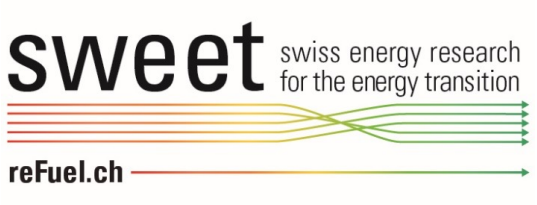

Renewable **Fuel**s and **Ch**emicals for Switzerland*

Sustainable Bio-jetfuels: Innovation and Application challenges

*reFuel.ch is a consortium sponsored by the Swiss Federal Office of Energy's SWEET programme and coordinated by Empa.

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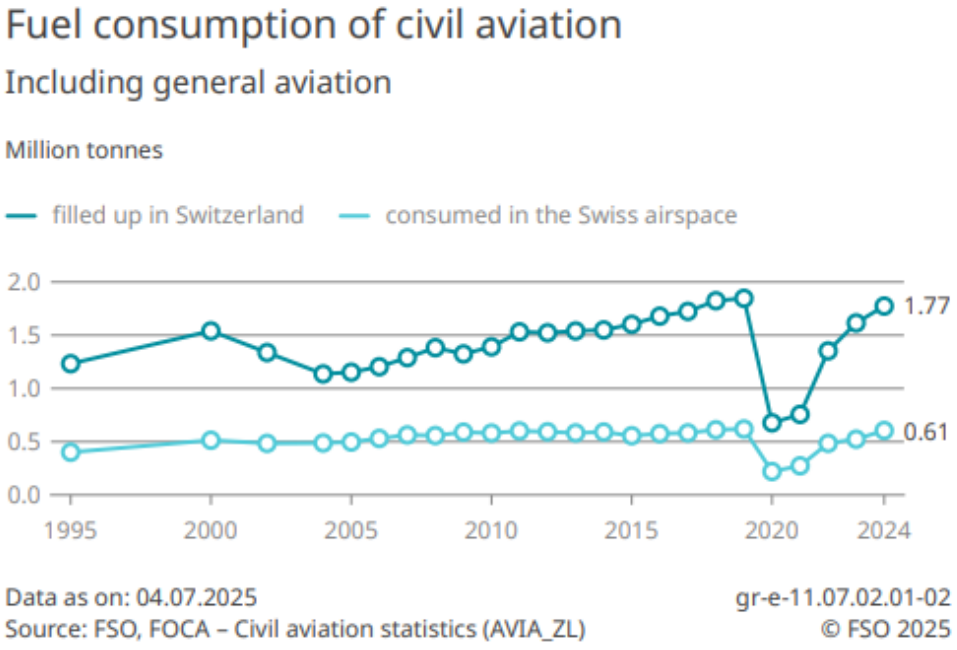
Agenda

Time	Content
14:00 – 14:15 incl. Questions	What are biogenic aviation fuels and what is permitted for use in the EU/Switzerland? Regina Betz (ZHAW-CEE)
14:15 – 14:30	What policies exist and what policies would be necessary to promote sustainable aviation fuels? Raphaela Kotsch (ZHAW-CEE)
14:30 – 14:45	What would the logistics for using biomass residues in Switzerland look like, and how would they fare in a life cycle assessment? Sandrine Werner (ETHZ-ESD)
14:45 – 15:00	How can sustainable aviation fuels be produced from biomass residues such as manure? Joshua Csucker (FHNW/PSI)
15:00 – 15:25	Where and how high is the international potential for sustainable biofuels? (Regina Betz) What is the potential in Switzerland for the use of manure? (Joshua Czucker and Sandrine Werner) What policies are missing from the analysis? (Raphaela Kotsch)
15:25 - 15: 30	End

Kerosene demand in Switzerland

Today:

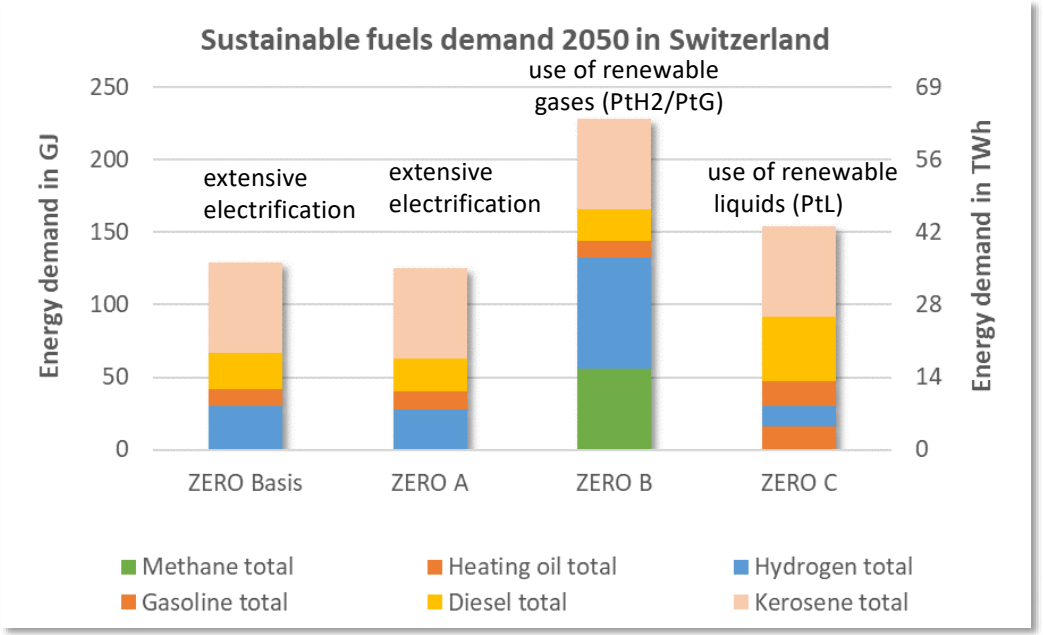
1.77 Mio. t Kerosene ≈ 5.5. Mio t CO_{2e}



Projections for 2050:

Demand of sustainable fuels in 2050 is estimated to be between 110 – 220 GJ or 30 – 60 TWh/a or **2.53 – 5 Mio. t Kerosene** depending on the different scenarios.

It is expected, that **>90% thereof has to be imported.**



Source: SFOE, Energy perspectives 2050+

ReFuel Overview

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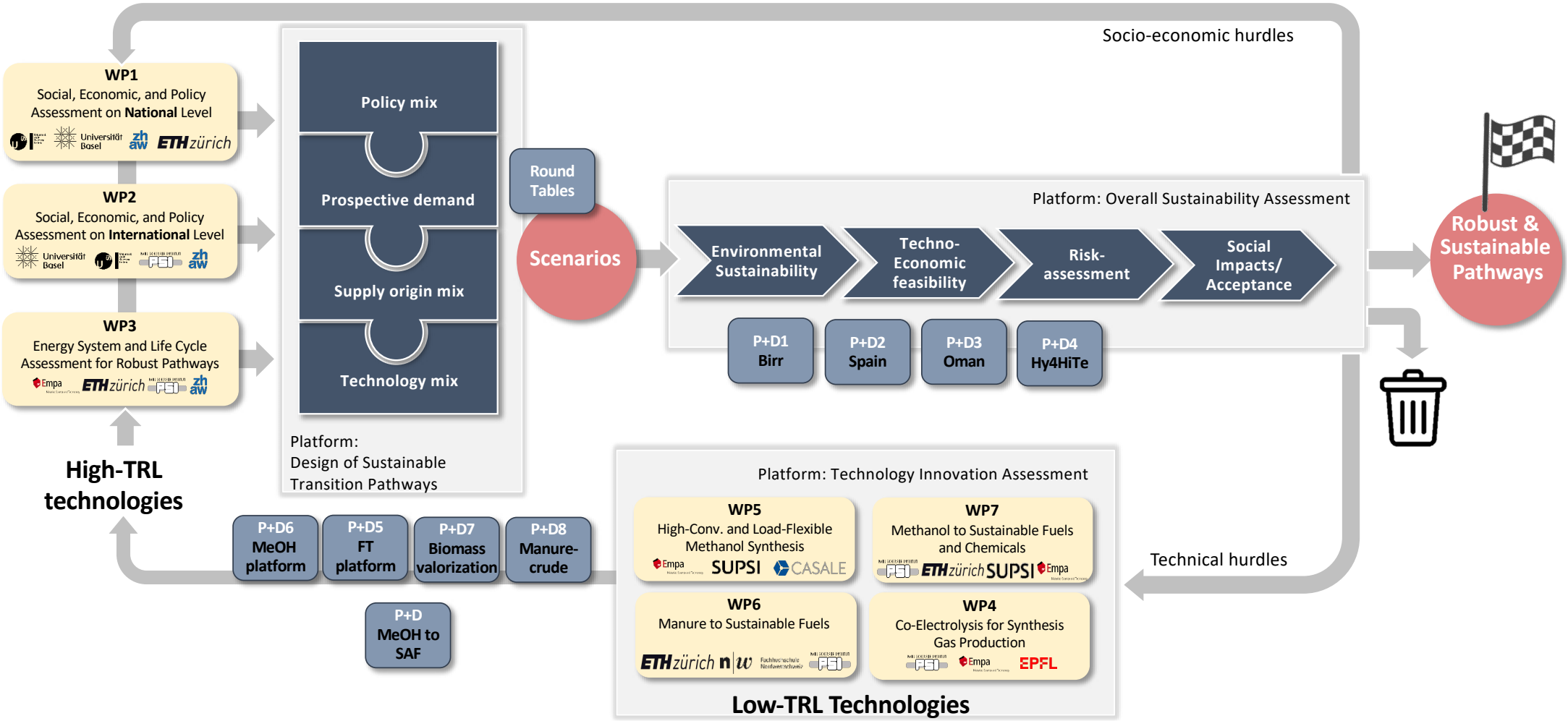

Pathways for Sustainable fuels and platform chemicals

(Import of (some of) the inputs)

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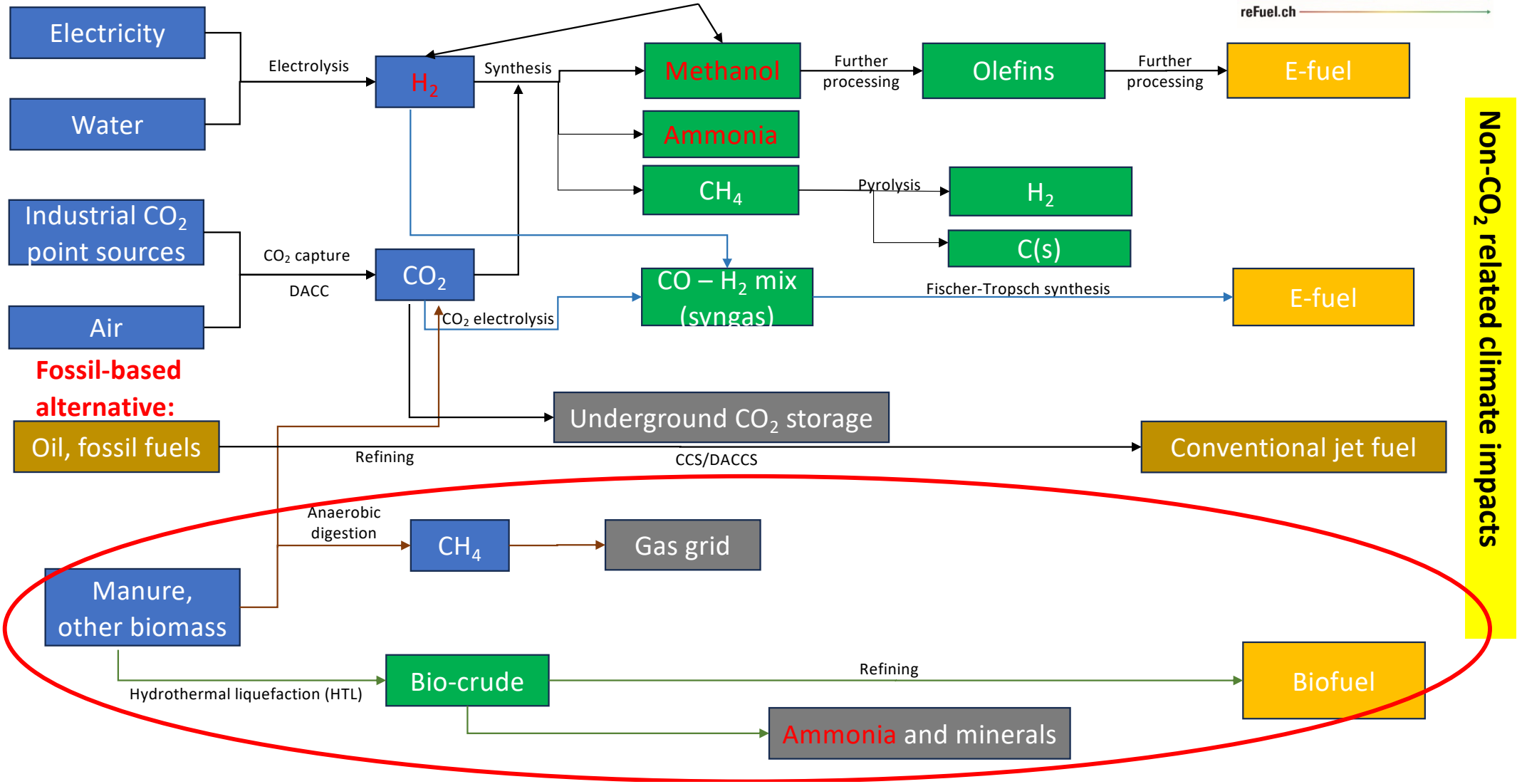

Biomass Selected Technology Pathways in competition with GHG Removals

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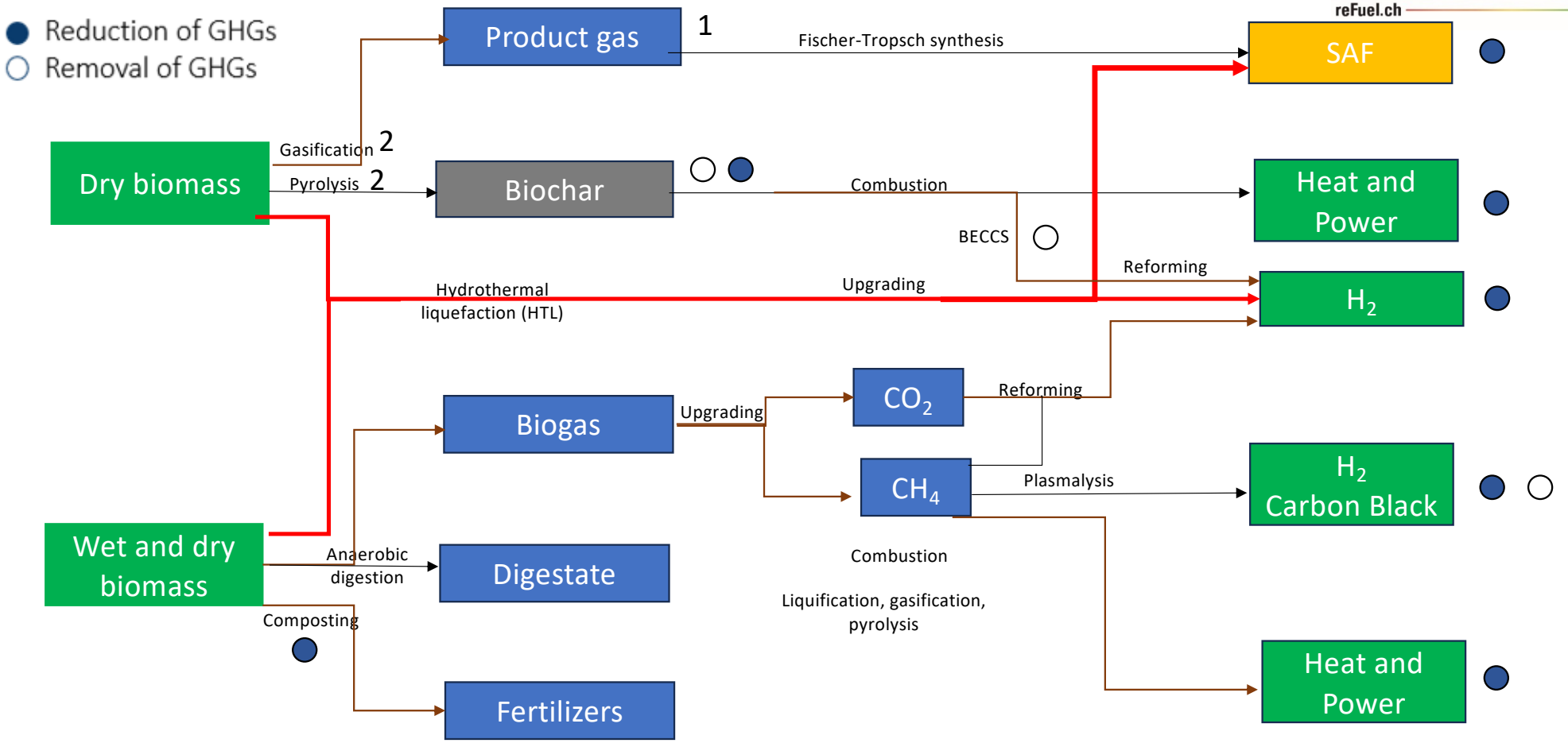

[1] primarily hydrogen (H_2), carbon monoxide (CO), methane (CH_4), along with nitrogen (N_2), carbon dioxide (CO_2), and small amounts of impurities like tar, sulphur compounds, and chlorine – for further processing upgrading is needed (e.g. syngas with defined composition of H_2 and CO for Fischer-Tropsch synthesis)
[2] Also possible: Pyro-gasification (solid and gas output)

Source: Adopted from presentation of Atmosfair

Biomass potentials in Switzerland

- The biggest Swiss unused potential is manure
- Wood/dry biomass is competing agains many other usages (e.g. building material, energy wood, pyrolisis)
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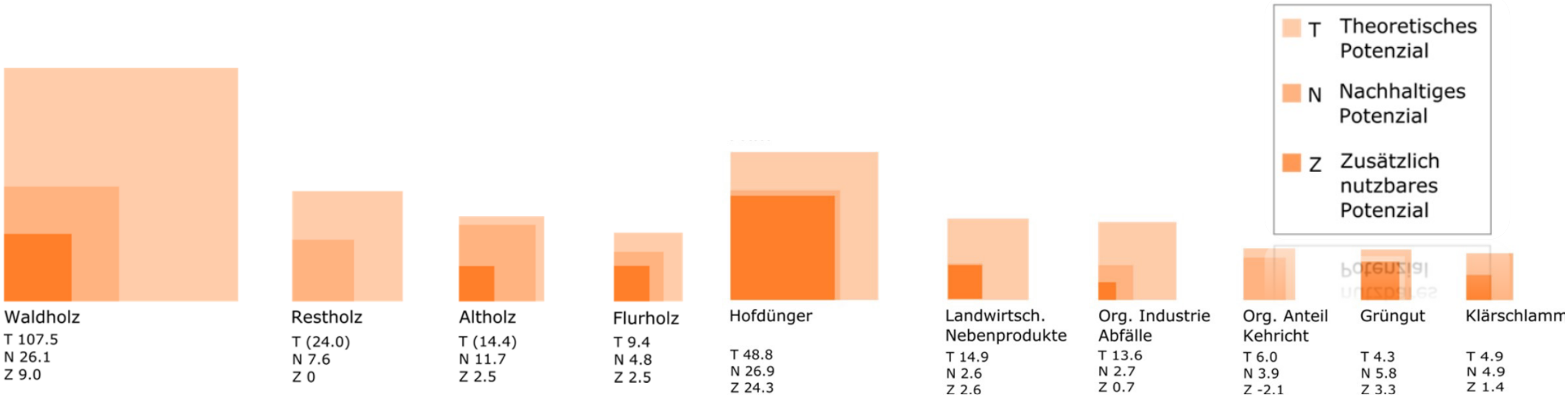

Thees, Burg et al., WSL

Questions?