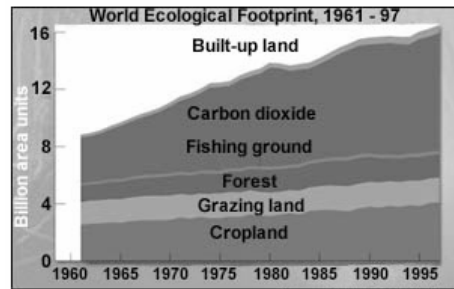
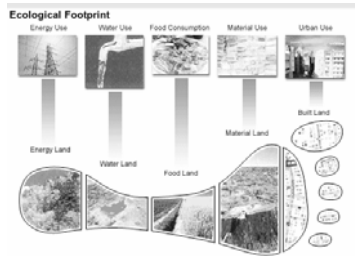


Food Production and the Environment:  
The Concept of Ecological Footprint



Source: WorldWide Fund for Nature

The above six areas comprise the Ecological Footprint of any individual.

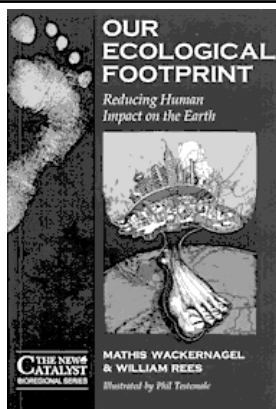


Ecological Footprint\* Definition

The E-footprint of a population is estimated by calculating how much land and water area is required on a continuous basis to produce all the goods consumed, and to absorb all the wastes generated by that population. To calculate the E-footprint of energy consumption, you estimate how much land is needed to produce the same energy from the sun. For example, plants are converting energy from the sun into plant material (biomass) and people turn biomass into fuel e.g. ethanol and methanol. You calculate the amount of energy used from a certain piece of land e.g. joules/per hectare/ year.

city is 120 times the area of the city itself. They estimate that a typical North American city with a population of 650,000 would require 30,000 square kilometres of land—an area roughly the size of Vancouver Island, Canada—to meet domestic needs alone without even including the environmental demands of industry. In comparison, a similar size city in India would require 2,800 square kilometres.

\* Concept developed by Bill Rees and Mathis Wackernagel 1992



Mathis Wackernagel

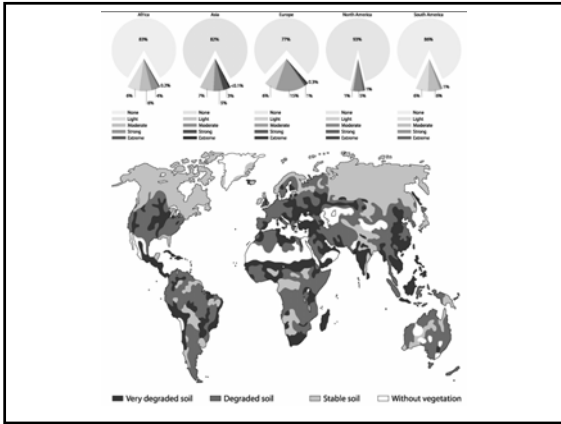


William Rees

Agriculture Dominates Freshwater Use



Source: World Water Vision, 2000.

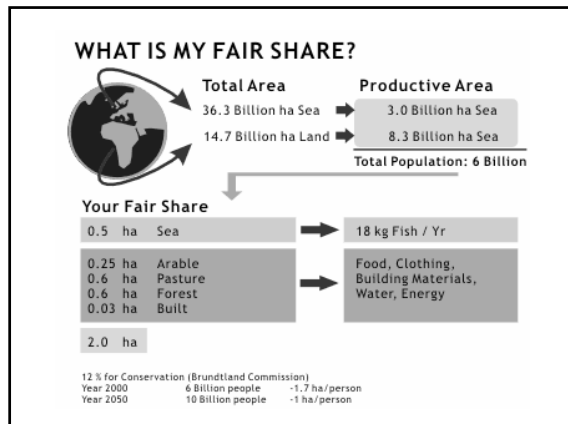
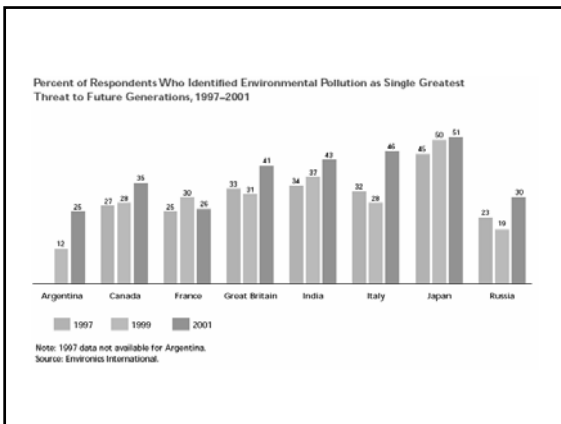
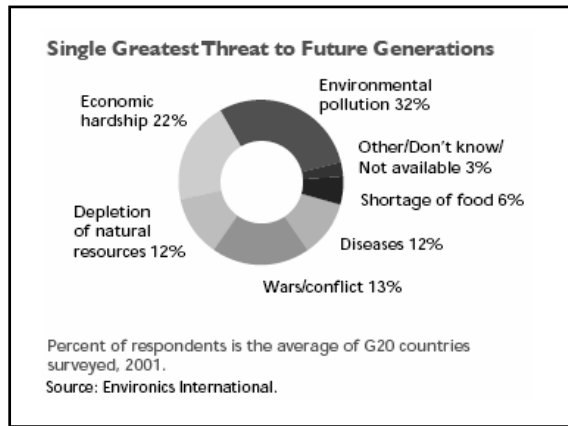


Extent and causes of land degradation	
Degradation extent	Cause
580 million ha	<b>Deforestation</b> — vast reserves of forests have been degraded by large-scale logging and clearance for farm and urban use. More than 220 million ha of tropical forests were destroyed during 1975–90, mainly for food production.
680 million ha	<b>Overgrazing</b> — about 20 per cent of the world's pasture and rangelands have been damaged. Recent losses have been most severe in Africa and Asia.
137 million ha	<b>Fuelwood consumption</b> — about 1 730 million m <sup>3</sup> of fuelwood are harvested annually from forests and plantations. Woodfuel is the primary source of energy in many developing regions.
550 million ha	<b>Agricultural mismanagement</b> — water erosion causes soil losses estimated at 25 000 million tonnes annually. Soil salinization and waterlogging affect about 40 million ha of land globally.
19.5 million ha	<b>Industry and urbanization</b> — urban growth, road construction, mining and industry are major factors in land degradation in different regions. Valuable agricultural land is often lost.

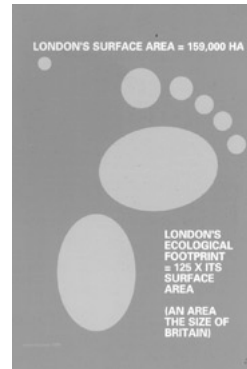
Source: FAO 1996

Trends in undernourishment (in millions of people)			
	1996-98	2015	2030
Sub-Saharan Africa	186	184	165
Near East/North Africa	36	38	35
Latin America/Caribbean	55	45	32
Asia	514	309	168
Developing countries	791	576	400

Source: The state of food insecurity in the world (FAO, 2000)



### The Ecological Footprint



### Cities and the culture of sustainability

*Herbert Girardet describes ways in which cities can be truly sustainable*

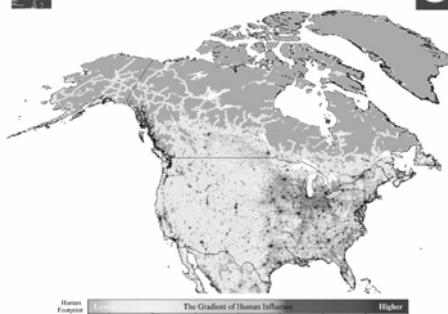
The Quarterly Journal  
of the Urban Design Group

Spring 2001 / Issue 78

TOPIC

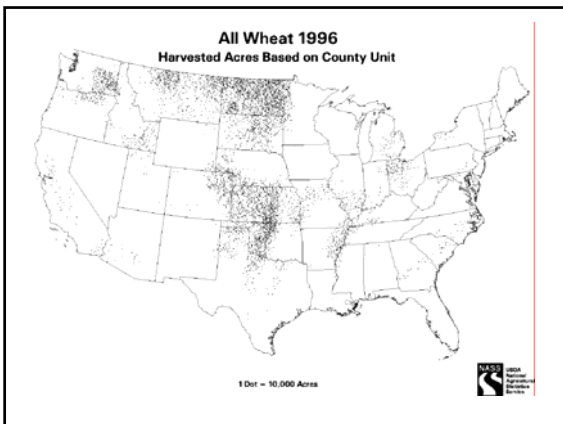
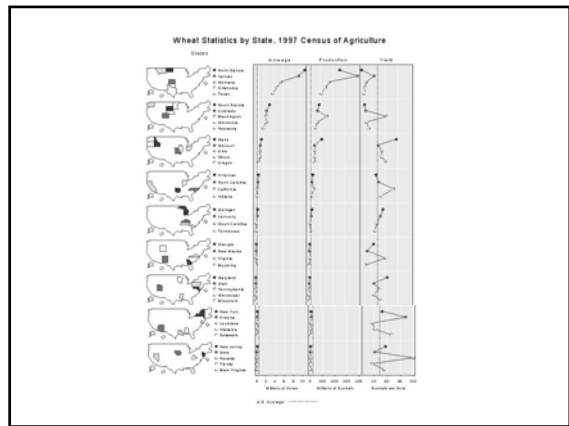
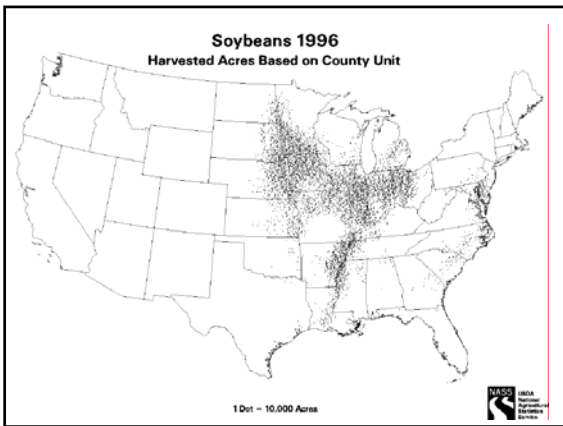
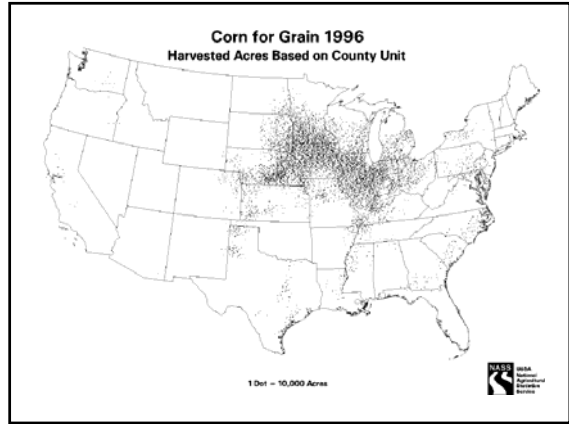
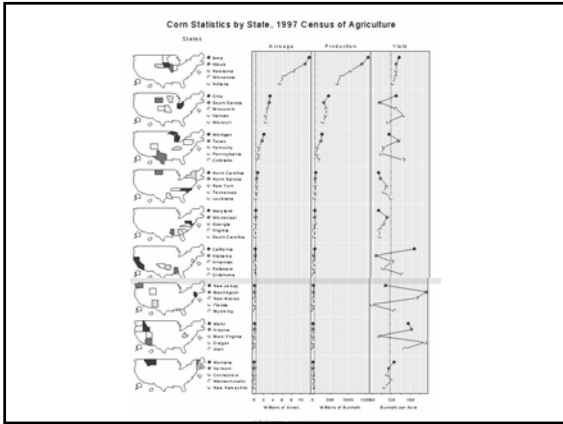
urban design

### The Human Footprint in North America



US Footprint = 24.4 acres!





**The Impact Of Agriculture On Hardwood Forests In The United States**

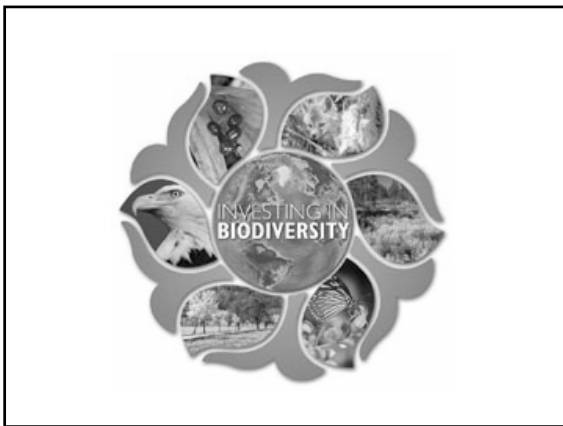
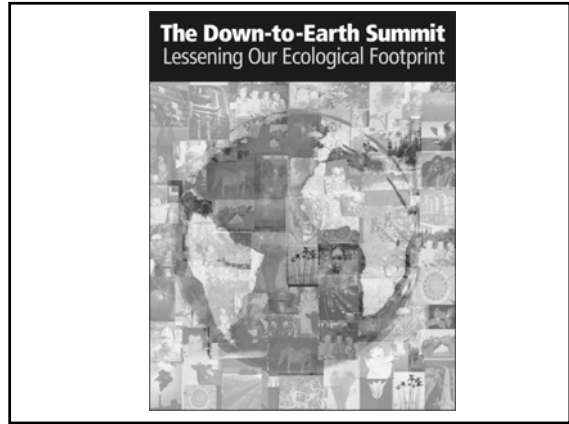
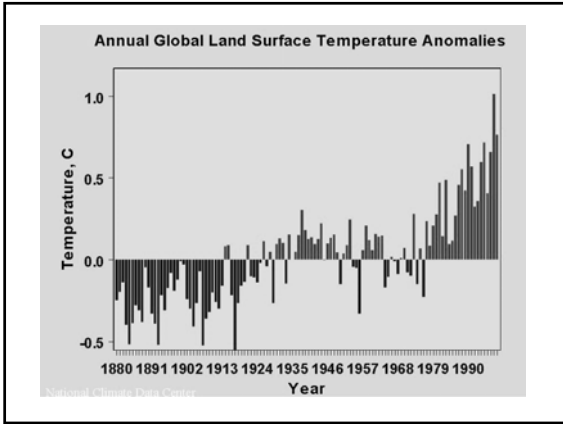
Corn, cotton, sorghum, grains

CONSEQUENCES, Volume 3, Number 1 1995

**Past and Present Land Use and Land Cover in the USA**

By  
William B. Meyer

Figure 1. Areas of major forest. Map in brown (1900), 1950, and 1990 as published by William B. Meyer, "The Pattern of Geography to Timber Supply" Economic Geography, vol. 3, pp. 1-17 (1955). The location of old forests in the area maps may be misleading in that they show only old-growth forest and not total tree cover.



- THE MILLENNIUM DEVELOPMENT GOALS**
- ▶ Eradicate extreme poverty and hunger
  - ▶ Achieve universal primary education
  - ▶ Promote gender equality and empower women
  - ▶ Reduce child mortality
  - ▶ Improve maternal health
  - ▶ Ensure environmental sustainability
  - ▶ Combat HIV/AIDS, malaria, and other diseases
  - ▶ Develop global partnerships for development