

Sustainability assessment of biofuel pathways to
identify key metrics beyond GHG reduction,
spanning both feedstocks and conversion
technologies

IEA Bioenergy TCP Task 39 virtual meeting – 4pm CET, April 2nd 2020

D. O'Connor, A. O'Connell, A. Bonomi, M. Wang

Background

- Task 39 and its members continue to be involved in extensive^{1,2} comparisons of different biofuel pathways and models
- All modelling requires simplifications, wish to discuss and consider more clearly some of the main factors which can influence LCA results
- Idea is to complete an overview report for policy makers which will help them understand how different choices or assumptions in some of these factors can significantly affect LCA results

(1) For example please see: Comparison of Biofuel Life Cycle Analysis Tools; Phase 2, Part 1: FAME and HVO/HEFA (Dec 2018), Phase 2, Part 2: biochemical 2G ethanol production and distribution (Dec 2019), and (2) “Policy Implications of Allocation Methods in the Life Cycle Analysis of Integrated Corn and Corn Stover Ethanol Production” (Canter et al, 2016)

Proposed focus areas - 1

1. Soil carbon changes; discuss ranges and summarise effects on results
2. Soil N₂O/N₂O emission factors
3. Allocation approaches; discuss effect on results
4. Waste definitions, displacement, or “system boundaries”; some LCA systems consider avoided emissions, what about displacement?
5. Energy balance; a new fuel may have promising GHG reductions but may exhibit a relatively poor energy balance compared to alternatives
6. CO₂ input considerations for power-to-fuels
7. GWP factors
8. Accurate co-processing bio-component tracking/accounting, effect of renewable hydrogen in fuel production

Proposed focus areas - 2

- Accurate co-processing bio-component tracking/accounting, effect of renewable hydrogen
- Data accuracy issues
- Water use
- Any other items to be add/delete?
- *Land use change (already long discussed and considered)*

Next steps

- Decide priority areas
- Decide on output(s)
- Define approximate timeline
- Begin research
- Schedule a conference call to discuss progress