

LCA of Packed Food Products

- the function of flexible packaging -

Approach: Life Cycle Analysis of complete food supply



Relevance of consumer, e.g. for end-of-life

The consumer decides:

- Littering
- Landfilling
- Recycling
- ...



Integrated approach – cup of coffee

- ☉ Average roasted coffee in a roaster with emission control
- ☉ Brewing the coffee or heating the water by a coffee machine
- ☉ Normal user behaviour concerning coffee machine switch off
- ☉ Pouch and stick-pack with an alufoil layer



Results are specific for the specific filling good and the specific packaging system; they must not be generalized.

Coffee supply system – CO₂ equivalents

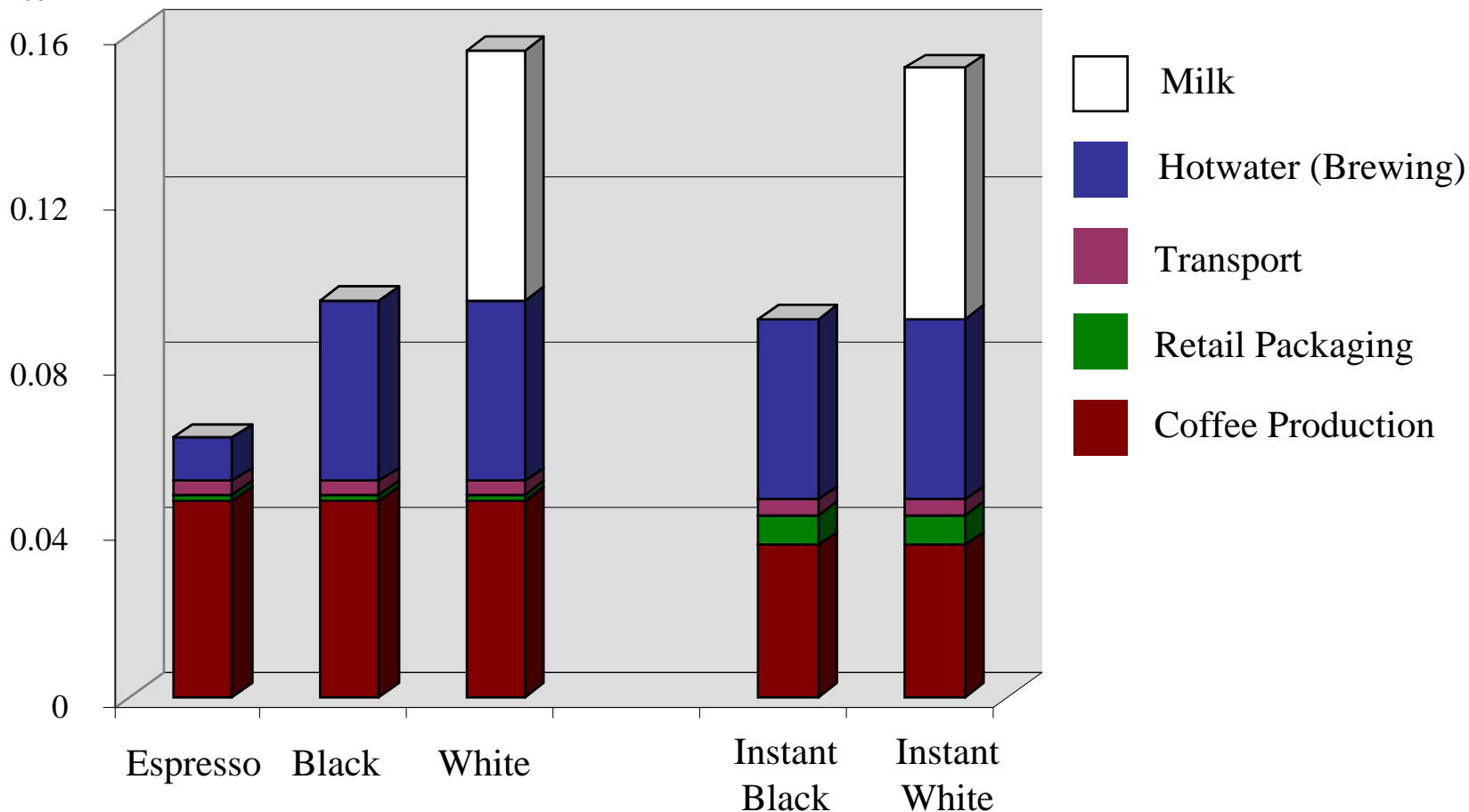


Cup of coffee from 500 g bag
(PET12/alu7/PE100)

Cup of coffee from 2 g stick



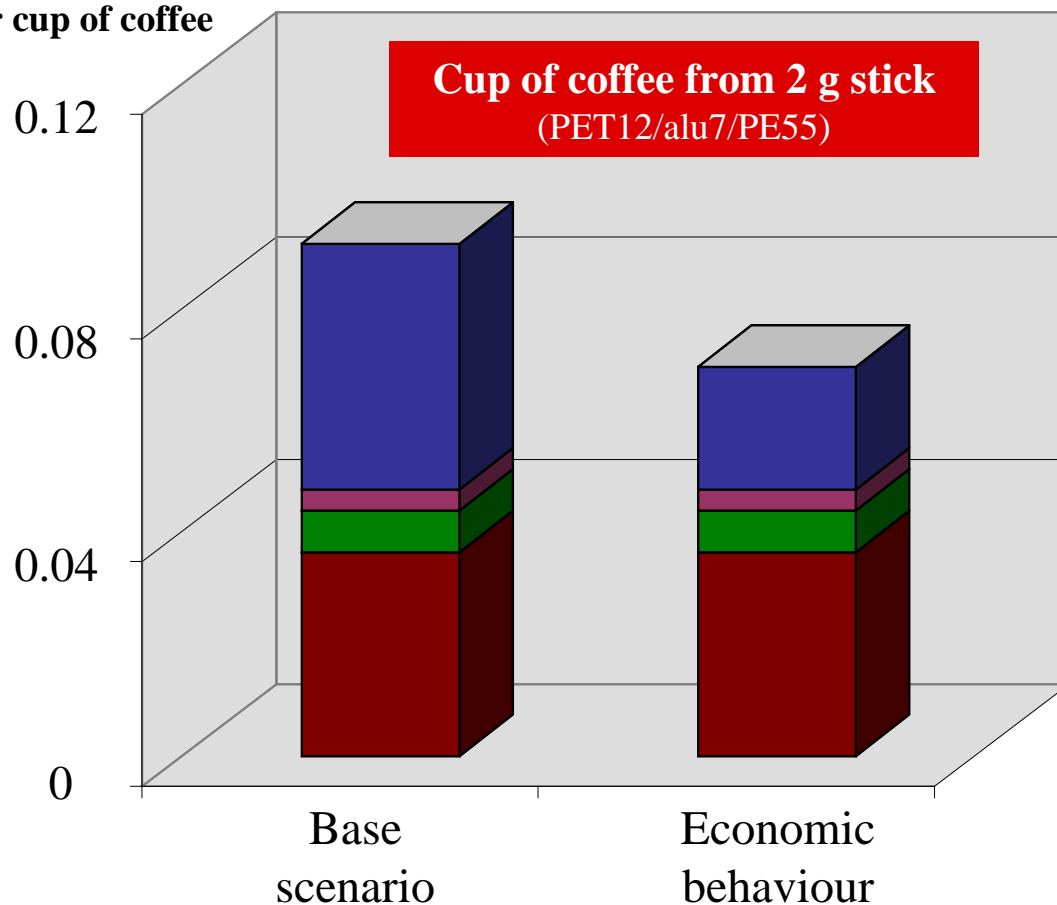
kg CO₂-equ.
per cup of coffee



Coffee supply system – CO₂ equivalents

Black Instant Coffee

kg CO₂-equ.
per cup of coffee



- Hotwater (Brewing)
- Transport
- Retail Packaging
- Coffee Production

First conclusions – coffee

- ☉ The contribution of the packaging in the food supply system with respect to CO₂ and other impacts is relatively low
- ☉ Production of coffee - as a highly processed good - has a relatively high share
- ☉ Portioned packaging (coffee stick) has a relatively higher share than family packs. However, they may contribute to the prevention of spoilage, thus even saving “overall” resources.
- ☉ Boiling of water considerably influences the performance of the supply chain
- ☉ Change of consumer behaviour can contribute to reduce the overall impact of the coffee supply chain.

The results depend on the specific filling good and the specific packaging system.

The contribution towards environmental impacts of the packaging in the supply chain depends on the process intensity of the food.

Integrated approach – Butter

- ◉ Wrap (Al/wax/paper) for 250 g and 15 g
- ◉ Functional unit is one kg butter ready for home consumption



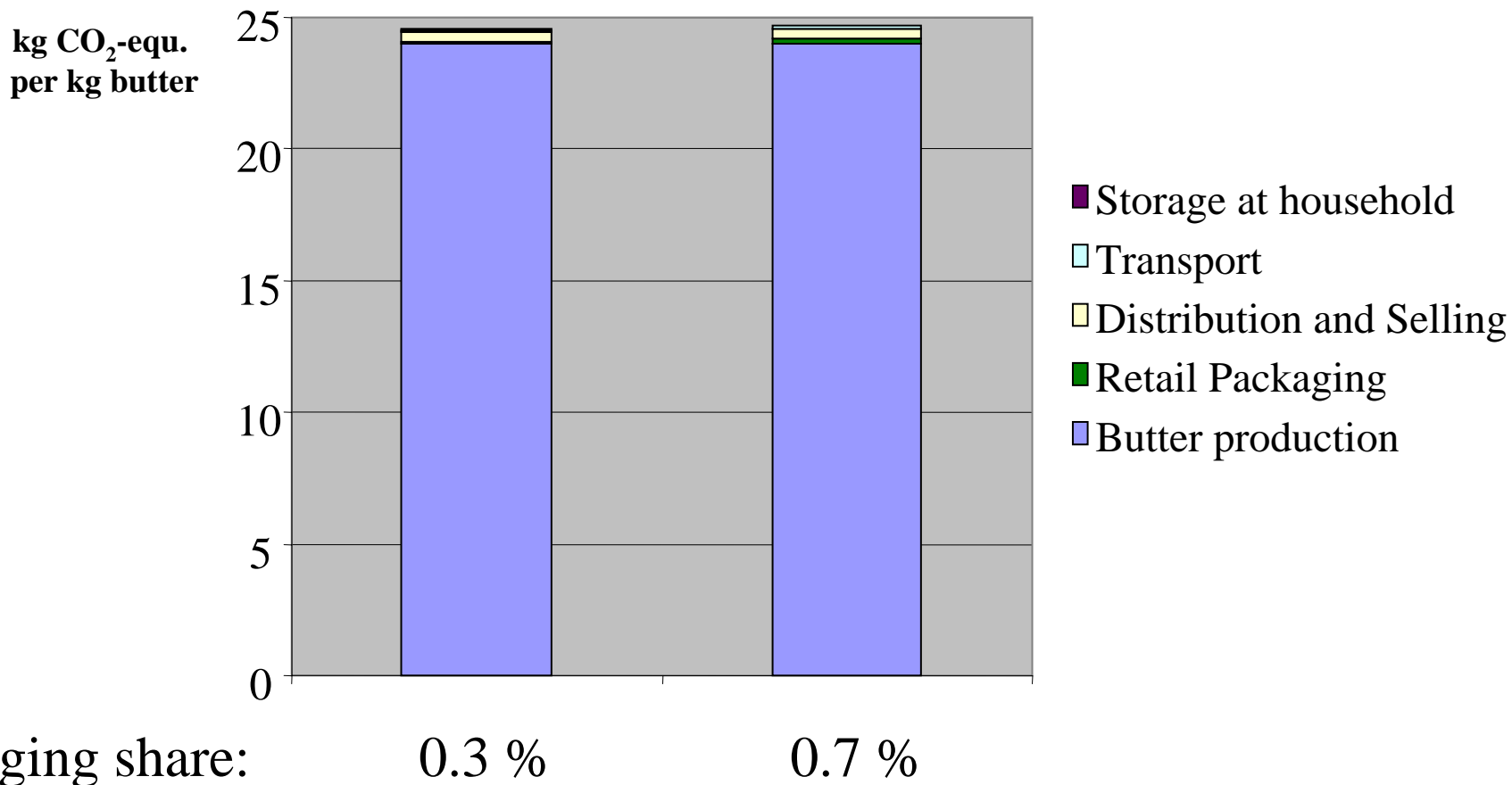
Butter supply system – CO₂ equivalents



250 g wrap



15 g wrap



First conclusions - butter

- ☉ Butter is a highly processed product
- ☉ Contribution of packaging is very low
- ☉ Packaging of butter is important to protect and preserve resources
- ☉ most relevant factors for the environment are: butter production and spoilage (especially leftovers)

General conclusions

- Society has developed from a local community to a global society; packaging contributes to satisfy human needs.
- Sustainable development is not only “the carbon footprint” of a specific product; it includes environmental, societal and economical aspects as well as interdependencies between those areas
- Life Cycle Assessment is good tool to get a better understanding of a product’s environmental performance; however, it refers only to the environmental part of sustainability
- An integrated approach gives a better insight in the supply system of goods; also allowing statements regarding the role of the consumer
- Collaboration of all stakeholders necessary to work towards sustainability: everybody has to play their part

Next steps

- ◉ **Investigate more products:**
 - Pet food in retortable foil tray
 - Household foil
 - Confectionery wrapped in foil
 - Dairy products with foil lidding
 - ...
- ◉ **Develop communication campaign**

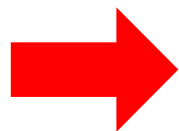
Key target: Resource efficiency

Shelf life ↑

→ **Spoilage at consumer level ↓**

→ **Resource efficiency ↑**

(even if additional packaging resources necessary)



**Broaden discussion from single focus on packaging's
CO₂ footprint towards sustainable food consumption**