

The role of LCA in sustainable food procurement by a city

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ABSTRACT

Life cycle assessment (LCA) can identify the potential for the environmental optimization of production processes of single products. The method however reaches its limit, if several hundreds or thousands of products should be assessed at once. This can be overcome by combining LCA data for single products with environmental data linked to purchase statistics.

Keywords: environmental impact, environmental product information, environmental product declaration, carbon footprint

1. Introduction

Life cycle assessment (LCA) has proved to be a powerful tool for the environmental optimization of production processes of single products. However, it is difficult to apply detailed LCA studies to investigate several hundreds or thousands of products at once. The city of Zurich centrally organizes the procurement of about 1000 different food products for about 10'000 people in hospitals, retirement homes and other public institutions. A general aim of its policy is to reduce the environmental impacts of the governmental activities. LCA has proved to be a suitable method in order to assist this goal.

2. Goal and scope

The total environmental impact of food purchases centrally organized by the city have been evaluated applying LCA data for single products and combining them in a simplified manner with the total purchase statistics. The methodology has been developed in a study accounting for the embodied greenhouse gas emissions of Switzerland (Jungbluth *et al.* 2007).

3. Life cycle inventory analysis

A total balance of embodied emissions due to the purchases has been made. The analysis of the purchases is based on data on the estimated quantity of ordered food products. These data are linked with life cycle assessment (LCA) data of food products and product groups (ecoinvent Centre 2007, Jungbluth *et al.* 2010). Figure 1 shows an example of the life cycle inventory and impact assessment for the purchases of dairy products. Rough assumptions have been made concerning transports, packages and distribution according to the methodology developed for assessing impacts of food purchases (Jungbluth 2000a, b). Most of the impacts stem from the agricultural production of milk.

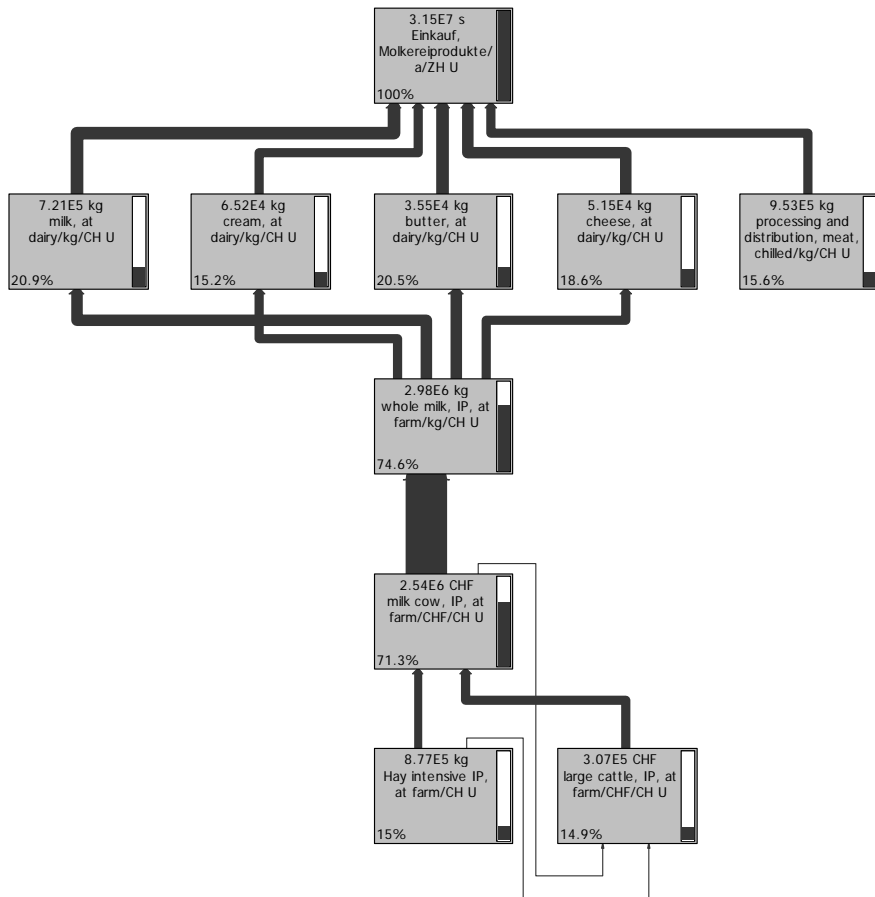


Figure 1: Unit process raw data for annual purchases of dairy products and LCIA with the ecological scarcity method

4. Impact Assessment

The impact assessment has been made for the cumulative energy demand (Frischknecht *et al.* 2007), the greenhouse gas emissions (GWP-global warming potential) (Solomon *et al.* 2007) and for environmental impacts based on the ecological scarcity method 2006 (Frischknecht *et al.* 2009). Figure 2 shows the shares of weight, value and environmental impacts for the different categories of food purchases. The evaluation on the basis of the ecological scarcity method highlights the importance of meat and dairy products for the overall impacts. Surprisingly, further products have also been identified as highly relevant, e.g. purchases of coffee. The results show differences between total environmental impacts and energy demand or GWP only.

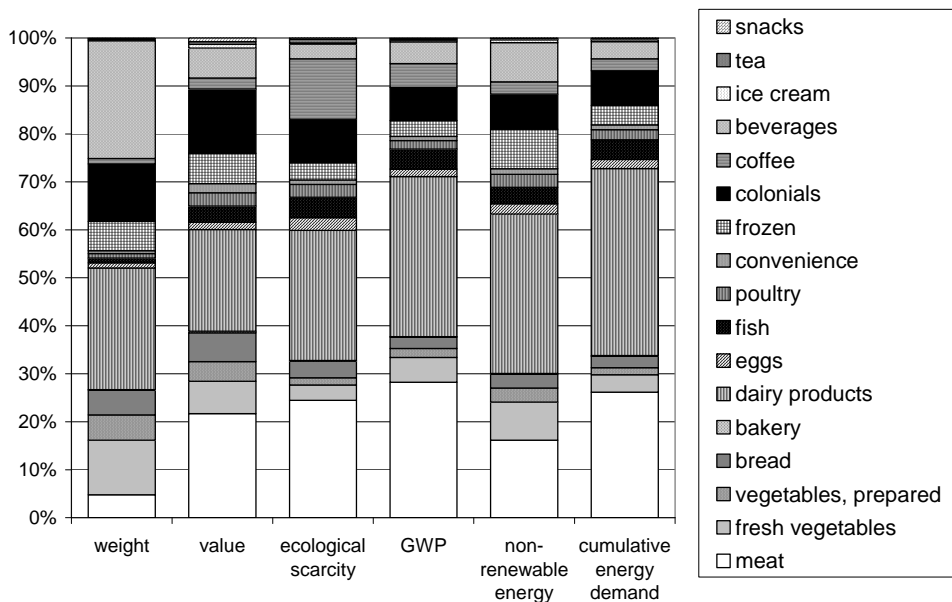


Figure 2: Share of different indicators for the food purchases of Zurich

5. Conclusions

Results of LCA case studies have been used to propose relevant issues to be considered in the call for tender of different product groups. In addition, suggestions for the reduction of environmental impacts are given to the persons responsible for food storage and preparation in the different institutions. Thus, LCA has been used in different ways to optimize the environmental performance in a large institution.

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