Life Cycle Assessment, why it lagged behind and how it will race forward
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Life Cycle Assessment
Why it lagged behind and how it will race forward

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Goals: & Method:
Understand the causes of current LCA failure and identify solutions to overcome them.
Analysis of LCA’s function, reviewing current LCA methodology and criticisms.

Current state and critics

<table>
<thead>
<tr>
<th>Framework:</th>
<th>Tool:</th>
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</thead>
<tbody>
<tr>
<td>ISO 14040</td>
<td>Simapro</td>
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<tr>
<td>ISO 14044</td>
<td>Gabi</td>
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<tr>
<td>ILCD guidance</td>
<td>Umberto</td>
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</tbody>
</table>

Application:
- Design
- Metal
- Building etc.

Respective sub-framework: PCRs

Life cycle inventory analysis (LCI):
- Impact factors
- Local technical uniqueness

Life cycle impact assessment:
- Spatial variation
- Local environmental uniqueness
- Dynamic of the environment
- Time horizon
- Weighting and valuation
- Uncertainty in the decision process

Decision support framework issues:
1. LCA: Always a decision support!
2. Inconsistency and gaps in ILCD - ISO rules:
   - Logical deadlock loop:
   - No interpretation for disclosed comparative study.
   - No guidance to handle the needed judgment.

Value judgment
Cognitive limits
Judgment Inconsistencies
Data unavailability

CONCLUSION: LCA NEEDS UPGRAISING

LCA 1.0 is in a dead end!

LCA 1.1
Approach:
- By goal and methodology

LCA 2.0
Approach:
- For operationalisation of a corrected methodology

LCA 3.0
Approach:
- For operationalisation of a corrected methodology

LCA aims at holism. It needs:
- Interactivity (2.0)
- Scalability (3.0)

LCA = ABM
Agent Based Modelling.

Recognition and acceptance of value judgment
A major democratic opportunity

Use of MCDA softwares
A need for implementation

Data availability
A need for making accessible and readable valuable data

Data quality is a consequence of the adequate decision of data.

Development need:
Scientific communities will massively open and connect themselves, and develop open semantic web solutions for scalable knowledge production.

Remaining problem:
The way scientific communities produce and share knowledge.

References
5. S. Groh, D. Kiesel, C. Böhm, “Dynamic system of ILCD on the basis of a model intended to support decision-making in environmental assessment of products” – 2011

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