ONE TWO WE
Life cycle management in canteens together with suppliers, customers and guests

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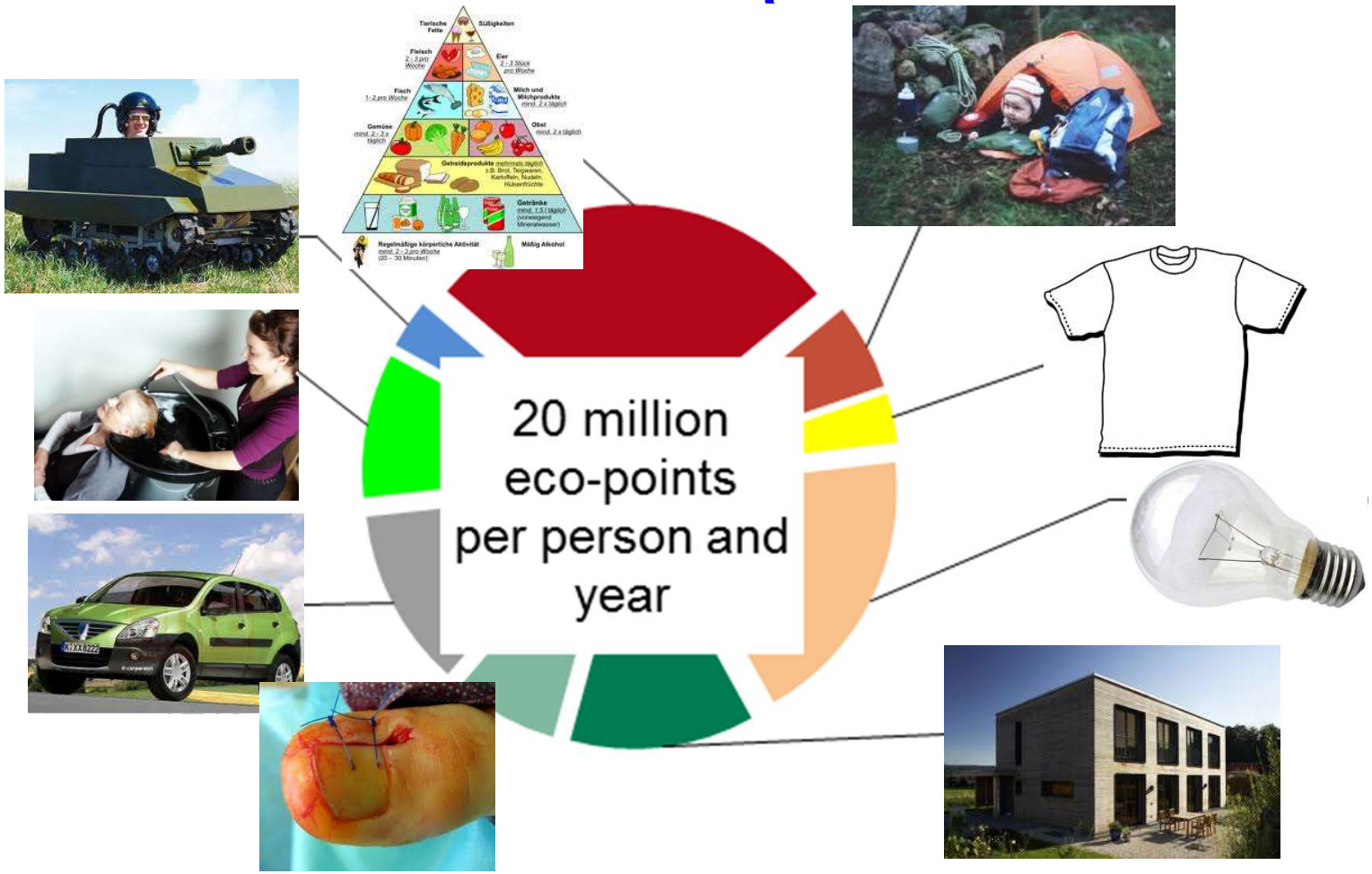
ESU-services Ltd.

- Founded in 1998 as an ETHZ spin-off
- 3 co-workers
- Long time experience since 1994 with life cycle assessment (LCA)
- Clients from industry, NGO, administration, universities

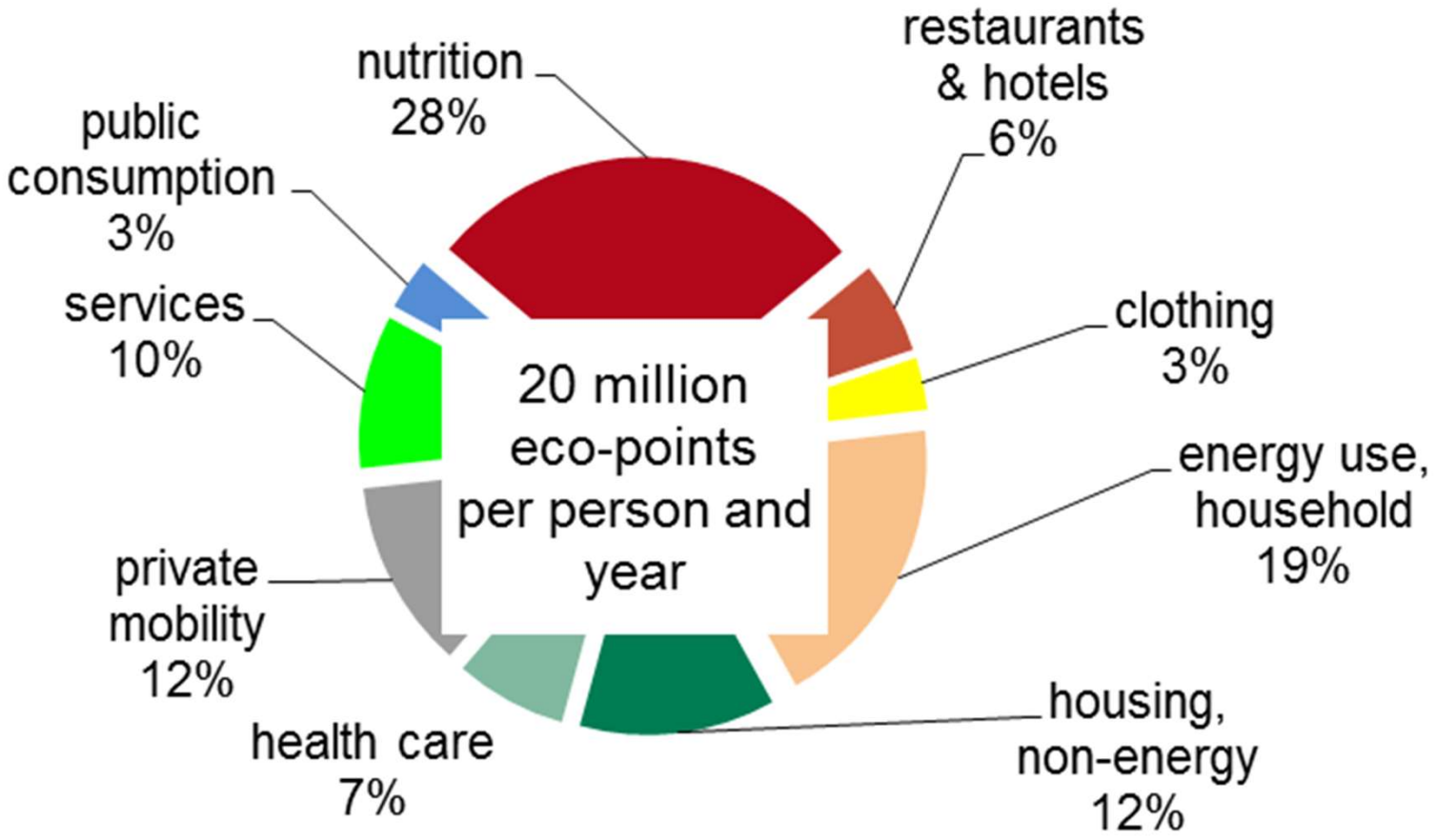
Our services

- Full-scale Life Cycle Assessments (LCA)
- Tiered LCAs
- LCI data acquisition and management (data-on-demand)
- LCA project management
- Ecolabelling concepts
- Literature surveys
- Critical peer reviews
- LCA training & coaching
- Regional SimaPro Centre (LCA software)

Share of consumption areas



Share of consumption areas



- Nutrition is the most important consumption area with 28%
- Share of restaurants in separate category and not in nutrition

Goal and Scope for the project commissioned by the canteen operator SV group

- Total food purchases
  - in 240 canteens
  - for 19.2 million meals
  - worth more than 150 Mio. CHF
- Functional unit: 1 meal served
- Share of different types of ingredients?
- Improvement potentials developed together with WWF and ewz (energy supply)

Data collection in a modular LCA

- Inventory of 12’000 articles purchased from different suppliers
- Total purchase of 21’000 tonnes food and non-food
- Linked to 200 different type of products in ESU data-on-demand database
- Further coverage of packaging, type of conservation, origin and mode of transport

ESU-services global food database

- First work on cooking in India (1994-1995)
- Further development with Ph.D. thesis of Niels Jungbluth on meat and vegetable consumption in CH (1996-2000)
- Several projects of ESU-services for extension
- Today more than 2000 datasets related to food consumption
- Background data and methodology according to ecoinvent v2.2
- Data can be provided for SimaPro
- Costs depend on number and documentation

Contents ESU data-on-demand

- Simplified agricultural production services: application of fertilizers
- Vegetables: spinach, salad, tomatoes, lettuce, potatoes, onions, asparagus, etc.
- Fruits: apples, strawberries, cherries, grapes, oranges, vine, melons
- Animal products: pork, veal, beef, lamb, poultry, eggs
- Dairy products: butter, milk, milk powder, yoghurt, cheese

Contents (Part 2)

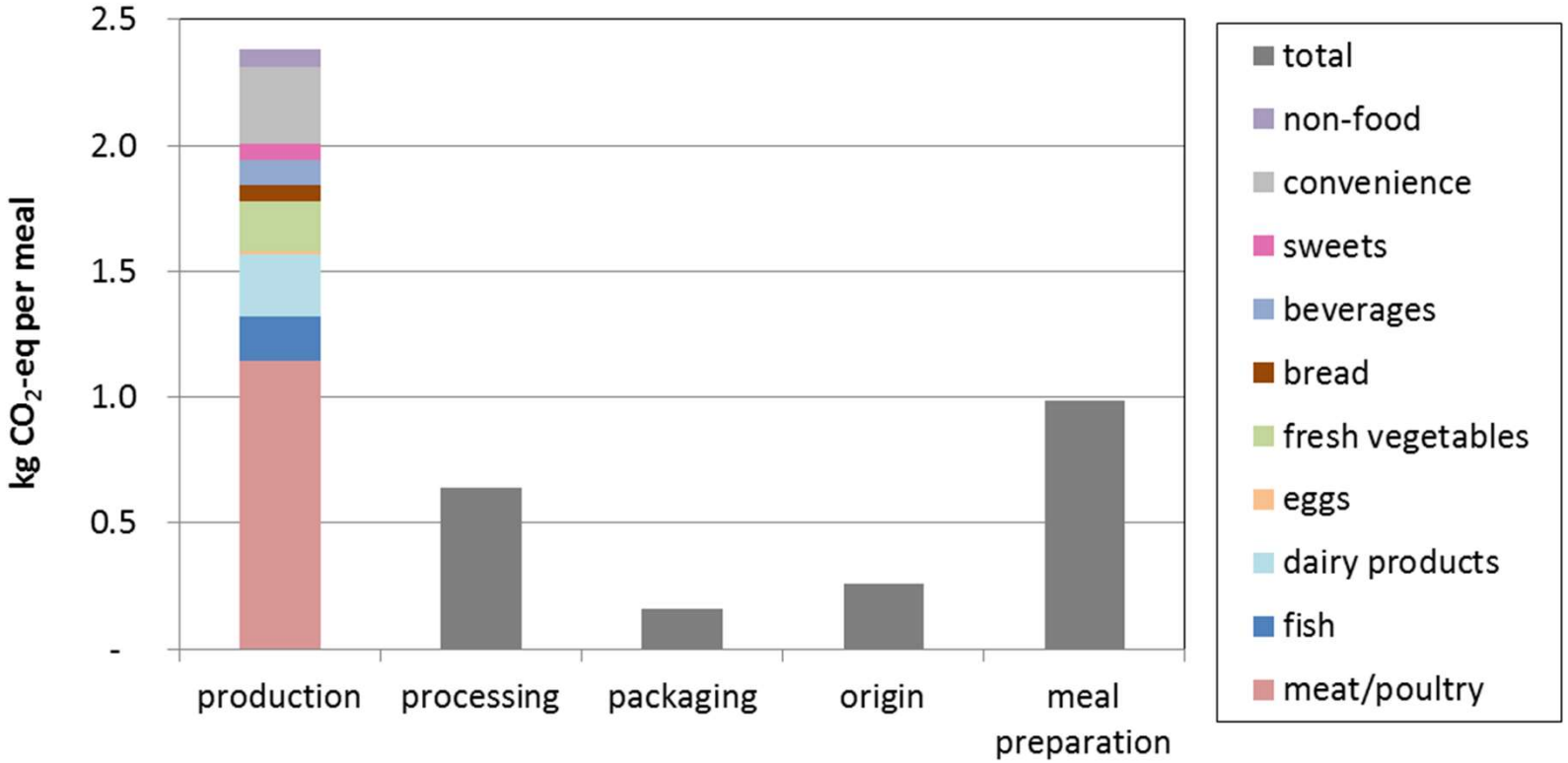
- Drinks: apple & orange juice, mineral water, tap water, beer, wine, milk, coffee
- Sweets: chocolate, cake, ice cream
- Meals: canteen, home-made, ready-to-eat
- Household appliances: cooking stoves and ovens, microwaves, refrigerators, carbonisation devices, coffee machine
- Food consumption: packages, transports, cooking, consumption patterns
- Pet food: cat food

Composition of the average canteen meal

Product group	grams per meal
meat/poultry	108
fresh vegetables	310
bread	108
dairy products	135
eggs	5
fish	21
sweets	32
convenience	137
beverages	225
non-food	42
Share organic	*<1*
Share CH/ship/air-transported	*61% / 9.5% / 0.5%*

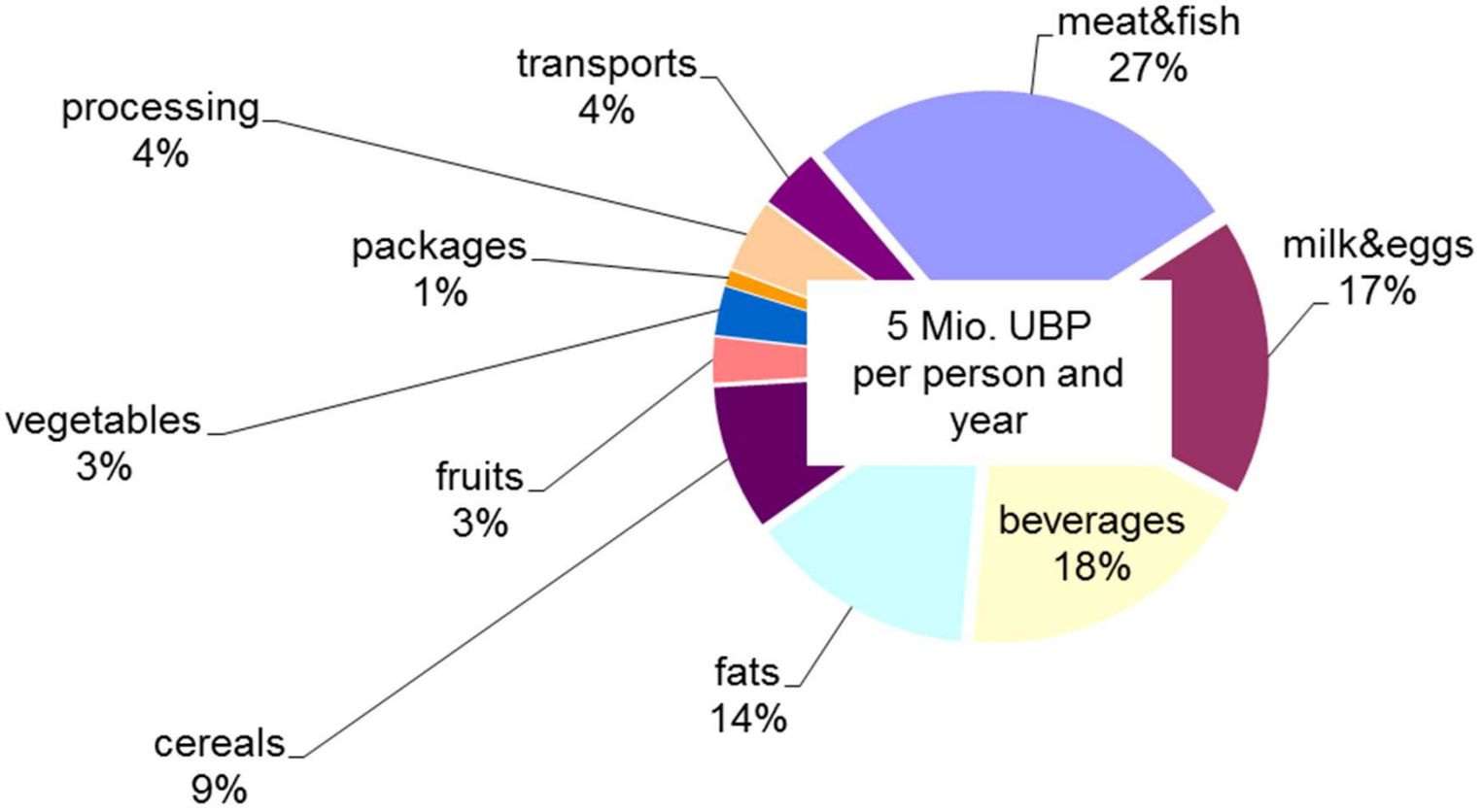
GWP of meal preparation in canteens

87.000 t CO2-eq per year (66.000 t CO2-eq goods and 21.000 by preparation)



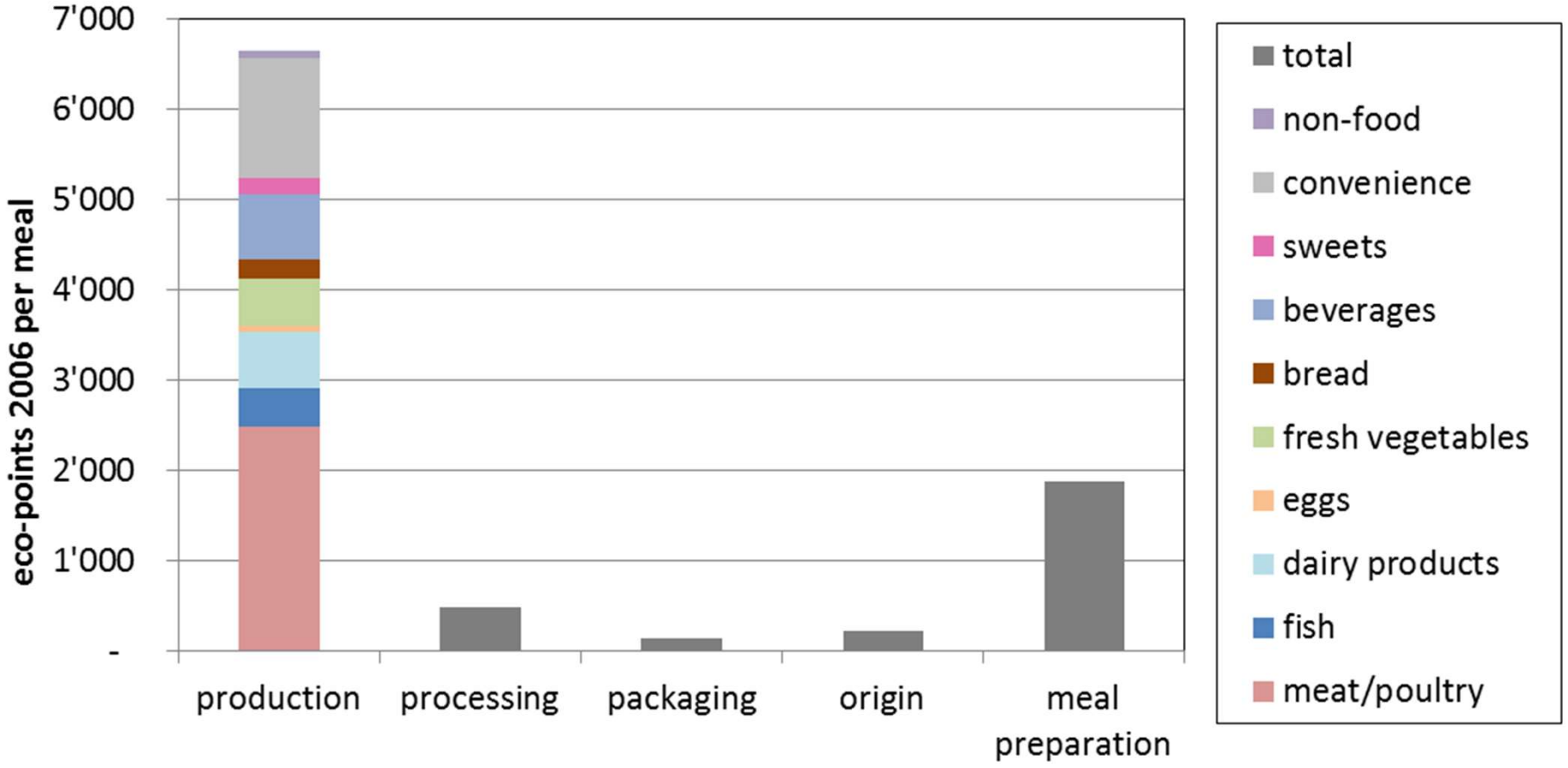
- Production of food much more important than preparation
- Meat and fish dominate the results with more than 50%

Average product groups within nutrition



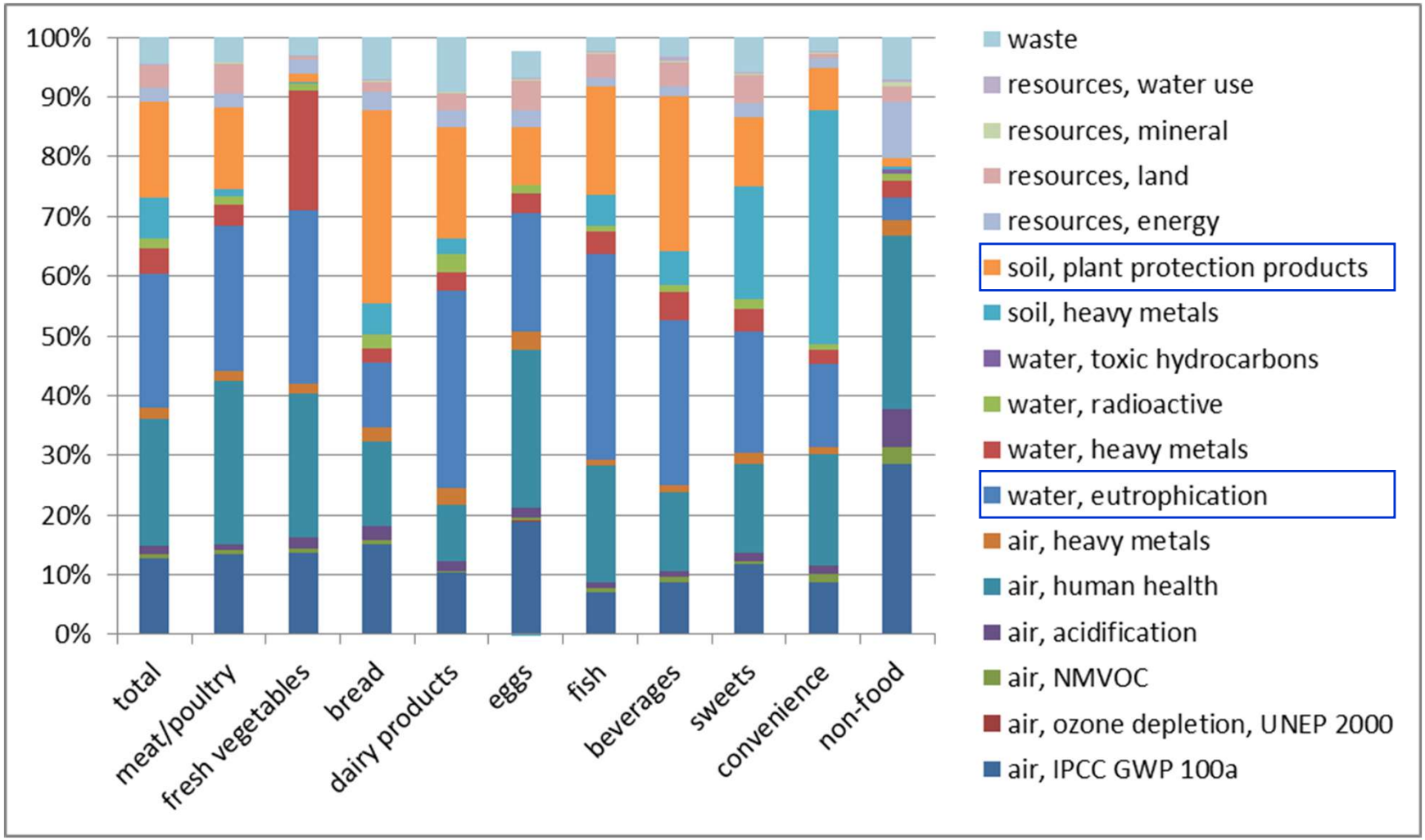
- Meat and animal products cause 44% of total impacts
- Wine, coffee and beer are important for beverages

Full LCIA of total purchases per meal



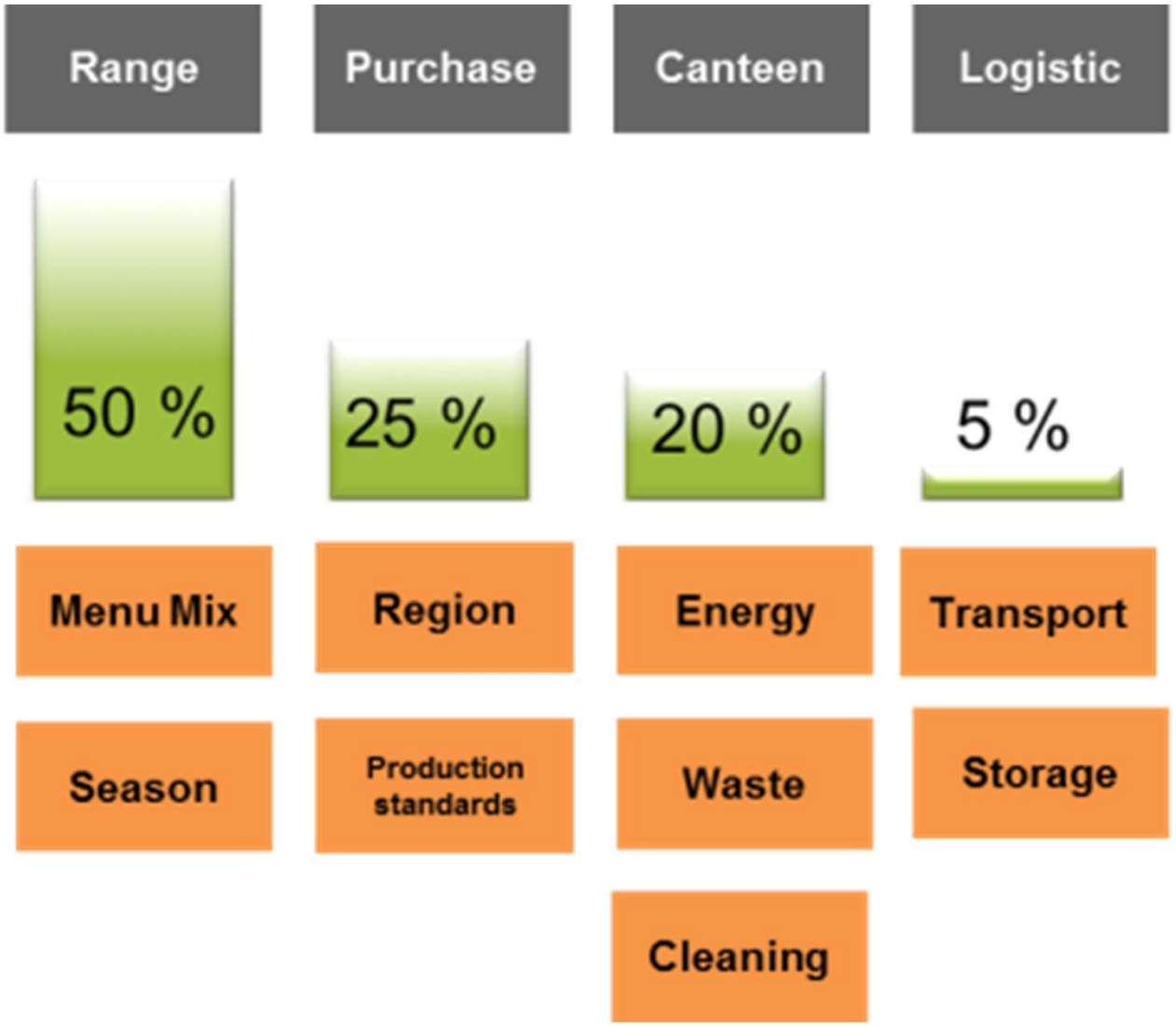
- Supply chain and agricultural production even more important in a full LCIA

Relevance of category indicators



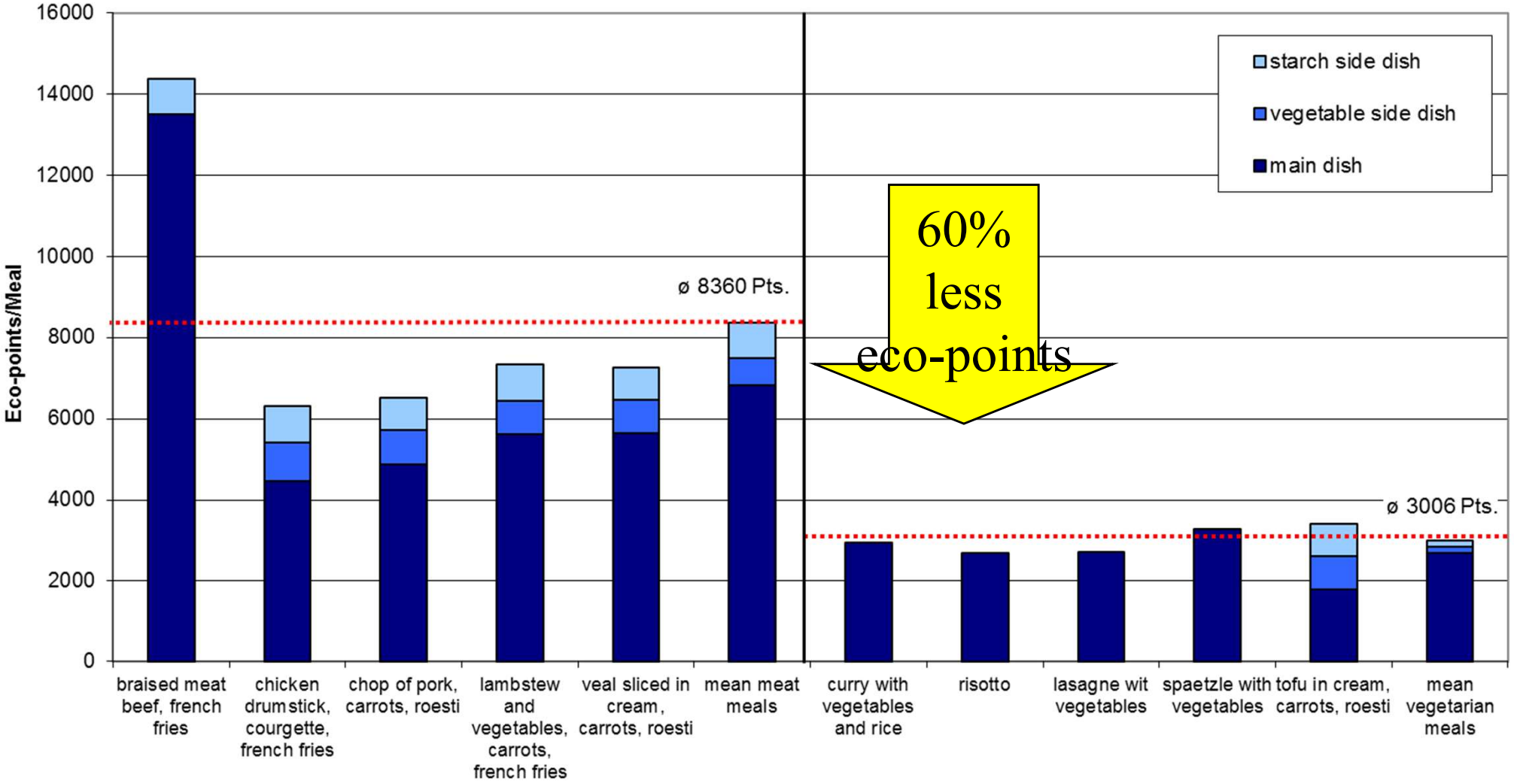
- Plant protection, eutrophication, NH3 are aspects in agriculture

The programme ONE, TWO, WE



- Customer can choose between improvement options for their canteen

Improvement: Vegetarian canteen meals



- Vegetarian meals reduce the environmental impacts considerable

Improvement: Season calendar for fruit and vegetables

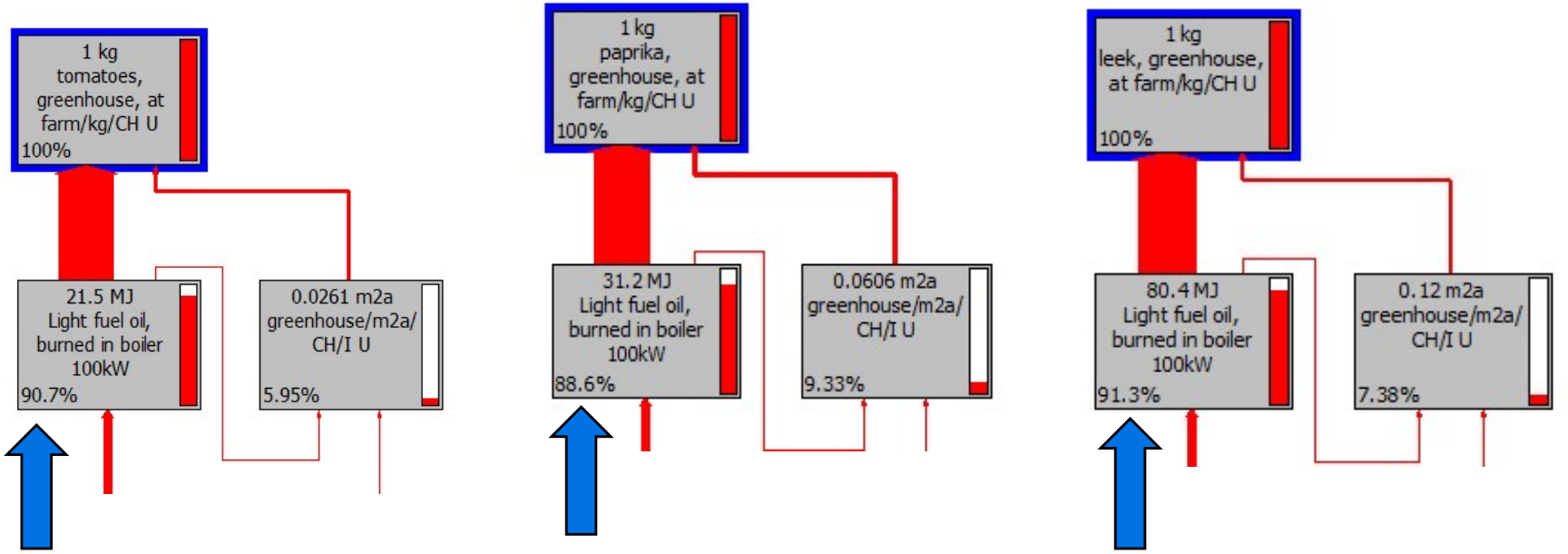
kg CO2-eq per kg good		Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Broccoli	CH-Lorry	n.a.	n.a.	n.a.	n.a.	0.6	0.6	0.6	0.6	0.6	0.6	0.6	n.a.
	ES-Lorry	7.2	7.2	0.9	0.9	0.9	n.a.	n.a.	n.a.	n.a.	n.a.	0.9	7.2
	IT-Lorry	7.1	7.1	0.7	0.7	0.7	n.a.	n.a.	n.a.	n.a.	n.a.	0.7	7.1
Broccoli deep frozen	CH-Lorry	0.70	0.72	0.74	0.77	0.66	0.66	0.66	0.66	0.66	0.66	0.66	0.68
Green asparagus	CH-Lorry	n.a.	n.a.	n.a.	1.5	1.5	1.5	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	ES-Lorry	n.a.	n.a.	n.a.	1.7	1.7	1.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	PE-Air	12.8	12.8	n.a.	n.a.	n.a.	n.a.	12.8	12.8	12.8	12.8	12.8	12.8
	US-Air	n.a.	9.7	9.7	9.7	9.7	9.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Assessment of global warming potential

Season calendar to assess monthly routes

Main difference: heating greenhouse and air freight

Cultivation in heated greenhouses
State of the art



Average 90% of GHG emissions

Heating modelled with light fuel oil

Independent from product cultivated and region

Cultivation in heated greenhouses
Knowledge gap - Improvement

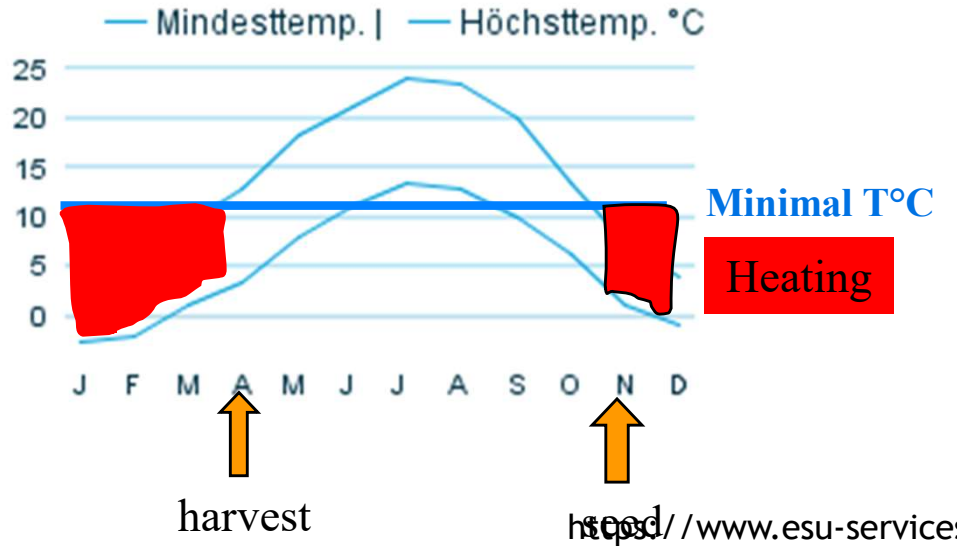
Fuel use?

➡ Questionnaire to producers, statistics

Heating energy requirement?

➡ Estimate heating energy requirement

- sowing period
- growing period,
- minimal temperature
- yield



Main Improvement options followed up

- Less meat per meal and more vegetarian meals
- Supply chain management for vegetables from heated greenhouses
- Reduction of air-transportation
- Less food waste

➢ Each customer can choose the extra services and offers for their canteen

➢ Goal: 10% less CO2-eq or -6000 tonnes in 2015

Status after the first year

- 42 canteens participating
- 418 Tonnes of CO2-eq saved, 5.5% reduction
- SV purchased 54 tons less meat and fish and at the same time 35 tons more vegetables
- Reduction of 35% air-transportation saved 5 tonnes of CO2-eq

Congratulations to our customer SV Group winning the Zurich climate prize 2013

Further information at:

https://www.esu-services.ch/projects/lcafood/onetwowe/

https://www.one-two-we.ch/

Thank you very much for your attention