



Good Food, Good Life

The Challenge of Using Regionalized LCA at Nestlé

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Nestlé Research™

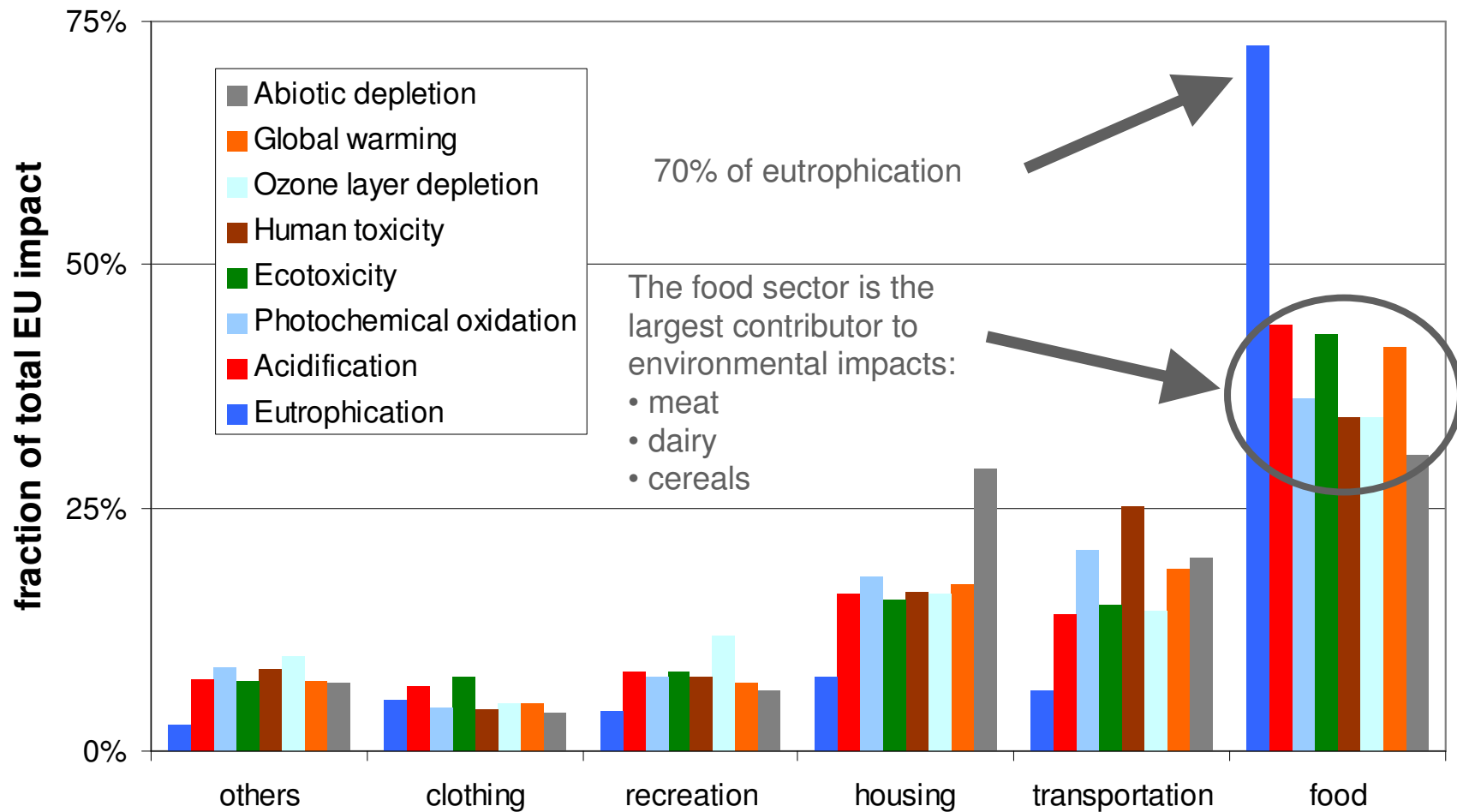
- Introduction
 - Nestlé & the Environment
- Regionalized LCA for Packaging
 - Packaging & the Environment
 - Packaging Ecodesign
- Regionalized LCA for Coffee Production
 - Water Impacts
- Conclusion



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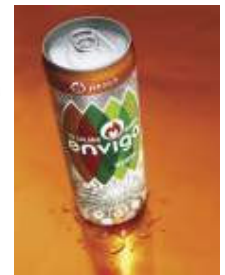
All together, food products have a high environmental impact along their life cycles



Adapted from: Environmental Impact of Products (EIPRO) - 29.04.05 based on 7 existing studies & own analysis



- Nestlé is committed to the continuous improvement of our environmental performance
 - Results are measured & transparently reported
- To obtain good-quality raw materials, Nestlé requires an intact natural environment
- Nestlé is present in all major markets
 - 460 factories in 84 countries on all continents
 - Purchase of very different ingredients to manufacture very different products
- LCA at Nestlé requires a significant degree of regionalization, as shown in the next slides



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Environmental consequences of underpackaging are worse than overpackaging



- The environmental benefit of food packaging is sometimes overlooked

wrap

Material change for
a better environment

Food waste report v2

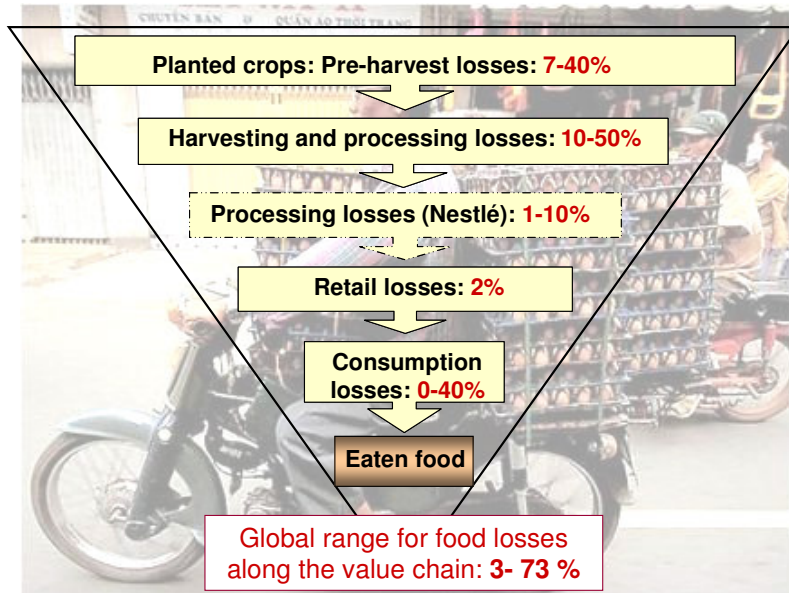
The food we waste



- Changing lifestyles in modern societies:
 - Urban population
 - Single households
 - Irregular eating habits
- Appropriate packaging reduces food waste and related environmental impacts
 - Safe transportation and storage
 - Smaller portions / re-closable
 - Longer shelf-lives



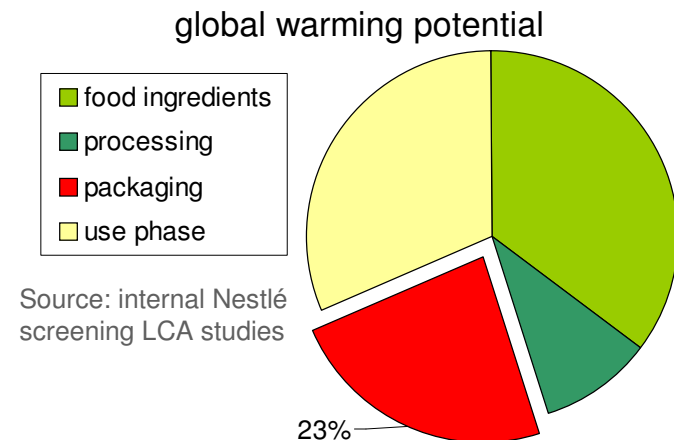
Food waste in the supply chain can be reduced through packaging



Lack of packaging impacts the environment:

- 30-50% losses of fresh food products in China or India¹⁾
- “Reducing [post harvest] losses is likely to be among the most sustainable alternative for increasing food availability”²⁾

The environmental impact of packaging represents 10% (eutrophication, water use) to 23% (climate change) of the total impact³⁾

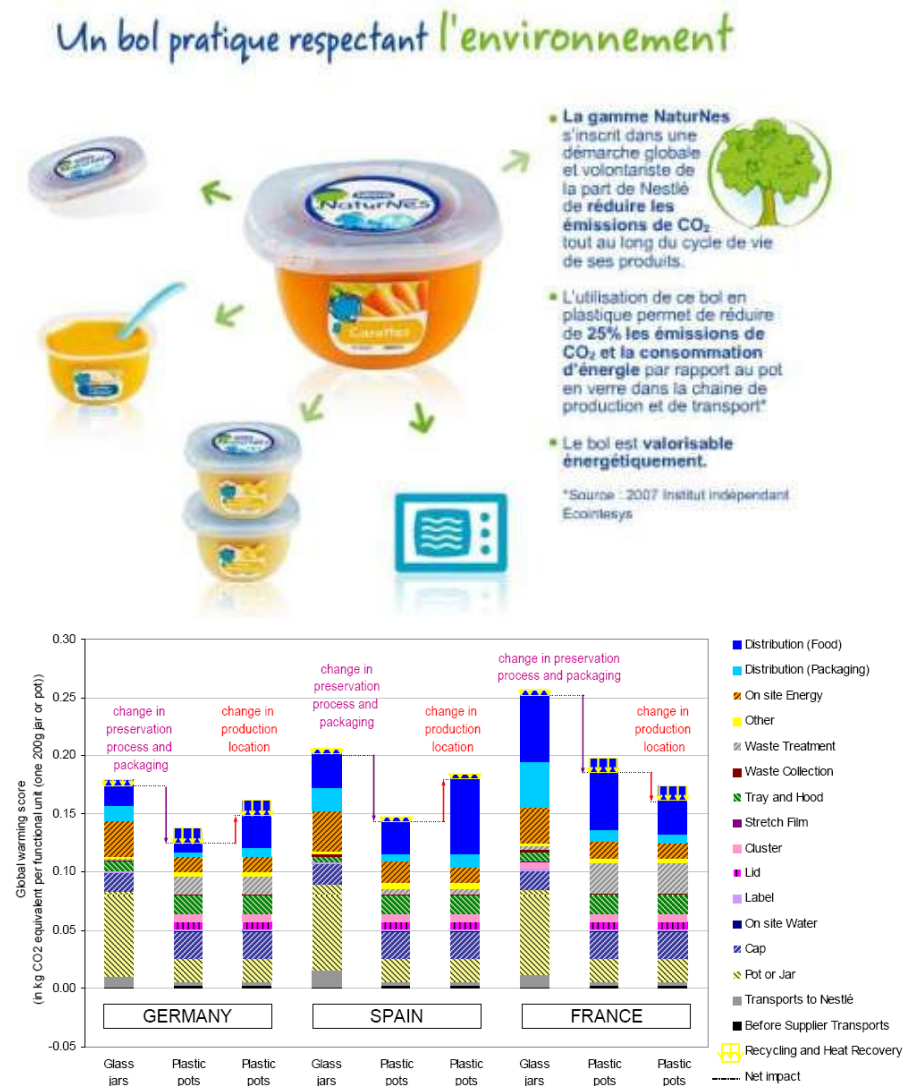


- 1) http://base.china-europa-forum.net/rsc/docs/doc_628.pdf, http://www.scribd.com/full/19981743?access_key=key-q860oj7zm5bm7g7yv5j
- 2) UNEP report: “The environmental food crisis” – Grid Arendal
- 3) Internal Nestlé screening LCA studies

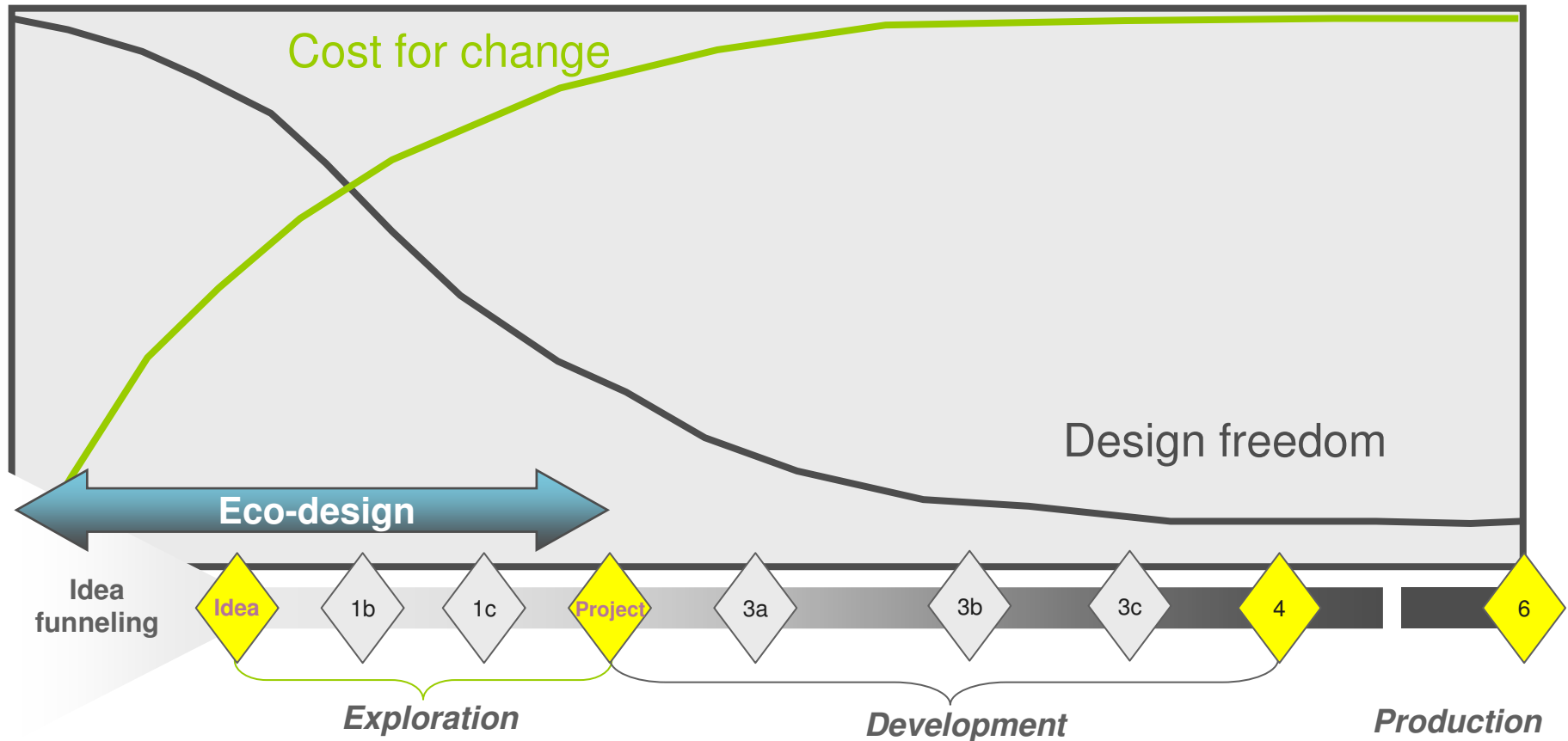


NaturNes: Baby food with a reduced impact on the environment

- Regional LCA for a new baby food packaging ¹⁾
 - Replaces glass by plastic + new preservation process (UHT)
 - For Germany, Spain, France
 - Peer Review, uncertainty & sensitivity assessment
 - Long and costly process
- Claim for lower CO₂ emissions for the markets that have been assessed
- Nestlé would like to sell NatureNes in other markets
- How to quickly assess the environmental impact for new markets?



Eco-design in the exploration phase of a project optimizes results and minimizes costs





- PIQET is used in Australia for screening packaging ecodesign
 - Assessment of a packaging scenario in 20 minutes if all data available
- Release PIQET for worldwide use is a challenge
 - Regionalized energy mixes required
 - A representative set of waste recovery options needed
- New inventories generated for New Zealand, China, Japan, EU, US
- Missing features and next steps:
 - Add data for missing regions (South America, Africa, India)
 - Add data for certain processes (truck types, ...)
 - Find suited proxies for smaller markets (Canada, UK)

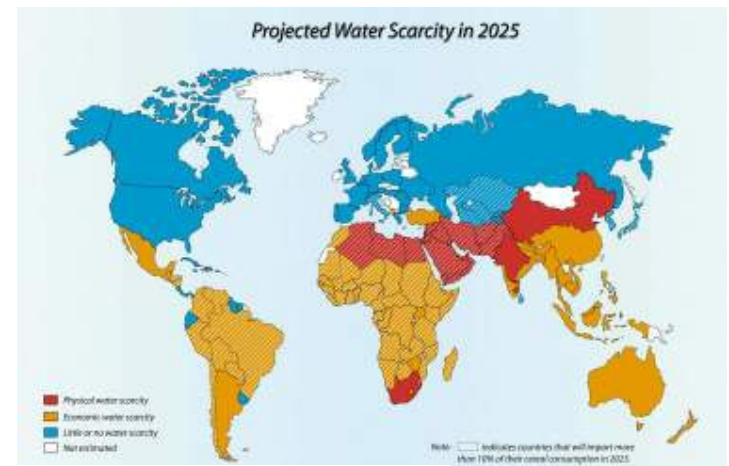
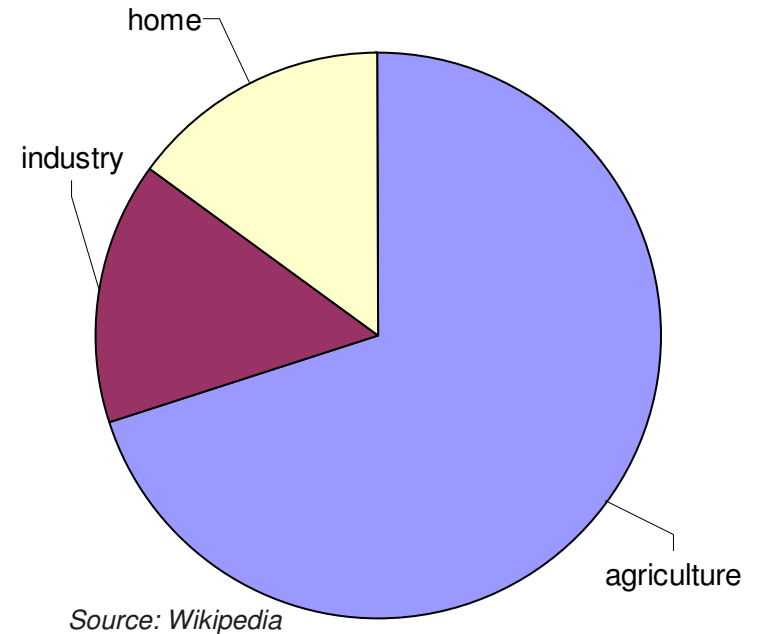


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Nestlé needs reliable access to clean water

- Nestlé water withdrawal represents 0.004% of world water withdrawals
- Water withdrawal has been reduced by 30% over the past 10 years, while production volume grew by 68% in the same time period
- Agriculture contributes to 70% of world water consumption
- Only 17% of agricultural land is irrigated, producing 40% of world food supplies¹⁾
- Water scarcity threatens world food supplies
- Virtual water content of Nestlé supply chain is much higher than the factory water use



Source: Int. Water Mgmt. Institute

Coffee cultivation differs strongly from region to region

- Coffee requires large amounts of water and regular precipitation
 - Coffee is mainly grown in tropical nations with high precipitation
 - Some countries have seasonally variable precipitation patterns (monsoon): India, SE-Asia, West-Africa, Ethiopia
 - Irrigation is required in these countries
- Water impacts are local, not global (as opposed to CO₂)
 - Water scarcity in a region / season is essential



LCA on coffee currently focuses on preparation methods

- Compare the environmental impacts of different coffee preparation methods
- Energy consumption taking into account stand-by mode, power saver, warming plate, excess water heating...
- Water consumption of about 1 litre per cup for non-irrigated coffee¹⁾
 - Washing of cup / machine dominates
- Water consumption is much higher with irrigation
 - assuming 4000m³/ha/y irrigation results in 10 liters water use per cup of coffee
 - water in the coffee and washing of cup is negligible



1) Humbert et al, 2009, J. Cleaner Prod. 17, 1351-1358

Is there a need for regionalized water impacts for coffee?

- Coffee growing techniques vary strongly from country to country
 - Taking into account country-specific water impact scores could improve the significance of a water impact indicator
- However, climate within a typical coffee growing country varies greatly (India, Ethiopia, Brasil)
 - Water impact scores would have to be based on the local climate, not the country average (although, if stream-levels are reduced sufficiently, the whole country might be impacted)
 - Water impact score would have to be based on the seasonal impact of water withdrawal (although, if dams exist, water for irrigation might be retained during high-precipitation periods)
- How complex can a regionalized LCA be made???



- Two examples where regional LCA is useful for packaging & food product ecodesign
- For the purpose of ecodesign, things have to be kept simple
 - Determining accurate energy impact scores is feasible
 - Finding accurate water impact scores is a challenge
- Finding the most accurate way of calculating an impact is important, but finding a simple method of being reasonably accurate is helpful, too
- « Le mieux est l'ennemi du bien ! »

