Sustainable Consumption: quantitative aspects

Maria Buitenkamp,

Ecostrategy

WBCSD definition

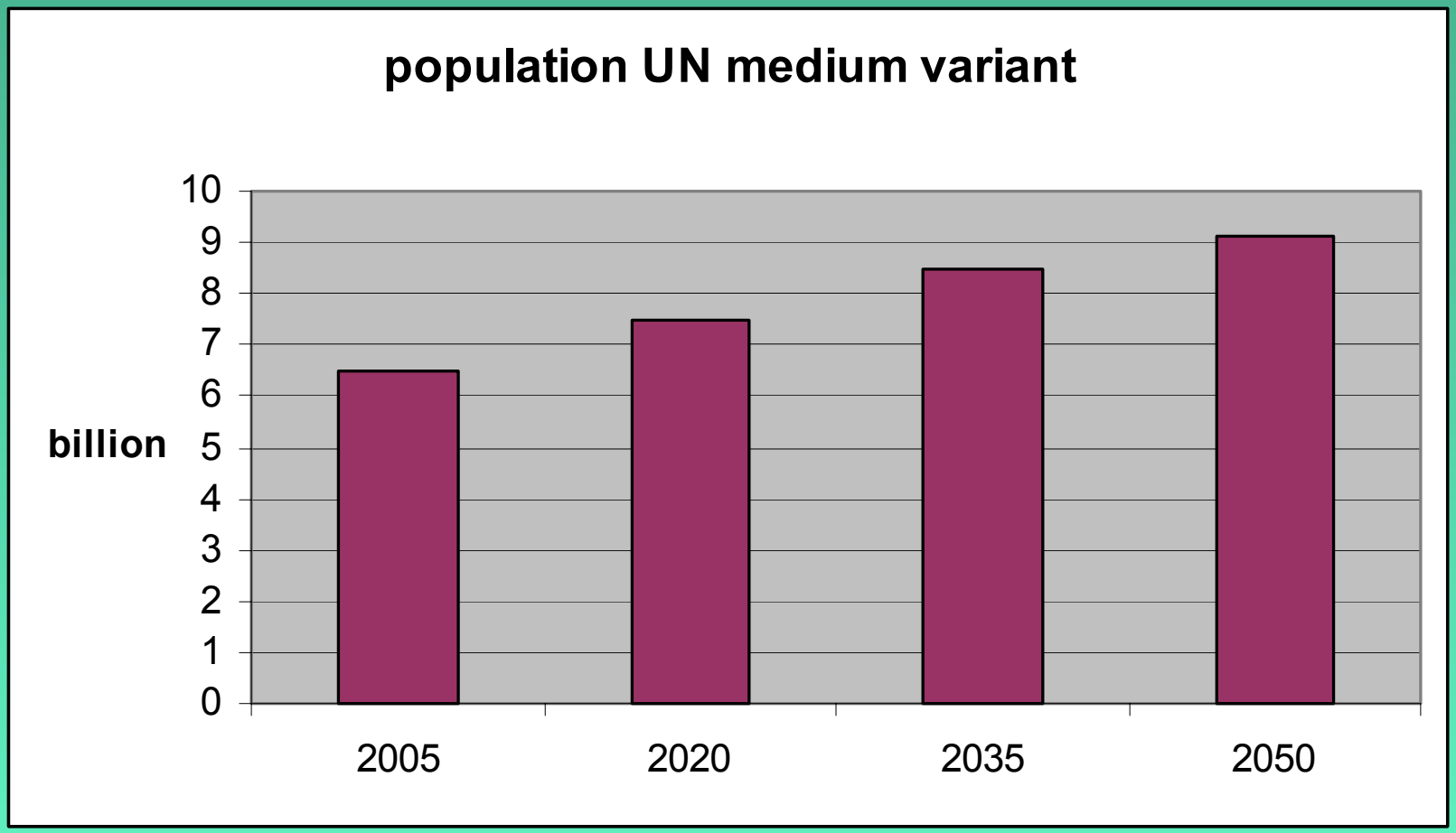
Eco-efficiency is reached by the delivery of competitively priced goods and services that satisfy human needs and bring quality of life, while progressively reducing ecological impacts and resource intensity throughout the life cycle, to a level at least in line with the earth's estimated carrying capacity

I=P*A*T

- **I:** environmental impact,
- **P:** population
- **A:** per capita economic activity (affluence)
- **T:** impact per unit of economic activity (technology).

Sustainable consumption:

- Total Impact < carrying capacity of local and global life support systems
- Acceptable Impact : Environmental (utilisation) Space or Ecospace.

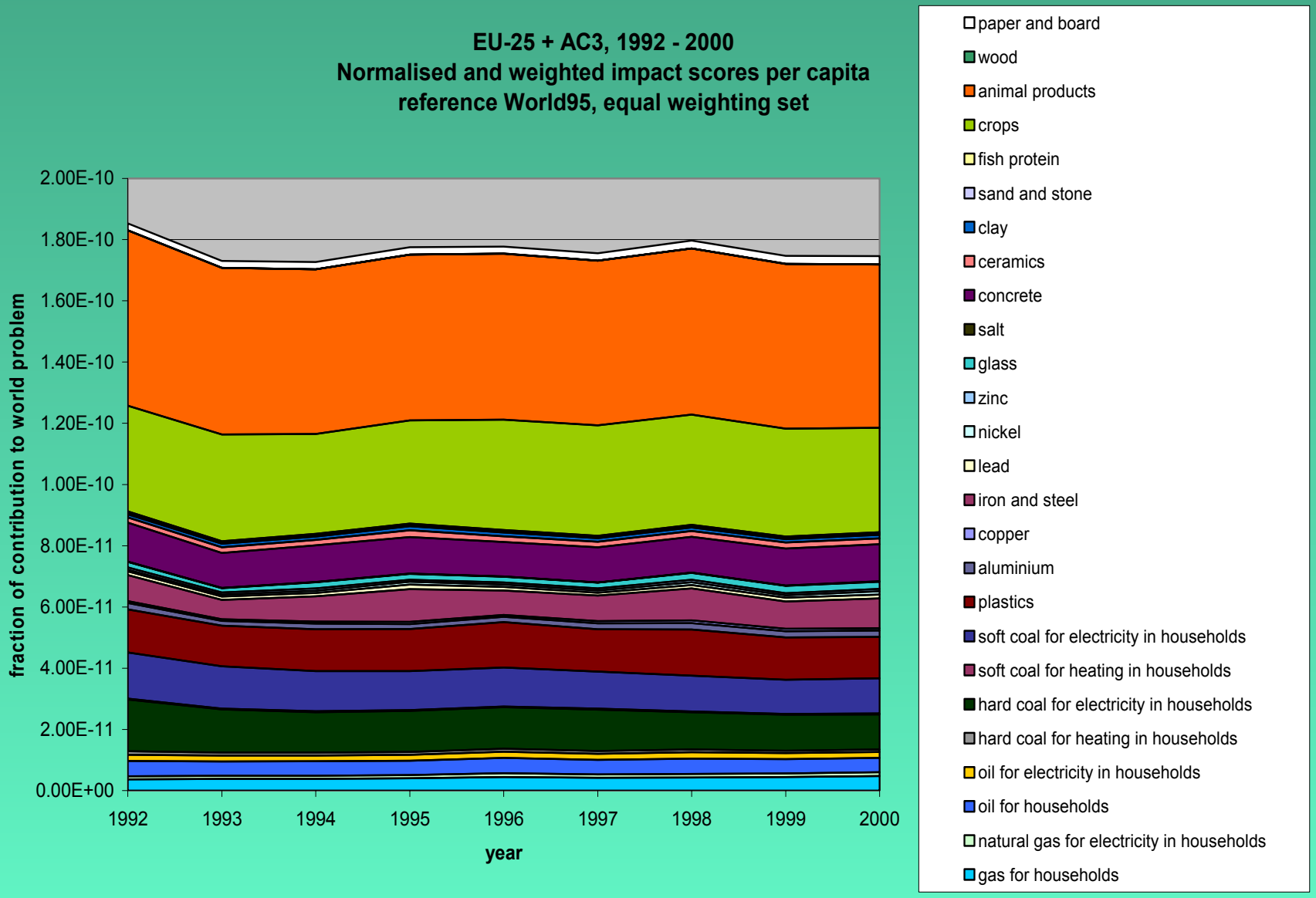

population UN medium variant
billion
10
9
8
7
6
5
4
3
2
1
0
2005
2020
2035
2050

Crucial impacts

- climate change: 60-80% GHG reduction in 2050
- biodiversity decline (halt 2010)
- decline of fertile land
- availability of clean water
- toxicity and impacts on human health

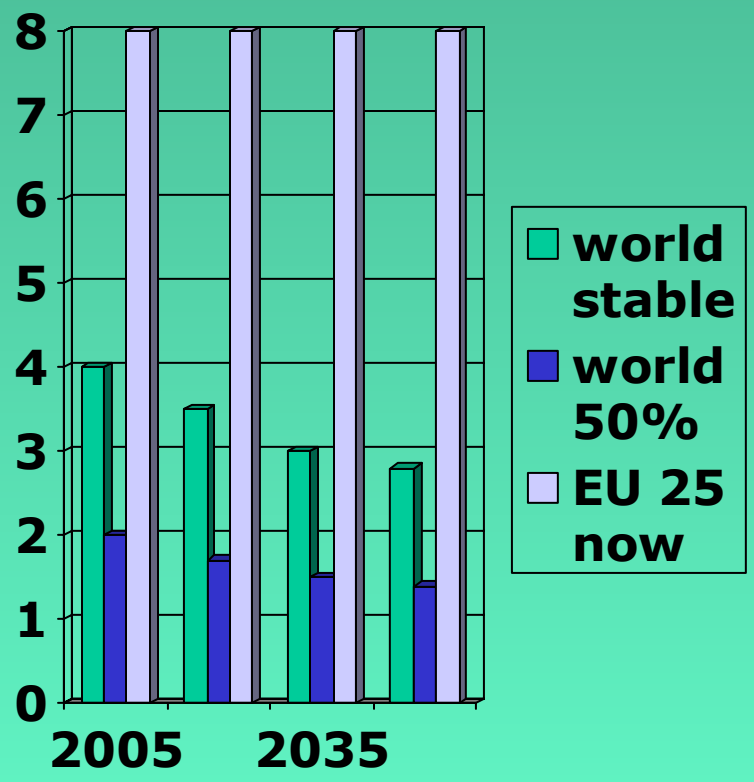
Most problematic resources

- Animal products and crops.
- Fossil fuels
- Concrete (glass and ceramics)
- Iron and steel (aluminium, lead, copper, nickel and zinc)
- Plastics
- Paper and board



Source: Van der Voet et al. Draft report, October 2004

Population growth and economic convergence: CO2



- Average CO2 p.p:
- Stabilising emissions
- Halving emissions
- Please note: numbers are a rough estimate for illustration

The copier example

- XEROX office department copier/printer/fax, 84,000 copies per year, used by 5 – 20 people, 5 year lifetime.
- 1999-2010: increase from 0.8 to 3.5 million machines in use
- 1999-2010: 10% more paper use

Copier: results of growth in affluence and market developments in 2010

- 4.4 - fold increase in machine related resources used
- 4.8 - fold increase in paper use
- 4.7 - fold increase in energy use

The 2010 sustainable copier challenge

- Stabilise impacts: 75-80% reduction needed
- Reduce impacts: 90% reduction

Resource use of a copier

World population 7 billion	Sustainable use per person per year	Resource use for one copier per year
Iron ore	50 kg	40.6 kg
Fossil energy	25 GJ	24 GJ
Renewable energy	35 GJ	0.6 GJ
Wood	200 kg	336 kg

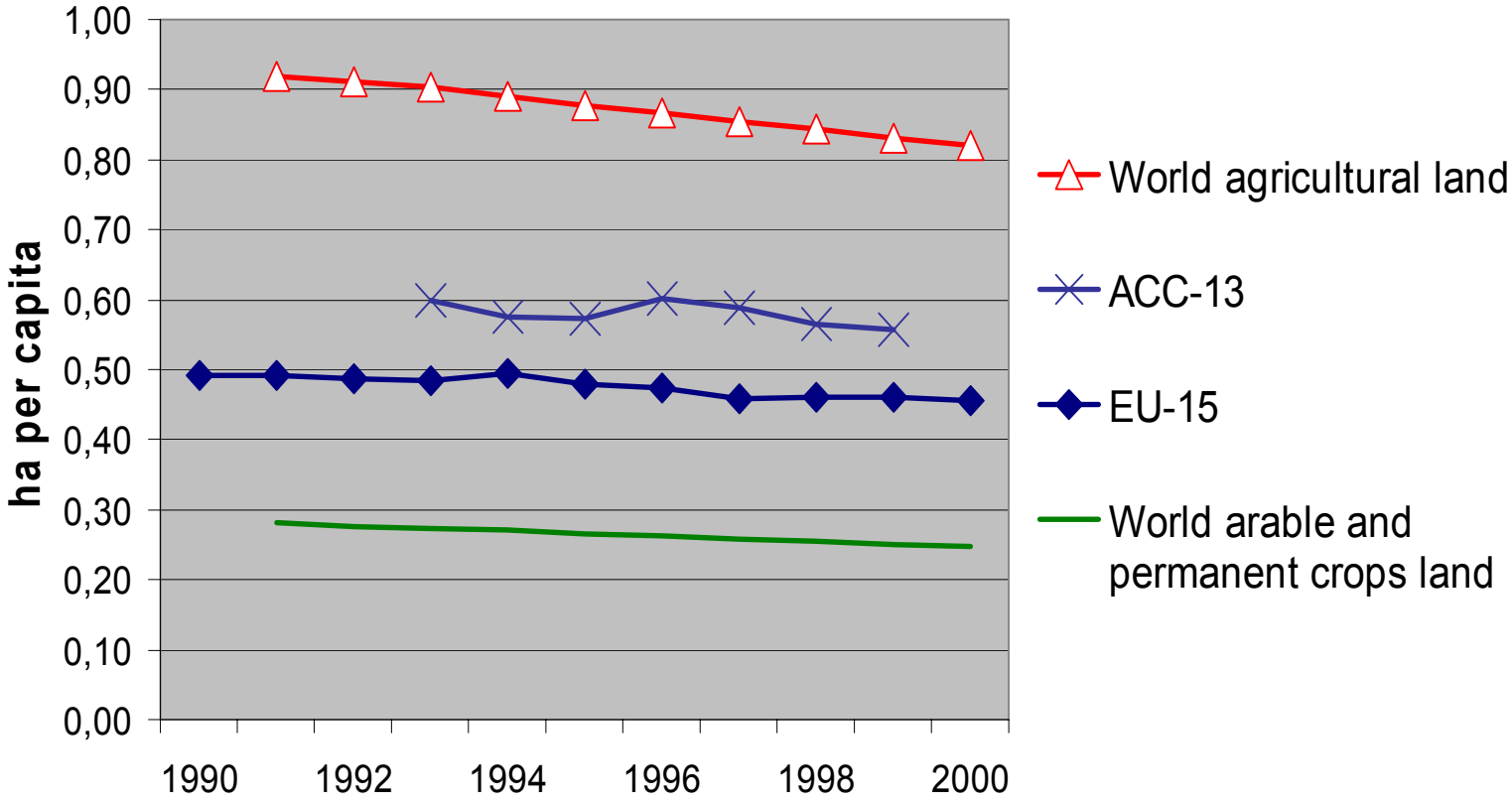
Options to meet the challenge

- expanding the life-time
- re-use and recycling of machine parts
- use of recycled paper
- use of renewable energy sources
- system innovations such as rewritable (electronic) paper?

Recommendations

- global perspective
- economic convergence (China, India)
- assess carrying capacities
- define standards and objectives for sustainable use of resources
- providers of goods and services also have a responsibility to respect carrying capacities
- economic convergence and population growth alone point in the direction of 80% reduction
- the recommendations from Ostend, Nov. 2004

Global Agricultural Land Use Indicator (GALU)



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