

HTL for the future

End user's perspective -
an outlook

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Paris agreement and a lot of possibilities

Carbon neutral environment – decarbonization of fuels and chemicals

- We are facing new area – and we need to utilize all waste streams in the Circular economy
- Many sectors: Power, heat, transportation (aviation and shipping) and chemicals
- Green power from wind, sun and hydro is obvious for many purposes
- PtX is likely to play a major role
- But we still have a lot of residues form urban areas and industry

Residues of various kinds

Dry and wet and some in between

- Wastewater sludge
 - Digestate from biogas plants
 - Slaughterhouse wastes
 - Side streams from organic factories
 - Etc.
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- All containing a lot of carbon, nutrients and some even hazardous chemicals and plastic residues

Risks/opportunities analysis and economy

- Risks: Use of digestate in farming might not be appropriate in the future due to contaminants
- Carbon reuse might be essential with a growing population and the demands for food and feed (the availability of land and water will become scarce)
- Wastewater will be an interesting source for carbon and nutrients – might stop just the use of sludge for biogas (waste of carbon in the CO₂ production)
- Economy in all processes will still be at the essence's

Conclusions

- Recovery of carbohydrates and nutrients at the most economical process will be one of the winners in the future marketplace for circular economy
- **The HTL process has the potentials**
Especially for all the wet streams due to the process design !

Thanks for your attention -

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