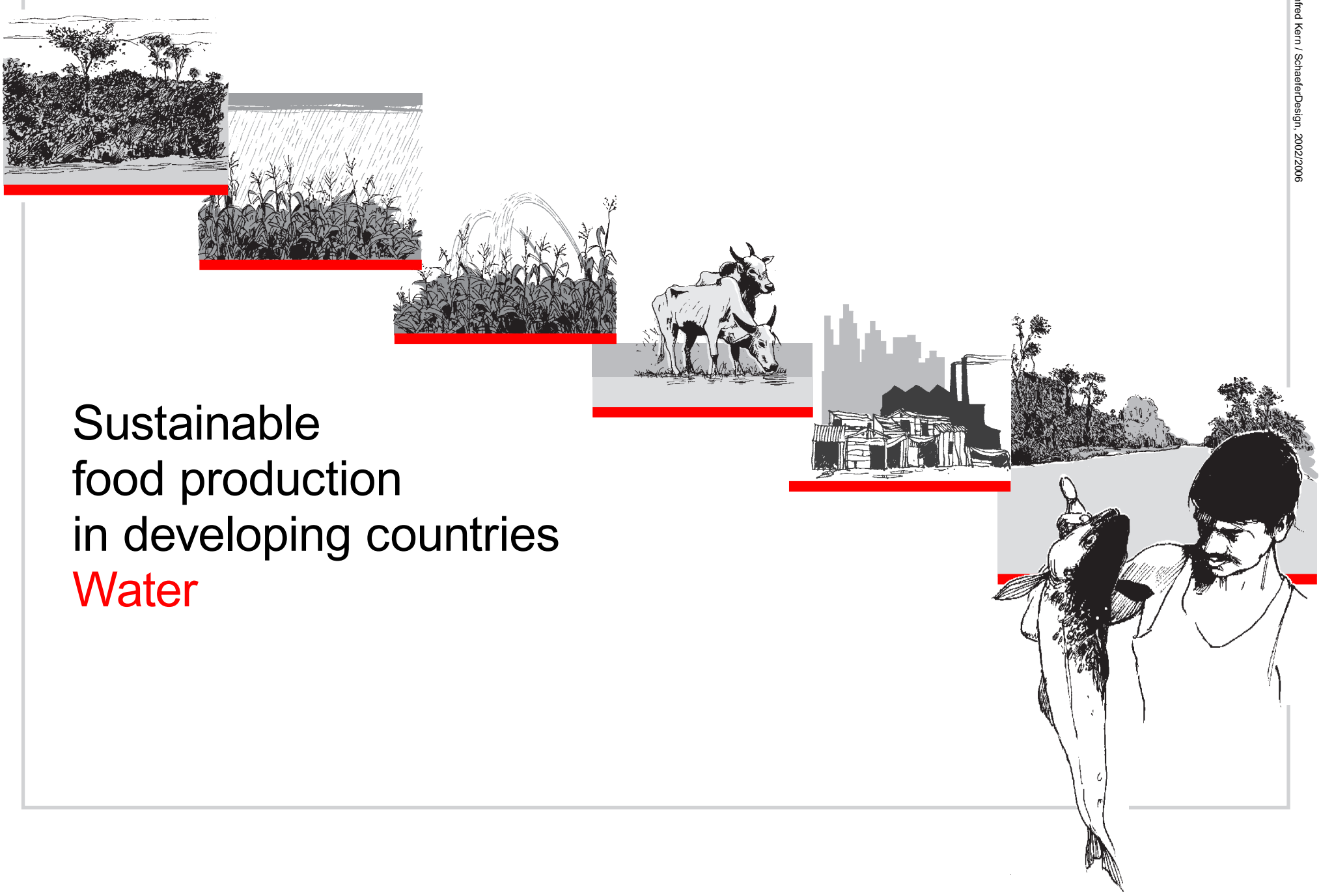
?



Industrialized countries
Europe
limit for nitrate

10 ppm

Agenda 21 §18.65 Earth Summit, Rio 1992



Sustainable food production in developing countries

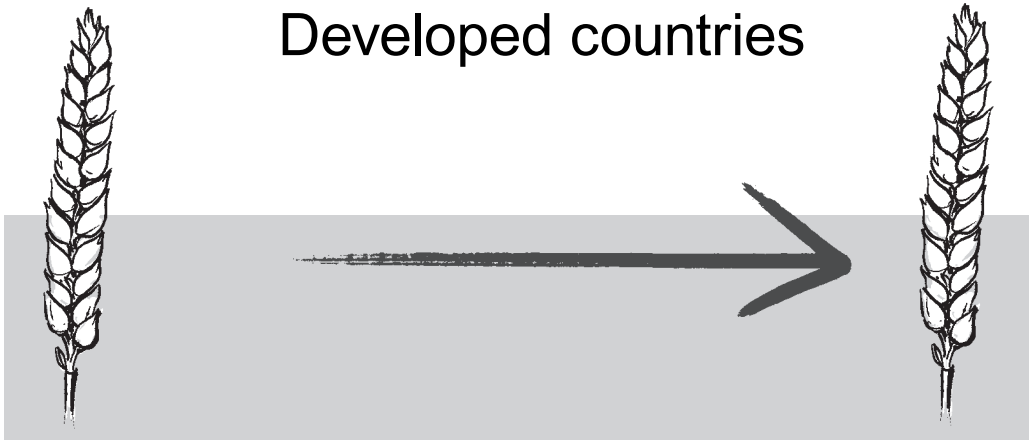
Water

Agenda 21 §14.44 Earth Summit, Rio 1992

Soil erosion and soil fertility (wheat)

1992 2000

Developed countries

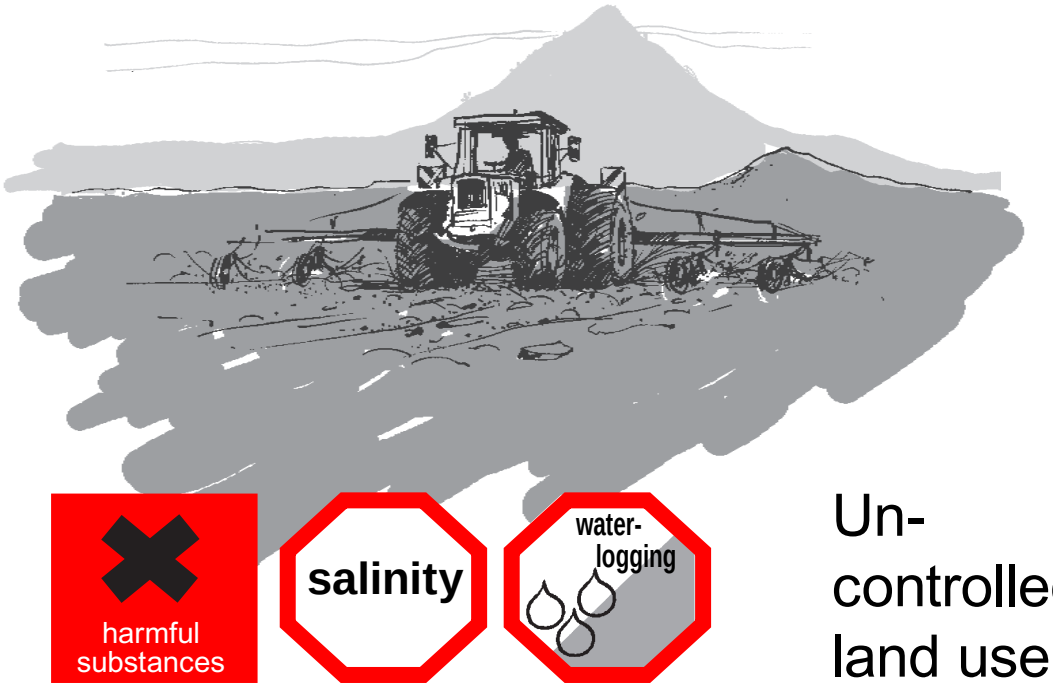


Developing countries

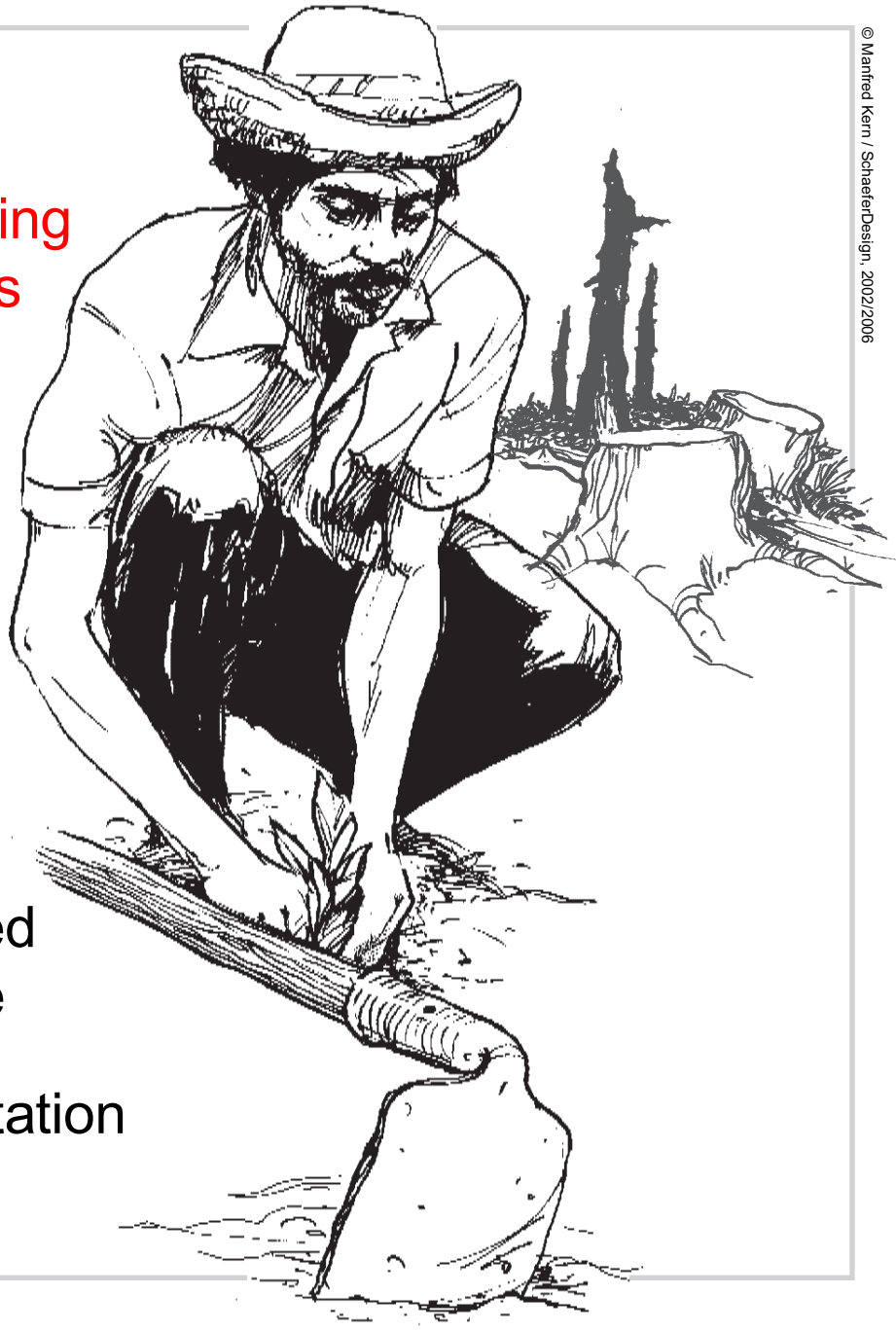
Agenda 21 §14.44 Earth Summit, Rio 1992

Soil erosion

Developed countries



Developing countries



Un-controlled land use

Deforestation

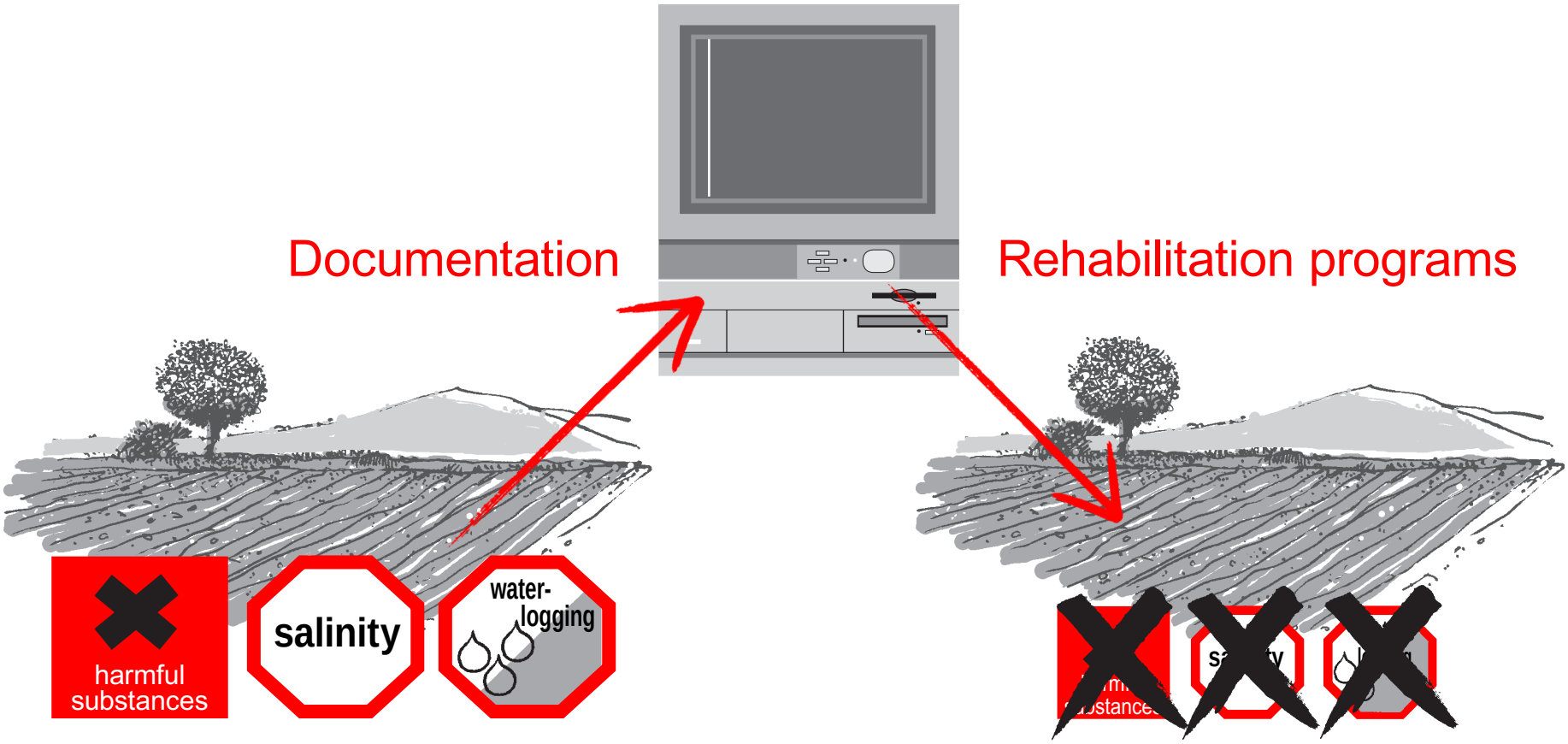
Preservation of soil fertility

Objectives: surveys, documentation, programs

1992 2000 2005

Documentation

Rehabilitation programs

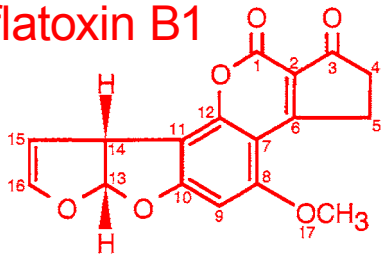


Risks in plants, animals and human systems

Maximum tolerated levels of mycotoxins in cereals / bread (Europe, effective from July 1, 2006)

DON	adults	500 µg/kg	cereals
DON	adults	350 µg/kg	bread
DON	children	100 µg/kg	cereals
ZEA	adults	50 µg/kg	cereals
ZEA	children	20 µg/kg	cereals

Aflatoxin B1



Example: Mycotoxins

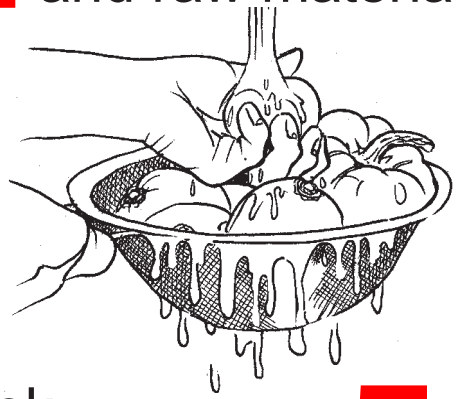
Aflatoxin B1
Aflatrem
Citreoviridine
Citrinin
Deoxynivalenole (DON)
Ergotamine
Fumonisins
Gliotoxin
Lolitrem B
Moniliformin
Ochratoxin
Patulin
Penitrem A
Phomopsin
Roquefortine
Rubratoxin B
Slaframine
T-2 Tetraol
Verrucarin A
Zearalenone (ZEA)

Keys to safe food

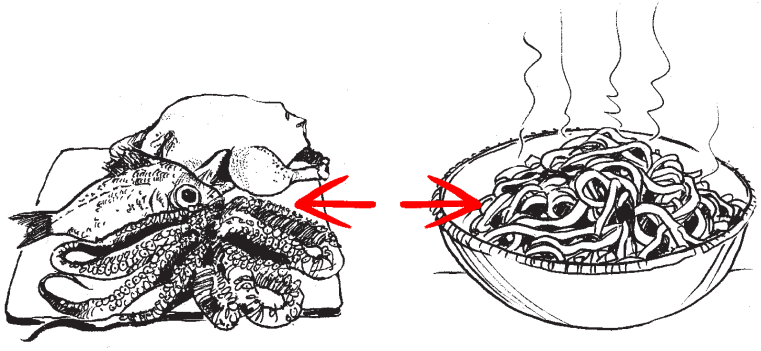
Example: Hygiene

1 Keep clean, wash your hands

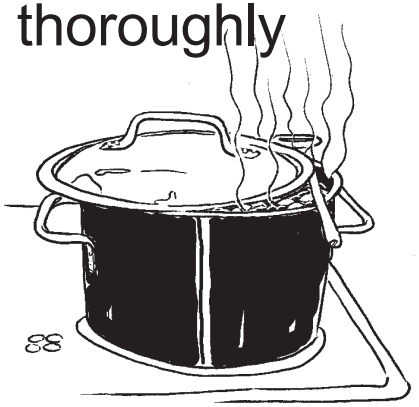
2 Use safe water and raw materials



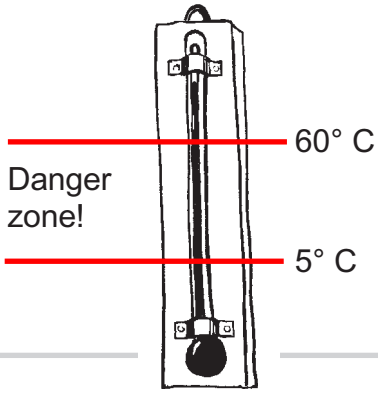
3 Separate raw and cooked food



4 Cook thoroughly



5 Keep food at safe temperatures



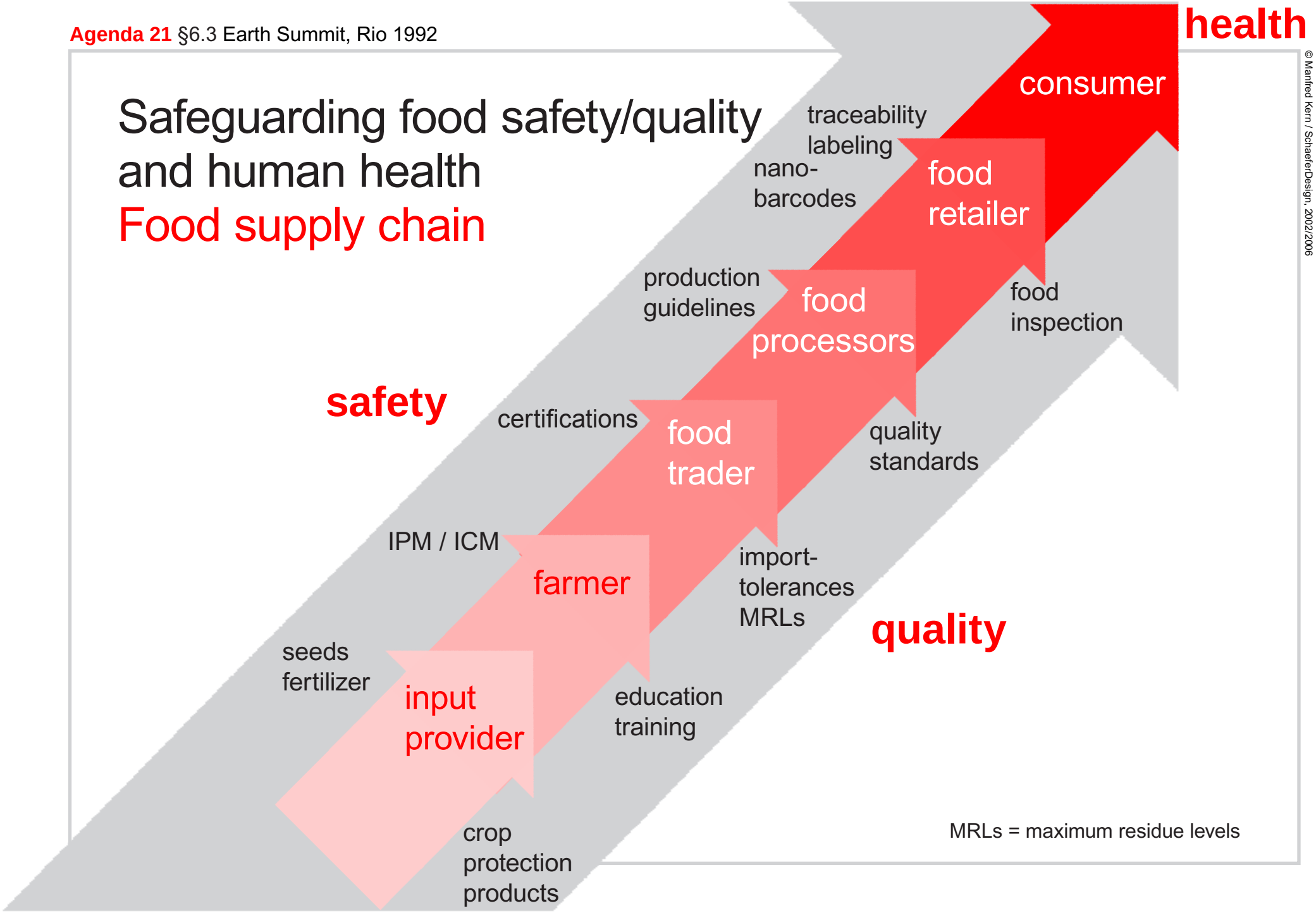
Agenda 21 §6.3 Earth Summit, Rio 1992

Safeguarding healthy food
Example: Asparagus

Agenda 21 §6.3 Earth Summit, Rio 1992

Safeguarding food safety/quality and human health

Food supply chain

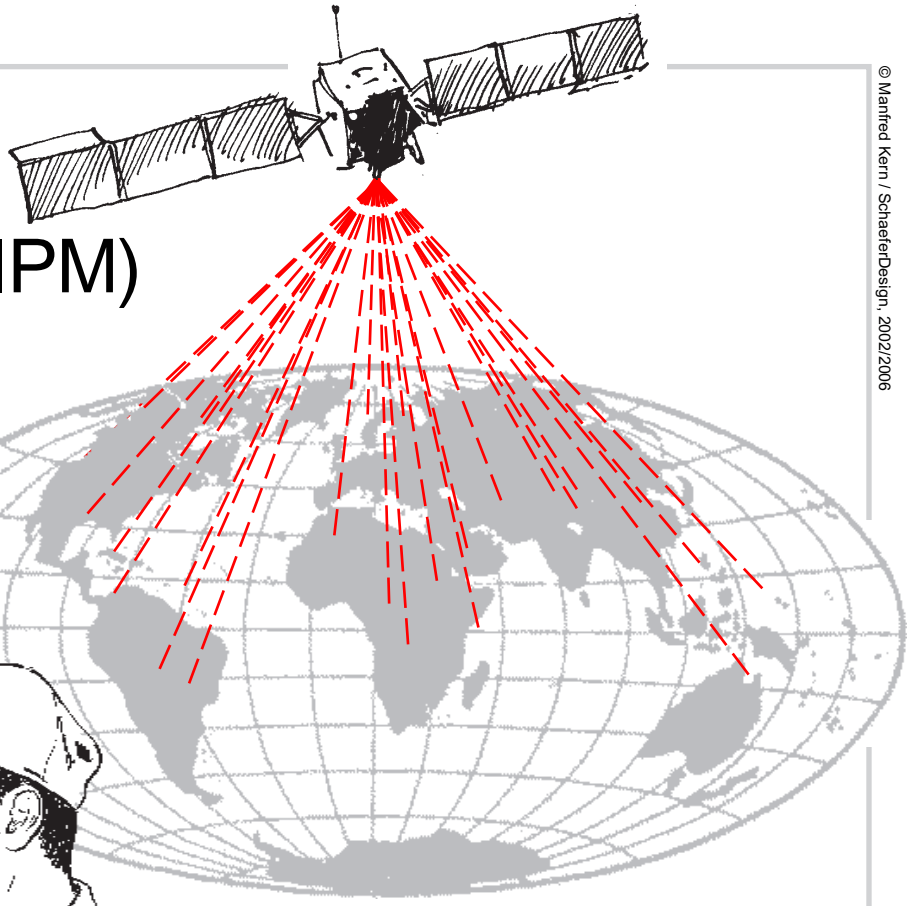


Agenda 21 §14.74 Earth Summit, Rio 1992

Interactive networks for Integrated Pest Management (IPM)

Objectives until 2000:

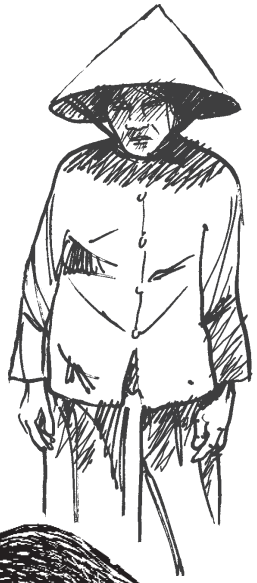
Know-how transfer



Agenda 21 §14.74 Earth Summit, Rio 1992

Integrated Pest Management (IPM)

25% pre harvest losses



50% post harvest losses

- Biological control
- Host plant resistance
- Appropriate farming practices
- Pesticides

Agenda 21 §14.74 Earth Summit, Rio 1992

Sustainable agriculture in developing countries

Objective: Implementation of Integrated Pest Management

- Host plant resistance
- Minimized use of pesticides
- Appropriate farming practices
- Biological control

→

- Should be environmentally friendly
- Reduce costs
- Guarantee yields

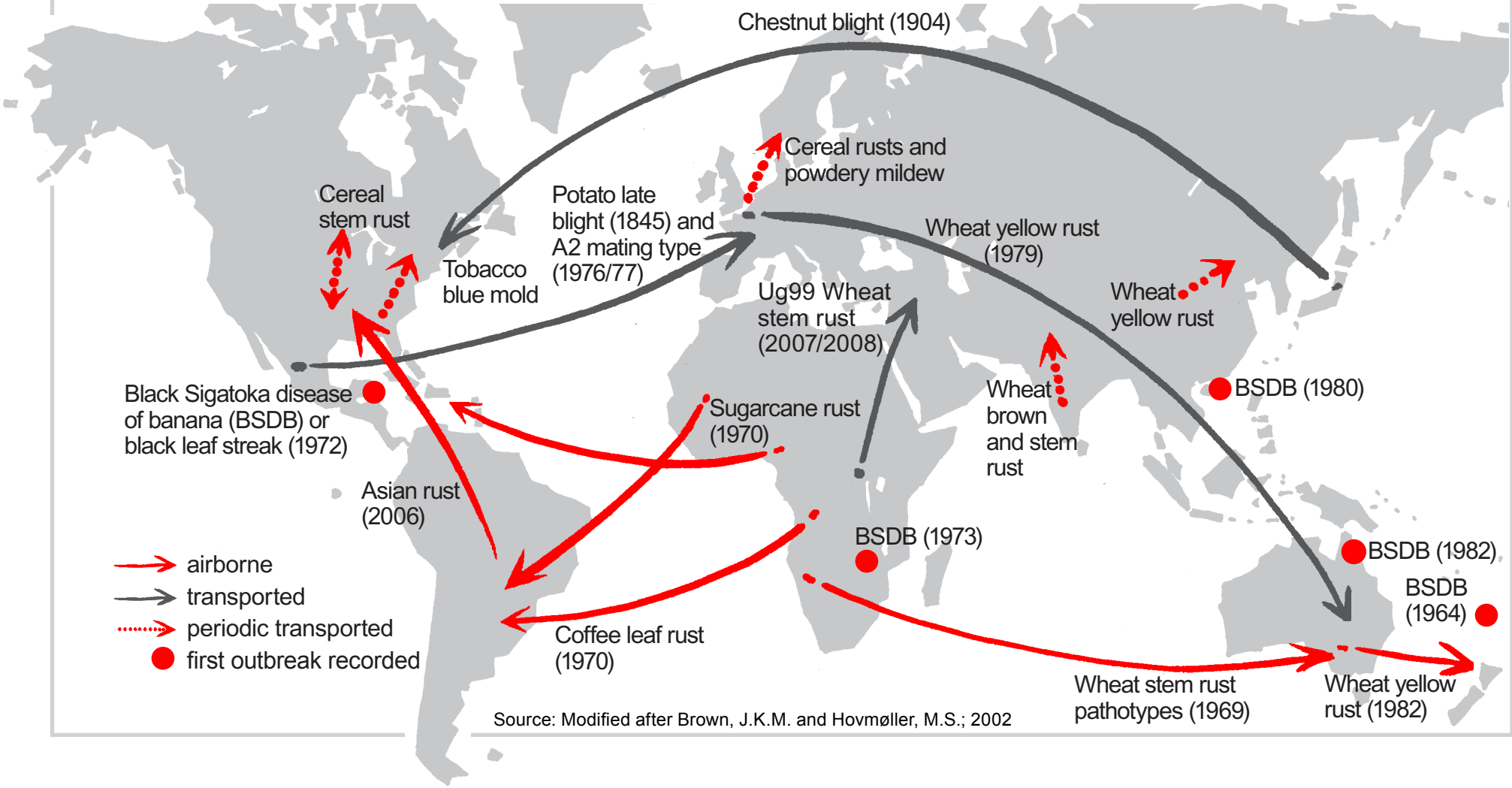
→

- Integrated Pest Management (IPM)

Agenda 21 §14.76 Earth Summit, Rio 1992

Control and monitor the incidence of pests and diseases in agriculture

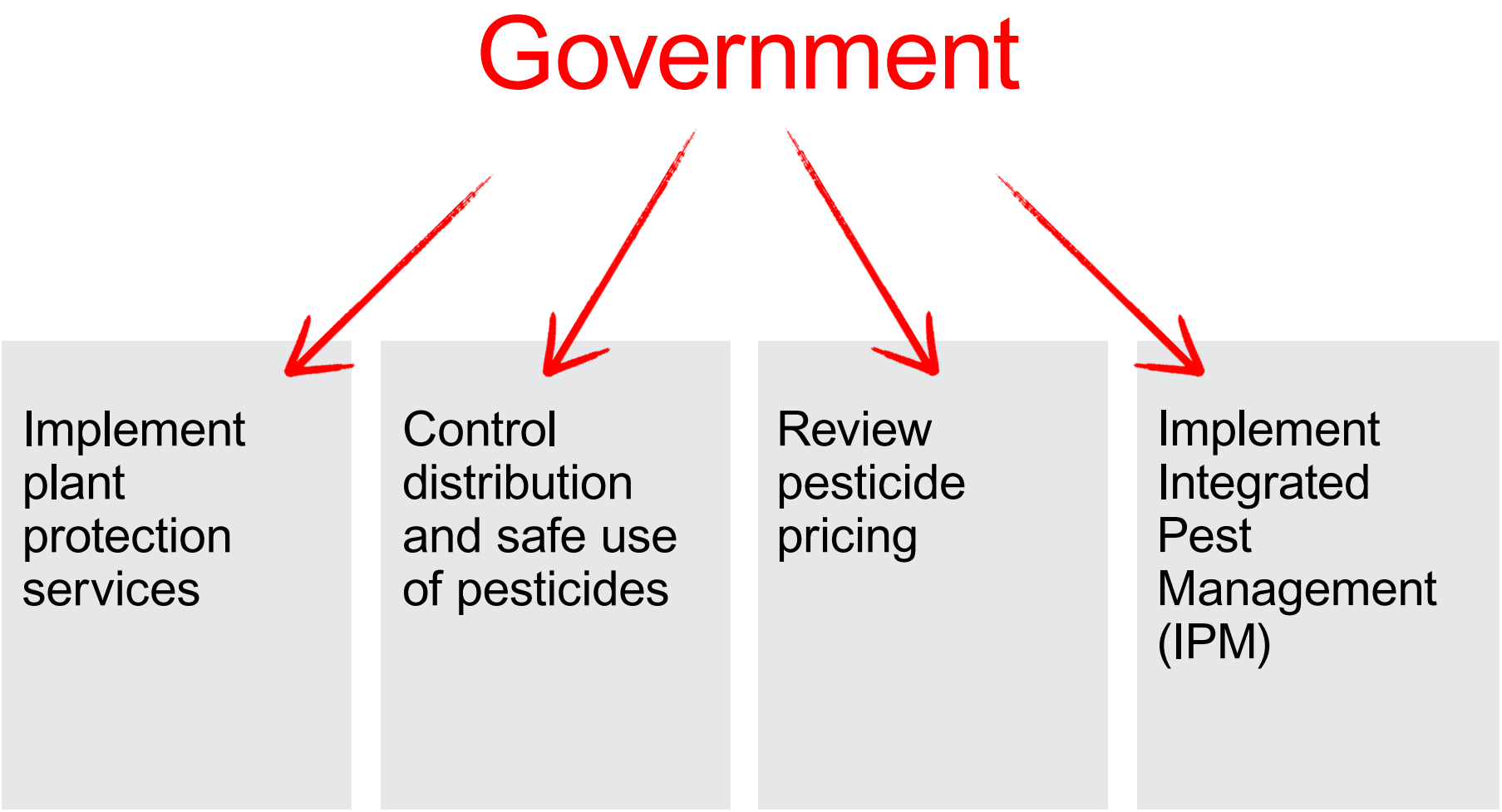
Selected dispersal events of fungal pathogens



Source: Modified after Brown, J.K.M. and Hovmøller, M.S.; 2002

Agenda 21 §14.76 Earth Summit, Rio 1992

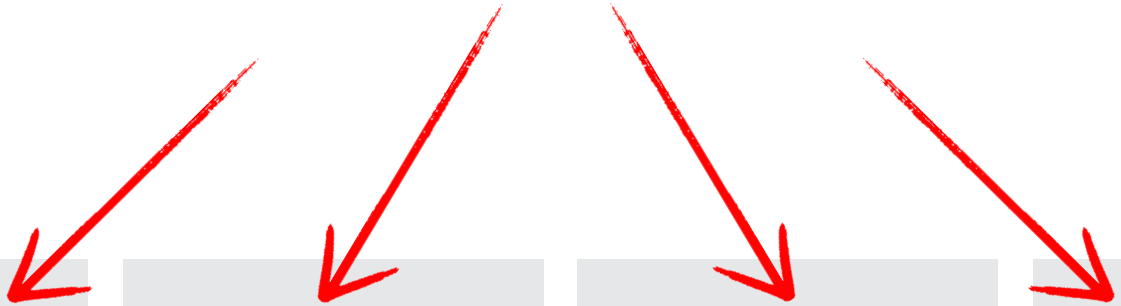
Objectives for governments and politicians
Part 1



Agenda 21 §14.76 Earth Summit, Rio 1992

Objectives for governments and politicians
Part 2

Management Systems

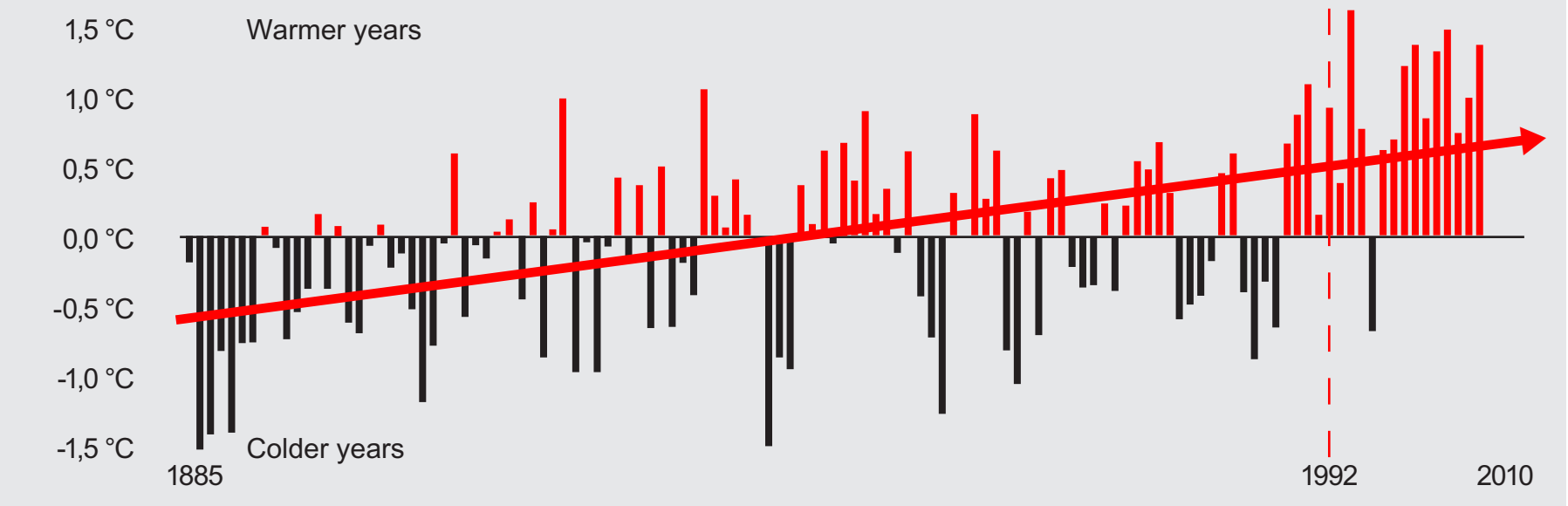


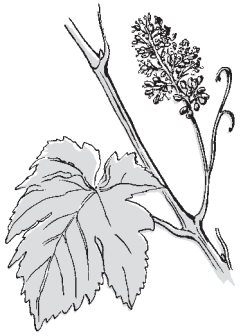
- Control and monitor the incidence of pests and diseases
- Control the distribution and use of pesticides
- Encourage research and development into pesticides which are target-specific and readily degradable
- Provide farmers with understandable pesticide labels about safe use

Improving the understanding of the economic and social consequences of atmospheric changes

Climate change and viticulture

Example: Annual average temperatures in Geisenheim (Germany), 1885-2010





Start of flowering

June 1885

May 2010

Start of ripening

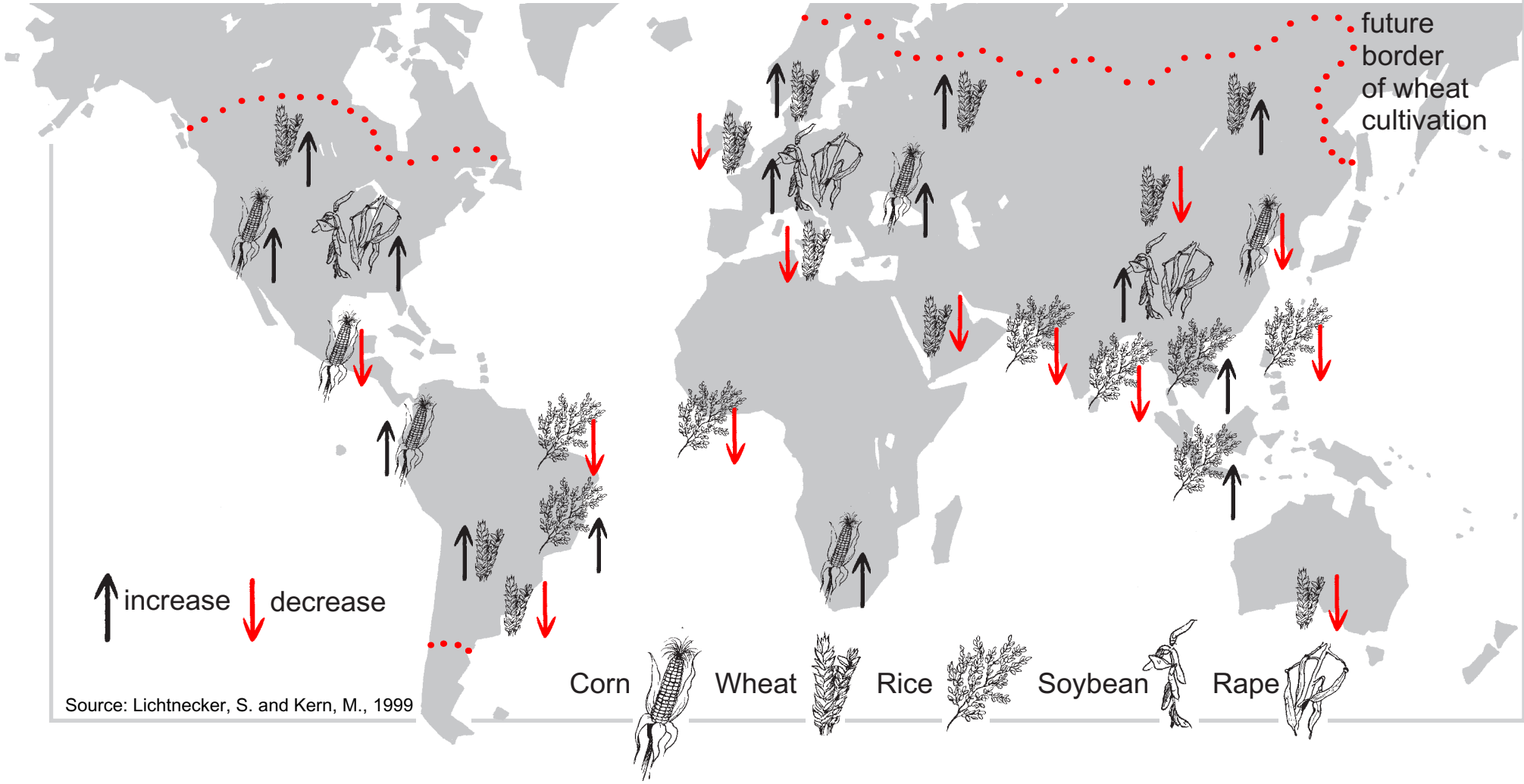
September 1885

August 2010

Source: Deutscher Wetterdienst Geisenheim, Weinbauamt Eltville and Forschungsanstalt Geisenheim, 2007

Economic and social consequences of climate changes

Global production area of main crops and forecasted development of yields until 2050

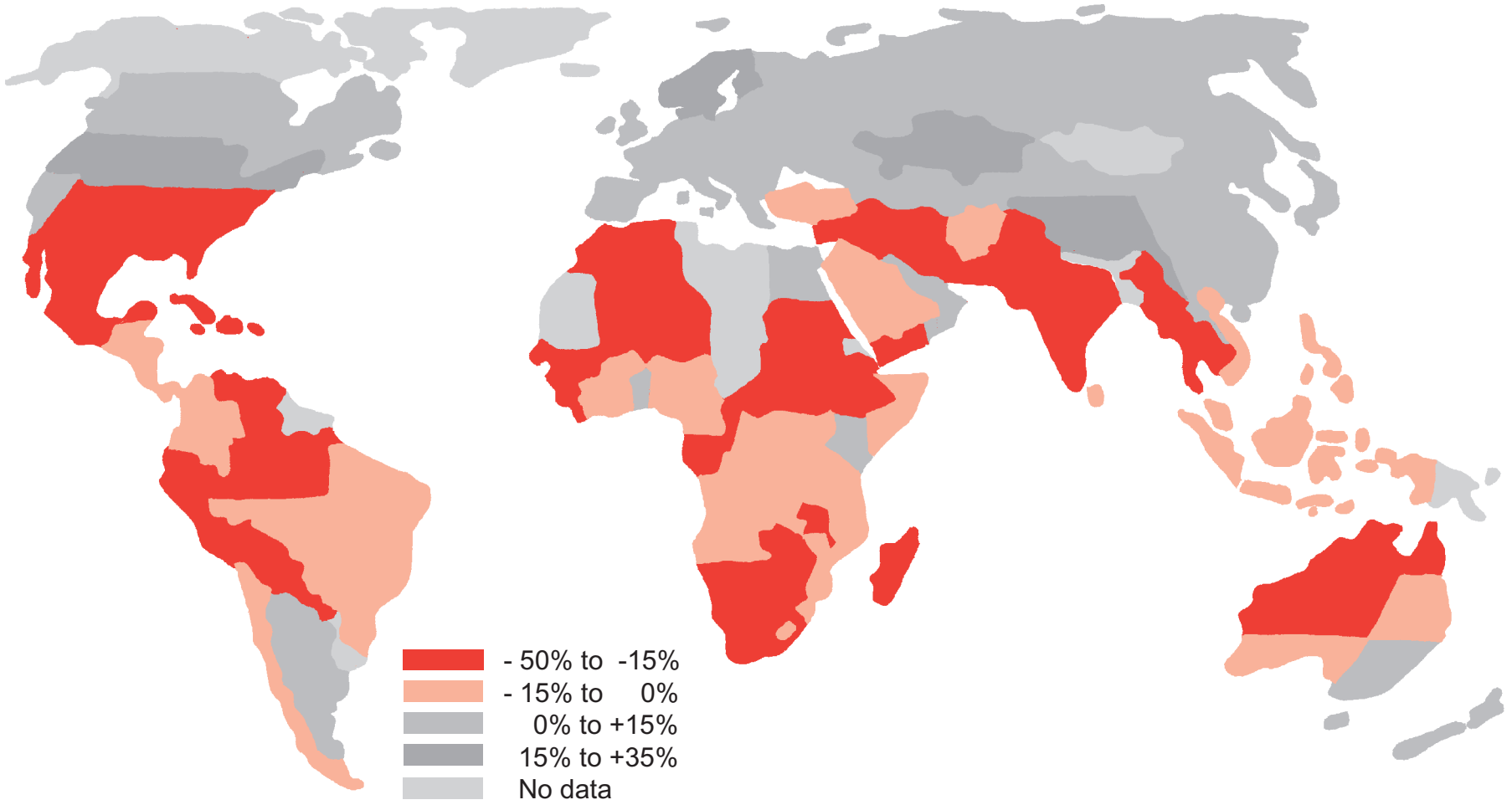


Source: Lichtnecker, S. and Kern, M., 1999

Agenda 21 Rio + 20 §12.26 Earth Summit, Rio 1992, Rio + 20

Target: Combating climate change and poverty

Projected changes in agricultural productivity in 2080 due to climate change, incorporating the effects of carbon fertilization



Source: Cline, W. R., Peterson Institute, USA, 2007

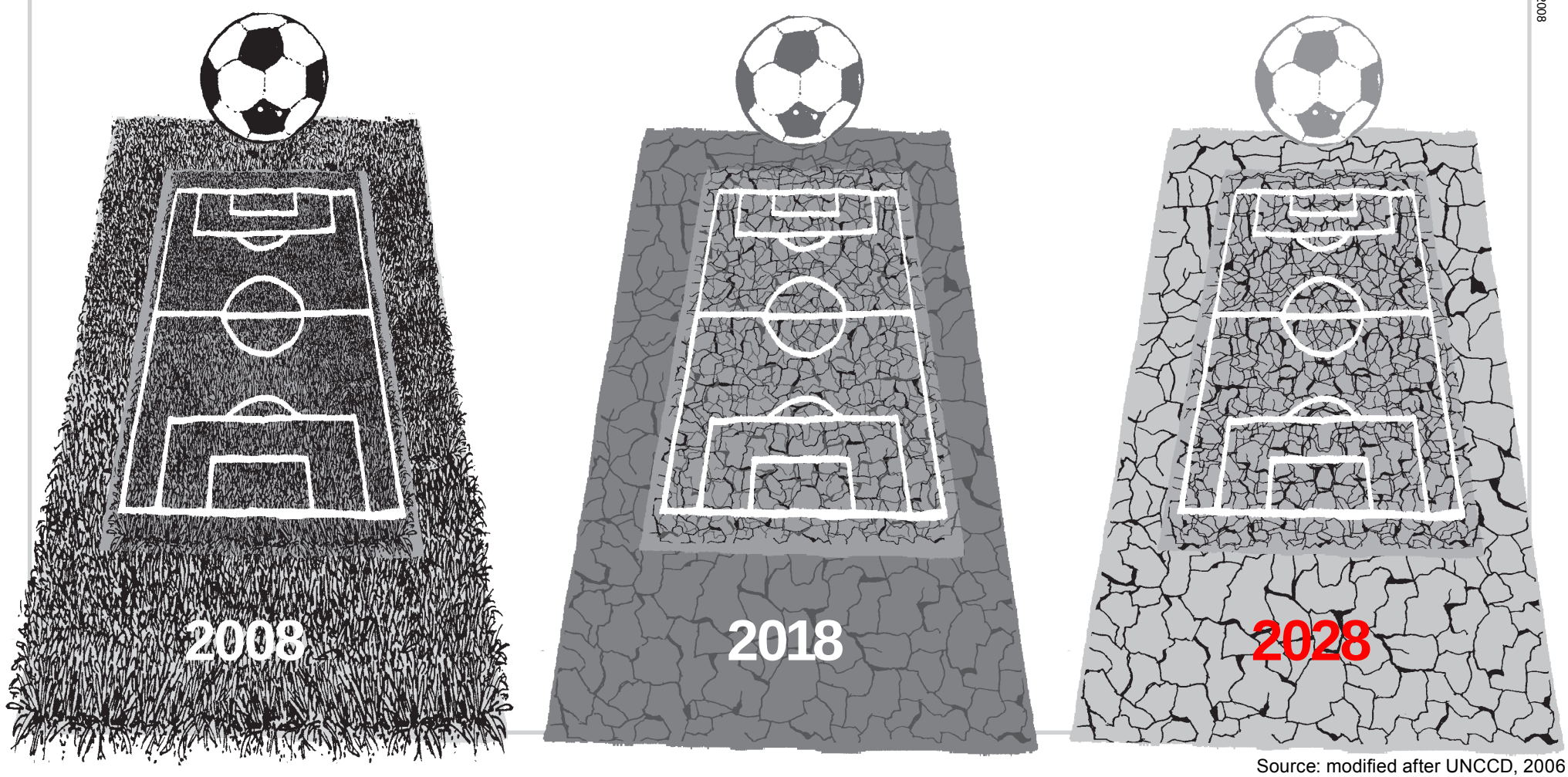
Agenda 21 §14.44 Earth Summit, Rio 1992

Target: Combating desertification

Today we play on this field

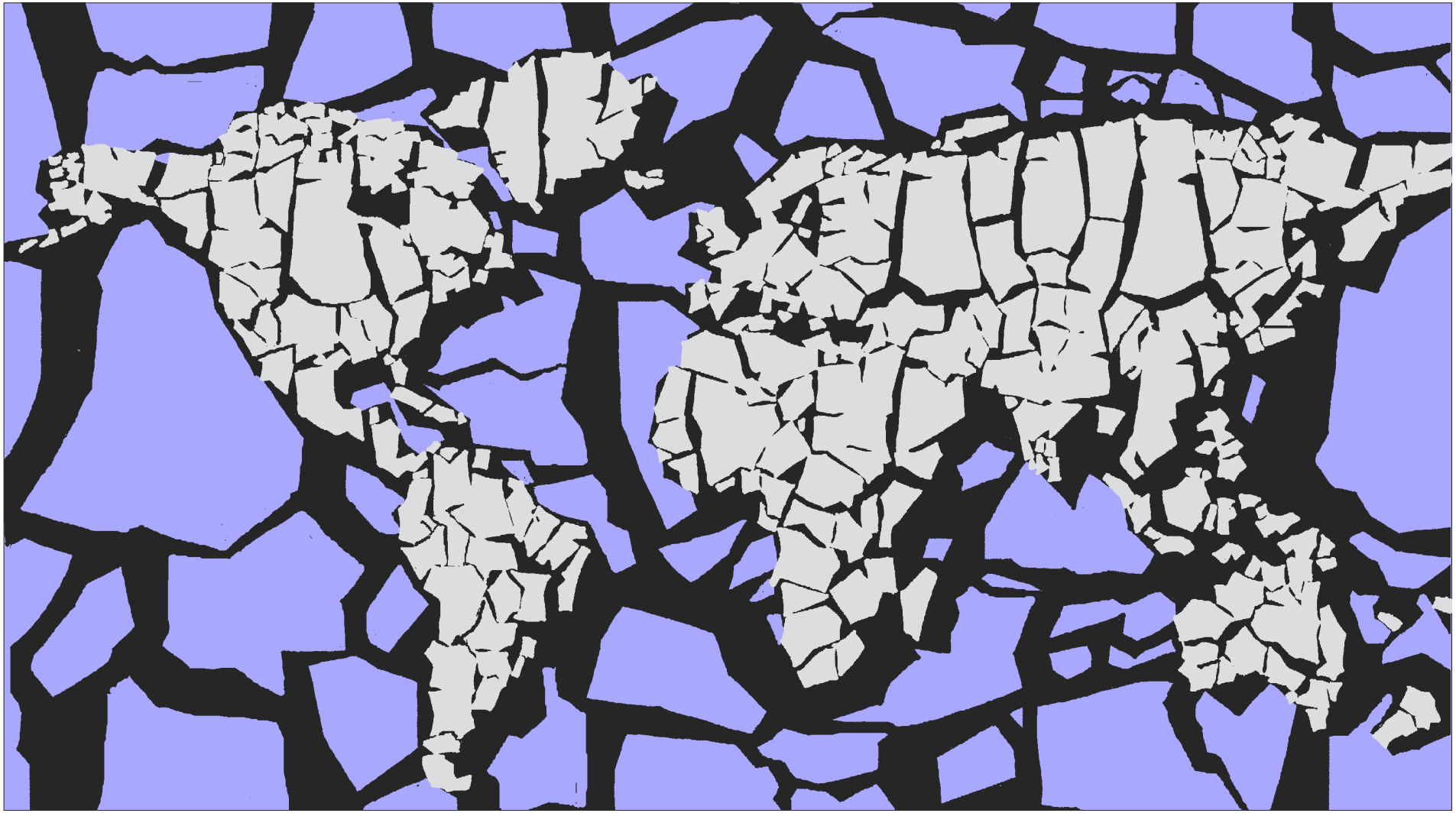
Tomorrow we may be playing on this one...

What about the day after tomorrow?



Source: modified after UNCCD, 2006

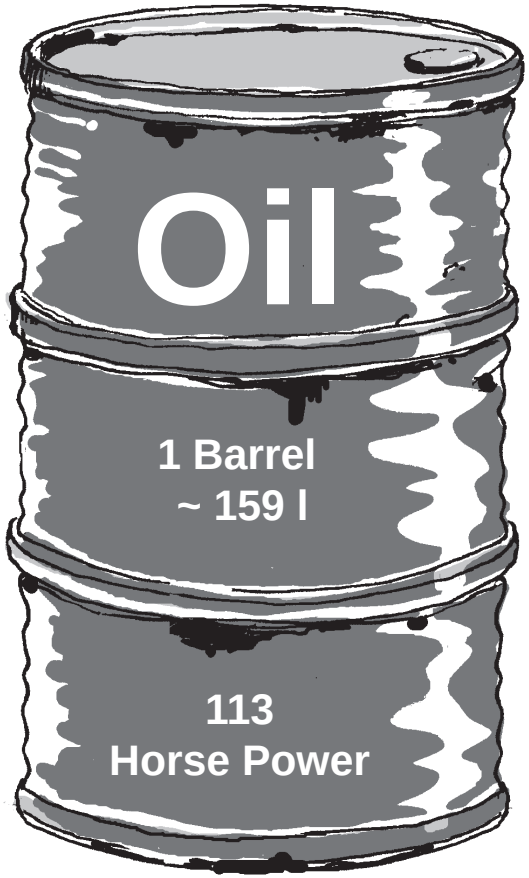
Target: Don't let our future dry up!



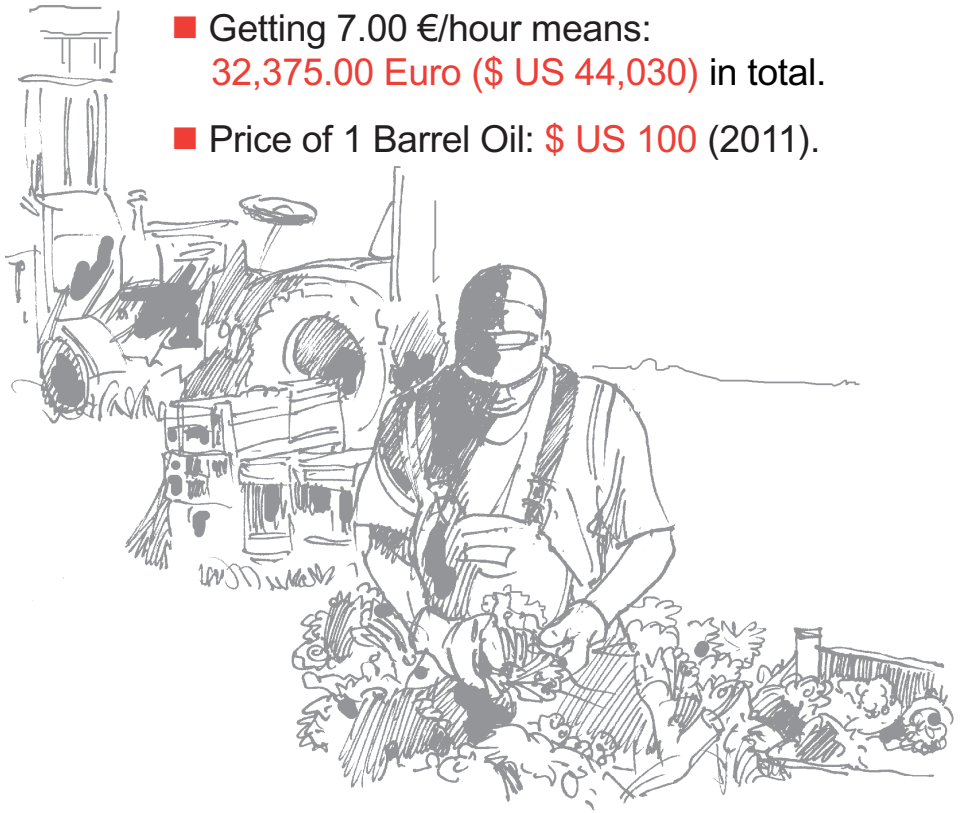
Source: UNCCD, United Nations, 2011

Target: Energy transition to enhance productivity

In 1 barrel oil (~159 l) there is energy, which ...



- ... is comparable of physical work of a farmer working for 3,625 hours in the field.
- This is a workload of physical work for 15 months.
- Getting 7.00 €/hour means: 32,375.00 Euro ($ US 44,030) in total.
- Price of 1 Barrel Oil: $ US 100 (2011).



Beijing International Renewable Energy Conference 2005 (BIREC)

Renewable Energy for Sustainable Development

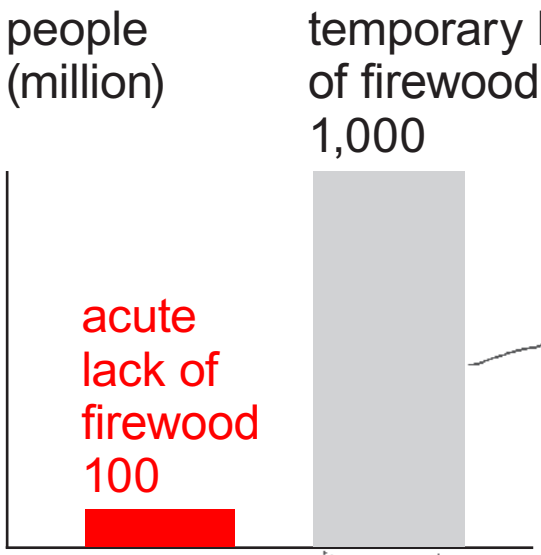
We, ministers and government representatives from 78 countries, having met at the Beijing International Renewable Energy Conference 2005 (BIREC), reaffirm our commitment to implement the outcomes of the Earth Summit, The World Summit on Sustainable Development (WSSD), and the United Nations 2005 Millennium Review Summit,
and to substantially increase with a sense of urgency the global share of renewable energy in the total energy supply,
as called for in the Johannesburg Plan of Implementation.

We emphasize the multiple benefits of increased energy efficiency and the use of renewable sources of energy for improving access to energy services, thereby contributing to the eradication of poverty as called for in the UN Millennium Development Goals (MDGs), increasing job opportunities, improving air quality and public health, reducing greenhouse gas emissions and combating climate change,
enhancing energy security,
and offering a new paradigm for international cooperation.

Agenda 21 §14.93 Earth Summit, Rio 1992

Renewable resources

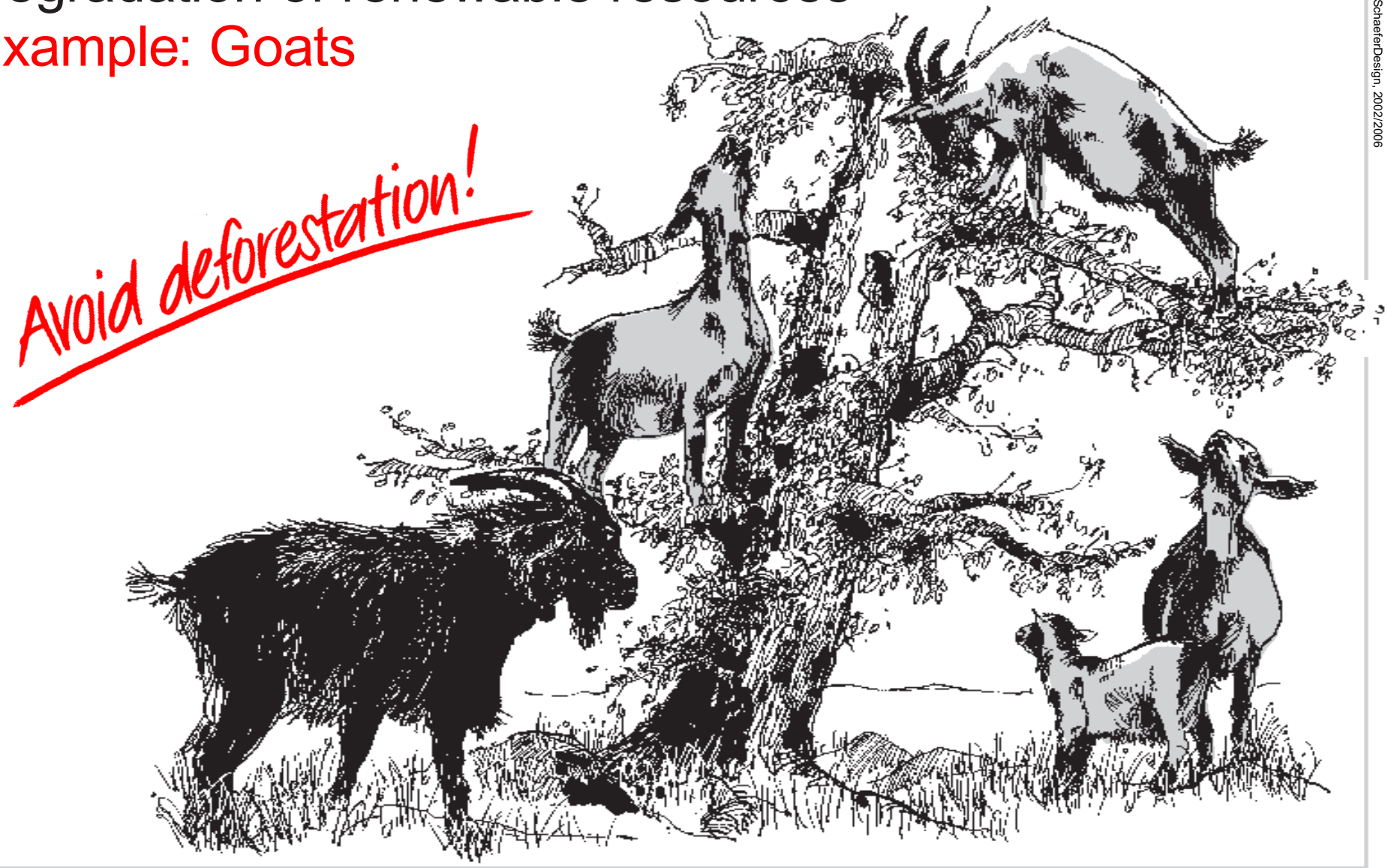
Example: Firewood



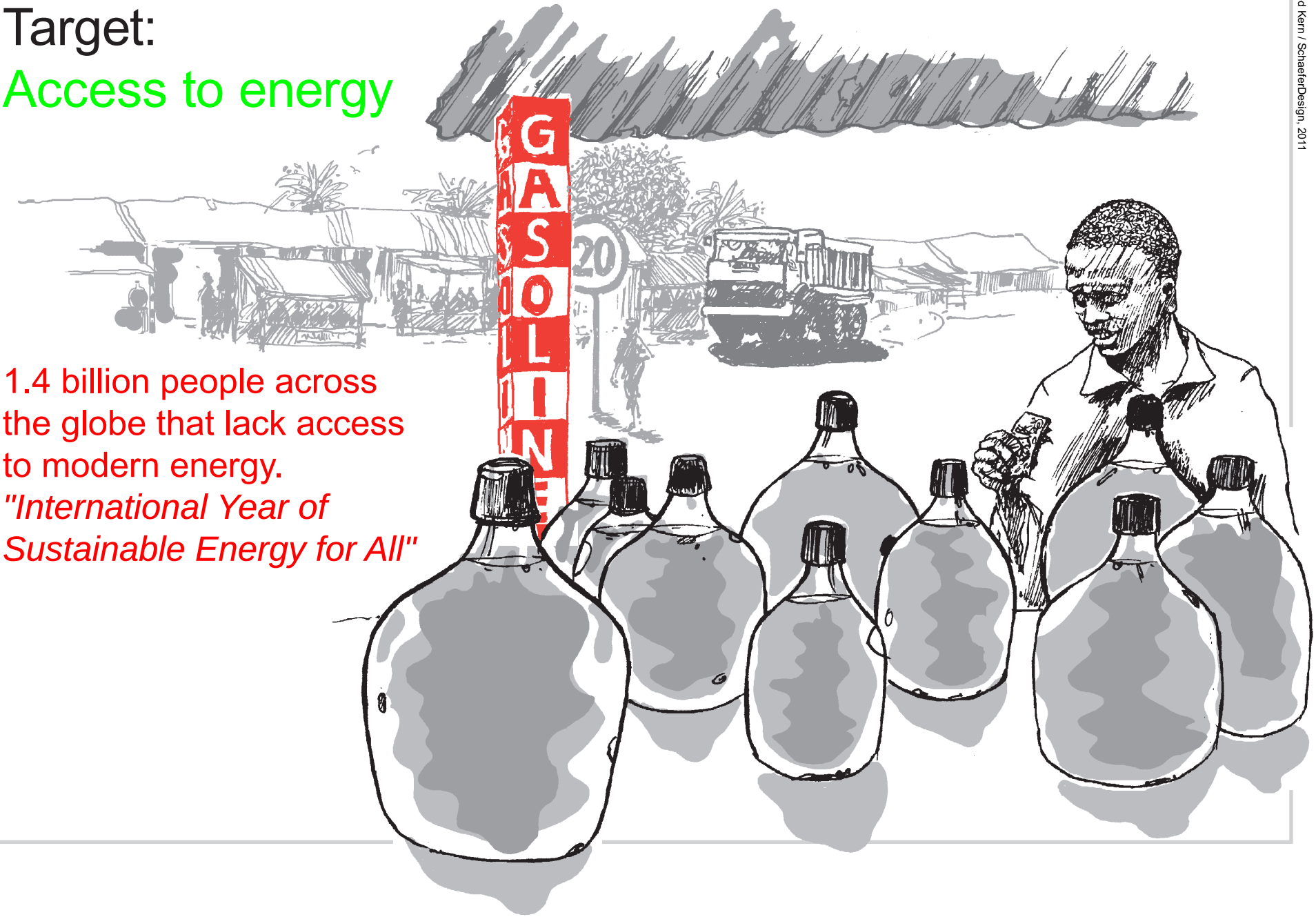
Agenda 21 §14.93 Earth Summit, Rio 1992

Degradation of renewable resources

Example: Goats



Target:
Access to energy

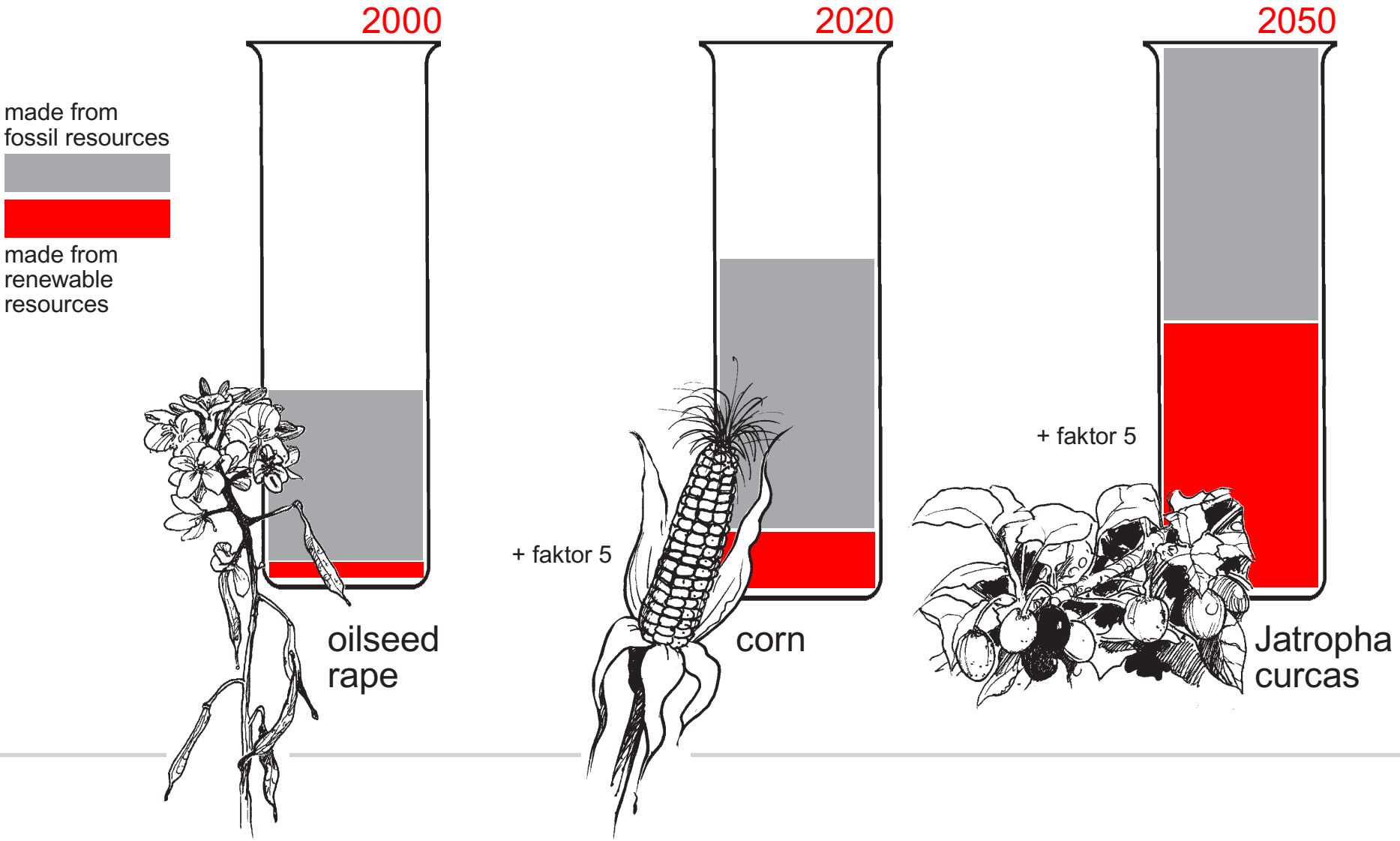


1.4 billion people across the globe that lack access to modern energy.
"International Year of Sustainable Energy for All"

Agenda 21 §14.94 Earth Summit, Rio 1992

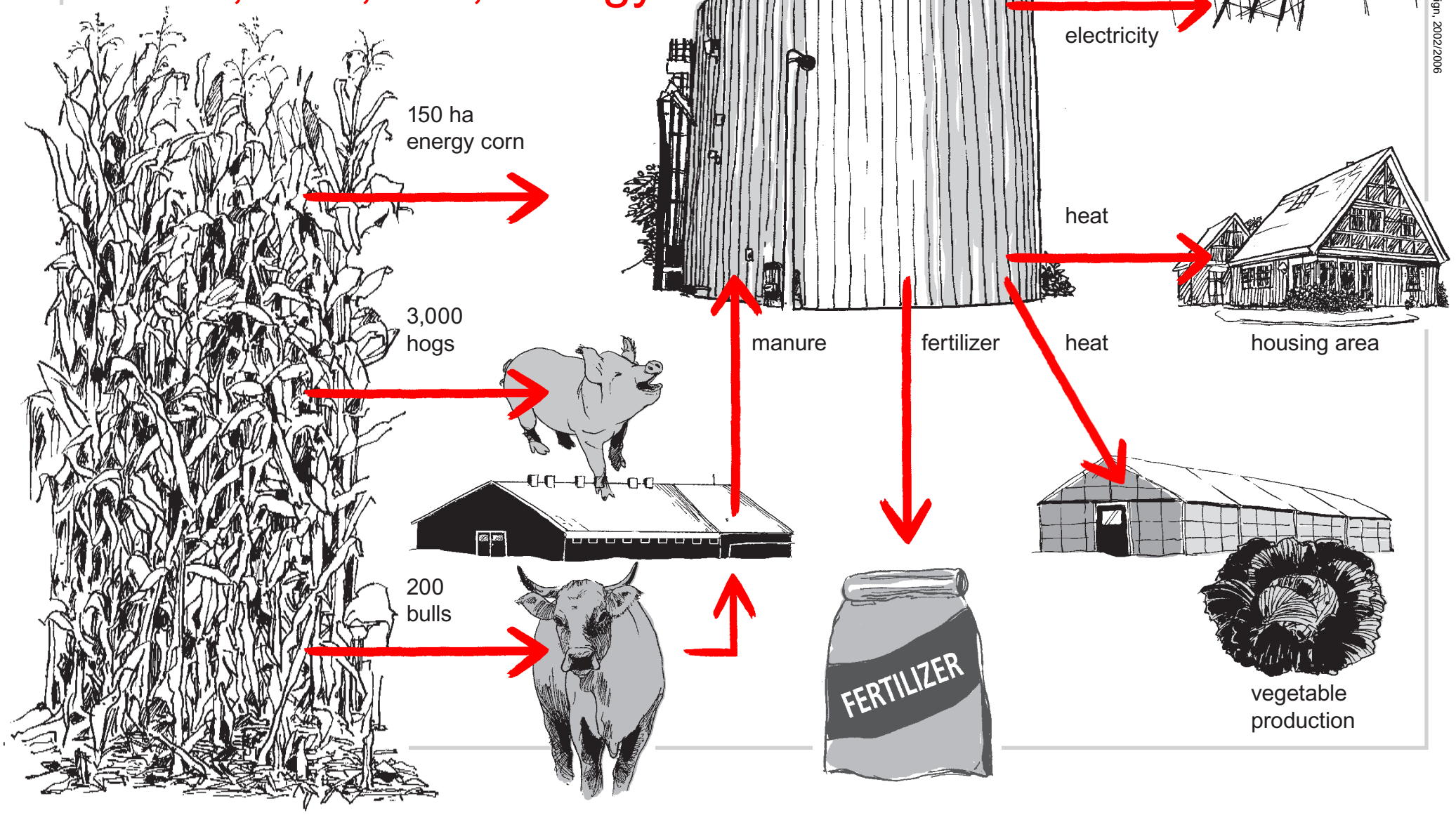
Renewable resources

Example: Biodiesel / Bioethanol

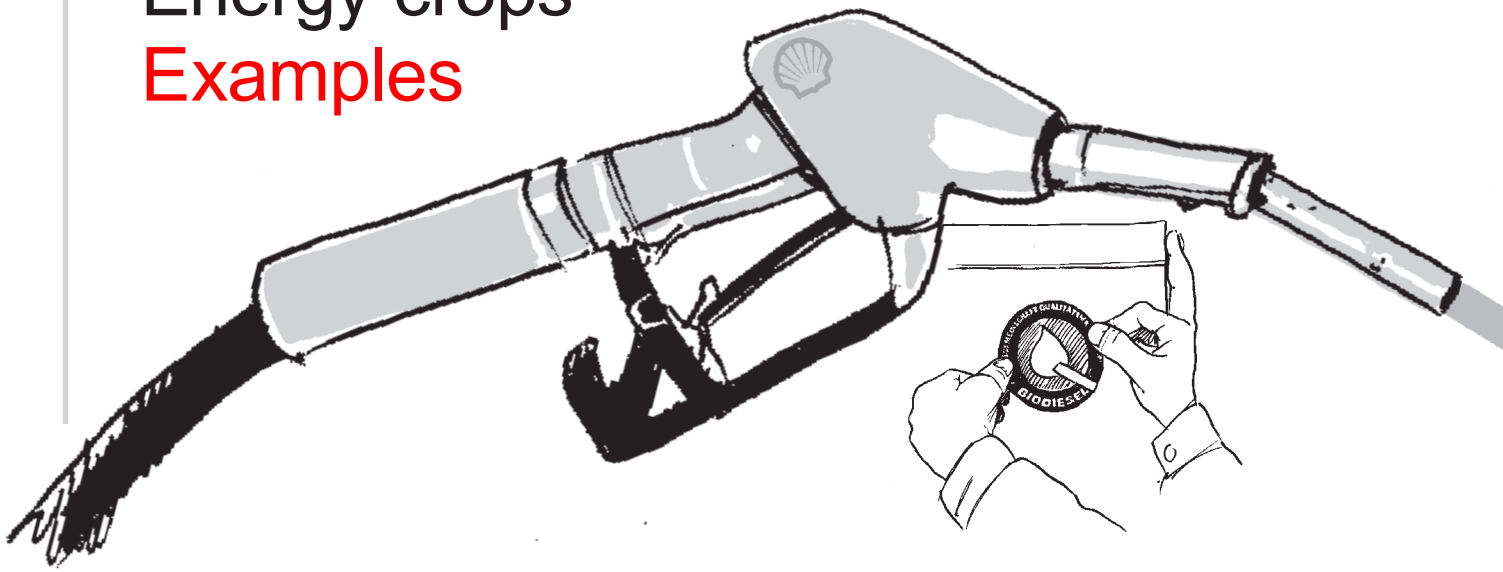


Agenda 21 §14.99 Earth Summit, Rio 1992

Renewable resources
Food, feed, fuel, energy

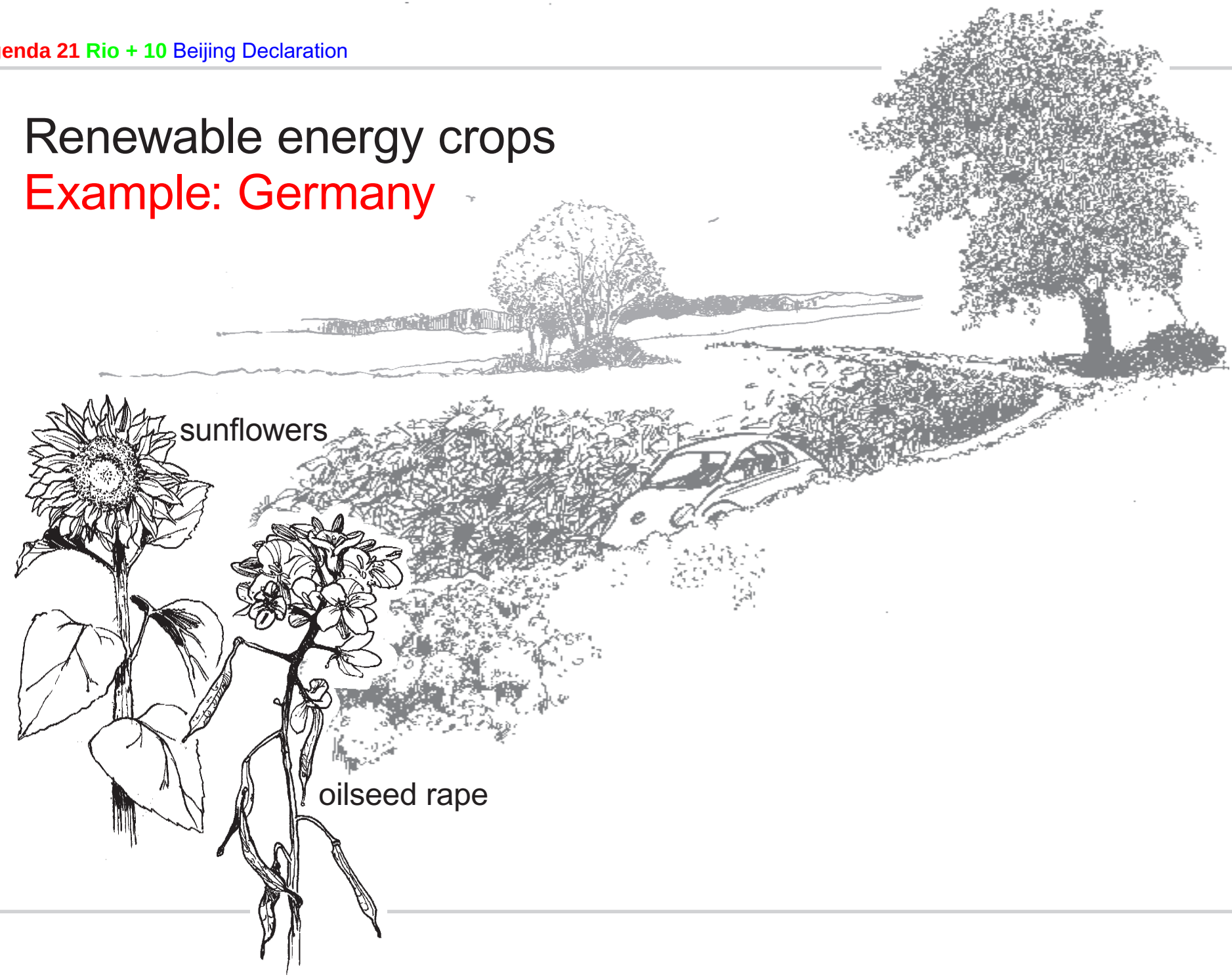


Energy crops
Examples



biodiesel
bioethanol
biogas
sun fuel
mineral oil
diesel

Renewable energy crops
Example: Germany

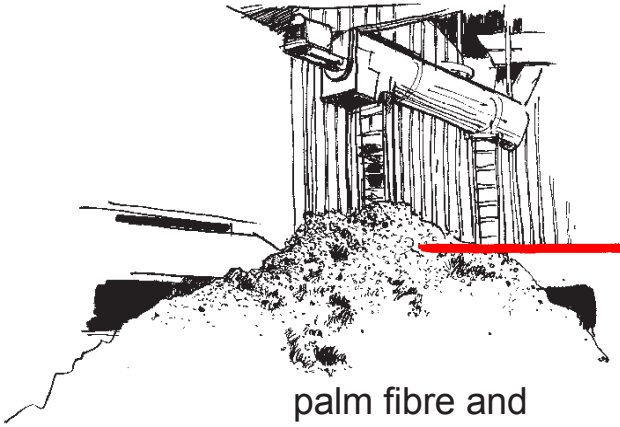


Renewable energy from Jatropha plant

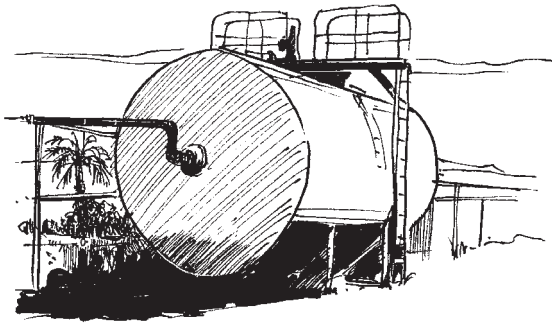
Example: India

Renewable energy from oilpalm

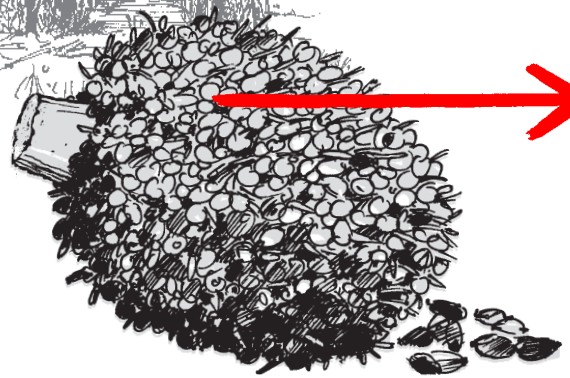
Example: Malaysia



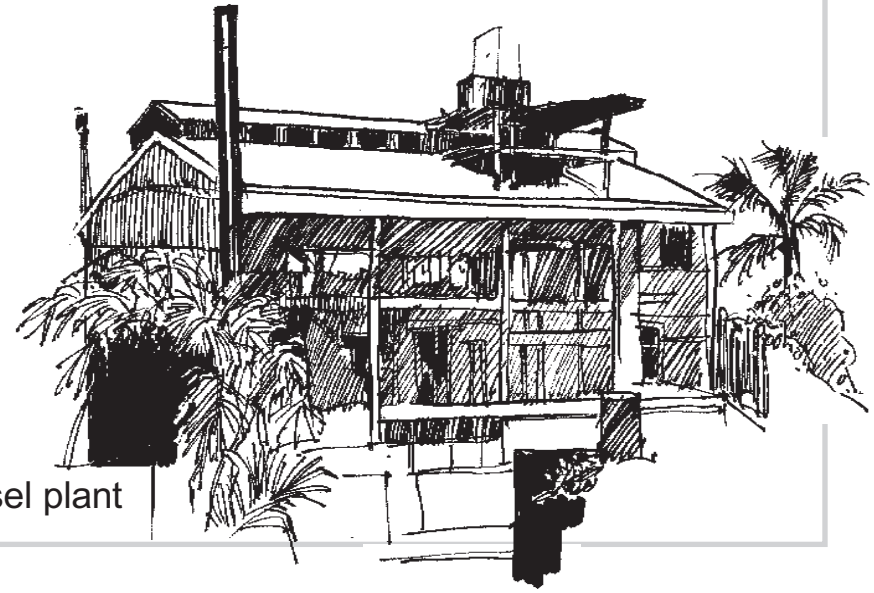
palm fibre and
fruit bunches



biogas



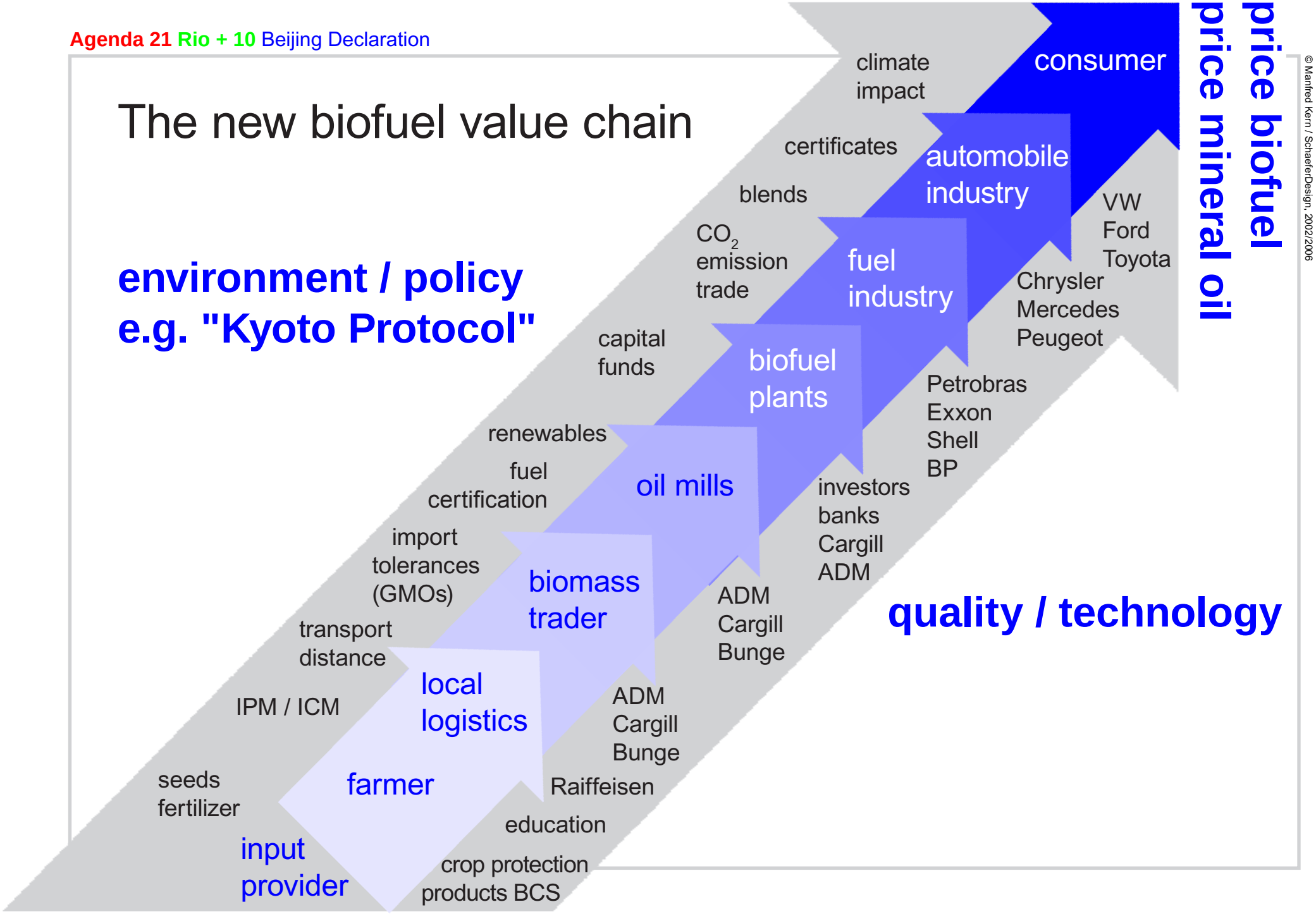
palm oil



palm biodiesel plant

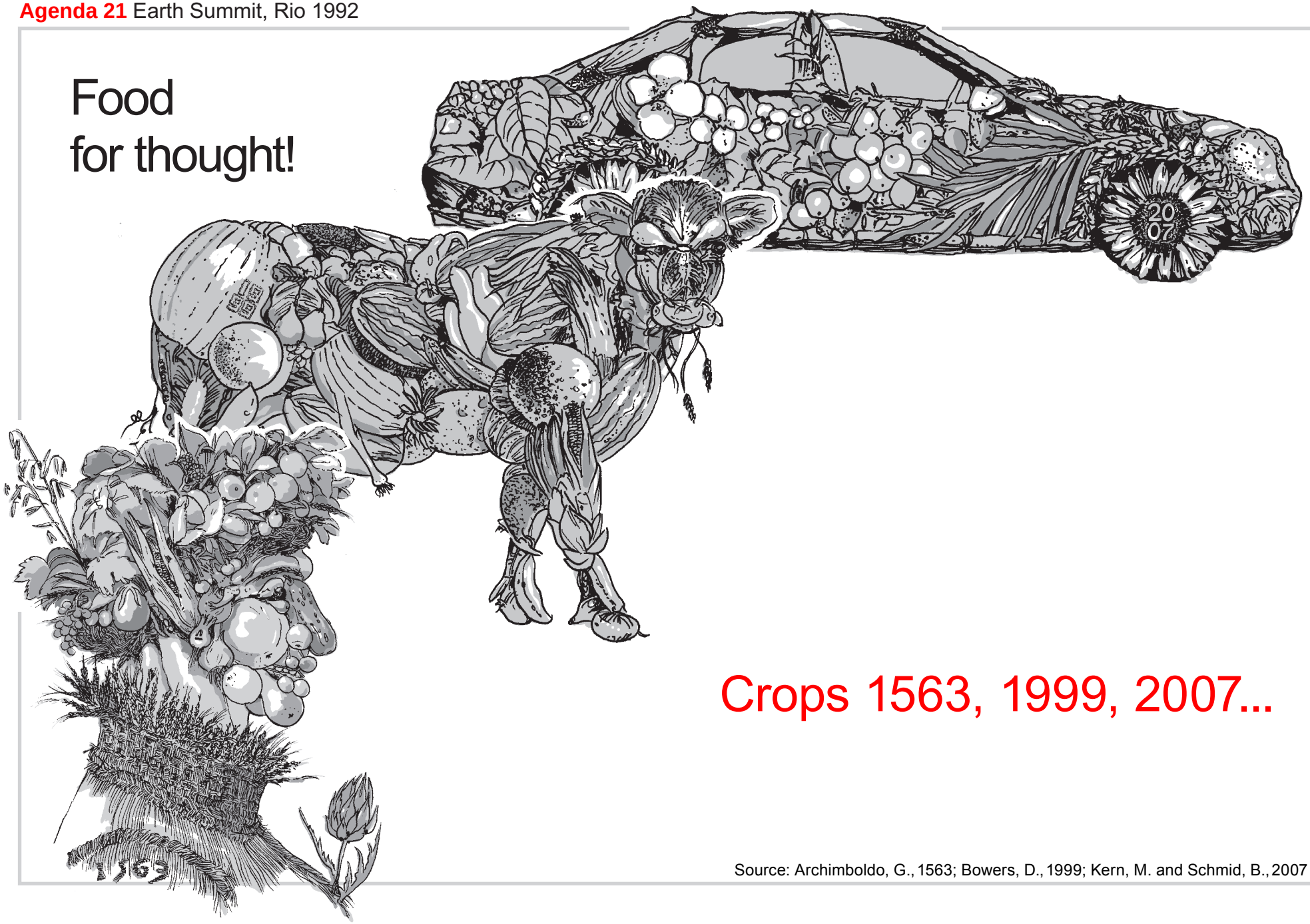
Agenda 21 Rio + 10 Beijing Declaration

The new biofuel value chain



Agenda 21 Earth Summit, Rio 1992

Food for thought!



Crops 1563, 1999, 2007...

Source: Archimboldo, G., 1563; Bowers, D., 1999; Kern, M. and Schmid, B., 2007

Environmentally sound management of biotechnology

Agenda 21

- Increasing the availability of food, feed and renewable raw materials
- Improving human health
- Enhancing protection of the environment
- Enhancing safety and developing international mechanisms for cooperation
- Establishing enabling mechanisms for the development and the environmentally sound application of biotechnology

... especially in developing countries.

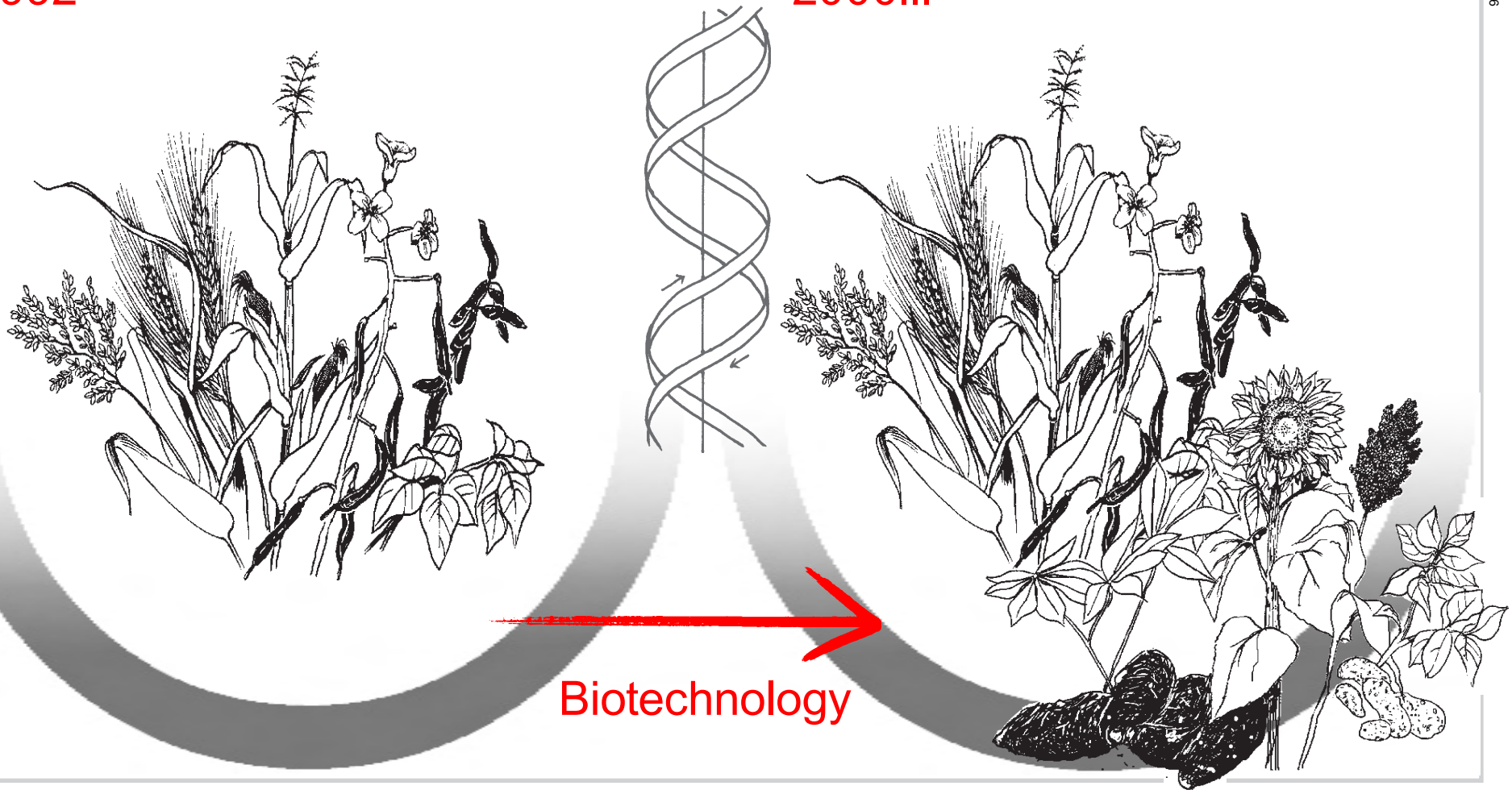
Agenda 21 §14.54 Earth Summit, Rio 1992

Plant genetic resources

Objectives: Preservation and sustainable use

1992

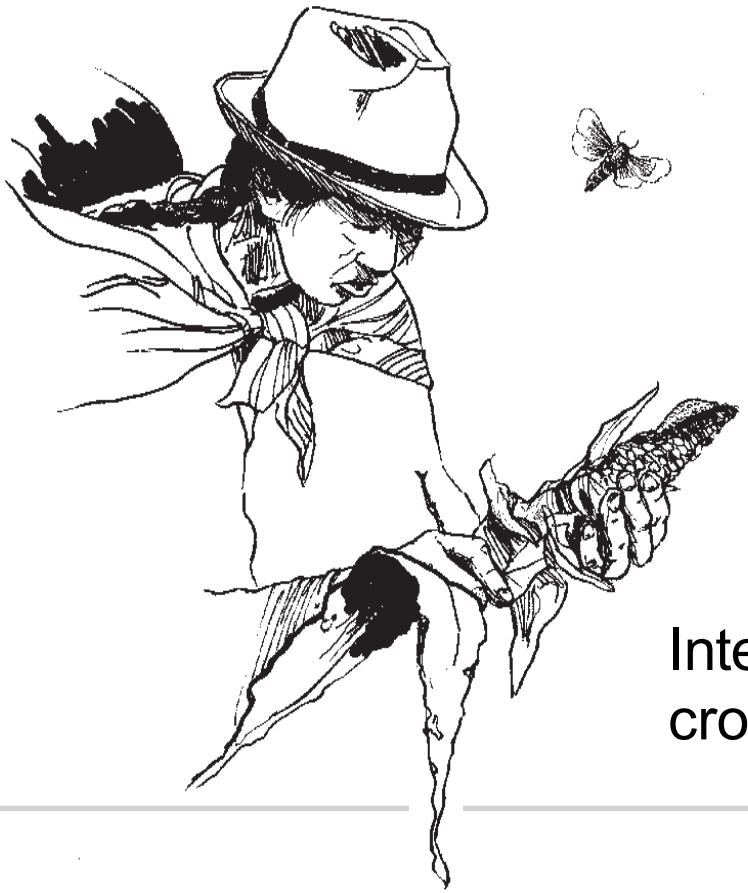
2000...

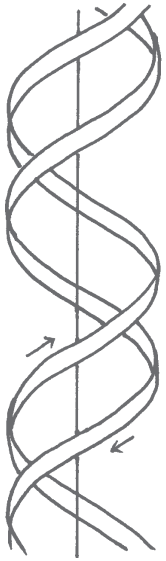


Agenda 21, Chapter 16

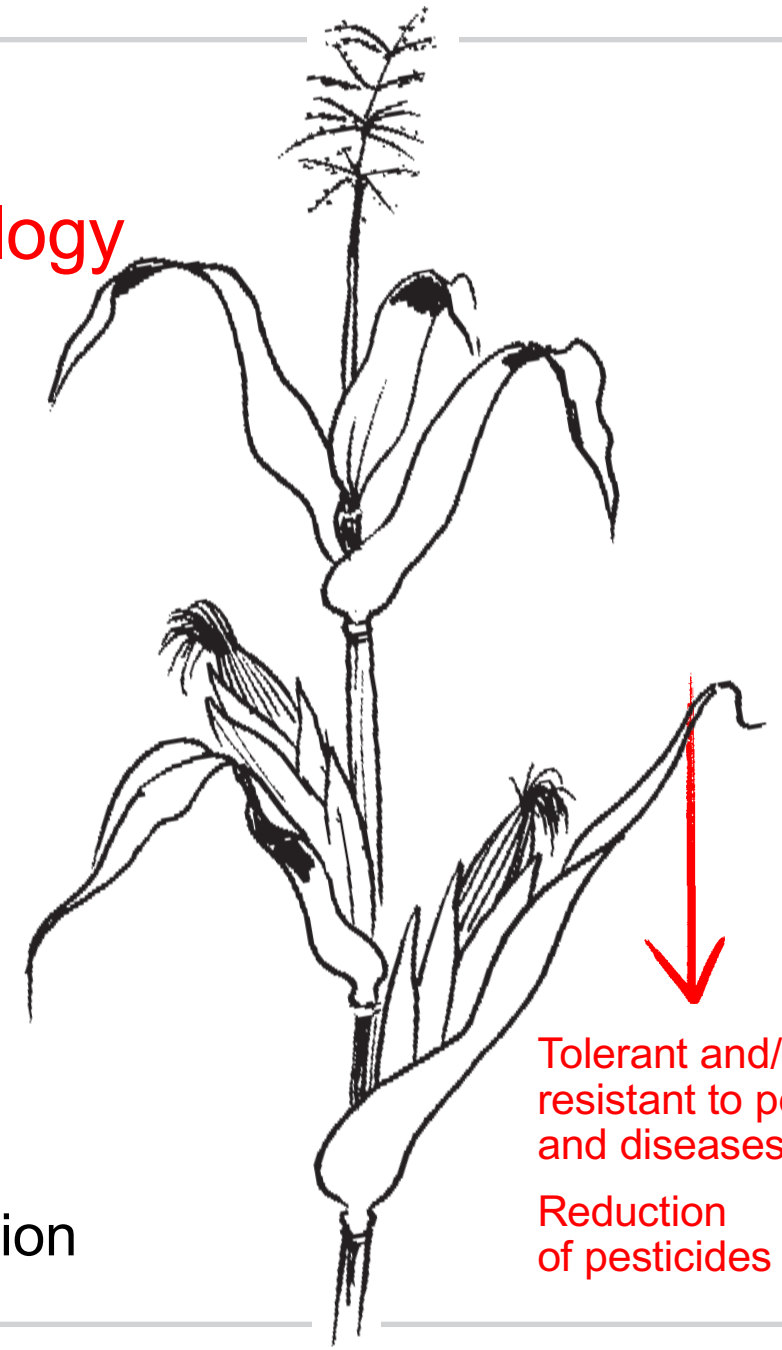
Biotechnology ≈ Gene technology

Plants





Integrated
crop protection

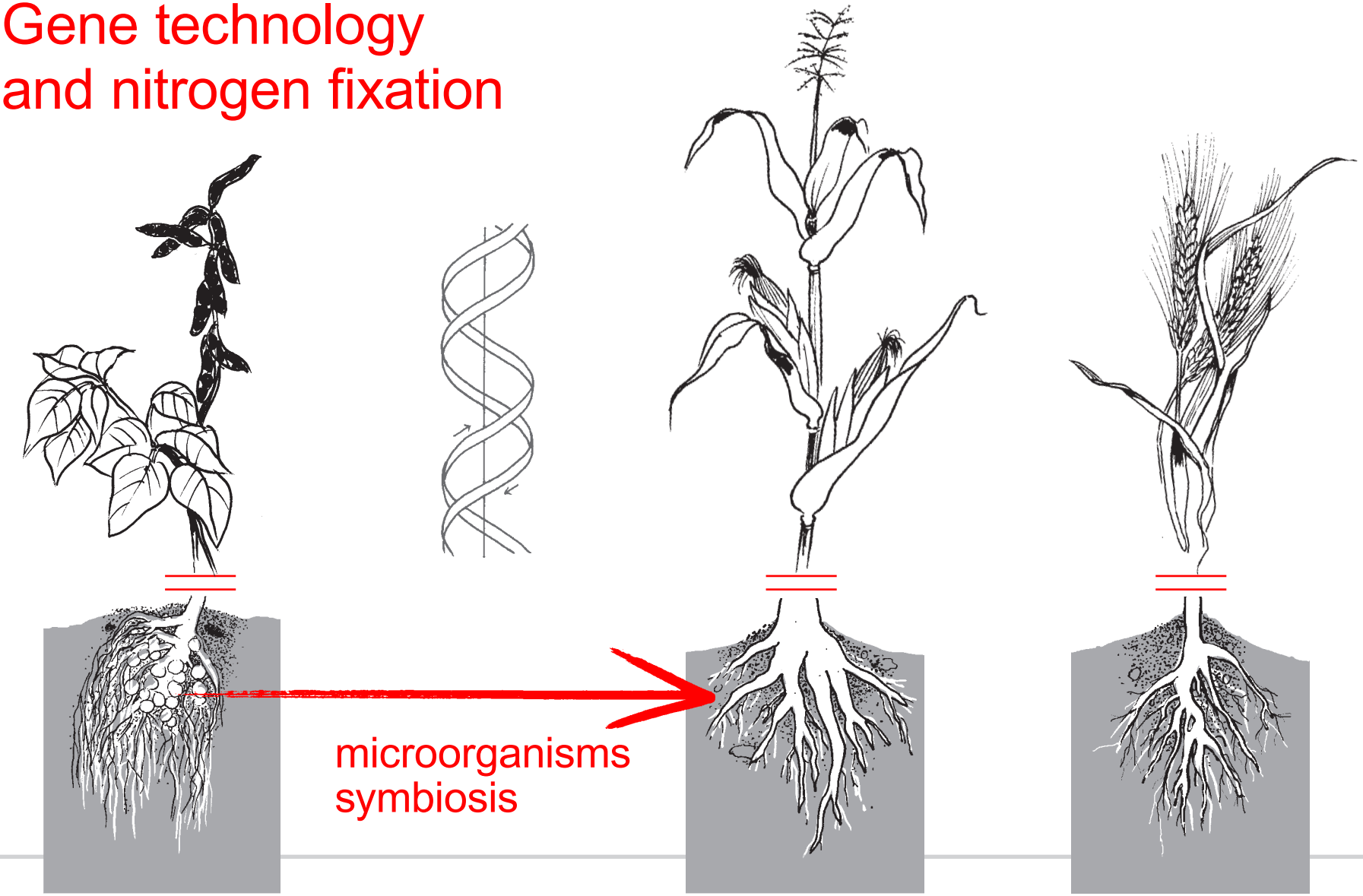


Tolerant and/or
resistant to pests
and diseases

Reduction
of pesticides

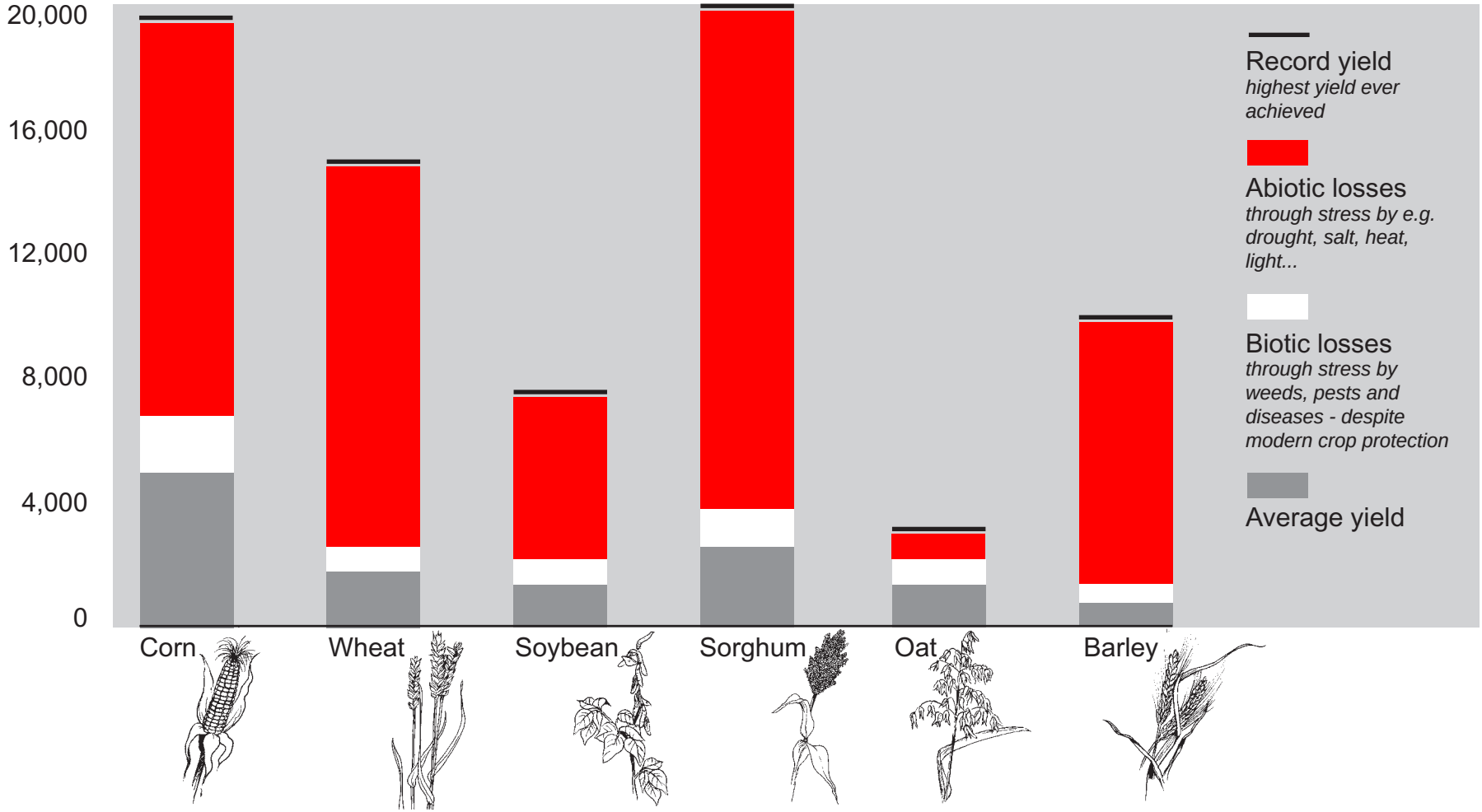
Sustainable agricultural production system

Gene technology and nitrogen fixation



Target: Research innovation has to address biotic and abiotic stresses

Global Yield Losses (kg/ha) - Biotic and Abiotic Stress, 2012



Agenda 21 §16.5 Earth Summit, Rio 1992

Plant cultivars tolerant/resistant to stress from abiotic causes

Gene technology: Heat and drought resistant plants

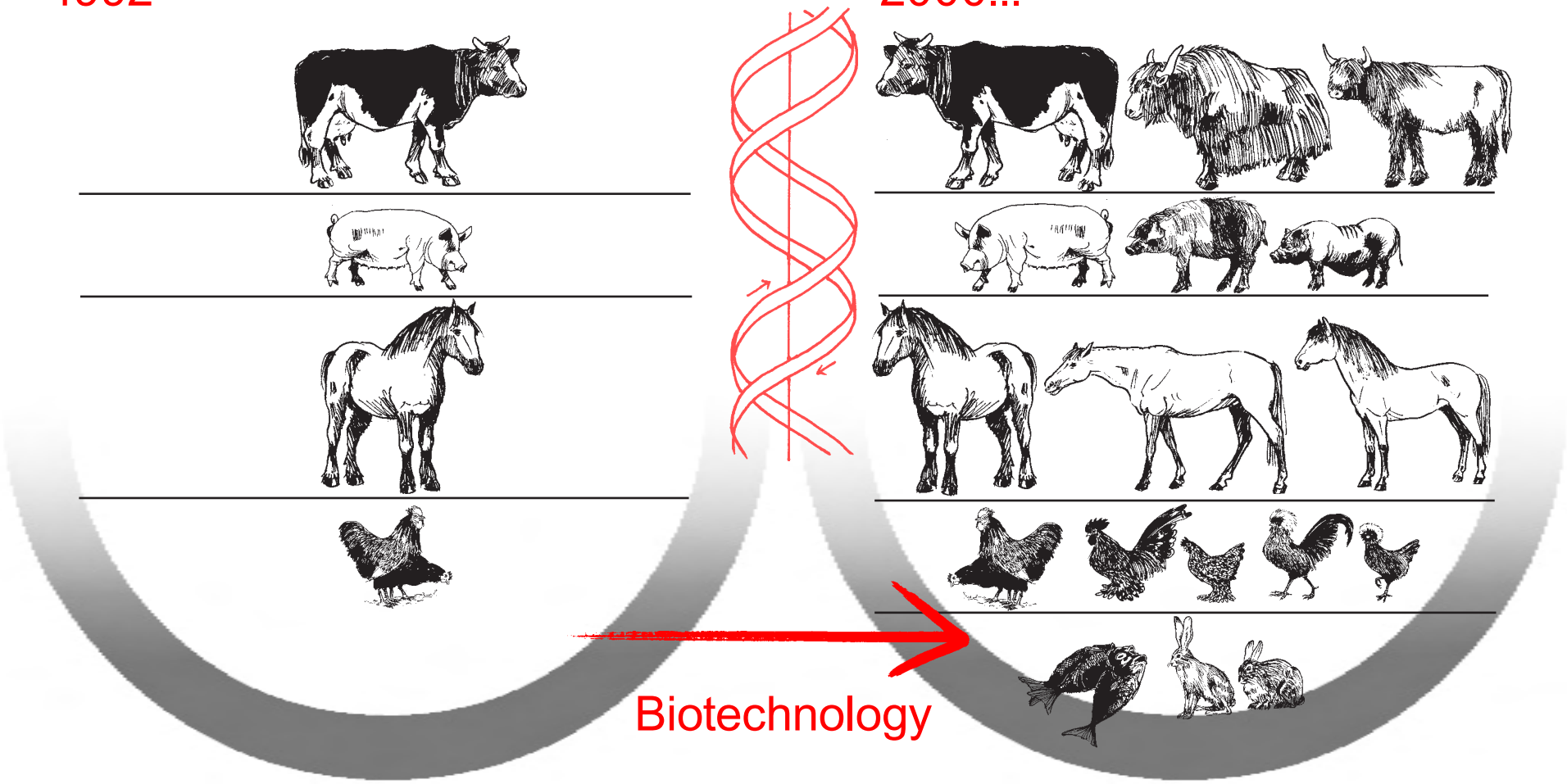
Agenda 21 §14.65 Earth Summit, Rio 1992

Animal genetic resources

Objectives: Preservation and sustainable use

1992

2000...



Biotechnology

Agenda 21, Chapter 16

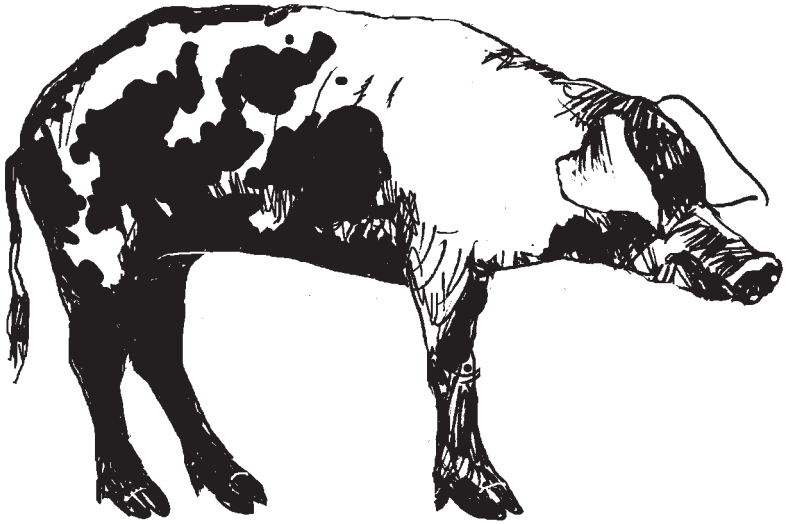
Biotechnology ≈ Gene technology

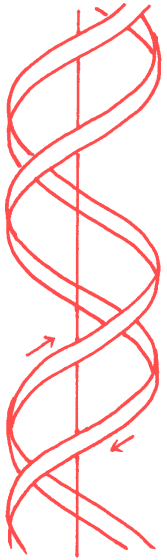
Animals

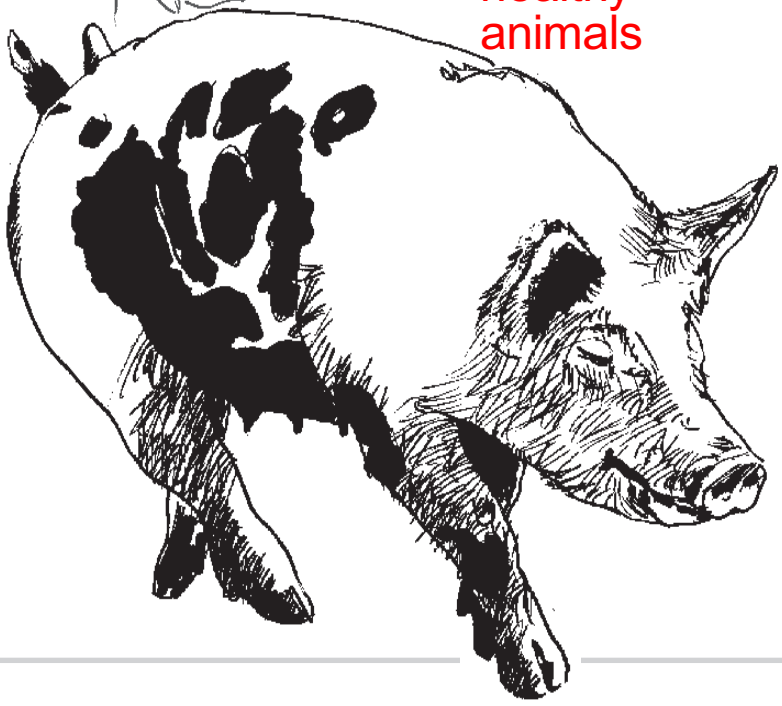
Improve productivity

Improve nutri-tional quality

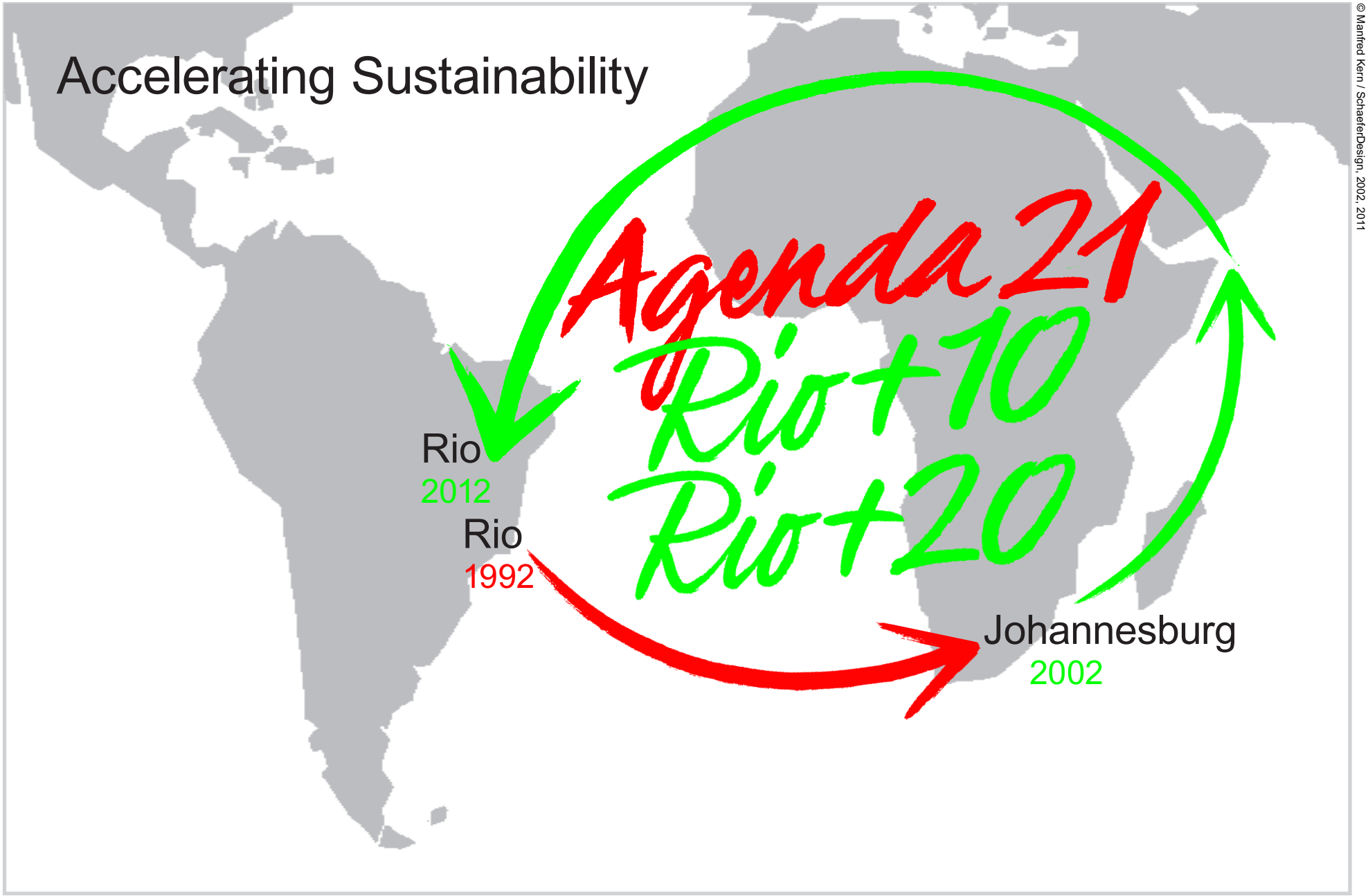
Develop vaccines for healthy animals







Agenda 21 **Rio + 10** **Rio + 20** International Sustainable Development 2002, 2012



Accelerating Sustainability

World Summit
Johannesburg 2002
Rio de Janeiro 2012

In 2012, the UN World Summit on Sustainable Development will mark the 20th anniversary of the UN Conference on Environment and Development, where 178 countries adopted a global action plan for sustainable development called Agenda 21,

- to determine strategies for sustainable development for the next ten years.
- to formulate strategies for further implementation of Agenda 21 and the Rio Convention.
- to lay the foundation for a more green economy, a better governance and poverty eradication.

Target: Poverty

By 2015: to halve poverty, the proportion of people globally (currently 22%)

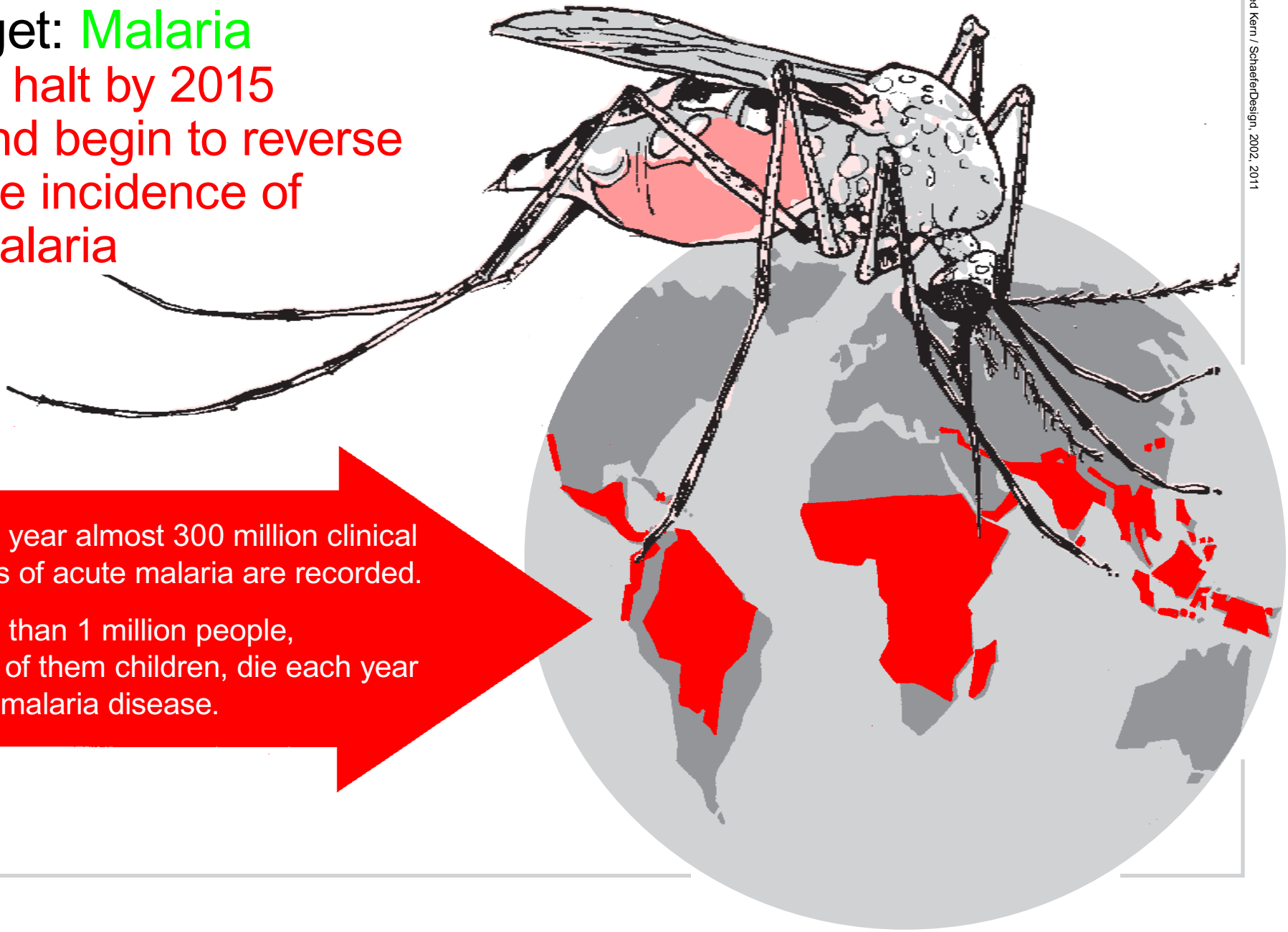
2002 = $1/day

Target: Health

By 2015: to reduce infant mortality by 66%
to reduce maternal mortality by 70%
access for all to primary reproductive health service

Target: Malaria

- to halt by 2015 and begin to reverse the incidence of malaria



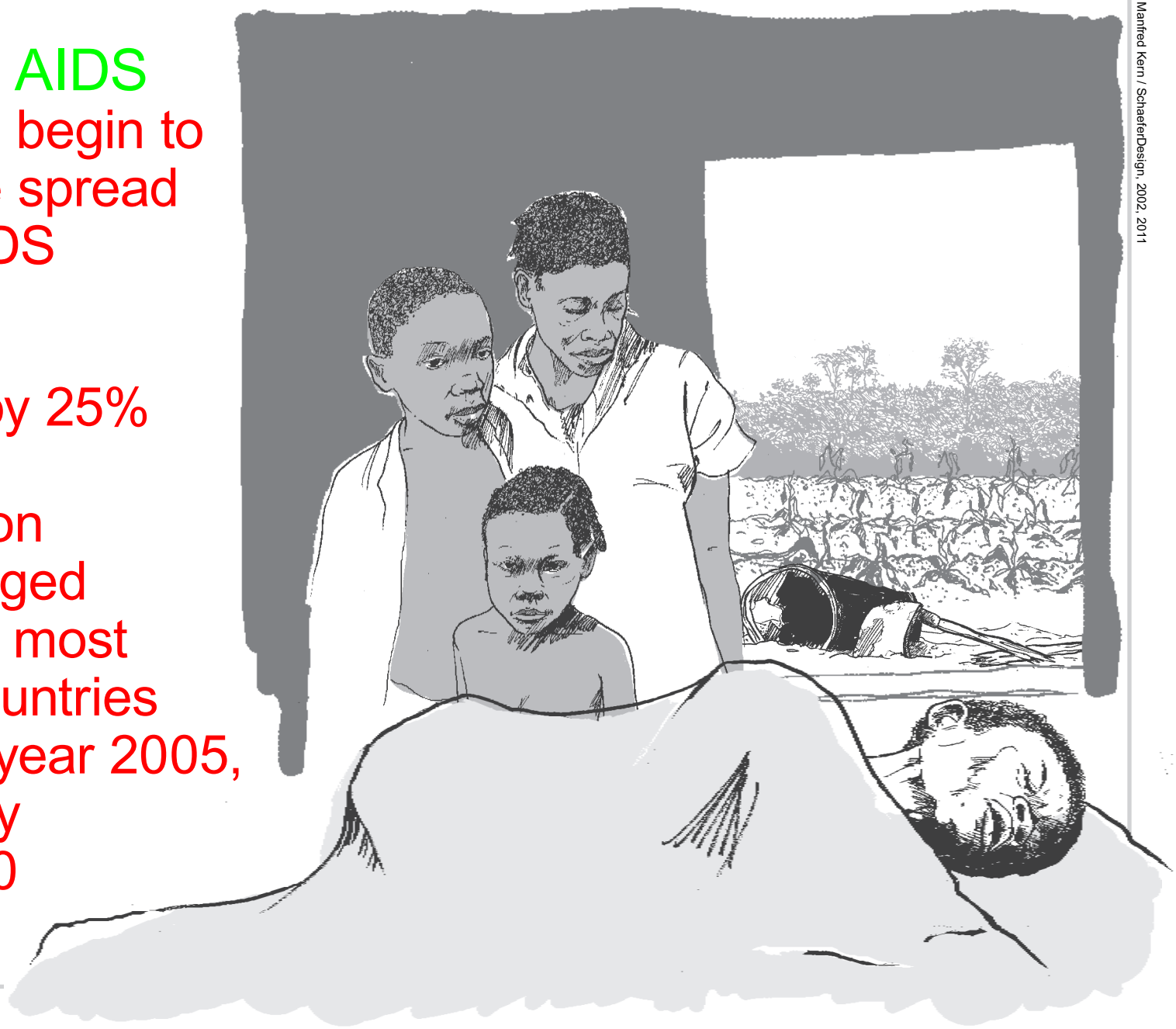
Each year almost 300 million clinical cases of acute malaria are recorded.

More than 1 million people, most of them children, die each year from malaria disease.

Target: HIV / AIDS

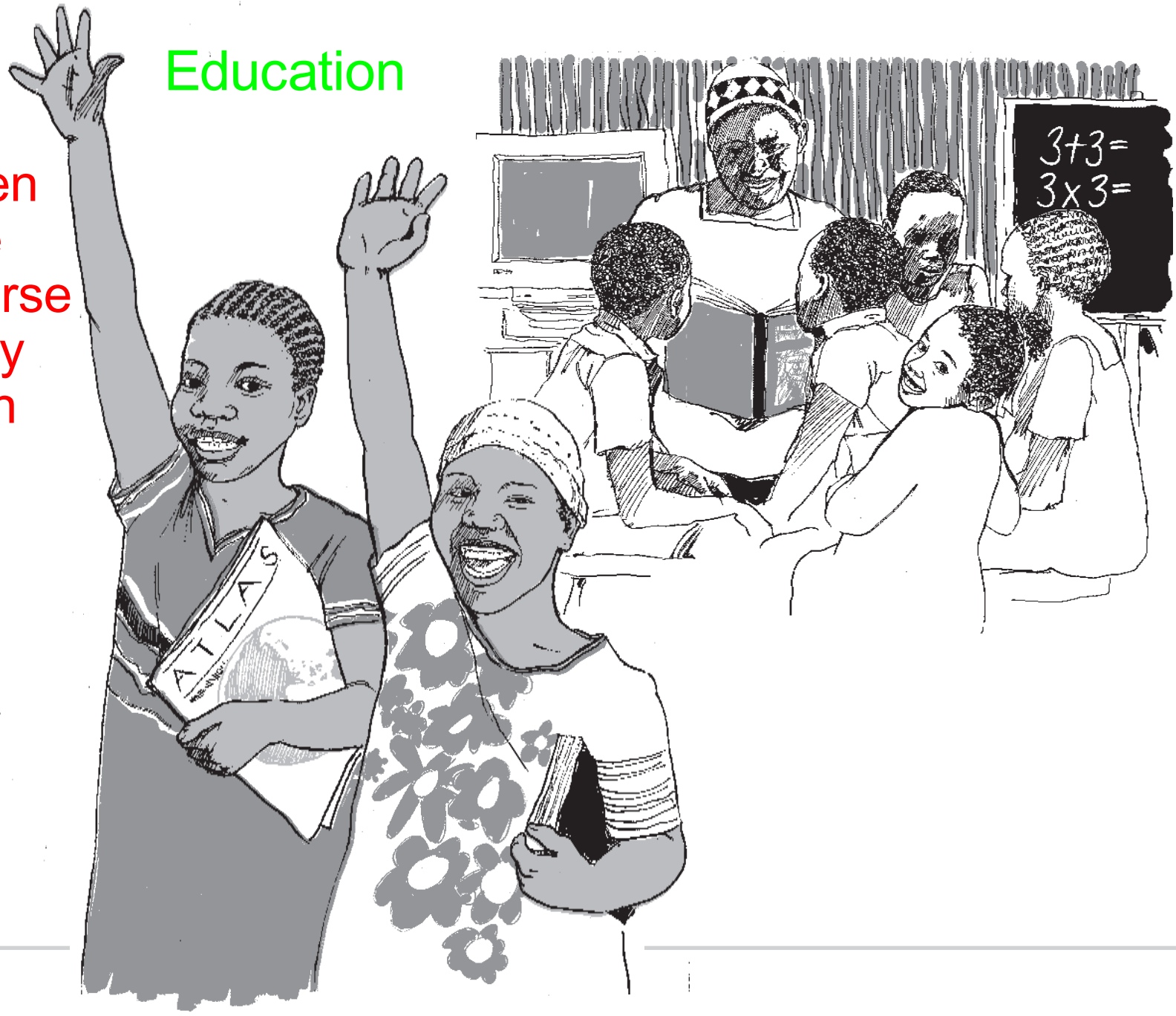
- to halt, and begin to reverse the spread of HIV / AIDS by 2015

- to reduce by 25% the rate of HIV-Infection in people aged 15 to 24, in most affected countries before the year 2005, and globally before 2010



Target: Education

By 2015
all children
complete
a full course
of primary
education



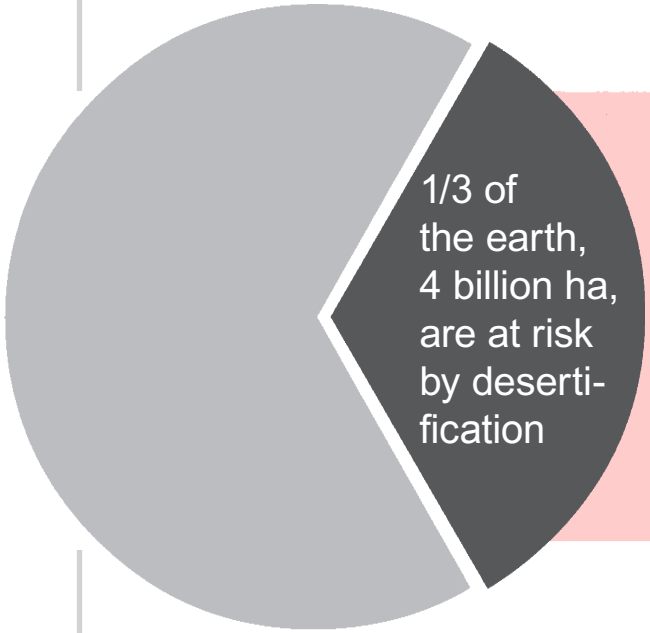
Target: Water

By 2015: to halve the proportion of people who do not have access to safe drinking water (currently 20% of global population)

Source: UN, 2001

Target: Soil

- to halt land degradation
- to manage land more responsibly
- to reverse the decline in agricultural productivity
- to improve livehoods of some billion people



60 million people
from Sub-Sahara Africa

135 million people are at risk
of being displaced due
to loss of arable land

> 250 million people
are at risk

"environmental
emigrants"

man made
- over use
- overgrazing
- deforestation
- poor water use
- wars

external factors
- climate change
- drought
- floods
- erosion

Source: UNCCD, 2002

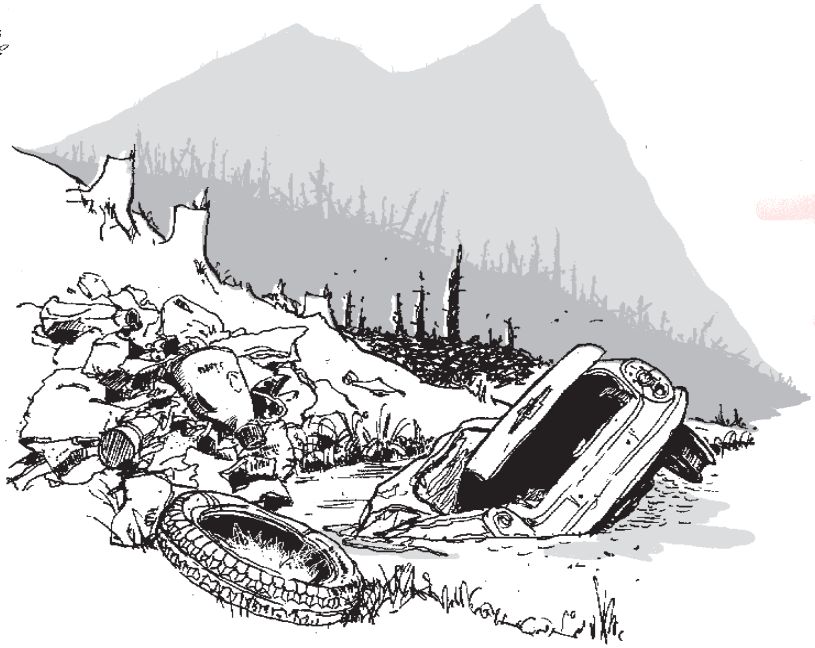
Target: Environment

To reverse the loss of environment resources by 2015

Biodiversity

Forests / Water

Air



Strategy: Coordinated biodiversity monitory programme

A highly unfamiliar picture emerges if a typical organism from each of the taxonomic groups is illustrated on a scale to match the number of species its particular group contains. More than half of the species known up to know are insects and many of them have not yet been classified. The number of mammalian species comes to only about 4,000, which accounts for barely 0.25% of the approximately 1.5 million species of organisms which have been scientifically described.


Mammals


Amphibians


Bacteria


Sponges


Echinoderms


Reptiles

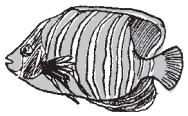

Zoophytes


Birds


Annelids


Nematodes


Flatworms

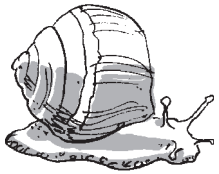

Fish

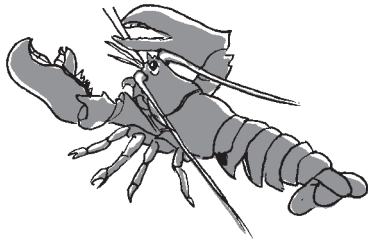

Algae


Protozoa


Fungi

Insects

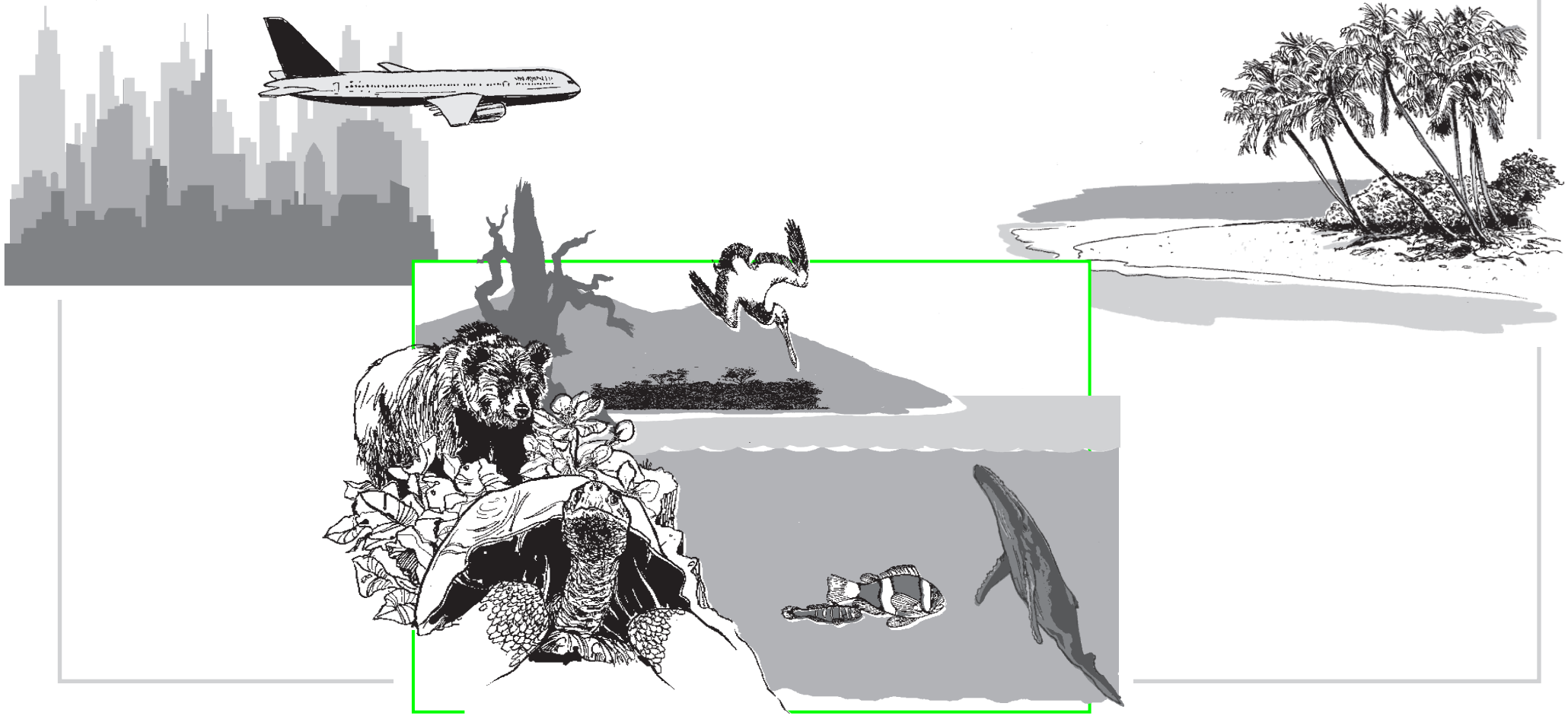

Molluscs


Arthropods excl. insects

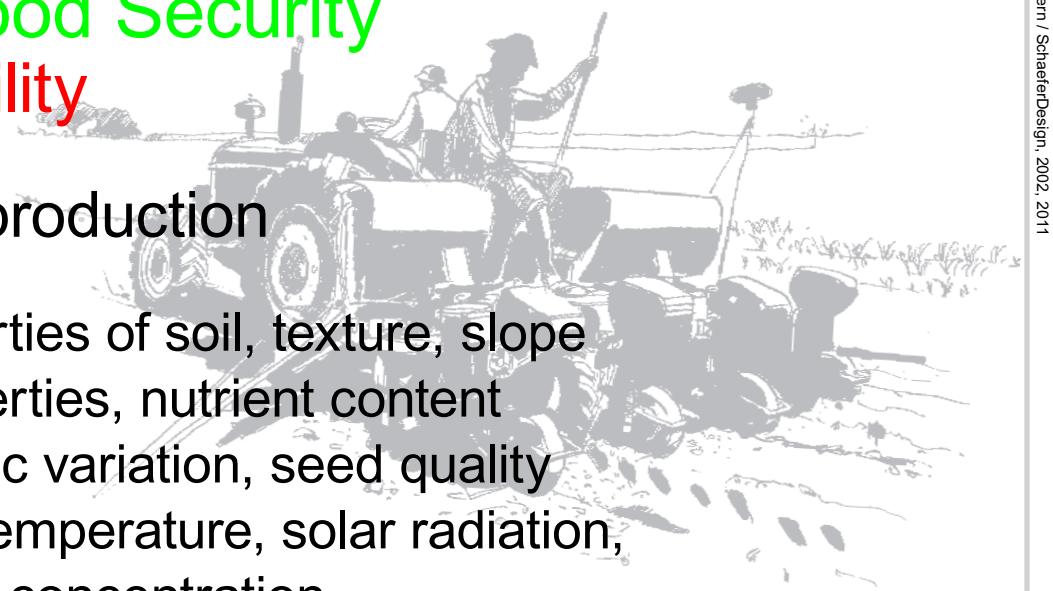

Mosses, ferns, seed-bearing plants

Strategy: A more sustainable development of tourism

Tourism is now regarded as the world's largest industry

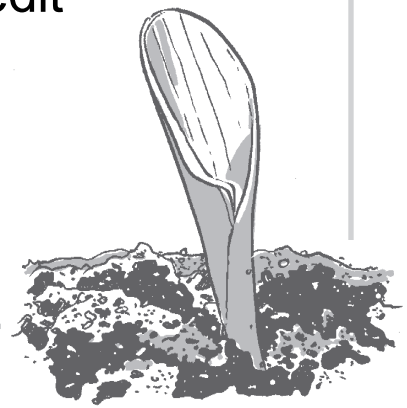


Strategy: Safeguarding Food Security
Availability versus Accessibility



Availability: Sustainable food production

1. soil factors	physical properties of soil, texture, slope chemical properties, nutrient content
2. plant factors	species, genetic variation, seed quality
3. climate factors	water supply, temperature, solar radiation, carbon dioxide concentration
4. ecological shocks	water scarcity, floods, storms, monsoons, earthquakes, vulcanic eruptions, drought
5. socioeconomic factors	price of agricultural inputs and products, farm income, efficient agro-technologies, availability of credit
6. knowledge factors	availability of knowledge, infrastructure for disseminating informations, availability of agricultural research centers



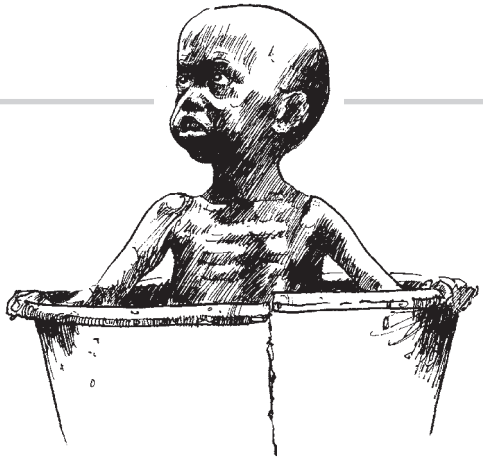
Strategy: Safeguarding Food Security
Availability versus Accessibility

Accessibility: Ability of people to receive or gain access to food depends on

1. poverty, 1.3 billion people living below US $ 1 a day (2002)
2. financial means to purchase adequate food
3. economic shocks, economic crisis, depts, corruption
4. food distribution systems, which are shaped by political and economic forces
5. an inequitable food production
6. political unrest and lack of democracy

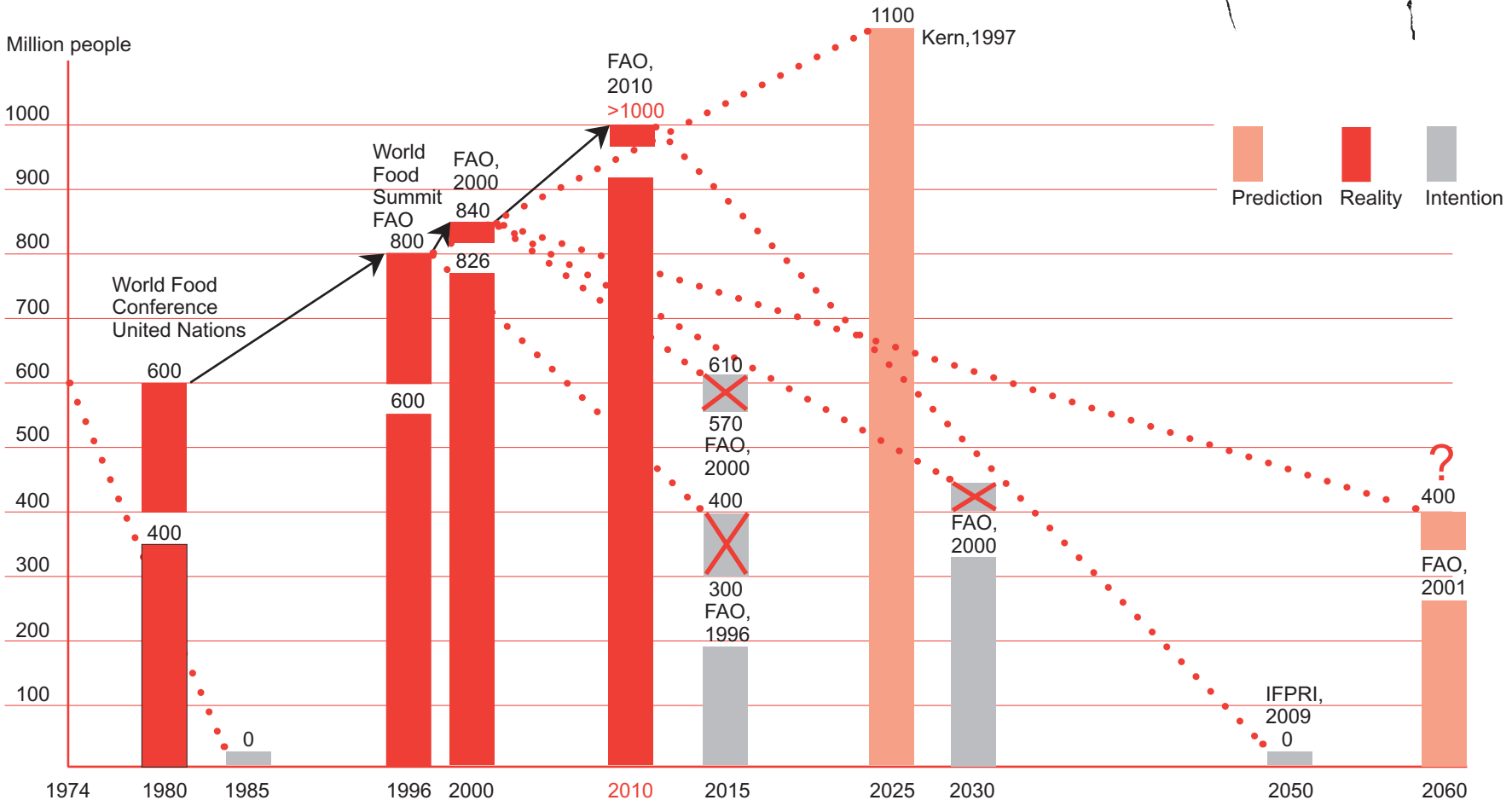
Source: IFPRI, 2001

Target: Eradicating hunger



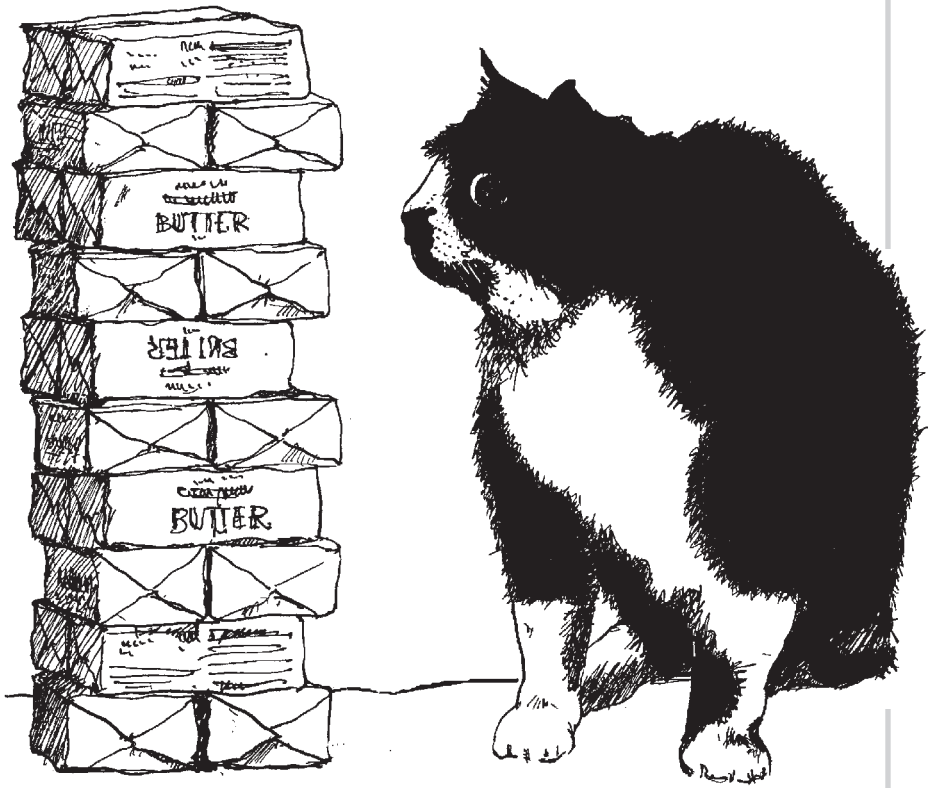
Global Malnutrition: Predictions and Reality, 1974 - 2060

"Related to higher food prices, a lot of people will explain, why the world will/could not reach the millennium target to halve hunger until 2015!" (Kern 02/2007).



Target: Eradicating poverty and hunger
Development with equity and dignity

Champion Weight-Shedder
in 2005 was a tom cat.
Lost 5 kg!



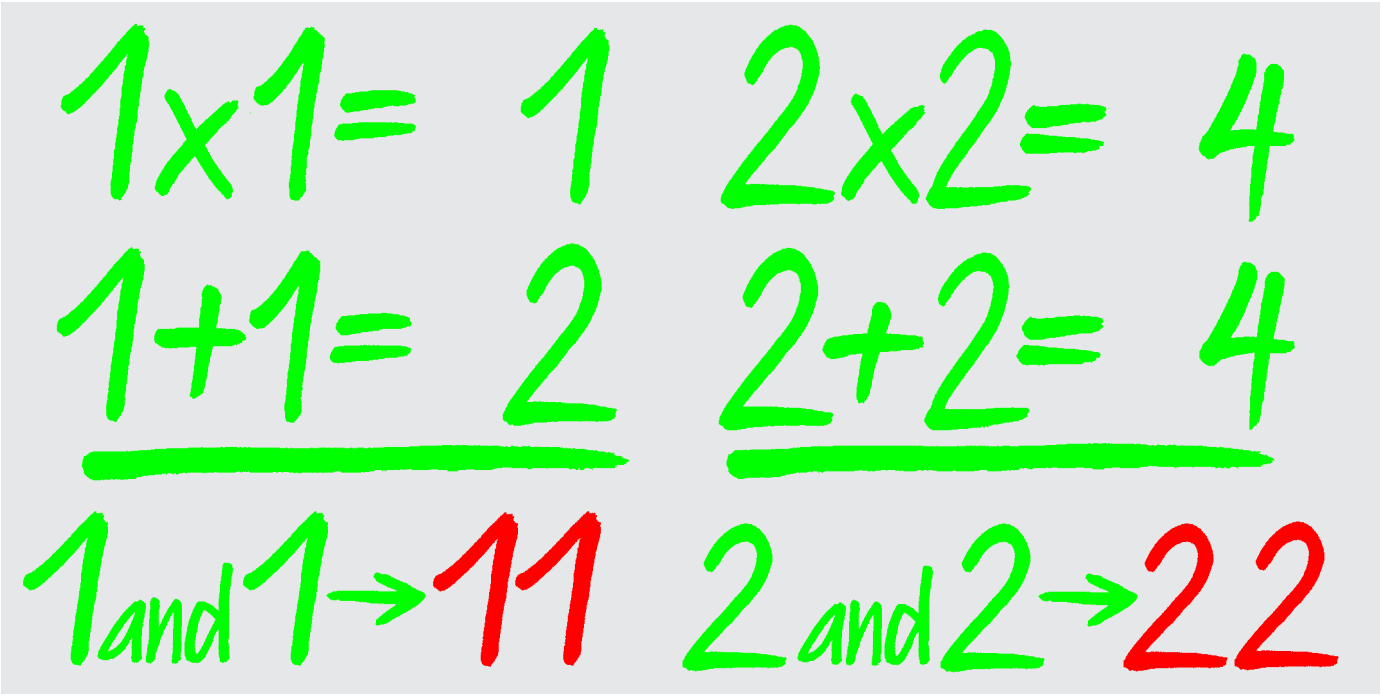
Agenda 21 §9.9 Earth Summit, Rio 1992

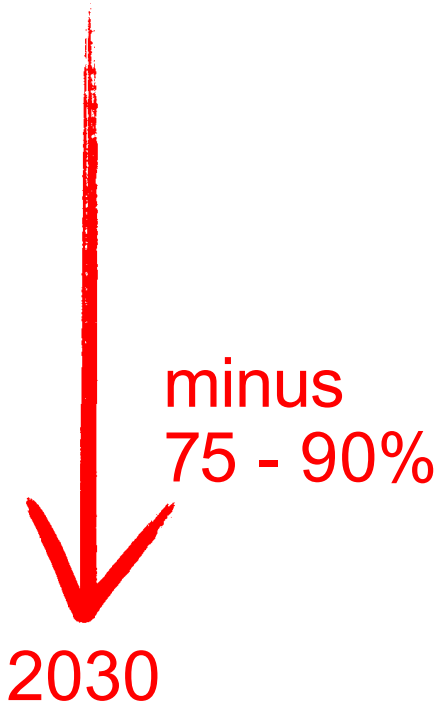
Target: Use of all energy resources by respecting the atmosphere, human health and the environment

It's all energy!

Strategy: To shift consumption and production pattern

EC: to reduce consumption in personal resource use by 75 - 90% over the next 30 years



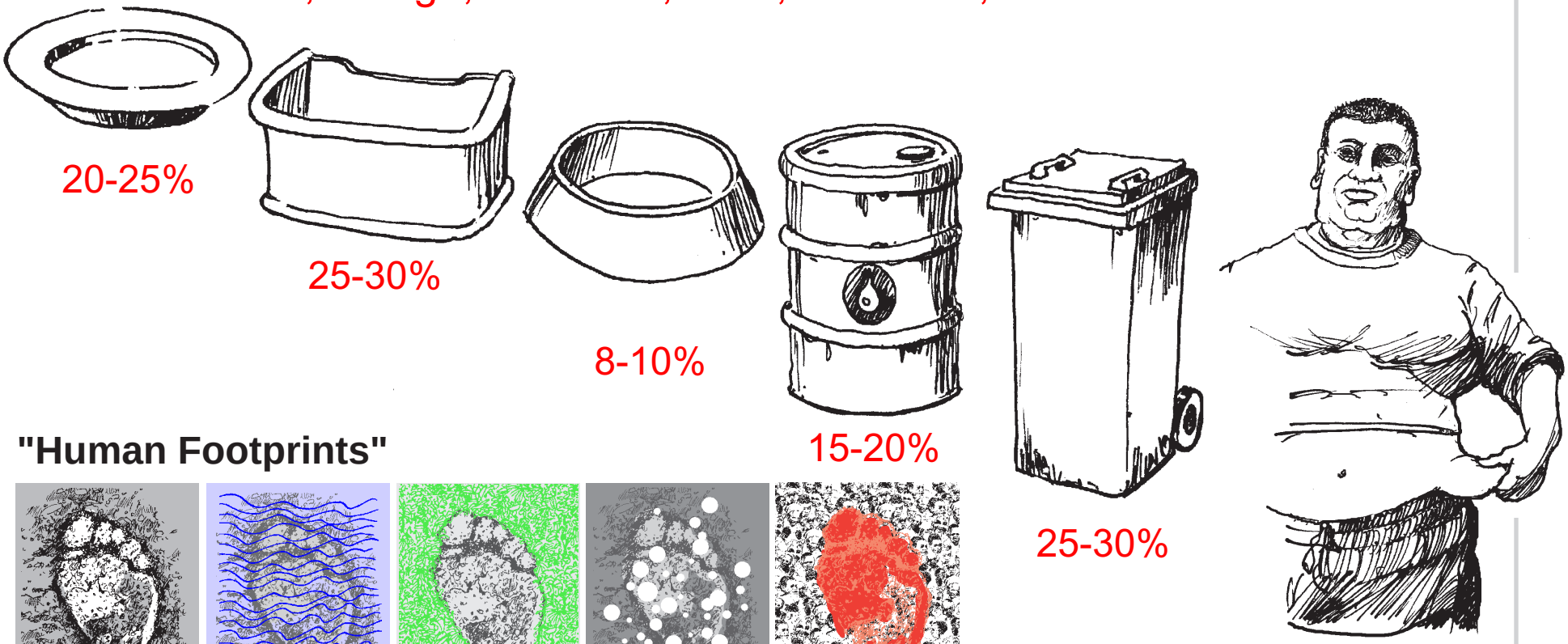


Reduce personal consumption!

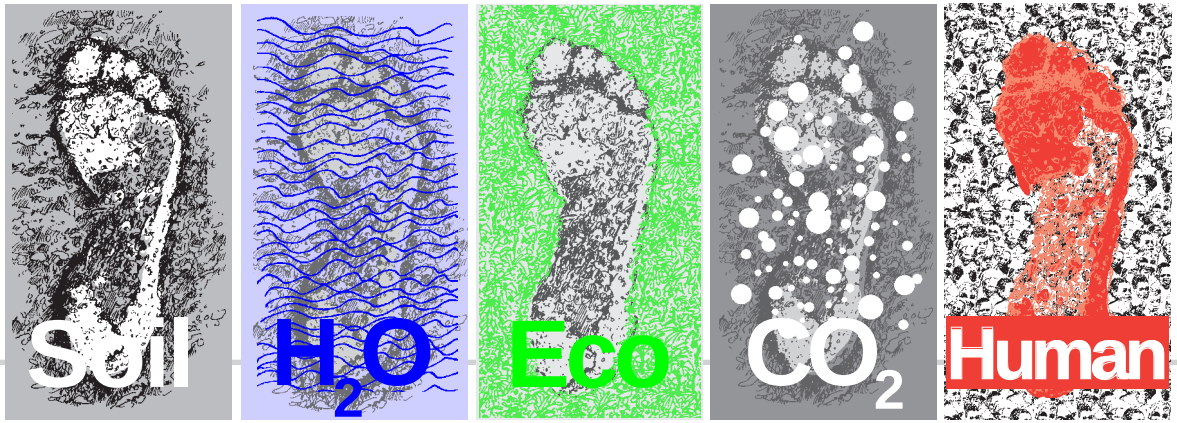
Target: Greater efficiency in the use of energy and resources by minimizing wastes

Consumption of global agricultural goods in industrial countries

Table, Trough, Pet Food, Tank, Wastebin, Waistline - 2012/2025



"Human Footprints"



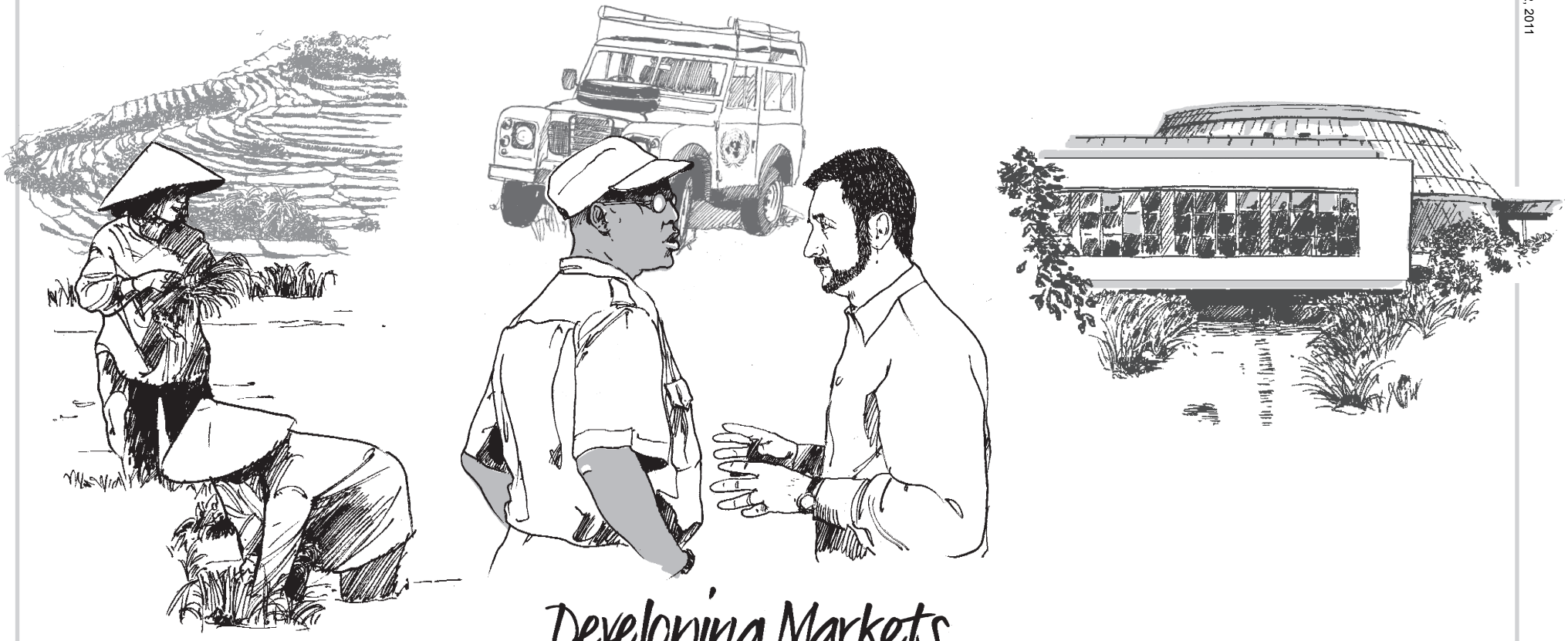
Strategy: Global dialogue, serious public dialogue
Really listen and respond to the concerns of developing countries

Strategy: Private Public Partnership

NGO's

Donor's

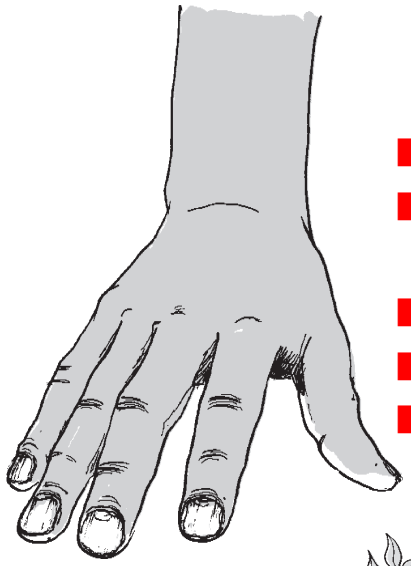
Private Sector



Developing Markets

Reducing Poverty

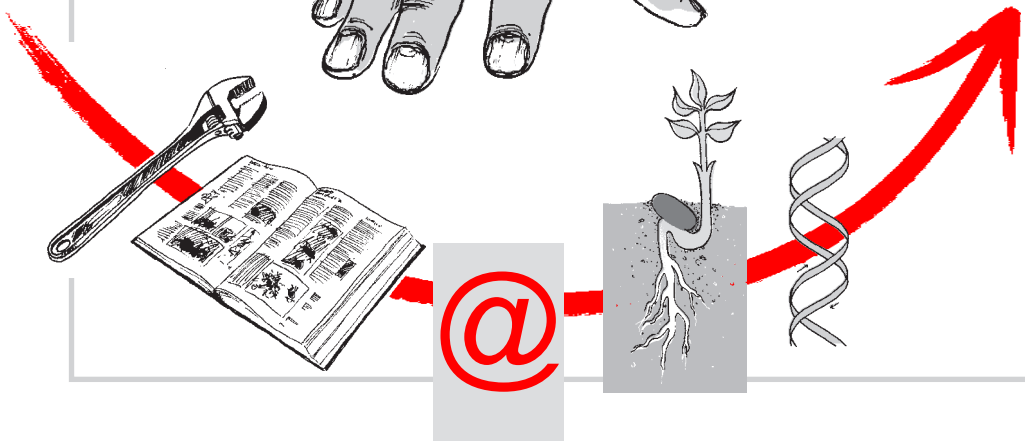
Strategy: Technology transfer and access to markets



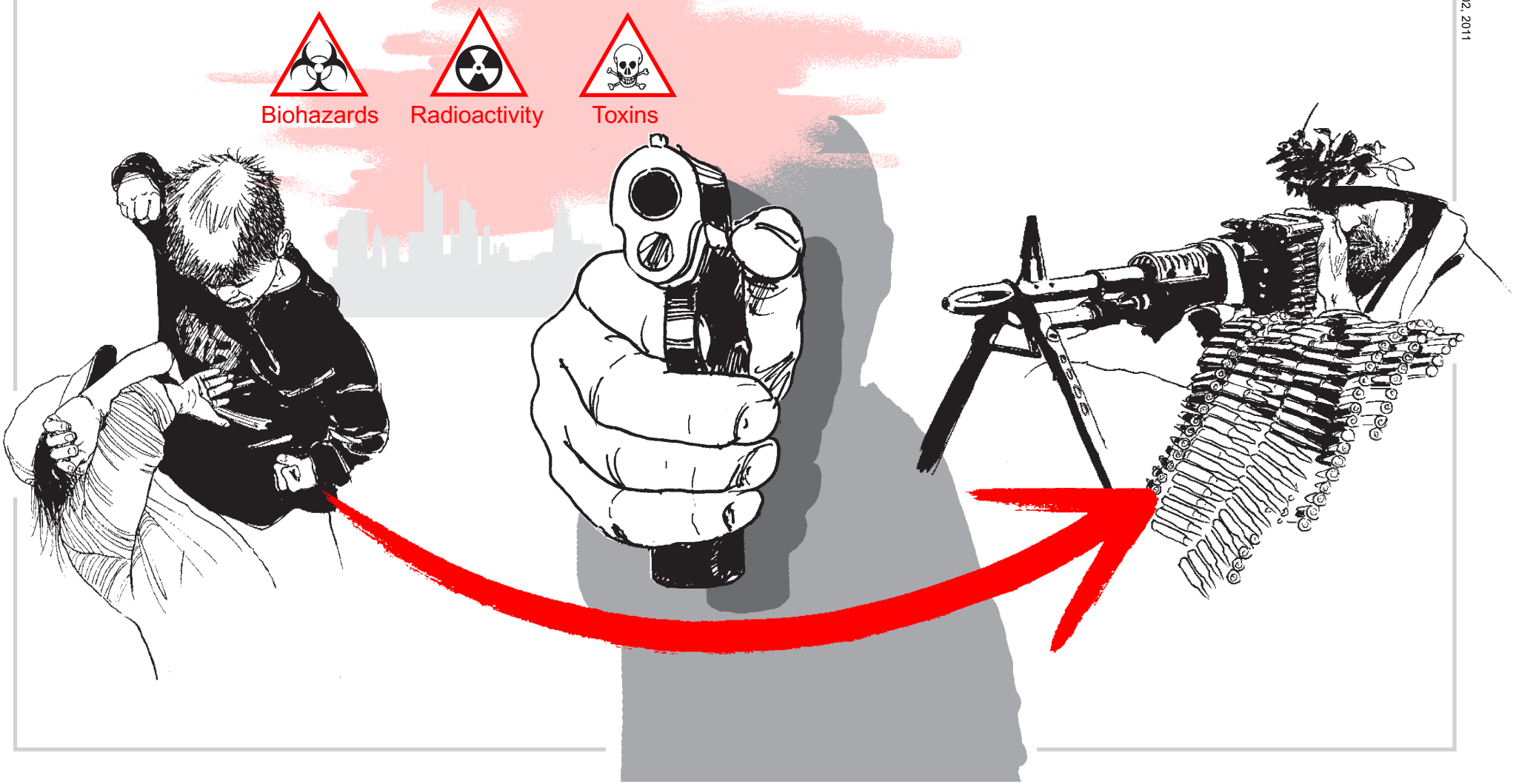
- cleaner technologies
- particulary information and communication technology
- biotechnology
- desalination technology
- renewable energy

... especially in Africa

... adapted to local needs and use of indigenous skills where ever appropriate

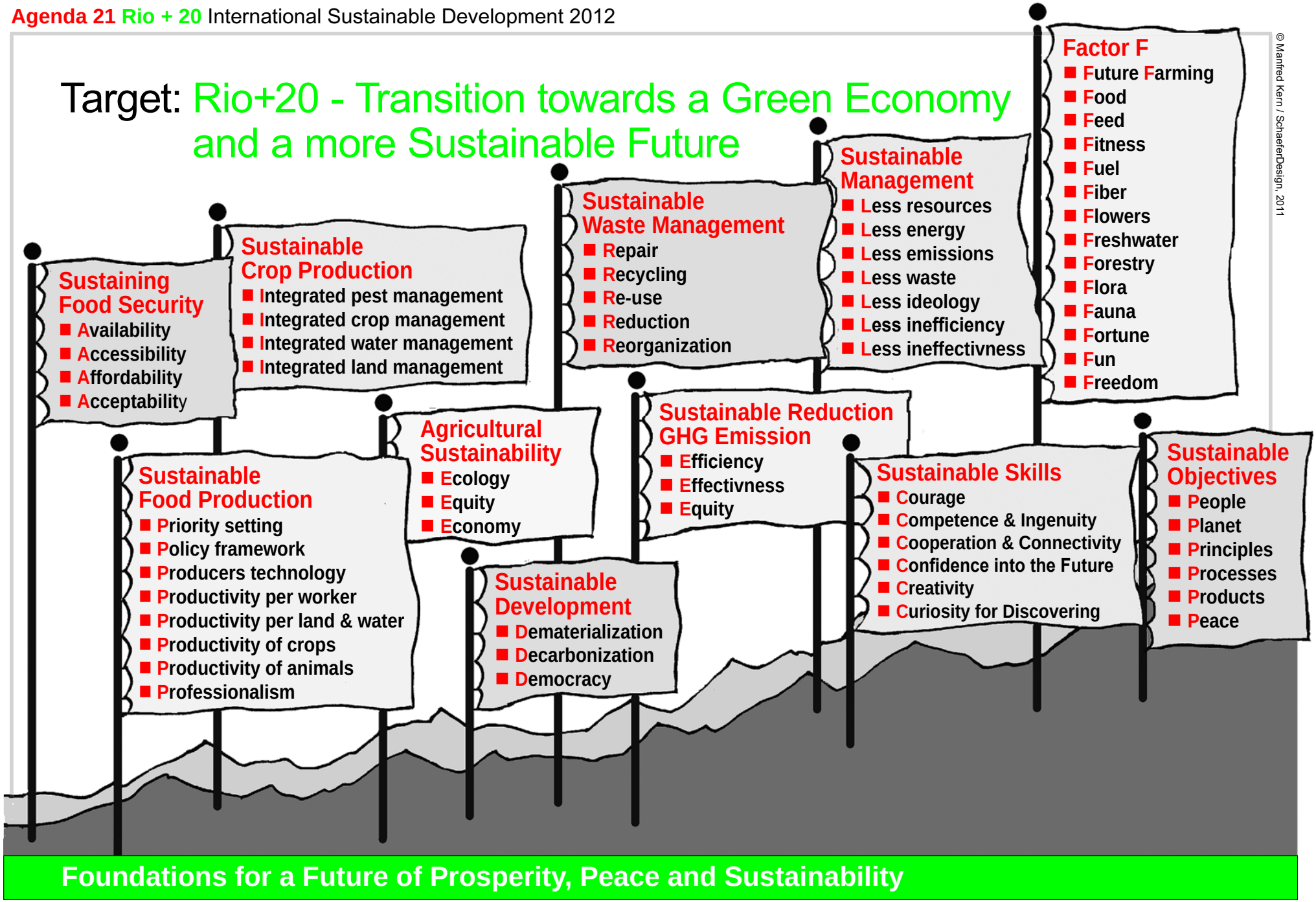


Strategy: Safeguarding peacekeeping and security
Eliminate violence and excessive use of force



Agenda 21 Rio + 20 International Sustainable Development 2012

Target: Rio+20 - Transition towards a Green Economy and a more Sustainable Future



Target: Sustainable development for current and future generations

"Let's leave things
a little better
than we find them!"

Strategy: Global Governance - a new global architecture

The Golden Rule

Buddism	Hurt not others with that which pains yourself
Christianity	Therefore all things whats-oever ye would that men should do to you, do ye even so to them
Confucianism	What you do not want done to yourself do not do unto others
Hinduism	Good people proceed while considering what is best for others is best for themselves
Islam	No one of you is a believer until he loves far his brother what he loves for himself
Judaism	And thou shalt love thy neighbor as thyself
Zoraastrianism	Whatever is disagree - able to yourself do not do unto others

Source: A Global Ethic, William Hitt, 1996