

Population, Reports and Treaties

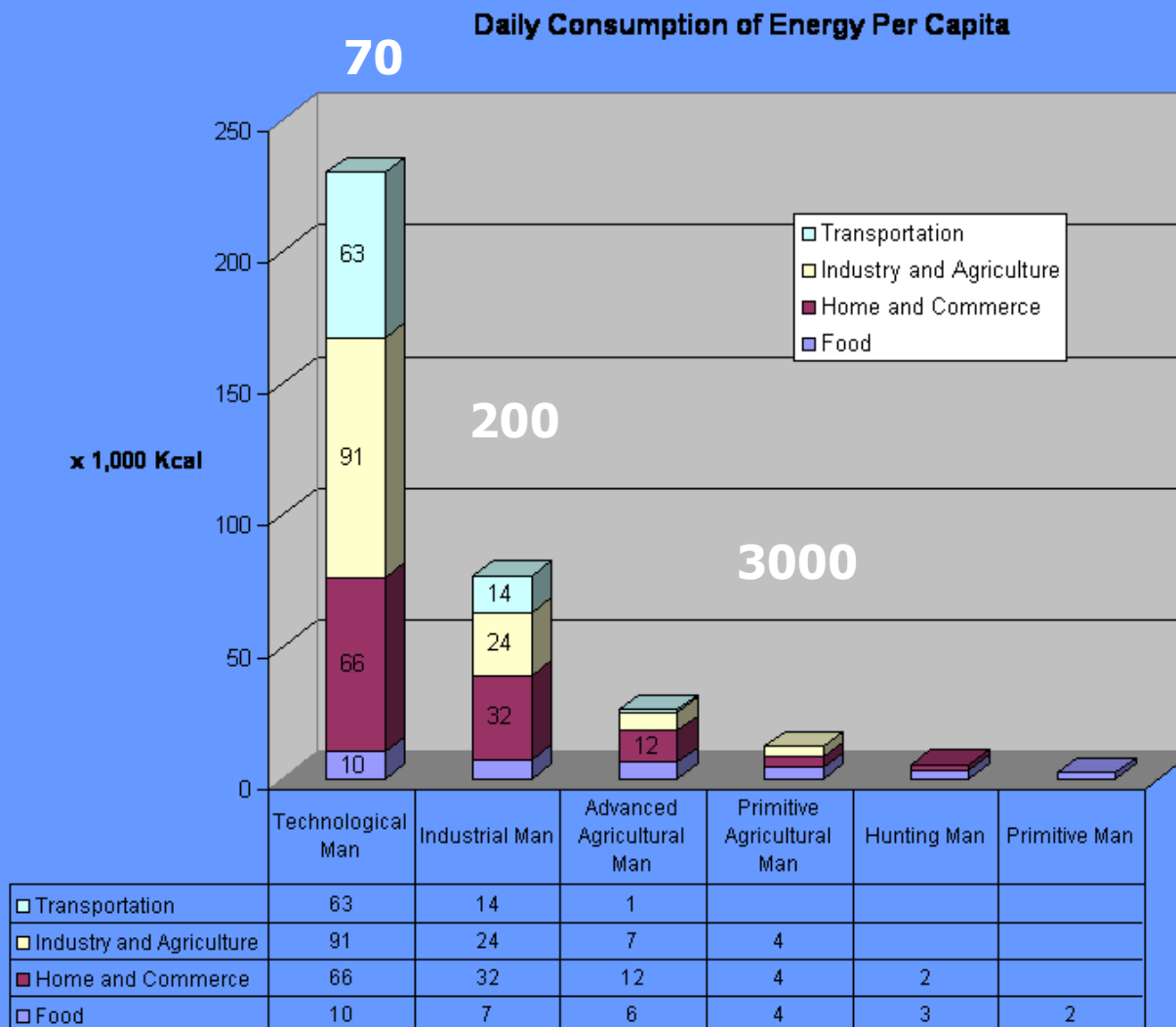
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Daily per capita consumption of energy



Adapted by A. Courtney, WOU, from: E. Cook, "The Flow of Energy in an Industrial Society" Scientific American, 1971 p. 135.

Biocapacity of the earth = 11.2 gha
= Maximum per capita footprint ×
size of sustainable population

Figure 1: World Footprint - 2003



Based on biocapacity data taken from WWF Living Planet Report 2006.

Martin Desvaux - Mar 2008 WSPHF1

Available:
1.64 gha/cap

Use
USA: 9.4 gha/cap
EU: 4.8 gha/cap
China: 1.6 gha/cap

gha/cap = global hectares per capita: Global total 11.2 gha
<http://www.optimumpopulation.org/opt.optimum.html>
(1 hectare = 0.405 acres)

Other biota

- Humans currently use about 40% of the terrestrial food supply, leaving only 60% for animals and plants (remember using fish for fertilizer?).
- You might conclude from this that we are at 40% of the carrying capacity. **Don't.**

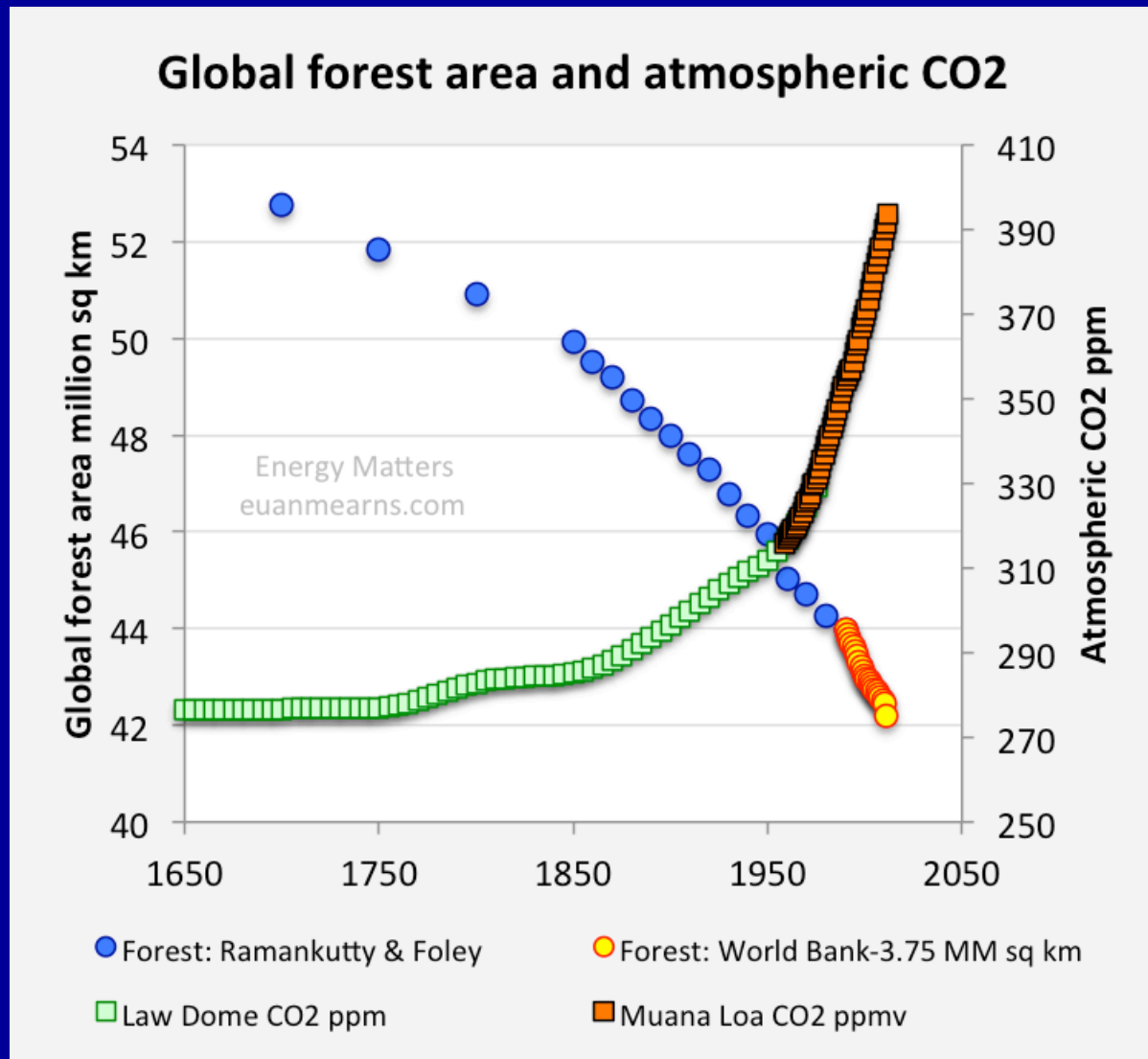


Species extinction: loss of habitat and inadequate food supplies

Trash: Where to put it??



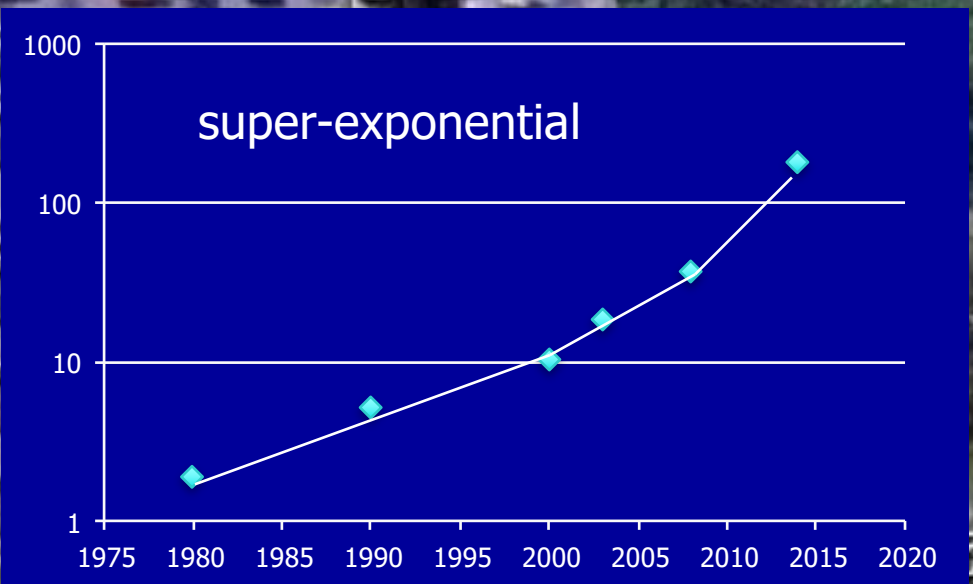
Forests are needed to absorb CO₂



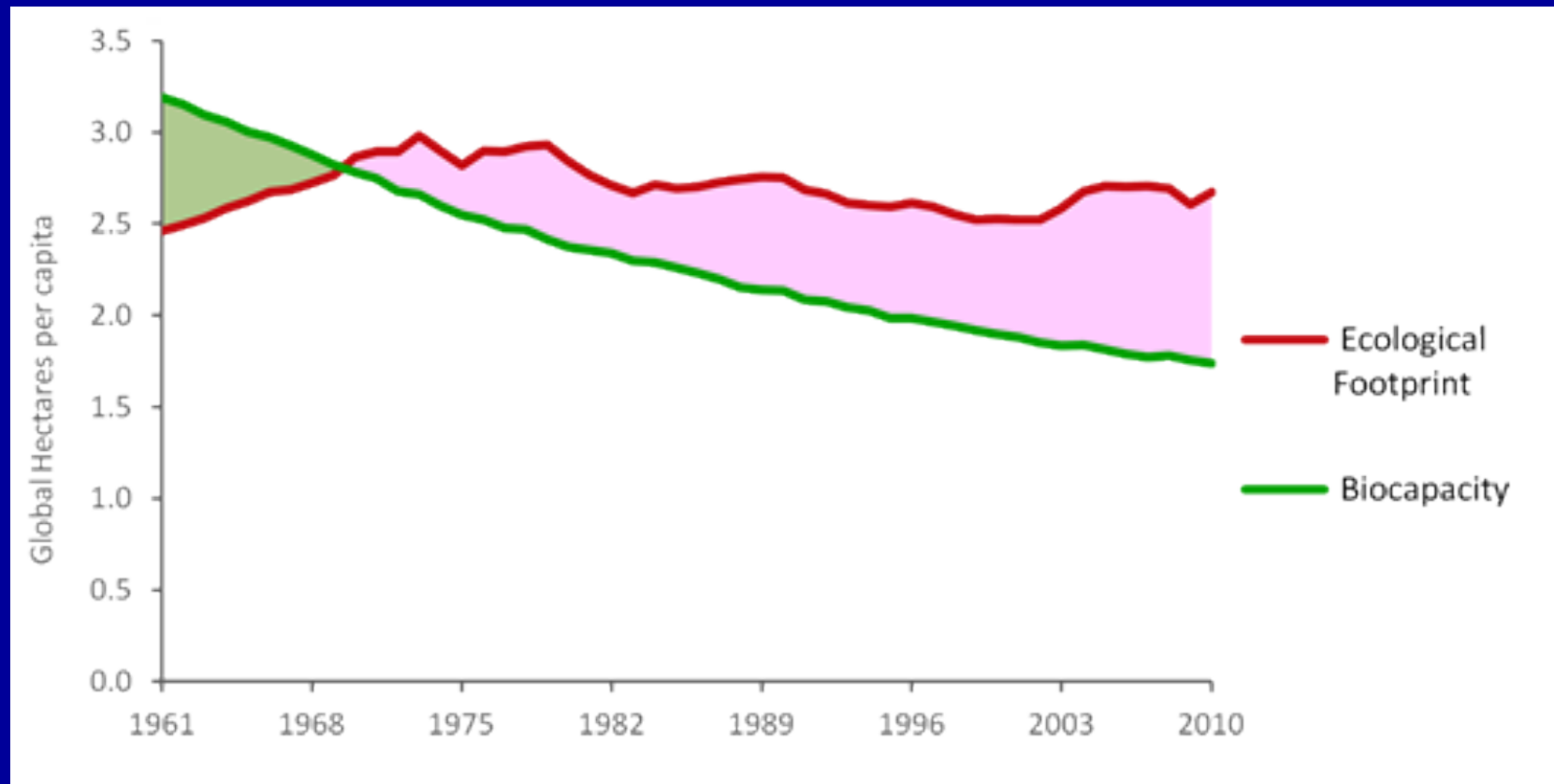


Motor Vehicles per Thousand People

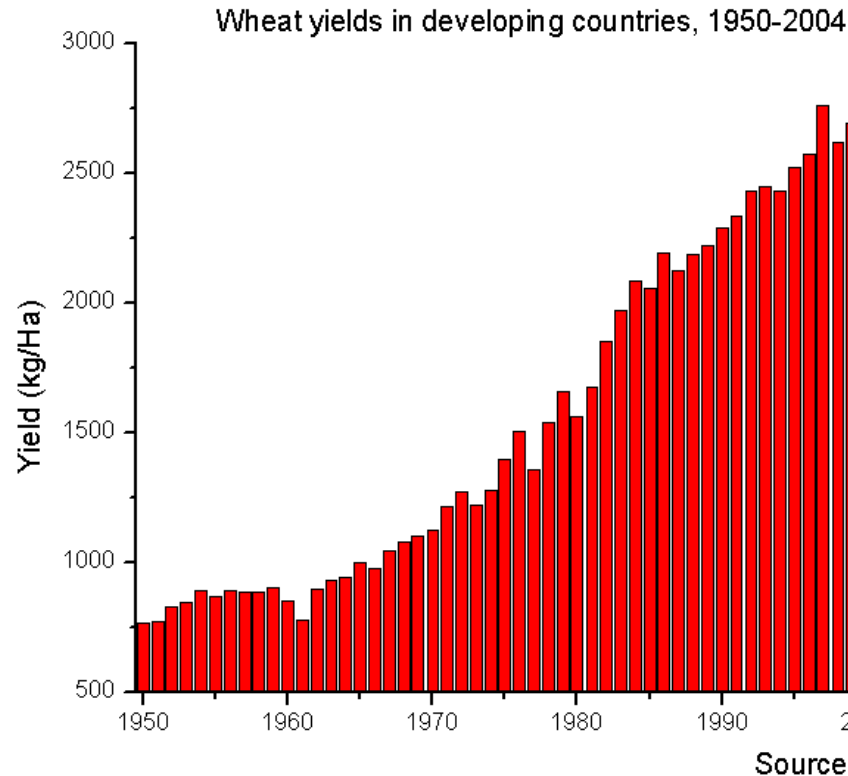
Year	US	China
1950	323.4	
1960	410.3	
1970	528.9	
1980	752.6	1.9
1990	755.2	5.3
2000	761.8	10.6
2003	779.5	18.6
2008		37
2014	797	183



<http://www.footprintnetwork.org/en/index.php/GFN/page/trends/world/>



Green Revolution



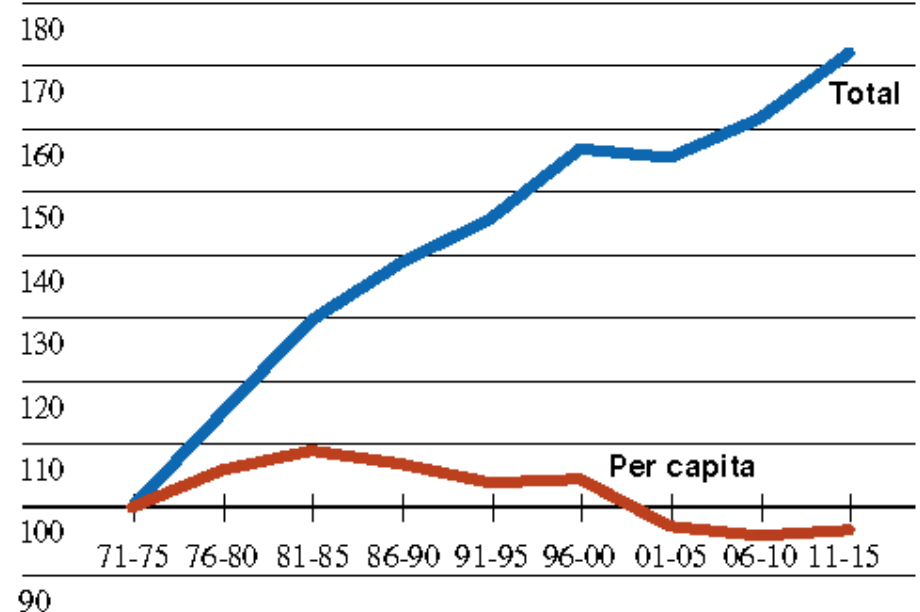
The Green Revolution

(data from <http://www.fao.org/home/en>)

Has the green revolution
has made us complacent?

Global Grain Production: 1971-2015

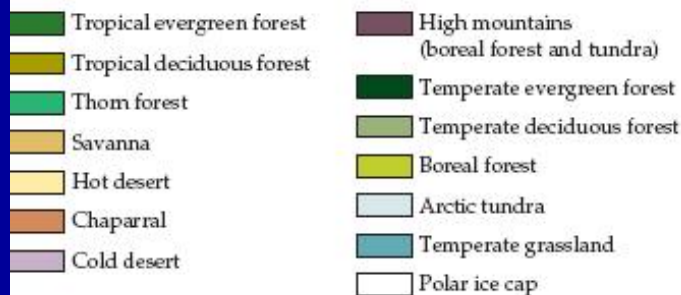
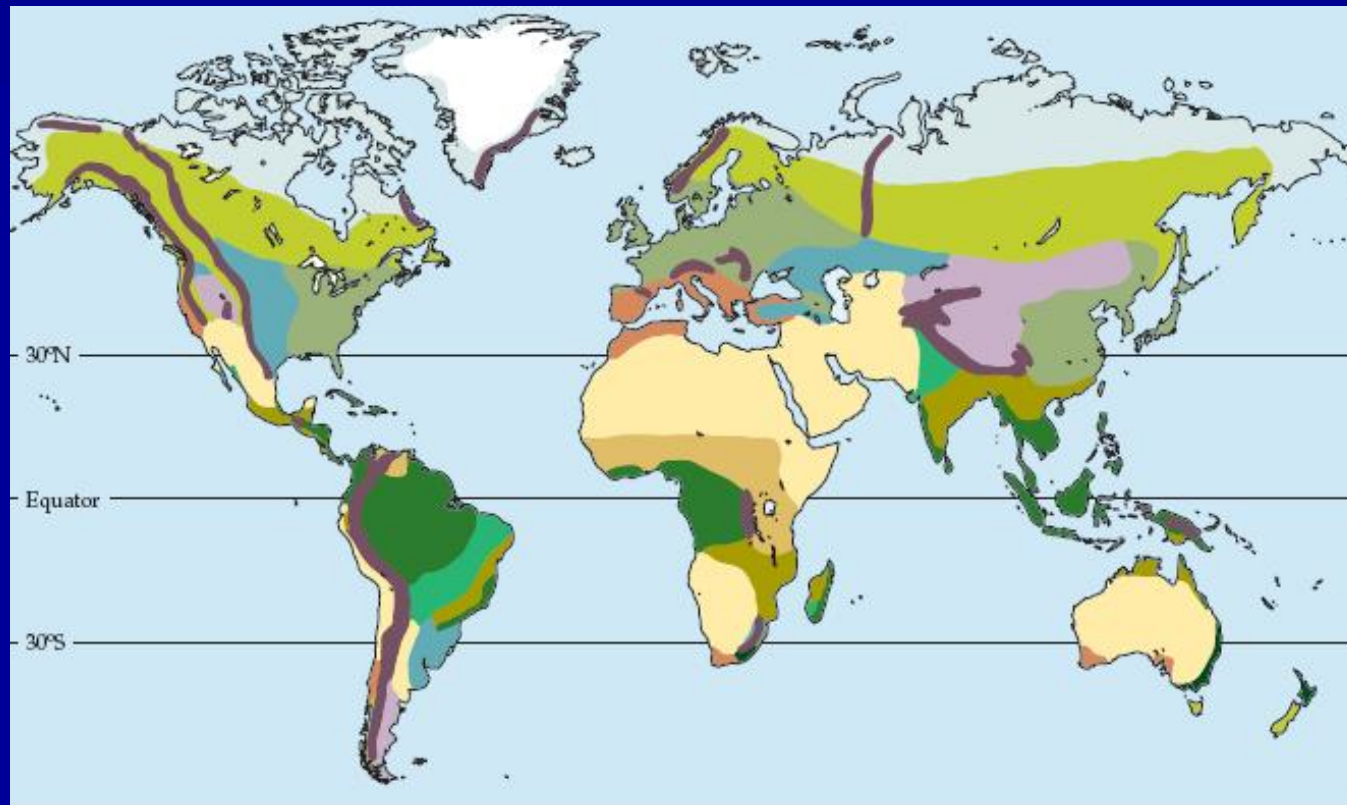
Index: 1971-75=100



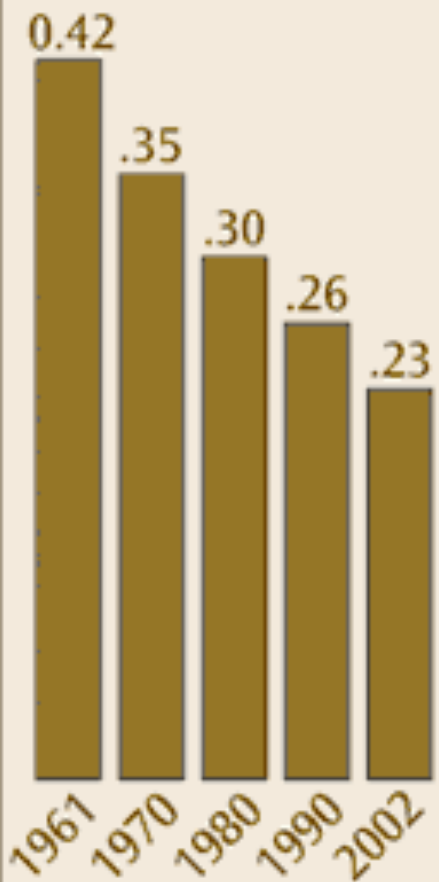
Sources: International Food Policy Research Institute, October 1999,
US Bureau of the Census, and CIA.

Land is a fixed resource

In hectares
1 hectare
= 2.47 acres



**WORLD ARABLE
LAND PER PERSON
1961 – 2002**



Sources: World Resources Institute Earthtrends database <earthtrends.wri.org> UN FAO Stat Land Use Data 2004 <<http://faostat.fao.org/faostat/>> US Census Bureau <<http://www.census.gov/ipc/www/worldpop.html>>

Growing UN Attention to soil degradation

The UN has declared 2015 as the International Year of Soils to shine the international spotlight on the challenges.

Threats

Nutrient depletion

Salinization

Erosion

Urbanization

Chemical pollution



A terracing project

Intergovernmental Technical Panel on Soils (like IPCC)

24 July, 2014 News release from the UN

http://www.un.org/apps/news/story.asp?NewsID=48342#.U_f0nkur-MA

Quiz

- How many babies per woman in Bangladesh?
- What time horizon should we have for energy and climate?
- What population growth rate can we strive to attain (in %/year)?
- What standard of living should be the norm for everyone and why?
 - USA, China, India, Canada, Bangladesh, Monaco

Quiz

- How many babies per woman in Bangladesh?
 - 8, 6, 4 or 2?
- What time horizon should we have for energy and climate?
 - 2 yrs, 4 yrs, 10, 30, 100, 100, 10000
- What population growth rate can we strive to attain (in %/year)?
 - 1.18 (current), 1.00, 0.5, 0.25, 0.1, 0.0, -0.1
- What standard of living should be the norm?
 - USA, China, India, Canada, Bangladesh, Monaco