



International seminar "Footprints of Food: from Data to Awareness"
10.10.2012.

Life Cycle Thinking (LCT) on Examples of Ketchup and Fish

Siret Talve, Tartu University
Juha Grönroos, Finnish Environment Institute



S Y K E



EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
INVESTING IN YOUR FUTURE



CENTRAL BALTIC
INTERREG IV A
PROGRAMME
2007-2013



FOODWEB



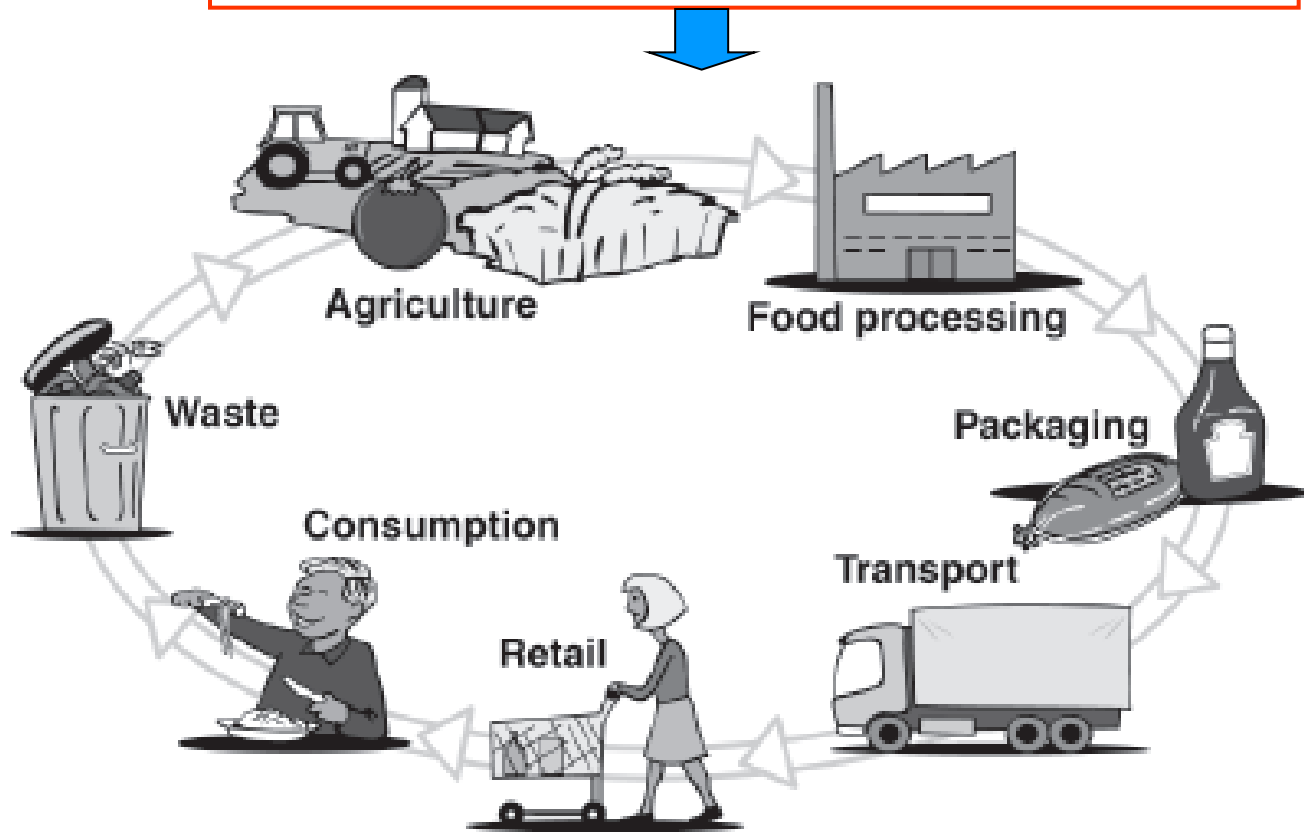
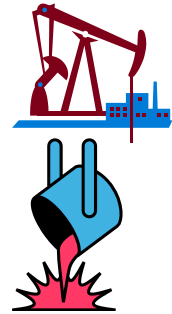
What is product life cycle?

Consecutive and interlinked stages of a product system (or chain), from raw material extraction, through production of materials and semiproducts, parts to products, through product use or service operation to recycling and/or final disposal.

LC of food

INPUTS AND THEIR PRODUCTION:

- * Energy (electricity, fuels)
- * Chemicals (fertilisers, pesticides...)
- * Materials (metals, plastics...)
- * Other inputs
- * (Machinery, buildings, roads...)



Why LCT?

- To achieve more sustainable production and consumption patterns.
- Life Cycle Thinking and Life Cycle Assessment (LCA) are scientific approaches behind a growing number of environmental policies and decision support.
 - Reliable ecolabeling
 - Green procurement
 - Carbon footprint

Key aim of LCT

Avoiding burden shifting - minimising impacts at one stage of the life cycle, or in a geographic region, or in a particular impact category, while helping to avoid increases elsewhere.

For example, saving energy during the use phase of a product, while not increasing the amount of material needed to provide it.

Expected benefits

- Identification of possible improvements to goods and services in the form of lower environmental impacts and reduced use of the resources across all life cycle stages.
- Comparison of different products designed for the same purpose.



Main players in food chain

- Farmers
- Food processing industries
- Retailers
- Consumers

Farmers

- Energy saving and use of renewable fuels
 - Energy use of machinery and grain drying can be reduced
 - Alternative fuels and heating systems for grain drying (e.g. utilisation of heat of the local district heating plant using wood as fuel)
- Efficient use of fertilisers and pesticides
 - Use only if needed
 - Maximum utilisation of organic wastes (manure etc.)
 - Alternative methods (biological N-fixation, avoidance of monoculture)
- Alternative use of low-productivity fields

Tomato: open field vs greenhouse

Mediterranean region greenhouse:

- + major increase in yield
- + reduced harvest losses
- + a major reduction in use of pesticides and irrigation water
- materials for infrastructure
- slightly higher energy consumption



Food processing industry

How is produced and transported my raw material, ingredients, energy?

MY ENTERPRISE

How are my products transported, marketed and consumed; waste handled?

**FARMING
INDUSTRIES**

**FOOD
PROCESSING**

CONSUMPTION

**AGRICULTURE
ENERGY GENERATION**

PRODUCTION PROCESSES

**LOGISTICS
RETAILERS
CONSUMERS**

PRODUCT LIFE CYCLE



Retailers

- Day-to-day operations
- Logistics
- Communication along the food chain
- Ecolabelled products



Consumers

- Eating habits
- Shopping habits
- Waste management
- Home appliances
- Wasting of food!!!

Example: Fridge

- Study published in 1998 (Sweden) – fridge needs 4,73 Wh per litre and day.
- Currently A class fridge needs electricity 1,45 Wh per litre and day.
- A++ class fridge needs 1,2 Wh per litre and day.



Wasting of food

The loss in the household phase is equivalent to the same percentage of the total environmental impact.

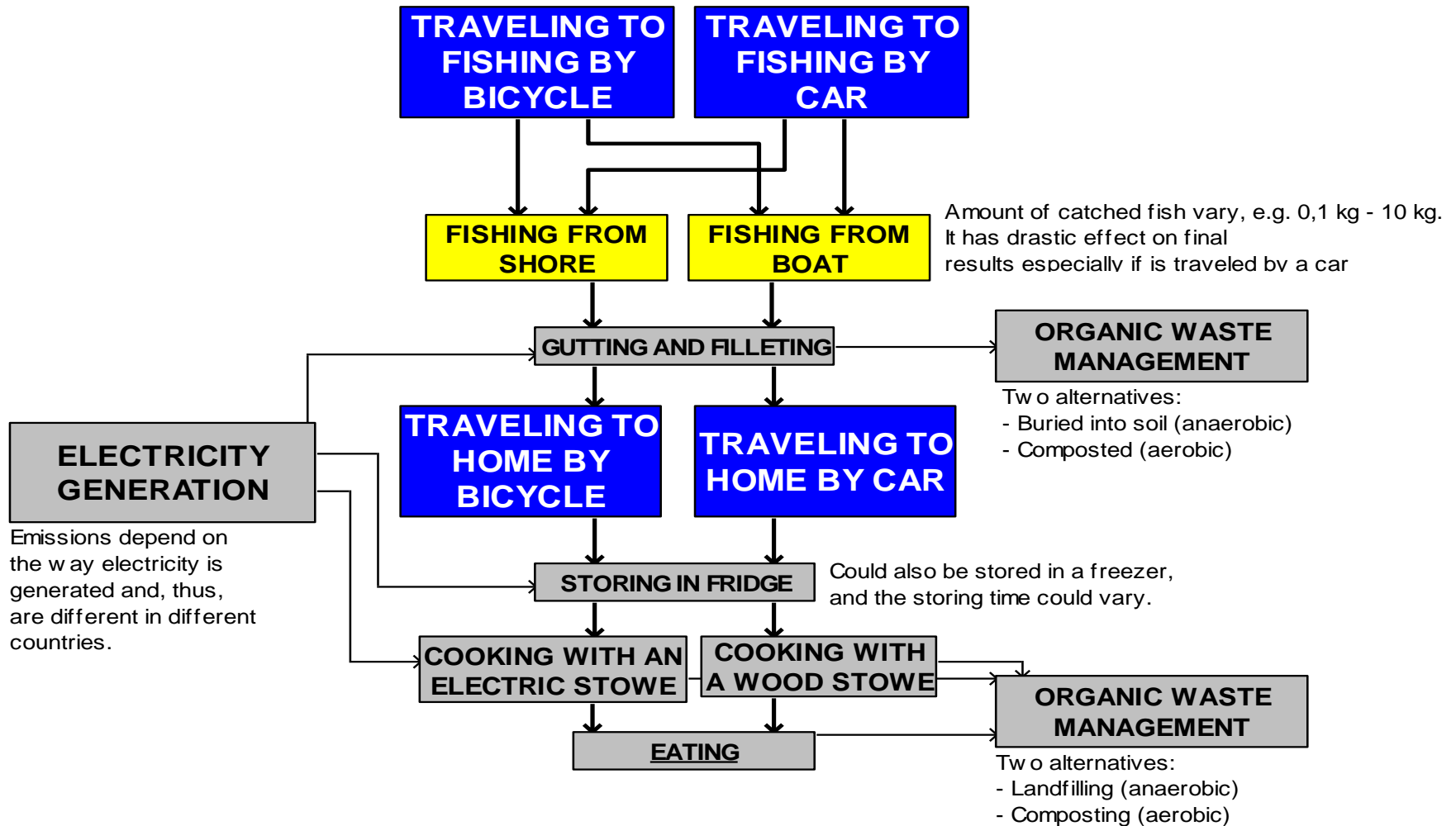
For example, by wasting of 50% you increase the environmental impact of food consumed by 50%.



Shopping behaviour

- car use
- distance
- amount bought

Example: fish



Recreational fishing (I)

- traveling to fishing with alternative modes of traveling (on foot, by bike, by passenger car) and alternative traveling distances;
- fishing (from shore or from boat);
- fish waste management (buried into soil or fed to a cat);
- traveling back to home;

Recreational fishing (II)

- fish storing at home (number of days in fridge);
- fish cooking (yes/no).

The accompanying processes are also included, i.e. electricity generation and fuel production.

http://foodweb.ut.ee/Fishing_calculator_122.htm

Life Cycle of ketchup (I)

- Tomato production (open field vs greenhouse)
- Transport of tomatoes to tomato paste factory
- Production of tomato paste
- Transport of tomato paste to ketchup factory (ship, truck or plane)
- Production of ketchup and ingredients

Life Cycle of ketchup (II)

- Ketchup packing
- Transport of ketchup to wholesalers
- Transport of ketchup to retailers
- Ketchup in retail store
- Transport of ketchup to household
- Ketchup in fridge in household

<http://foodweb.ut.ee/tomato/>