

COMPLEMENTING LCA WITH QUALITATIVE ORGANISATIONAL STUDY FOR IMPROVING WASTE MANAGEMENT GOVERNANCE – ILLUSTRATED BY A COMPARATIVE CASE ON METAL PACKAGING

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We here present a novel method that combines the life cycle approach with qualitative organisational study for environmentally effective waste management. While LCA is useful for producing a systems overview of the environmental performance, it does not provide further guidance on systems management since the actors and activities that uphold them are not systematically studied. The human dimension is particularly manifest in waste management where many types of actors (private, public, consumers, legislators, sector organisations) interact in complex ways.

Our method, with which we study Product Chain Organisation (PCO), is designed to complement LCA. Descriptions and accounts of actors interacting and communicating in the product chain provide a basis for understanding how actions influence overall environmental performance. The method is thoroughly grounded in a socio-material approach well established in the social sciences and the humanities. The socio-material approach considers human organisation to be intimately entangled with material flows, machines, buildings, the environment, etc, and that they all influence each other.

We illustrate our method through a comparative study of metal packaging flows in Sweden (SE) and the Netherlands (NL). We first created an overarching understanding of the organisation of different waste management options and their environmental performance. Several field research methods were employed (interviews, field visits, document studies). The empirical material was used to make descriptions of conditions and practices in the product chain in the respective countries. As both a result and a stepping-stone for further analysis and understanding, we produced an overview combining technical, environmental, and organisational aspects (simplified version in Figure 1). Next, we identified a number of situations where management has a significant influence on life cycle environmental performance, for example, where disagreement between public and private actors blocks change, and organisational sources to unreliable data and statistical methods. The study identified that data transparency is low for both countries, but for somewhat different reasons. Further study of organisational practices in the Swedish recycling system and data collection and statistical practices in the Dutch recycling system could be useful. This makes the statistics for SE and NL not readily comparable.

mineral mining	metal production	packaging production	filling, distribution & use	metal packaging waste collection	recycling and other waste mgt
		SE & NL: Producers and importers of packaged products have considerable freedom for how to reach EU and national recycling targets. Fees are included in product prices to cover costs of recycling systems.	SE: 7 kg/cap (2011) NL: 12 kg/cap (2011)	SE: Source separation. Organised and carried out by several organisations, with different organisation for household and business waste, respectively. NL: Metal separation from municipal incineration ashes for household waste; source separation for business waste. Nedvang, which represents all Dutch producers and importers of packaged products, oversees and organises packaging waste collection and recycling.	<i>Recycling rates for SE & NL are not readily comparable owing to different methods and data choices.</i> SE: 75% reported to be recycled, but monitoring is incomplete. Discussions to recover metal from incineration ashes have stalled. NL: 91% reported to be recycled. Recycling statistics by Nedvang; estimation methods change over time. Conflict about fees being siphoned to cover budget deficits.

Figure 1: Simplified findings for metal packaging waste management in Sweden and the Netherlands.

Our case study illustrates how the method by not being limited to LCA study can be used to produce a realistic understanding of even complex systems, such as waste management. It produces accounts that enable the understanding needed for informed action as well as identifies socio-material sources to data uncertainties that hide behind the figures in official statistics and sustainability reports.