

# Produktion von SYN-FUELS & CHEMICALS – Umsetzung und Skalierung

ÖGEW/DGMK Herbsttagung 2021  
Umsetzung der Energiewende – Wunsch & Wirklichkeit

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# Why synthetic fuels?

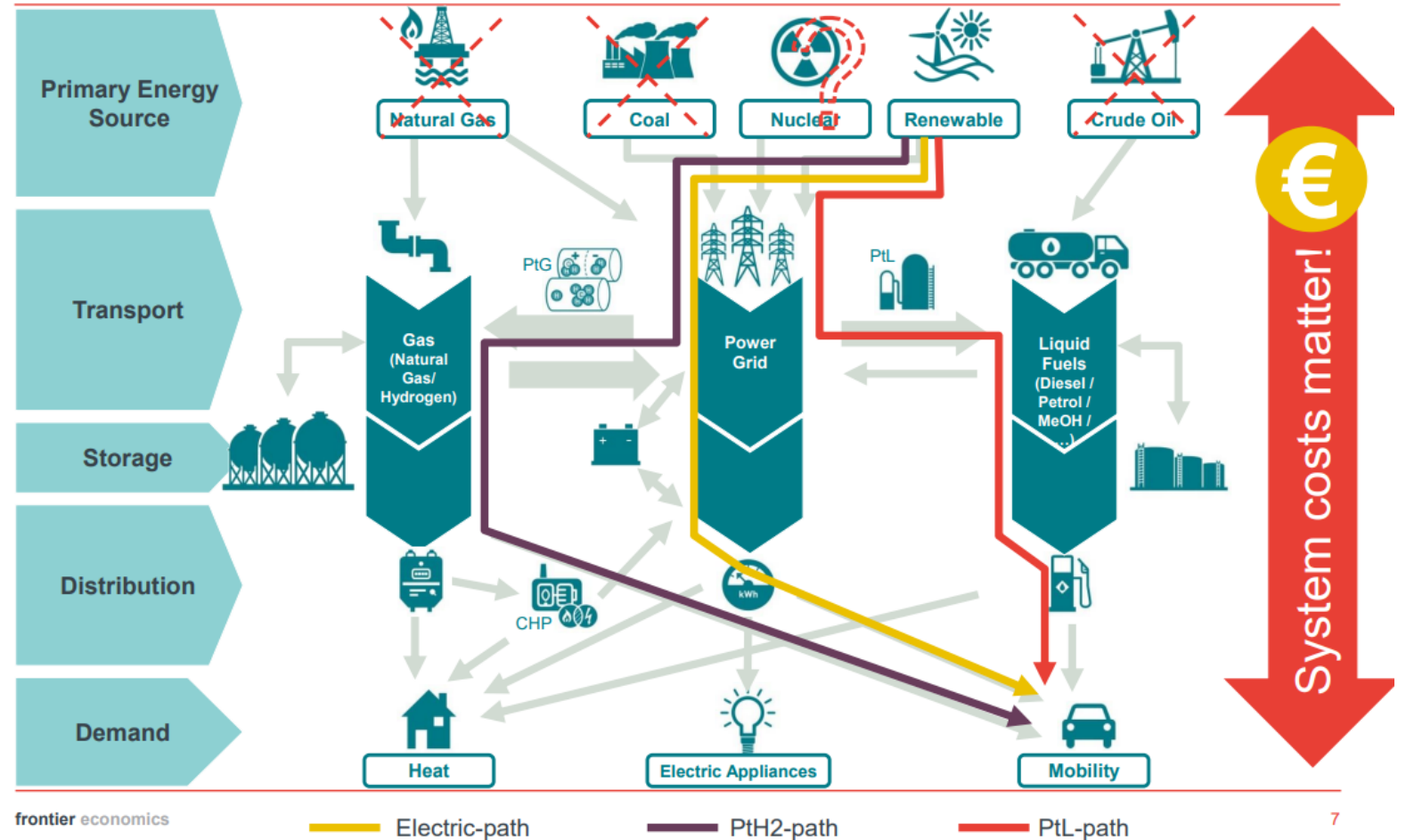
## All clear?

Das Wasserstoffauto ist nachgewiesenermaßen NICHT die Klimälösung 🚗  
 Im Verkehr hat sich die Elektrifizierung durchgesetzt, und das aus gutem Grund. E-Autos sind um ein X-faches ressourcenschonender als Fahrzeuge, die mit Wasserstoff oder Synfuels angetrieben werden. Schluss mit Debatten, die sich schon längst erübrigt haben ❤️



Die Grünen – Oberösterreich - Facebook

„Fuel Chains“ (Well-to-Wheel) must be planned and evaluated together with the full energy system!



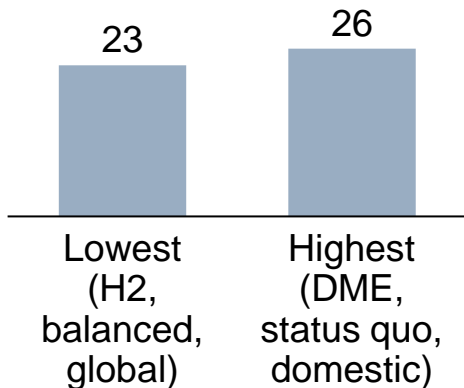
frontier economics

<sup>1</sup> Based in Frontier Economics November 2021

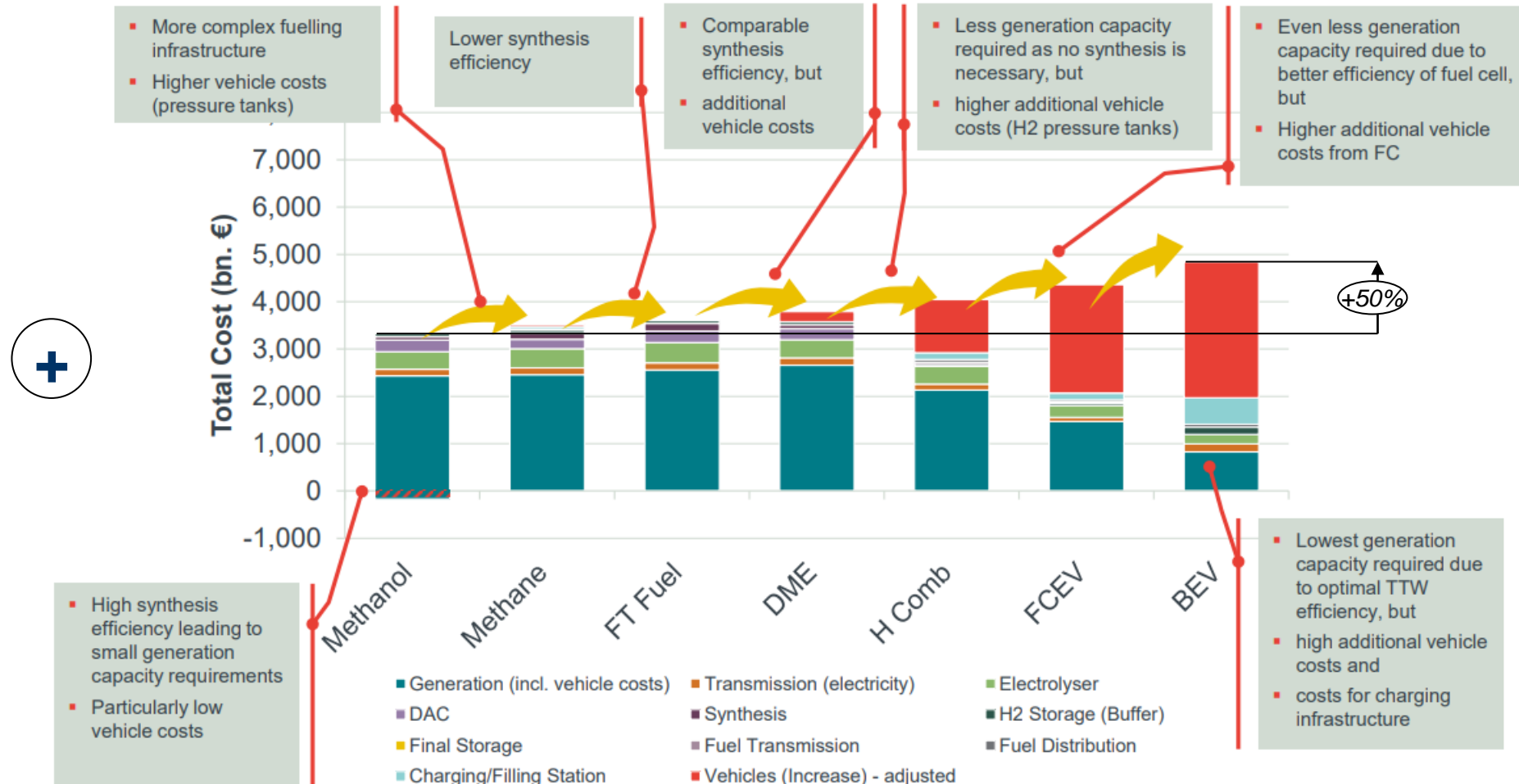
# E-fuels vs. battery – similar CO2 performance, higher efficiency

Cum. CO2 emissions 2021-2050<sup>1</sup>  
(road transport), bn t of CO2eq

- ▶ Scenario modelling:
  - ▶ 6 fuel types (electric, H2, FT, CH4, MeOH, DME)
  - ▶ 7 drive trains (BEV, H2FC, H2IC, ICE for FT, CH4, MeOH, DME)
  - ▶ 3 efficiency development pathways (status quo, balanced, all-in)
  - ▶ Domestic vs. global sourcing
- ▶ 42 technology options for climate neutral mobility in EU until 2050



Total incremental cost, bn EUR

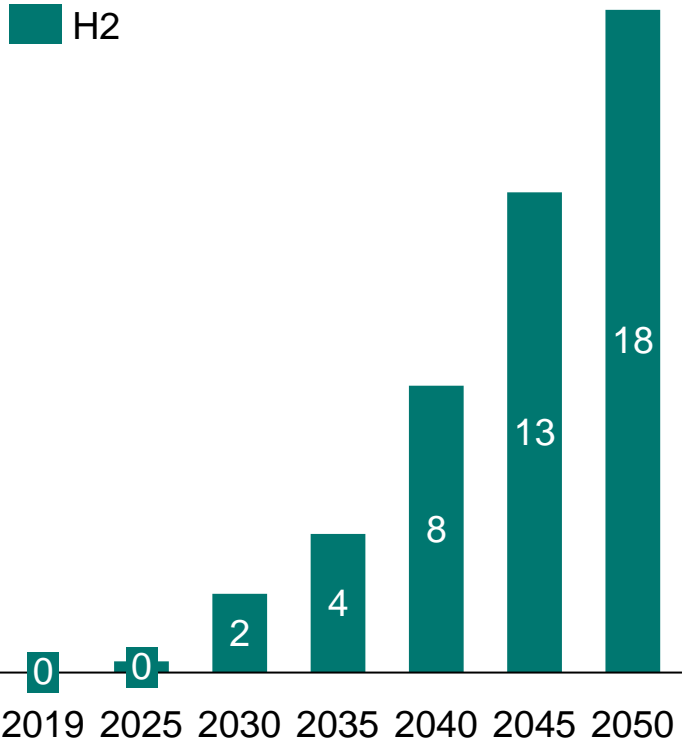


<sup>1</sup> Backcasting of cum. CO2 emissions in EU with assumed linear ramp-up of alternative vehicle drivetrain technologies and defossilised final energy supply up to 100% defossilised transport by 2050

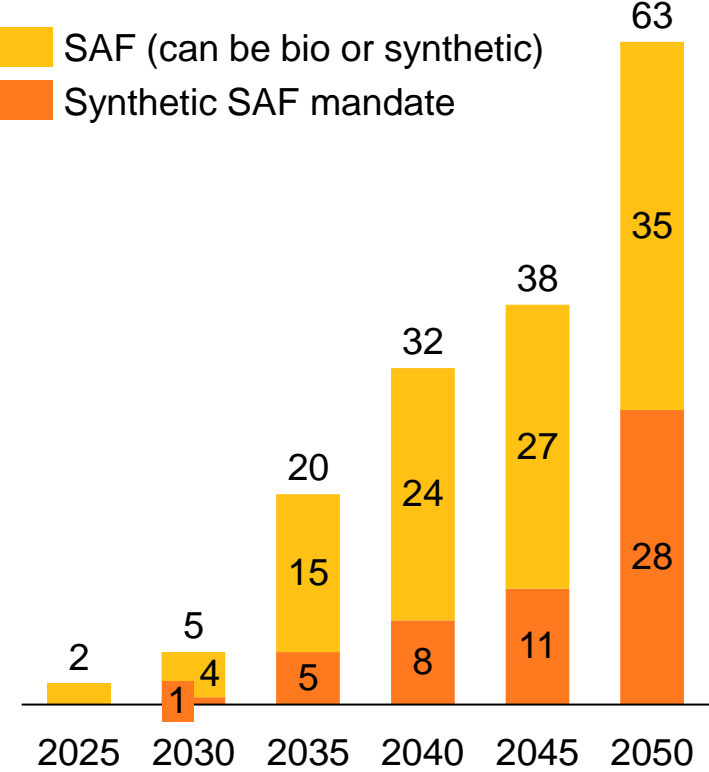
# Fit Four 55 Five creates a market for renewable fuels of non-biological origin

Mn t

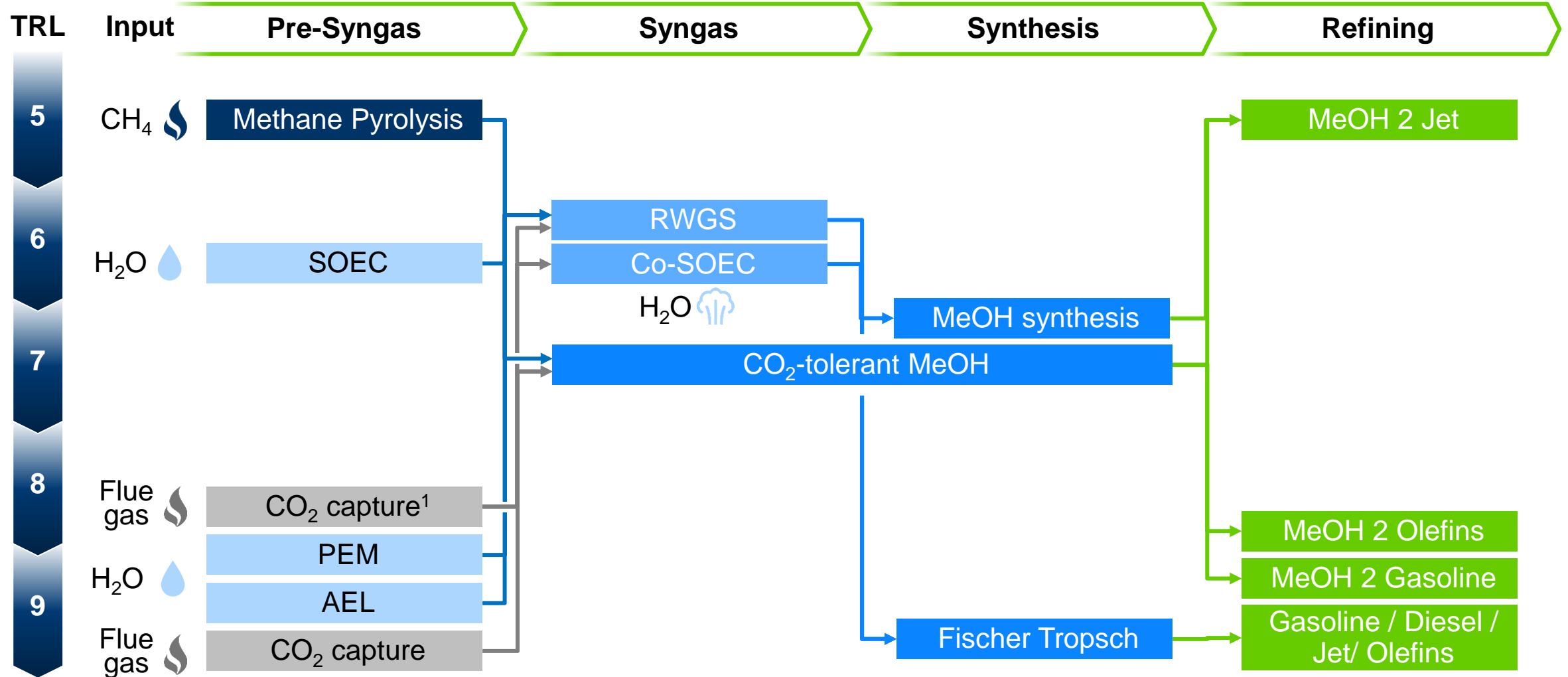
Quota for hydrogen...



... quota for synthetic aviation fuel



# Synthetic fuels & chemicals process flow and development level



<sup>1</sup> Flue gas CO<sub>2</sub> Capturing (< 10 % CO<sub>2</sub> Concentration is not yet TRL 9)

# OMV project funnel is tailored to technological development needs

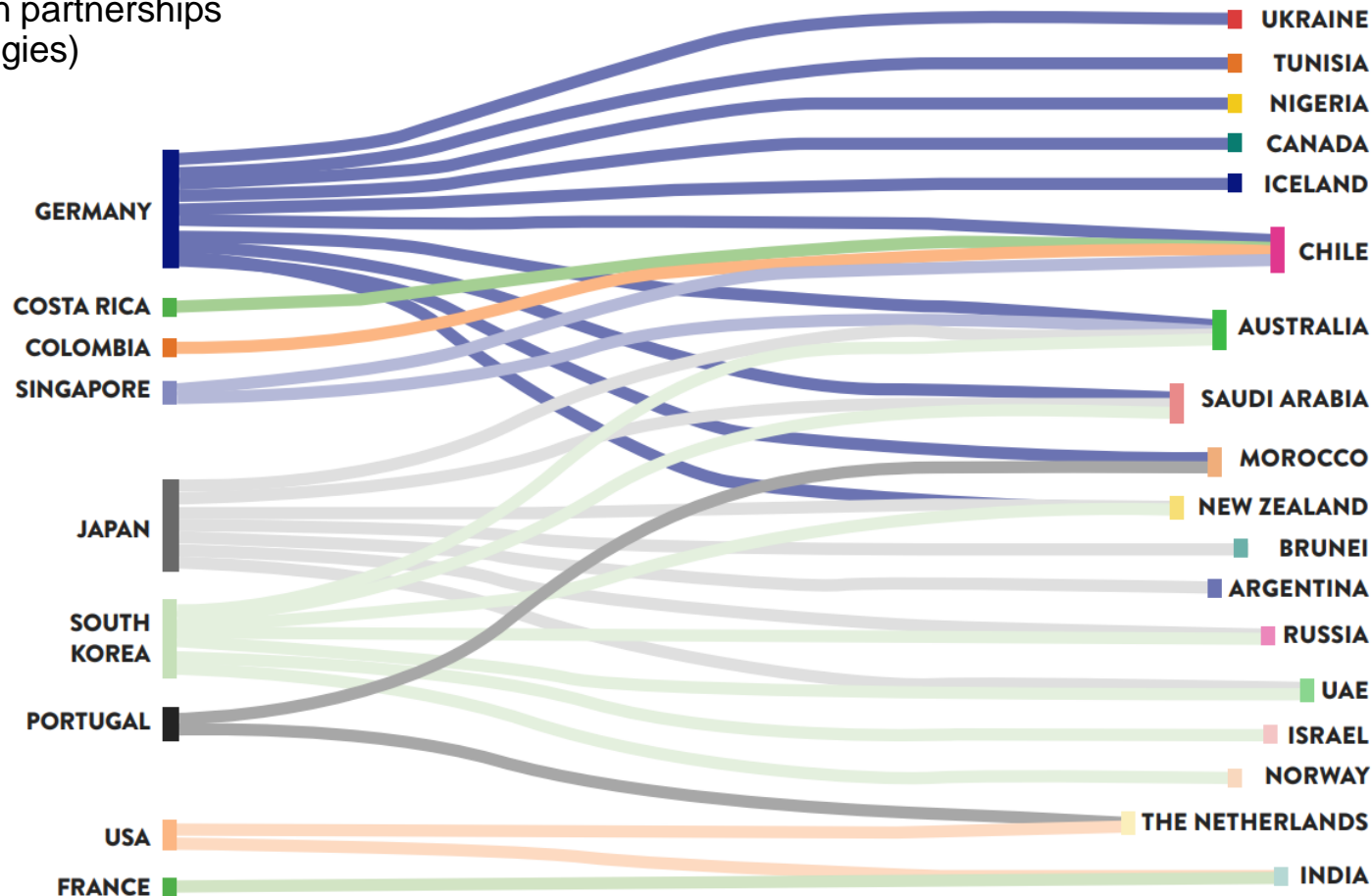
	E-fuels project Schwechat	C2PAT	CleanTech Bavaria
<b>Synthetic production capacity, kt/a (MW)</b>	~0.5 (1 MW)	~2 (10 MW)	> 50 kt/a (>100 MW)
<b>Syngas technology</b>	Co-SOEC	RWGS	tbd
<b>Partners</b>	Not disclosed	Lafarge, Verbund, Borealis	Siemens Energy, MTU Aero Engines, MAN Energy Solutions, Lufthansa, Flughafen München, Capenia, Bauhaus Luftfahrt, Reallabor Burghausen, TU München, DLR
<b>Status</b>	Planning	Planning	Idea
<b>Reliance on funding</b>	Medium	High	High

+ engagements with partners on methane pyrolysis

# However, true challenge to synthetic fuel scale up is sourcing of hydrogen – domestic supply often considered insufficient

Bilateral clean hydrogen partnerships  
(as fuel and/or technologies)

Status 27-May 2021



Source: World Energy Council, modified from German Member Committee map, 2021<sup>2</sup>

<sup>1</sup> Methodology: The bilateral partnerships are exclusively government-to-government agreements that can encompass trade relations around hydrogen (import/export of hydrogen fuel and/or technologies), demonstrations projects, and Memorandums of Understandings. Based on information available on 27th May 2021.

<sup>2</sup> [Global Overview on Activities Towards H2 Strategies](#) - H2 partnerships globally

# A key question for a successful energy transition: from where to get how which type of clean hydrogen

Hydrogen costs in 2030, EUR/kg

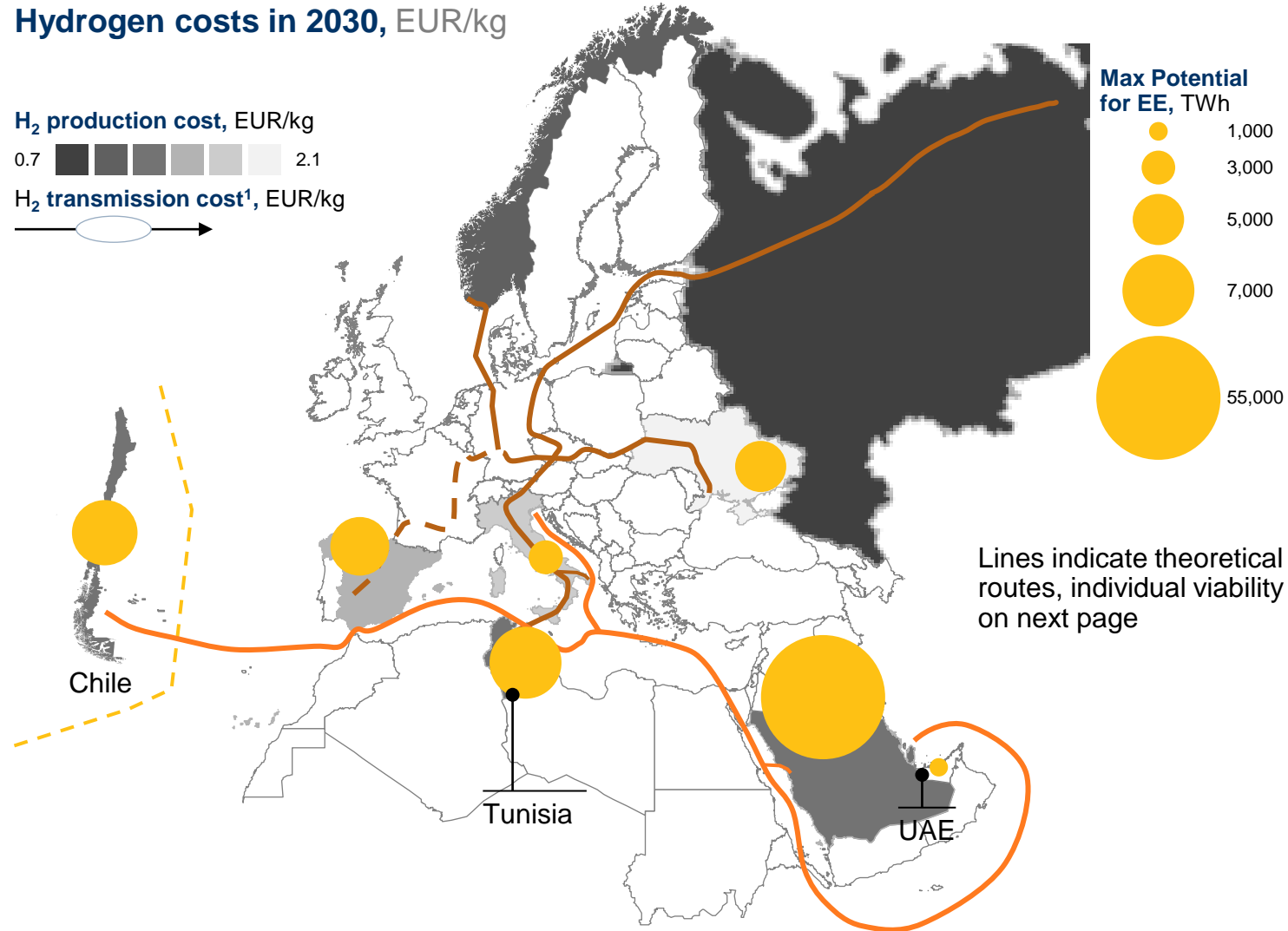
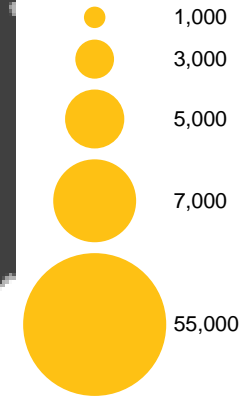
H<sub>2</sub> production cost, EUR/kg

0.7  2.1

H<sub>2</sub> transmission cost<sup>1</sup>, EUR/kg



Max Potential  
for EE, TWh



Lines indicate theoretical routes, individual viability on next page