
German eFuel one

# German eFuel One

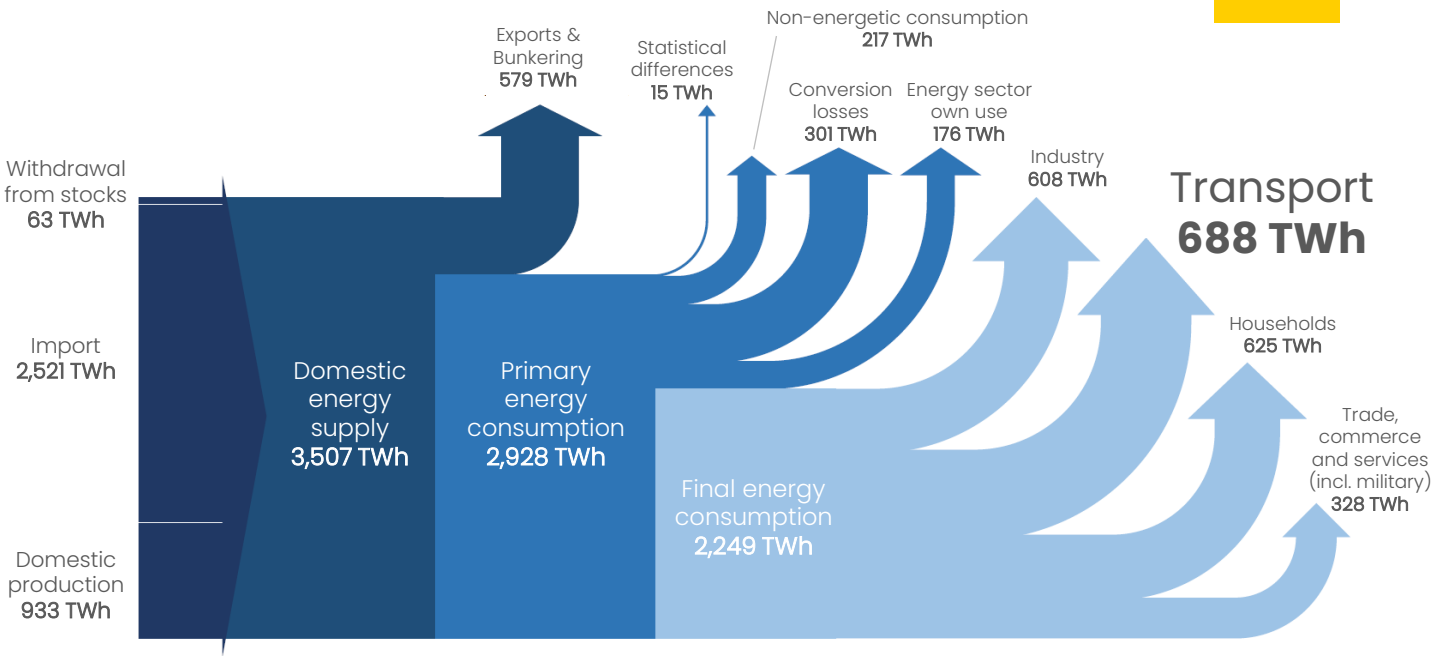
**Shaping the future of mobility.**

Christian Hanke
CEO
www.gef1.de

# The Role of Green Molecules for a Sustainable Future

Why the energy transition needs more than electrons

## Energy Flow Chart 2024 for Germany [1]



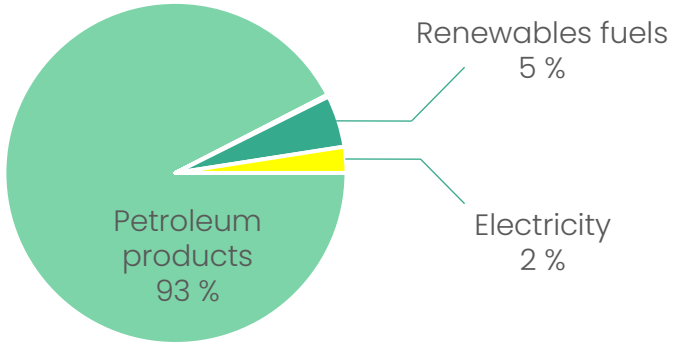

Good News: Primary energy consumption in Germany decreases since 1990

Energy import quota remains high at approx. 70 %

Renewable energy is best transported over long distances as liquid green molecules

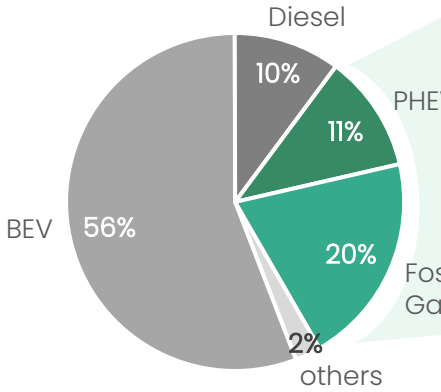
## Energy use in transport

(by energy carrier) [2]




## Outlook 2050

(projected passenger car fleet) [3]




**e-Gasoline potential** to substitute fossil gasoline leads to demand of…

→ **45B liter** in EU

→ **8B liter** in GER

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Notes :

1) Arbeitsgemeinschaft Energiebilanzen 09/2025
2) Graphics data based on evaluation tables on energy balances from Arbeitsgemeinschaft Energiebilanzen 09/2025
3) Project German eFuel One – Vendor Commercial Due Diligence

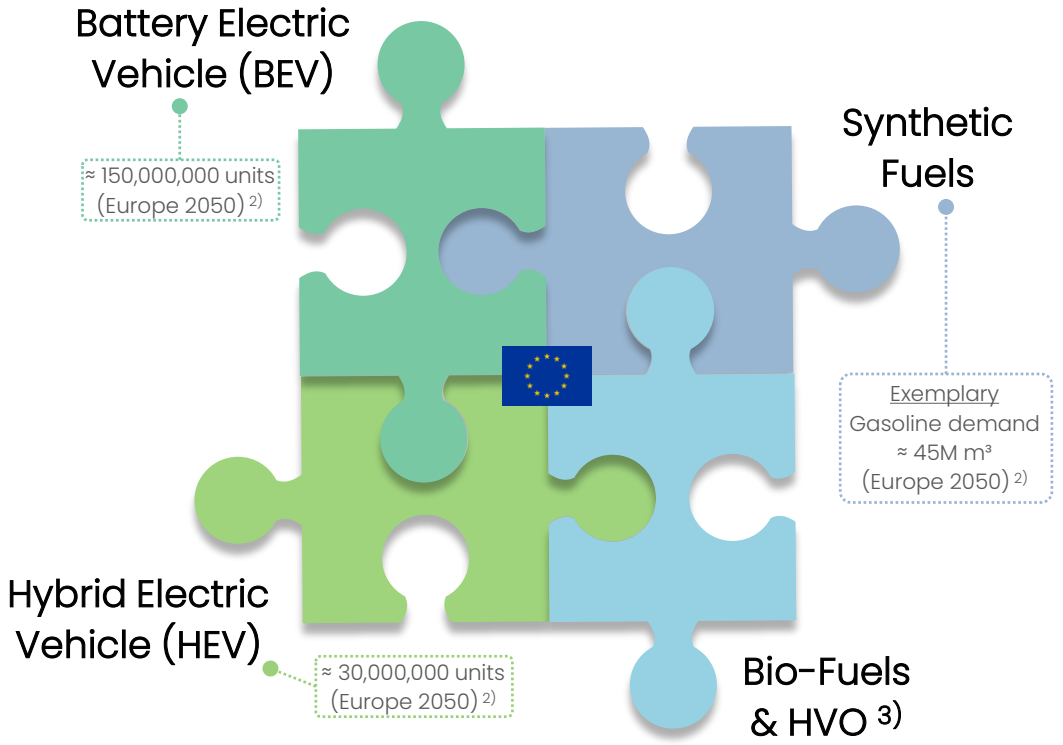
# Decarbonising Mobility: Roads to a Sustainable Future

The reduction of fossil fuels in transport is crucial for meeting the EU's "Net Zero" targets

Countries around the world agreed to "Net Zero" targets to fight climate change

The road transport sector accounted for 21% of GHG emissions in the EU [1)]

A shift to sustainable mobility is needed to significantly reduce the carbon footprint




**Climate-friendly mobility needs all technological solutions**

Globally ~1.4 billion cars demand scalable, complementary approaches

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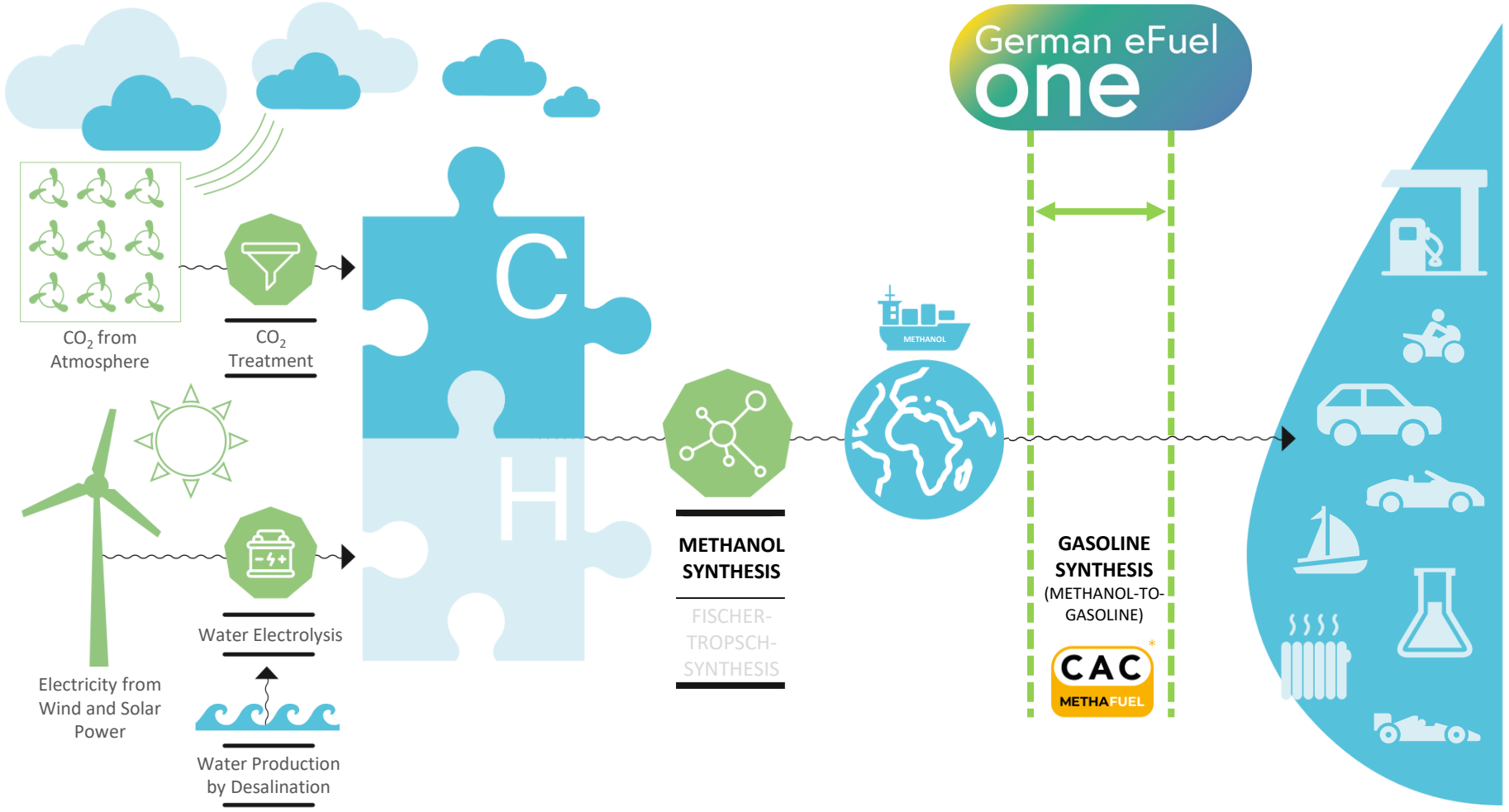
Notes:
1) European Environmental Agency (latest figures as of 2022)
2) Project German eFuel One – Vendor Commercial Due Diligence
3) HVO - Hydrotreated vegetable oil

# From Green Power to eFuels




## eFuels

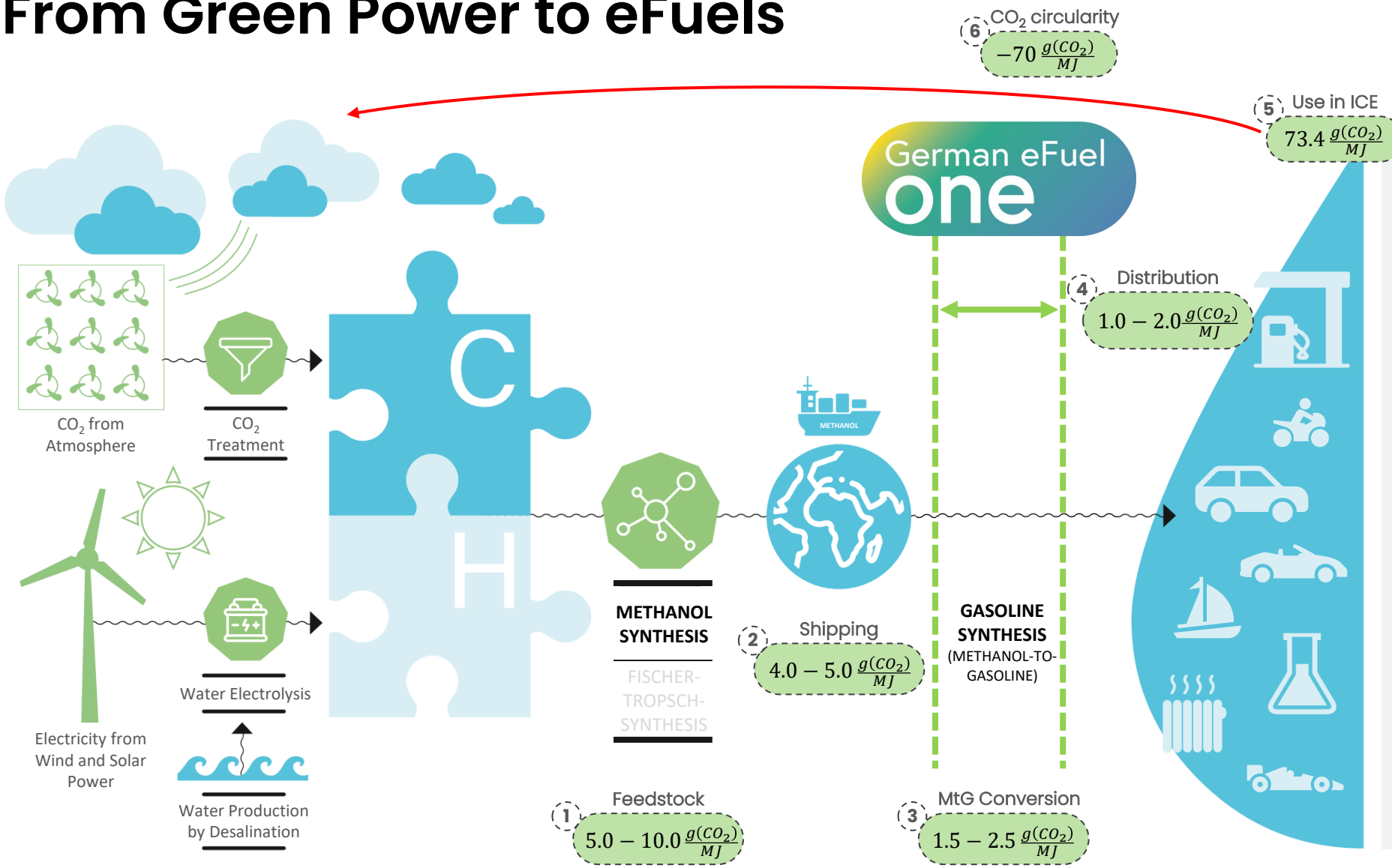
- ✓ *Climate-friendly synthetic fuels made from renewable energy sources*
- ✓ *Drop-in capable due to same fuel properties*
- ✓ *Compatible with existing infrastructure*
- ✓ *Producable worldwide at favorable locations*
- ✓ *Unlocking the huge international potential of renewable energies*
- ✓ *Important key to secure Germany's energy demands*

* German technology development from Saxony with worldwide patents



Notes:

# From Green Power to eFuels

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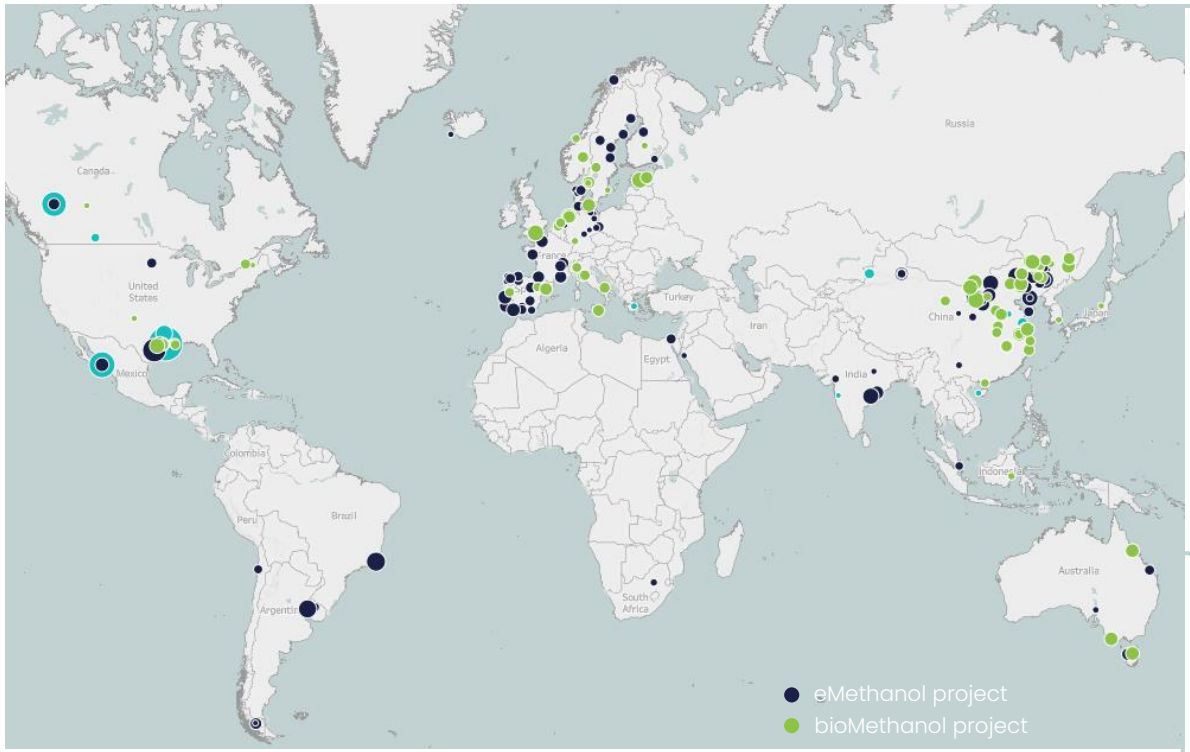
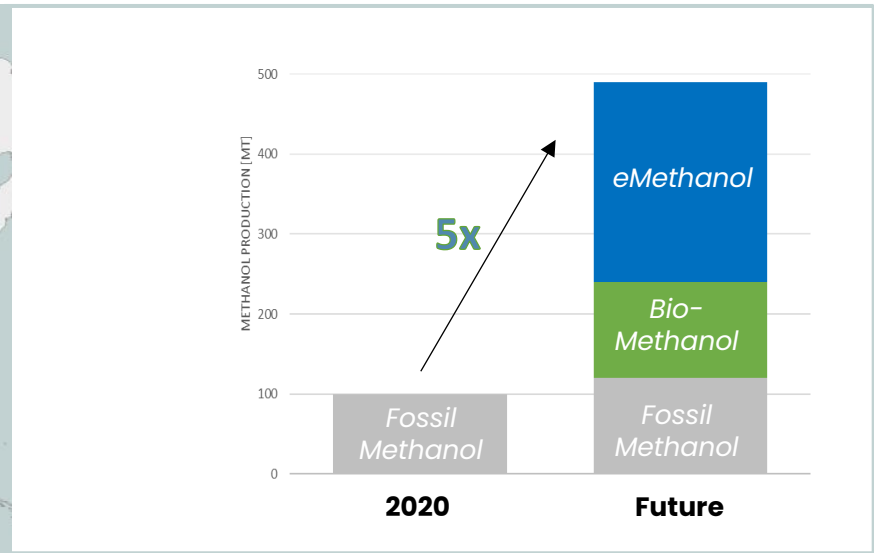
Notes:

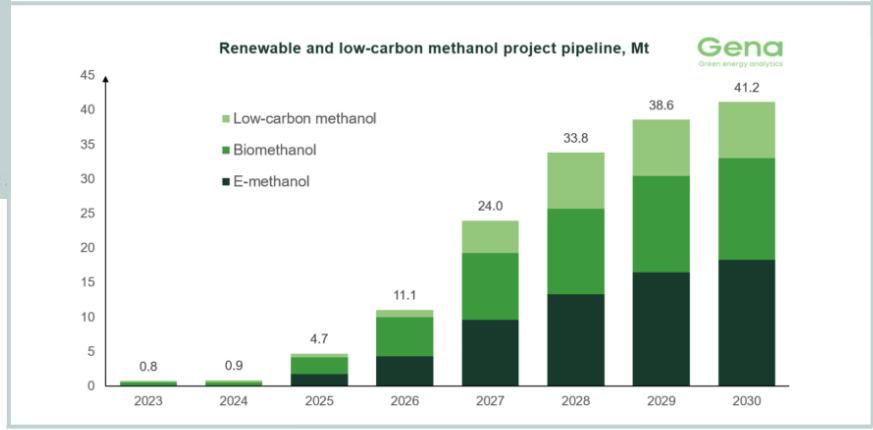


Achievable overall GHG avoidance 77-85 %

# Renewable Methanol Market – Turning to Green Molecules




**Methanol as versatile building block for chemicals and fuels**

**Worldwide >200 projects on renewable methanol**

**Fossil dominated methanol market develops to green molecules**

**Total production capacity of >40 billion l/a** (until 2030)



Notes:

# German eFuel One: first commercial e-Gasoline plant

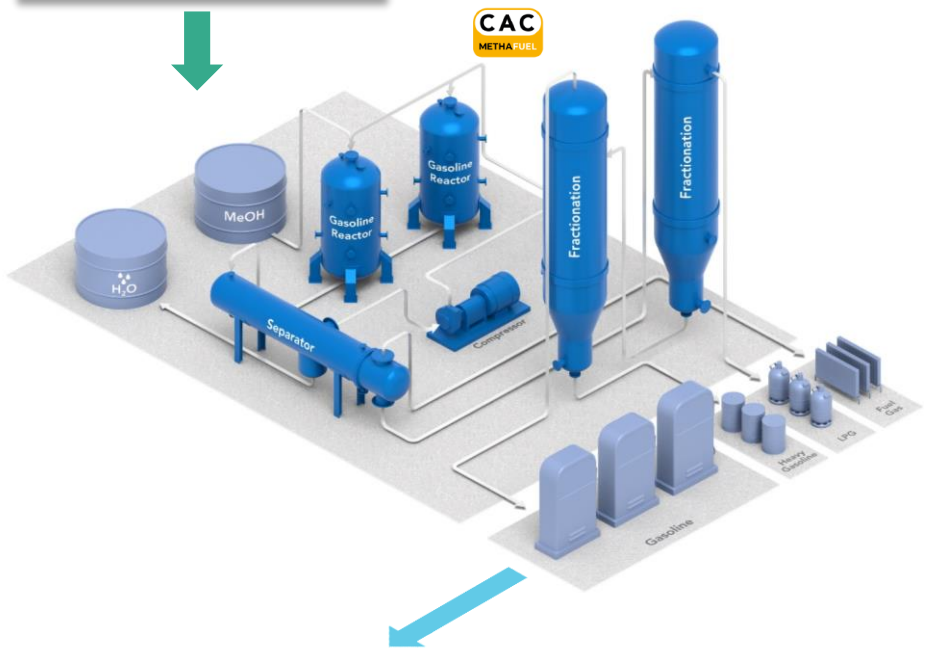
**First commercial production plant**

for 75 million liters per year

**180 M€**
**Total investment**

Input

e-Methanol: 160,000t/a
bio-Ethanol: 6,000t/a




Output

e-Gasoline: 57,000t/a

**145,000 tons $CO_2$ reduction per year**

Up to 90% lower $CO_2$ footprint in e-gasoline output

**Consortium of German 'Mittelstand'**

# Accelerated Momentum since Foundation of GEF One

Building on 15 years of successful development since its inception in 2008, the project leverages market-ready technology today

**2008** – **Start of development**
*The construction of the plant was funded by EFRE*

Europa fördert Sachsen. EFRE Europäischer Fonds für regionale Entwicklung – Europäische Union

**2012** – Commissioning of gasoline synthesis in the bioliq plant (KIT)

**2017** – **Laboratory plant at CAC**
*The construction of the laboratory plant was funded by EFRE*

Europäische Union – Europa fördert Sachsen. EFRE Europäischer Fonds für regionale Entwicklung

**2019/2020** – **1st participation at 24h Race Nürburgring with TGR-E**

GR Toyota Gazoo Racing Europe

**2010** – **First test campaign**

**2013** – **100,000 Liter** of stable gasoline produced by 2013; Over 3,600 operating hours since 2010

Bundesministerium für Digitales und Verkehr

**2022** – **45,000 Liter** gasoline produced for R&D project **C³-Mobility**

Closed Carbon Cycle MOBILITY

Bundesministerium für Wirtschaft und Klimaschutz

**2023** – New R&D project **DeCarTrans** at Freiberg plant; **380,000 liter gasoline** produced

Bundesministerium für Digitales und Verkehr

**2023** – **TRL 9 achieved**

**2023** – German eFuel one: **Foundation of eFuel Projektentwicklung GmbH & German eFuel One GmbH** Project agreement to start commercialization

**10/2024** – **10 mEUR equity commitment by current shareholders**

**12/2024** – **BMW MOTORRAD** wins world SBK title fueled by synthetic gasoline based on CAC METHAFUEL® from Freiberg plant

BMW MOTORRAD WorldSBK Team

ROKiT

→ **Consecutive World Champion title** secured by BMW driver Toprak Razgatlioglu in 10/2025

**6/2025** – **1st Gas station** offers e-Gasoline (E10) to customers


**10/2025** – **BMW First-Fill** agreement on the supply of e-gasoline

**2026** – **FID**

**COD Q4/2028**

TUBAF · TECHNISCHE UNIVERSITÄT DRESDEN · CAC · RWTH AACHEN UNIVERSITY · fev · VW · OPEL · DAIMLER · Ford · BMW · KTM · PORSCHE · HYUNDAI · DENSO · AVL

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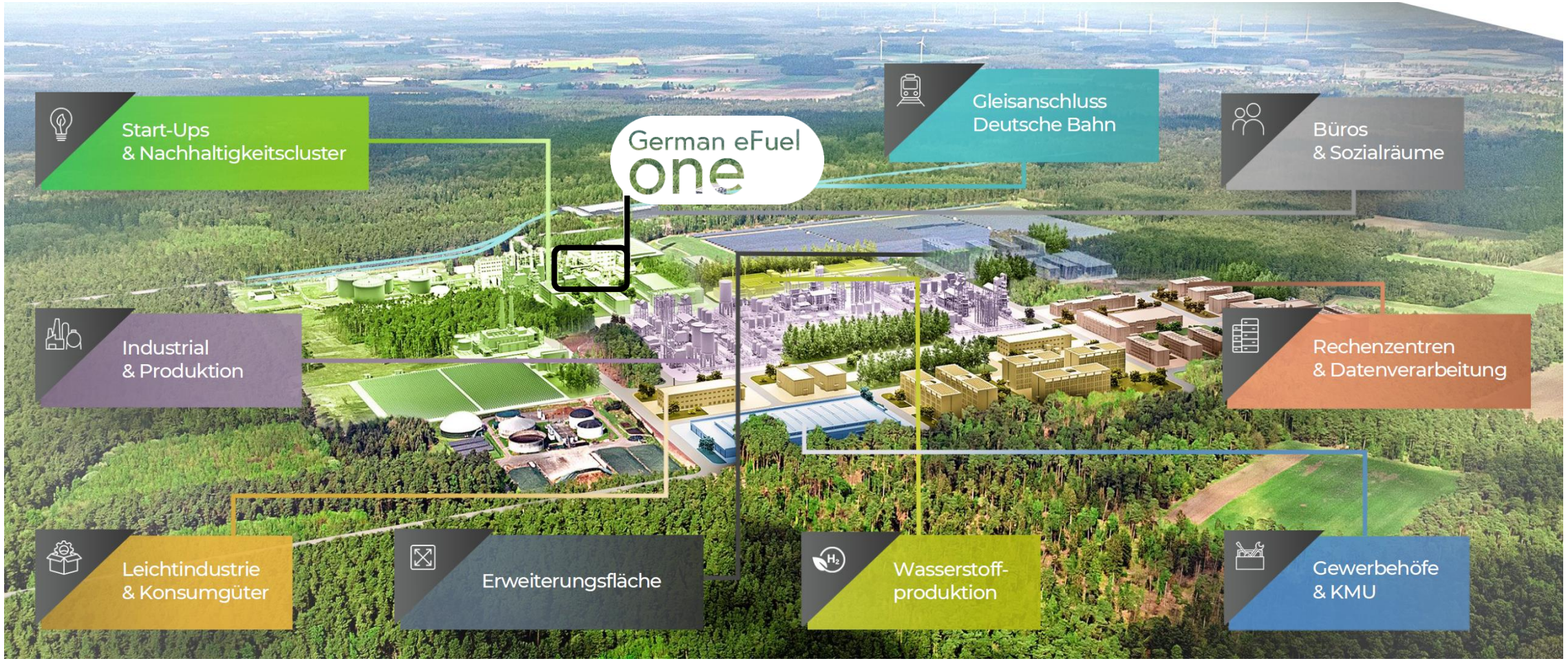
# GreenTec Park Steyerberg

## Mögliche Darstellung der Ansiedlung verschiedener Branchen



# Proven Technology accompanied by R&D

The R&D projects C³-Mobility as well as its successor DeCarTrans pursues the goal of developing and demonstrating new approaches to $CO_2$-free mobility of the future using synthetic fuels based on methanol.

Closed Carbon Cycle MOBILITY

TUBAF · CAC · RWTH AACHEN UNIVERSITY · TECHNISCHE UNIVERSITÄT DRESDEN · FEV · HYUNDAI · PORSCHE · DENSO · DAIMLER · Ford · OPEL · AVL · KTM

Supported by: Federal Ministry for Economic Affairs and Energy on the basis of a decision by the German Bundestag

## Key Insights from C³-Mobility

- Various engine components and concepts were tested: injection systems, fuel tanks, single-cylinder and full engines, as well as complete vehicles
- Tests were conducted under different operating conditions and with a broad range of engine setups

## Results from C³-Mobility

- MtG fully **compatible with common automotive materials** over the entire vehicle lifetime
- **Fuel properties comparable to conventional** reference fuels (density, RON, etc.)
- **Low soot formation**
- All project partners confirmed the **full drop-in capability**

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# BMW, Lother and GEF1 commit to e-fuels – First fill in 2028


From left to right: Glenn Schmidt, Gitta Connemann, Christian Hanke, Hanspeter Tiede


BMW GROUP
Unternehmenskommunikation

Presse Information
13. Oktober 2025

**Starkes Zeichen für Technologieoffenheit und für die Zukunft effizienter Verbrennungsmotoren: BMW Group, Lother GmbH und German eFuel One GmbH unterzeichnen LOI-Vereinbarung zur Nutzung von eFuels als Erstbefüllung ab 2028**

**+++ Erneuerbare Kraftstoffe ab Werk: Nach HVO100 für Diesel jetzt eFuel Erstbefüllung für Modelle mit Ottomotoren in Vorbereitung +++ Forderung zur Anerkennung CO2-reduzierter Kraftstoffe +++**

**Berlin.** Die BMW Group ist überzeugt: Der effektivste strategische Ansatz, $CO_2$-Emissionen insgesamt zu reduzieren, besteht darin, alle Technologien zu nutzen. Technologieoffenheit war und ist zentraler Teil der BMW Group Strategie. Über die Nutzung verschiedener Antriebstechnologien hinaus, bergen erneuerbare Kraftstoffe ein erhebliches $CO_2$-Reduktionspotenzial.

Mit der feierlichen Unterzeichnung eines Letter of Intent (LOI) im BMW Group Werk Berlin bekräftigen die BMW Group, die Lother GmbH und die German eFuel One GmbH ihre Absicht, ihren Beitrag zu leisten, dieses Potenzial zu heben. Im Mittelpunkt dieser wegweisenden Partnerschaft steht das klare Bekenntnis zur Nutzung $CO_2$-reduzierter Kraftstoffe.


From left to right: Christian Hanke, Gitta Connemann, Hanspeter Tiede, Glenn Schmidt, Prof. Dr.-Ing. Helmut Schramm

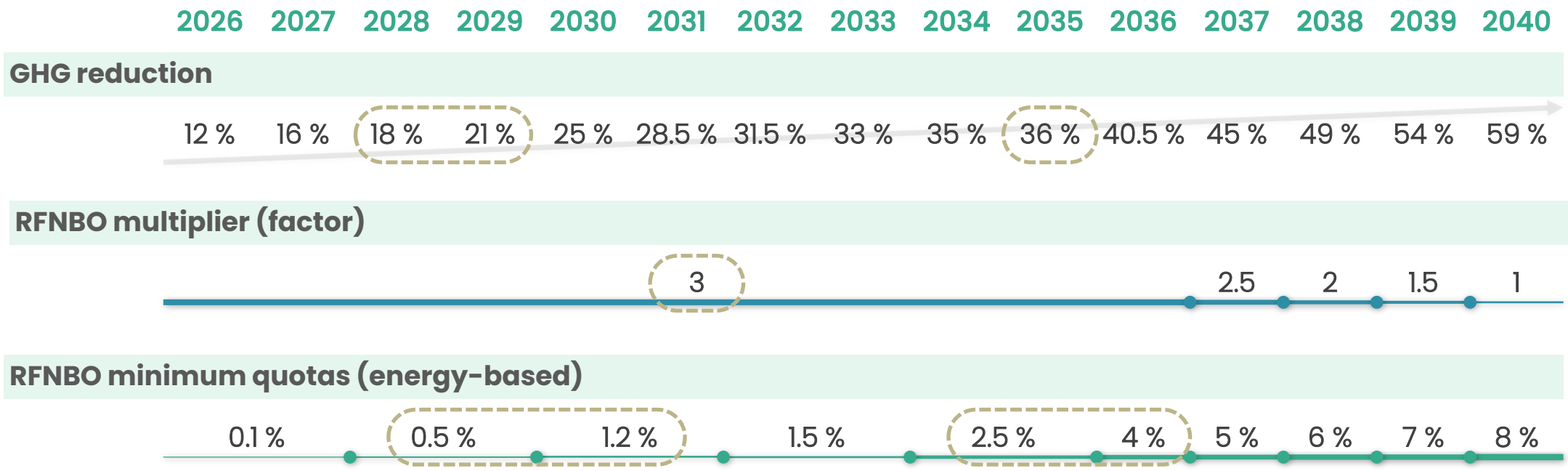
BMW GROUP

Rolls-Royce Motor Cars Limited

German eFuel one

Notes: https://www.press.bmwgroup.com/deutschland/article/detail/T0453248DE/starkes-zeichen-fuer-technologieoffenheit-und-fuer-die-zukunft-effizienter-verbrennungsmotoren:-bmw-group-lother-gmbh-und-german-efuel-one-gmbh-unterzeichnen-loi-vereinbarung-zur-nutzung-von-efuels-als-erstbefuellung-ab-2028?language=de

# Regulatory Framework for Road Sector




**RED III sets a strong investment framework – but far greater ambition is still required.**



Notes: Deutsches Biomasseforschungszentrum (DBFZ), Impulsvortrag, Leipziger Biokraftstoff-Fachgespräche, 15 September 2025. Graphics reconstructed and data updated based on publicly available DBFZ and BMUKN information

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