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Editorial: Sustainable life cycle assessment scenarios: Decision making perspectives

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Editorial on the Research Topic
Sustainable Life Cycle Assessment Scenarios: Decision Making Perspectives

The application of life cycle thinking for decision-making needs to be explored to mitigate the current challenges and solve the problems which can affect people's daily life. However, the debate about the combination of different life cycle tools is still open and several researchers face this issue with different methods.

Life cycle sustainability assessment, which usually combines life cycle assessment, life cycle costing and social life cycle assessment, can be used to measure the environmental, economic, and social performances of a system. However, it is still not clear how life cycle sustainability assessment can be used for decision-making:

- How to develop policies based on the results determined by life cycle sustainability assessment?
- How to improve the sustainability of a system based on its sustainability performances?
- How to select the most sustainable option among different alternatives?

This Research Topic aims to disseminate advanced methods/models and the latest studies in the field of life cycle sustainability assessment for decision-making.

Studies focusing on different fields of sustainability and including new explorations in the agricultural sector have been considered, such as an application of information-sharing mechanisms with the aim to facilitate "from seed to consumer" analyses (Duncan et al.) and an application of participatory modeling methodology to involve regional stakeholders in a decision-making process (Hatziioannou and Kokkinos). Other explored fields of sustainability include the application of participatory models developed and agreed by stakeholders across costal rural areas in Europe to assess socio-ecological

management practices (Tiller et al.). In addition, a case study of organizational life cycle assessment (O-LCA) was developed with the intent to estimate the impact of a research project focusing on travel and testing O-LCA as a decision-making process (Cooney et al.).

What emerges is that life cycle sustainability assessments can be combined with the decision-making methods and stakeholders' opinions along the life cycle of product or processes. The models for assessing sustainability and analyzing different scenarios and options were used for agricultural applications but also for territorial management. Environmental impacts and their implication for stakeholders and decision-makers were assessed highlighting that measuring sustainability performance and using the results for decision-making can contribute to a more sustainable society.

The collected papers in this Research Topic can facilitate the scientists, researchers, engineers, and policymakers to understand the nexus between sustainability and decision-making. In addition, we would like to take this opportunity to sincerely thank the Editorial team, all the authors of this Research Topic and our reviewers for their support and assistance.

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ST: writing and original draft preparation. JR: writing, reviewing, and editing. MS: writing and validation. KZ: validation. All authors contributed to the article and approved the submitted version.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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