Carbon Footprint of dairy products

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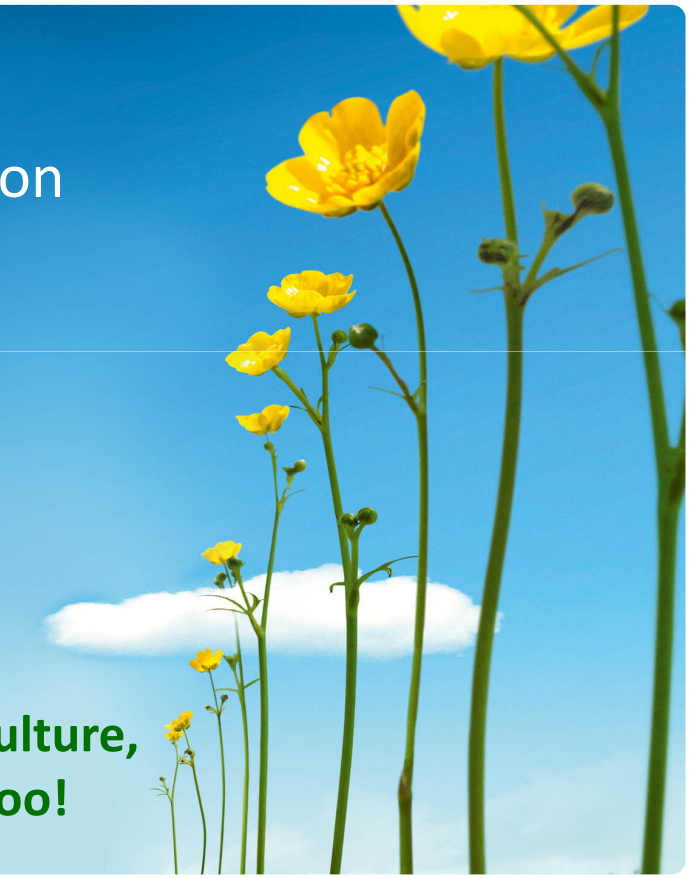
Anna Flysjö, PhD student vid Arla Foods & Aarhus Universitet

Arla Foods Environmental/Climate strategy

We want to reduce our greenhouse gas emissions by 25% before 2020

- 25%

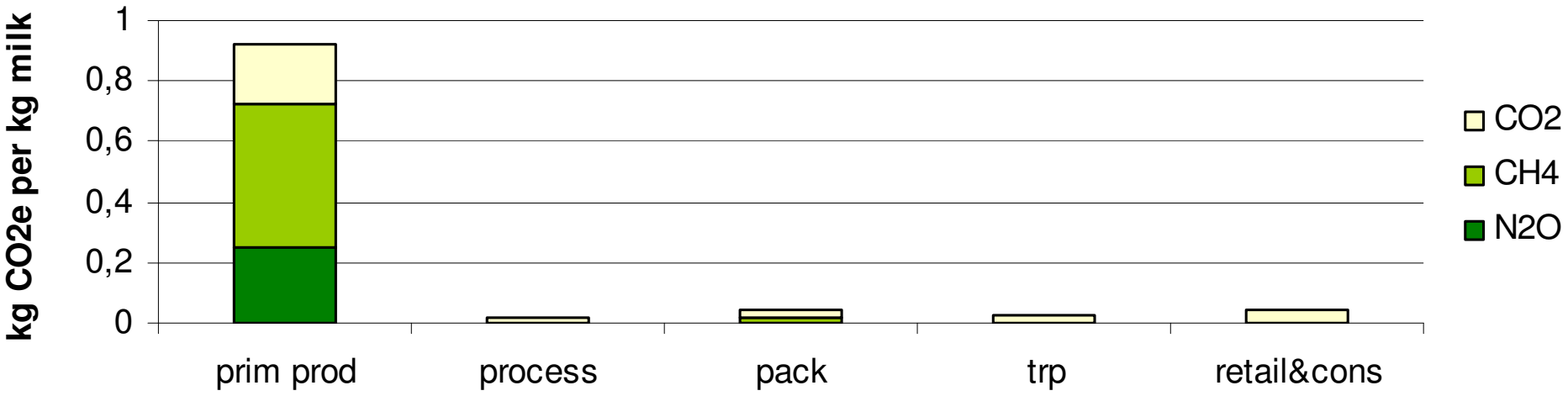
- ✓ Food production
- ✓ Transport
- ✓ Packaging



…do not yet have a numeric target on agriculture, but we will reduce GHG emissions there too!

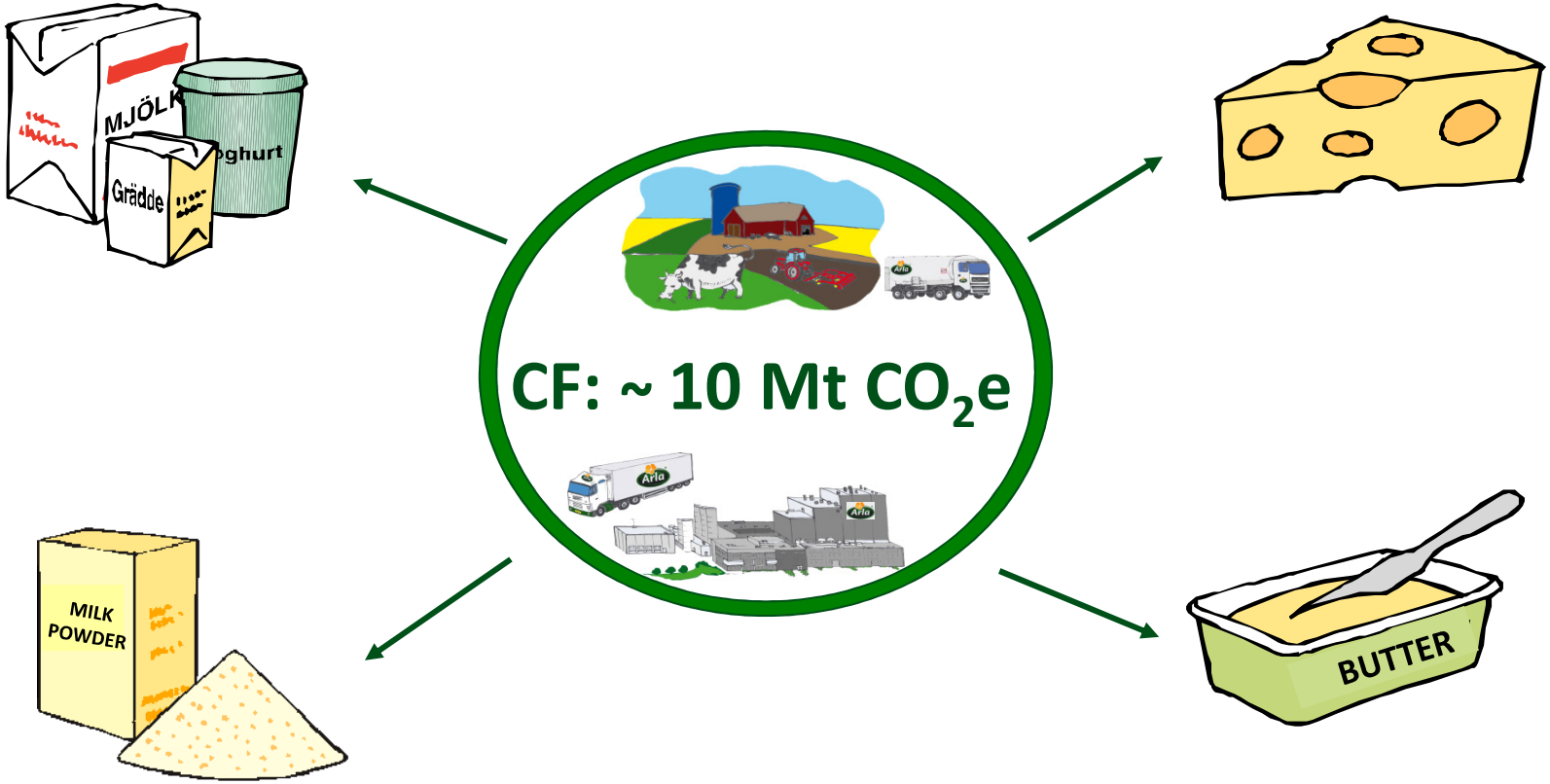
Calculating the Carbon Footprint

Primary production	Processing	Packaging	Transport	Retail & consumer
CO2 x 1 CH4 x 25 N2O x 298	CO2 x 1	CO2 x 1	CO2 x 1	CO2 x 1



source: LRF 2002

Purpose: Develop a model to follow reductions at product level

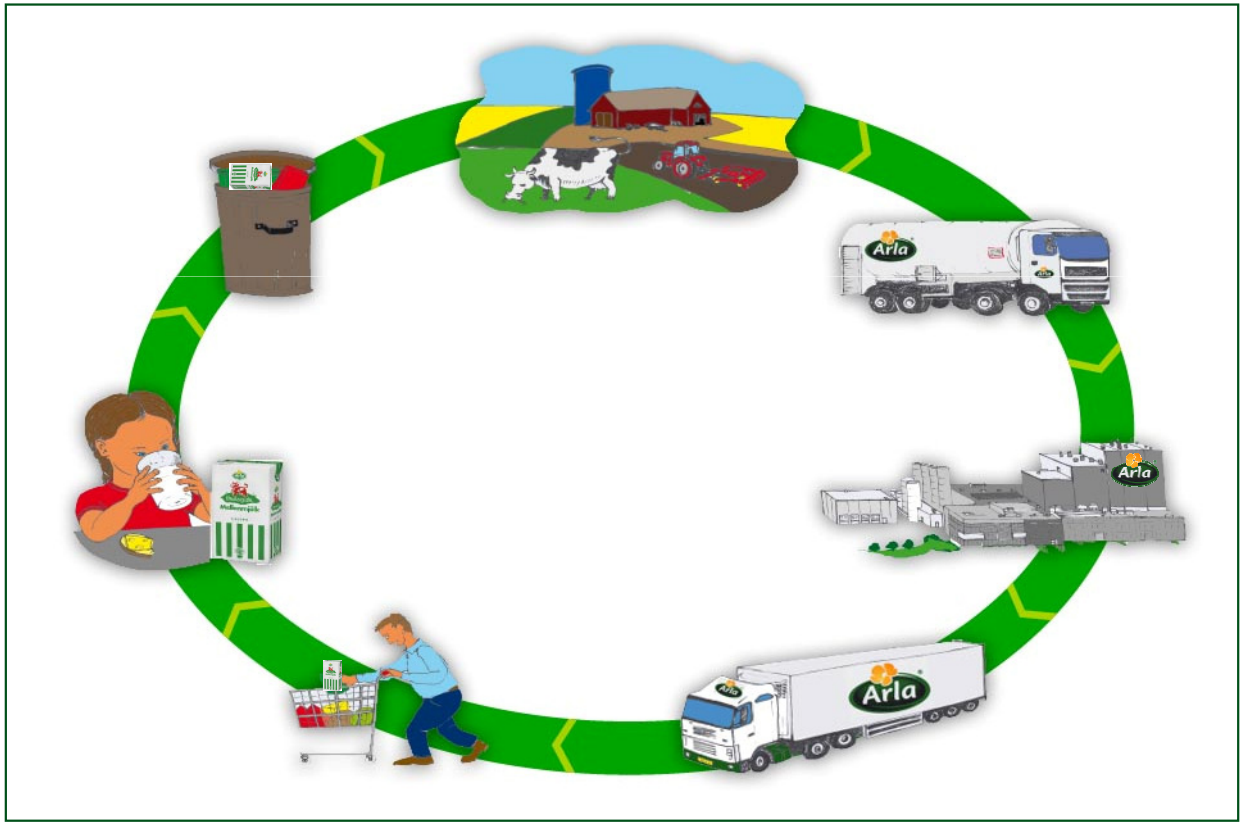


How shall total CF be allocated to different products?

Methods: Carbon Footprint (CF) / Life Cycle Assessment (LCA)

Assess the greenhouse gas emissions for the whole lifecycle of a product, 'from cradle to grave'.

INPUTS:
Energy
Materials
Chemicals
Others



OUTPUTS:
Emissions
to air,
water,
soil
Waste
Waste water

Model: Allocation of inputs

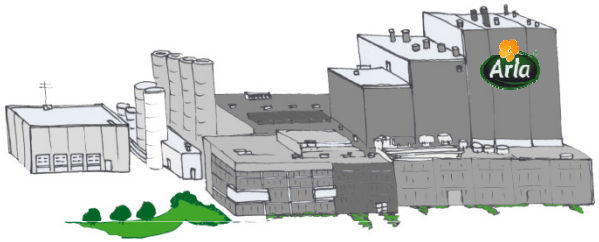
Raw milk

Energy

Ingredients

Packaging

Transports



Fresh dairy products
- Milk
- Yoghurt

Butter & spreads
- Butter
- Blend

Cheese
- Yellow cheese
- White cheese
- Mould cheese
- Soft cheese

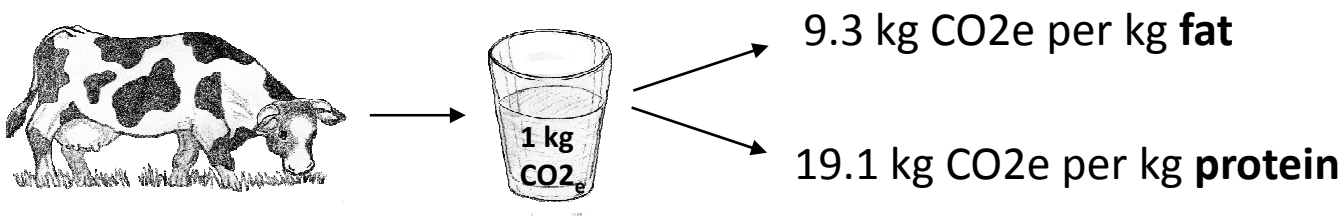
Powder
- Whole milk powder
- Skim milk powder
- Whey powder

Raw milk stands for ~85% of total CF

Allocation of raw milk to dairy products

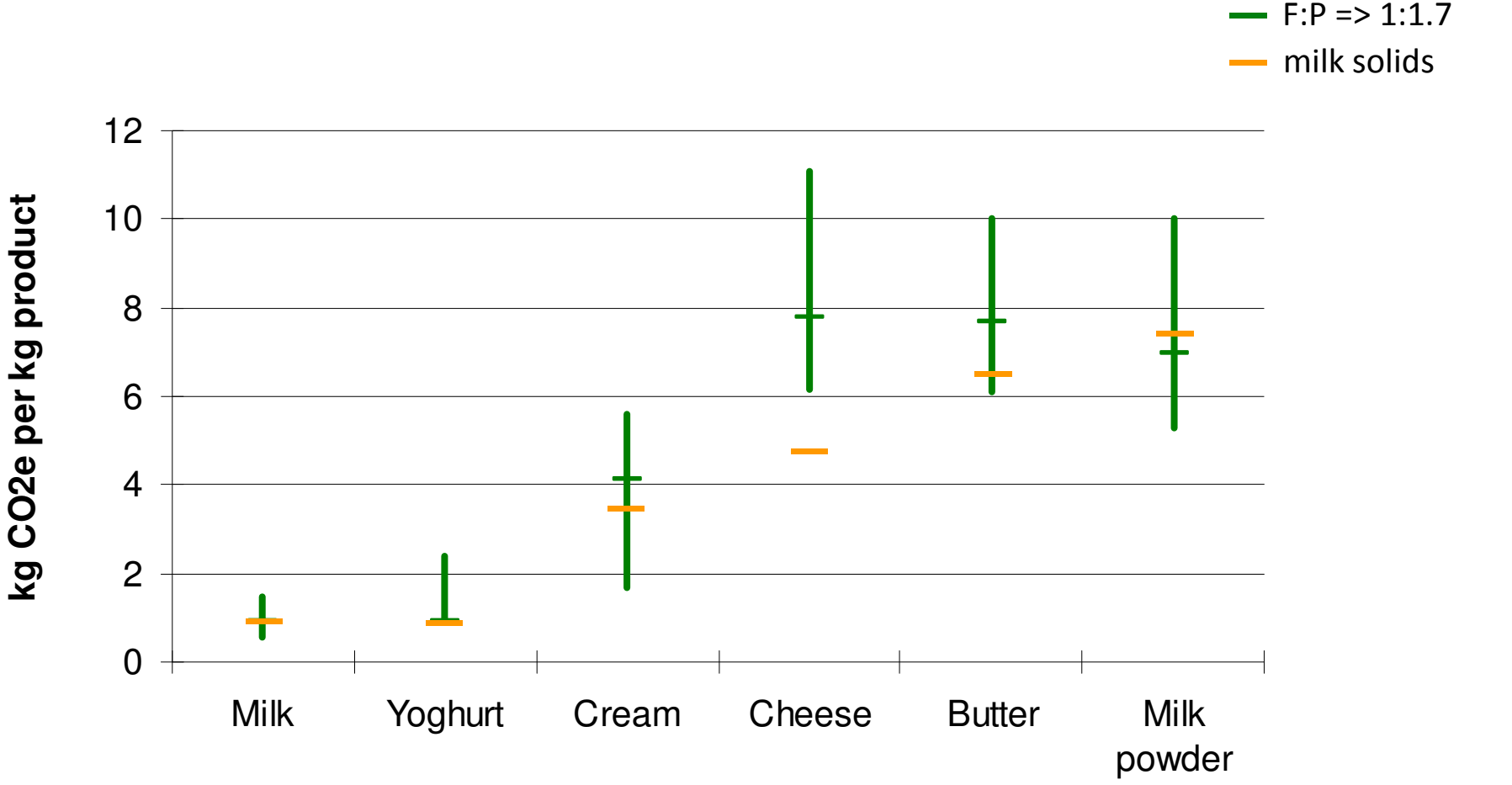
- System expansion
- Economic allocation
- Allocation based on milk solids *(Feitz et al., IDF, Carbon Trust)*
- Allocation based on fat and protein content

Allocation based on weighted fat and protein content (1:1.7)



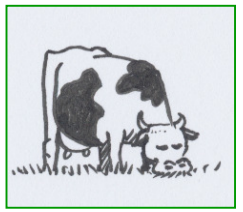
Summary of CF for different dairy products

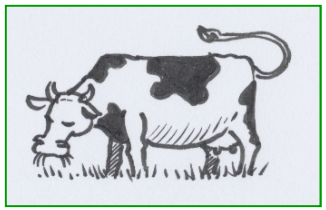
(different allocation and methodological assumptions!)



Based on own estimates and Berlin, 2002; Högaas Eide, 2002; Flysjö, 2011; Nilsson et al., 2010; Sheane et al., 2011

Summary & further things to consider





- How raw milk is allocated between dairy products are crucial for the CF!

- Is it possible to only have one model?
- Will this ‘top-down’ model match a ‘bottom-up’ model?
- Should all dairy products be considered as ‘determining products’?

- Important to be transparent and show underlying assumptions when communicating CF results.