

The role of refrigeration in reducing food waste



Moderator

Didier Coulomb

Director General

International Institute of Refrigeration



Shamila Nair-Bedouelle

Head of OzonAction

United Nations Environment Programme (UNEP)



“On your shoulders rest the challenge of giving science a face that inspires our youth to seek our science, engineering and technology is part of that task.

But it requires more. It also means orienting science in a practical and visible way towards helping meet basic needs. It means recognising the intellectual challenge of applying knowledge to meeting such needs,” *Academy of Science 1996*

"Massive poverty and obscene inequality are such terrible scourges of our times - times in which the world boasts breath-taking advances in science, technology, industry and wealth accumulation - that they have to rank alongside slavery and apartheid as social evils,” *Trafalgar Square 2005*



- **Significant barriers to market penetration** specific to the **food cold chain in developing countries?**
- Do multinationals from developed countries apply the same standards when working in developing countries?
- Responsibility of hypermarkets in every step of the cold chain?
- How to link **food protection** with **climate-friendly** refrigerants in the food cold chain in developing countries?
- **CFCs → HCFCs → HFCs → ???**

Creation and implementation of appropriate legislation based on a code for the food cold chain?



Matthijs Montsma

Scientist - Food and biobased research
Wageningen University & Research



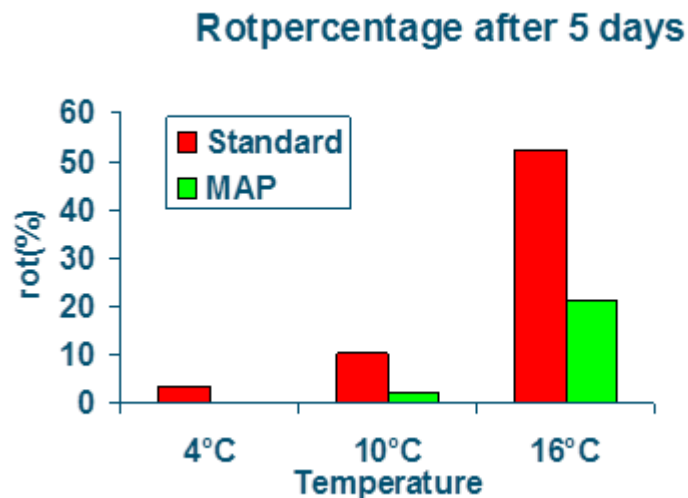
- **Many initiatives making agenda in Brussels**

- ✓ Individual approach is not effective
- ✓ Link to multi disciplinary consortia (i.g. Fusi)
 - Focus on multi level impact
 - Whole supply chain, consumer behaviour



- **From big consortia to**

- ✓ Close Cold Chains
- ✓ Product knowledge
- ✓ Cool Data Management



Olivier Jan

Partner Sustainability
Deloitte France



- Food wastage represents partially avoidable emissions of **3,6 Gt of CO₂ eq.** (FAO, 2015)
- On a global basis benefits would outbalance additional emissions by approximately a **factor of 10** with higher benefits on meat and vegetables supply chains
- **Potential rebound effects** such as evolution of consumer behaviour could however slightly affect this estimation

Reduction of food losses, and associated carbon footprint

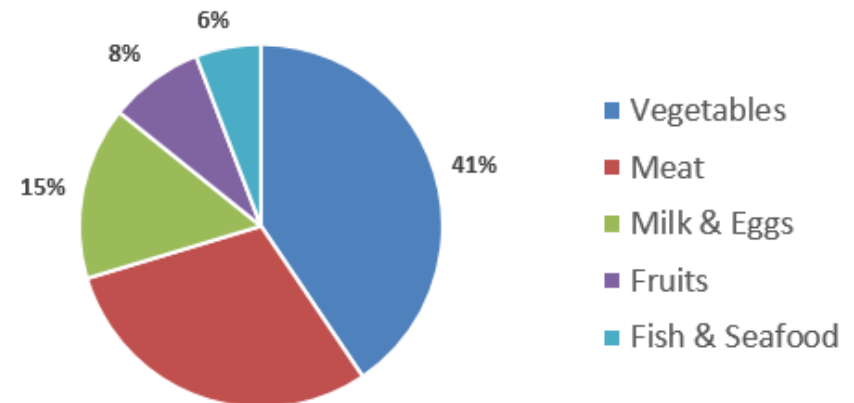


Additional emissions from increased energy use, refrigerants and greater transport distances.



CO₂



FLW & cold chains
Breakdown of net GHG 'savings' by product categories



Gérald Cavalier

President
CEMAFROID



 	Monde	Pays développés *	Pays en développement**
Population			
Population en 2009 (milliard d'habitants)	6,83	1,23	5,60
Taux d'équipement de la chaîne du froid			
Volume entreposage frigorifique (m3/1000 hab.)	52,00	200,00 / 10	19,00
Nombre d'engins de transport sous température dirigée (millions d'engins)	4,00	2,73	1,27
Nombre d'engins de transport sous température dirigée (nbe habitants)	1 708	450 / 10	4 421
Nombre réfrigérateurs domestiques (/1000 hab.)	172	627 / 10	70
Taux de perte			
Pertes*** de denrées alimentaires (tous produits) (%)	25%	10% X 3	28%
Pertes*** fruits et légumes (%)	35%	15% X 3	40%
Pertes de denrées périssables par non application du froid (%)	20%	9% X 3	23%

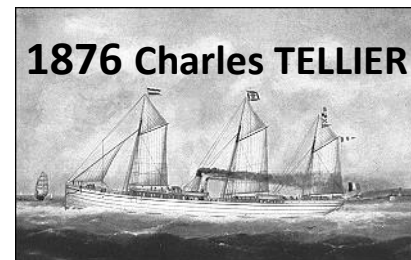
1,3 Bt
Foodwaste



<10 %
Refrigerated food



140 years
Of Cold Chain



3rd
Country for GWP

Juergen Goeller

Director Sustainability UTC Climate EMEA
UTC Carrier



- **Benefits of reducing of global food losses and food waste**
(feed more people with better resource efficiency, and help curb global GHG emissions and water use)
- **2/3 of the total food losses and food waste** happens along the global food cold chain from farms to markets- in developing as in developed countries
- **2/3 of all food losses** happen in developing countries, but ~1/3 still happens in developed countries
- **Sustainable refrigeration technologies** overcompensate the increase of GHG emissions from the improvement of global food cold chains

Q&A



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Heating, Cooling, Refrigeration & Ventilation: Sustainable technologies for a better life



EMERSON



Danfoss

