

THE CHALLENGE OF SUSTAINABILITY IN THE FOOD SECTOR

- general aspects and practical approaches

Karin Östergren and Thomas Ohlsson
SIK –The Swedish Institute for Food and
Biotechnology



SUSTAINABILTY

The Brundtland “Mantra”:

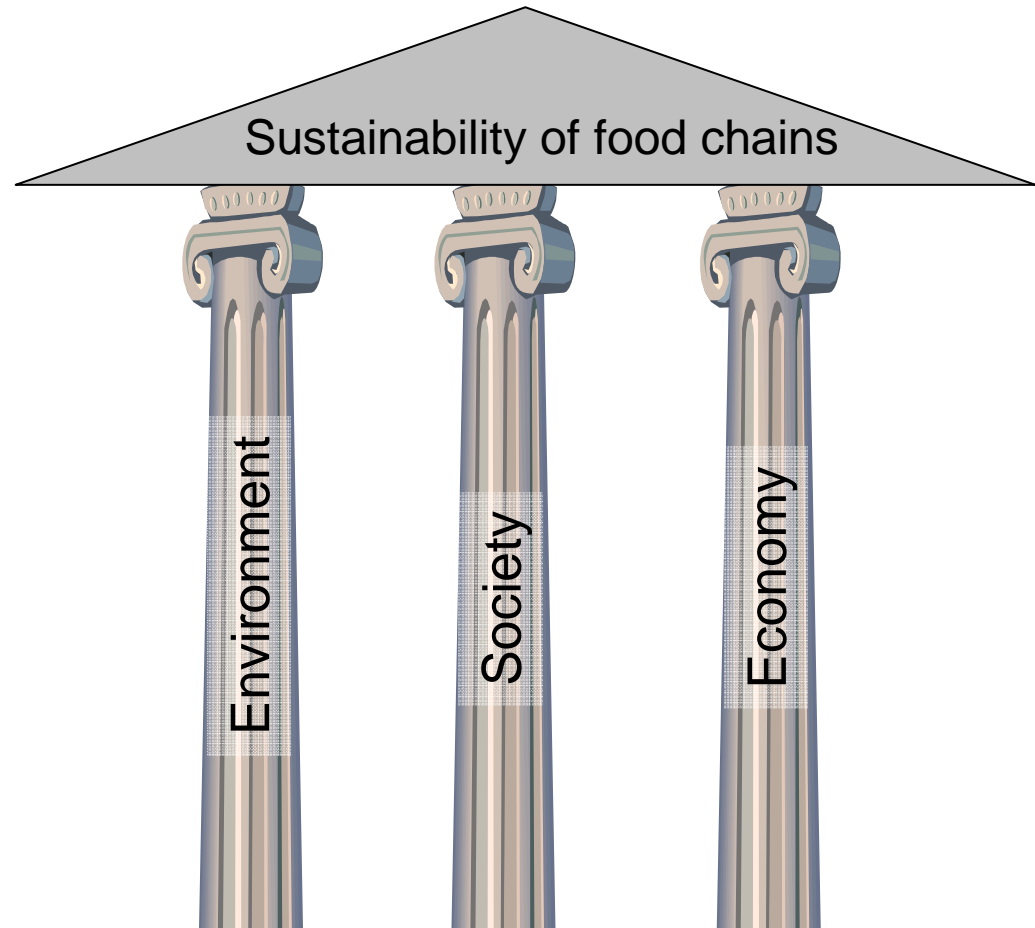
”Development that meets the needs of the present without compromising the ability of future generations to meet their own needs”

(Brundtland Commission, 1987)



THE 3 PILLARS OF SUSTAINABILITY

- Social responsibility
- Economical viability and governance
- Environmental performance



SOCIAL CONCERNS REGARDING SUSTAINABLE FOOD PRODUCTION

- Health and wellbeing
- Human capital development
- Role of the company in the society
- Rural development
- Labour practices
 - No child labour
 - No discrimination
 - Freedom of association
 - Access to health care



ECONOMICAL CONCERNS RE SUSTAINABLE FOOD CHAINS

- Fair distribution of revenues

In the food industry

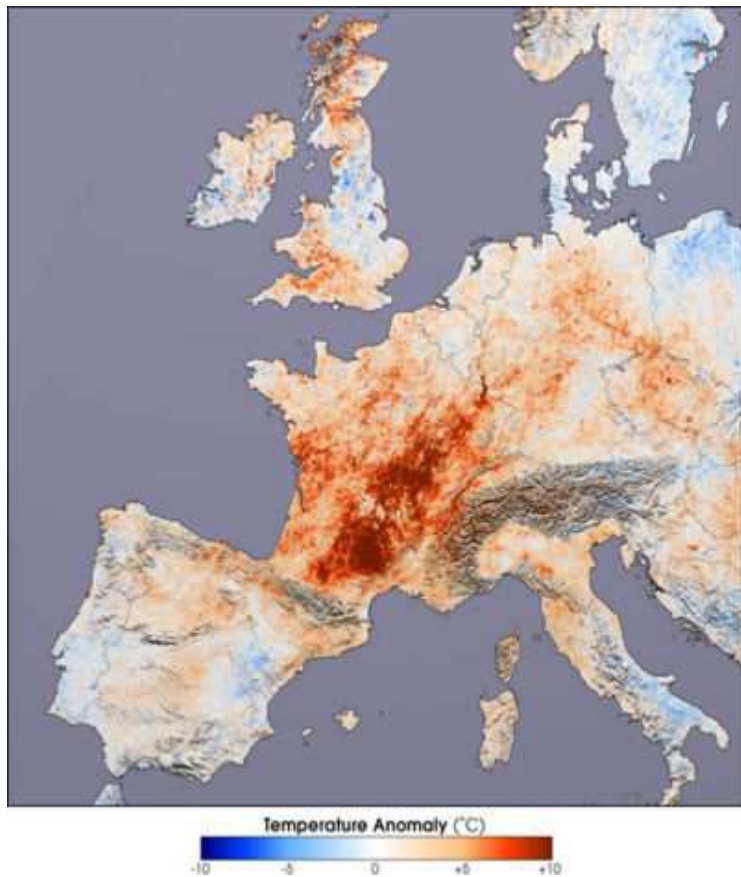
- Efficiency of resource use
- Risk and crisis management

In raw material sourcing

- Prevention of corruption and bribery



ENVIRONMENTAL CONCERNS REGARDING SUSTAINABLE FOOD CHAINS

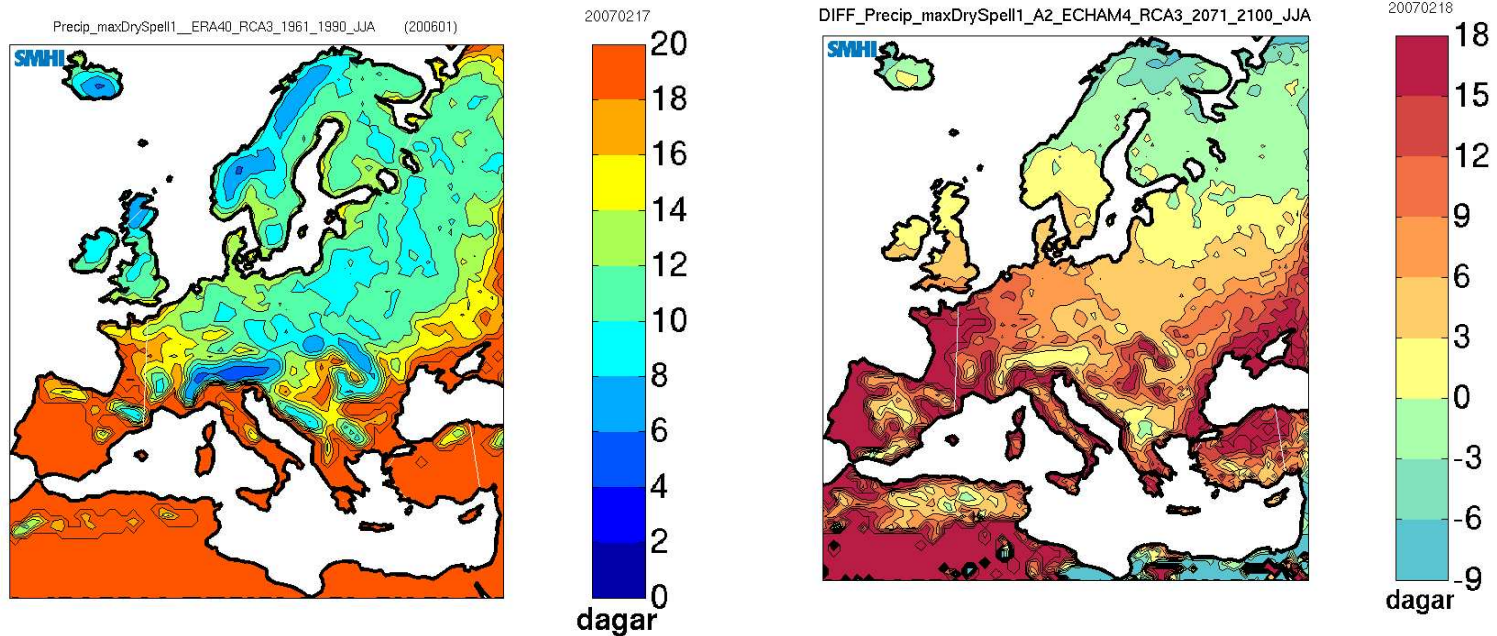


Western Europe in August 2003

Food affects climate change

- Extensive dependence on fossil fuels
- Food chain uses about 20 % of total energy
- Contributes to about 30 % of the Global Warming Potential
- Accounts for more than 25% of highway transport

Climate change affects the food chain...



Number of days with dry-spells in June-Aug. in Europe 1961-1990 (left) and changes in 2071-2100 (right) scenario simulations (SMHI, Sweden)

ENVIRONMENTAL CONCERNS RE SUSTAINABLE FOOD CHAINS

- Eutrophication
 - High nitrogen leakage
 - High phosphorus leakage
 - Food chain accounts for 50%
- Persistent toxicity
 - Cadmium and heavy metals in soils
 - Dioxin in fish



Algae blooming in the
Baltic sea in summer
of 2003

Why be concerned with sustainability of food production?

- It is good for the bottom line of the business
- Supports image and good-will of the company
- Assessed by financial investors
- Advantages for consumer marketing
- Job satisfaction
- Food production actually demands healthy ecosystems

PRACTICAL APPROACHES

- LCA from an actor perspective
- Advantage of unified approaches
 - Combination of LCA and traditional production line simulations with Lean theories (Toyota philosophy)

LCA FROM AN ACTOR PERSPECTIVE

- the role of food waste

Product group	Avoidable household food waste (%)
Bakery food	30,7
Meat and Fish	13,2
Dairy product, egg	3,4
Dry products (rice, pasta, flour, cereals)	14,5
Fruit	26,3
Vegetables and salad	45,4
Potatoes and root crops	19,1
Confectionary	17,2
Condiment, sauce,, oil ,spice	13,6
Desserts	11,1

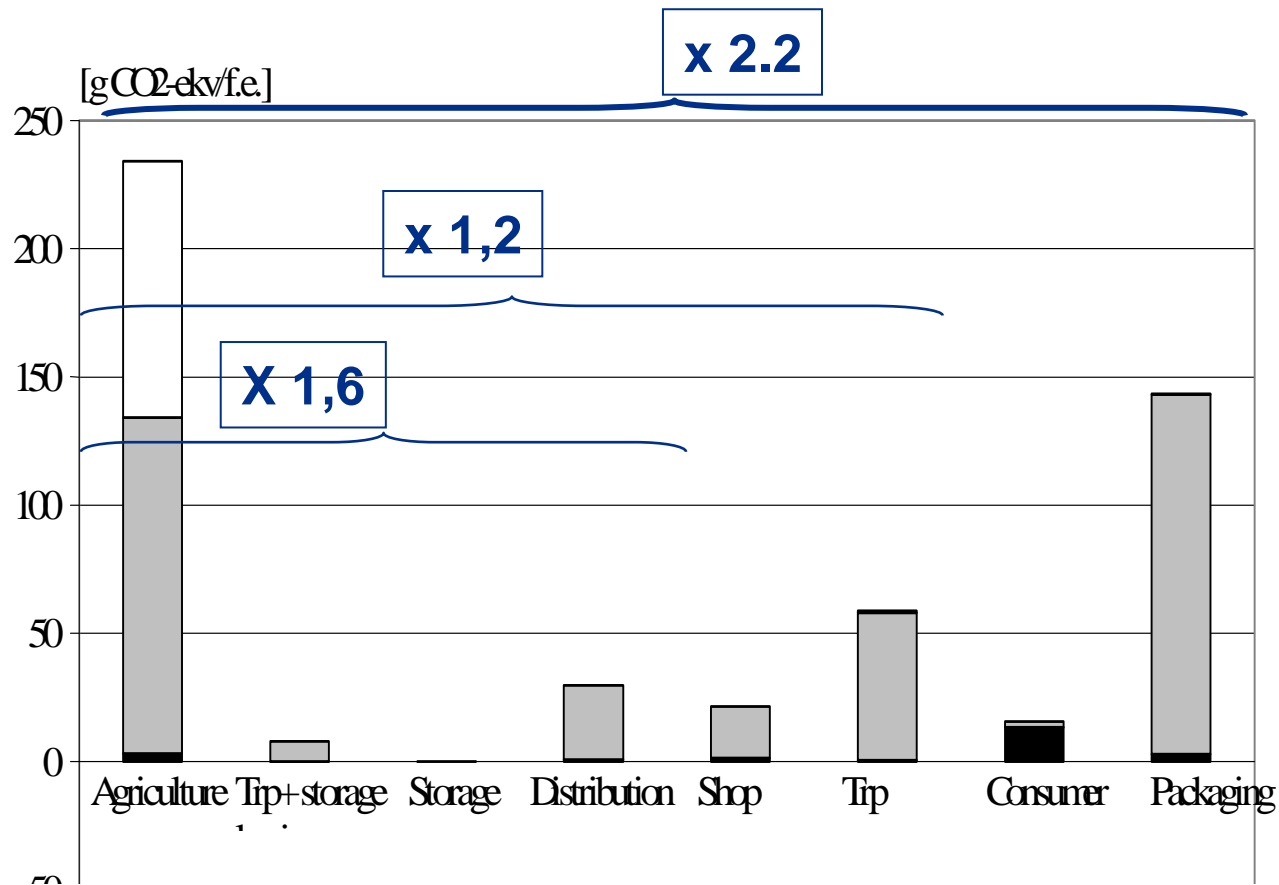


Source WRAP, 2008



LCA FROM AN ACTOR PERSPECTIVE

- the true impact

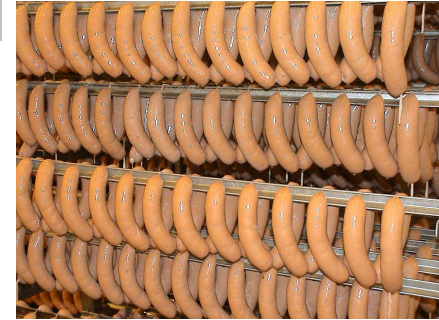


- 1 kg to supermarket = 1.6 kg harvested lettuce
- 1 kg bought by consumer = 1.9 kg harvested lettuce
- 1 kg eaten lettuce = 4.2 kg harvested lettuce

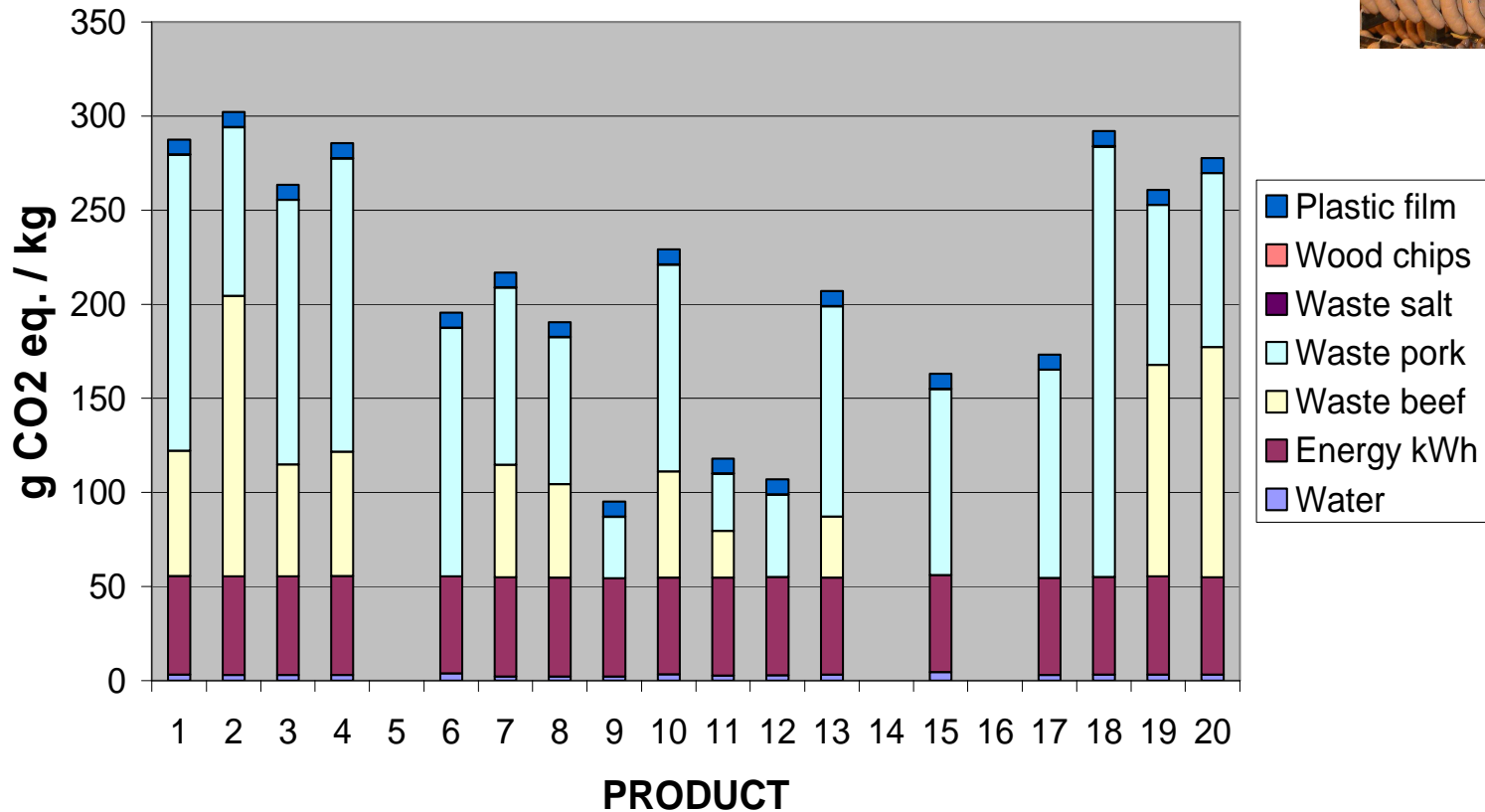
Källor: Maten och Miljön, LRF, 2002

LCA FROM AN ACTOR PERSPECTIVE

- the industrial improvement potential



Global Warming Potential

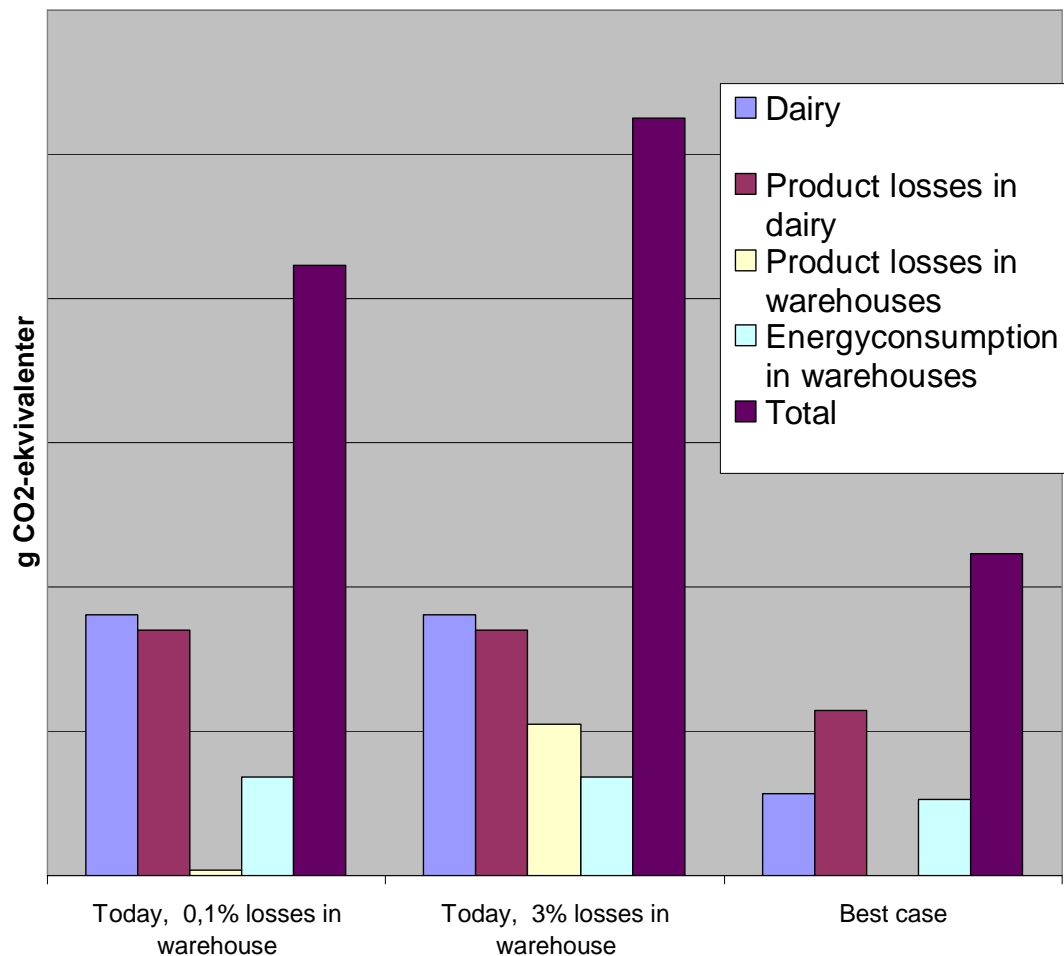


THE ADVANTAGE OF AN UNIFIED APPROACH

- New methodology for simultaneous assessment of production efficiency and environmental efficiency
- Discrete Event Simulation (DES) in combination with LCA
- Scenarios were developed based on Lean thinking
 - “doing more with less”
 - reduce waste - focus on value adding activities



THE ADVANTAGE OF AN UNIFIED APPROACH - Results from a yoghurt production plant



- Reduced losses by using e.g. pigs, better control
- Green electricity and renewable fuel
- Higher production frequency for 61% of the production volume (Decrease in storage space: 8% → 4%)
- Increased production line availability with 5% by always filling up the last fermentation vessel

THE ADVANTAGE OF AN UNIFIED APPROACH

- Results from a yoghurt production plant

This proved to be a totally realistic scenario

- Reduced costs amounting to about half million Euro /year
 - Increased production capacity of 6-7 percent
 - Reduction of greenhouse gases up to 50 percent
- all achieved with relatively simple solutions



PRACTICAL APPROACHES for sustainable solutions

- LCA from an actor perspective
 - Identifies who is actually controlling the environmental impact
- Advantage of unified approaches
 - Combination of various of aspects generates new and different solutions and contradictory solution can efficiently be avoided.

Sustainability is an important part of our common future

The future is here.
It's just not widely distributed yet
(William Gibson)



Thank you for your attention!

