



IEA Bioenergy
Technology Collaboration Programme



ITP Work Package 3

Case studies on hydrogen use in bio-based processes

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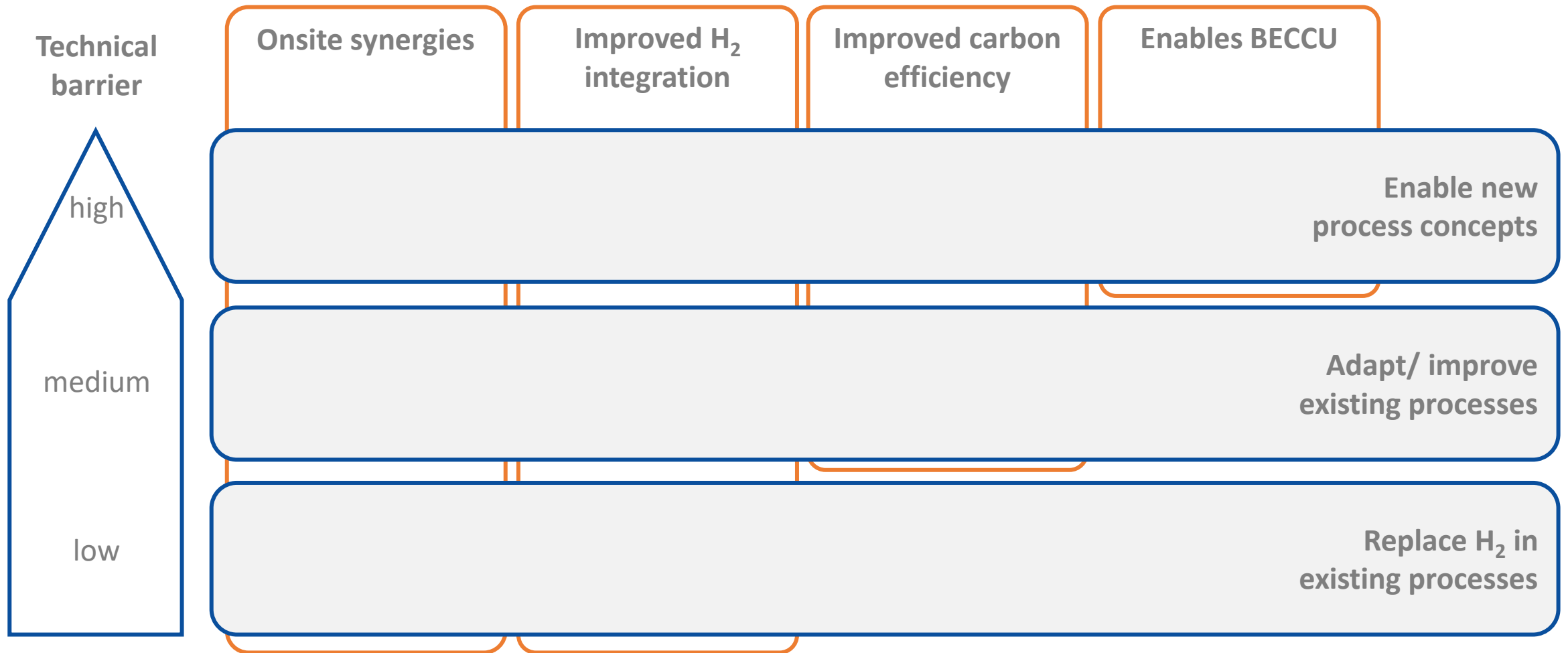
Expert Workshop: Deployment perspective of green hydrogen from biomass and green hydrogen use in bio-based processes

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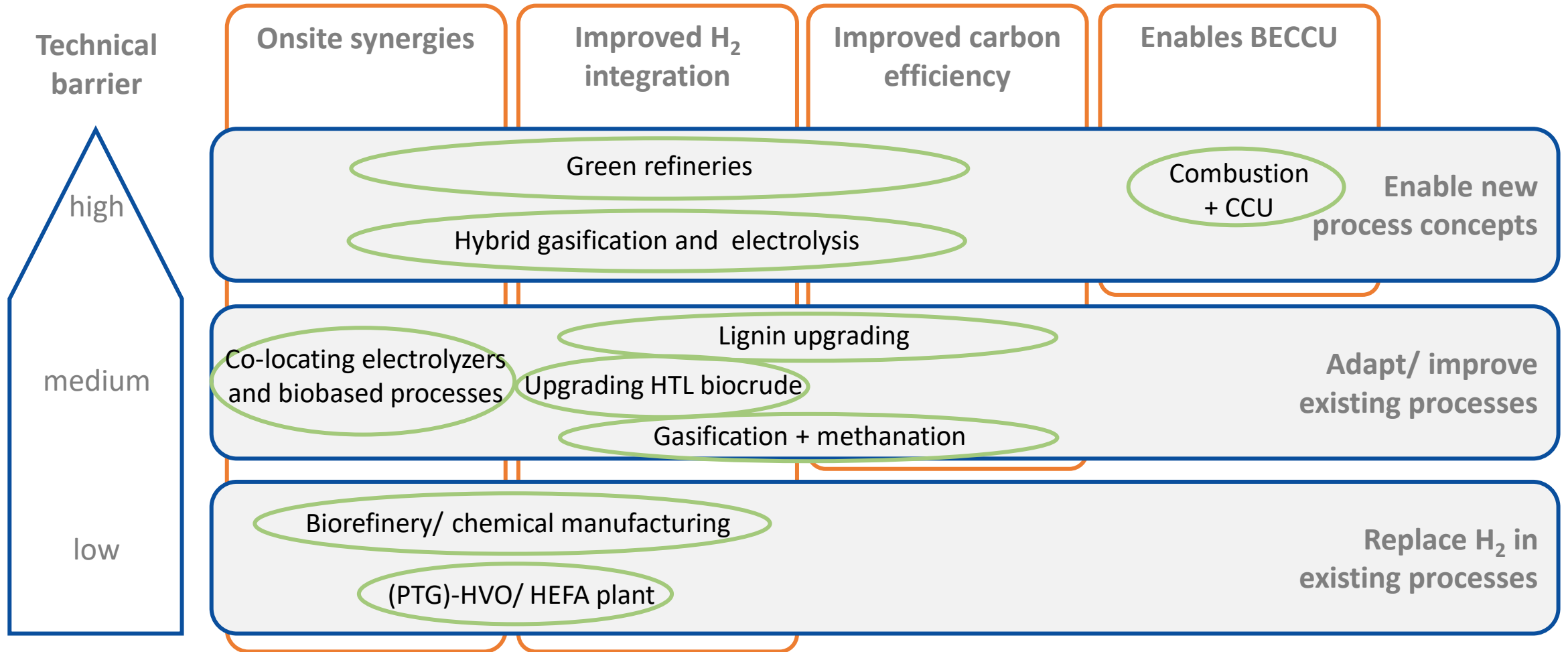
Benefits/ synergies of applying H₂ in bio-based processes

1. Synergies through process integration electrolysis/ biofuels
 - On-site synergies (infrastructure, heat, logistics)
 - Promotes use of VRE (power sink, chemical storage, green hydrogen cost)
2. Integration of (green) hydrogen in existing infrastructure
 - Little to no adaptation of infrastructure, including end use
 - Easier storage, transport and processing as liquid fuel
3. Increase of carbon efficiency of bio-based value chains
 - Improves use of biogenic carbon in final products
4. Required to enable BECCU liquids/ gases (over ,simple‘ BECCS)
5. ...?

Mapping Case Studies



Mapping Case Studies



Omega Project

- Omega Green from ECB Group is located in Paraguay
 - designed for a capacity of up to 20,000 barrels per day
- Apply commercial Honeywell UOP Ecofining concept (TRL 9)
 - HVO, SAF, and green naphtha from vegetable oils and animal fat
 - H₂ by electrolysis (water power in this case)



(image courtesy of ECB Group Paraguay)

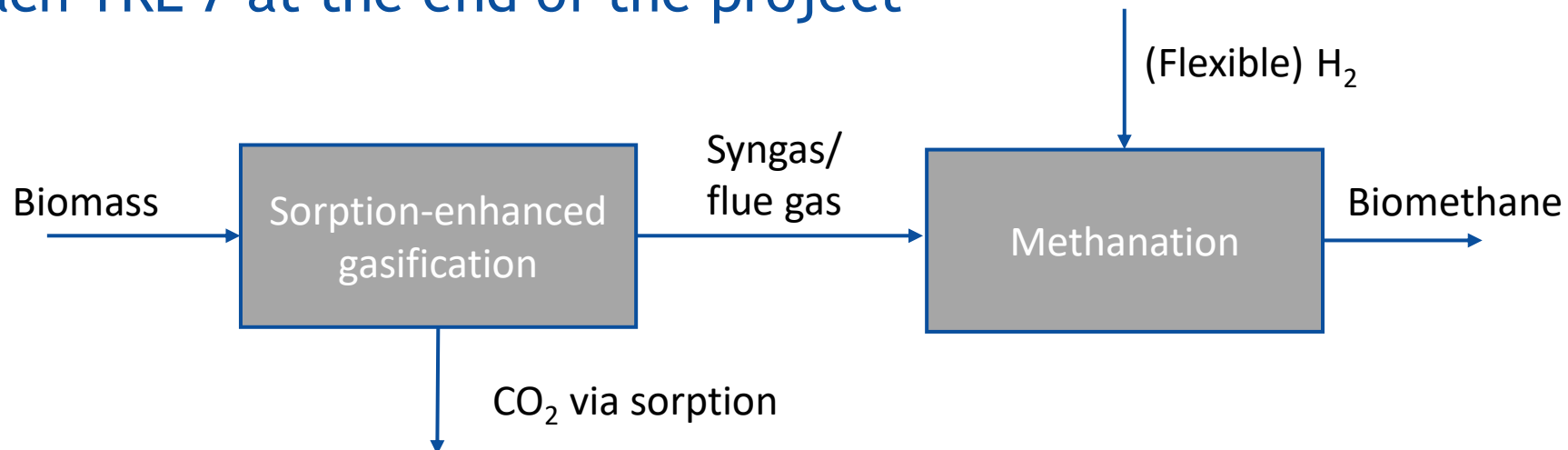
Silva Green Fuel

- Joint venture between Statkraft and Sødra for the development of advanced biofuels.
 - Construction of a TRL 7-8 hydrothermal liquefaction demonstration plant from Steeper in Tofte/ Norway
 - Commercial scale operation anticipated for 2025
 - Convert forest residues into a bio-crude oil at a rate of 4000 L/day.
- Upgrading of produced bio-crude oil to renewable diesel, jet or marine fuel via hydrodeoxygenation.



HyFuelUp

- 12 Mio EUR EU Horizon Europe Research project on ,Hybrid Biomethane Production from Integrated Biomass Conversion‘
 - Focus on digestate and other low grade biomass as feedstocks
 - Partners from Portugal (lead), Germany, Greece, Spain, Switzerland, and the UK
- Demonstrator aims elevating the technology to reach TRL 7 at the end of the project



Thank you for your attention

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