

Fenntarthatatlan világ


Globális környezeti problémák

- Klímaváltozás (sarki jég, szibériai tőzeglápok)
- Biodiverzitás helyett embertenyészet és biotikus holocaust
- Esőerdők pusztítása (150 ezer km²/év)
- Sivatagok terjedése (60 ezer km²/év)
- Savasodás
- Ózonréteg elvékonyodása
- Víziány
- Talajerózió (évi 25 md t veszteség)



Egy kis ökológia

- Veszélyben az endemikus fajok
- A nem-létezés bizonyítéka
- A redukált fajközösségek instabilitása
- Környezeti diszkontinuitás
- Az eltartóképesség hirtelen csökkenése







Néhány ország 1996. évi ökológiai lábnyoma és ökológiai kapacitása

	népesség 1997-ben (millió fő)	ökológiai lábnyom (ha/fő)	jelenlegi ökológiai kapacitás (ha/fő)	ökológiai deficit (ha/fő)
Világ	5 744,9	2,85	2,18	-0,67
OECD	1 091,0	7,22	3,42	-3,80
nem OECD	4 658,7	1,81	1,82	0,01
Ausztrália	18,6	8,5	9,42	0,9
Ausztria	8,1	5,4	4,3	-1,1
Belgium	10,2	5,-	1,6	-3,4
Brazília	167,-	2,6	2,4	-0,1
Csehország	10,3	4,2	2,5	-1,7
Dánia	5,2	5,8	2,1	-3,7
Dél-Afrika	43,3	2,6	1,6	-1,-
Finnország	5,1	6,3	9,6	3,3
Franciaország	58,4	5,7	3,8	-1,9
Hollandia	15,7	4,7	2,8	-1,9
India	970,2	0,8	0,8	0,-
Japán	125,7	6,3	1,7	-4,6
Kanada	30,1	7,-	8,5	1,5
Kína	1 247,3	1,2	1,3	0,1
Lengyelország	38,5	3,4	2,3	-1,1
Magyarország	10,-	2,5	2,-	-0,5
Nagy-Britannia	58,6	4,6	1,8	-2,8
Németország	81,8	4,6	2,1	-2,5
Norvégia	4,4	5,7	4,6	-1,1
Olaszország	57,2	4,5	1,4	-3,1
Oroszország	146,4	6,-	3,9	-2,-
USA	268,2	8,4	6,2	-2,1

Forrás: Wackernagel és Rees.

A világgazdaság expanziója

- termelés és energia
- népesség



Figure 3-9 WORLD ENERGY USE

Millions of terajoules per year

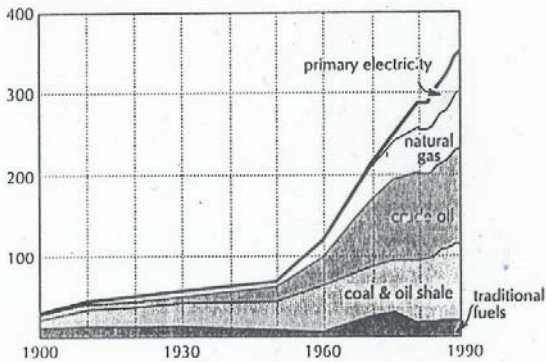


Figure 1-2 WORLD INDUSTRIAL PRODUCTION

Index (1963 = 100)

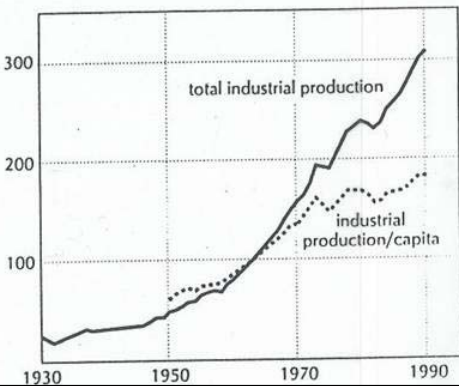
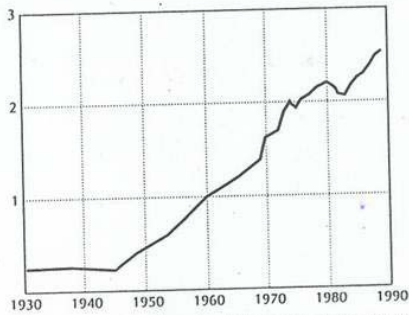


Figure 3-15 WORLD METAL CONSUMPTION

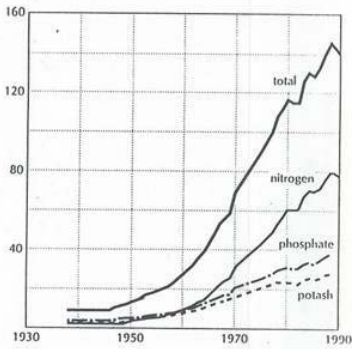
Billion metric tons per year



Total world metal consumption showed a slight downturn in the economic recession of the early 1980s, but then continued to rise. Since the 1970s, growth has been more linear than exponential. (Sources: E. N. Cameron; U.S. Bureau of Mines.)

Figure 2-1 WORLD FERTILIZER CONSUMPTION

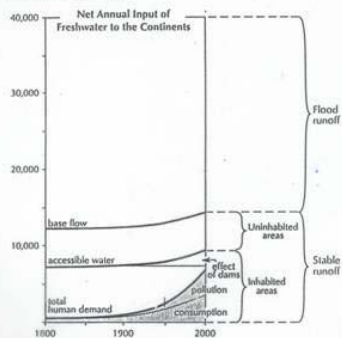
Million metric tons per year



World fertilizer consumption is increasing exponentially with a doubling time of about 10 years before 1970, and of about 15 years after 1970. Total use is now 15 times greater than it was at the end of World War II. (Source: United Nations.)

Figure 3-5 FRESH WATER RESOURCES

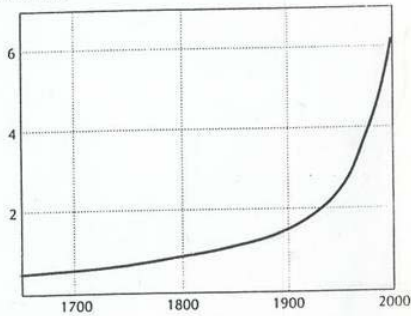
Cubic kilometers per year



A graph of global fresh water resources and uses shows how quickly exponential growth in consumption and in pollution can approach the total amount of water that is stable and accessible. In 1950 human demand for fresh water was only about one-half the amount of water that was accessible. Only a strenuous dam construction program will leave some margin between demand and supply by the year 2000. (Source: R. P. Ambrose)

Figure 1-1 WORLD POPULATION

Billions of people



World population has been growing exponentially since the beginning of the Industrial Revolution. In 1991 the world population growth rate was estimated to be 1.7%, corresponding to a doubling time of 40 years. (Sources: United Nations; D. J. Bogue.)

Billions of people

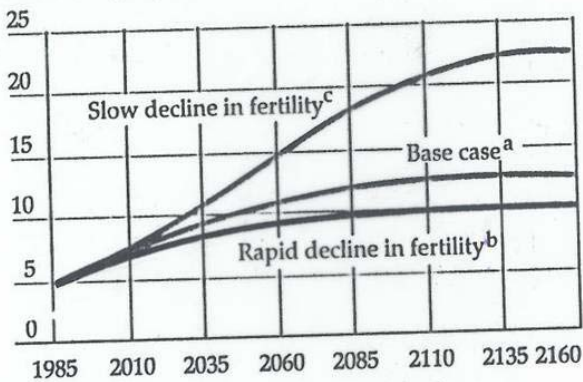


Figure 2-2 WORLD URBAN POPULATION

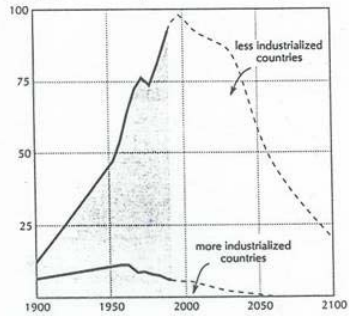
Billions of people



Total urban population is expected to increase exponentially in the less industrialized regions of the world, but almost linearly in the more industrialized regions. Average doubling time for city populations in less industrialized regions has been 20 years—faster than population growth as a whole. (Sources: United Nations; Population Reference Bureau.)

Figure 2-5 WORLD ANNUAL POPULATION INCREASE

Millions of people added each year

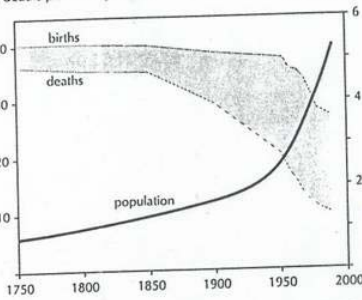


The number of people added to the world population each year has increased enormously and is projected to go on increasing for another decade under the World Bank's forecasts. Those forecasts are very optimistic; they assume rapid drops in birth rates in the less industrialized countries. (Source: United Nations; E. Bos et al.)

Figure 2-4 WORLD DEMOGRAPHIC TRANSITION

Births & deaths per 1000 per year

Population (billions)



The shaded gap between births and deaths shows the rate at which the population grows. Until about 1970 the average human death rate was dropping faster than the birth rate, and the population growth rate was increasing. Since 1970 the average birth rate has dropped slightly faster than the death rate. Therefore the rate of population growth has decreased somewhat—though the growth continues to be exponential. (Source: United Nations.)

Az exponenciális trendek veszélye

- Megkétszereződési idők
- Nigéria népessége
- Pozitív és negatív visszacsatolás
- Georgescu Roegen
- Növekedés vs fejlődés