Review of food LCA results and consumer recommendations on environmentally conscious consumption behaviour

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Objectives of the study

Review of LCA, PCF and Material Flows Analyses studies in view of the validity and universality of commonly used consumer recommendations regarding environmental sound consumption behaviour.

Consumer recommendations that have been followed in depth:

- ‚unpacked food is environmentally better than packed food'
- ‚locally produced food is much more environmental sound than food that has been transported longer distances'
- ‚industrially processed, ready prepared food causes much more environmental impacts than fresh prepared food'
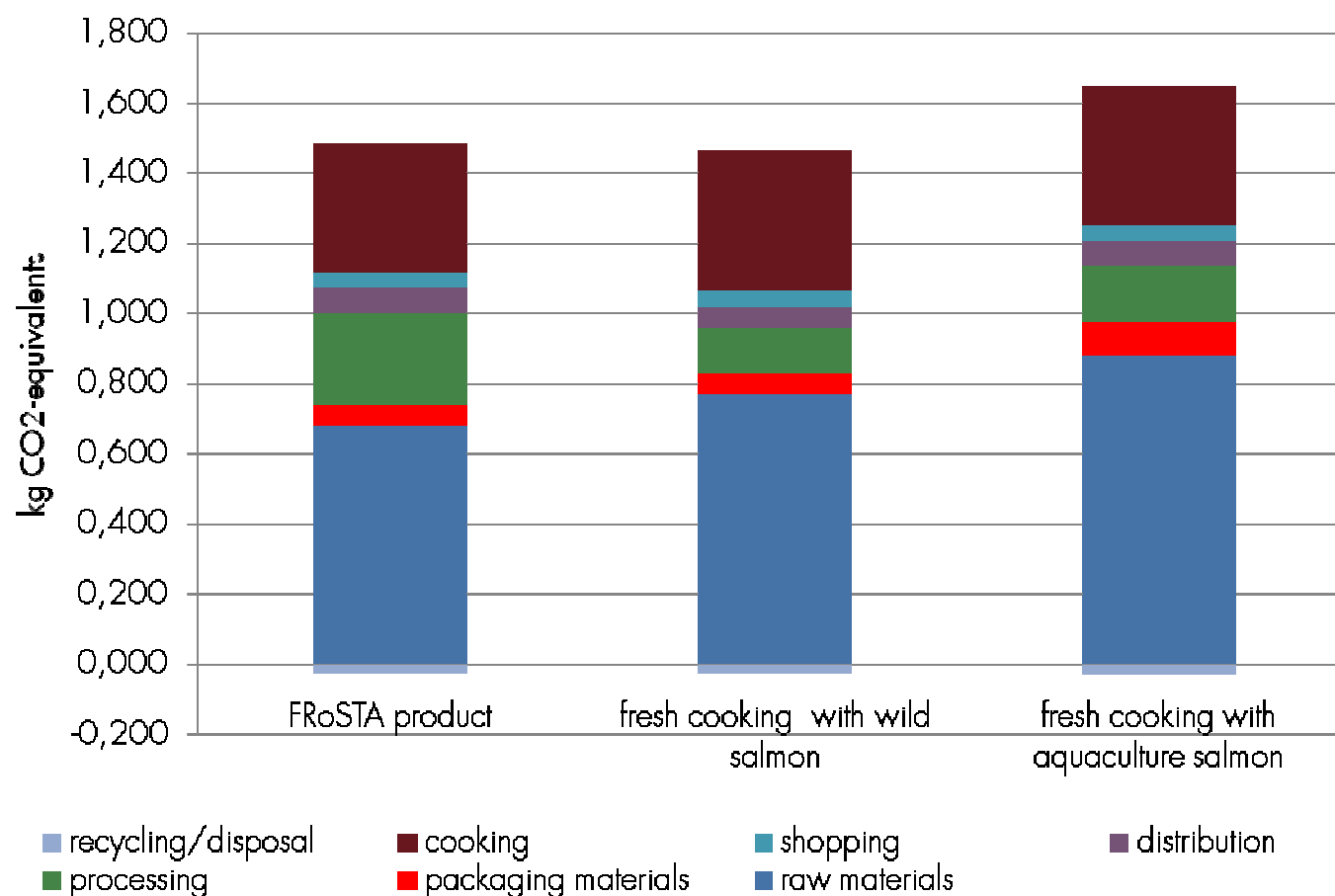
Packaged versus less or unpacked food

- Consumers' perspective: packaging reduction, in particular reduction of retail packaging, plays an important role in consumers' perception regarding the reduction of environmental impacts

- Results:

  - the contribution of packaging to the environmental impacts of food products is in most cases below 10%

  - packed food is not necessarily worse than unpacked food e.g. if the prevention of losses or spoilage is considered in the life cycle assessment
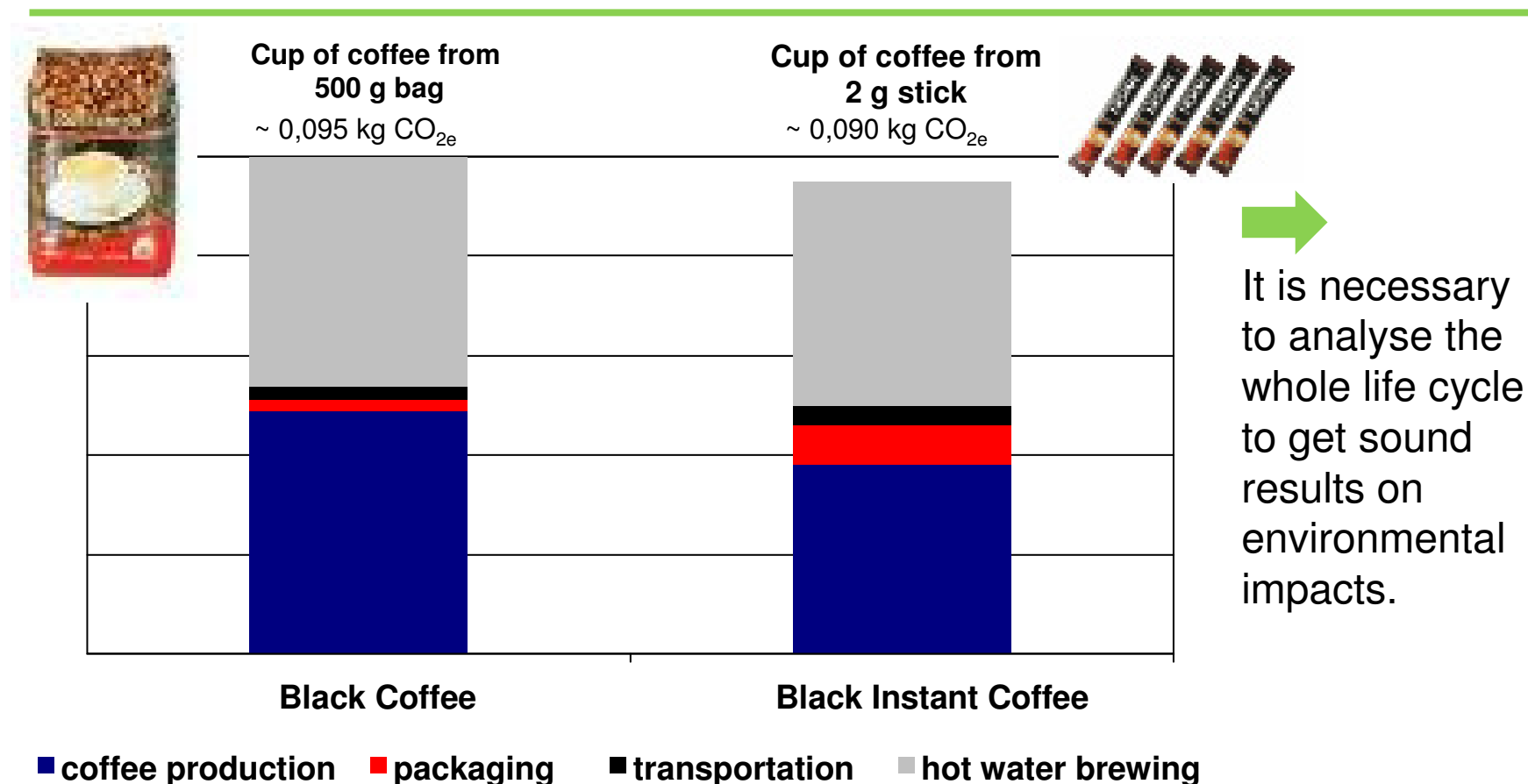
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Example: Tagliatelle Salmon

Share of packaging is between 5 and 6 percent.

Legend:
- recycling/disposal
- cooking
- shopping
- distribution
- processing
- packaging materials
- raw materials

Categories: FRoSTA product, fresh cooking with wild salmon, fresh cooking with aquaculture salmon

Y-axis: kg CO2-equivalent

Example: Coffee

Cup of coffee from 500 g bag
~ 0,095 kg CO_{2e}

Cup of coffee from 2 g stick
~ 0,090 kg CO_{2e}

It is necessary to analyse the whole life cycle to get sound results on environmental impacts.

Black Coffee

Black Instant Coffee

■ coffee production   ■ packaging   ■ transportation   ■ hot water brewing

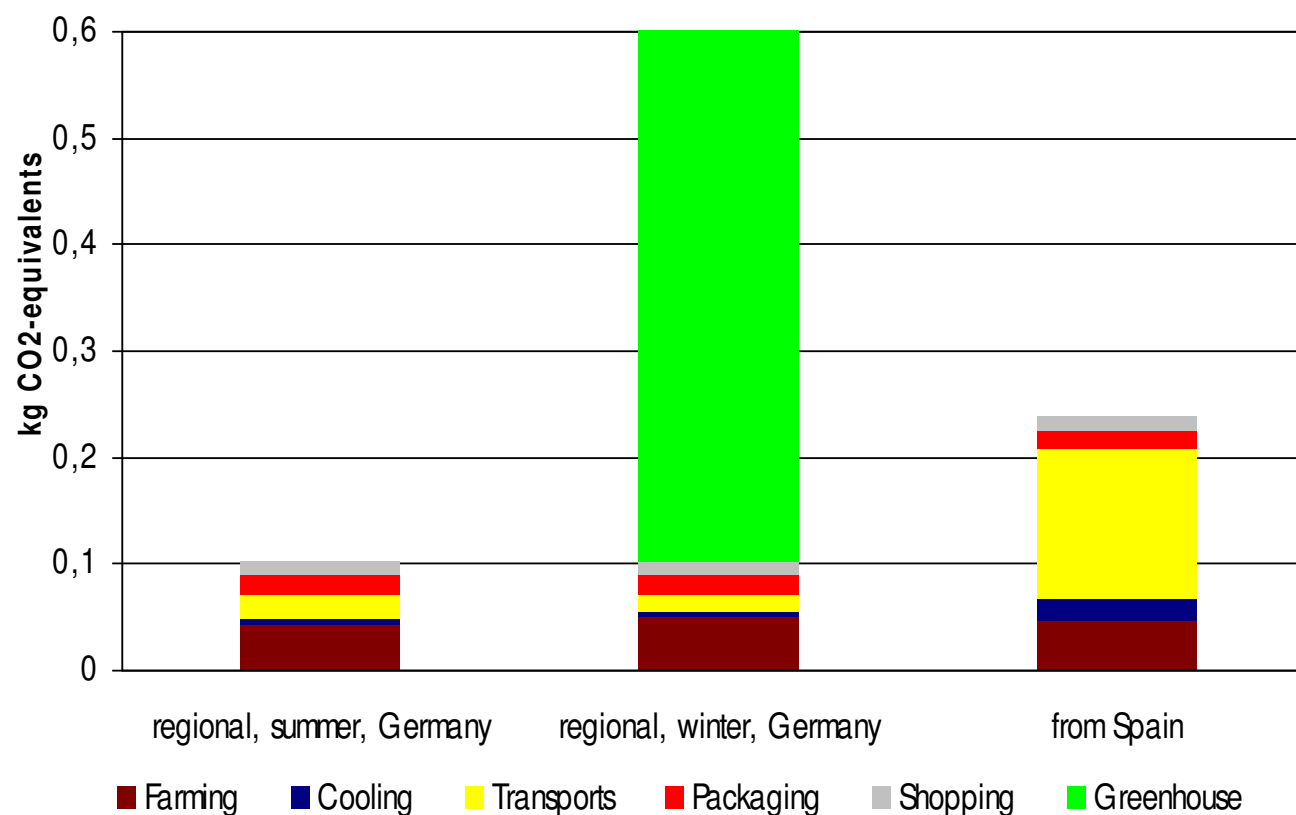Source: Büsser et al. 2008

Local food versus
food that has been transported long distances

- Consumers' perspective:
  - long transport distances mean high greenhouse gas emissions,
  - local = fresh = healthier
- Results:
  - it is not possible to get general recommendations under an environmental perspective which are valid for all food products with respect to 'local' versus 'global' food
  - in those cases where air freight is involved, transportation is always a relevant factor
  - distant production can explore environmental benefits (e.g. production efficiency) compensating efforts for transportation
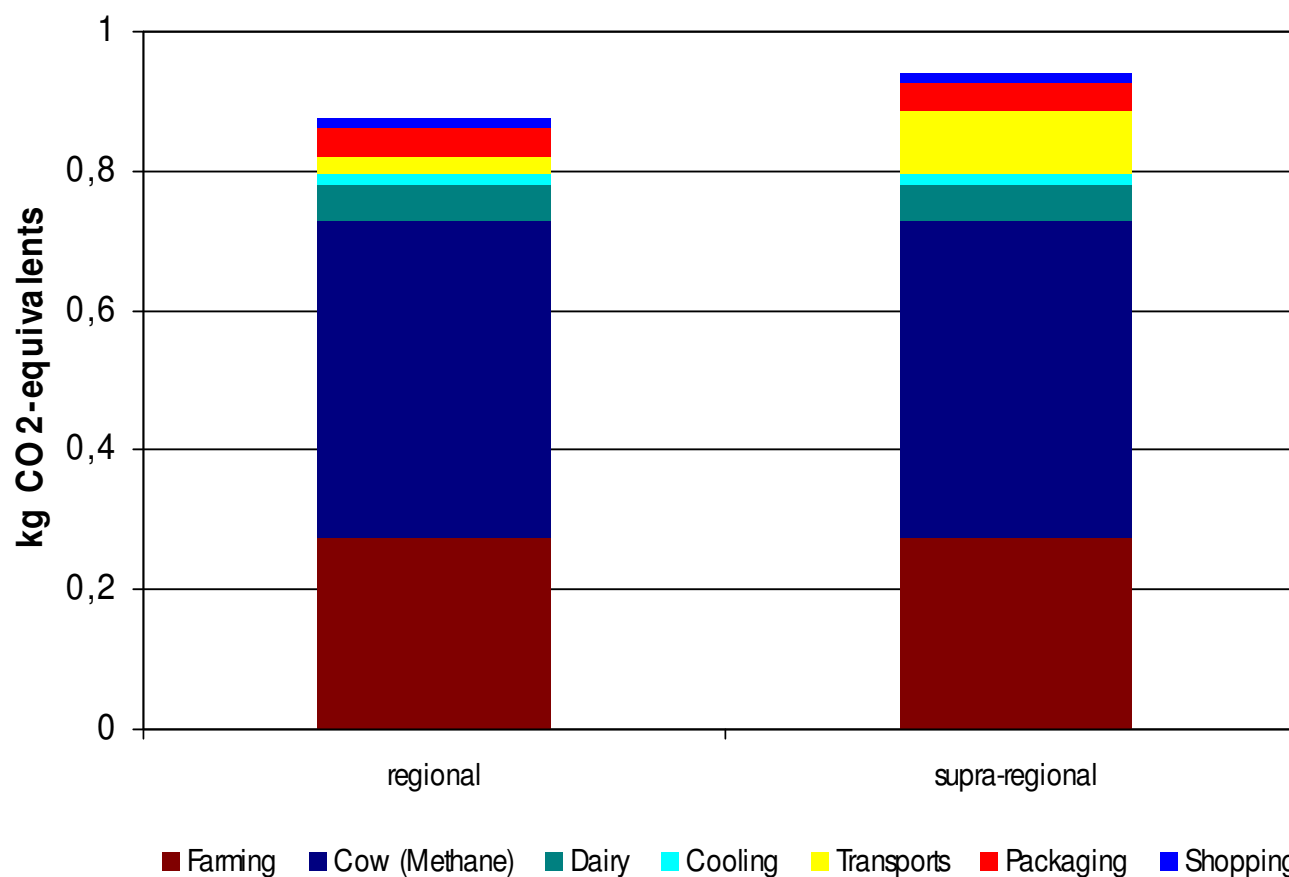
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Example: Salad

Recommendation depends on the season

Legend: Farming, Cooling, Transports, Packaging, Shopping, Greenhouse

X-axis: regional, summer, Germany; regional, winter, Germany; from Spain

Y-axis: kg CO_2-equivalents

Example: Milk

PCF is determined by transportation

Legend: Farming, Cow (Methane), Dairy, Cooling, Transports, Packaging, Shopping

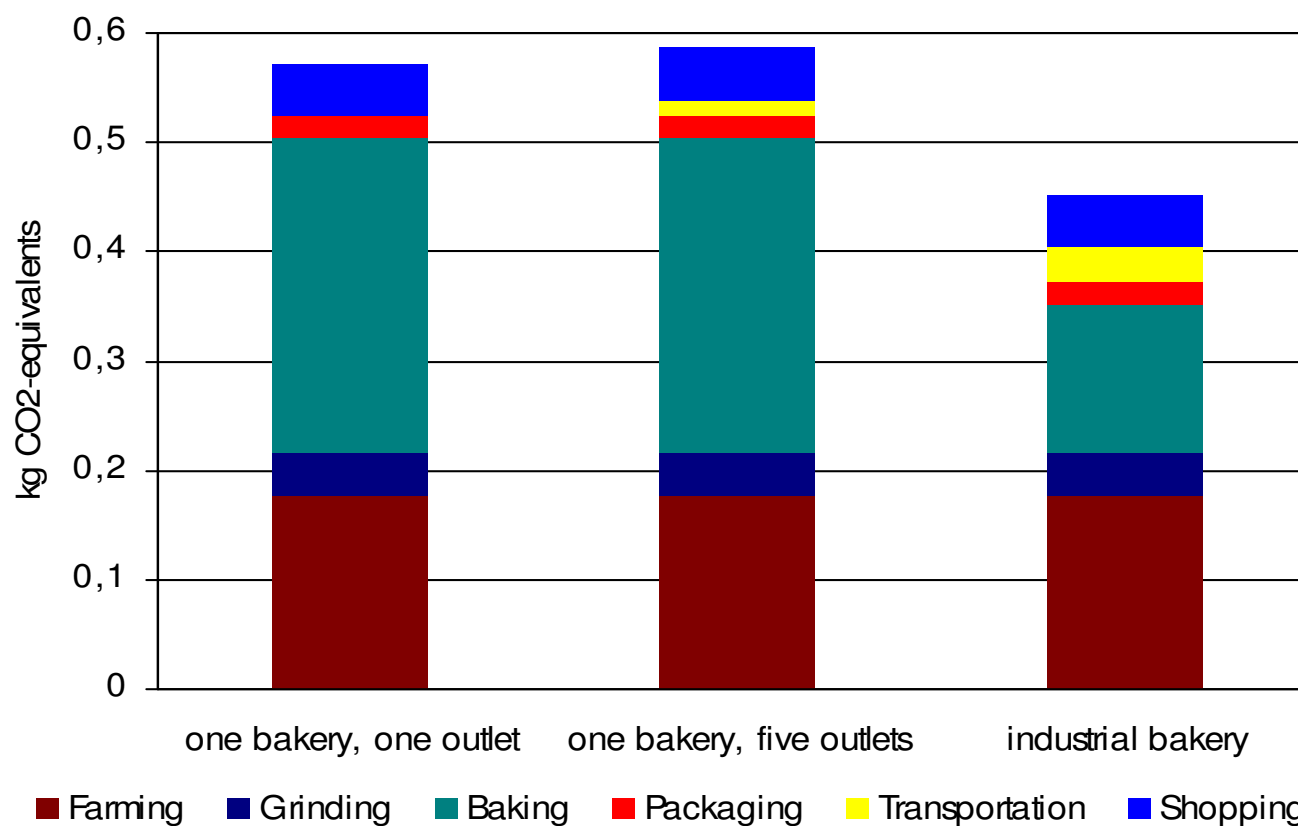Source: Reinhardt et al. 2009

Ready to eat products versus fresh prepared meals

- Consumers' perspective:
  - industrial processing, cooling/freezing needs more energy than fresh preparation at home
  - ready prepared food includes many food miles
  - fresh = healthier

- Results:
  - only few studies have compared fresh preparation at home with ready-to-eat products/meals
  - there is no evidence that ready meals are environmentally worse than freshly prepared food
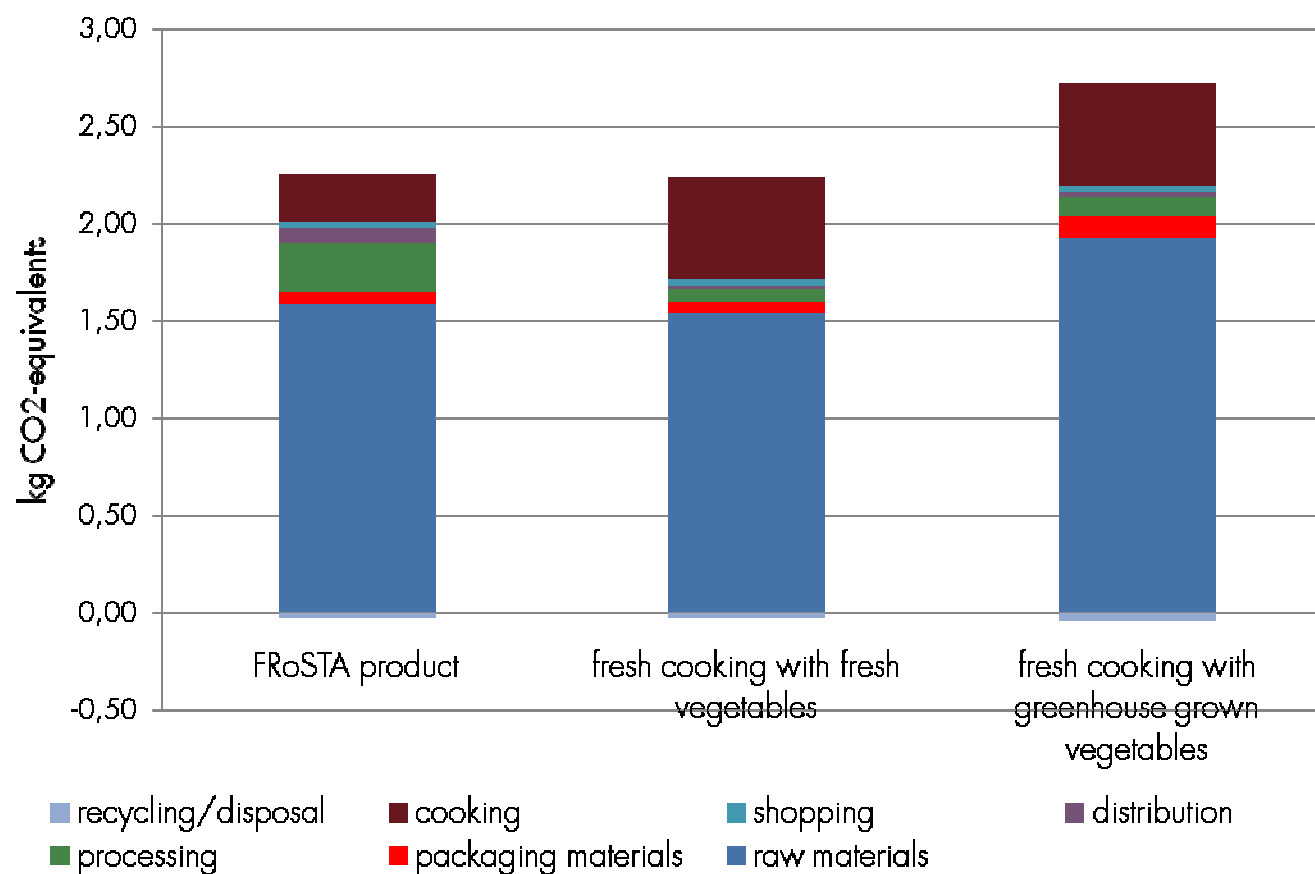
Example: Bread

PCF is determined by efficiency of baking process

kg CO2-equivalents

one bakery, one outlet   one bakery, five outlets   industrial bakery

■ Farming   ■ Grinding   ■ Baking   ■ Packaging   ■ Transportation   ■ Shopping

Source: Reinhardt et al. 2009

Example: Goulash Pan

PCF is determined by consumer behaviour

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Conclusions (I)

- For all three investigated recommendations the review shows that they are not applicable in general.
- General recommendations regarding environmental conscious consumer behaviour are difficult to obtain, much more if sustainable consumer behaviour is addressed.
- Valid recommendations for all products analysed:
  - food transport by aircraft causes high GHG emissions,
  - means of transport chosen for way to shopping influences PCF, as well as inefficient household appliances.
  - seasonal use of vegetables and fruits seems to reduce environmental impacts

Conclusions (II)

- There is a demand for recommendations with regard to healthy nutrition but also to environmentally conscious and ethically 'correct' behaviour.

- To deduce consumer recommendations that really contribute to more sustainability not only a differentiated view on results from scientific studies is necessary, but also an integrated view keeping in mind consumer behaviour and wishes/interests and considering further environmental and sustainability aspects.

- Results need time to become known and believed.

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Thank you very much!

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