



## Country Overview Germany

**Philipp Braunsdorf** | Programme Manager Infrastructure Hydrogen, NOW GmbH  
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# NOW GmbH – Who we are

- NOW: National Organization Hydrogen and Fuel Cell Technology
- Sole shareholder is the Federal Republic of Germany (represented by BMVI)
- Founded in 2008 to implement the National Innovation Program Hydrogen and Fuel Cell Technology (NIP)
- Today's task: Designing, coordinating and implementing national strategies and public-private programs in the field of technology for sustainable mobility and energy supply
- Currently 41 employees



 Nationale Organisation  
 Wasserstoff- und Brennstoffzellentechnologie

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# NOW GmbH – Programmes and tasks of NOW

## Electromobility on site

Research & Development  
Procurement, concepts



## NIP\*

Research & Development  
procurement



## Export Initiative Environmental Technology

# NOW

Nationale Organisation  
Wasserstoff- und Brennstoffzellentechnologie

coordination  
implementation  
networks  
acceptance  
visibility

## Funding Guidelines Charging Infrastructure

Area-wide construction  
normal charge  
Quick charge



## Mobility and Fuel Strategy

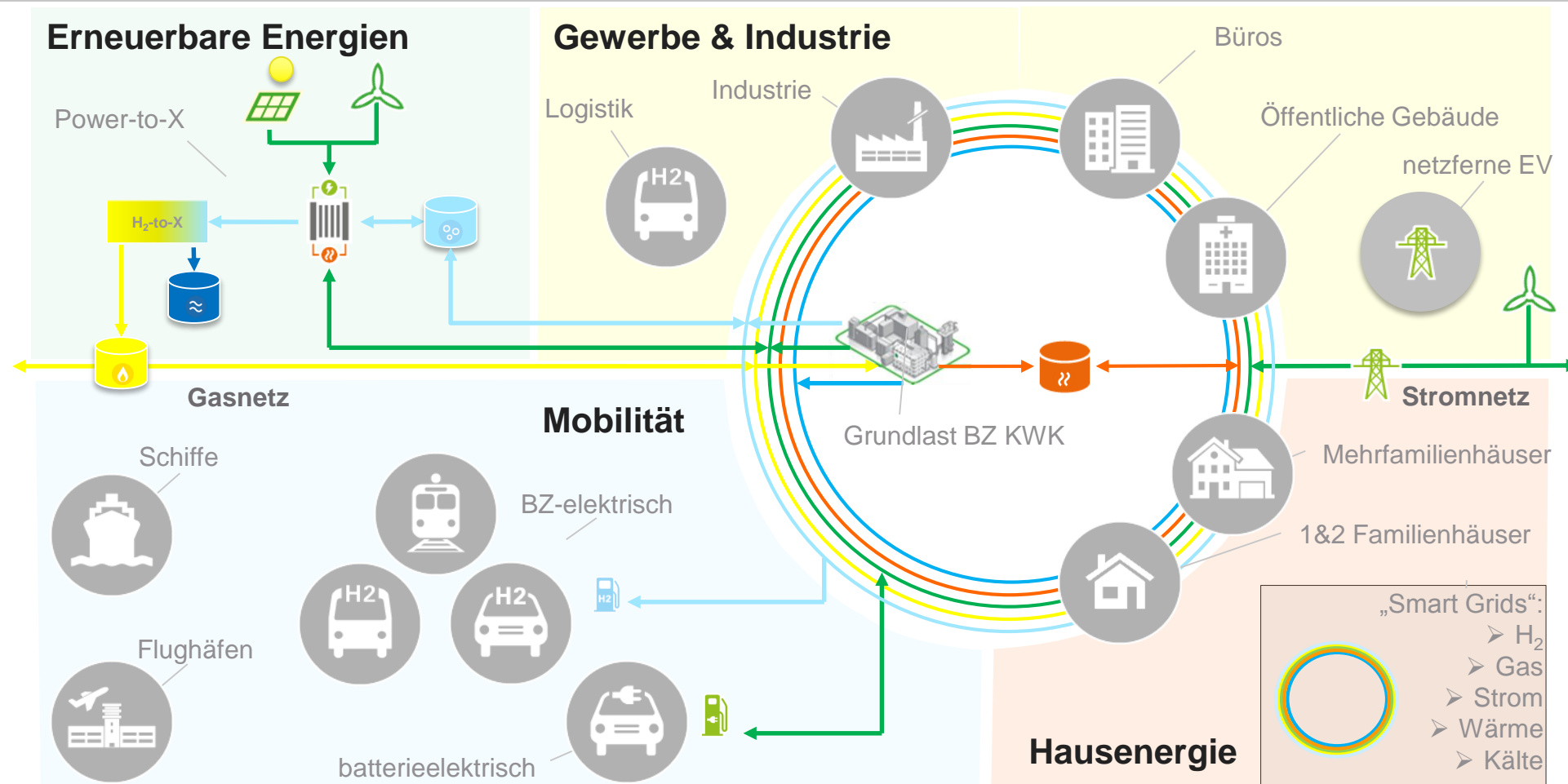
Pilots



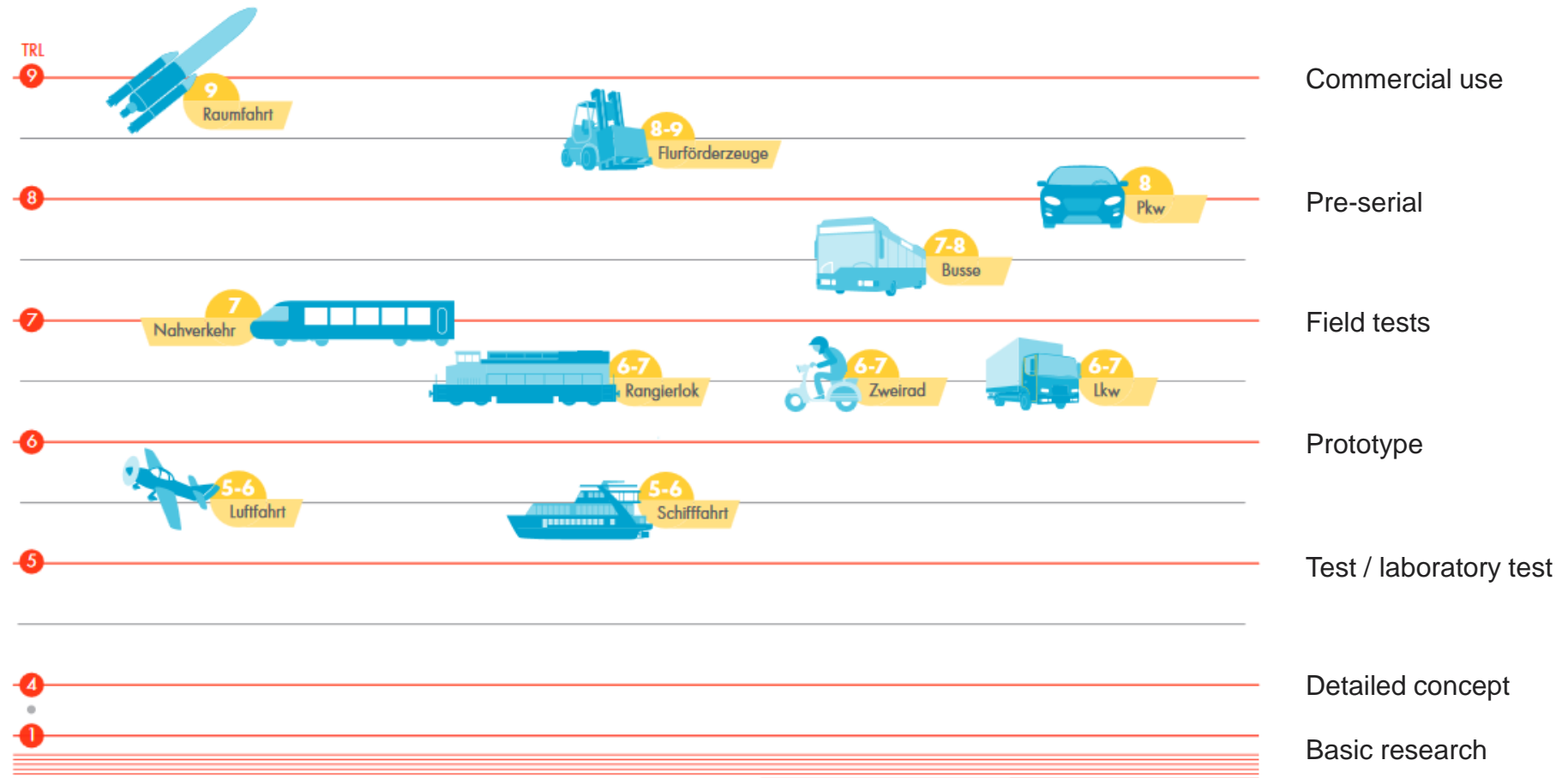
German-Japanese cooperation in the field of PtG  
H2 / BZ technology in development cooperation (cooperation  
with GIZ)

\* National Innovation Programme for  
Hydrogen and Fuel Cell Technology

# Hydrogen and Fuel Cell Technology – Renewable, intelligent and connected across all sectors

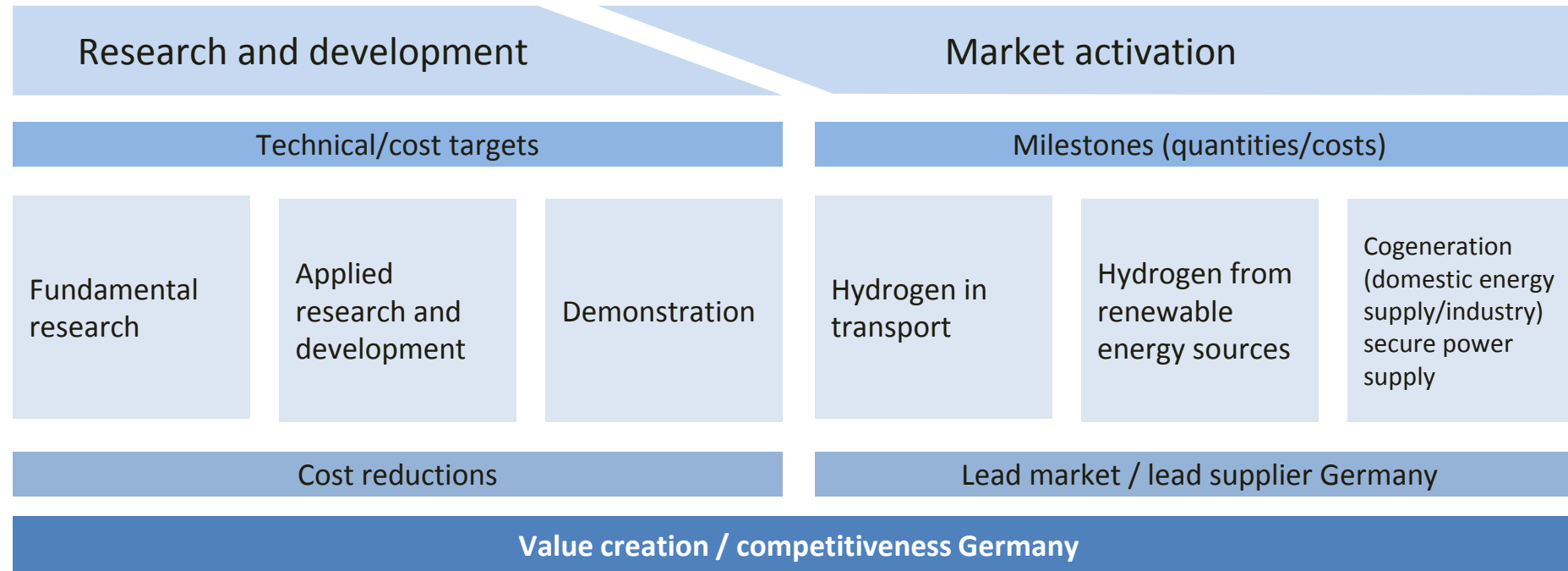


# Status – Technology readiness level (TRL)



Quelle: Shell Wasserstoffstudie 2017

# Status – continuing the National Innovation programme Hydrogen and fuel cell technology (NIP 2)




10 years → Federal funding € 1.4 bn → Combining R&D funding with market activation



# Status – Project and budget overview research & development and innovation



	Autostack Industrie GEN5-BZ ROBALD LHMC HyPerformance		BILBO Go4H2	<b>160</b> applicants
	BIC H2 VerfügbarkeitBZBus rHYn-main		FFZ70	<b>23</b> projects
	Bethy 2a X-EMU		RSOC	<b>77 Mio. €</b> granted
	ELEKTRA Pa-X-ell2 RiverCell2 SchIBZ2		BePPel Hy-Lab QuBK RoundRobin Precoil	<b>20 Mio. €</b> applications



# Status – Project and budget overview market activation



Cars 563  
LDV 500



4 calls



Buses 81  
HRS 3  
Ely 1



270 Mio. € applications



Trains 164  
HRS 13  
Ely 7

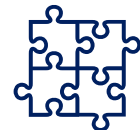


HRS 47  
Ely 11

200 Mio. € applications in the train call



Ships 1



18 Mio. € granted

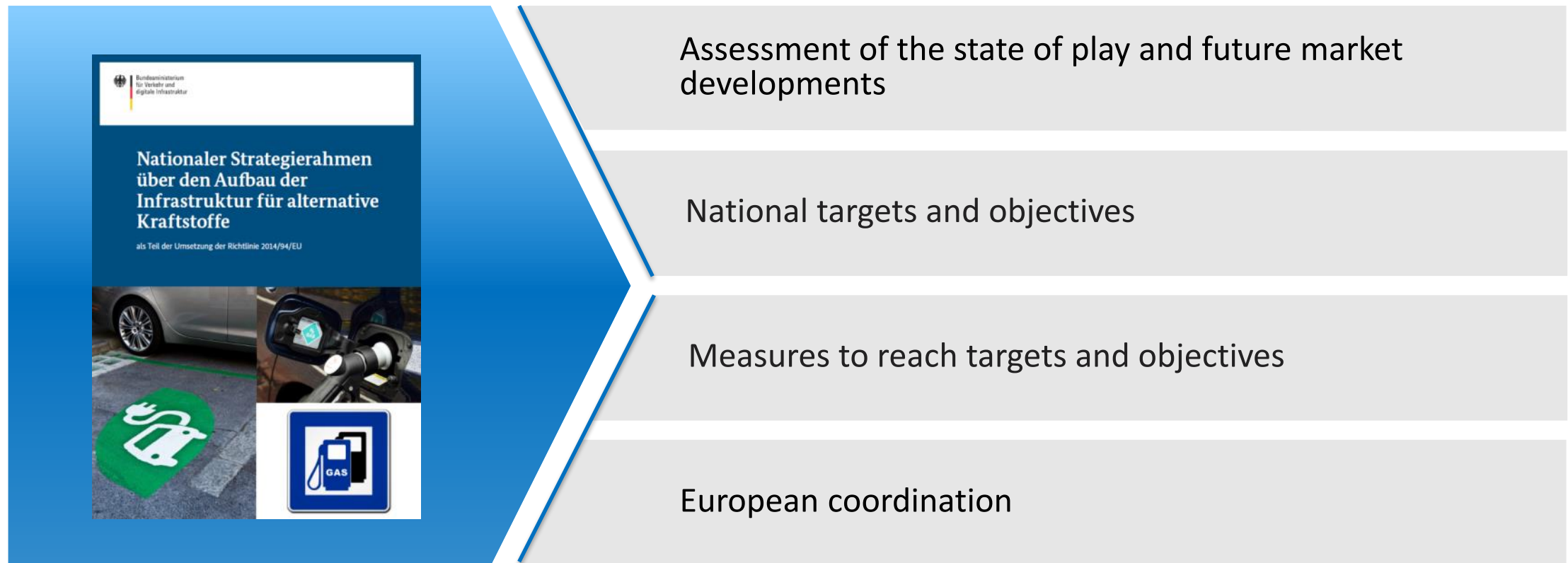




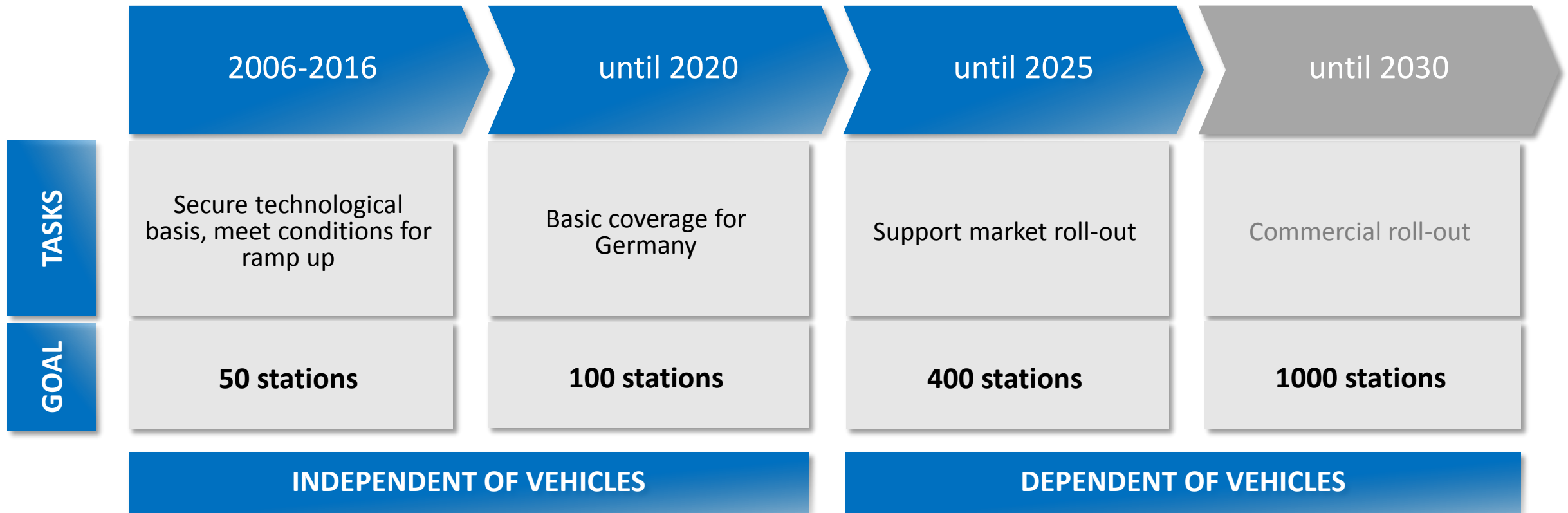
# Framework – Directive on the deployment of alternative fuels infrastructure (2014/94/EU)



The national strategic framework covers electricity, CNG/LNG and hydrogen

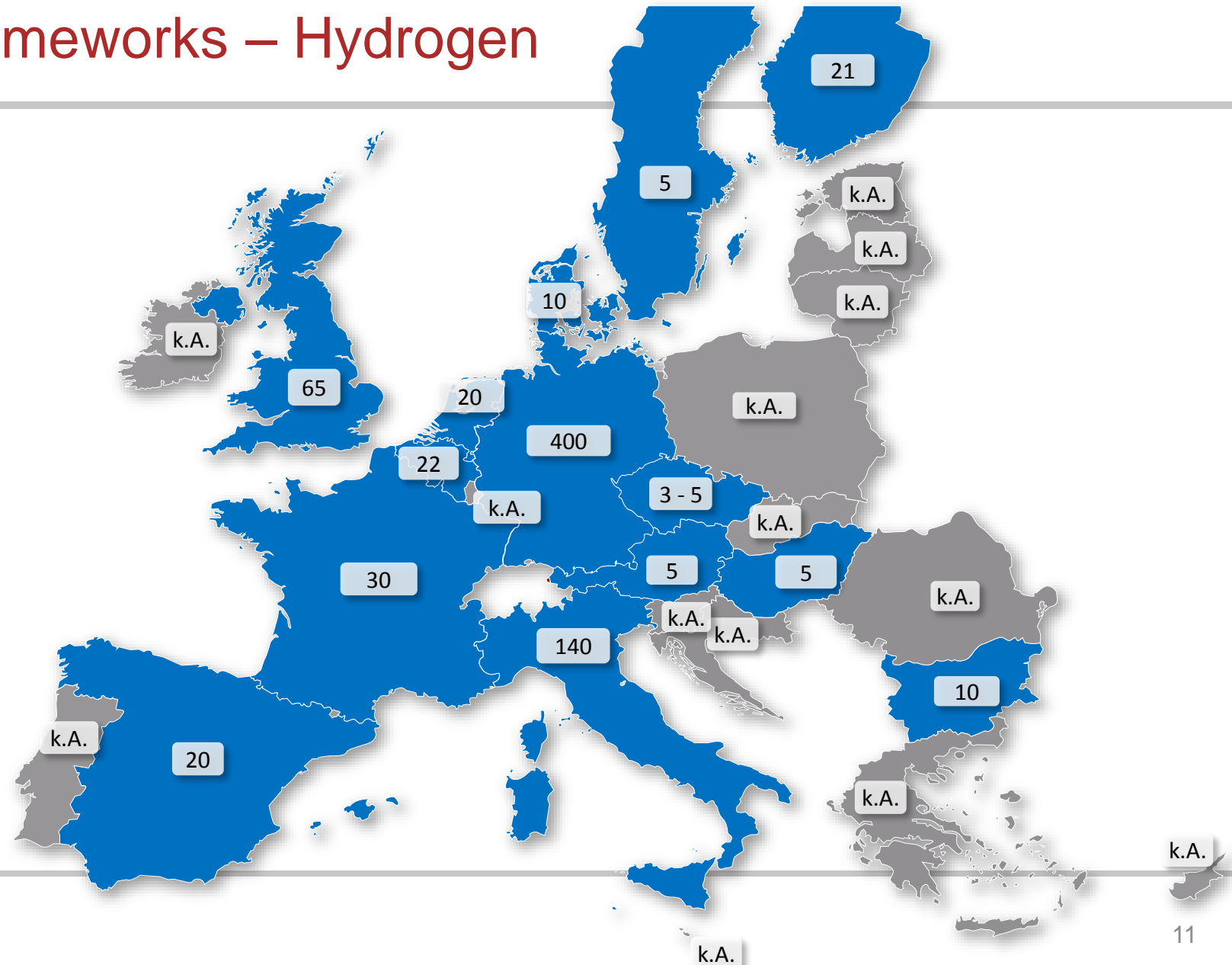


# Framework – Germany’s National Strategic Framework (hydrogen infrastructure for passenger cars)



# Status – National Strategic Frameworks – Hydrogen

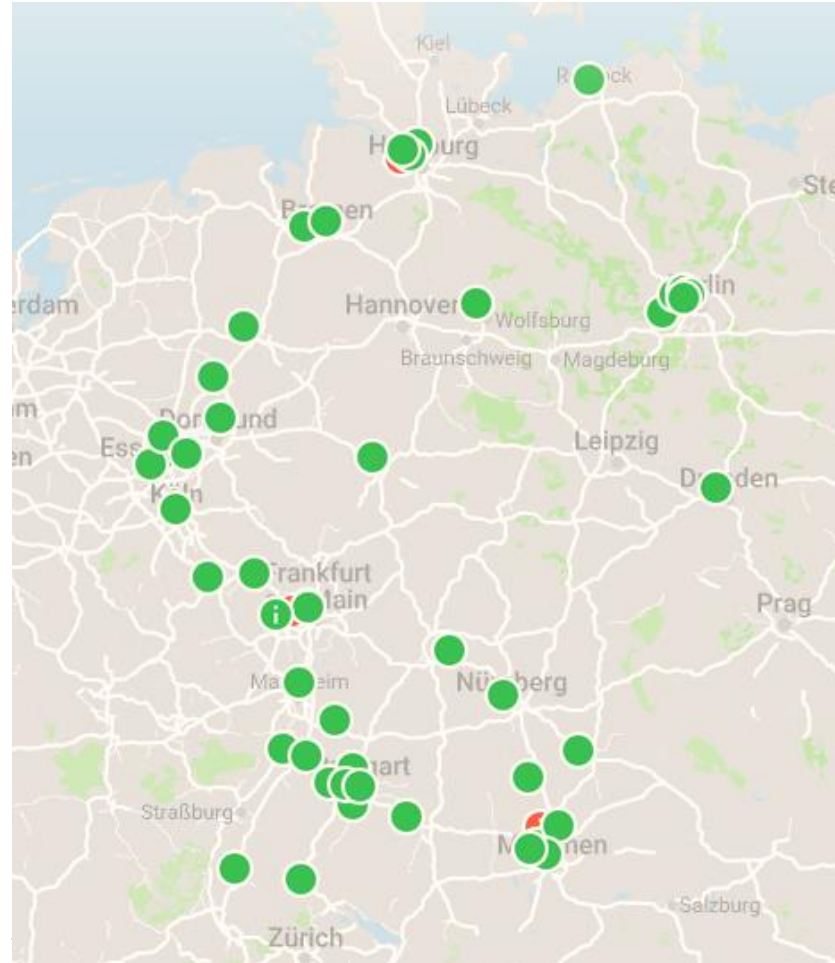
- National strategies in place
- No feedback



# Status – HRS in Germany

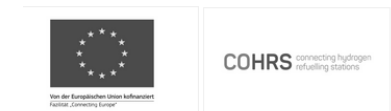
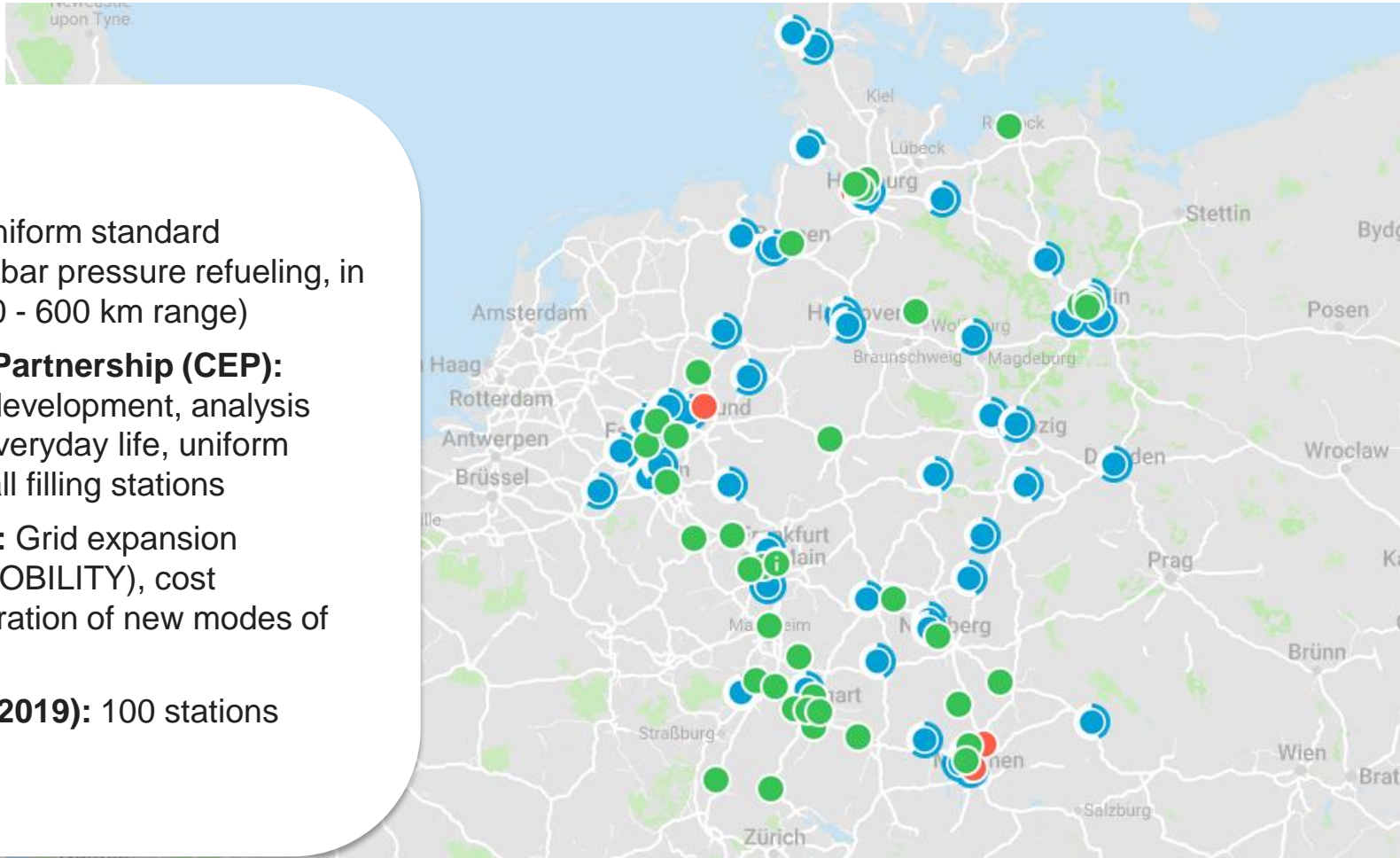
## Passenger Car, 700 bar

- 50 operation
- 8 installed / final approval
- 14 construction
- 18 permission
- 6 planning

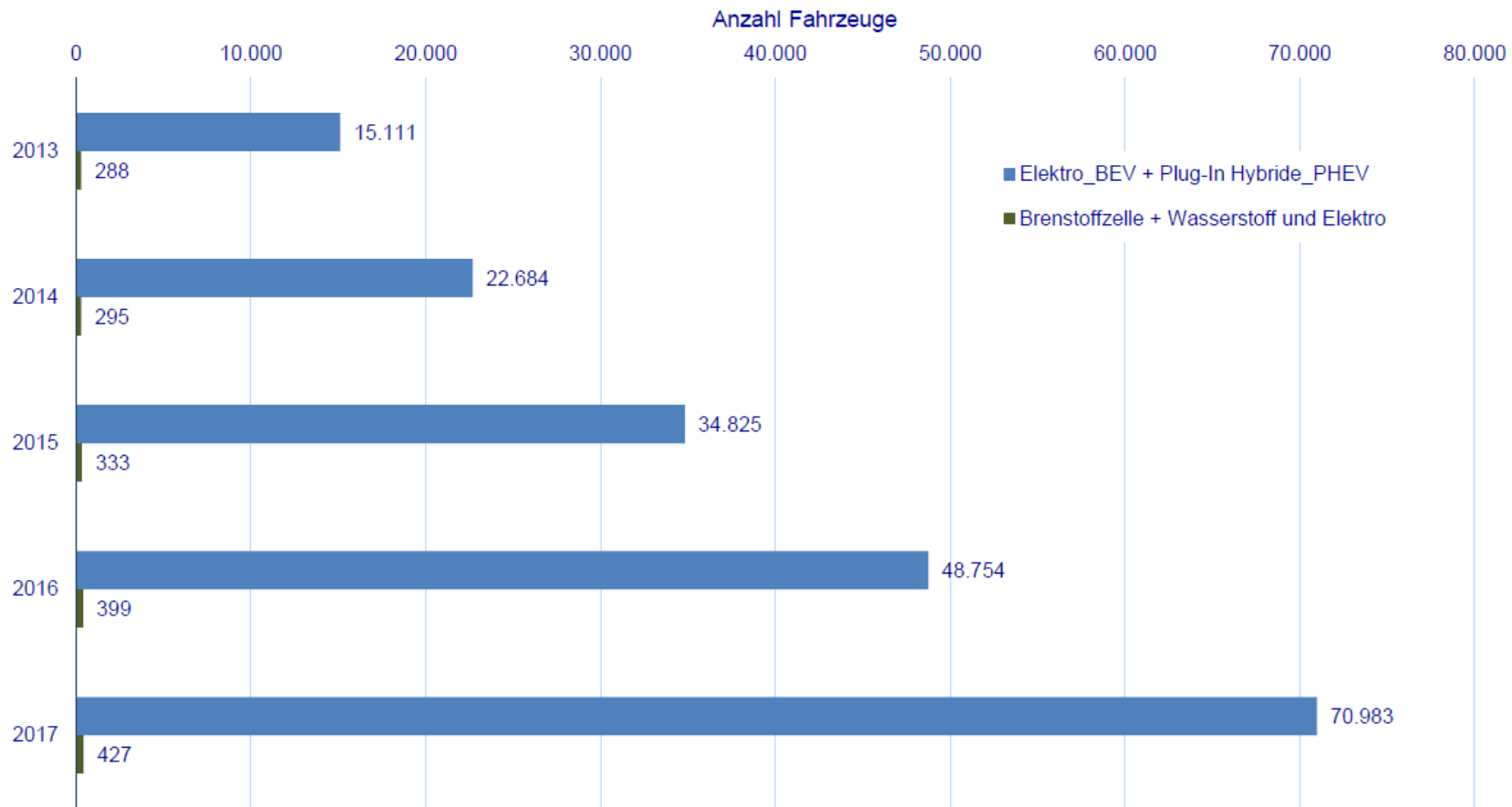


# Status – HRS network in 2019

- **Technology:** uniform standard worldwide (700 bar pressure refueling, in 3-5 minutes 400 - 600 km range)
- **Clean Energy Partnership (CEP):** cross-industry development, analysis and testing in everyday life, uniform acceptance of all filling stations
- **Current topics:** Grid expansion (including H2 MOBILITY), cost reduction, integration of new modes of transport
- **Target (end of 2019):** 100 stations

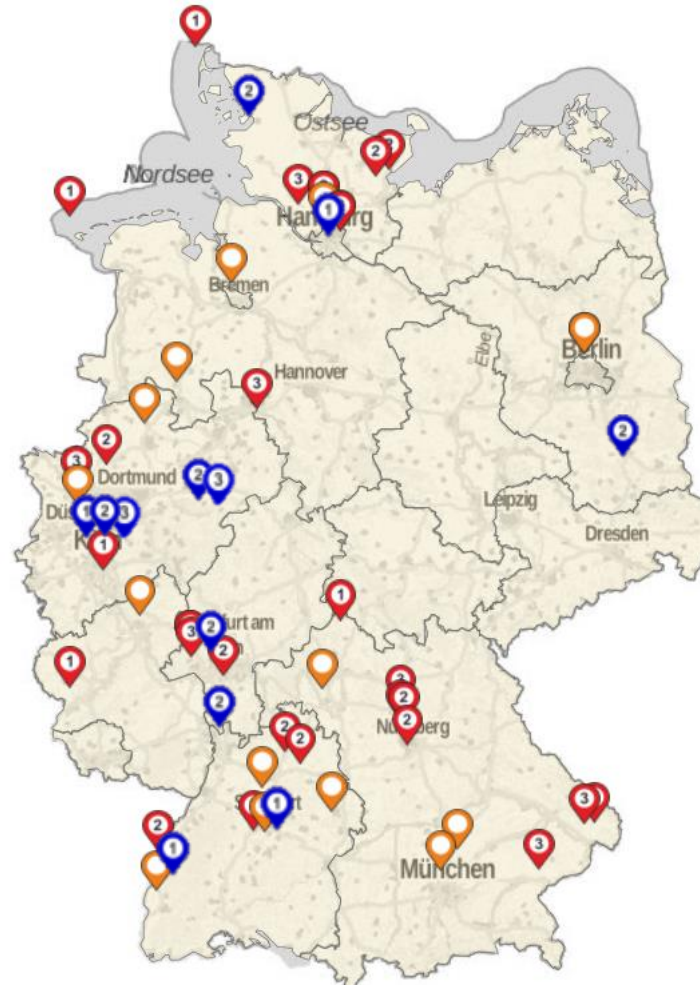


# Status – Stock BEV / FCEV



Quelle: KBA Flensburg

# Status – Electric Buses



## Funding BMVI

- 📍 EM 1. Call: 11
- 📍 EM 2. Call: 35
- 📍 EM 3. Call: 62
- 📍 NIP I: 16
- 📍 NIP II + JIVE: 51
- 📍 NIP II (+ JIVE II): 30
- 📍 Sofortprogramm Saubere Luft (Teil BMVI): 441\*

**Sum: 646\***

\* incl. applications

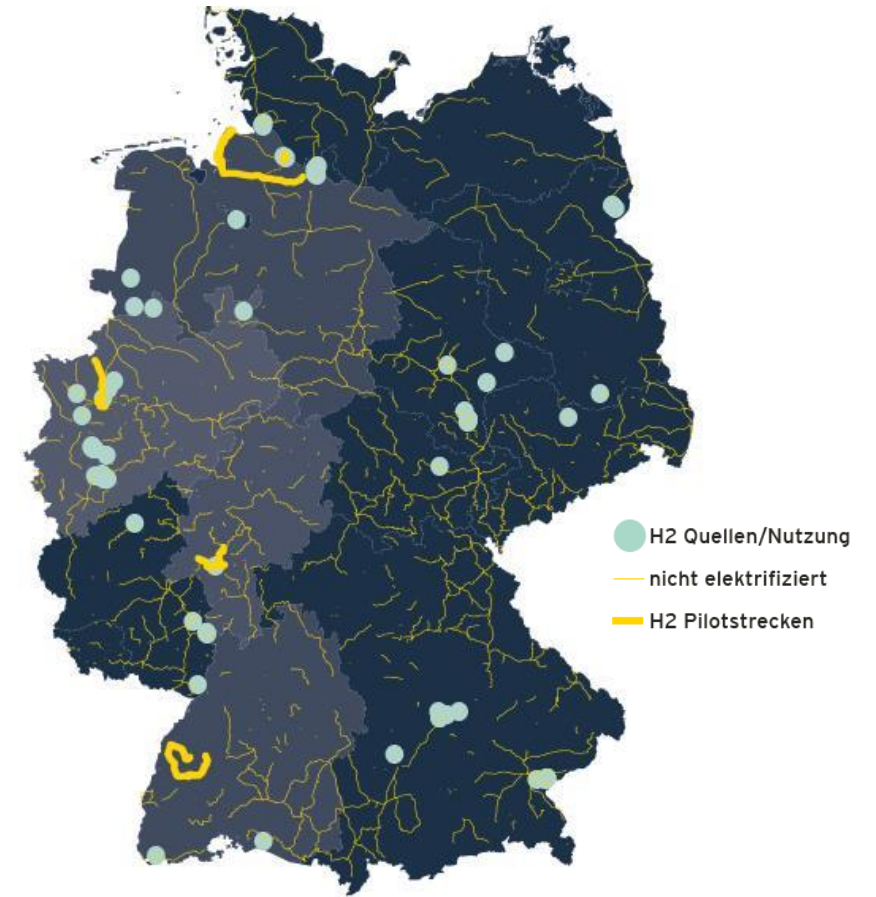
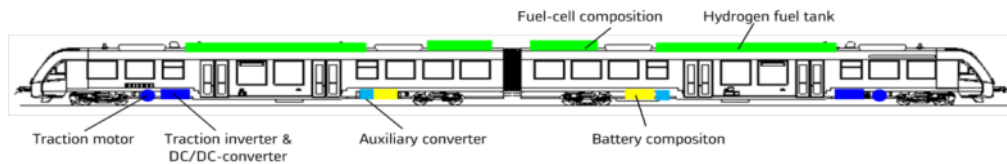


# Status – Fuel cell trains

ALSTOM

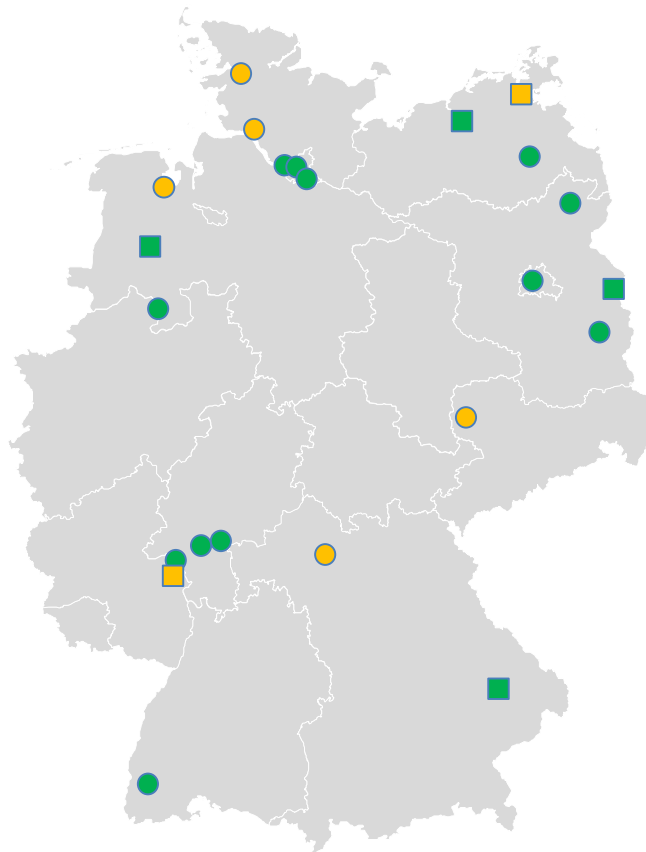


SIEMENS





# Status – Power-to-Gas projects in Germany



**Overall performance: 17,9 MW**

## Hydrogen

● In operation 10,4 MW  
● Planned 11,7 MW

## Methane

■ In operation 7,3 MW  
■ Planned 1,0 MW

Quelle: [www.europeanpowertogas.com/demonstrations](http://www.europeanpowertogas.com/demonstrations)

# Status – Business models for fuel cell applications and green hydrogen

<p><b>Costs (CAPEX/OPEX)</b></p> <ul style="list-style-type: none"> <li>• Reducing CAPEX</li> <li>• Increasing efficiency</li> </ul>	<p><b>Durability</b></p> <ul style="list-style-type: none"> <li>• Increasing durability</li> <li>• Reducing degradation of components</li> </ul>	<p><b>Framework</b></p> <ul style="list-style-type: none"> <li>• Acknowledgment of hydrogen as a             <ul style="list-style-type: none"> <li>• energy carrier</li> <li>• fuel</li> </ul> </li> </ul>	<p><b>Market für fuel cell applications and green hydrogen</b></p> <ul style="list-style-type: none"> <li>• Market Roll-out for green hydrogen</li> <li>• Market activation in transport and industrial sector</li> </ul>
<p><b>Activities of NOW (on behalf of Ministry of Transport)</b></p>			
<ul style="list-style-type: none"> <li>• Market activation NIP</li> <li>• R&amp;D NIP</li> <li>• Studies</li> </ul>	<ul style="list-style-type: none"> <li>• R&amp;D NIP</li> <li>• Studies</li> </ul>	<ul style="list-style-type: none"> <li>• Transposition AFID</li> <li>• Accompaniment RED II</li> <li>• Study IEK2050</li> </ul>	<ul style="list-style-type: none"> <li>• Funding fleets and their infrastructure (passenger cars, trains, buses)</li> </ul>



## Thank you!

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