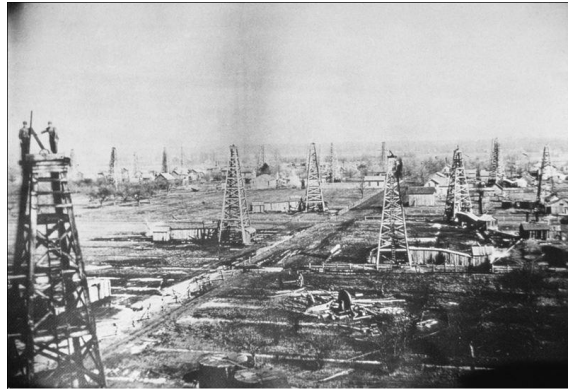


# Re-Scandinavia 2021

## Liquid Wind

Scaling access to carbon neutral fuel

# The Green Energy Transition



## 1880 – Industrial Revolution

Fossil extracted  
Oil/Coal/Gas



Electricity  
Liquid Fuel

**Emits fossil CO<sub>2</sub>**

## 2000+ Green Revolution

Renewable Electricity



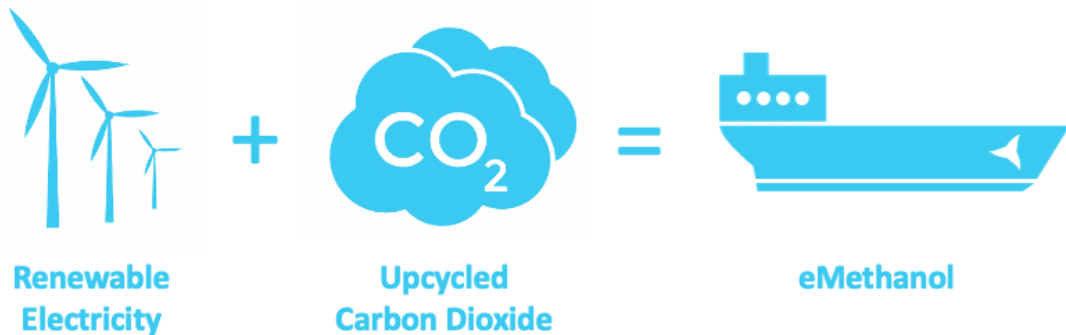
Liquid Fuel

**Carbon Neutral uses CO<sub>2</sub>**

# Liquid Wind concept & vision

Liquid Wind develops renewable eMethanol facilities to;

- increase supply of carbon neutral fuel, and
- prevent CO<sub>2</sub> emissions



Per year, each standard facility;  
**Upcycles 70,000 tonnes of CO<sub>2</sub>**  
**Generates 50,000 tonnes of eMethanol**  
**Prevents 100,000 tonnes of CO<sub>2</sub> emissions**  
**Use 550 GWh or renewable electricity**

## Establishing commercial-scale facilities

<b>2024</b>	First facility in Örnsköldsvik, Sweden
<b>2030</b>	10+ facilities
<b>2050</b>	500 facilities, globally



# eMethanol – in-direct electrification



- The marine sector is in the forefront
- Methanol is a "ready to use" marine fuel
- eMethanol – a possibility to kick-start

- Direct electrification not possible
- Preferred: Liquid fuel with high energy content



“reduce the total annual GHG emissions (from International Shipping) by at least **50% by 2050** compared to 2008.”



Committed to "**net-zero CO2** emissions from operations by 2050"

**Getting to Zero Coalition**

“Development and deployment of commercially viable deep sea **zero emission** vessels by 2030“

Source: UNCTAD - Review of Maritime Transport 2019

# Carbon Neutral eMethanol

Liquid Wind will produce eMethanol only at highest sustainability criteria (Beyond Compliance)



## Additional Renewable Electricity

- ✓ LW will commission additional renewable to cover full consumption
- ✓ RED II Compliant

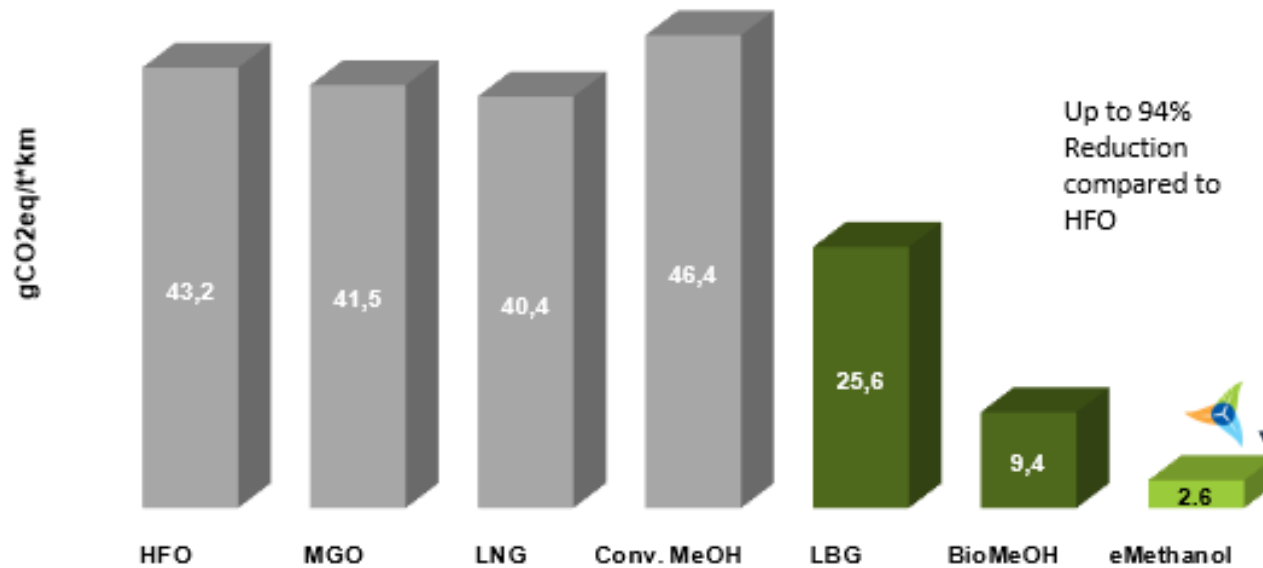


## Biogenic CO<sub>2</sub>

- ✓ LW will only biogenic sources to (e.g. Pulp & Paper Mills)
- ✓ DAC when cost competitive

# eMethanol from Liquid Wind = 94% reduction in CO2 emission

Climate change potential of different fuel alternatives



\*Comparison fuels based on Brynolf (2014): Environmental assessment of marine fuels

Press releases

A.P. Moller - Maersk will operate the world's first carbon neutral liner vessel by 2023 – seven years ahead of schedule

17 February 2021

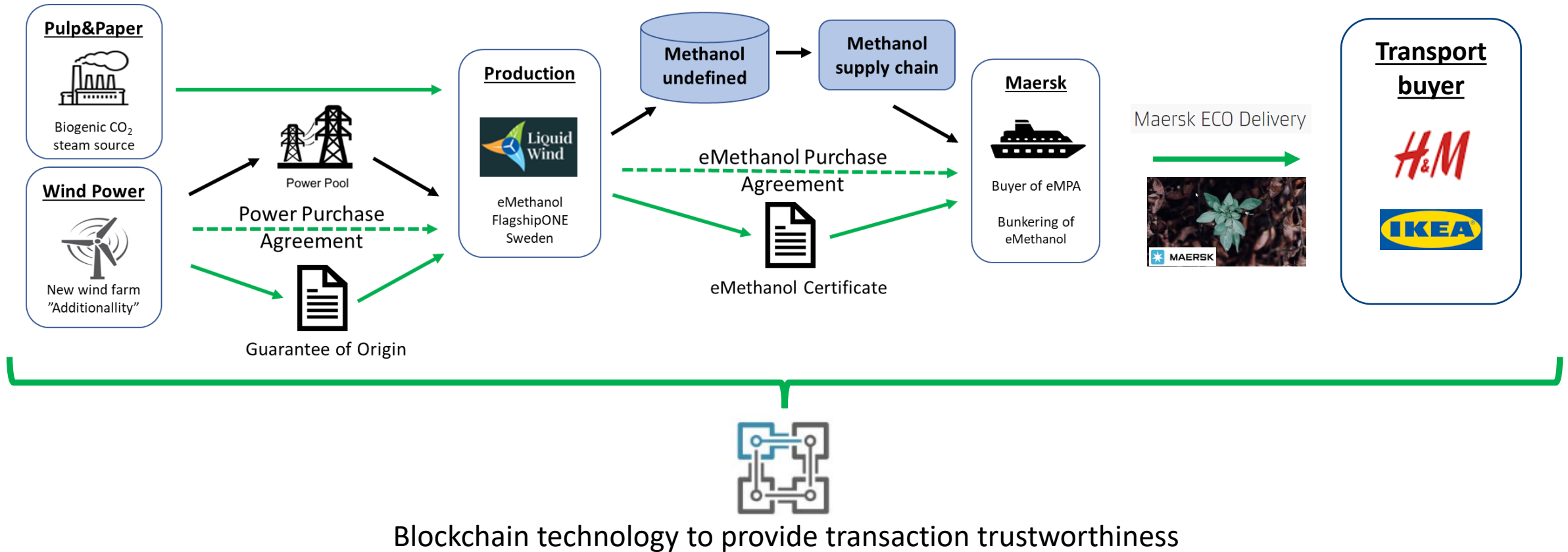
Sustainability Ocean Transport

Share



A.P. Moller - Maersk speeds up on decarbonisation with a methanol-fueled feeder vessel on the water in 2023, piloting a scalable carbon neutral product to customers and offering fuel suppliers incentive to scale production of the fuels of the future.

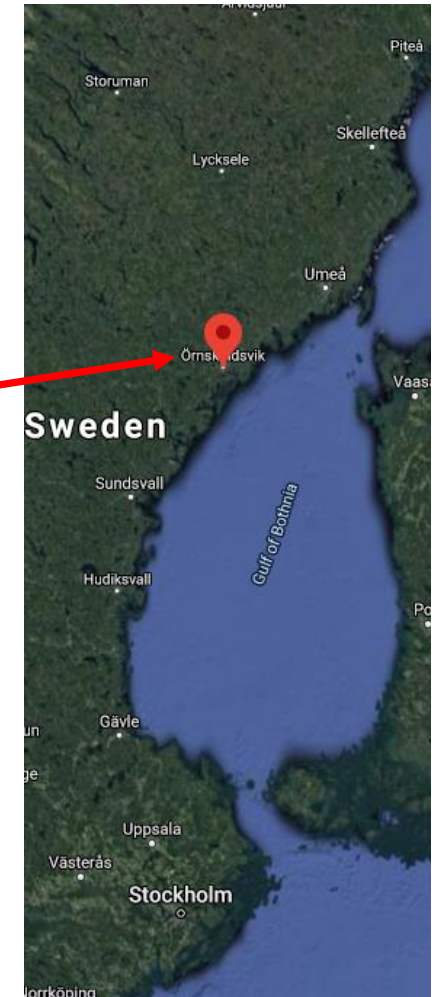
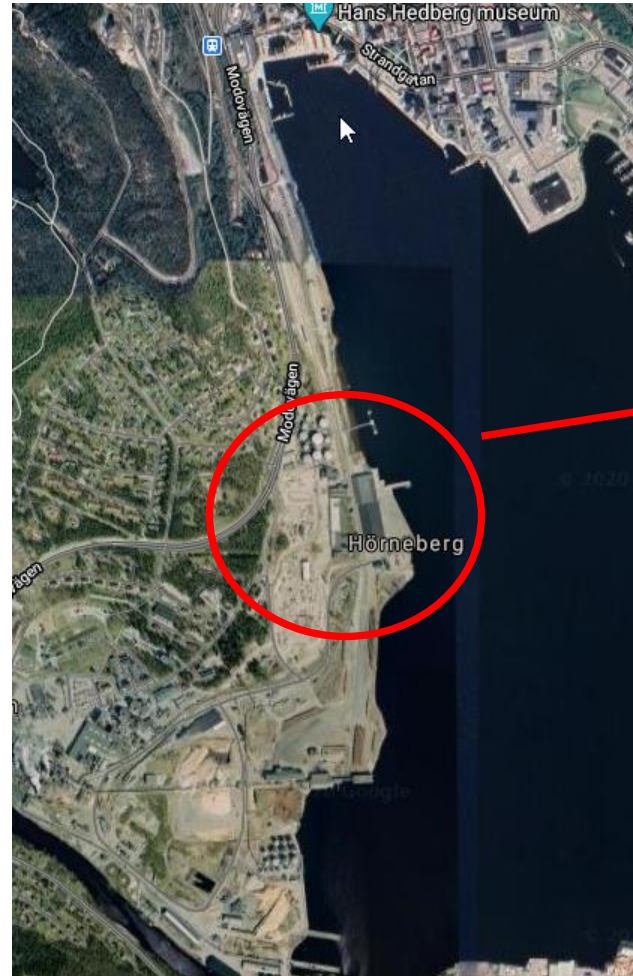
# Sustainability tracking - core component of Liquid Wind eMethanol



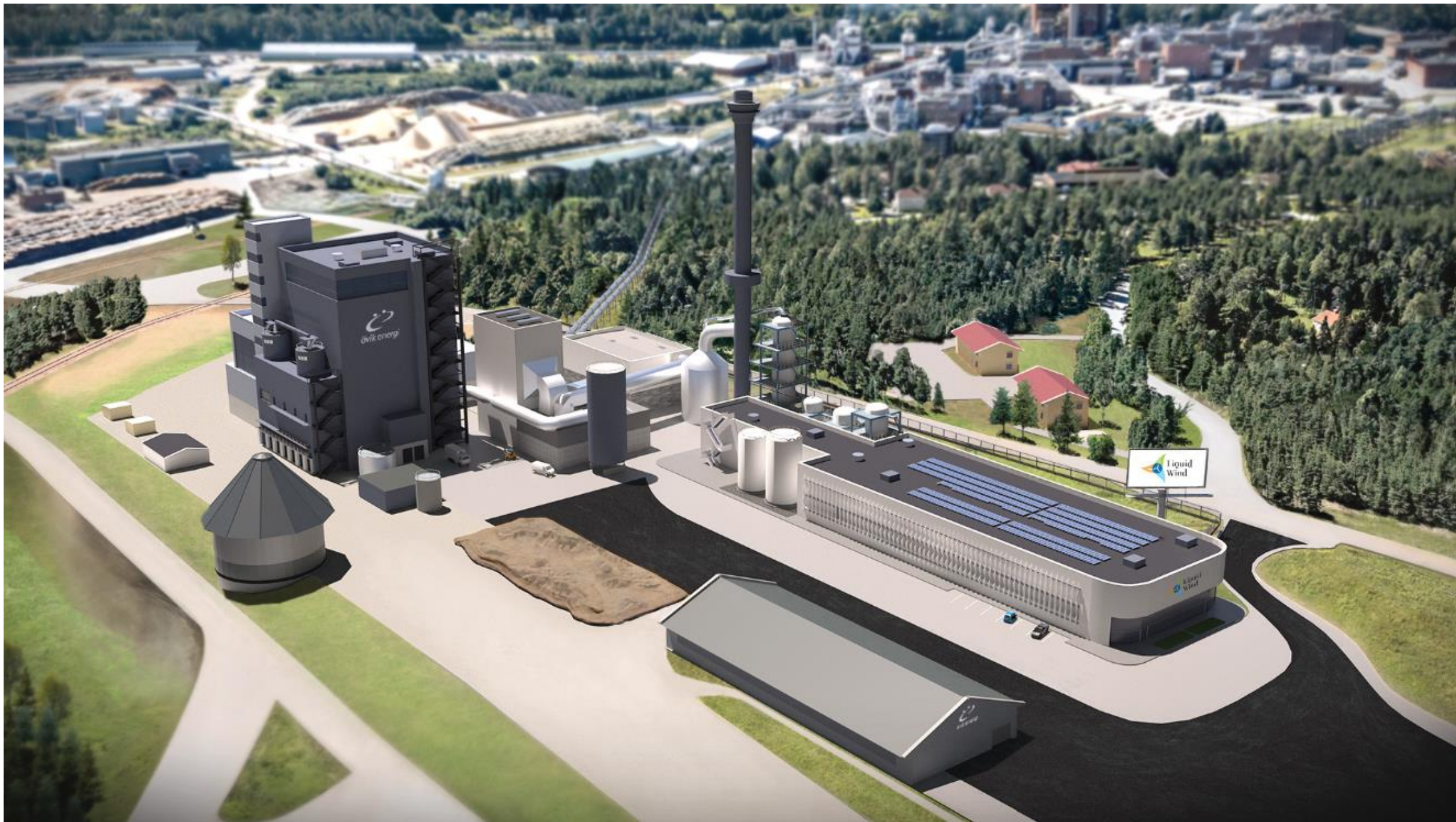
# Site for the first FlagshipONE facility – Övik Energi Hörneborgsverket

## FlagshipONE Host: Övik Energi Hörneborgsverket

- CO2 source: Hörneborgsverket exhaust gases  
=> bio-genic CO2
- Basic Engineering started February 16
- PPA sourcing on-going
- eMPA (eMethanol Purchase Agreement)  
negotiations on-going
- Permitting on-going
- Financial Close: end of Q1 2022
- COD: Early 2024





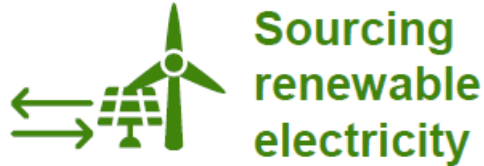


# RES sourcing challenges

1. Lowest possible cost and long term
  - Focus on the north of Sweden – SE1, SE2
2. RED II compliance
  - Necessary to meet customer demands
3. Coordination of financing processes
  - Mutual dependency
4. Speed of build-out
  - Each Flagship facility need 550 GWh/y

# RFNBO Renewable Evidence in RED II

## Renewable evidence through 4 requirements



*Electricity consumed must be “produced exclusively from renewable sources”*



*“... there should be an element of additionality, ... the fuel producer is adding to the renewable deployment or to the financing of renewable energy.”*



*There should be a “temporal... correlation between the electricity production unit with which the producer has a bilateral renewables power purchase agreement and the fuel production”*



*There should be a “geographical correlation between the electricity production unit with which the producer has a bilateral renewables power purchase agreement and the fuel production”.*

Exact requirements are to be defined in the upcoming delegated act of RED II

# Delegated Act – leaked draft



## Article 4

*Rules for counting electricity taken from the grid as fully renewable*

- **Additionality / timing (4 c)**

Key text: *came into operation in the same 12 months as the installation producing the renewable hydrogen, or later*

- **Temporal correlation (4 d) – 2 alternatives**

a) 15 min correlation, or

b) *it can be demonstrated based on data reported by the national transmission system operator that the share of renewable electricity in the same quarter of the hour in the bidding zone where the electrolyser is located is higher than the average share of electricity from renewable sources in the country where the electrolyser is located, as measured two years before the year of producing of the renewable liquid and gaseous transport fuels of non-biological origin*

# Bringing eMethanol to market at scale



**2050 Goal**  
50 million ton reduction in carbon emissions, every year

Join our journey to  
a cooler world



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[LiquidWind.se](http://LiquidWind.se)