# Article information:

Comparison between circularity metrics and LCA: A case study on circular economy strategies - ScienceDirect
<https://www.sciencedirect.com/science/article/pii/S0959652622031171>

# Article summary:

1. Circular Economy (CE) has emerged as an umbrella concept that offers a framing on resource efficiency strategies, although taken individually the strategies are not novel.

2. Circularity metrics (C-metrics) serve the purpose of simplifying decision-making by condensing the complexity of what they intend to measure and should be simple to use, transparent and accessible to practitioners of CE.

3. The study aims to test the ability of material-focused micro-level circularity metrics to align their rank of preferred CE strategies with Life Cycle Assessment (LCA) results and give recommendations for how these metrics can be used to foster environmental sustainability through the implementation of CE strategies.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article "Comparison between circularity metrics and LCA: A case study on circular economy strategies" provides an overview of the Circular Economy (CE) concept and its potential to support environmental sustainability. The authors analyze the validity of four material efficiency-focused C-metrics in comparison to Life Cycle Assessment (LCA) results, with a focus on CE strategies that narrow, slow, and close material loops. While the study provides valuable insights into the connection between micro-level circularity and environmental sustainability, there are some potential biases and limitations to consider.

One potential bias is the focus on material efficiency-focused C-metrics, which may not capture all dimensions of environmental sustainability. The authors acknowledge that micro-level indicators are sometimes criticized for mostly being focused on material efficiency without considering energy use or function preservation. This narrow scope may direct decision-makers towards solutions that cause burden-shifting or rebound effects. Therefore, it would be beneficial to include other sustainability dimensions in future studies.

Another limitation is the lack of consideration for social and economic aspects of CE strategies. While the authors mention that CE can support development towards environmental, social, and economic sustainability, they only focus on environmental performance in this study. It would be interesting to see how different CE strategies affect social and economic aspects as well.

Additionally, the article does not explore counterarguments or alternative perspectives on the validity of C-metrics compared to LCA results. While LCA is a standardized methodology that allows comparability between products and services, it has been criticized for its linear economy frame of reference and cradle-to-grave perspective on material flows. Therefore, it would be useful to consider alternative methods or perspectives in future research.

Finally, while the article presents both C-metric results and LCA results, there is a potential for one-sided reporting or partiality in their interpretation. The authors conclude that their findings suggest that C-metrics can complement traditional LCA methods in evaluating CE strategies at different stages of a product lifecycle. However, it is important to note that the study only focuses on material efficiency-focused C-metrics and does not consider other sustainability dimensions or alternative perspectives on LCA.

In conclusion, while the article provides valuable insights into the connection between micro-level circularity and environmental sustainability, there are potential biases and limitations to consider. Future research should aim to include other sustainability dimensions, consider alternative perspectives on LCA, and provide a balanced interpretation of results.

# Topics for further research:

* Social and economic aspects of circular economy strategies
* Criticisms of Life Cycle Assessment methodology
* Circular economy strategies and energy use
* Circular economy strategies and function preservation
* Alternative sustainability metrics to complement C-metrics and LCA
* Circular economy strategies and rebound effects

# Report location:

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