

Duurzame ontwikkeling: technologie als probleem of oplossing?

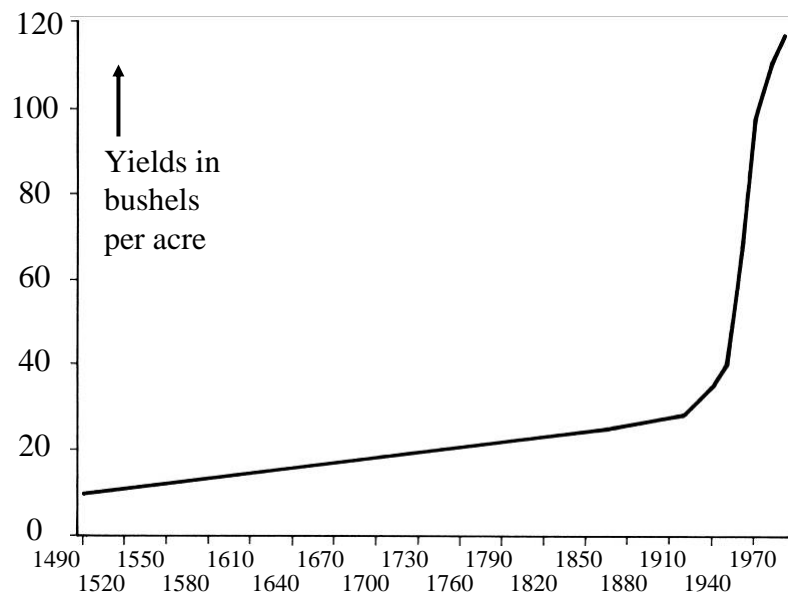
Utrecht – Bewegingscongres
21 november 2008

Dr. Gijsbert Korevaar
Programma Directeur Industrial Ecology

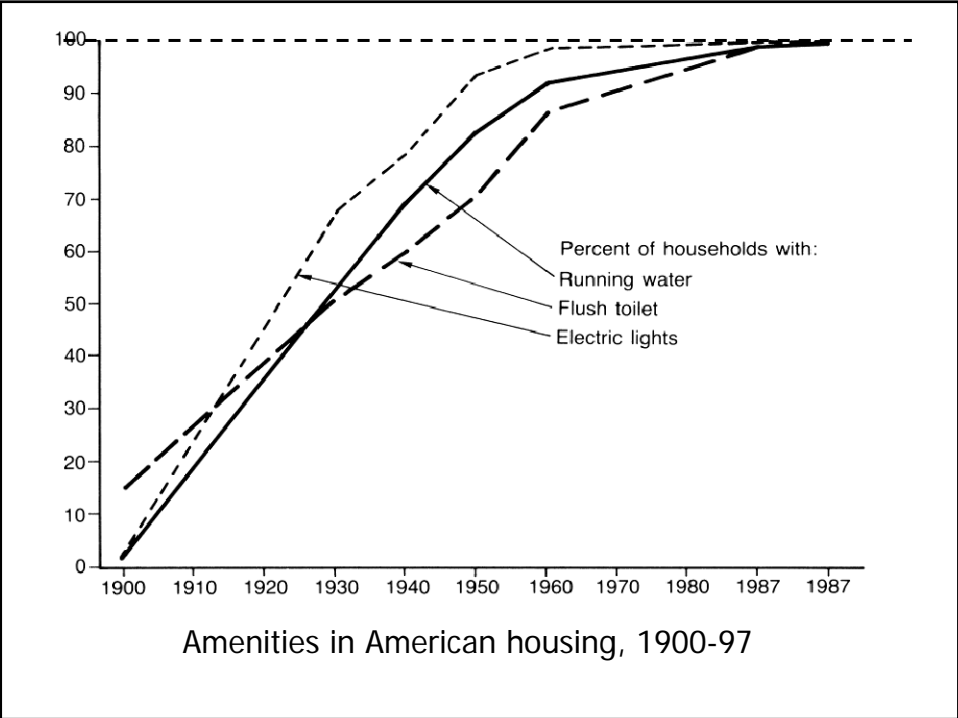
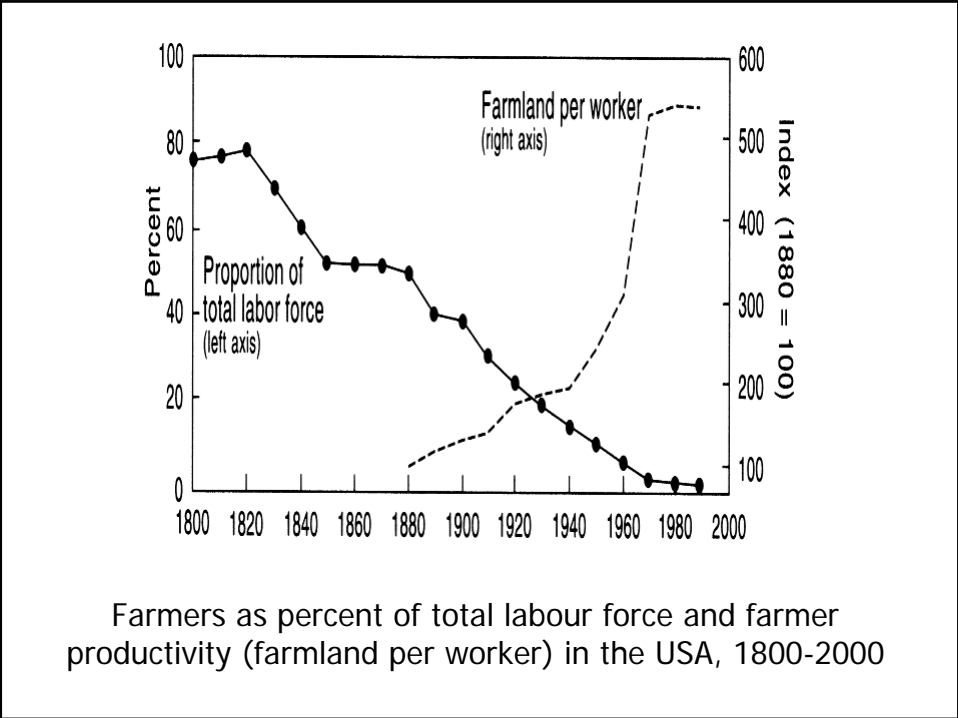
Industrial Ecology Programme - Gijsbert Korevaar

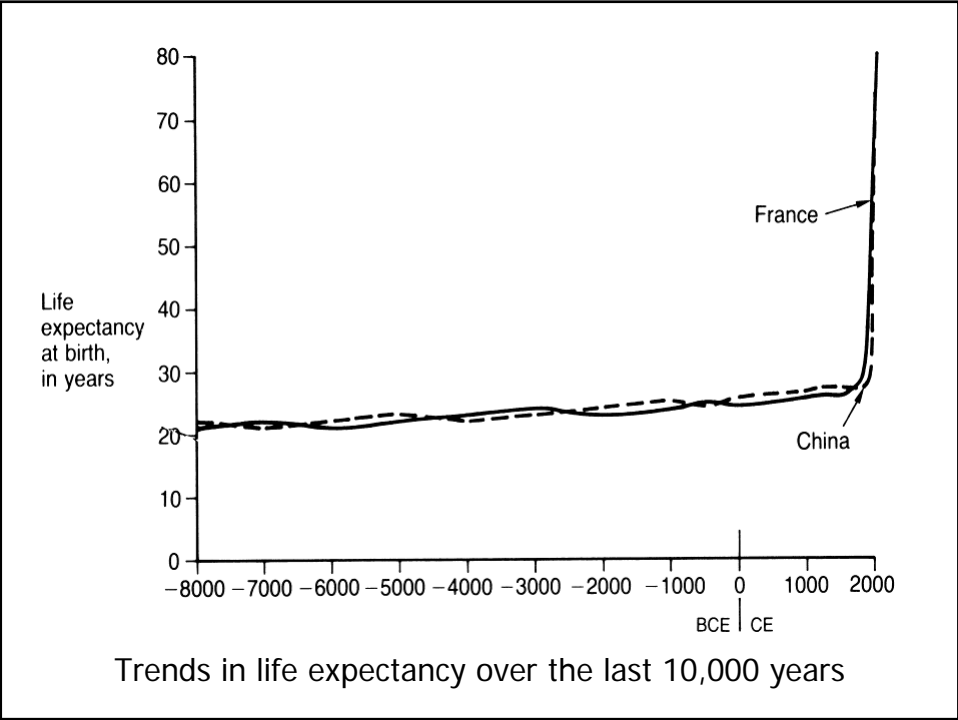
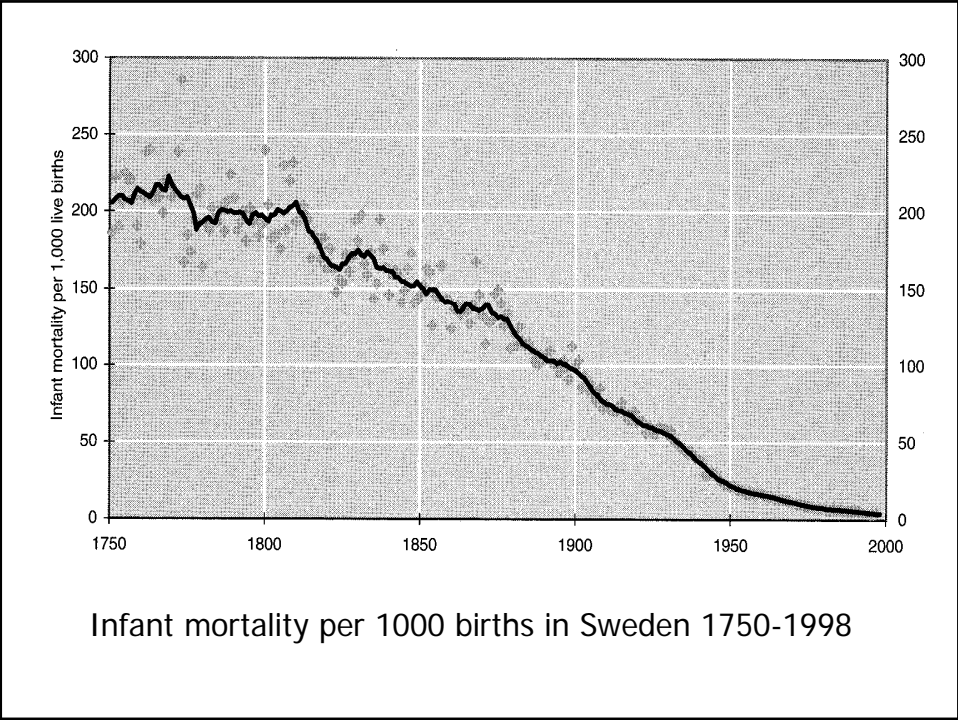


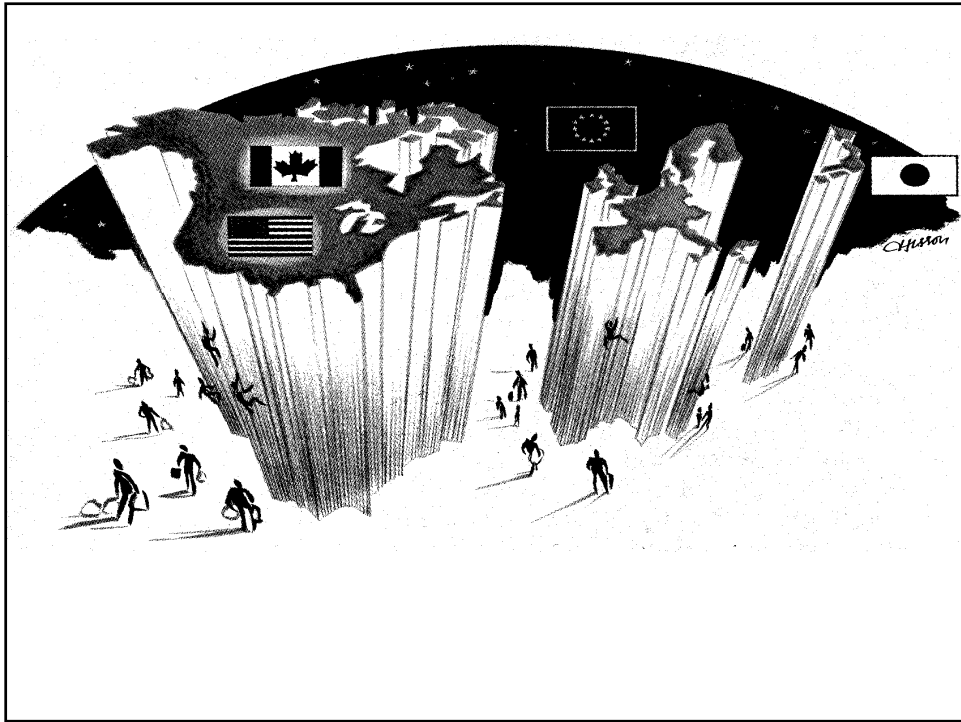
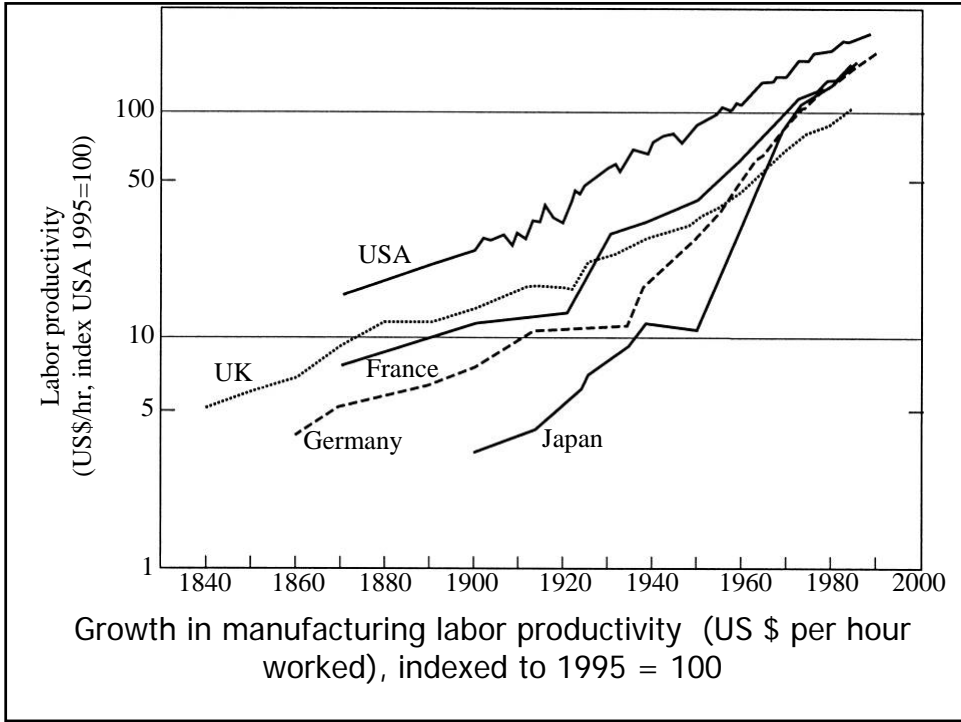
Industrial Ecology



Estimated American corn yields 1490-1990







IPAT-equation

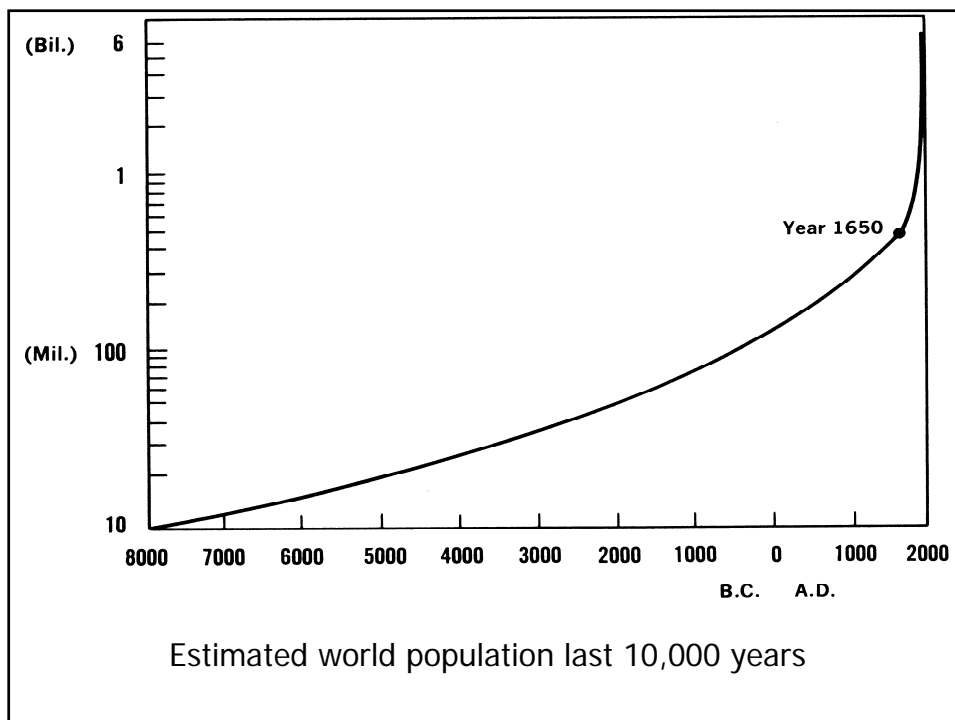
Environmental Impact (I) =

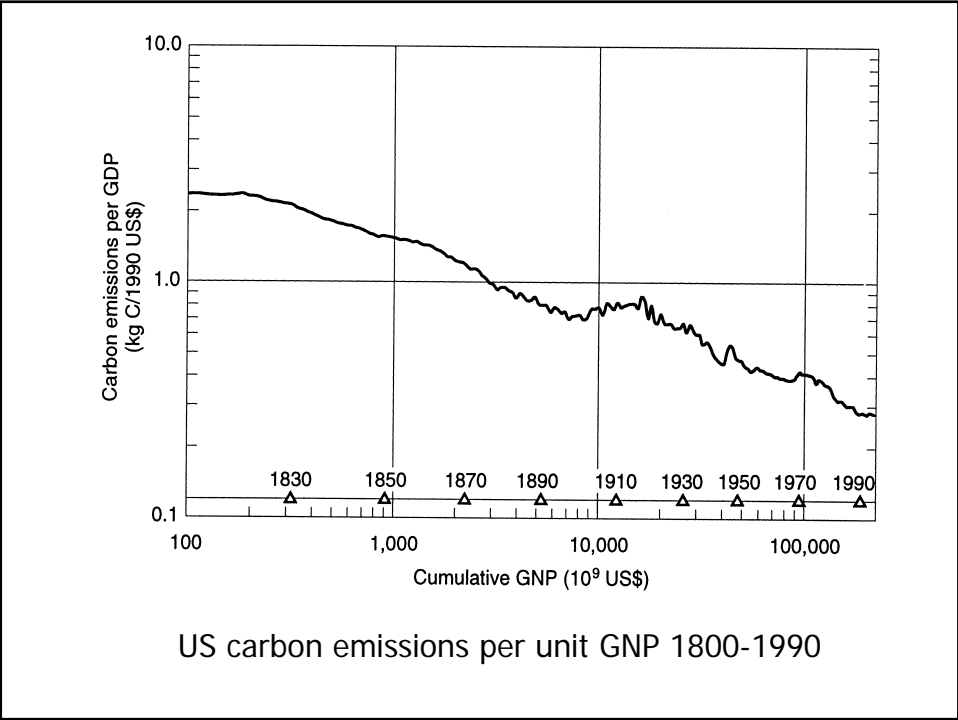
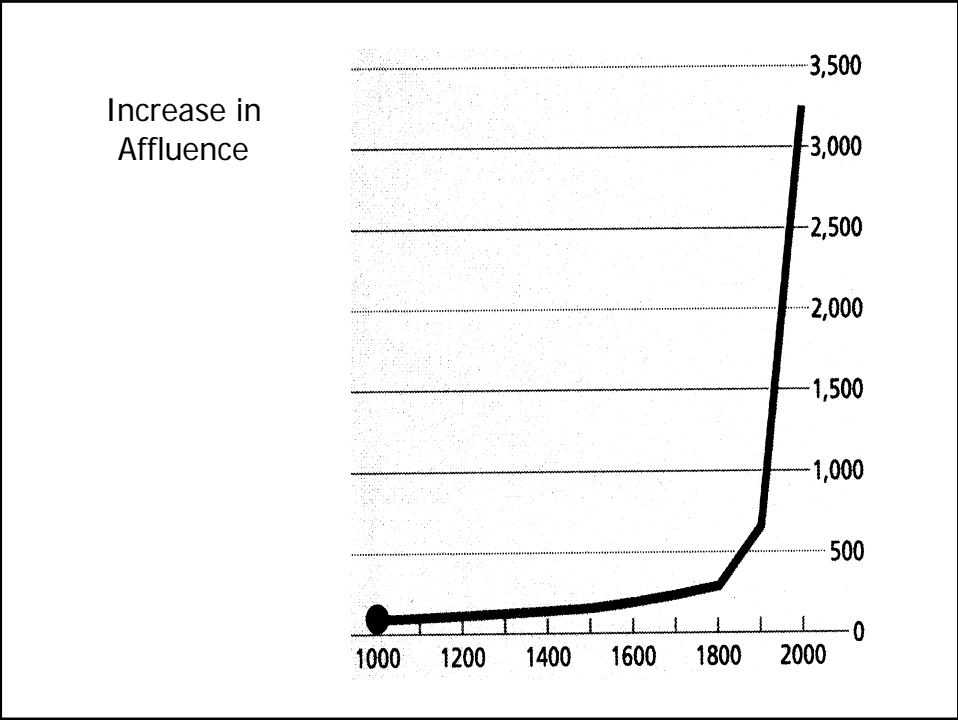
[Population (P)] • [Affluence (A)] • [Technology (T)]

Environmental Impact (I) = generation of waste and pollution and use of resources

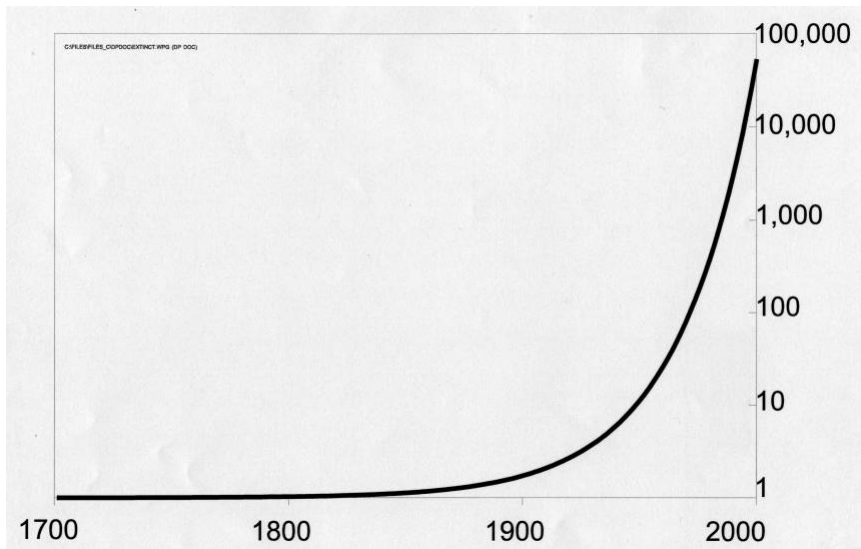
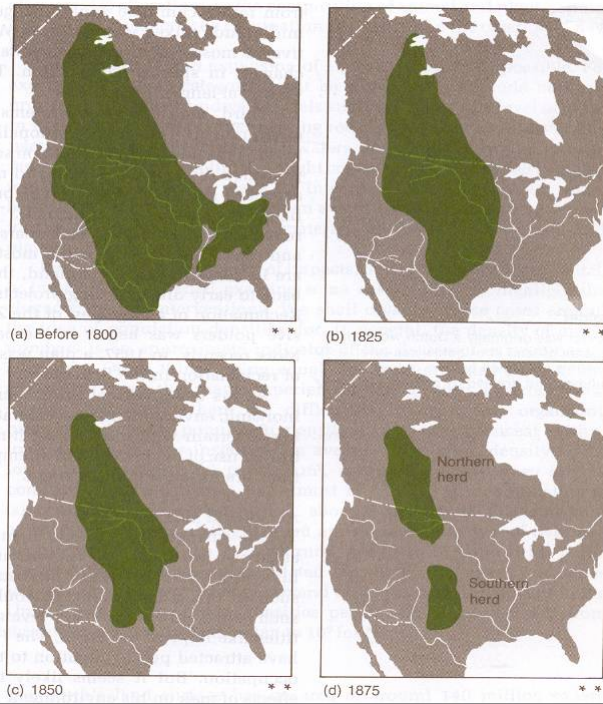
=

$\left[\begin{array}{l} \text{Number} \\ \text{of people} \end{array} \right] \cdot \left[\begin{array}{l} \text{GDP/Number} \\ \text{of people} \end{array} \right] \cdot \left[\begin{array}{l} \text{Generation of waste} \\ \text{\& pollution and use} \\ \text{of resources/GDP} \end{array} \right]$

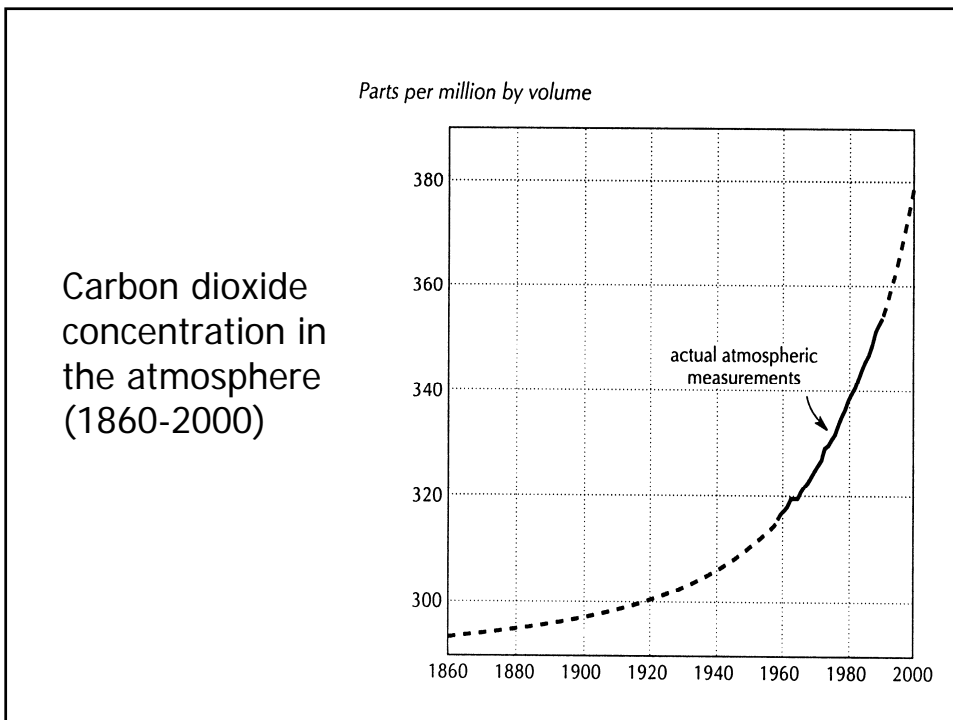
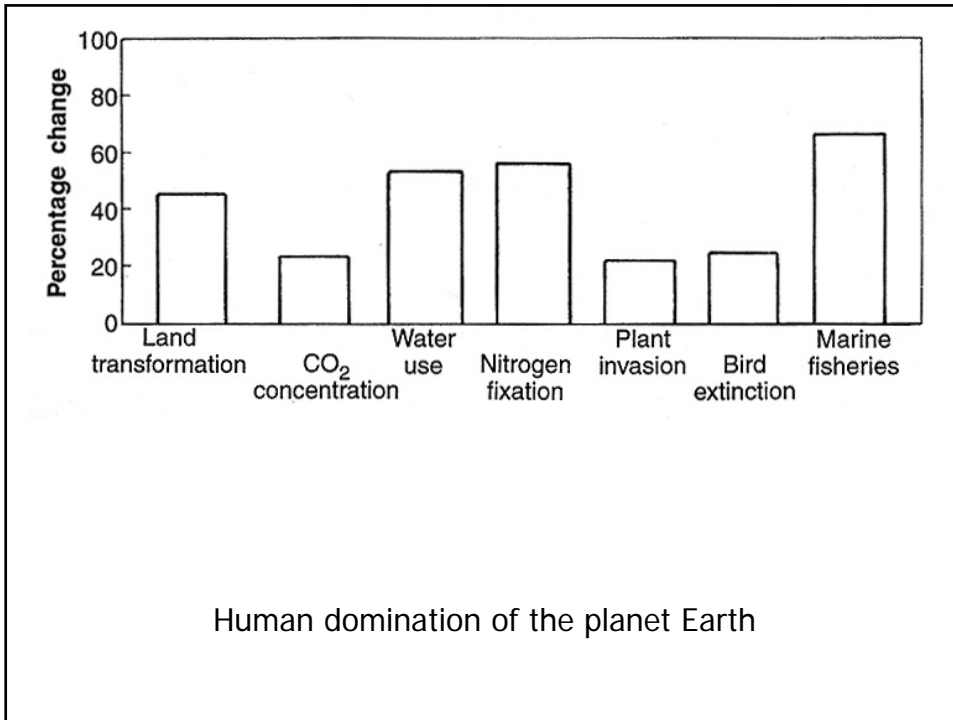


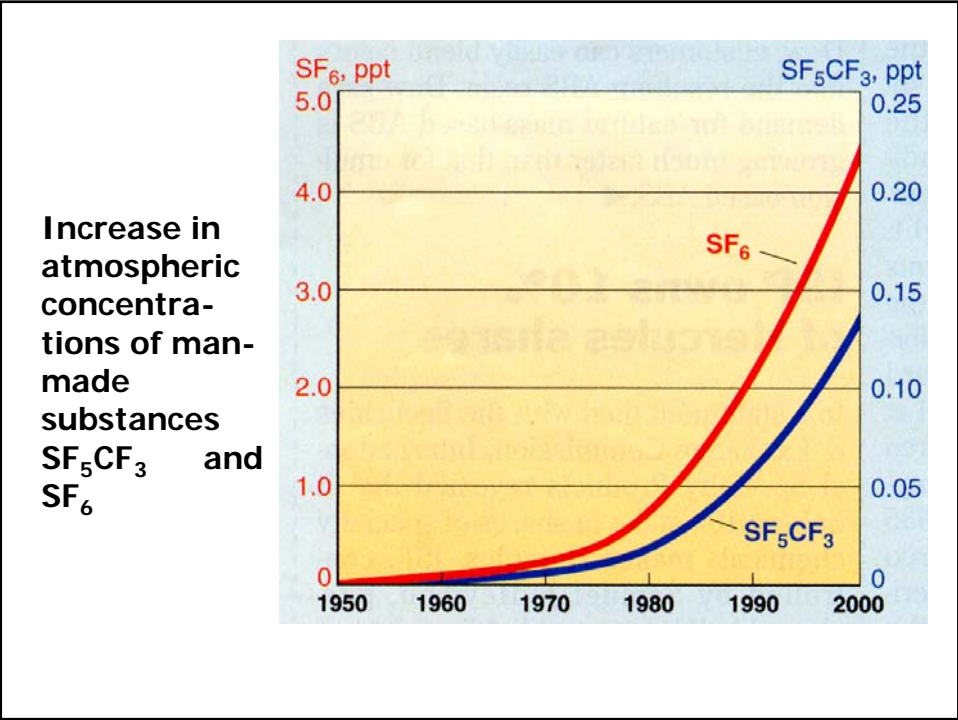
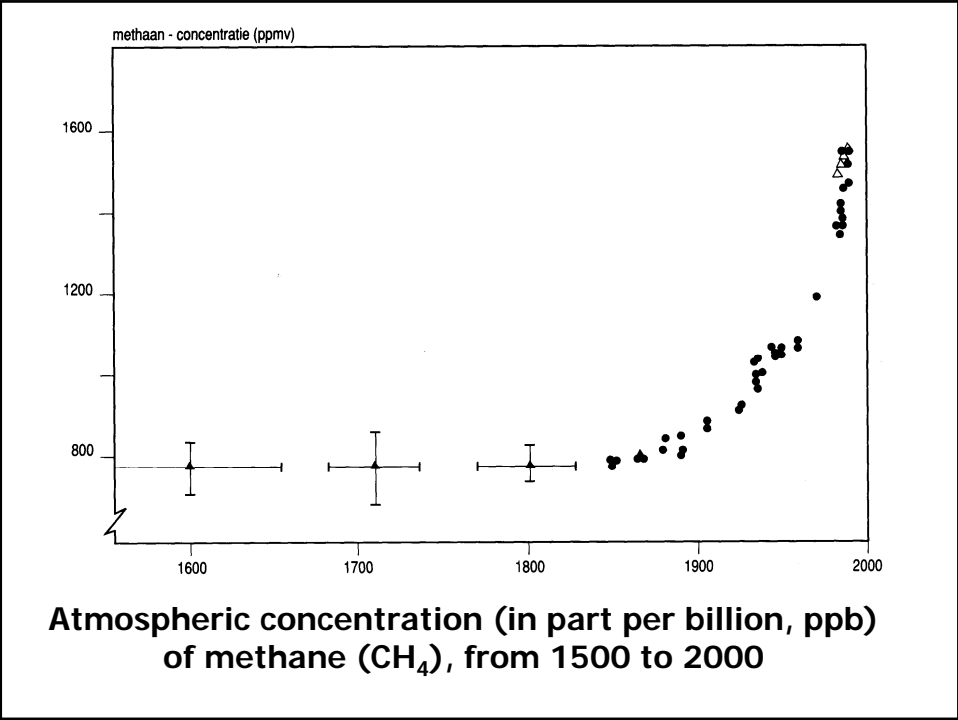


Loss of habitat



Estimated number of species extinctions per year

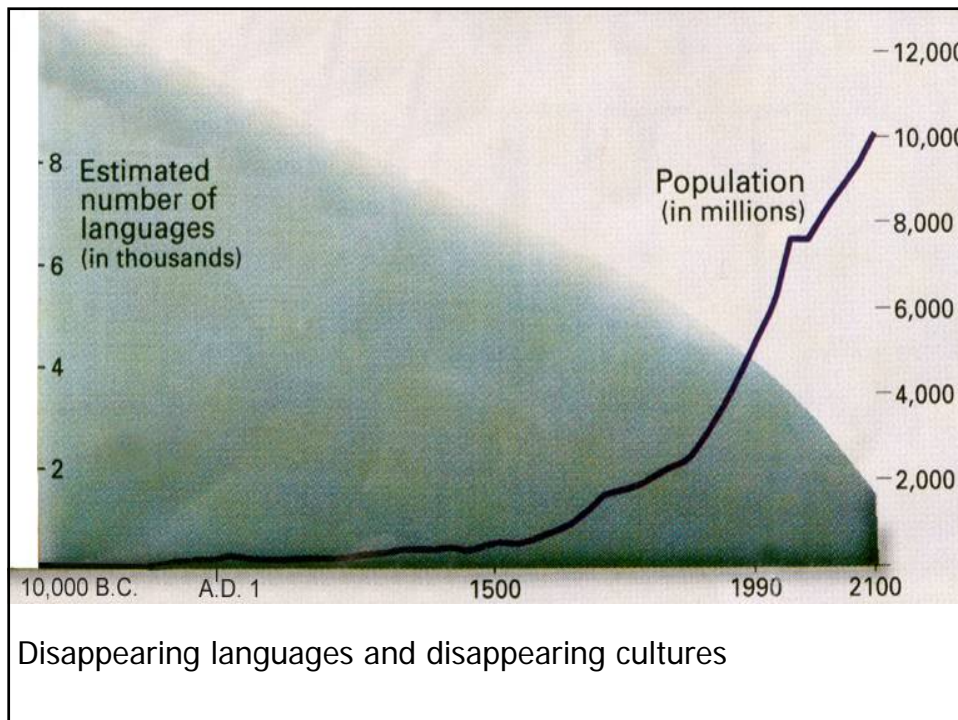


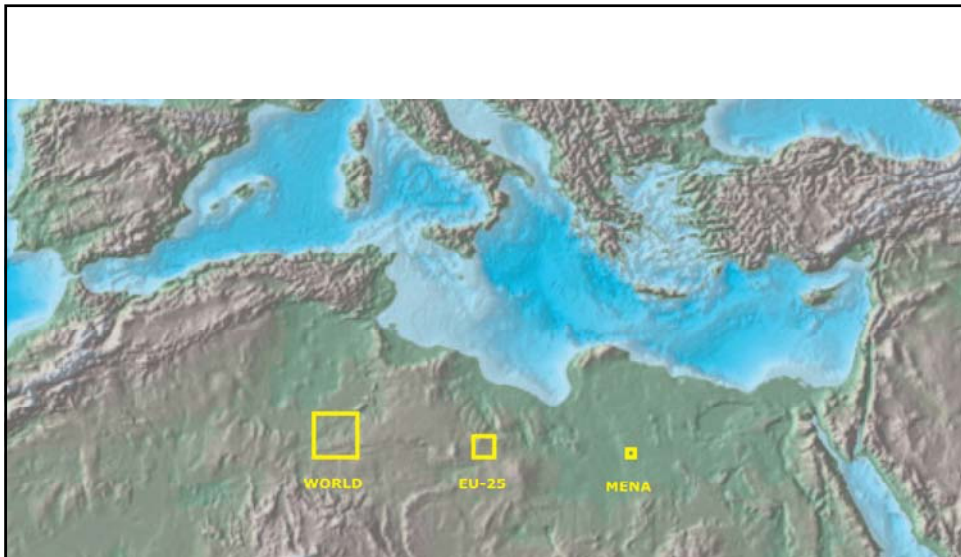
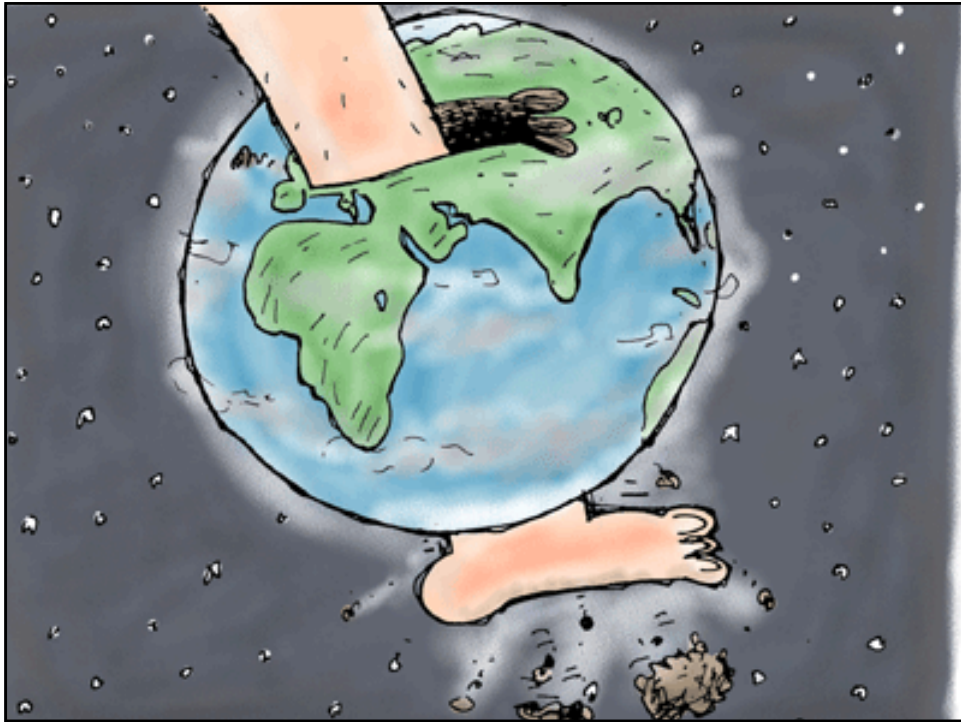


<i>Metal</i>	<i>Human activity kMT</i>	<i>Natural activity MT/day</i>	<i>Ratio: human to natural</i>
Lead	2000	6	333
Zinc	840	36	23
Copper	260	19	14
Vanadium	210	65	3
Nickel	98	28	4
Chromium	94	58	2
Arsenic	78	21	4
Antimony	38	1	38
Selenium	14	3	5
Cadmium	6	0.3	20

Source: Galloway et al.1982

Estimated annual global emissions of selected metals to the atmosphere, circa 1980





Solar radiation per year: World (17,000 TWh/y), Europe (EU-25, 3,200 TWh/y), MENA (600 TWh/y)

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There's enough food for everyone, but the poor can't afford to buy it

Jonathan R. Latham¹

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Sir:

The existence of malnourished and hungry people has been used repeatedly in this journal and elsewhere as a justification for biotechnology and for the production of more food^{1,2}. This assumption supports a main policy plank of the Rockefeller Foundation food biotechnology programme³ and other major international and charitable institutions.

Yet there are good reasons to be sceptical of the equation "more food equals less hunger".

The world produces more than enough food at present to feed everyone, but nevertheless many people still starve or are malnourished^{1,2,3}. As economist and Nobel laureate Amartya Sen has pointed out, it is poverty, not a physical shortage of food, that is the primary cause of hunger in the modern world⁴.

The political and economic reasons don't change: the amount of food that Ireland, for example, exported to Britain during the potato famine of 1845-46 would have been sufficient to feed those who starved. The root cause of the 1974 Bangladesh famine was a flood that displaced people from their jobs; more food was produced that year in Bangladesh than in surrounding years, yet — unable to earn money to buy it — up to 1.5 million people starved to death⁵.

Partial solutions such as local production of food, as suggested by Conway and Toennissen⁶, cannot circumvent economic reality. Even the World Bank has concluded that the problem of hunger can only be solved by "redistributing purchasing power" to the hungry⁷.

What about the state of food supplies in, say, 2040, when it is predicted that there will be ten billion people compared with today's six billion? In absolute terms, the world already produces enough food to feed ten billion people — it's just that most of it is fed to animals, fed to people, fed to people, fed to people, fed to people.

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