



COURSE FOR SUSTAINABILITY

STRATEGIES, METHODOLOGIES, POLICIES AND ACTIONS FOR CENTRAL AND EASTERN EUROPE

Environment and development: an introduction

János Zlinszky

14th September 2015



World population trends



*Current and Projected Population Size and Growth Rates**

Region	Population (billion)			Annual Growth Rate (per cent)		
	1985	2000	2025	1950 to 1985	1985 to 2000	2000 to 2025
World	4.8	6.1	8.2	1.9	1.6	1.2
Africa	0.56	0.87	1.62	2.6	3.1	2.5
Latin America	0.41	0.55	0.78	2.6	2.0	1.4
Asia	2.82	3.55	4.54	2.1	1.6	1.0
North America	0.26	0.30	0.35	1.3	0.8	0.6
Europe	0.49	0.51	0.52	0.7	0.3	0.1
USSR	0.28	0.31	0.37	1.3	0.8	0.6
Oceania	0.02	0.03	0.04	1.9	1.4	0.9

* Medium-variant projections.

Source: Department of International Economic and Social Affairs, *World Population Prospects: Estimates and Projections as Assessed in 1984* (New York: UN, 1986).



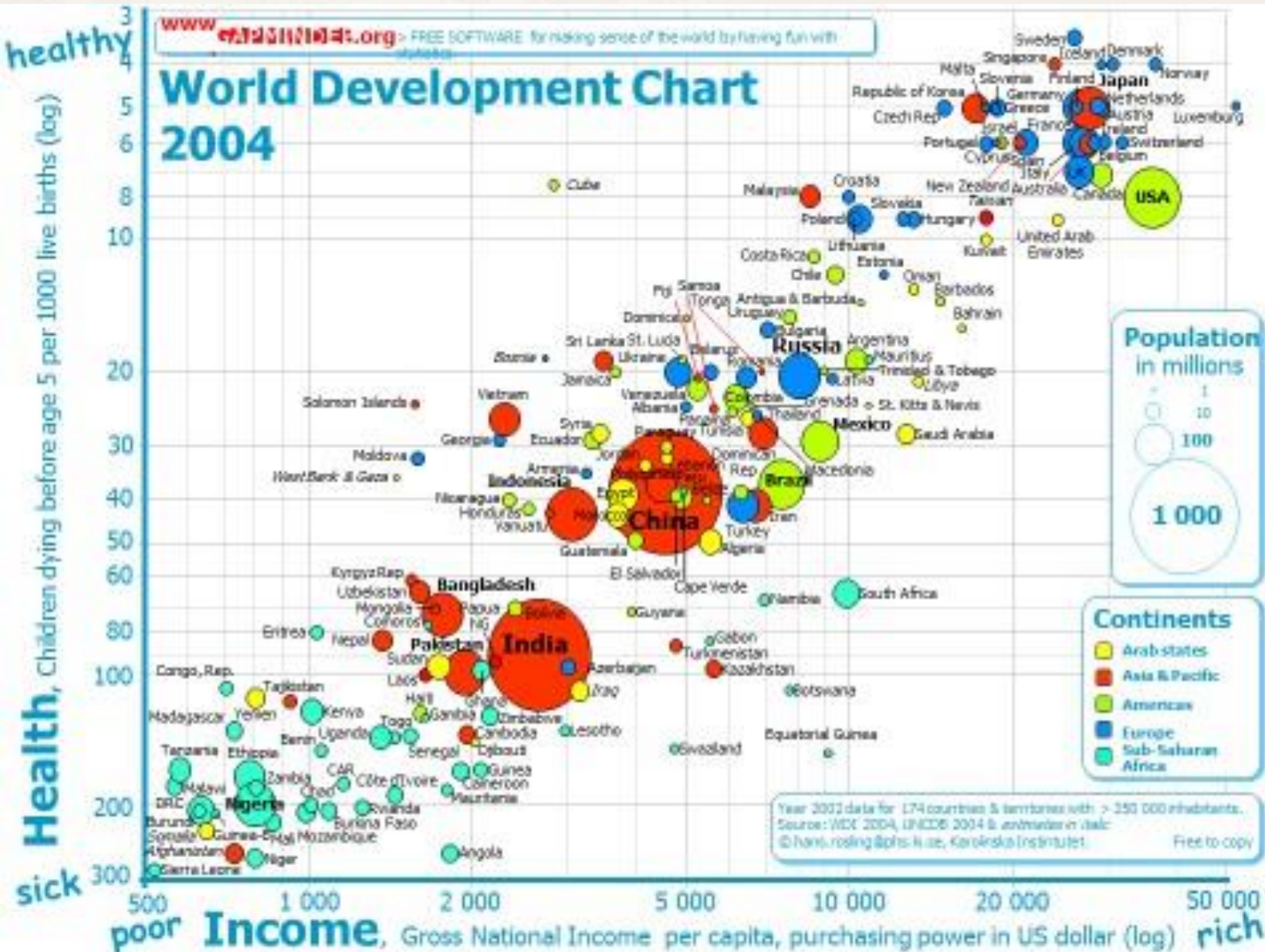
Development – the hopes

- Universal prosperity is possible
- Its attainment is possible on the basis of the philosophy „enrich yourselves”
- Key player is the economy
- This is the road to peace





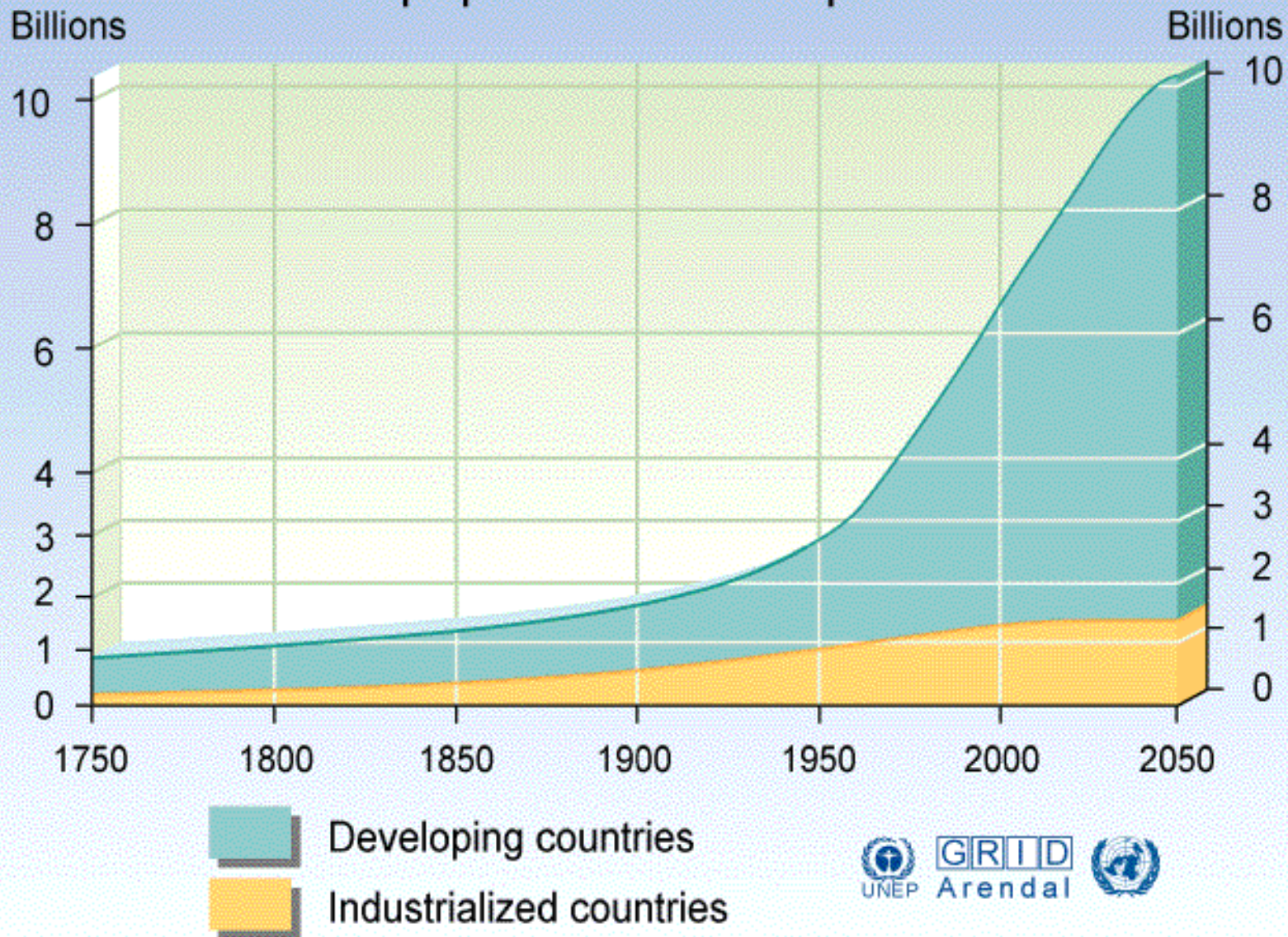
Development



Growth

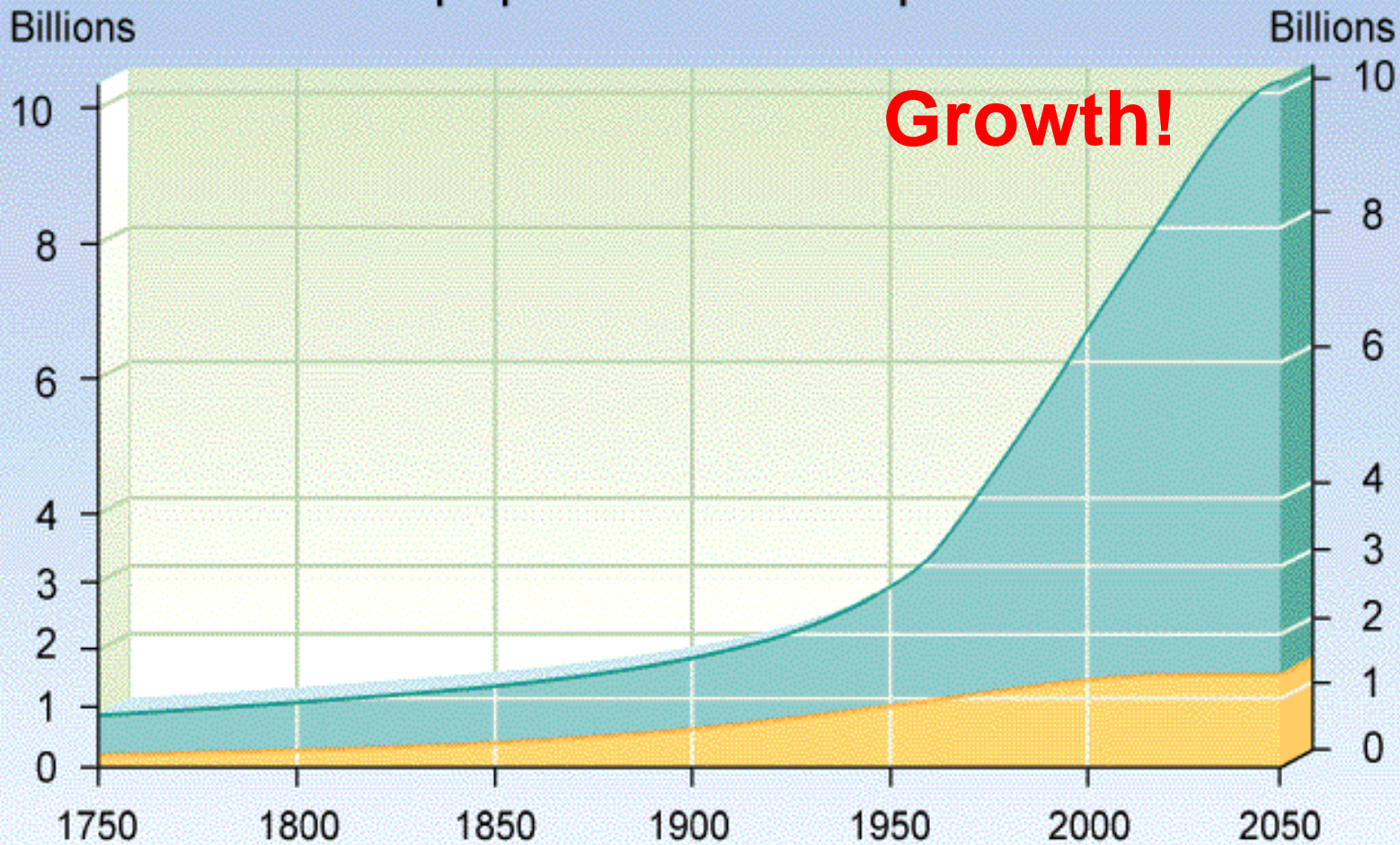


World population development





World population development



- Developing countries
- Industrialized countries

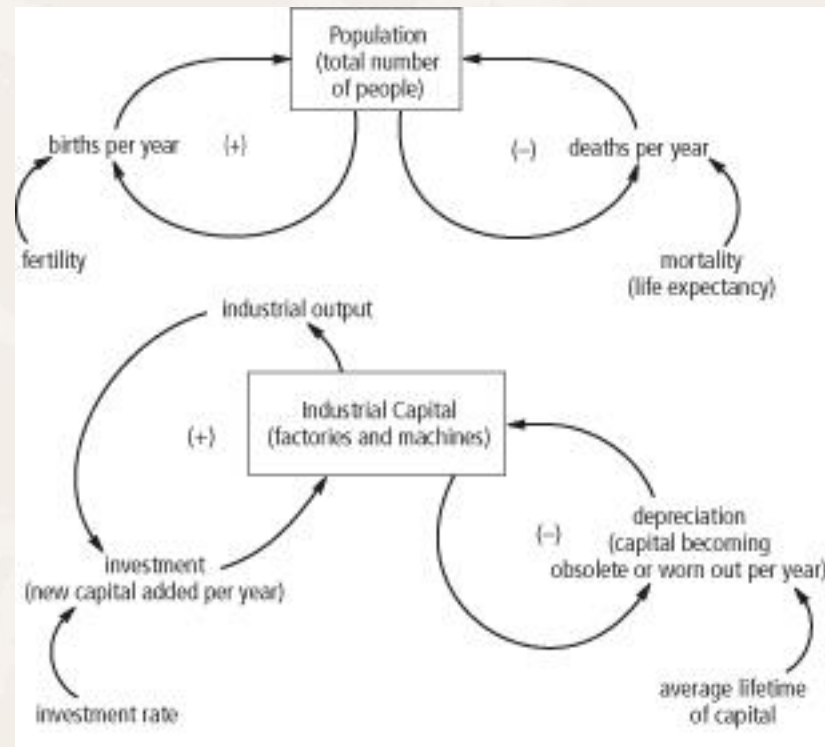




Exponential growth

Population

Industrial capital







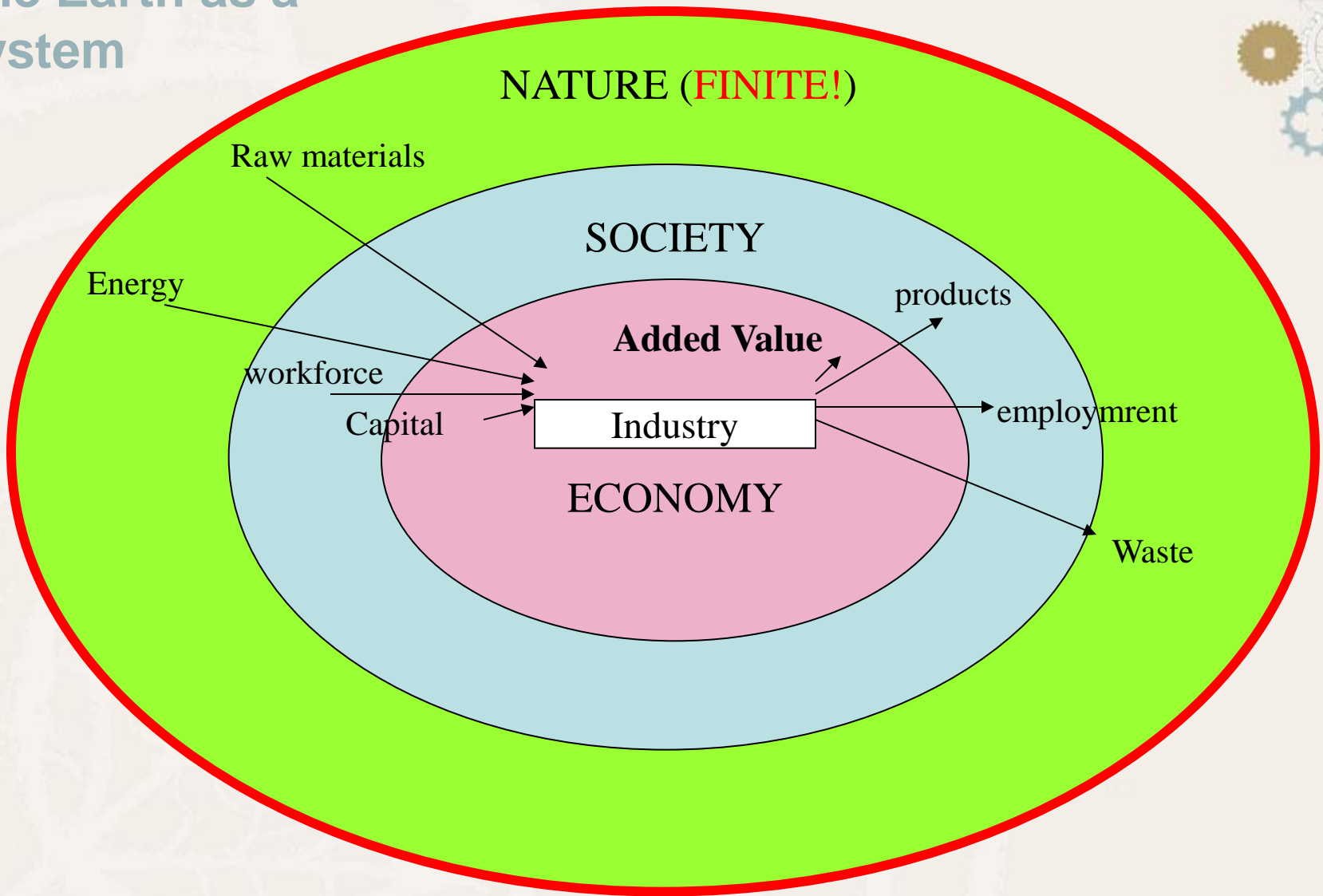
NATURE



NATURE (ENVIRONMENT)

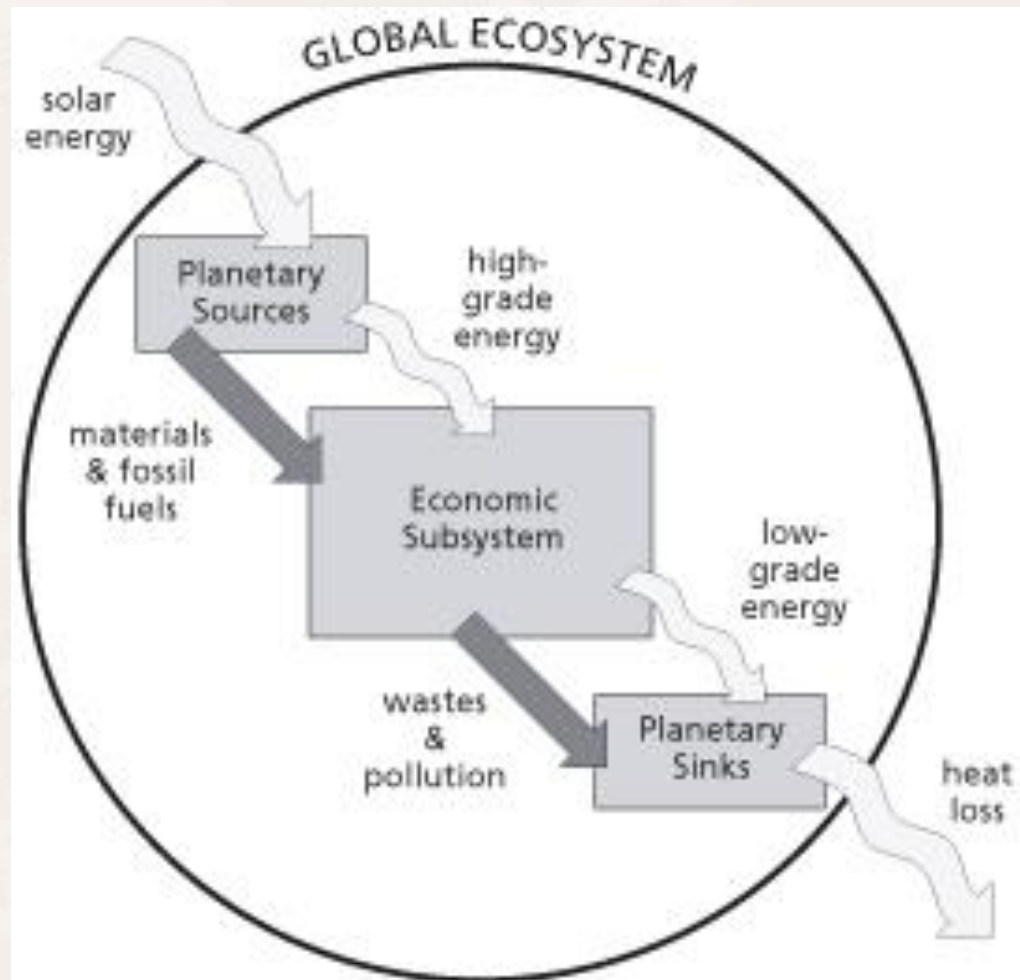
**SOCIETY
(HUMANKIND)**

The Earth as a system





The Earth as a system





What is the carrying capacity (of...)?

Do we have enough money?

What are our funds enough for?



Am I short of funds?

We can choose 4!

People
[capita]

Consumption
[goods/capita/year]

Resources (+ interest)
[HUF, interest rate %]

Price level
[HUF/ unit consumption]

Time span
of consumption
[years]

Calculating carrying capacity



We can choose 4!

Population
[capita]

Consumption
[unit material/capita/year]

Resources
[stocks, returns/year,
Sink capacity/year]

Technology
[raw materia/unit product]
+ [pollution/unit product]

**Time span
of consumption**
[years]

Carrying capacity

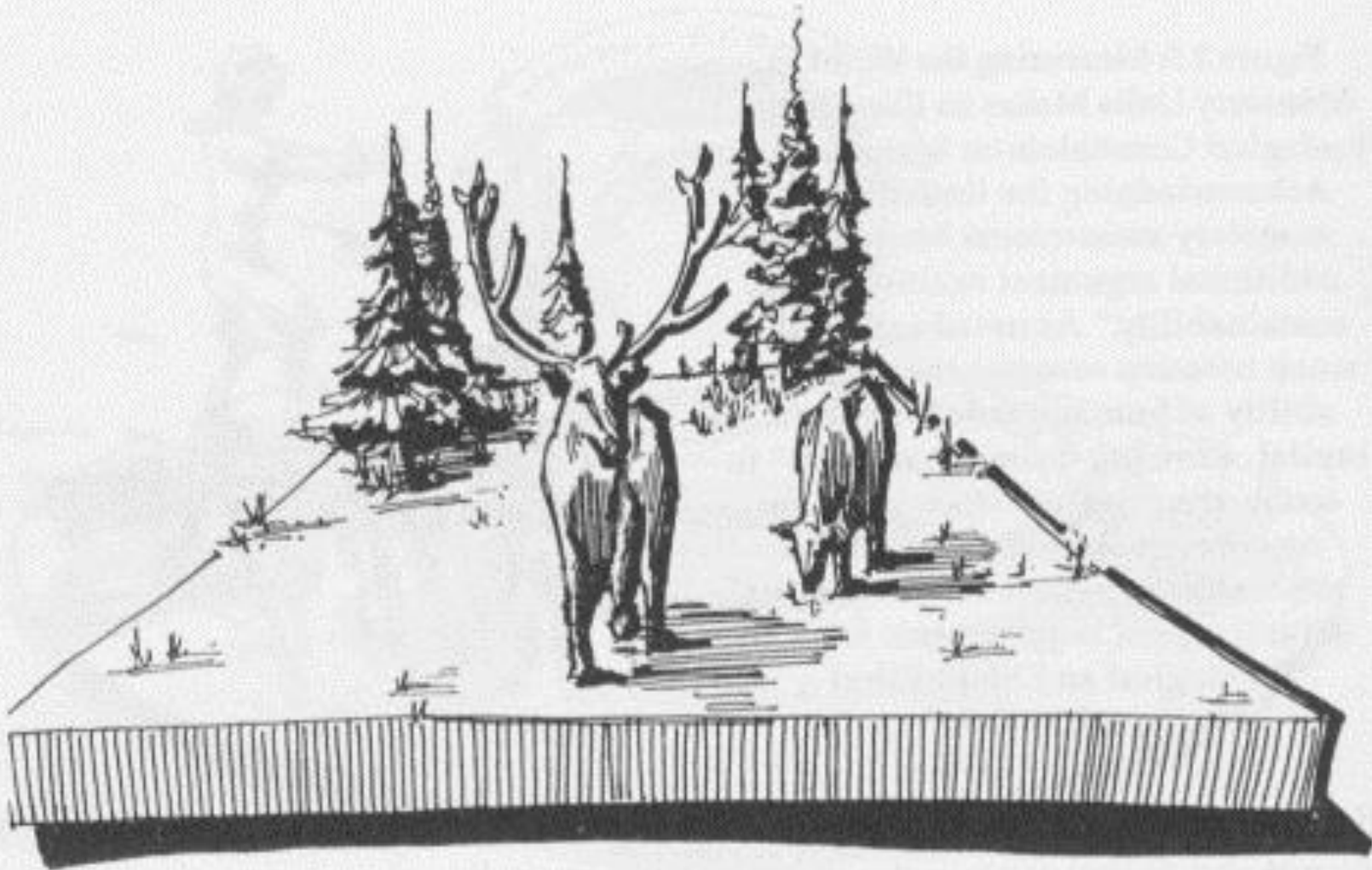
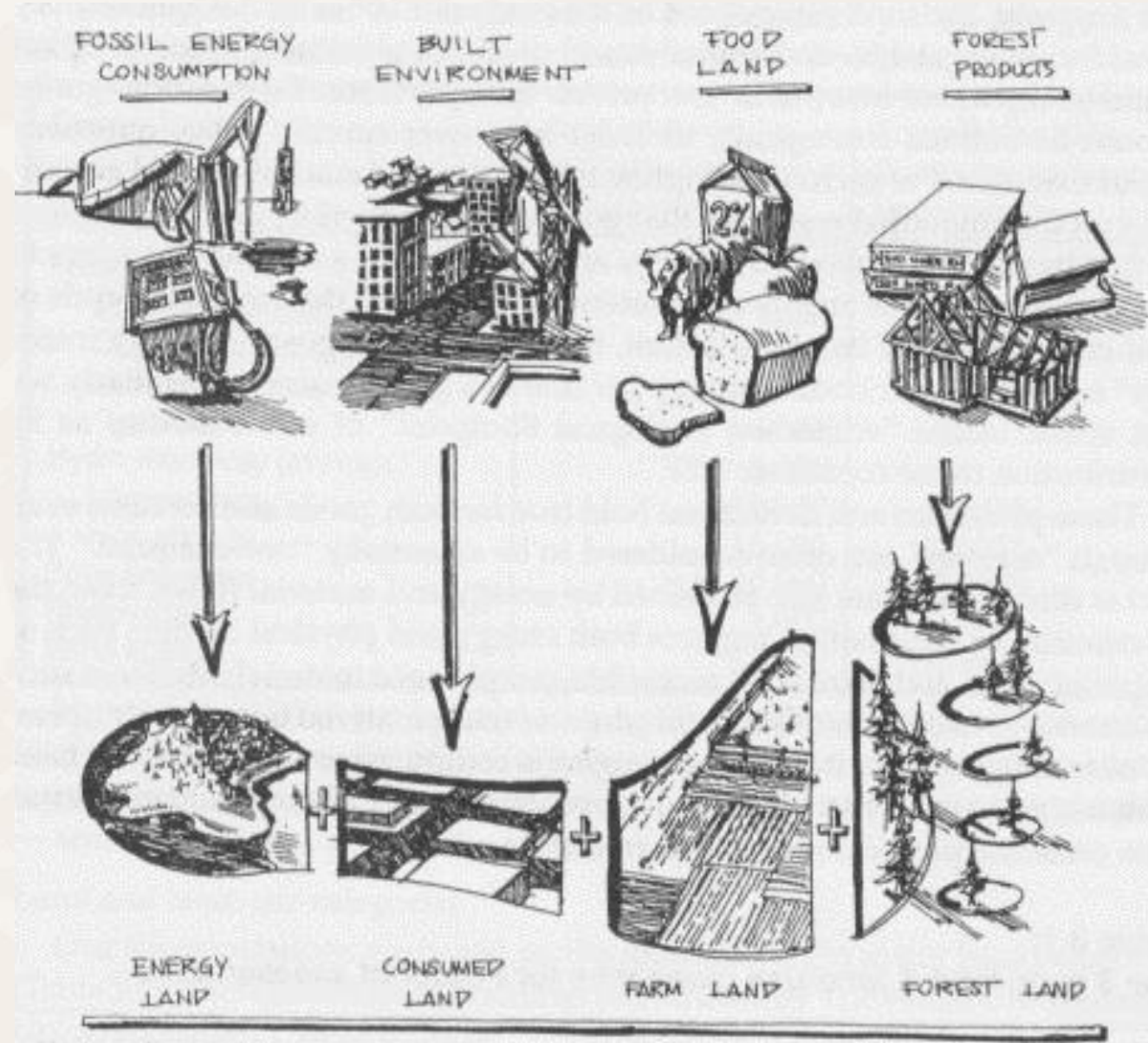


Figure 2.6: Carrying Capacity is traditionally defined as the maximum population of a species that can be sustained indefinitely in a given habitat.

Footprint



THE ECOLOGICAL FOOTPRINT

Space

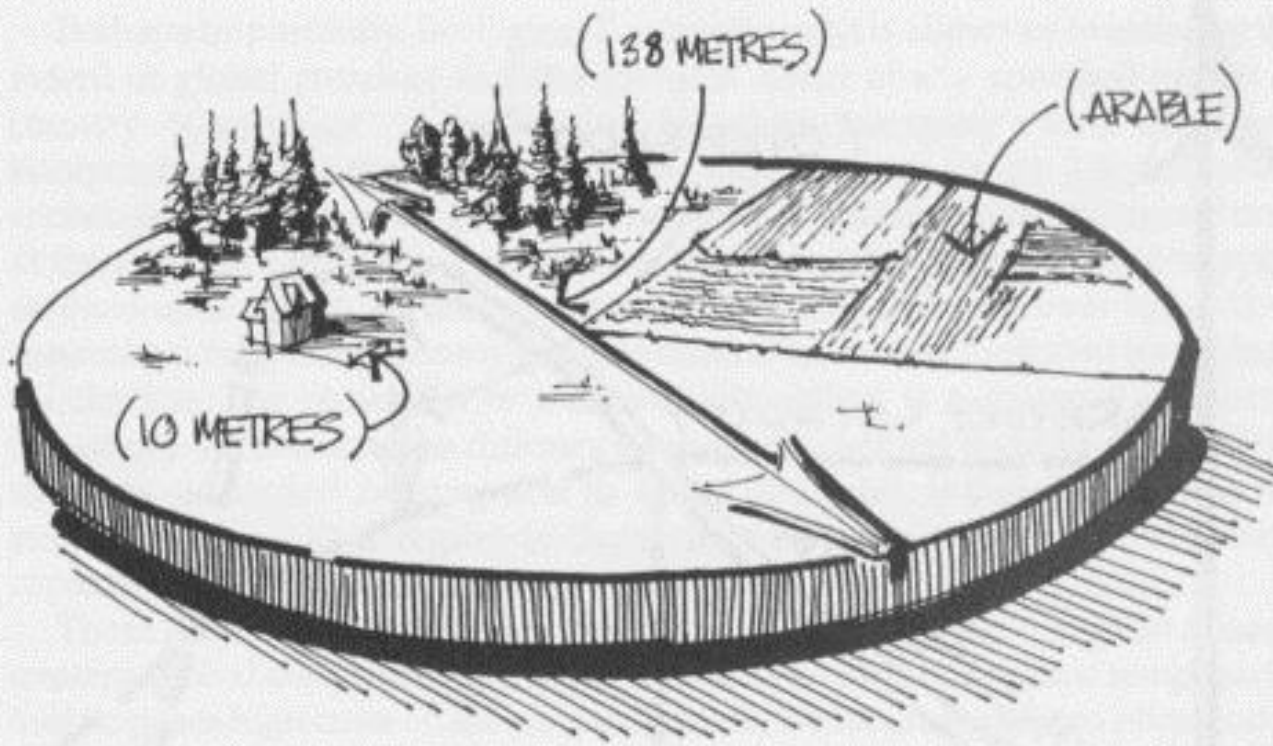
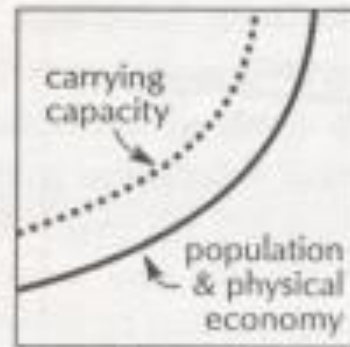


Figure 2.7: A fair Earthshare is the amount of land each person would get if all the ecologically productive land on Earth were divided evenly among the present world population. If your present Earthshare were a circular island it would have a diameter of just 138 metres. One sixth of your island would be arable land, the rest pasture, forest and wilderness, and built-up area. Clearly, as the population increases, our earthshares shrink. Also, for each person whose Ecological Footprint exceeds his/her fair earthshare by, say, a factor of three (as do North Americans'), three other people would have to content themselves with only a third of a share for global sustainability. —Any volunteers?

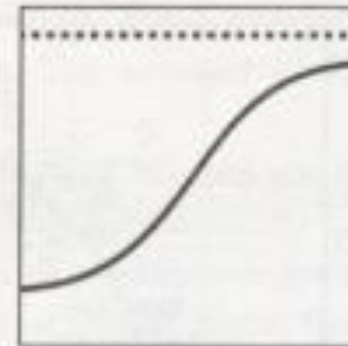
Approaching carrying capacity



Stable

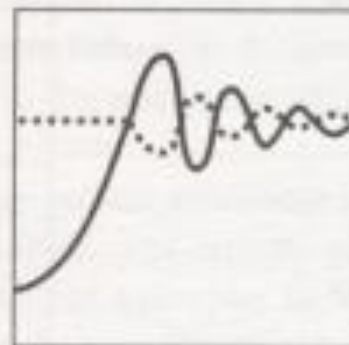


time →
Continuous growth

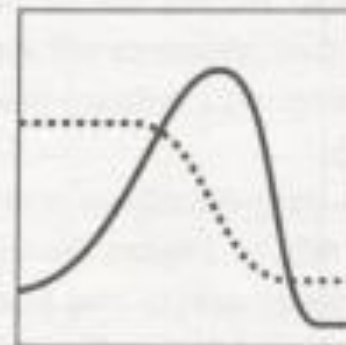


Sigmoid approach to equilibrium

Unstable



Overshoot and oscillation



Overshoot and collapse

The central question addressed by the World3 model is: Which of these behavior modes is likely to be the result as the human population and economy approach their carrying capacity?



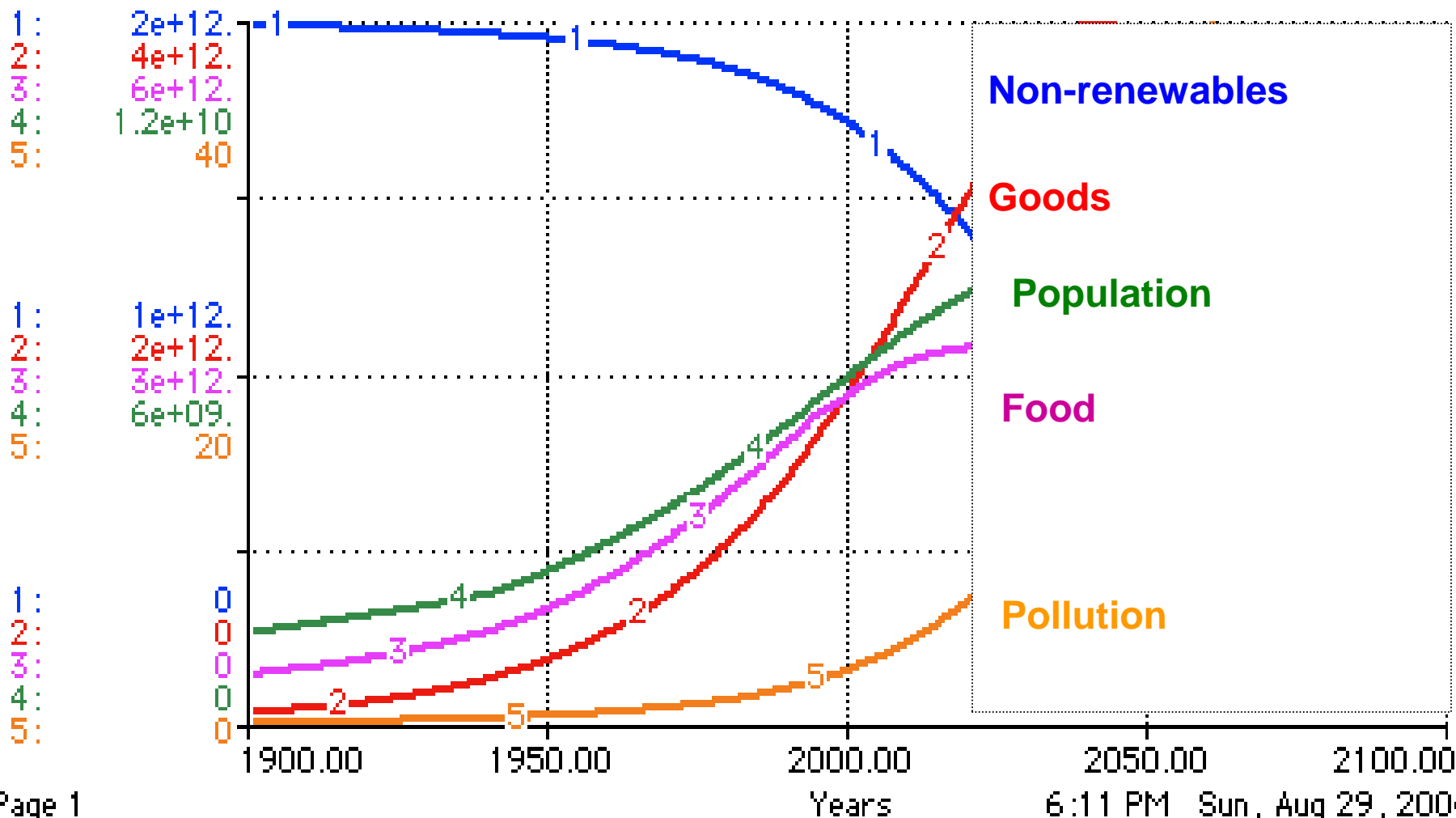
World stocks' and flows' trends are influenced by political priorities!

Main political priority since the 1970-ies has been to promote the exponential increase of the real economy of every country, i.e. the throughput of energy and materials from nature (raw materials) through the economy back into nature (waste)

De facto trends till 2013...

(Dennis Meadows)

1: nr resources ... 2: industrial out... 3: food 87 4: population 1 5: ppoll index 143

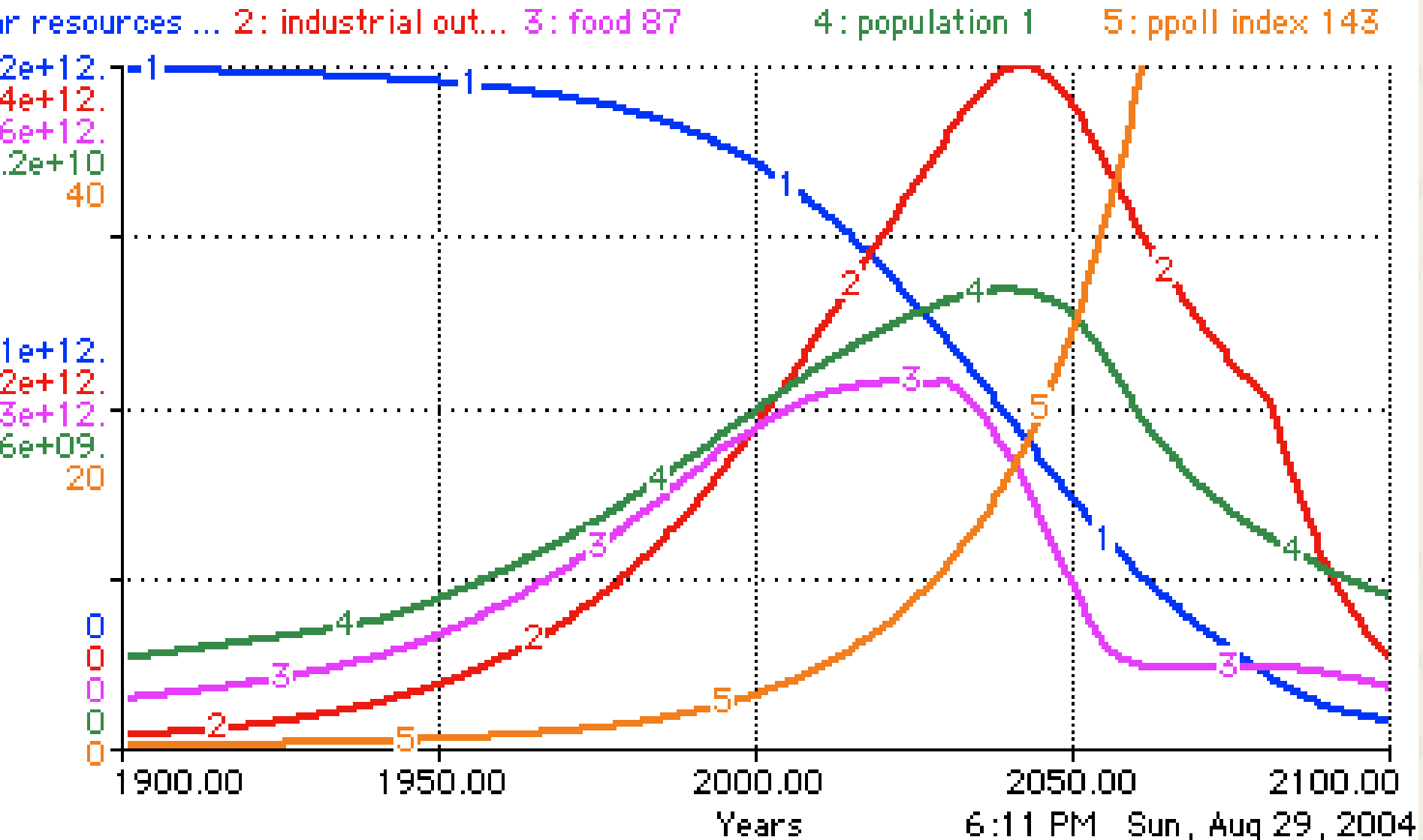


STRATEGIES, METHODOLOGIES, POLICIES AND ACTIONS FOR CENTRAL AND EASTERN EUROPE



...and projected till 2100!

STRATEGIES, METHODOLOGIES, POLICIES AND ACTIONS FOR CENTRAL AND EASTERN EUROPE



?



Terminology, definitions, concepts

What do model runs, scenarios mean:

Forecast or prophecy?

Inevitability or conditionality?



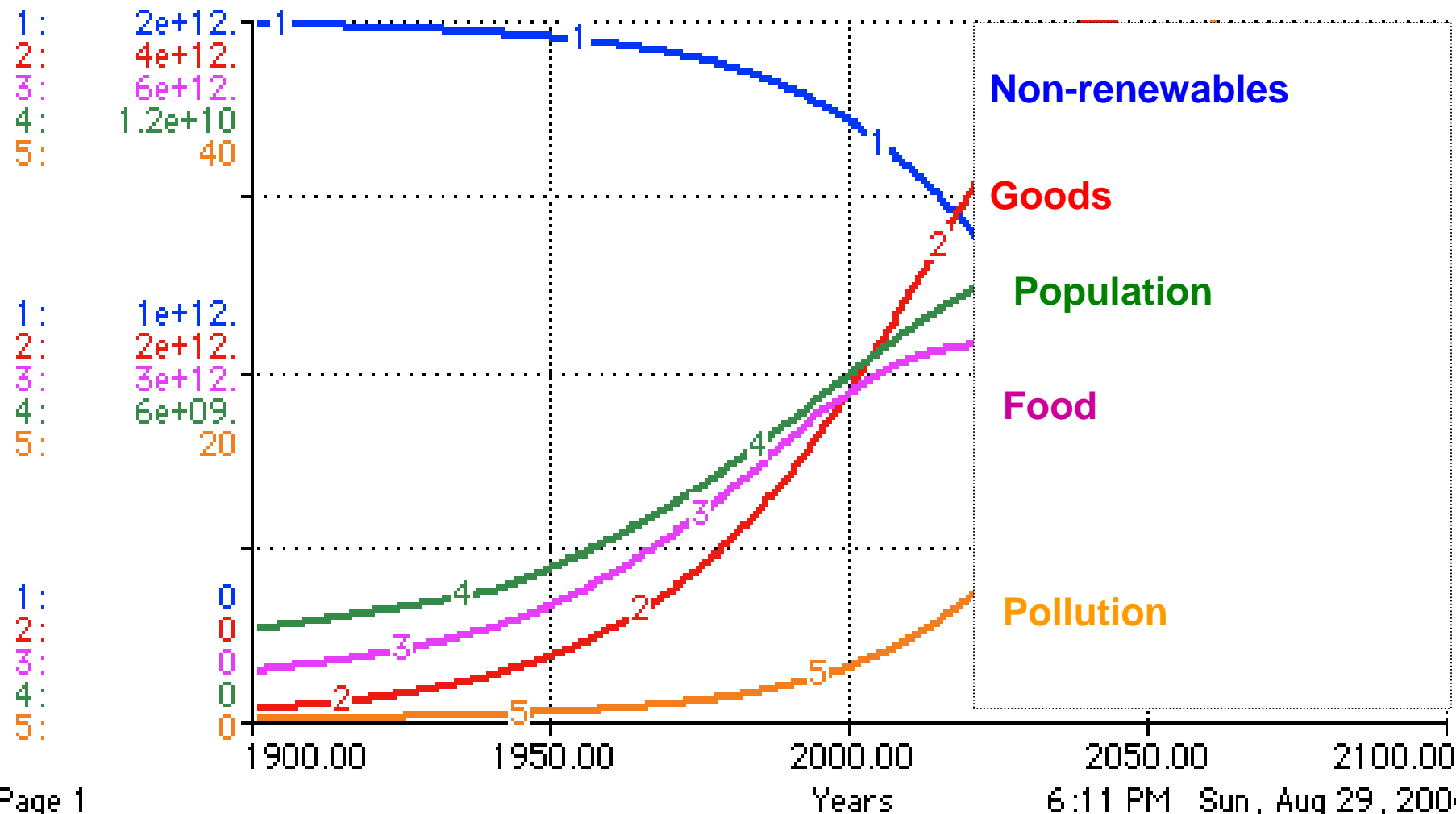
Change of political priorities from 2015 could change the outcome!

- Stabilize population
- Put ceiling on material throughflow
- Prefer energy- and resource-saving technologies
- Prevent polluting the environment
- Raise agricultural productivity
- Protect nature

De facto trends till 2013...

(Dennis Meadows)

1: nr resources ... 2: industrial out... 3: food 87 4: population 1 5: ppoll index 143

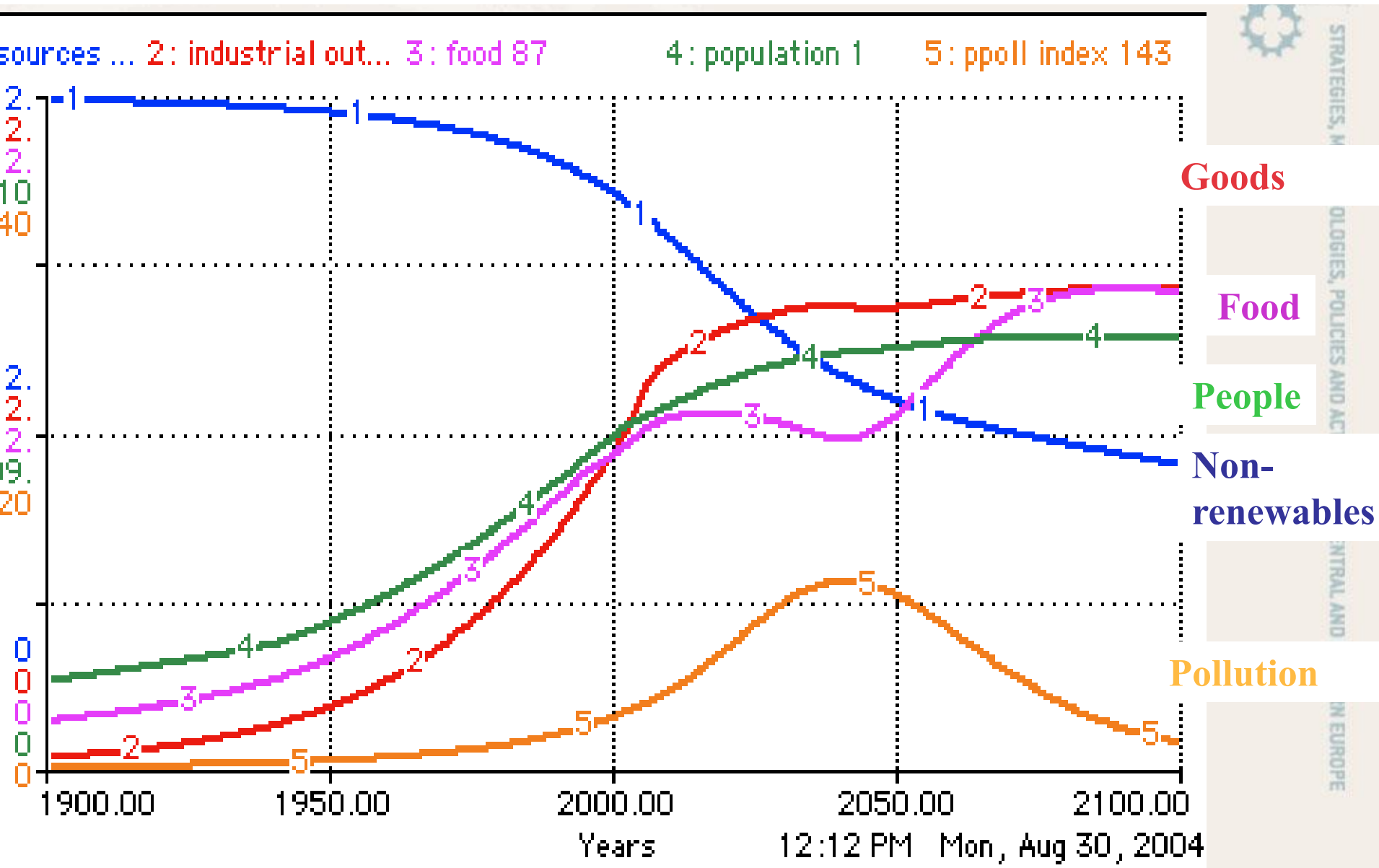


STRATEGIES, METHODOLOGIES, POLICIES AND ACTIONS FOR CENTRAL AND EASTERN EUROPE



... but then sustainable development!

(Dennis Meadows ábrája)





(End of 1st lesson)

...



Terminology, definitions, concepts

Development

Growth (linear, exponential)

Population (changes)(trends)

„Enough”, carrying capacity, (approach to)

Ecological footprint

Natural resource base, capital

System(s) (parts of)(structure of)

Model, forecast