

Renewable Developments and Trends in the Oil & Gas Industry

Vienna, November 13, 2020

OMV Aktiengesellschaft

The energy for a better life. 
OMV

Agenda

- 1** ▶ **New Energy Solutions in OMV**
- 2** ▶ **Market & Strategy**
- 3** ▶ **Renewable Technologies**

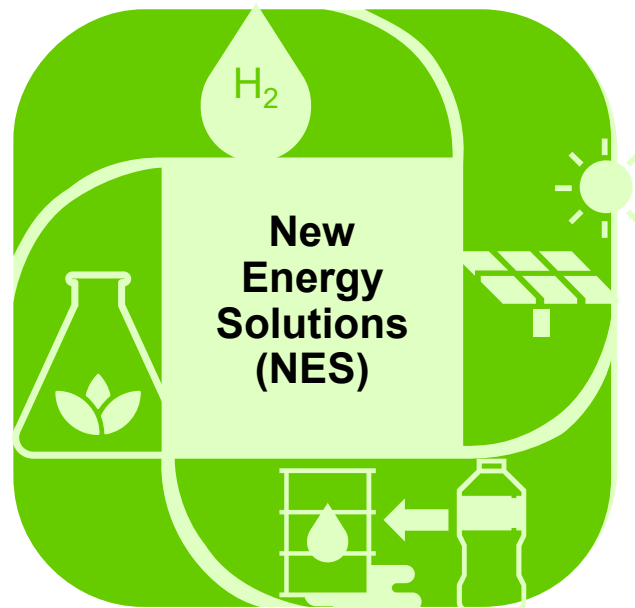
New Energy Solutions' mandate by OMV Executive Board: act as low carbon ambassador and build new business models

OMV Vision

- ▶ **carbon neutral operations** in 2050 or sooner
- ▶ **reduce net carbon intensity** of its **energy products** by **50%** until 2050 or sooner

NES as ambassador

- ▶ allows all people in OMV to **think** openly **about low carbon future** and
- ▶ builds **alternative energy business models** for OMV



NES as function

develops **low carbon business models**

- ▶ for **energy supply**
- ▶ for **mobility** and **industry**
- ▶ focusing on **OMV's core competencies** and
- ▶ keeping **direct link** to **existing business**

Agenda

1

▶ New Energy Solutions in OMV

2

▶ Market & Strategy

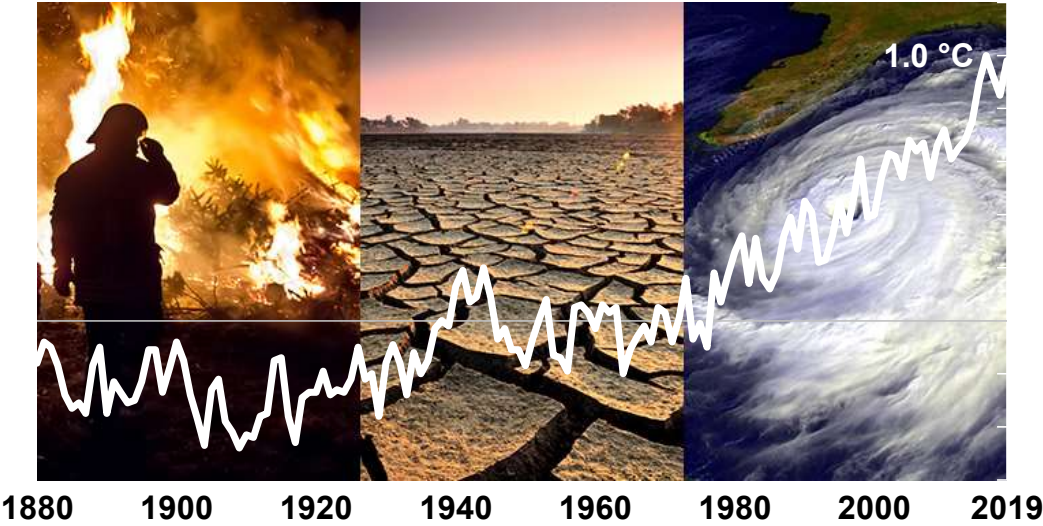
3

▶ Renewable Technologies

Times are changing...



Global surface temperature, °C



Source: UN, EU, NASA, BNEF

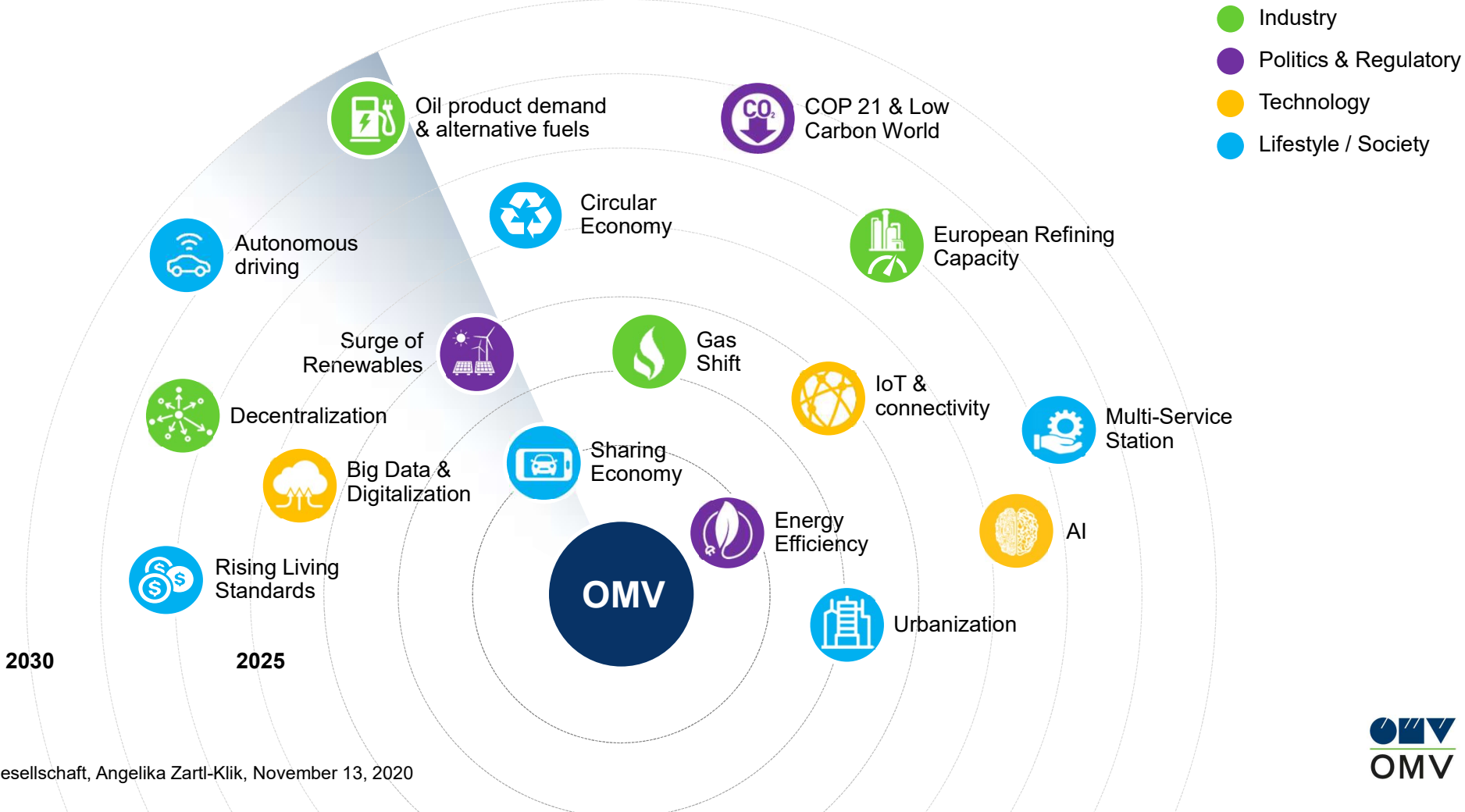
[News](#), [Solar](#), [Storage](#), [Wind Power](#)

BNEF says solar and wind are now cheapest sources of new energy generation for majority of planet

By [Renewable Energy World Content Team](#) | 4.28.20



OMV continuously monitors trends to derive new opportunities

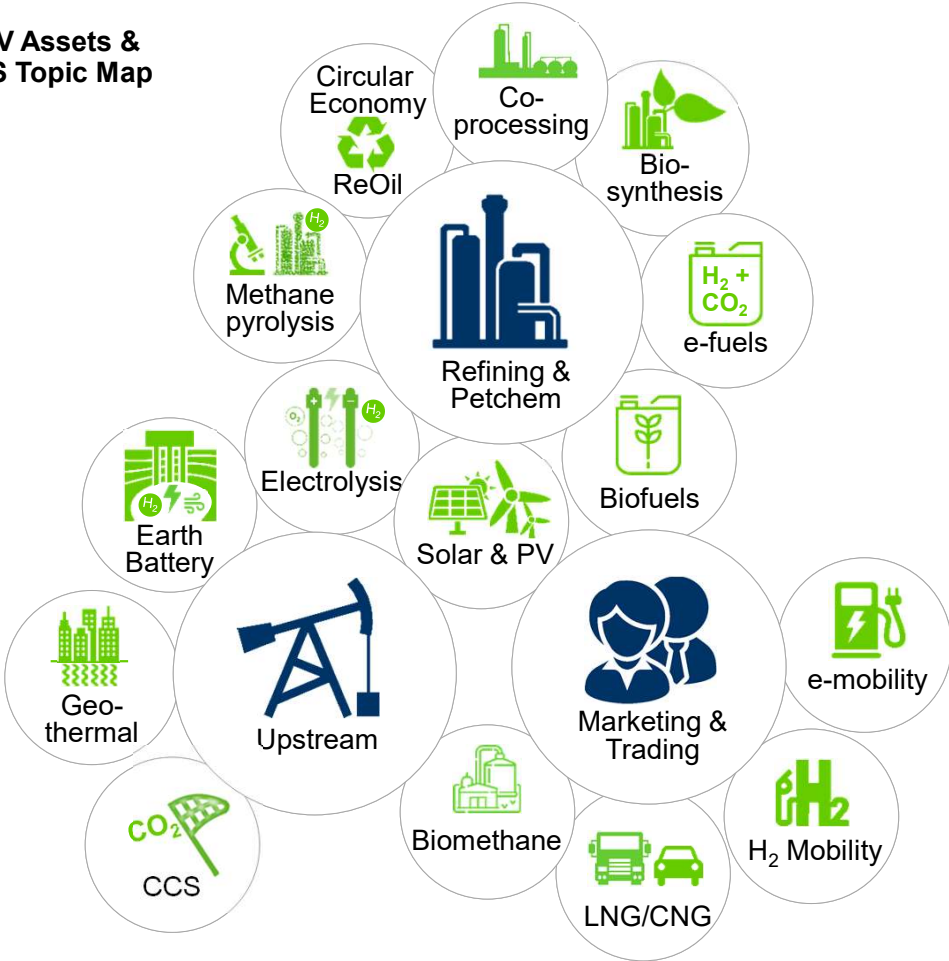


NES Business Development links feedstock and customer segments by utilizing OMV assets and competences

Feedstocks

- Hydrocarbons
- Organic feedstock
- Plastics
- CO₂
- H₂O
- Sun & wind

OMV Assets & NES Topic Map

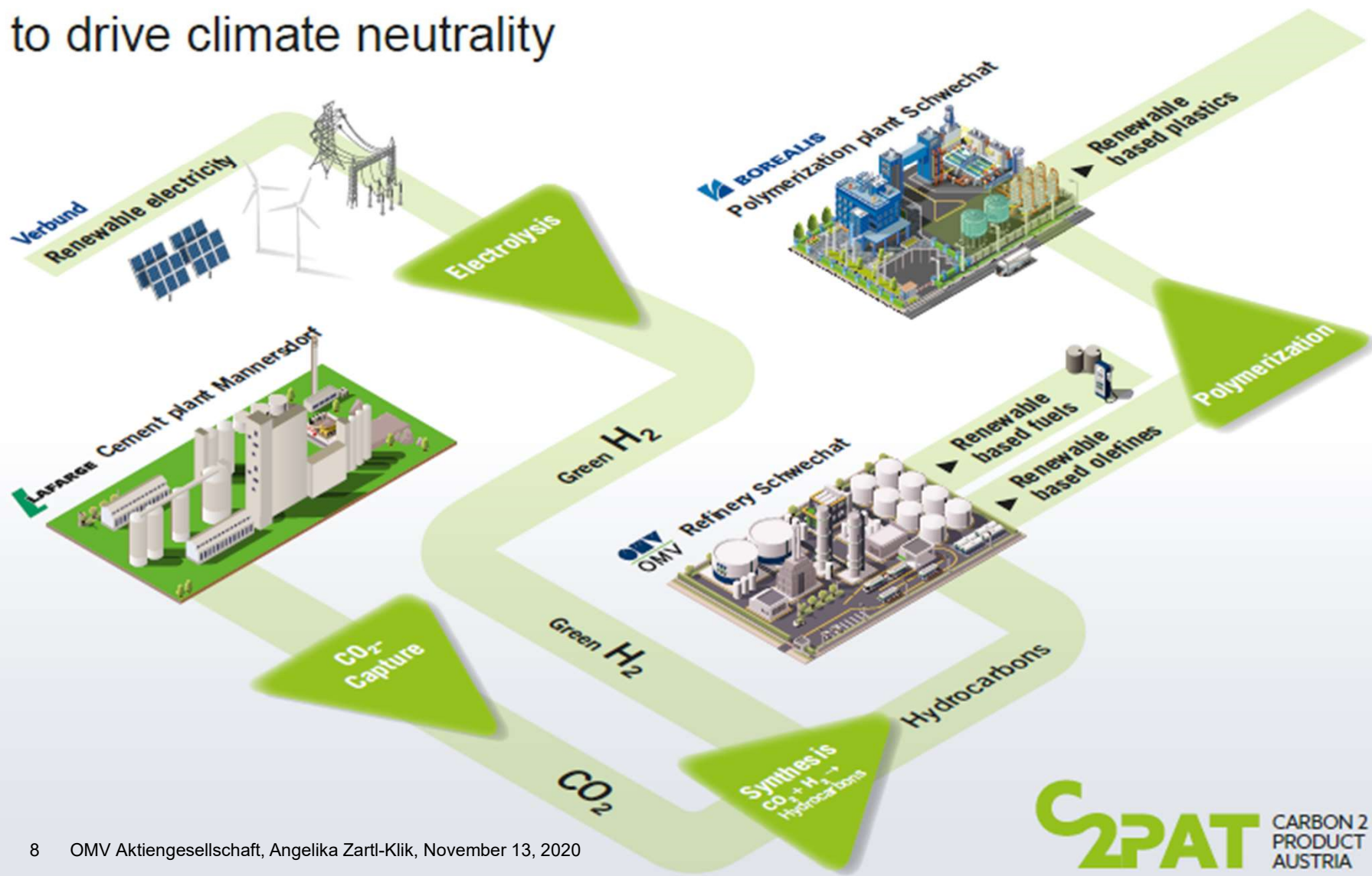


Customer segments

- Industrial Energy
- Mobility
- Petchem
- Energy Storage
- Heat



Cross sectoral value chain to drive climate neutrality



Agenda

1

▶ New Energy Solutions in OMV

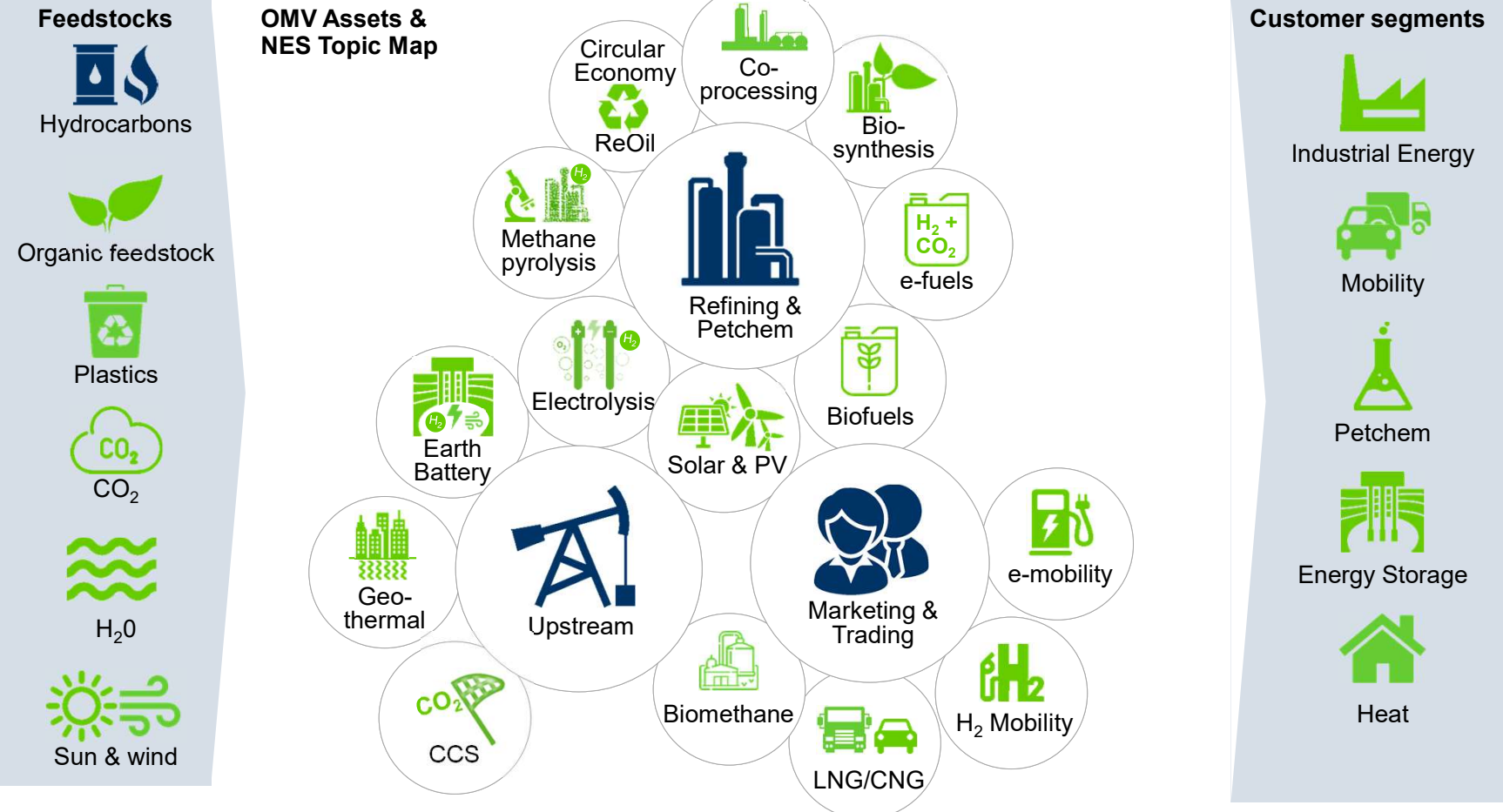
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▶ Market & Strategy

3

▶ Renewable Technologies

Technologies along OMV's value chain

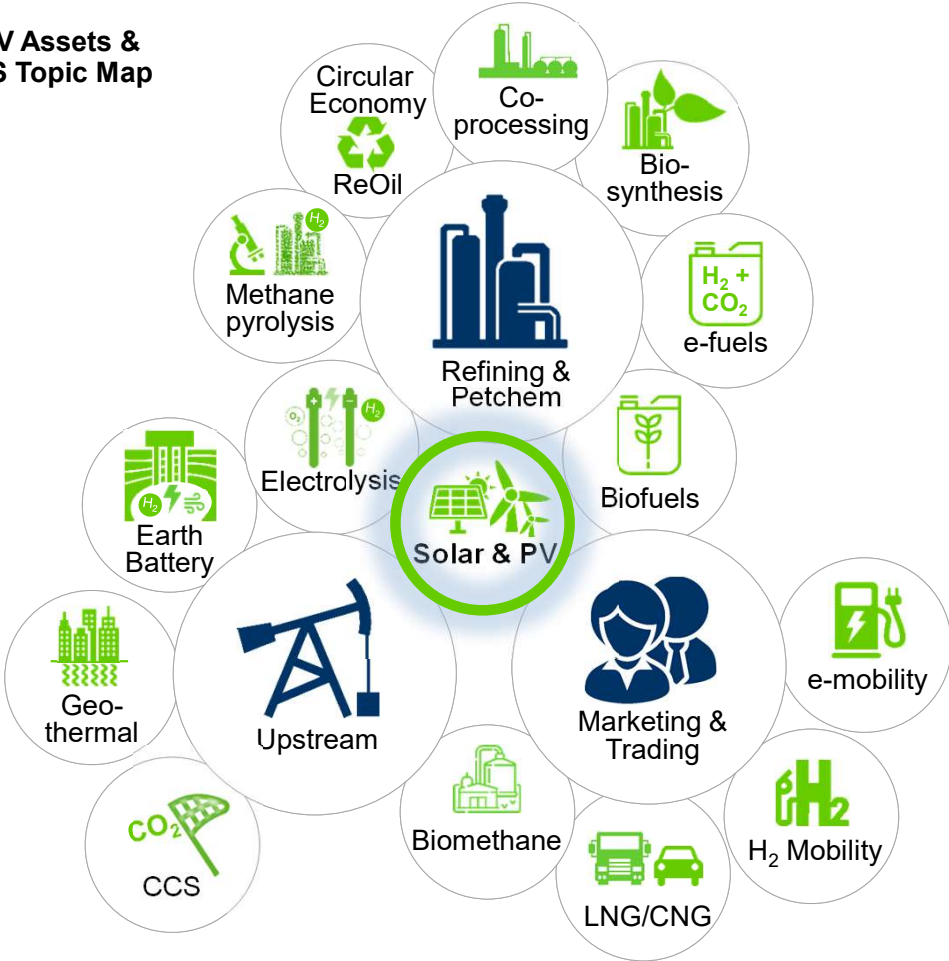


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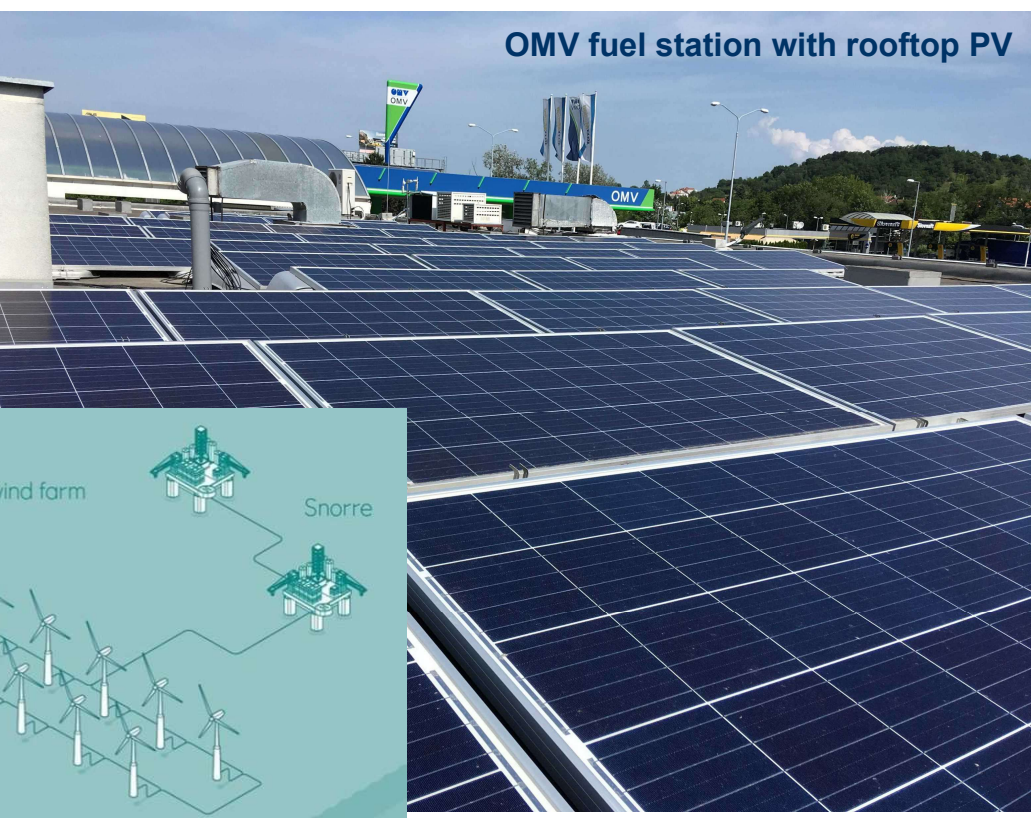
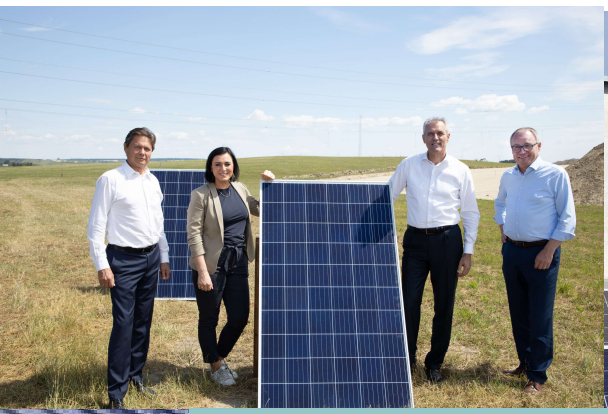




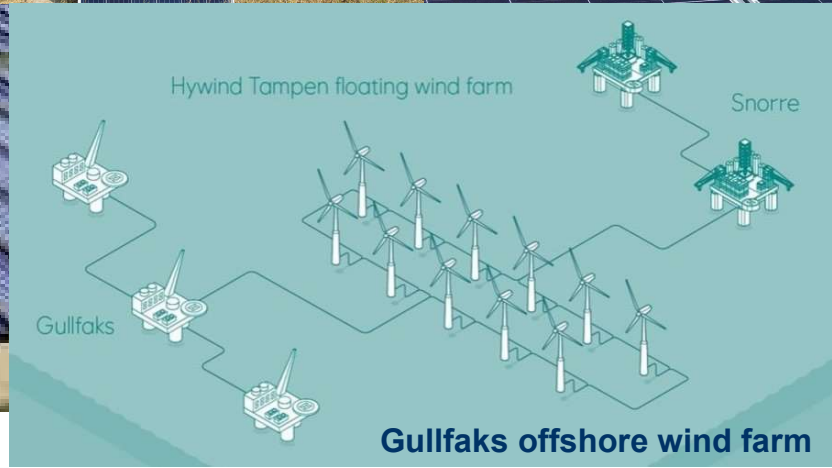
Electric energy (photovoltaic, wind,...)



Austria's largest area photovoltaic plant



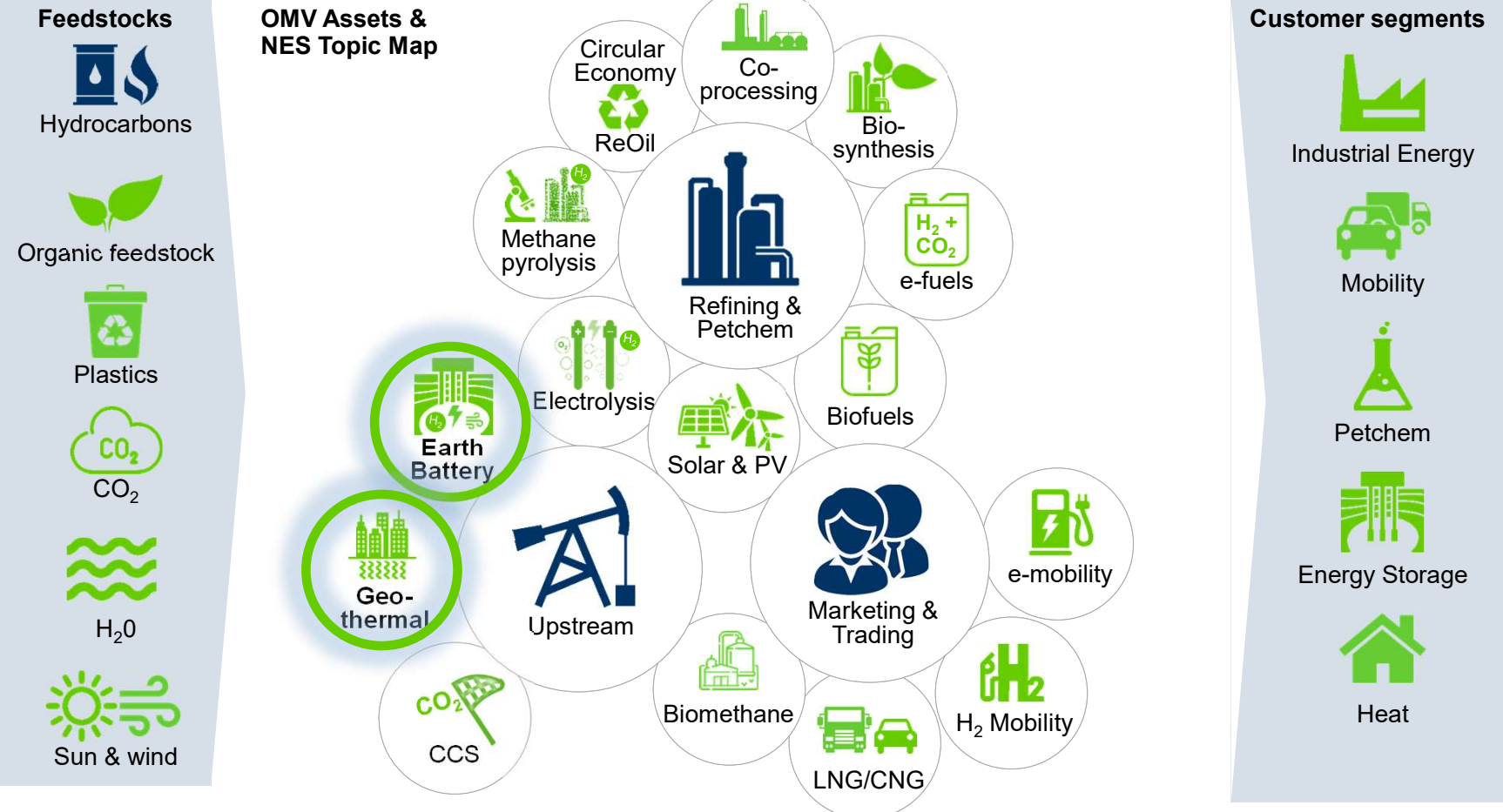
OMV fuel station with rooftop PV




Sources of Images: https://www.omv.com/services/downloads/00/omv.com/1522188484275/dload_PVSch%C3%B6nkirchenBaubeginn_Infografik_de
<https://www.omv.com/en/news/milestone-in-powering-our-operations-with-renewable-energy>



Technologies along OMV's value chain




Energy storage – “Earth Battery”




Compressed Air Energy Storage (CAES)

Air compressed into cavern/aquifer → discharge via turbine + generator



H₂ Storage

Energy transformed into hydrogen which can be stored over months in depleted gas reservoirs



Geothermal Energy

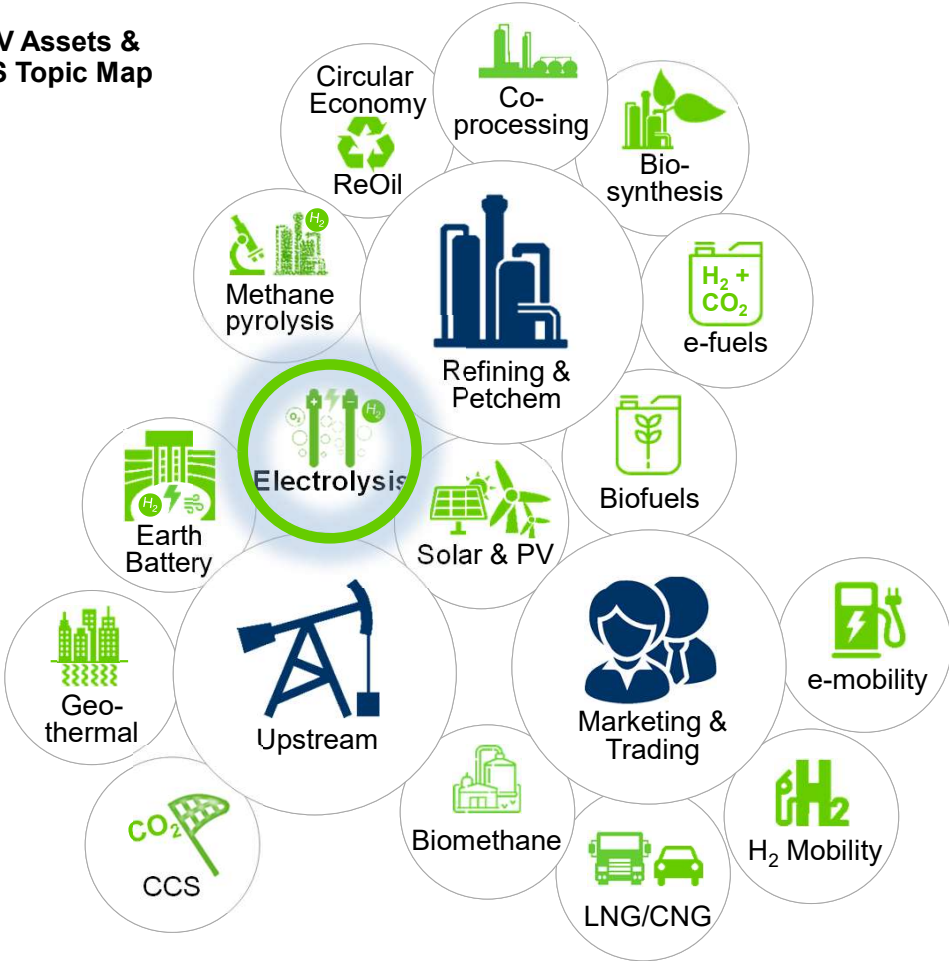
Usage of thermal energy stored subsurface

Technologies along OMV's value chain

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OMV Assets & NES Topic Map

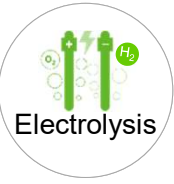


Customer segments

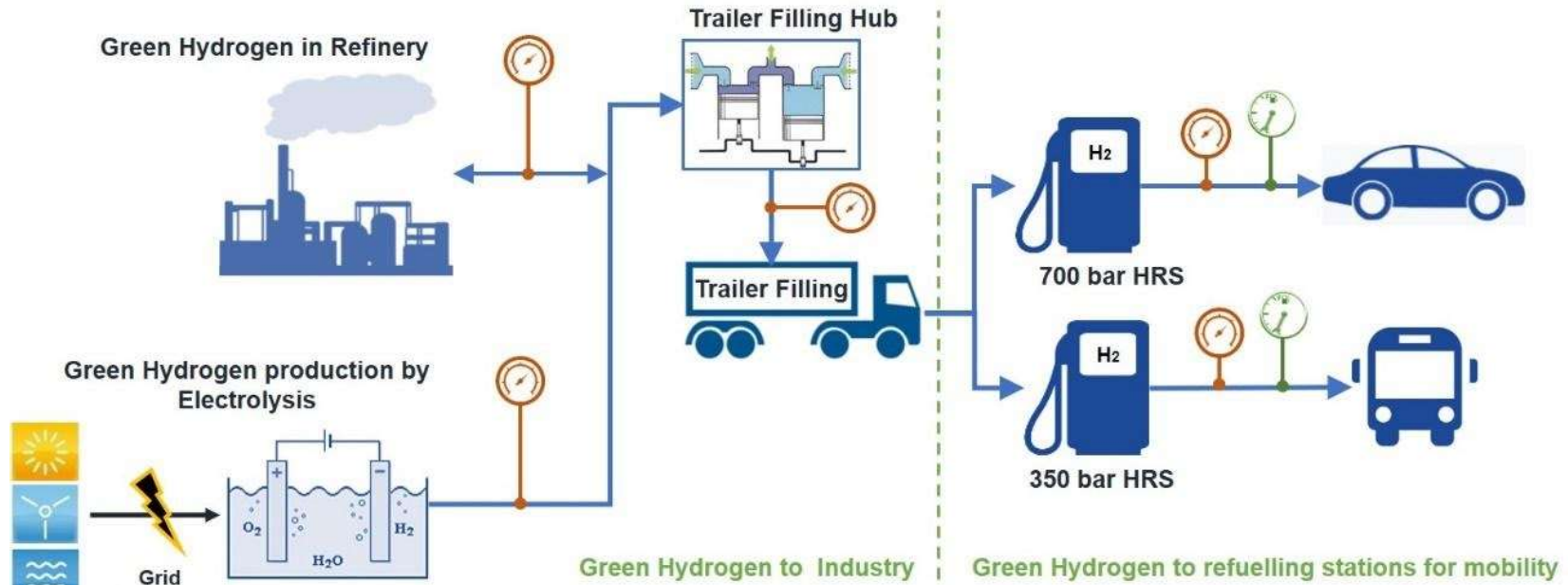
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Electrolysis



wind2hydrogen



 Novel measurement techniques for hydrogen quality at various measuring points

 Mass flow calibration at hydrogen dispenser nozzles

UpHy
large scale green hydrogen production, distribution and hydrogen refueling

Sources of Images: <https://www.klimafonds.gv.at/wp-content/uploads/sites/6/150817Factsheet-Wind2HydrogenEN-FINAL.pdf>
<https://www.wiva.at/v2/portfolio-item/uphy-upscaling-of-green-hydrogen-for-mobility-and-industry/>



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Biomethane

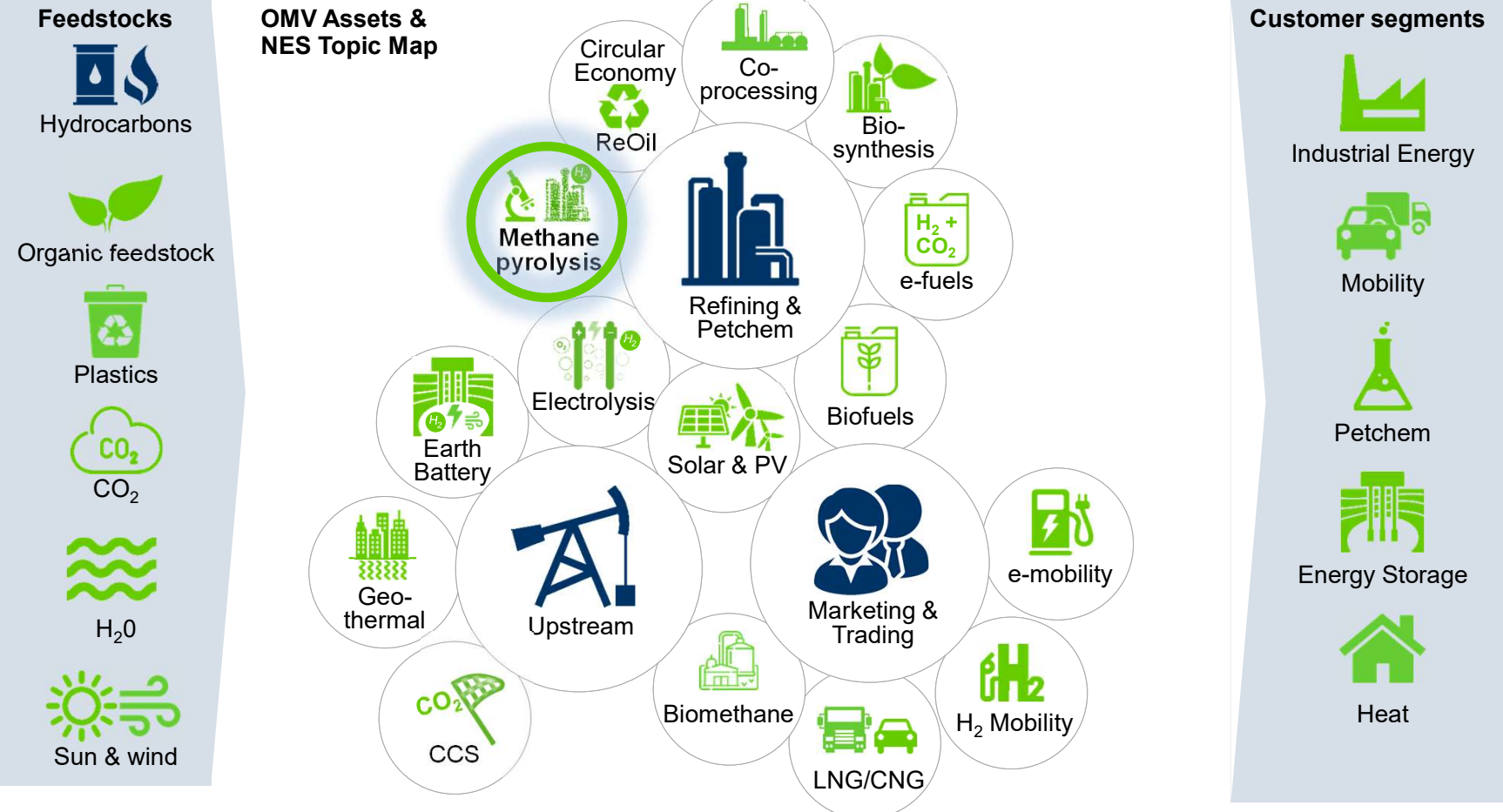
Austrian Government aims to inject **5 TWh “green gas”** into the grid by 2030 (current biomethane production level <0.2 TWh)



*Utilize **existing extensive capabilities and infrastructure** in terms of gas treatment and sales, market coverage in mobility, and strong customer base*



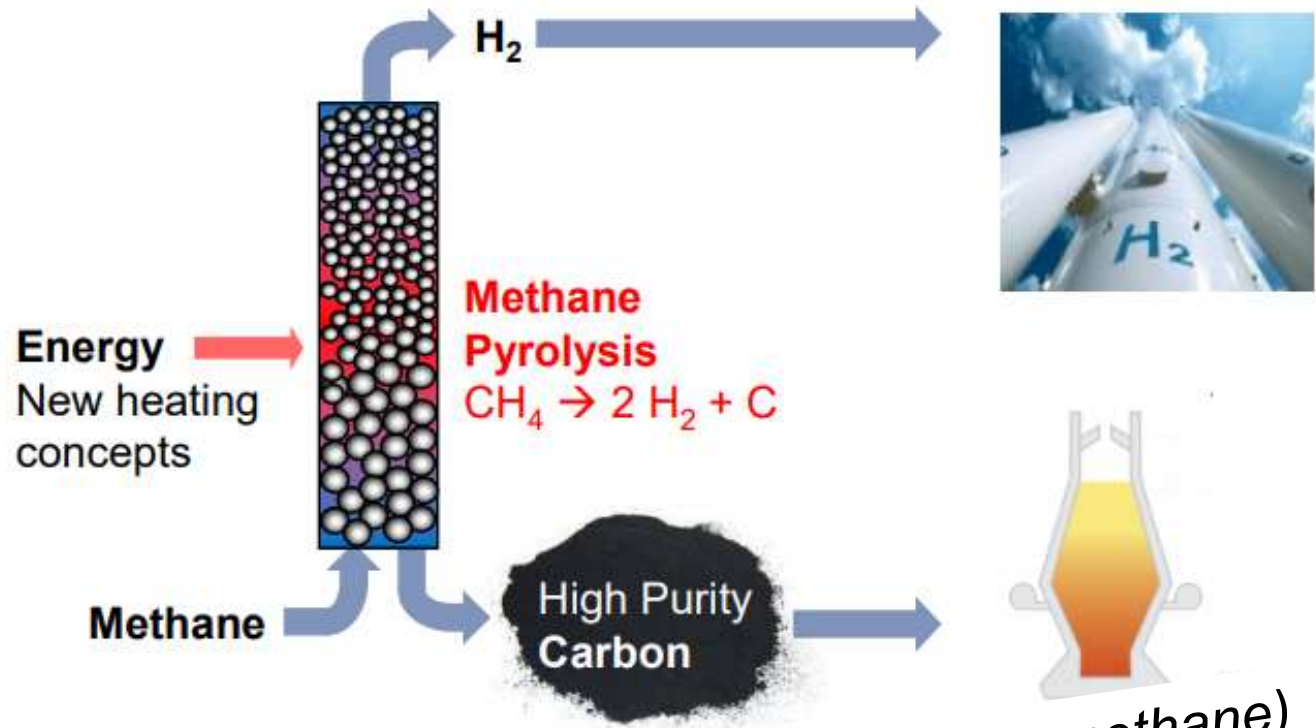
Technologies along OMV's value chain



Methane pyrolysis

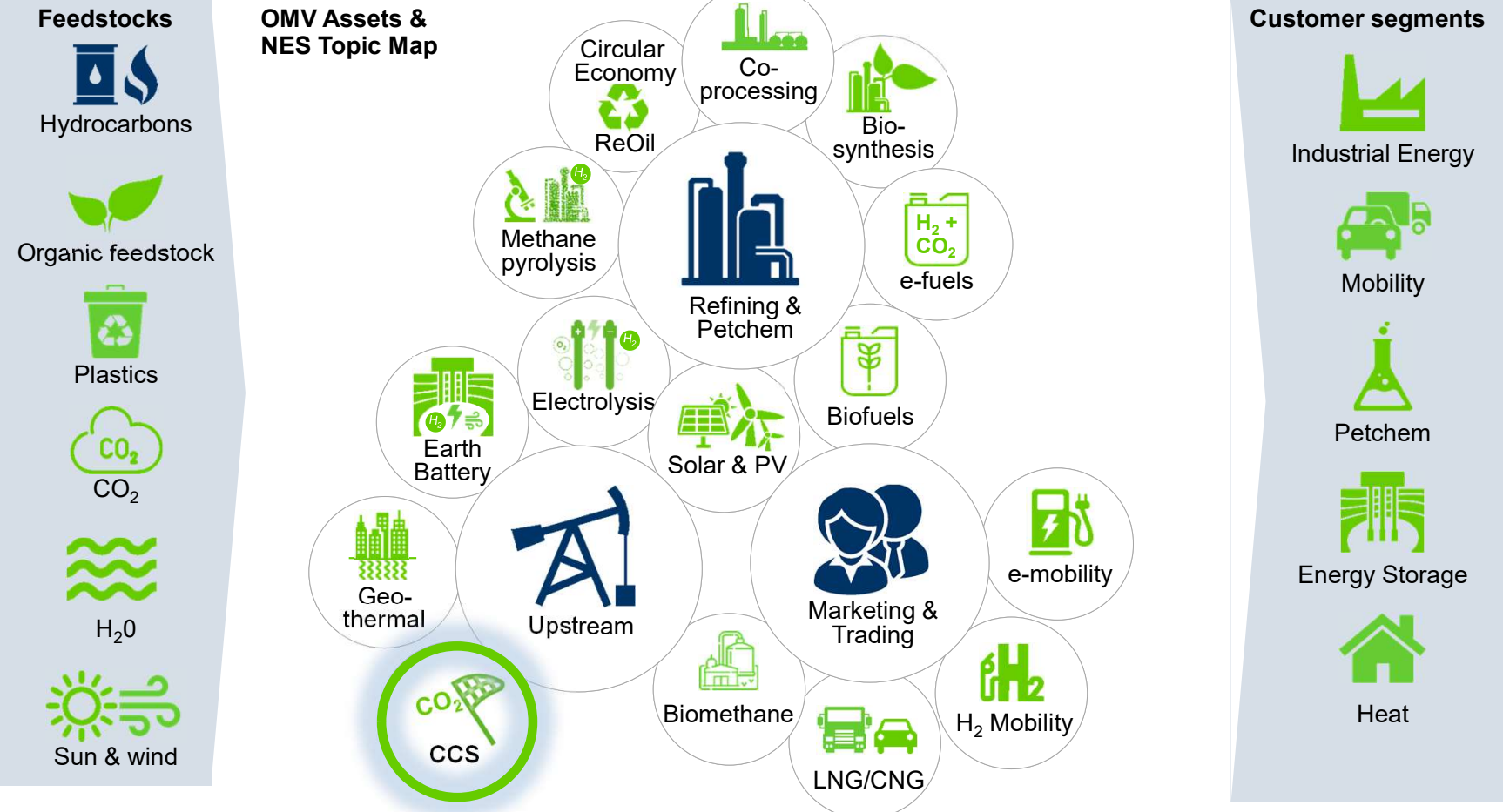


- ▶ Scouting and assessing of **most promising technologies**
- ▶ Hydrogen4Europe IOGP study
- ▶ DBI study together with Gazprom, Shell, Engie, etc.



Decomposition of natural gas (or bio-methane) into **hydrogen and carbon**

Technologies along OMV's value chain



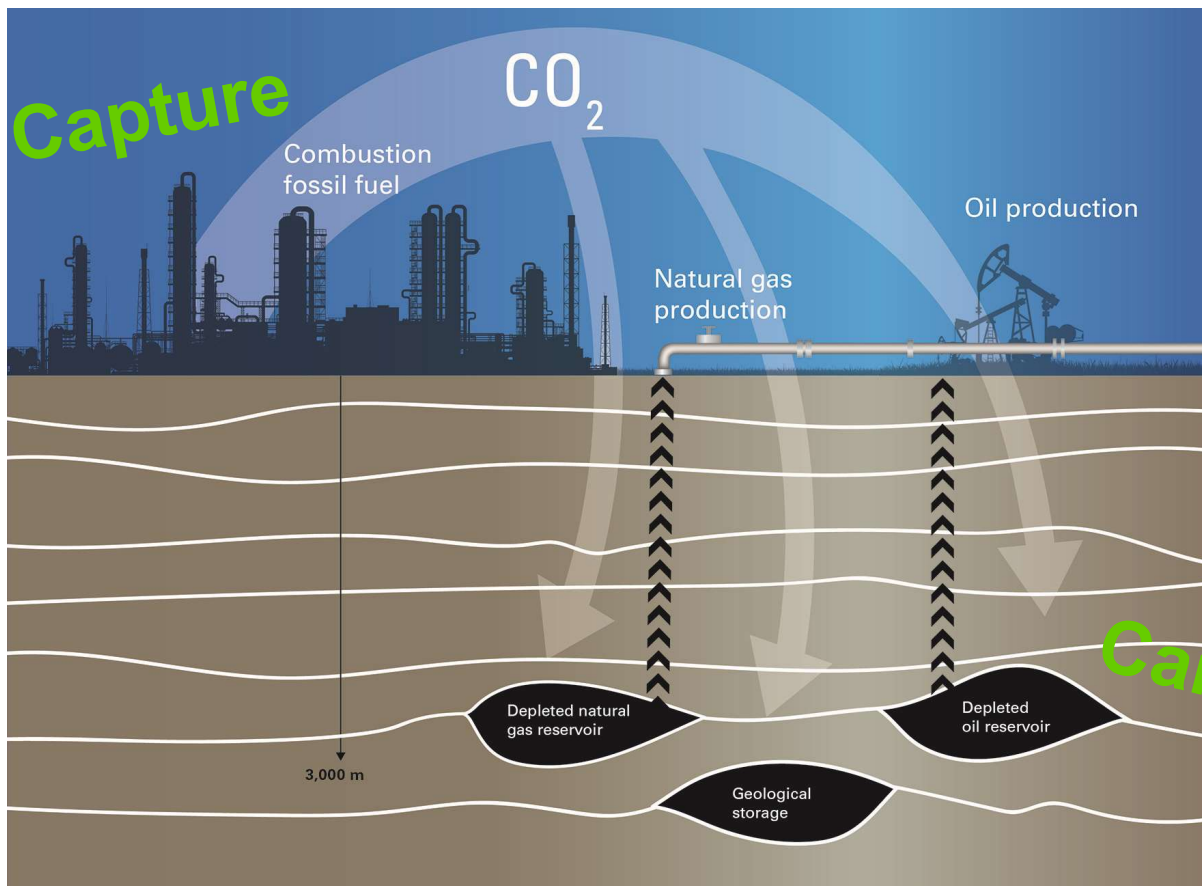


Carbon Capture and Storage (CCS)

Carbon Capture

- ▶ Post combustion
- ▶ Pre combustion
- ▶ Oxyfuel
- ▶ Direct air capture (DAC)

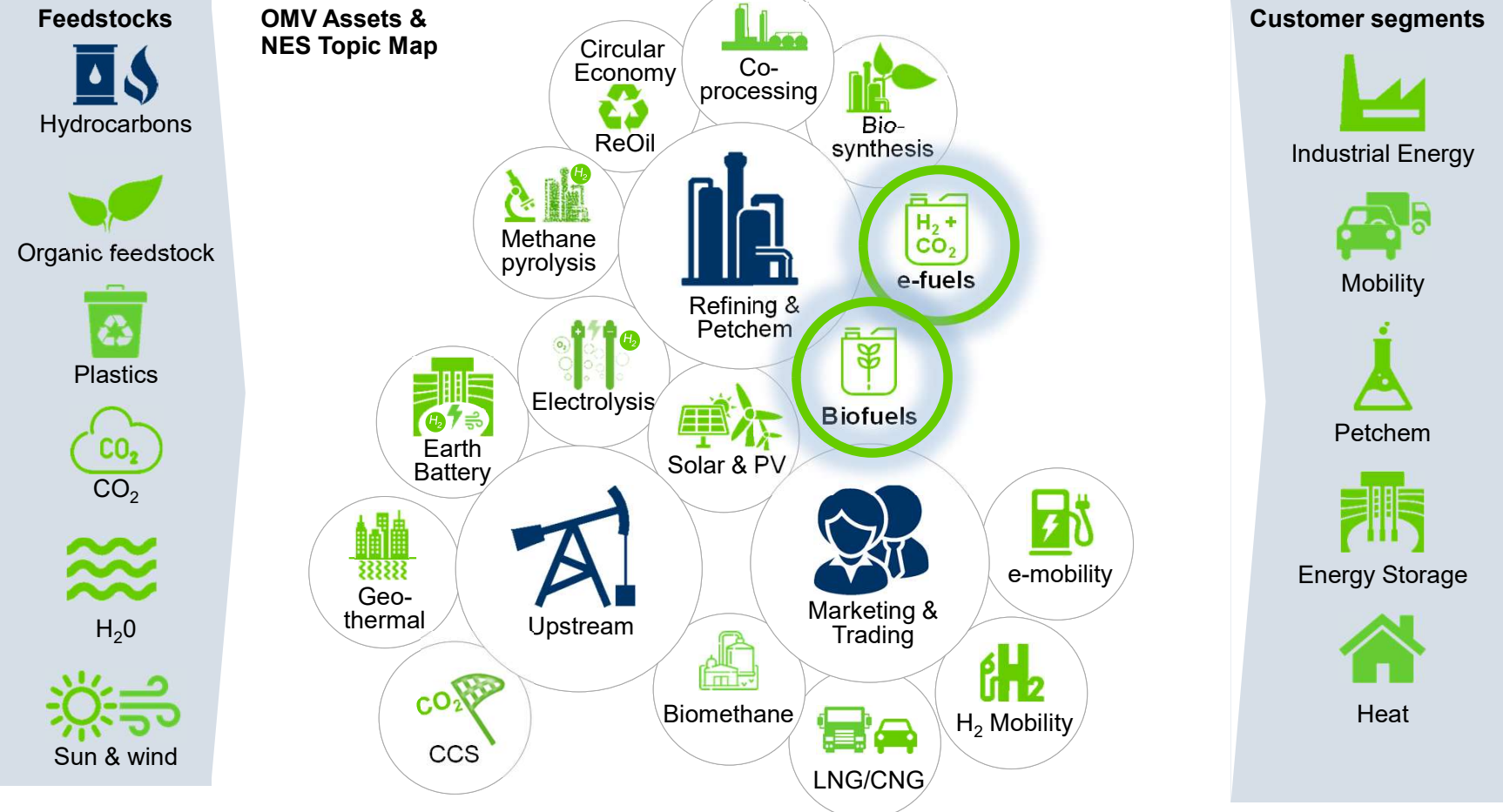
Typical capture rates:
85-90%, target: 95%+



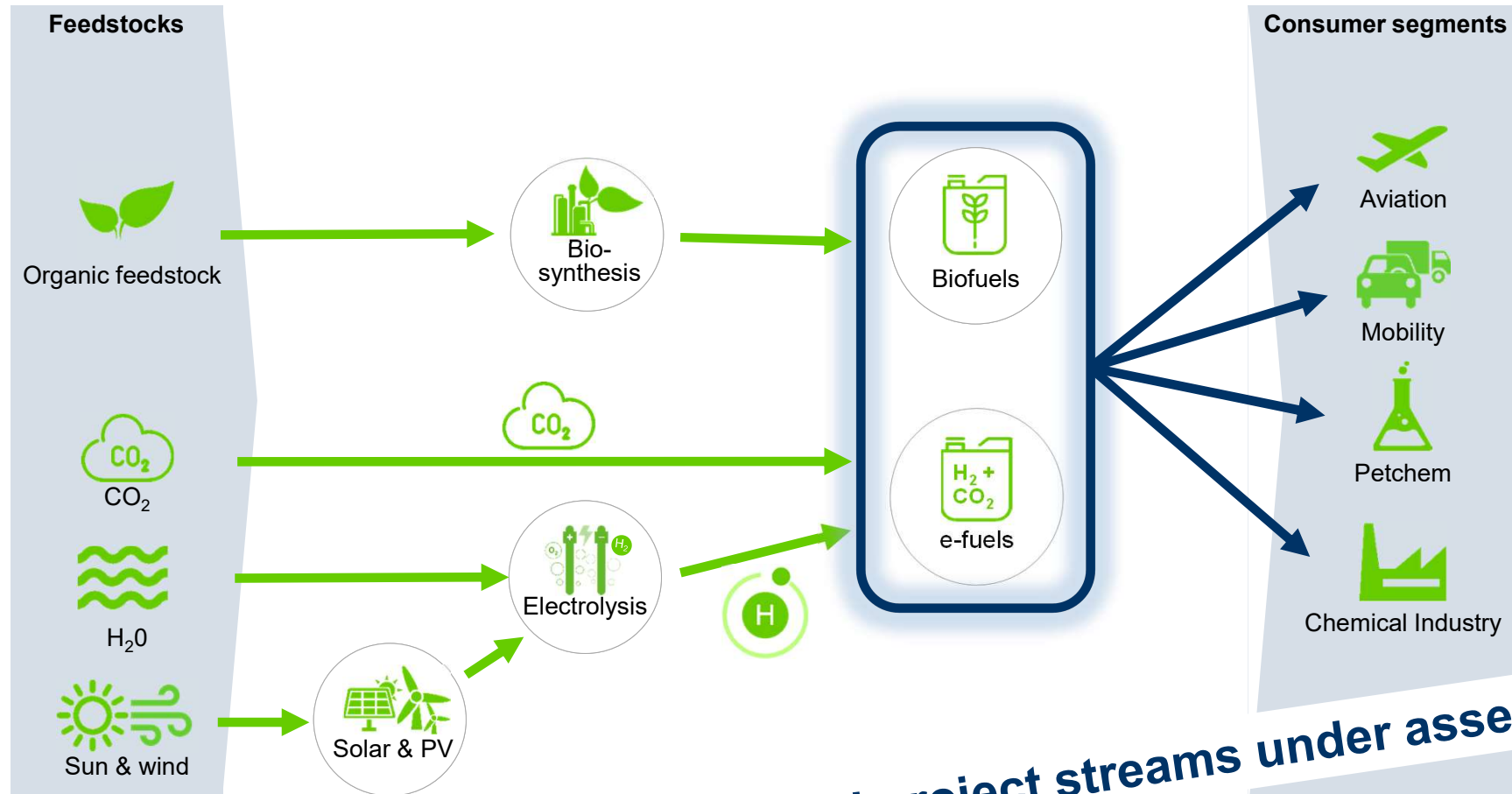
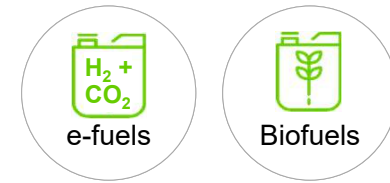
- ▶ About **165mn t CO₂** could be stored in depleted reservoirs in the Vienna Basin
- ▶ Currently CCS is prohibited in Austria (except for R&D)

Carbon Storage

Technologies along OMV's value chain

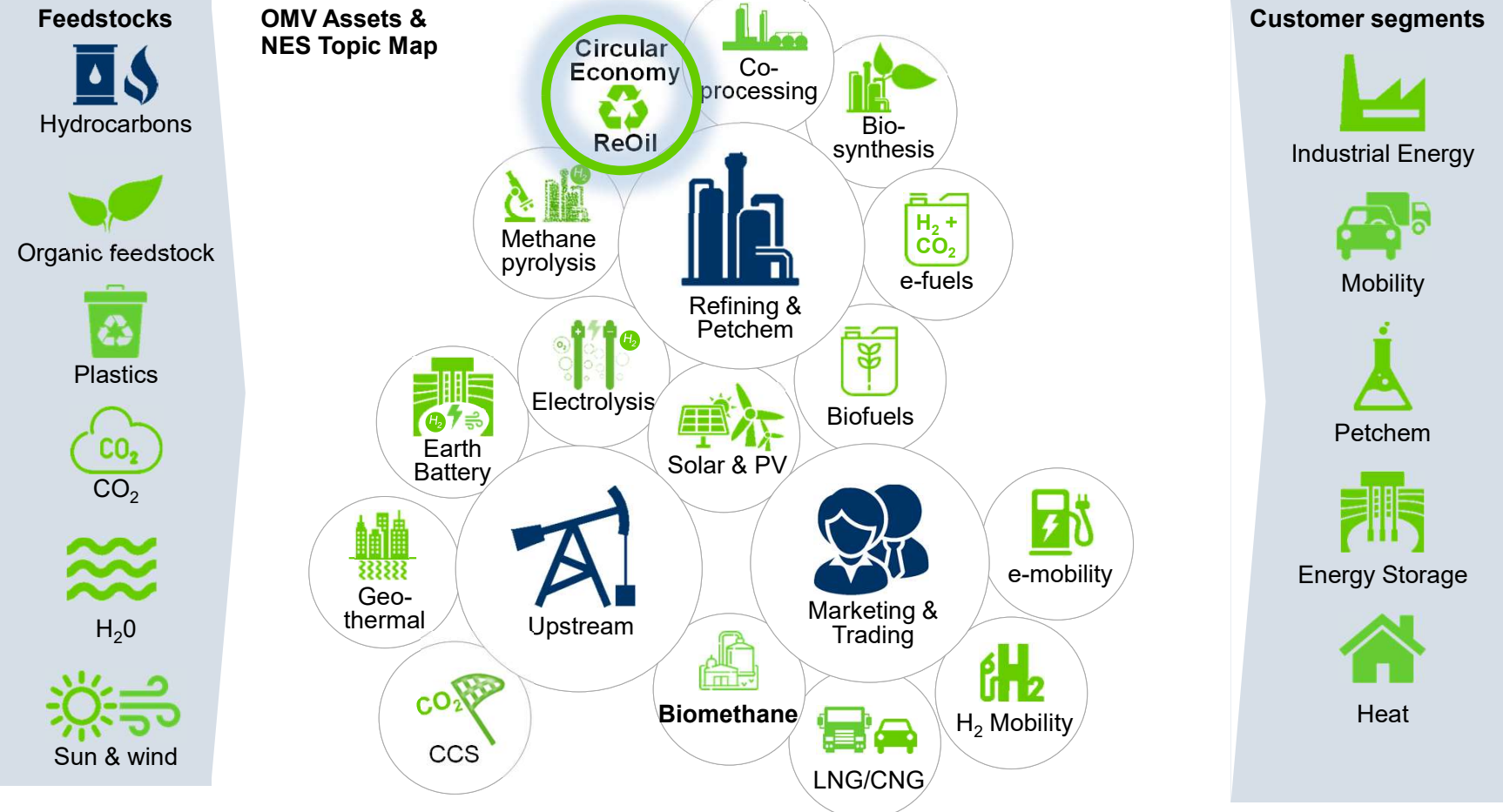


Biofuels / e-fuels



Several project streams under assessment

Technologies along OMV's value chain



Circular Economy



Sources of Images: <https://omv.online-report.eu/en/sustainability-report/2019/focus-areas/innovation/circular-economy.html>

**The energy
for a better life.**



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