
TES
Green energy,
naturally.
Win the climate race
We democratize access to reliable and affordable green energy through giga-scale projects
Wadden Sea Forum, 07/09/23, Jever, Germany

About me – Sven Partzsch

- Married, 2 kids, based in Hamburg
- Mastered in Civil Engineering with focus on economics and organisation, Karlsruhe/Germany
- Track record in Oil&Gas downstream industry since 1998 – energy and feedstock molecule logistics expertise
- 2016-2019 – Managing Director of Wilhelmshaven refinery site – restructuring, business development, repurposing site
- Since 2020 with Tree Energy Solutions – from start-up to project maturity, provision of decarbonisation solutions, green hydrogen, green power on demand and carbon management

TES Leadership & Partners: Highly accomplished senior team with value-added shareholders and partners

Cynthia Walker
CEO TES Americas[1],
Former SVP at Occidental Petroleum

Marco Alverà
Chief Executive Officer,
Former CEO of SNAM, Author of *The Hydrogen Revolution*

Marcel van Poecke
Co-Chair of the Board,
Founder of AtlasInvest, Vice Chair at Carlyle International Energy Partners

Paul van Poecke
Co-Chair of the Board,
>30 years of experience in energy sector holding executive positions

Yves Vercammen
Chief Corporate Officer,
>25 years of experience in energy commodities sector mostly recently at Fluxys

Dr. Jens Schmidt
Chief Technology Officer,
Former Corporate Technology Fellow at Dow

Kevin Selleslags
Exec. Commercial Director,
>19 years of energy sector commercial experience mostly recently at Energex Partners

Senior Management

Alexandra Pieton
Chief Projects Officer,
Former VP, Hydrogen Product Line at Technip

Natalie Jackson
Chief Capital Markets & Structuring,
Former SVP, Capital Markets & Project/Portfolio Finance at Clearway Energy

Senior advisors

Stefan Judisch
Former CEO of RWE

Christophe de Mahieu
Former Partner at Bain and McKinsey

Julian Metherell
Founding partner of MW&L Capital, Vice Chairman of GasLog
Former Partner at Goldman Sachs

Dr. Günther Bräunig
Former CEO of KfW

Dedicated team of 100+ employees

Project Partners

ECONNECT Energy
Bundesministerium für Wirtschaft und Energie
Niedersachsen Ports
OGE
TotalEnergies
uniper
EWE
ENGIE

Select Shareholders

AtlasInvest
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UniCredit
FORTESCUE FUTURE INDUSTRIES
HSBC
zhero

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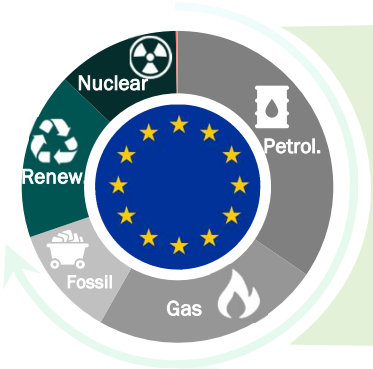
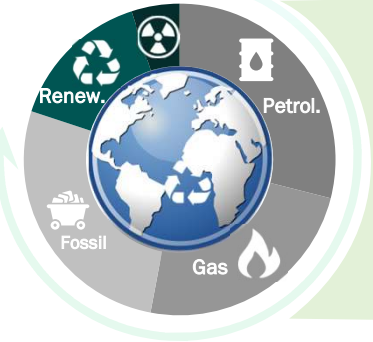
[1] Cynthia is also Chief Strategy Officer of TES

Green molecules are required to achieve net-zero ambitions in Europe & globally

Energy Mix 2020[1]





Decarbonization Need

~70%
by 2050

~73%
by 2050

Required Renewable Energy Sources

Electrons

Possible Sources:

- Wind
- Solar
- Hydropower

Challenges with electrons:

- ⊖ Energy quantity
- ⊖ Storage
- ⊖ Transmission
- ⊖ Intermittency

Molecules

Possible Sources:

- Hydrogen
- **Methane (e-NG)**
- Ammonia

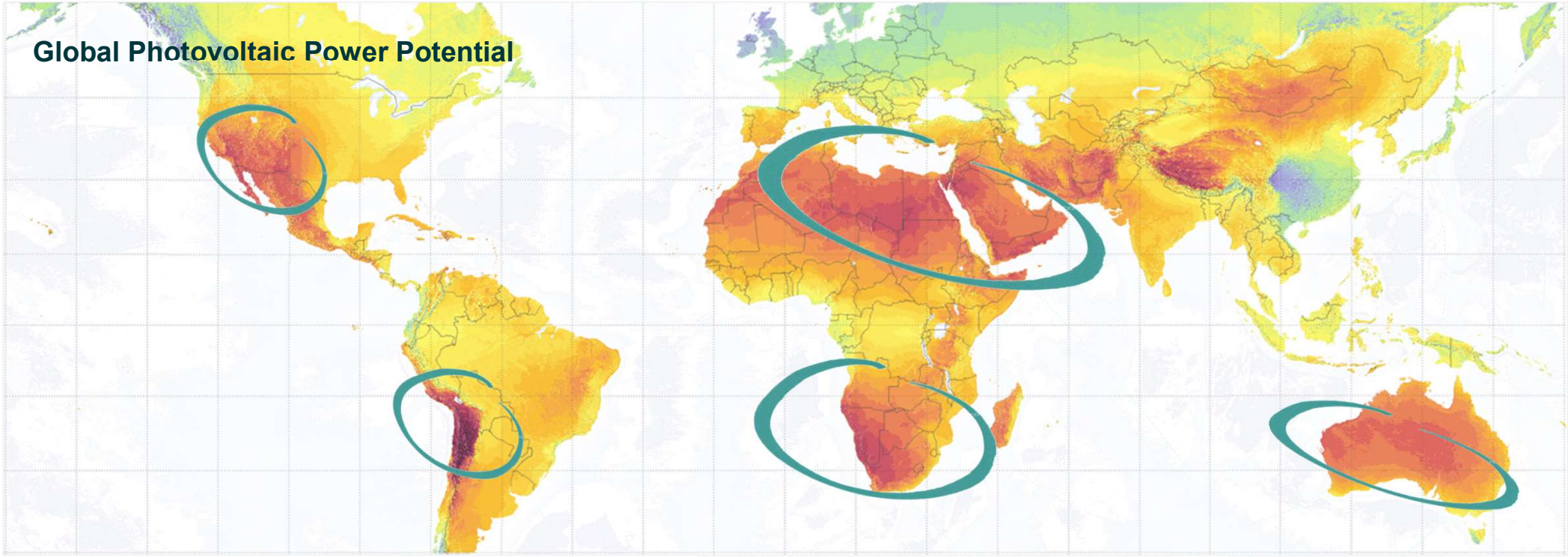
Benefits for molecules:

- ⊕ Hard-to-abate industries
- ⊕ Storage
- ⊕ Transmission
- ⊕ No intermittency

e-NG offers a green, affordable and reliable energy alternative to overcome the obstacles of green electrons

Source: Eurostat; IEA World Energy Balances 2022 – Energy mix is expressed as the share of fuels in gross available energy

Shipping the sun from areas producing PV power will drive energy independence



e-NG will shift supply to broad supply base with cost-efficient PV power – e.g., USA, UAE and Australia

What is e-NG?

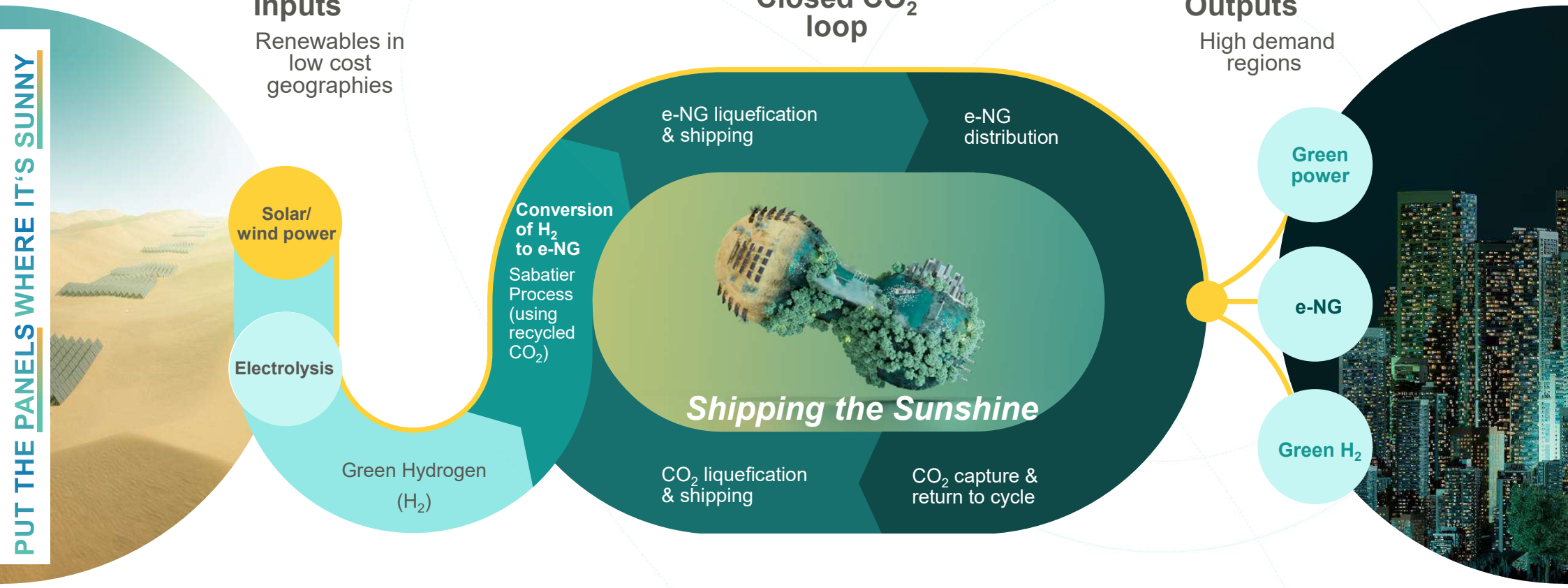
How is e-NG produced?

$$CO_2 + 4\,H_2 \rightarrow CH_4 + 2\,H_2O$$

Carbon Dioxide — Hydrogen — e-NG — Water

What is e-NG?	• **Electric Natural Gas** is a molecule produced entirely from ***renewable power and sustainable CO_2*** • **It is chemically identical to methane and can replace natural gas 1-to-1** in the grid, utilizing existing gas infrastructure
How is it used?	• **e-NG makes renewable H_2 easily transportable**, storable and usable • Usable as a ***drop-in fuel for hard to abate sectors*** such as industry and transportation
How is it green?	• **e-NG will be certified as a Renewable Fuel of Non-biological Origin ("RFNBO") for sales into Europe** • Complies ***with the most stringent EU renewable standards*** for H_2 and its derivatives • Provides a ***scalable pathway to decarbonize and balance global energy system***

Achieving net-zero, affordable and sustainable energy by closing the CO_2 loop



e-NG is rapidly becoming a key part of the energy transition

e-NG receiving public support worldwide…

G7 energy ministers agreed that e-NG combines **security and climate** using existing infrastructure

e-NG in gas grid targets **1% by 2030, 90% by 2050**; several projects undergoing

IEA e-NG is one of the **most promising fuels**; hydrogen carriers to speed up energy system **transition towards green**

…enjoying a strong momentum across the energy industry…

Santos Signed **e-NG agreements**

TotalEnergies e-NG agreements with **Toho Gas** (Japan)

Toho Gas, Mitsubishi, Tokyo Gas, Osaka Gas Collaborating to produce e-NG in the U.S. and transport it to Japan via Cameron LNG

ENGIE EU decarbonization scenario has **200 TWh of e-NG in EU by 2050**

CMA CGM Invested USD 10.2bn for **77 e-NG ready ships**

Shell e-NG will be a key driver of **shipping decarbonization**

Salzgitter AG, BASF Wide interest by **EU customers**

TOPSOE, MAN Scaling up **methanation technology**

Xcel Energy 100% carbon-free electricity by 2030

…while providing a scalable platform when compared to other e-fuels

e-NG shares similarities with biomethane (RNG) but **overcomes the supply issue** and other limitations associated with biofuels, with much **better bankability and tradability**

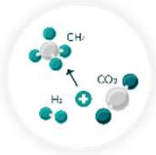
This drop-in fuel, or eNG,…is suitable for injection into the pipeline system. The carbon story is clear and the technology offers **a promising solution for accelerating momentum in renewable gas markets**

Marvel

e-NG will be essential to achieve net zero 2050 target, especially as **total cost is comparable – if not lower –** than e-ammonia, while **e-NG can leverage on existing gas infrastructure**

OliverWyman

High energy efficiency along the value chain

	Green Power Generation	Hydrogen Prod. *(Electrolysis)*	CH4 Production *(Sabatier)*	Liquefaction	Transport	Regasification	Market
							
Efficiency	**Most efficient; 10-30 €/MWh**	**72%**	**85%**	**96%**	**96%**	**99%**	

Total efficiency of green energy[1)]

e-NG

~78%
~56% incl. Electrolysis

Hydrogen[2]

~62%
~45% incl. Electrolysis

TES' e-NG is a highly efficient and competitive energy carrier

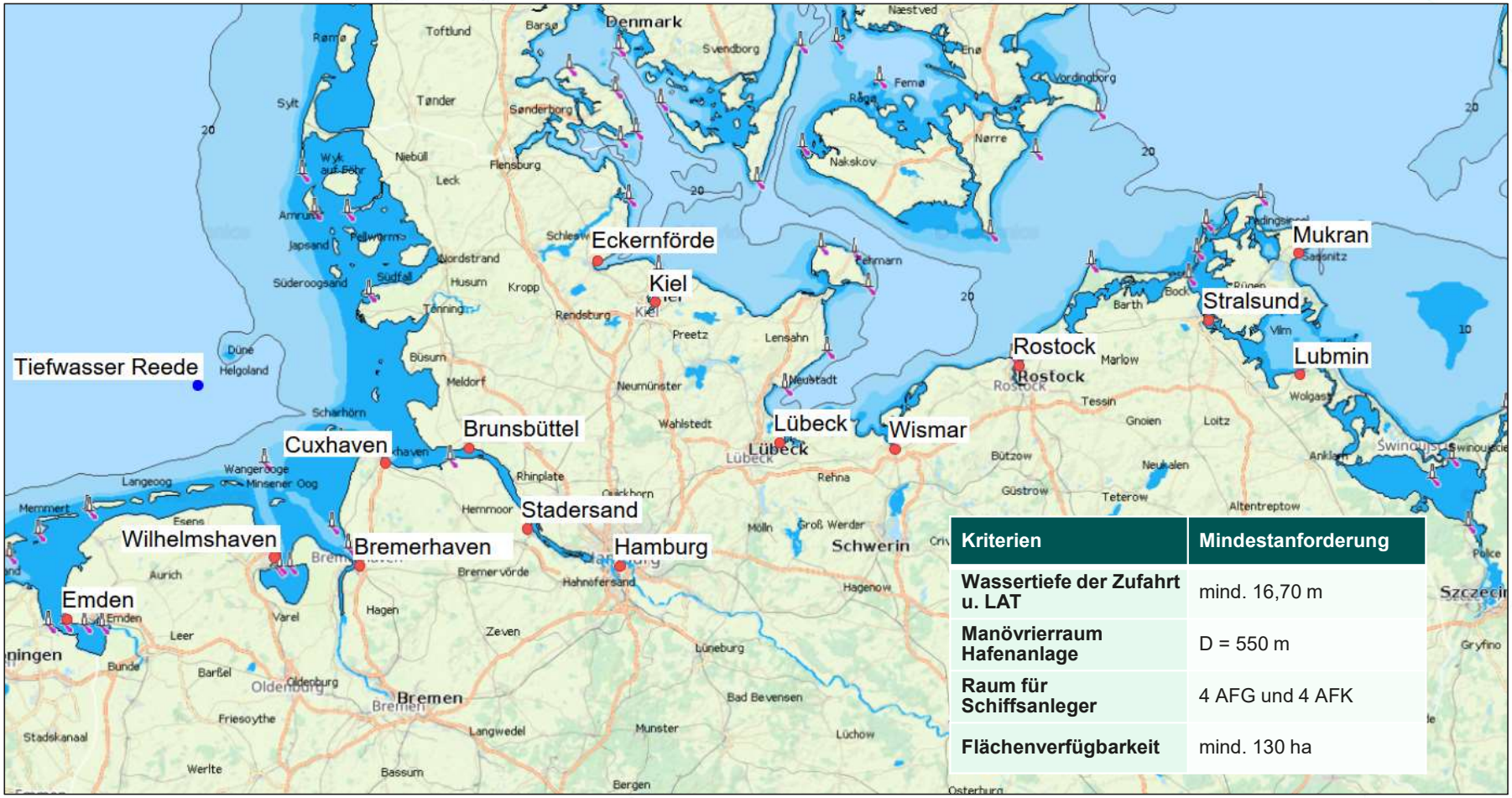
1) at WHV gate // 2) 80% Conversion efficiency e-NG to Hydrogen // Please note: Additional factors besides conversion efficiency need to be considered in economic assessment

High global scalability with innovative technology at market maturity

	Green Power Generation	Upstream Processing	Midstream Transportation	Green Energy Hub
Maturity	✓ Proven technologies with future efficiency gains	✓ Ready for market technology	✓ Usage of existing infrastructure of (L)NG	✓ Usage of already existing (L)NG technology
Scalability	✓ Expansion to countries with favorable conditions for wind and solar energy	✓	✓ Global infrastructure already in place	✓ Expansion to countries with need for green energy imports

TES' business model relies on existing infrastructure and mature green innovations

Best import location in Germany ?



Kriterien	Mindestanforderung
Wassertiefe der Zufahrt u. LAT	mind. 16,70 m
Manövrierraum Hafenanlage	D = 550 m
Raum für Schiffsanleger	4 AFG und 4 AFK
Flächenverfügbarkeit	mind. 130 ha

Wilhelmshaven – deep sea, vast space

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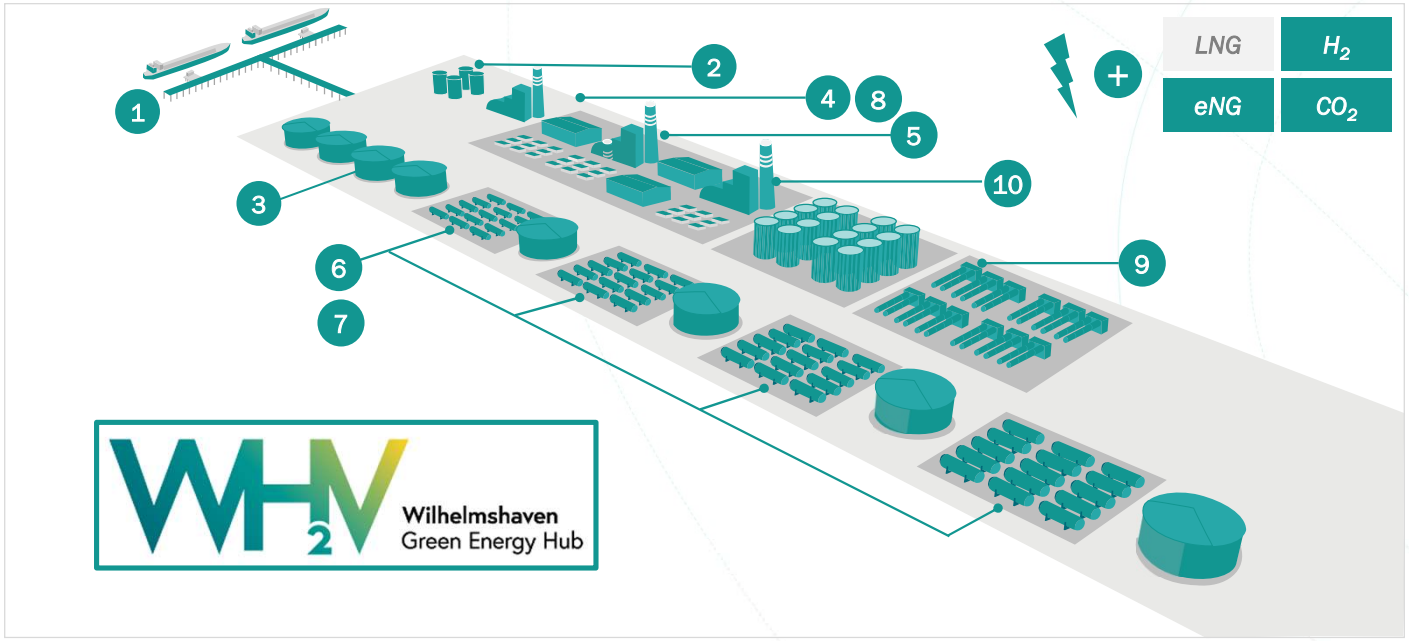
TES Green Energy Hub

Schematic view – process integration concept



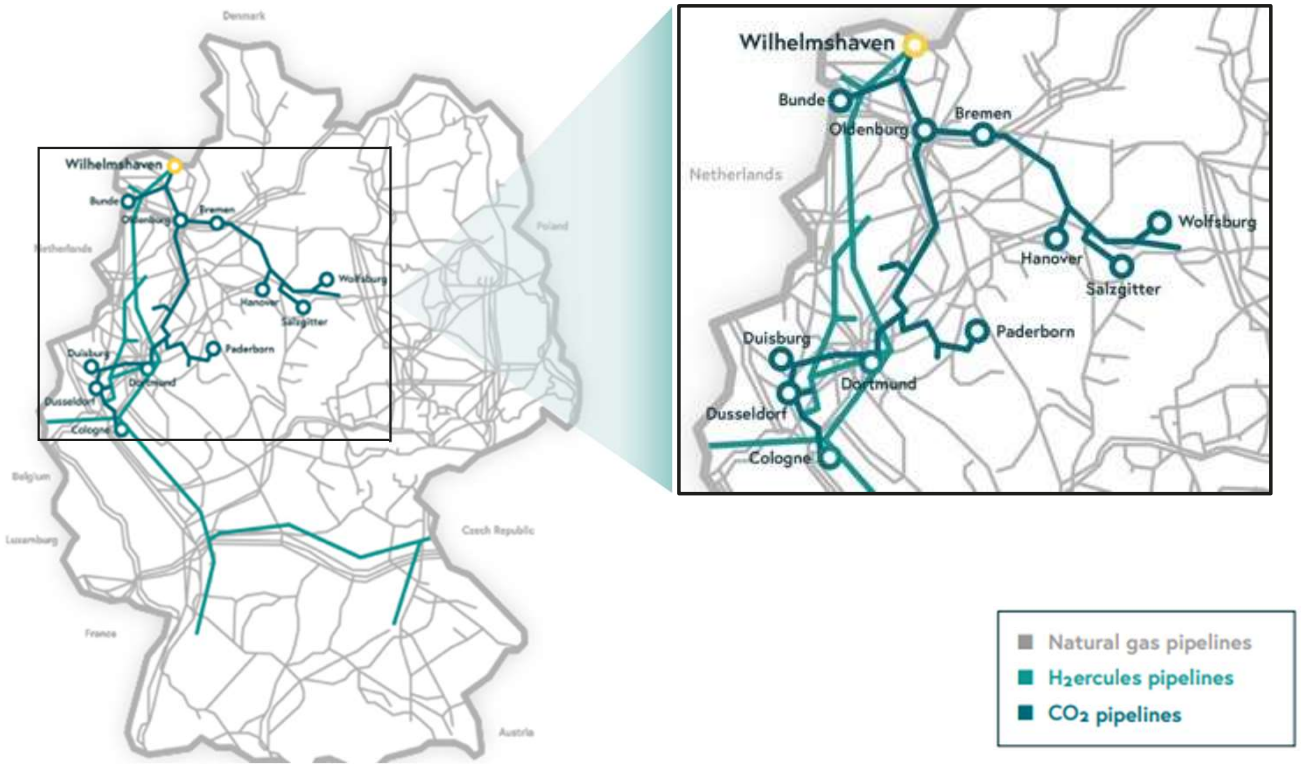
1 jetty	3 LNG/e-NG tanks	5 CH_4 reforming	7 CO_2 liquification	9 elektrolyzer
2 regassification	4 Nat gas grid	6 CO_2 storage	8 CO_2 grid	10 oxy Fuel power plant

Synergies

- Heat integration
- Cold integration
- Oxygen production & usage
- shared common infrastructure
- shared plant operations

Wilhelmshaven – energy import gateway

Strategic location for German industry supported by our triple pipeline access



Wilhelmshaven
Green Energy Hub

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Schedule

Winter 2023

- 5th federal state FSRU
- Privilged project under LNGG
- Limited to 5 years operation
- Annual capacity: 5 bcm

2027

- Priviledeg project under LNGG
- Jetty with 2 berths
- Onshore based LNG/e-NG storage tanks
- Regassification facility
- Annual capacity: >10 bcm

2028

- First imports of e-NG
- Export of CO_2
- Elektrolyzer 500MW (EWE)
- Green power on demand

WH2V Wilhelmshaven Green Energy Hub

ab 2030

- Ramp-up of e-NG imports
- Energy Hub supplying green electrons and molecules
- Annual capacity: >20 bcm

WH2V Wilhelmshaven Green Energy Hub

LNG | LNG / e-NG | e-NG

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TES Green Energy Hub as part of the larger Energy Hub Port of WHV

TES's projects aim to drive the development of real zero-emission green molecules, enabling the hydrogen economy's development.

Our commitment

By 2030

1 million tons of e-NG production

Saving 2.5 million tons of CO_2 emissions annually

By 2035

5 million tons of e-NG production

Saving 12.5 million tons of CO2 emissions annually

GHG footprint

Excluding electricity inputs
the GHG footprint of our cycle is 5kg CO2/MWh, or 1.5% of the fossil fuel comparator [1].

1.94 gCO2eq/MJ. Source: https://energy.ec.europa.eu/system/files/2023-02/C_2023_1086_1_EN_ACT_part1_v5.pdf


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