Green Hydrogen
Germany Market Economy


AFC Energy
AIRBUS
Air Liquide
creative oxygen
AIR PRODUCTS
ALSTOM
mobility by nature
AREVA H2Gen
Aspens
BeBa Energie
Diamond Lite SA
eifer
European Institute for Energy Research
AIRPORT
HELIPORT
OFFSHORE WESTCOAST
DEEP. KBB
DILLINGER
DAIMLER
DLR
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German Aerospace Center
Institute of Engineering Thermodynamics
DHBW
Duale Hochschule Baden-Württemberg
Mannheim
DVGW
Hofer
DLR
Deutsches Zentrum für Luft- und Raumfahrt
Institut für Vernetzte Energiesysteme
f-cell
HUSUM - SCHWESING
e-mobil BW
Landesagentur für neue Mobilitätslösungen und Automotive Baden-Württemberg
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Eine Energie voraus
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ENERGIE MIT ZUKUNFT.
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EnergieAgentur.NRW
GRAFORCE
FEE
DAS INNOVATIONSNETZWERK
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Join the change
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HyCologne
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H2BZ Initiative Hessen e.V.
H2energy
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THE LINDE GROUP
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KIT
Karlsruher Institut für Technologie
MAGNA
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Deutscher Wasserstoff- und Brennstoffzellen-Verband
NPROXX
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Driving clean energy forward
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German Hydrogen and Fuel Cell Association

For more than 25 years now, DWV has been advocating the technological development and market introduction of hydrogen technologies.

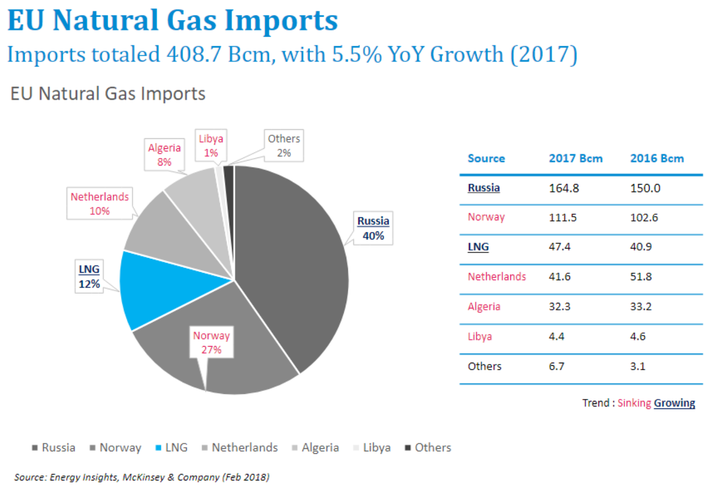
DWV represents all European member associations of Hydrogen Europe (12 associations - March 2019) on the board of the European Hydrogen Association. Hydrogen Europe is directly involved in the design of the European funding programs of the FCH JU.

The expert commission performing energy is the key market player, which has been working intensively since 2015 to ensure that "green hydrogen" is taken into account in the many regulations on energy system transformation for use in refineries.

We have been able to successfully inspire European, federal and state politicians with our proposals and make a decisive contribution to the consideration of green hydrogen in national and European regulations.

Ukraine conflict changes everything – Driver for green hydrogen in Germany and EU

Deutscher Wasserstoff- und Brennstoffzellen-Verband



We must act ambitiously now!

EU ENERGY MINISTER (Feb. 2022)

"End dependence on Russia"
In view of the Ukraine conflict, EU energy ministers decided to reduce the dependence on Russia's energy supplies and the associated security of supply.

Gazprom (14.06.2022)

Reduction of gas delivery about 40%.

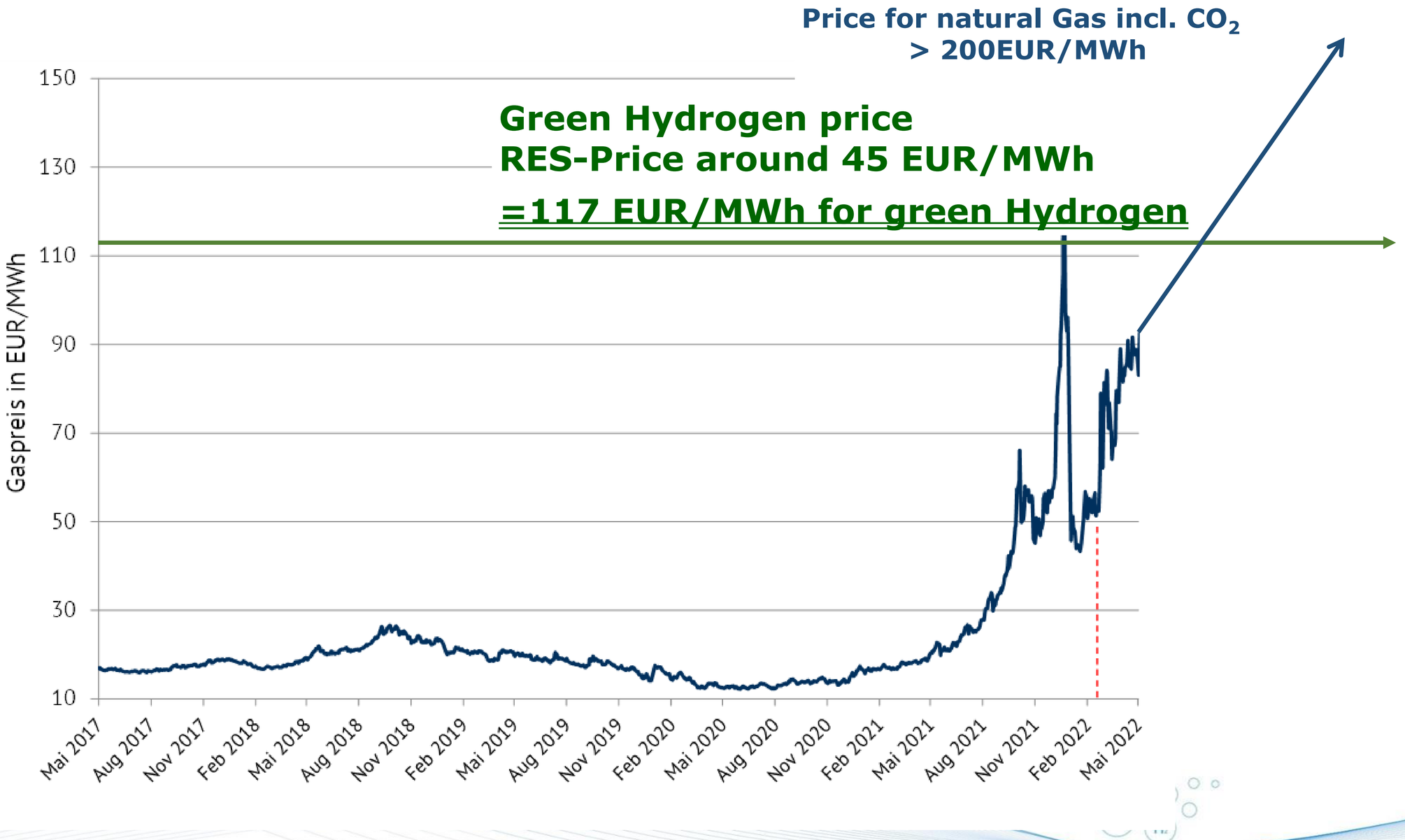
USA (14.06.2022)

Explosion in LNG-Terminal – less export to Germany

Renewable Energies and GREEN HYDROGEN is the best answer to the energy dictate.

Let us start the new era of a Green Energy Commodity.

Economic sustainable stability – Green Hydrogen



National Hydrogen Strategy
Selected targets of the NWS

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Develop "home market" for hydrogen technologies in Germany and open the way for imports of green hydrogen

The German government sees a hydrogen demand of about 110 TWh until 2030.

Currently 55 TWh/a of H2 in Germany are current consumed. The Government plans a ramp-up of hydrogen demand of up to 55 TWh/a. However, it intends to produce only 28 TWh/a as green hydrogen until 2030. This would mean that emissions in the hydrogen sector would increase by 75%. This target is therefore not in line with the climate targets for 2030.

To achieve this goal the NWS must address **40 GW, at least 10 GW domestic market and at least 30 GW import market**.

Present German hydrogen eco-system

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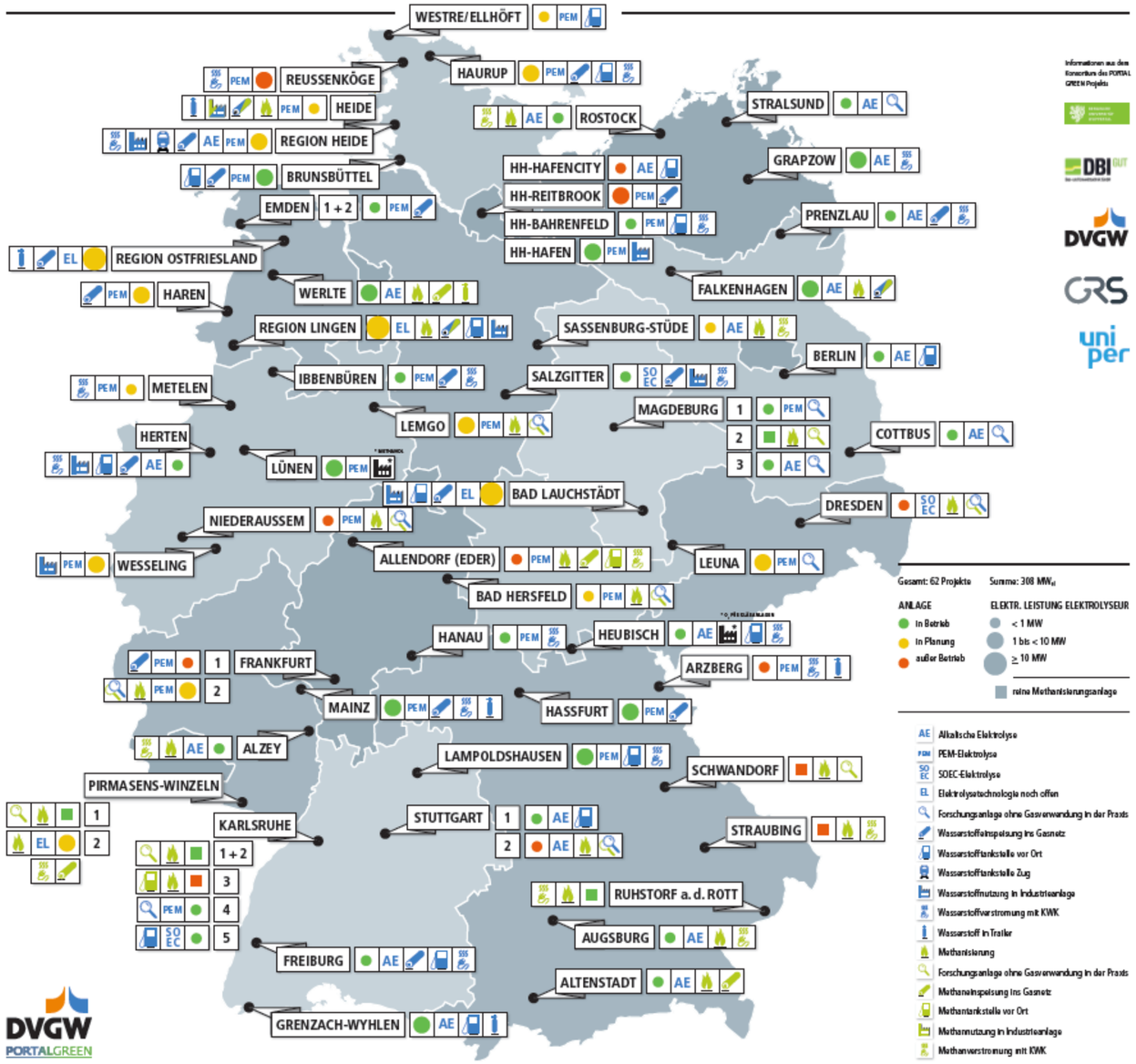
68 Power to Gas Projects commercial in operation (2020)

2021 announcements with more than 1 GW

Demand of PtX-Plants 2030 between 20 – 50 GW

Demand of PtX-Plants 2050 over 160 GW



Federal Ministry for Economic Affairs and Energy

MITTELSTAND GLOBAL ENERGY SOLUTIONS MADE IN GERMANY

Facilitator

energie waechter

Green Hydrogen – REPower
Secured European Energy Supply

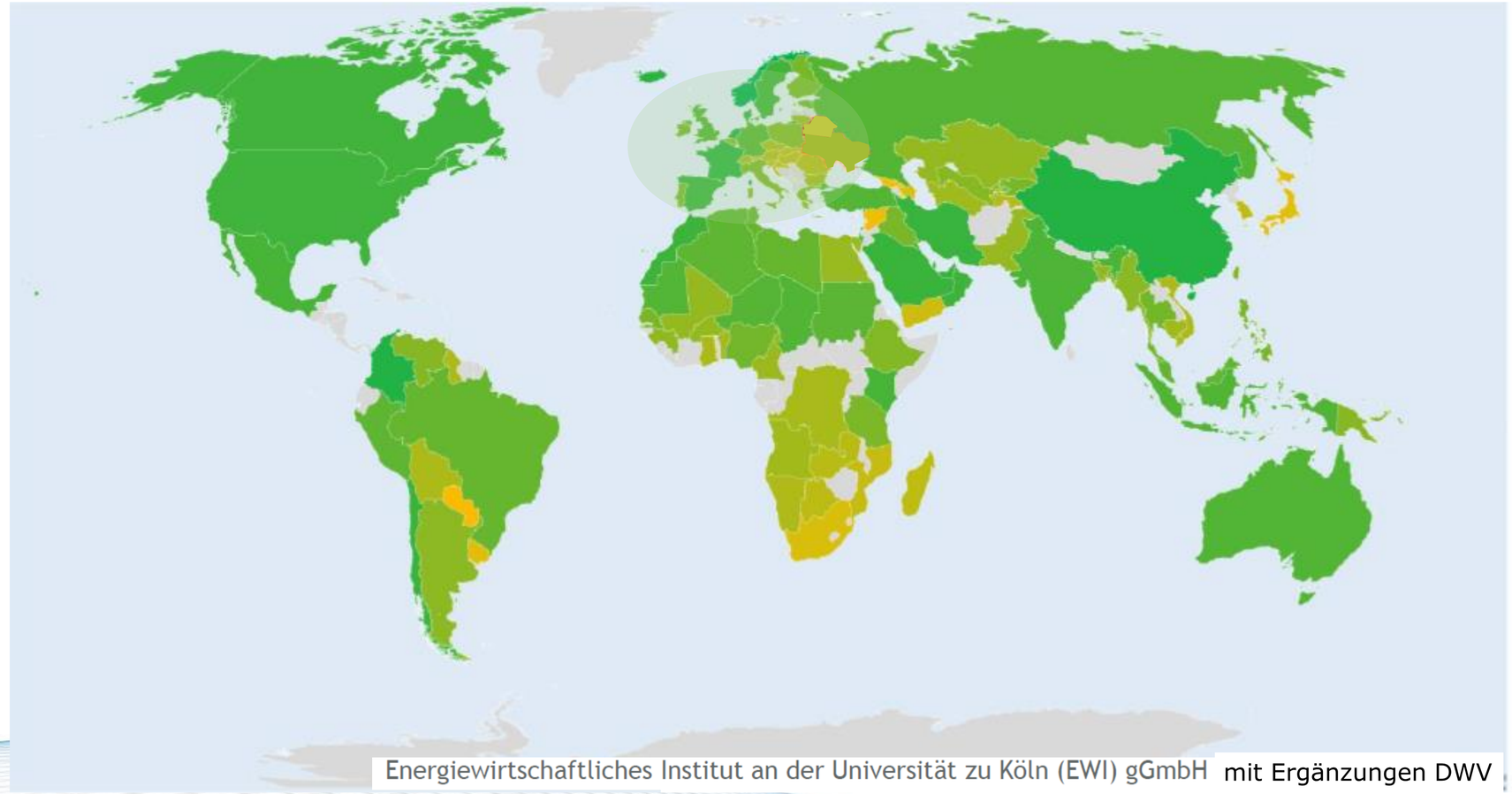
>250 GW Electrolyser capacity needed in 2030

The EU Commission estimates that an additional 15 million tons of renewable hydrogen could replace 25-50 bcm per year of imported Russian gas by 2030 (10 million tons of imported renewable hydrogen from various sources and 5 million tons more renewable hydrogen produced in Europe, in addition to the 5 million tons already planned).

>500 Mrd. EUR investments by 2030
Huge Challenge with great opportunities!

Advantage of a European Green Hydrogen Union

There are many places around the world where green hydrogen production costs are low – lower than fossil energy.



Energiewirtschaftliches Institut an der Universität zu Köln (EWI) gGmbH mit Ergänzungen DWV

But production costs are not everything!

We need a wider view of this!

- Transport costs
- Sustainability
- Security of supply
- Geopolitical aspects

But where will green hydrogen for Germany and EU come from in the long term?

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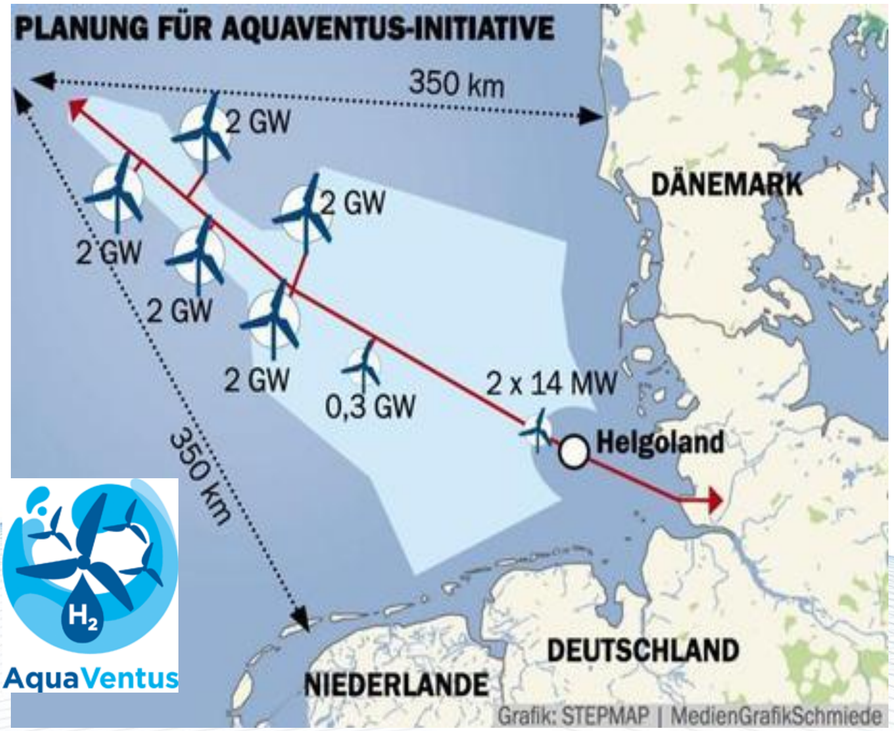
The optimal combination between favourable green hydrogen production costs and transport costs are crucial for a cost-efficient supply-secure energy supply of Europe.

The switch to green hydrogen allows for maximum diversification of supply options.

Europe's energy suppliers of tomorrow:

- Southeast Europe
- Scandinavia
- North Sea
- West Africa
- North Africa

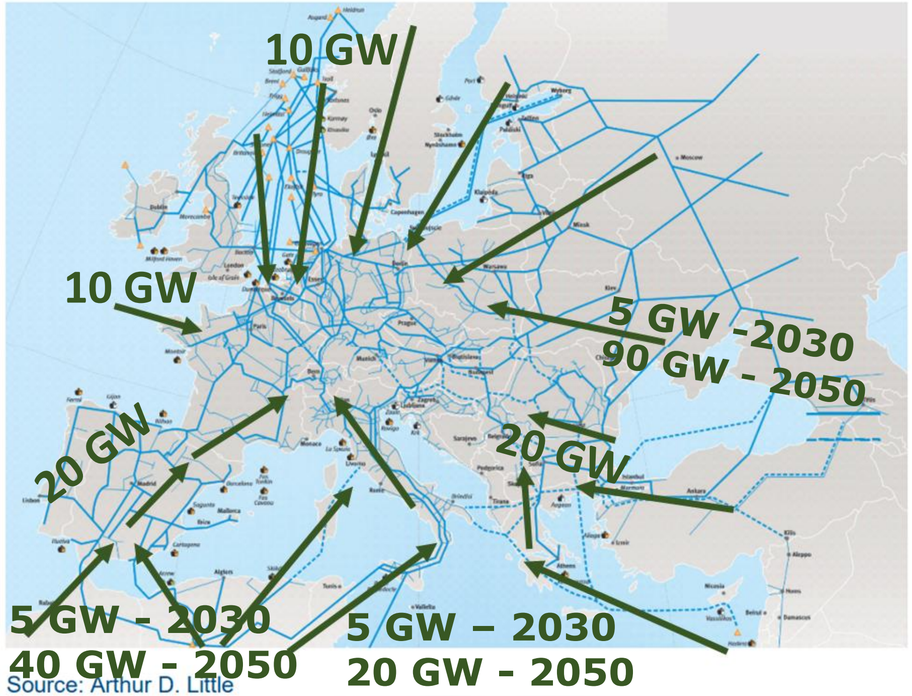
North-Sea 10 GW



North EU 10 GW
Central EU 30 GW
West EU 10 GW

South EU 10 GW
South-West EU 20 GW
South-East EU 20 GW
Ukraine4Europe 5 GW

ECOWAS 5 GW
North Africa 5 GW



Opportunity for a strong European economy!

Share your Wind and PV resources! Hydrogen makes it possible!

Green Hydrogen gives wind and solar an economic value. Selling solar and wind to the Europeans industrial centers is an **opportunity for tomorrow's global trade**.

Kick off for a green hydrogen economy in Europe

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H2Global

Best practice model for a market incentive programme!

H2Global – Great solution for quick start

German program for Non-Europe:

- H2Global is an independent industrial foundation funded by the German government with EUR 900 million.
- The first competition for projects to purchase green hydrogen at a fixed price for 10 years will start in 2022.
- The goal is to bring projects with up to 500 MW of electrolysis capacity into commercial operation by 2024 with the help of the H2Global program.

German program for Germany and Europe:

- Sprinter program to create a German green hydrogen production of 3 GW
- Sprinter program to create a European green hydrogen production for Germany of 2 GW
- Total funding requested of EUR 10 billion

EU program:
Next action needed at European and Non-European level

- Sprinter program to create a European hydrogen economy system.
- H2Europe program for 10 GW with funding of EUR 20 billion.
- H2Non-European Union for 5 GW with funding of EUR 10 billion.

Win-win for Everybody

ADD ON
Only additional expansion of renewable energies in the partner countries comes into play with H2Global

Locale value
Share of H2/PtX can be used in partner countries. Production and export of H2/PtX creates local jobs

Pathfinder and technology transfer
H2Global as a basis and opportunity for partner countries to integrate green H2 and PtX into their own energy transition.

International trade
Establishment of H2 and PtX as a new "raw material" for own use and diversification of export structures

Climate targets
The import of green hydrogen and its derivatives contributes to the achievement of European climate targets.

Industry
European hydrogen and RE industry benefits from the construction of plants in partner countries.

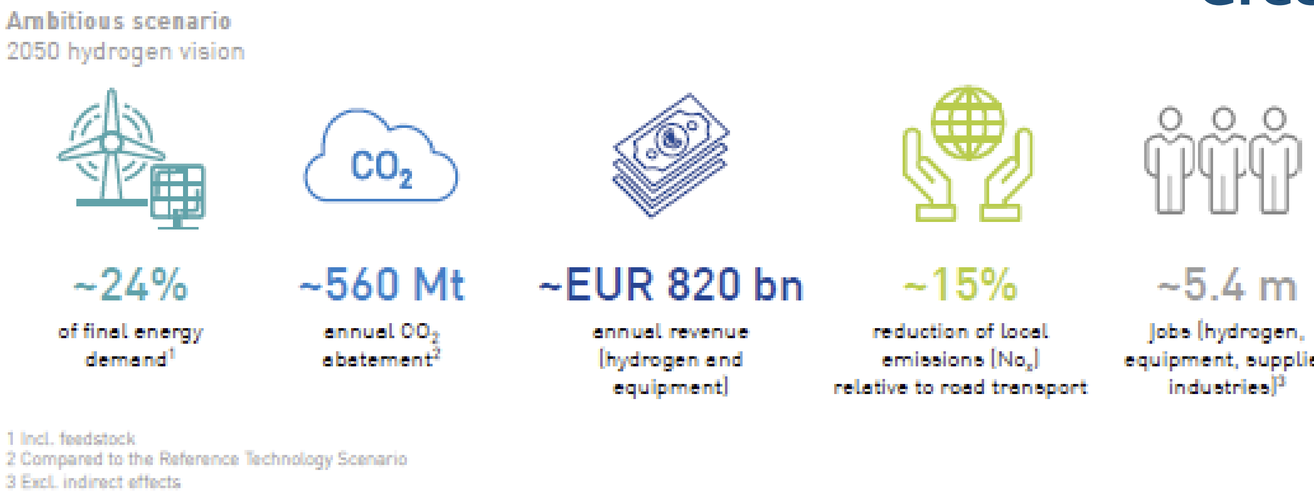
Global market – EU market

- Global: The McKinsey study "Hydrogen, Scaling Up" has identified a market potential of more than $2,500 billion for 2050 with over 30 million jobs.

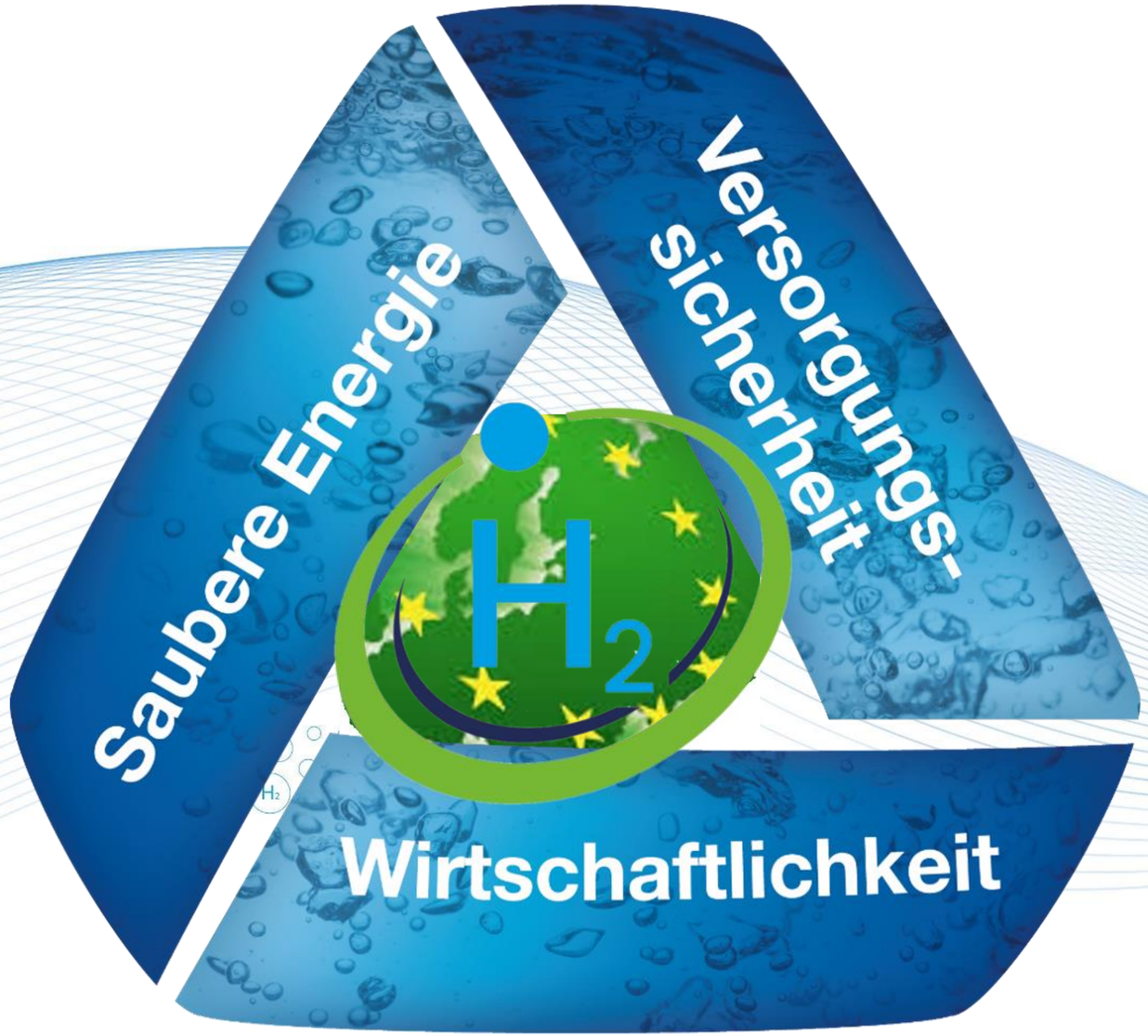
- Europe: Hydrogen Roadmap Europe

5,4 Mio. Jobs
820 Billion Euro annual revenue

Need Europe more reasons for a Green Hydrogen Economy?



Let's start a green hydrogen market economy together now!



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@DWV_H2

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