

Contribution of the ScoreLCA Study on E-fuels to Our Internal LCA Practices

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Methodological Challenges and interest of the Study




Major methodological challenges for e-fuel LCAs:

- Diversity of production technologies and electricity sources
- Management of CO₂ as a feedstock
- Consideration of infrastructures
- System multifunctionality and choice of system boundaries

The ScoreLCA/EVEA study made it possible to:

- Identify key points of attention at each life-cycle stage
- Propose concrete methodological recommendations adapted to different use contexts

 This broad methodological work helps better support e-fuel projects and adapt internal studies to the specific characteristics of the sector.

Key points regarding secondary data:

- **CO₂**: need to adapt database data (e.g. ecoinvent) depending on context (origin, capture technology, etc.)
- **Electricity**: the most influential parameter on LCA results; it is crucial to use representative, up-to-date data specific to the geographical and temporal context
- **Infrastructure**: limited LCA data available for detailed inventories of electrolyzers and CO₂ capture facilities
- **Combustion and use phase**: reliance on proxies is often required

 The study improves data selection and adjustment, leading to more robust and reliable LCAs.

Managing Multifunctionality



- **System expansion:** extending the system boundaries to include CO₂ production
- **Substitution (avoided burden):** subtracting the impacts of a reference system
- **Stock method:** attributing only CO₂ capture impacts to e-fuels
- **Allocation:** distributing impacts based on physical or economic criteria
- **Circular Footprint Formula (CFF):** recommended by the European Commission for CCU, it shares impacts between the CO₂ producer and the e-fuel user.



The study enables comparison of impact results using several approaches.

E-kerosene Case Study



Results across several impact indicators:

- E-fuels can reduce GHG emissions compared with fossil kerosene under certain conditions
- Strong influence of CO₂ origin, electricity mix and infrastructure on the results
- Significant impact of the multifunctionality management approach on impact assessment

Key development areas to strengthen the technology:

- Improve infrastructure data collection
- Develop representative electricity and CO₂ scenarios
- Continue methodological work on allocation approaches



structuring support to the development of e-fuels.