

Organisational Life Cycle Assessment: A state of the art

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The importance of sustainable development is a pivotal goal reaffirmed by the United Nations in Agenda 2030 (United Nations, 2015) and the European Green Deal (European Commission, 2019) in order to protect society and the environment from pollution and depletion of natural resources.

Current lifestyles and business models need to change in contrast to problems such as climate change and high resource consumption, which have direct consequences on people's lives, the economy, and the natural environment. (Wafa W., et al., 2022)

There is therefore a need for greater awareness and, consequently concrete actions, starting with the production system composed of companies, their processes, and products.

The life-cycle approach provides the opportunity to have a comprehensive perspective on the impacts of products and processes along the entire cradle-to-grave journey, which allows one to identify weaknesses from a sustainability perspective and make sound decisions to address them.

Life Cycle Assessment (LCA), among them, is a powerful tool in this sense. The standardised methodology allows to reduce environmental impacts by intercepting hotspots, take informed decisions according to it and thanks to the comparability of different solutions, both for managers and policymakers, other than supporting informed products claims avoiding greenwashing (Liscio, M.C., Sospiro, P.).

On the other hand, especially small and medium enterprises sometimes struggle to adopt such tools, both for the requirement of resources and competences in the field, but also due to the fact that in some cases, such as the fashion industry (C. De Ponte, M.C. Liscio, P. Sospiro, 2023), these companies are just in the early stages of the value chain, therefore they cannot conduct such analysis on the entire life cycle of a product.

A valuable tool is the Organisational LCA, an emerging method that offers a company-wide perspective, enabling the organisations to evaluate themselves, their input and output flows, and assess the environmental impacts throughout their value chain. This approach considers both upstream and downstream activities (Forin, S., Martinez-Blanco, J., Finkbeiner, M., 2019).

This method holds significant potential for enhancing corporate environmental management. Through meticulous scrutiny and quantification of ecological footprints across an organization's entire life cycle, this approach provides a comprehensive vantage point to comprehend resource utilization, emissions, and ecological implications. Consequently, companies equipped with these insights can tactically navigate towards resource optimization, waste reduction, and the pursuit of carbon neutrality.

The International Organization for Standardization defines OLCA in the ISO/TS 14072 (ISO, 2014), primarily based on the ISO standard for the product LCA, with the majority of ISO 14044 elements (ISO, 2006) are the same as for the product LCA (Wafa W., et al., 2022).

Moreover, the United Nation Environment Programme (UNEP) and the Society of Environmental Toxicology and Chemistry (SETAC) in the Life Cycle Initiative released a Guidance in OLCA to support the practitioners in the interpretation of the standard and the main field of applications and benefits of it (UNEP - SETAC - LCI, 2015).

Furthermore, European Commission embraced the Organisational point of view, as it published its Organisational Environmental Footprint methodology, starting from the ISO/TS 14072 standard, that indicates some procedural differences (European Commission, 2021).

This research aims to critically examine the pivotal role of Organizational Life Cycle Assessment (ISO 14072) in shaping contemporary corporate sustainability strategies. Through a meticulous analysis of the scientific

literature, using the SPAR-4-SLR protocol (Paul J., et al., 2021), this paper analyses the state of the art of OLCA in the literature, to elucidate the multifaceted benefits inherent in adopting OLCA, particularly in augmenting companies' capacity to mitigate environmental impacts throughout their operational life cycles, especially for the small and medium enterprises.

Indeed, a central focus of this review revolves around the strategic complementarity between Organizational LCA and Product LCA. The synthesis of these assessment methodologies strengthens the integrity of environmental evaluations, transcending isolated product-level analyses. This symbiotic relationship not only acts as a defence against greenwashing, but also generates an in-depth understanding of the real environmental ramifications by understanding upstream and downstream activities. Consequently, the use of OLCA, especially in parallel with product LCA, emerges as a powerful tool to mitigate burden sharing within industries and supply chains, not only at the product life cycle level, but also at the organizational level (Manzardo, A, et al., 2018).

In conclusion, this literature review underscores the transformative potential of OLCA in guiding companies towards genuine environmental stewardship. Its integration not only empowers corporations to navigate intricate environmental challenges but also mitigates the risks associated with misleading corporate environmental claims. Embracing OLCA delineates a profound commitment to responsible environmental management, facilitating a paradigm shift towards enduring sustainability practices and ethical corporate conduct.

Given that OLCA is relatively recent, there appears to be a limited number of case studies about it in the literature. In addition to a limited number of case studies from the scientific literature, the Life Cycle Initiative tested 12 case studies in 2017, three years after the publication of ISO/TS 14072:2014, following a call for testing of the methodology (UNEP-SETAC-LCI, 2017).

Therefore, based on this methodology, a series of case studies will be conducted, mainly focused on the fashion industry, to fill this gap and include small and micro enterprises.

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