



Estimating the greenhouse gas footprint of Knorr products

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WE WORK TO CREATE A BETTER FUTURE EVERY DAY

We help people feel good, look good and get more out of life with brands and services that are good for them and good for others.

We will inspire people to take small everyday actions that can add up to a big difference for the world.

We will develop new ways of doing business that will allow us to double the size of our company while reducing our environmental impact.

- Challenge: decoupling growth from impact
- GHG emissions estimated along the life cycle
- Unilever target: reduce own GHG emissions by 25% (2004-2012)
 - Achieved reduction: 41% between 1995-2009
- Commitment to sustainably source 100% of agricultural raw materials

September 2010: Unilever leads the Dow Jones Sustainability index for the Food and Beverages sector for 12th consecutive year



Challenges of assessing a brand portfolio



- Sold in ca. 90 countries
- >7,500 Stock keeping units
- Ingredients sourced globally
- Data gaps: ingredients & technologies
 - Consumer habits variable!





Assessing Knorr's GHG footprint

Objectives:

- Understand where impacts arise across the Life Cycle of Knorr products
- Identify ways to reduce GHG emissions
- Evaluate the impact of the brand's innovation strategy
- Communicate impact & reduction efforts



Meta-Product Approach



- Products grouped by type & by packaging format:
 - Soups / bouillon / drink shots etc.
 - Cans / Liquid cartons / glass jars / sachets etc.
- Defined for each geographical region; weighted average recipes
- Focused on representative products (sales volumes)
- Results per meta-product * regional sales volumes (2007) = total brand impact
- Modelling is comprised of 'building blocks'
 - Variability analysis conducted



Bouillon meta-products



Stock cubes



Granulated
bouillon



Concentrated
liquid stock



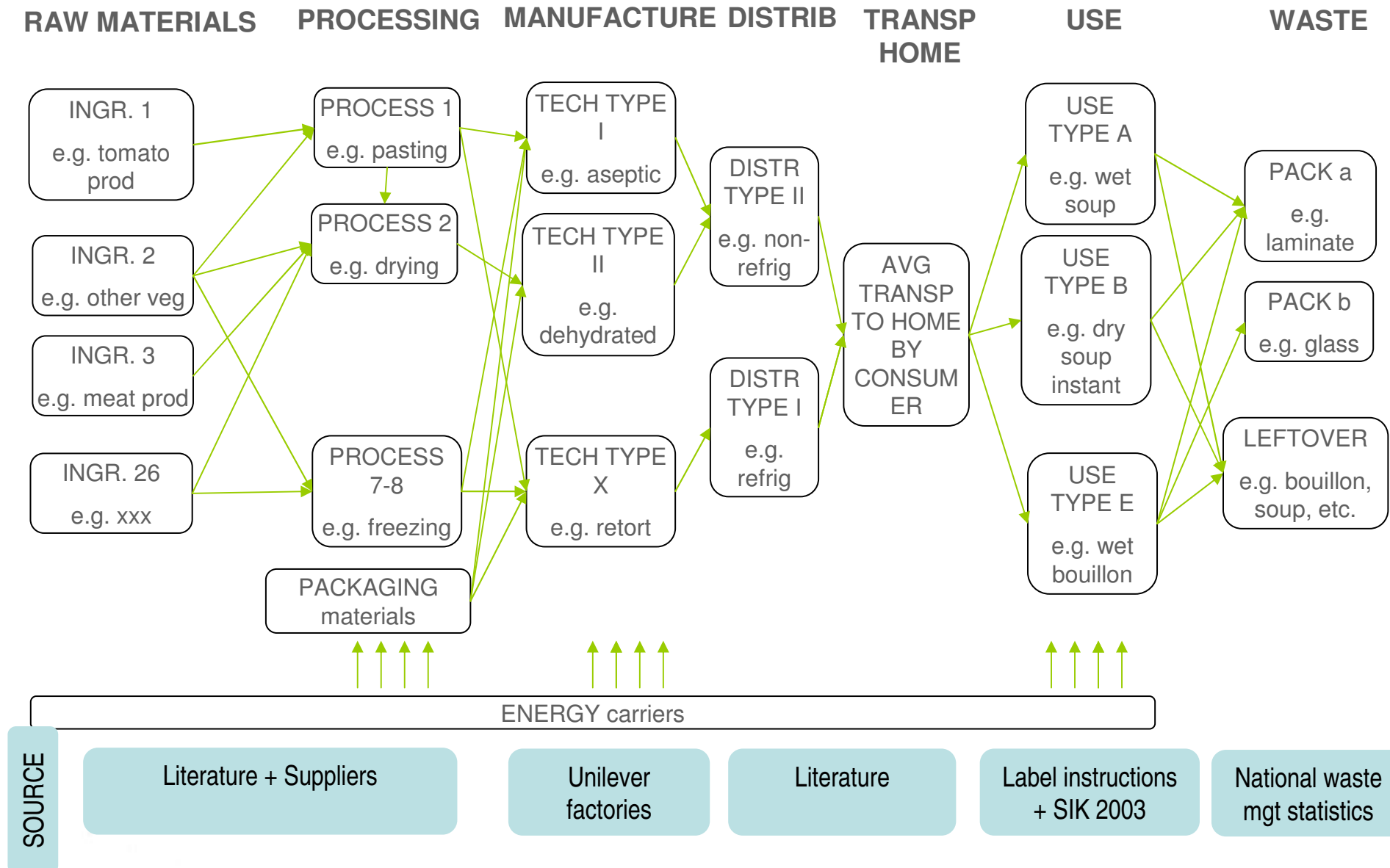
Stock pot



Ready to use
liquid stock



System boundaries and modelling



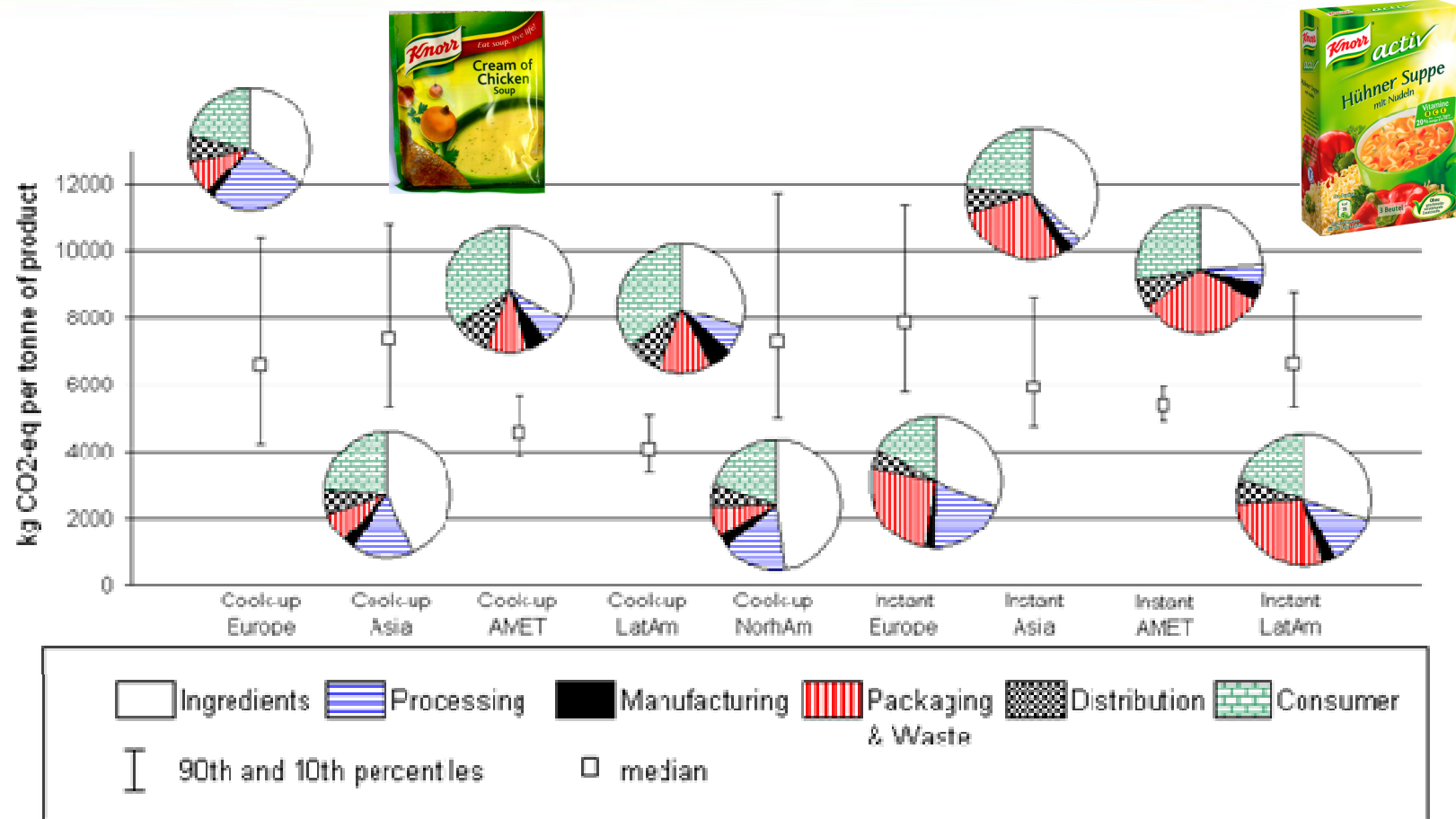


Variability: Example of literature values



Ingredient, Process	GHG Footprint (kg CO ₂ -eq/kg)			
	# data sets	Lower bound [Mean/ σ_g^2]	Geom. Mean	Upper bound [Mean* σ_g^2]
Animal fat	3	0.14	2.44	43.73
Cereal products (pasta, flour...)	4	0.13	0.56	2.35
Dairy product, powder	9	7.12	11.10	17.32
Egg products	6	3.81	5.51	7.96
Fish, fresh	16	0.11	2.34	47.71
Fruit product	5	0.02	0.22	2.14
Meat and meat by-product, fresh	16	1.43	6.28	27.62
Potato products	5	0.08	0.16	0.34
Soy meal	5	0.31	0.65	1.37
Starch & starch hydrolysates	7	0.76	1.33	2.31
Sugar	5	0.10	0.34	1.16
Tomato products	4	0.01	0.08	0.69
Vegetables & pulses	12	0.02	0.29	3.99
Vegetable oils & creamers	9	0.38	1.06	2.99
Wine, vinegar	2	0.61	1.77	5.18

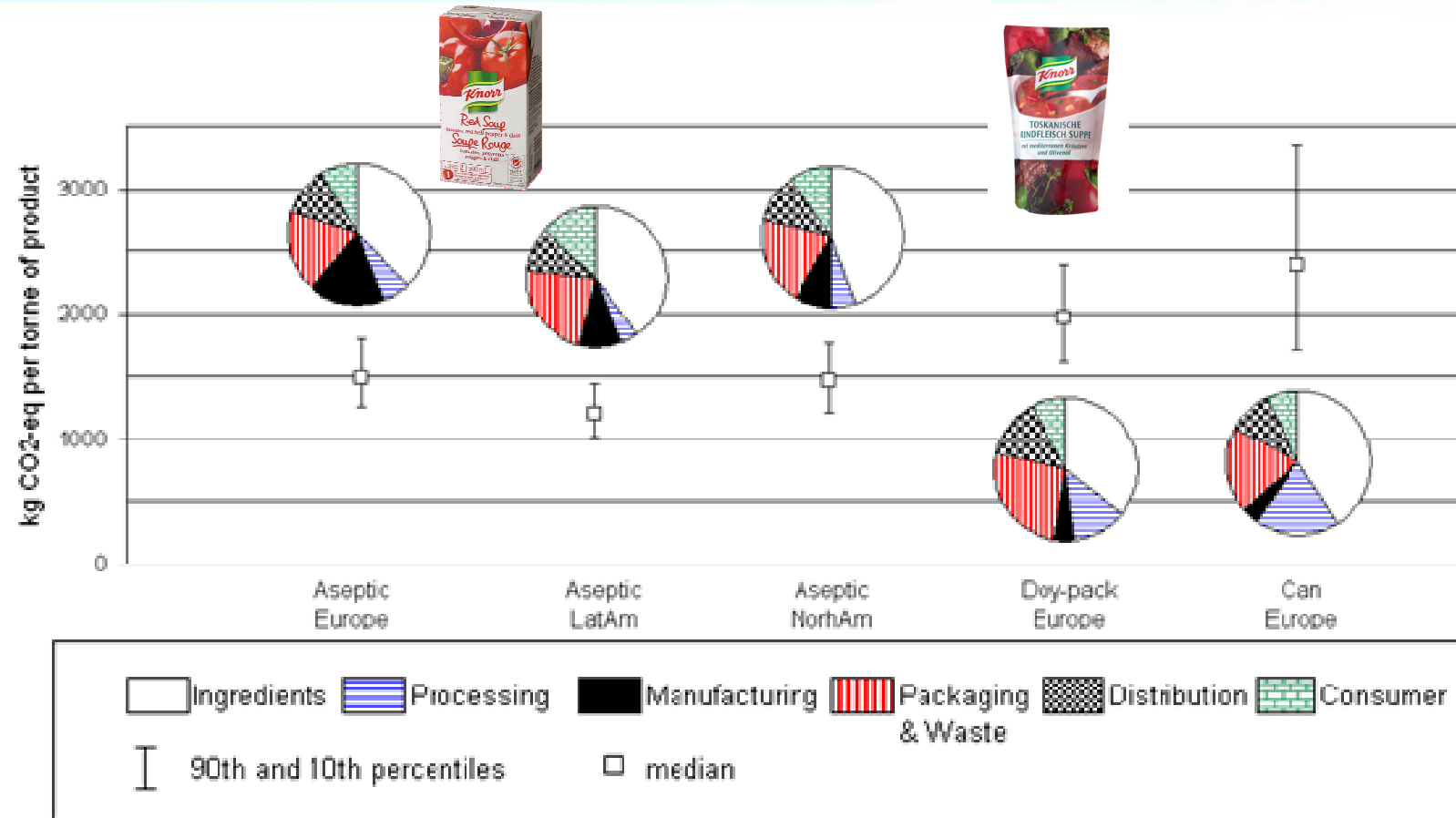
Knorr CF Results, per tonne, dry soups



- Most impact in growing and processing ingredients
- Home preparation has a large share
- Manufacture has a small share
- Significant variability in results, across regions and also due to variability in input data



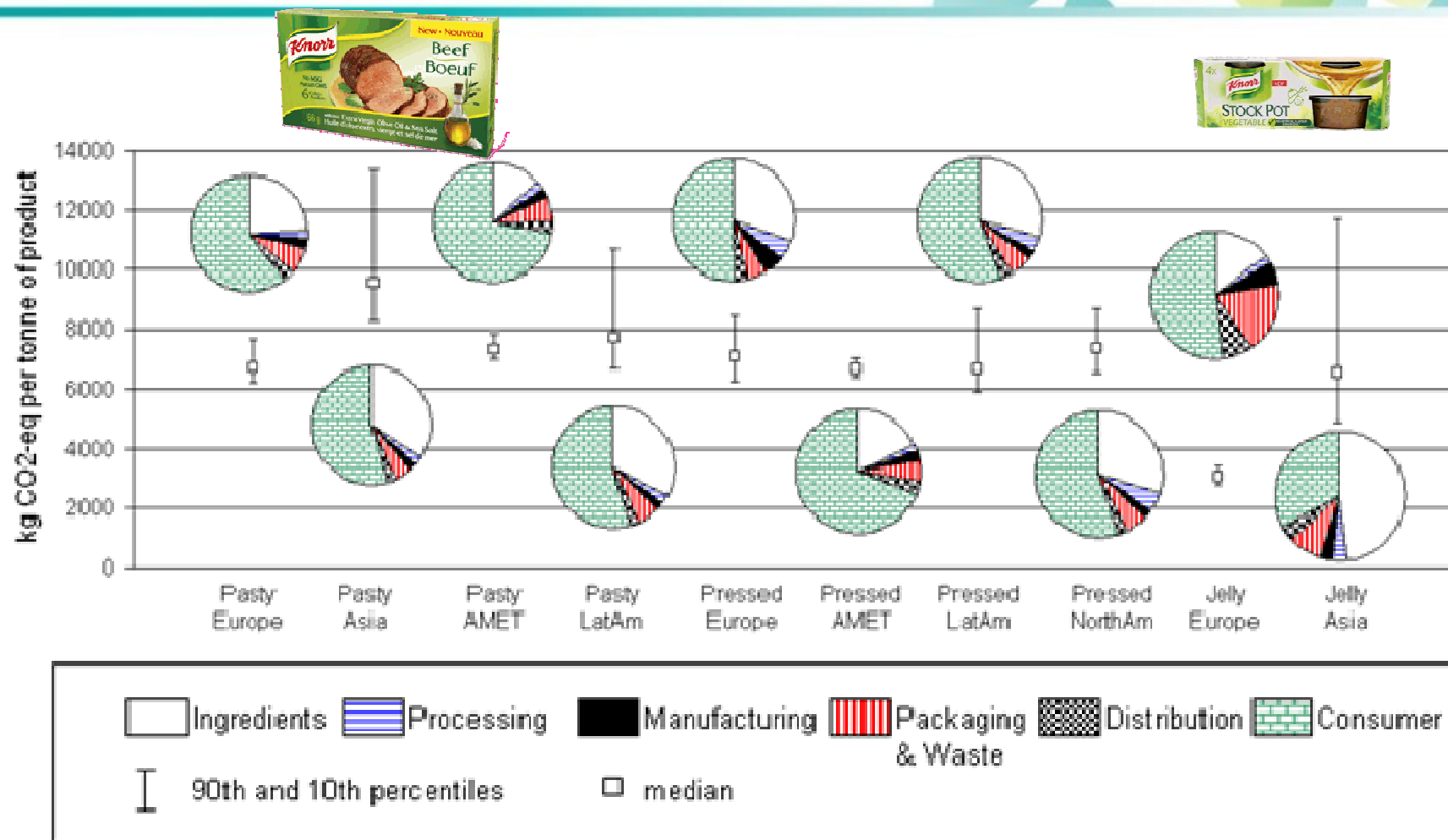
CF Results, per portion, wet soups



- Most impact in growing and processing ingredients
- Home preparation has a smaller share than dehydrated products (only heating up)
- Packaging has a 20-25% share of impacts, and manufacture is significant in aseptic



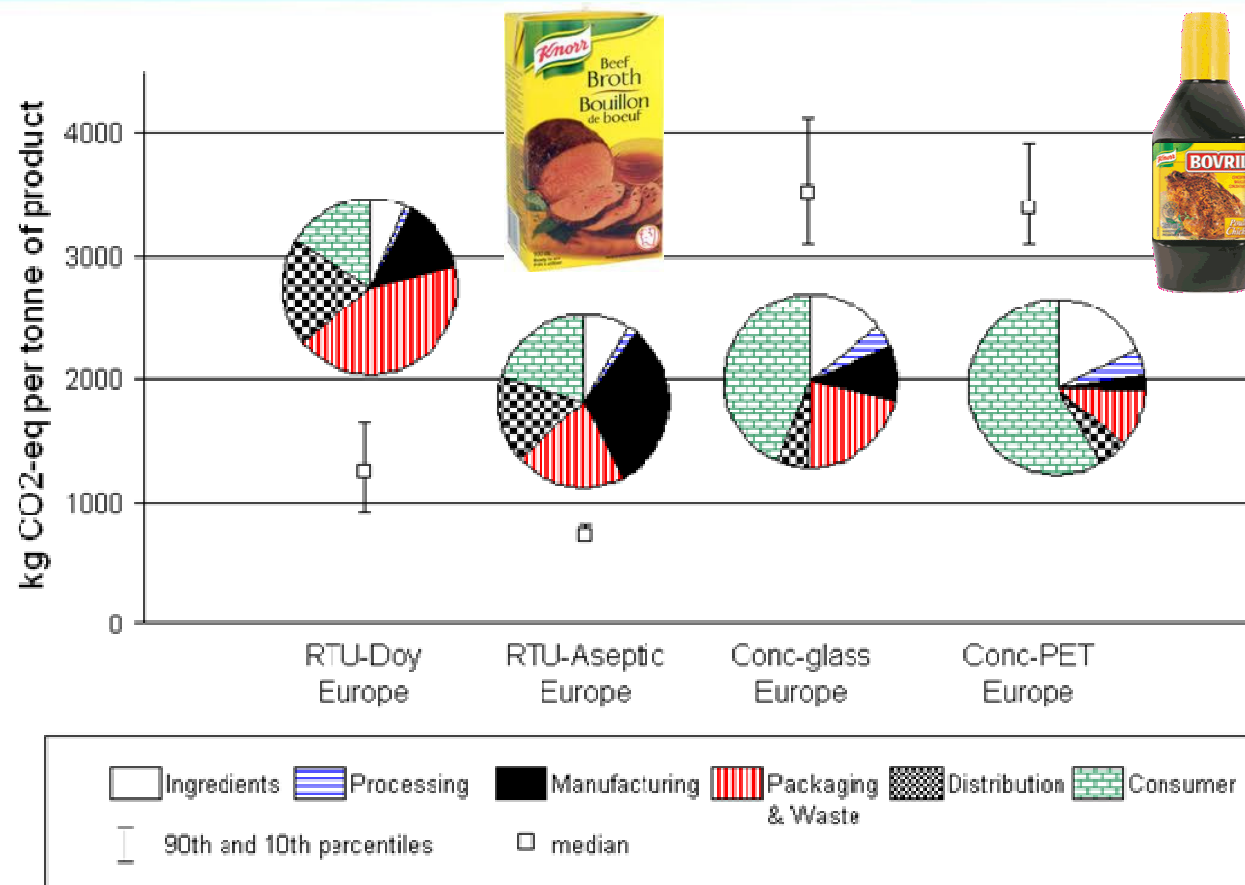
CF Results, per tonne, bouillon cubes



- Most impact in use phase (dehydrated products); this is worst case scenario (clear soup)
- Manufacture has a small share



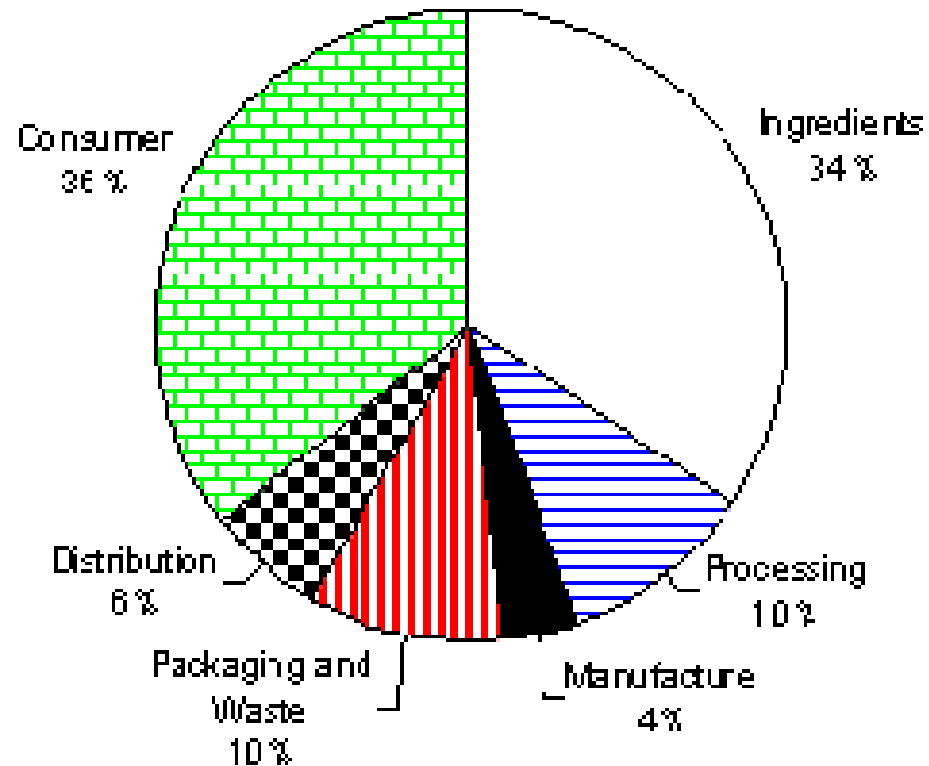
CF Results, per tonne, liquid bouillons



- RTU: much larger impact from manufacture (aseptic and retort) and packaging
- Home preparation has a large share particularly for concentrated products



GHG profile of global Knorr portfolio (2007)



- Global Knorr portfolio GHG emissions: 3-5 million tonnes CO₂e/annum (95% conf. interval)
- This represents approx. 1-4 % of the estimated Unilever CF, whereas Knorr delivers ca. 7.5% of Unilever's turnover
- Most impact occurs upstream (ingredients growing and processing: 44%) and at the consumer home (36%)



Opportunities across Life Cycle



- Ingredients growing and processing (44% CF):
 - Sustainable Agriculture: working on low carbon crops
 - Drying and Concentration: working on new technologies with suppliers
 - More meaty and creamy recipes are more carbon intensive: potential for substitution with vegetable proteins and fats? But consumer preference? Quality and taste...
- Manufacture (4% CF):
 - Working on new technologies with a focus on wet products
- Use and Consumption phase (36% CF)
 - Improving data on consumer habits, and guiding on best practice in the kitchen
 - Work on product formats that require less cooking / heating
 - Partner with appliance manufacturers where combination with our products may result in impact reduction

- The meta-product approach simultaneously allows the overall assessment of the whole portfolio and comparison of individual product types
 - Comparison between products is tricky: portions and function are not equal!
- Knorr uses these results to inform brand strategy with reduced GHG impact
 - The rest of Unilever follows a similar approach (see Rigarlsford *et al.*)
- Variability assessment supported the results: confidence range
 - Variability is large, but still allows strategic decisions
 - Numbers not suitable for on-pack labelling
- Dehydrated products and concentrated liquids have lower CF per portion
- GHG are just one environmental impact; other issues are being addressed in sustainability (e.g. sustainably certified ingredients)
 - Sustainability is only one criteria in consumer's decision making, alongside nutrition; quality; convenience; price; taste; etc.



Thank you! Questions?

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