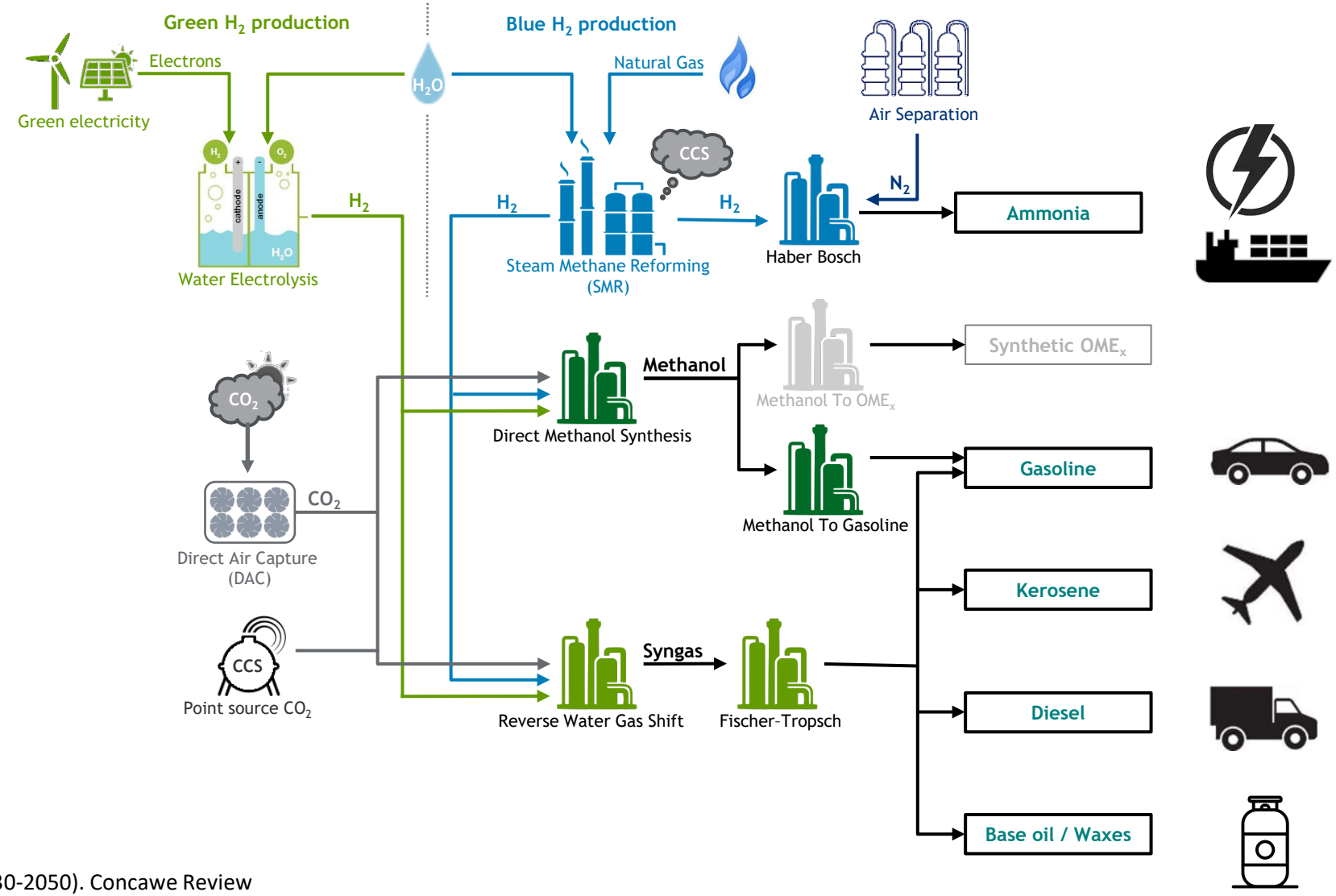
What are Synthetic Fuels (Power-to-Liquid)?

Building a fuel from scratch out of atoms and basic molecules

e-Fuels are synthetic hydrocarbons, resulting from the combination of **renewable hydrogen** and **CO_2 captured** either from concentrated (point) source or from the air (DAC).

e-fuels are also named as RFNBOs, power-to liquid (PtL), power-to-X (PtX) or power-to-gas (PtG) and synthetic fuels(1).

Renewable Fuels of Non-Biological Origin (RFNBOs) are defined as *"liquid or gaseous fuels which are used in the transport sector other than biofuels or biogas, the energy content of which is derived from renewable sources other than biomass"* (2)



(1) A look into role of e-fuels in the transport system in Europe (2030-2050). Concawe Review

Synthetic e-Fuels will play a key role in 2035+

Demo plant under construction in Port of Bilbao

Operational date
Q2/2026 (Demo)

Project capacity
2,1 kton/y (Demo)

CO_2 abatement
6,9 Kton/y (Demo)

Renewable electricity for Green Hydrogen
10 MW ELECTROLYSER,
BASQUE HYDROGEN S.L. (BH)

H_2 Hidrógeno renovable
Proyectos singulares y pioneros

Objective

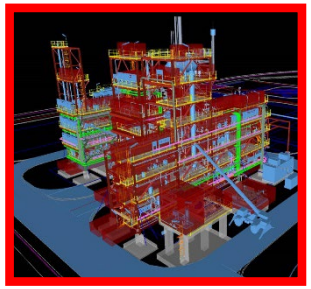
Development of **first of a kind e-Fuels plant** using captured CO_2 and green hydrogen.

Validation of **e-SAF** and **e-Diesel** production

Key insights

- **Drop-in** fuel that can be blended in existing engines in LDVs, HDVs, airplanes and ships.
- Demonstrate the whole value chain of producing synthetic fuel from CO2 and renewable hydrogen.
- Perform real fleet tests with market/clients/partners.

Project overview



- **Synthetic fuel plant** consisting in RWGS + Fischer Tropsch unit and Upgrading unit with capacity to produce e-jet, e-diesel, e-gas, e-naphtha.
- **Technology Development Plan** of both proponents and partners to de-risk technology

Partnerships for E-fuels production

aramco — Project proponent and partner

REPSOL — Project proponent and partner

Petronor — Operation and refinery integration

JM — Technology partner (rWGS + FT) technologies

Axens Powering integrated solutions — Technology partner (Product upgrading)

Partnerships for Renewable H2 production

10MW Electrolyzer **Basque Hydrogen**, by:

alba Emission Free Energy by Petronor

ENERGIAREN EUSKAL ERAKUNDEA ENTE VASCO DE LA ENERGÍA

enagas renovable