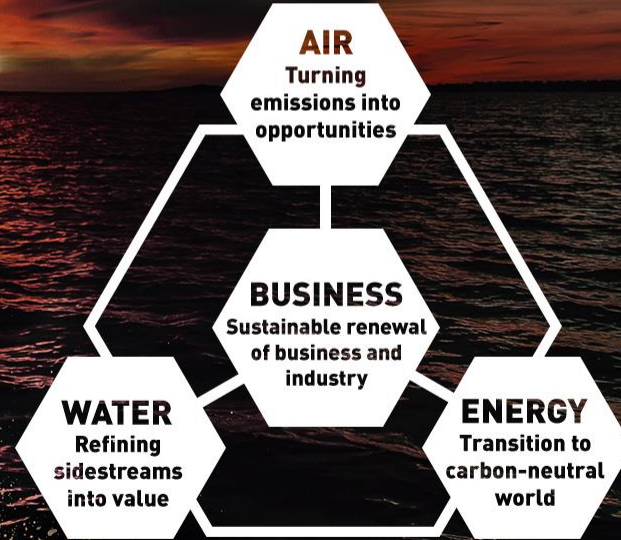


Wind Finland 2021

SYSTEM


EARTH



Green Electrification and Hydrogen Economy -projects

Leading P2X University in Europe

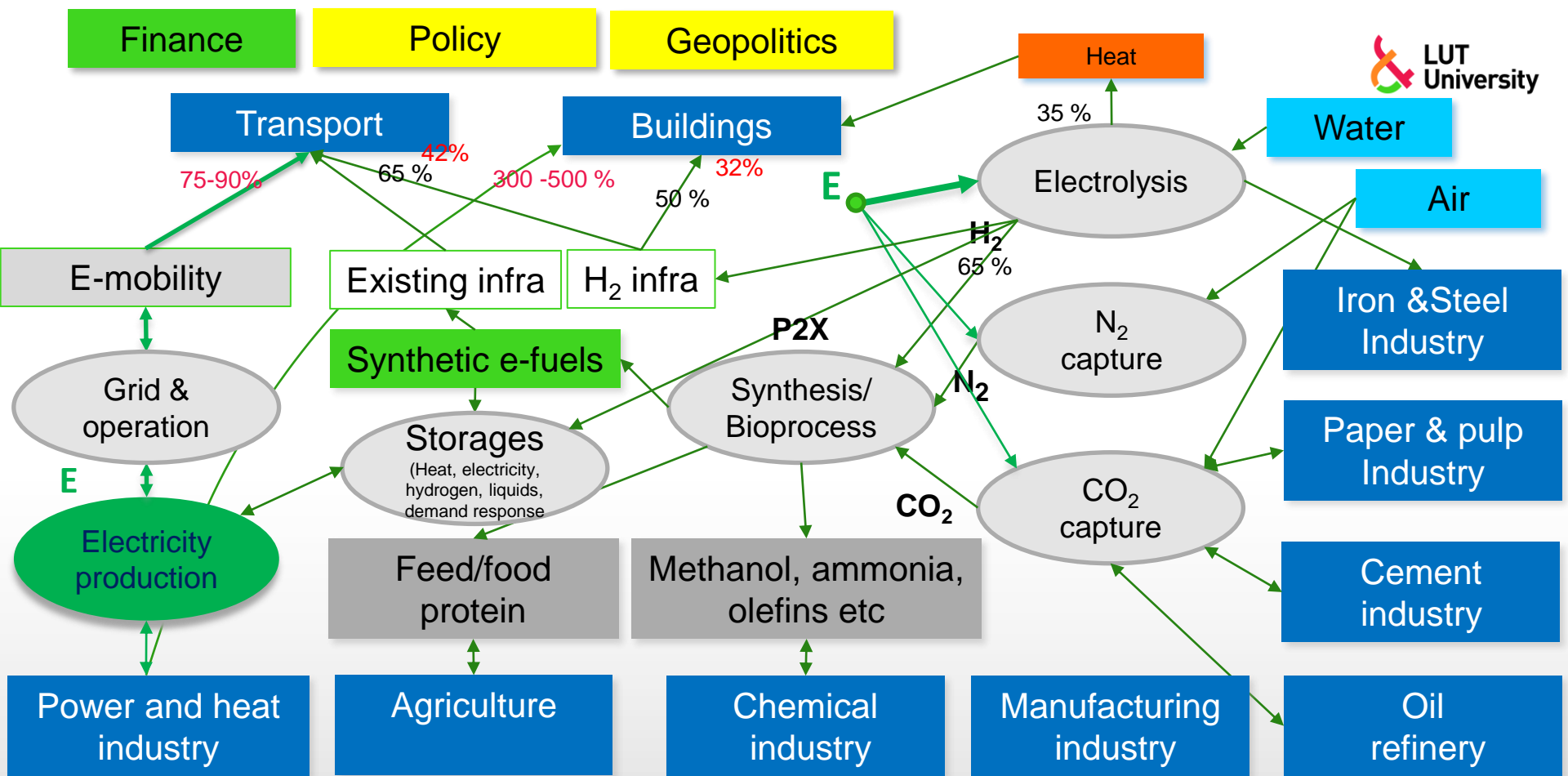
- Neo Carbon Energy –project (2014-2017)
 - Solar Food start-up (2017)
- Leading Global Energy Transition studies (LUT model is ranked highest among long-term models/hourly level, 2014 –)
- P2X Project Nebraska (Wärtsilä, Nebraska Public Power District, LUT) (2018)
- Recycling of CO₂ (St1 Göteborg, 2018)
- P2X Enable research project (2020 -)
- Public Private Partnership in Energy Investments in Public Buildings (2018 – 2021)
- Carbon Neutral Finland –report (LUT, Wärtsilä, St1)
- Feasibility Study for Industrial Pilot of Carbon-Neutral Fuel Production – P2X (<http://urn.fi/URN:ISBN:978-952-335-668-9>)
- ELPSU, Power electronics in electrolysis
 - Neovolt Oy start-up (2021)
- Carbon Neutral Åland (2021-)
- Bothnia Bay Hydrogen Valley (2021-)
- Value Chains in Green Electrification and Hydrogen Economy (Approved, begins 1.1.2022)
- South-East Finland Hydrigen Valley (Under work)

 8.12.2021

Musiikkitalo, Helsinki

Wind Finland 2021

Electrification and Hydrogen Economy – The Role of Affordable Electricity





Carbon Negative Åland Large Scale Offshore Wind Power Roadmap

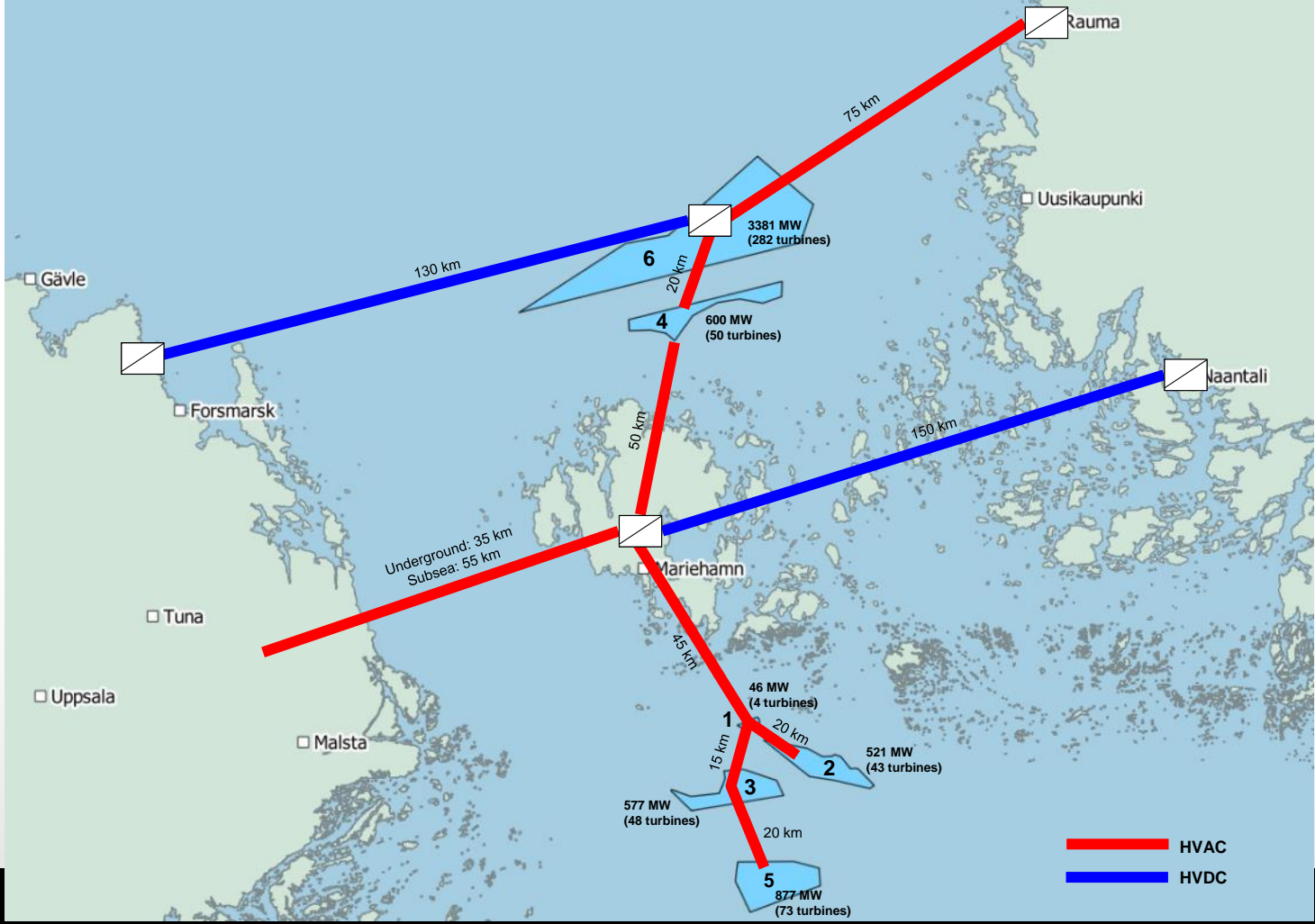
<https://lutpub.lut.fi/handle/10024/163456>

**Olli Pyrhönen, Petteri Laaksonen, Jukka Lassila, Hannu Karjunen,
Katja Hynynen, Kimmo Taulasto, Janne Karppanen, Julius Vilppo**

Interconnections Alternatives

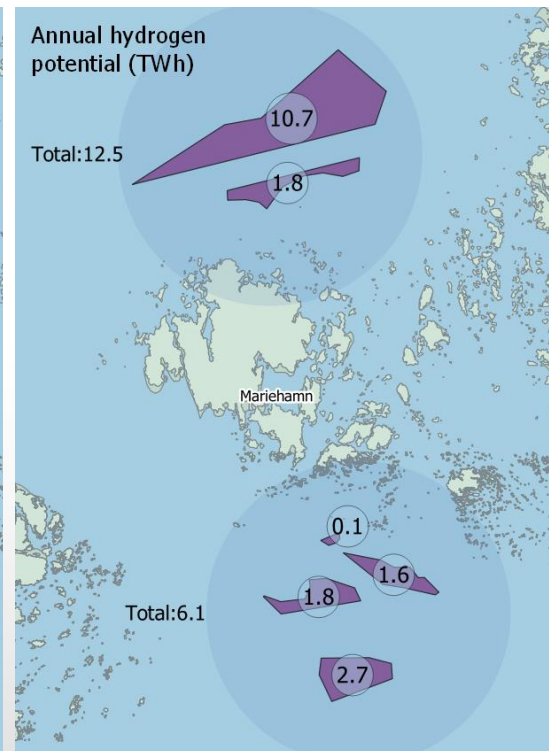
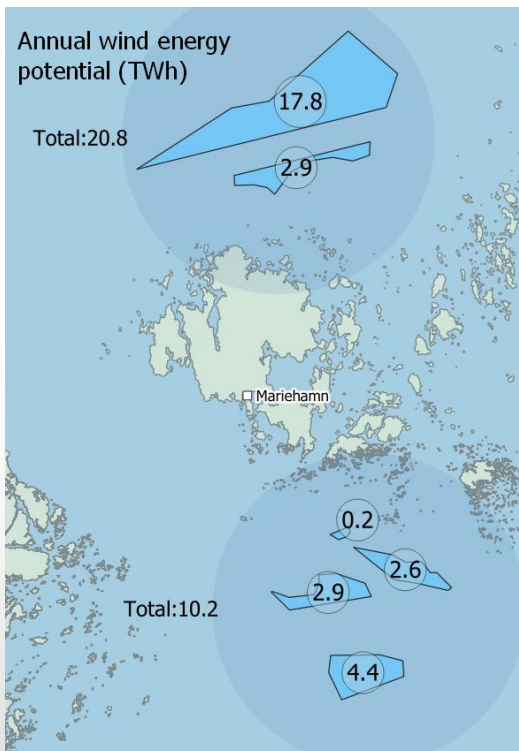
Variation of feasible technologies (HVAC vs. HVDC) for different interconnections of wind farms

HVDC = High-voltage DC
HVAC = High-voltage AC

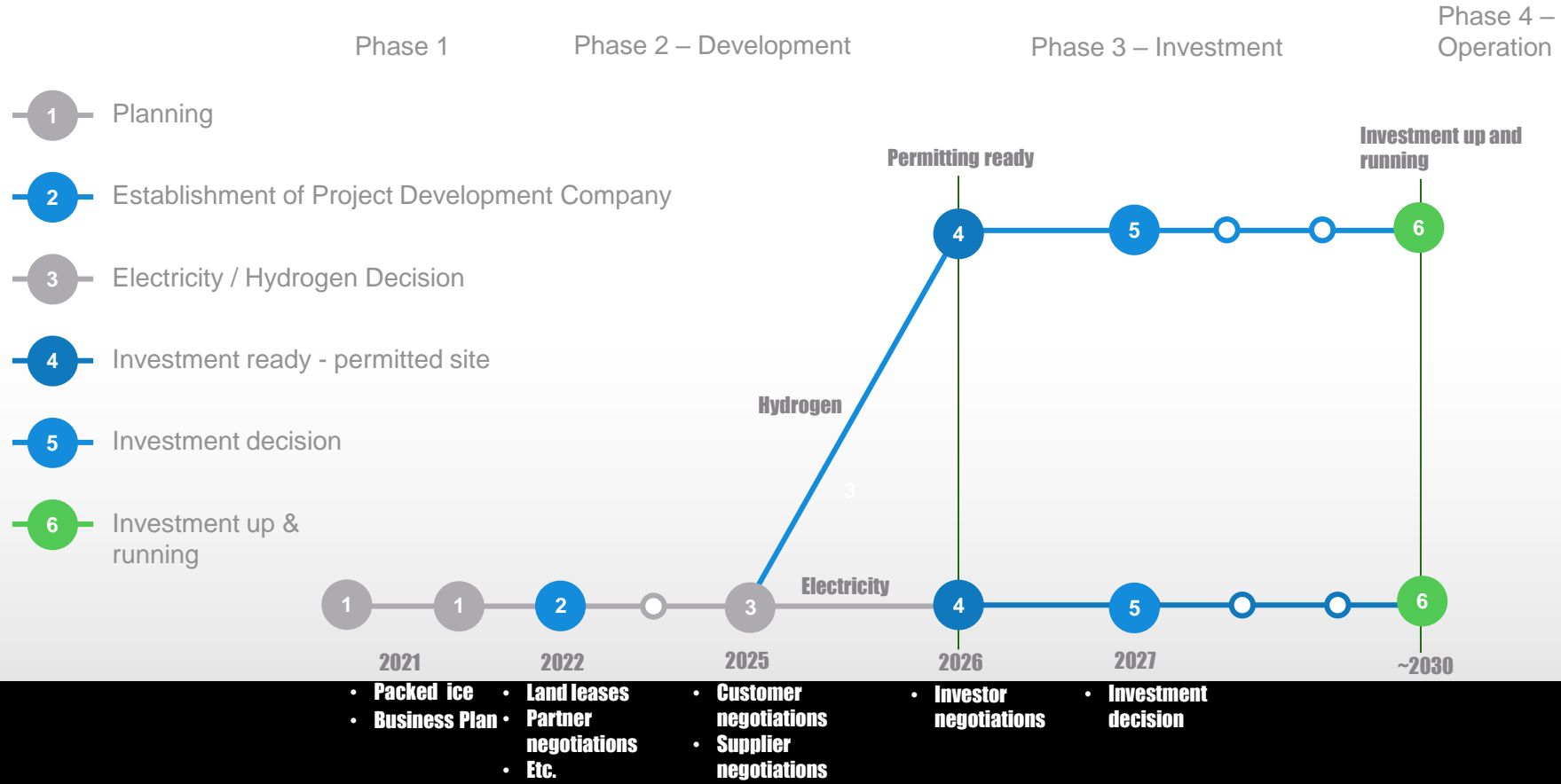


Hydrogen Production and Transport

- Potential 12 + 6 TWh_{H₂}
 - Annual Finnish natural gas use is about 24 TWh
- 60% conversion efficiency assumed (based on lower heating value of hydrogen)



Carbon Negative Åland - Roadmap





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