



**FUEL CELLS AND HYDROGEN**  
JOINT UNDERTAKING

***FCH-JU:  
Making Fuel Cells  
and Hydrogen an  
everyday reality in  
central and eastern  
Europe***

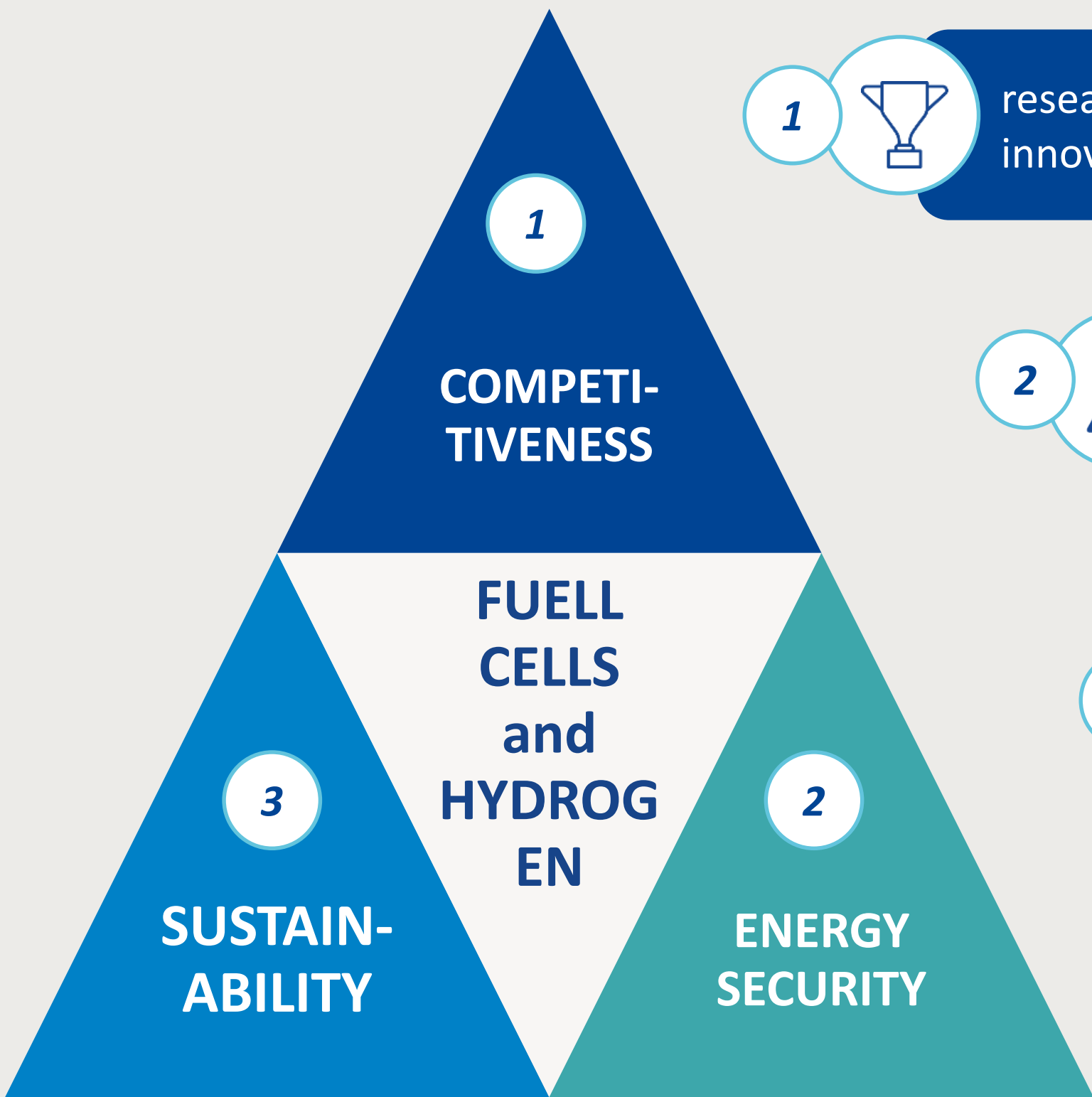
**Bart Biebuyck**

**Sofia**

**28<sup>th</sup> May 2018**



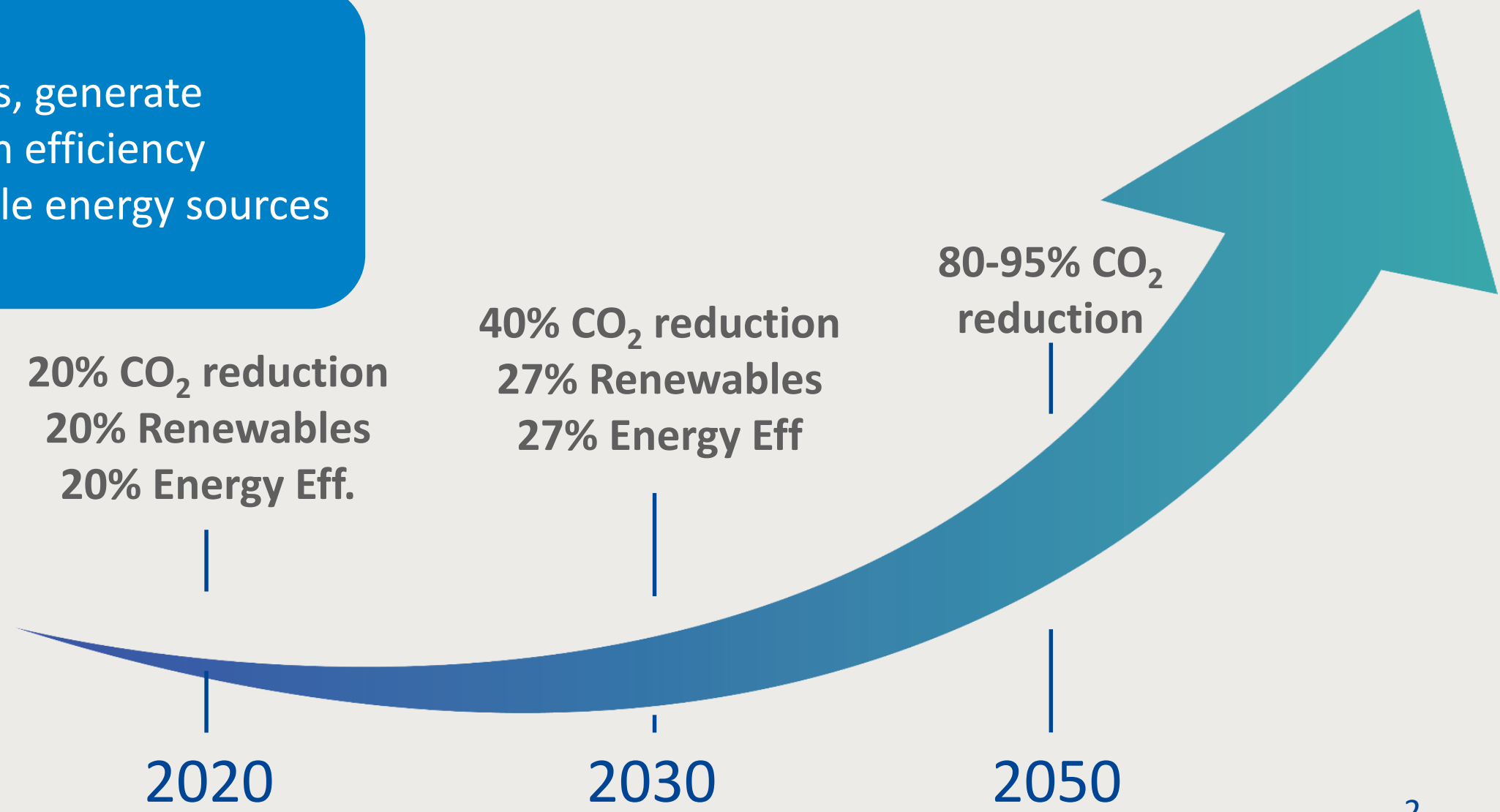
# Fuel Cells & Hydrogen technologies in the context of the European Energy policy



1 research excellence leading to industry innovation and growth

2 Increase independence from unstable outside regions

- 3
- H2 is a clean energy carrier
  - Transport and Energy applications, generate electricity and heat with very high efficiency
  - Possibility for storage of renewable energy sources
  - Reduction of CO2 emissions





# Strong public-private partnership with a focused objective



## FUEL CELLS AND HYDROGEN JOINT UNDERTAKING



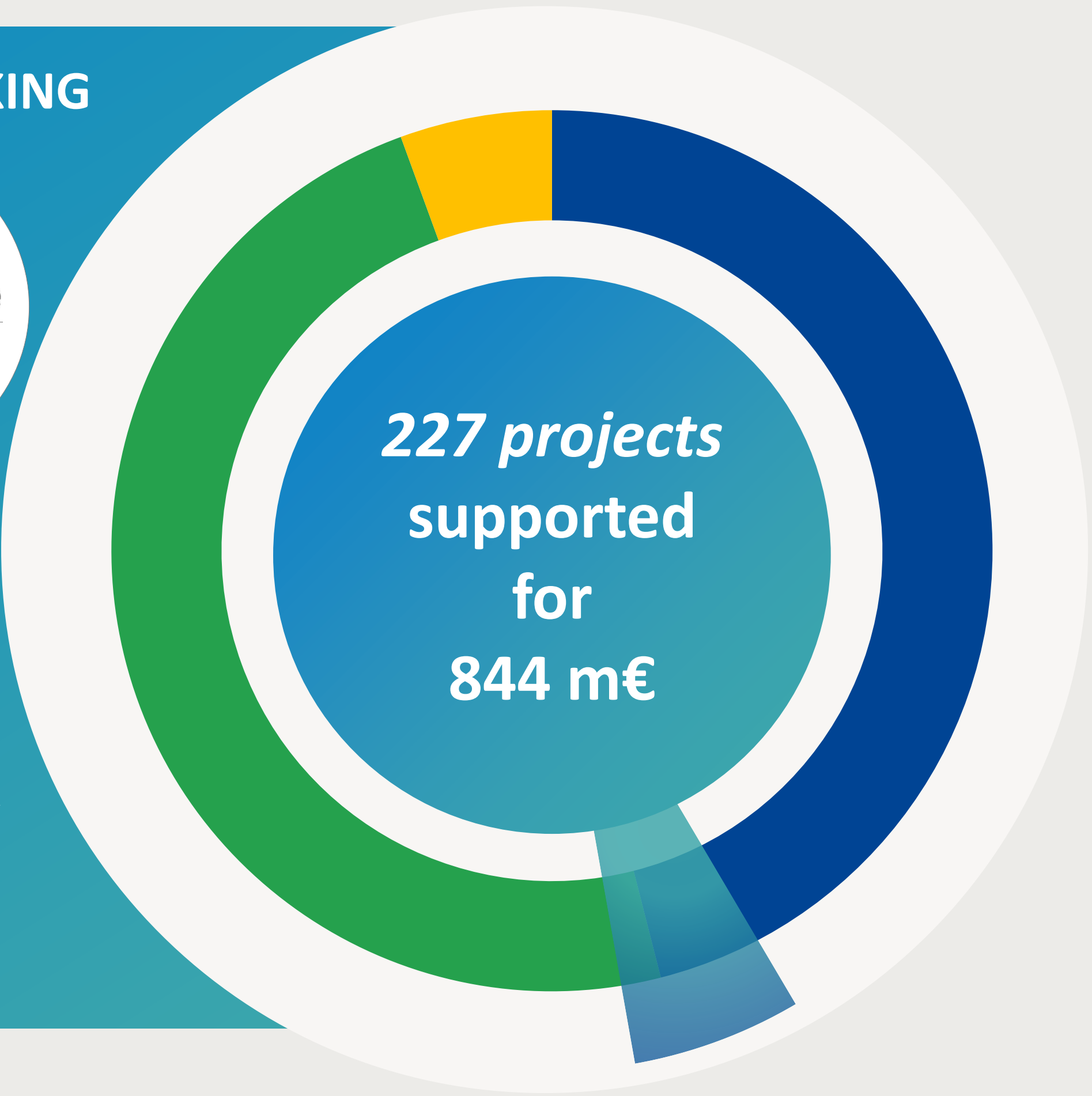
Energy

Transport

Cross-cutting



Similar leverage of other sources of funding: 886 m€



47.5%



401 million euros  
128 projects

42%



353 million euros  
59 projects

5.5%



47 million euros  
37 projects



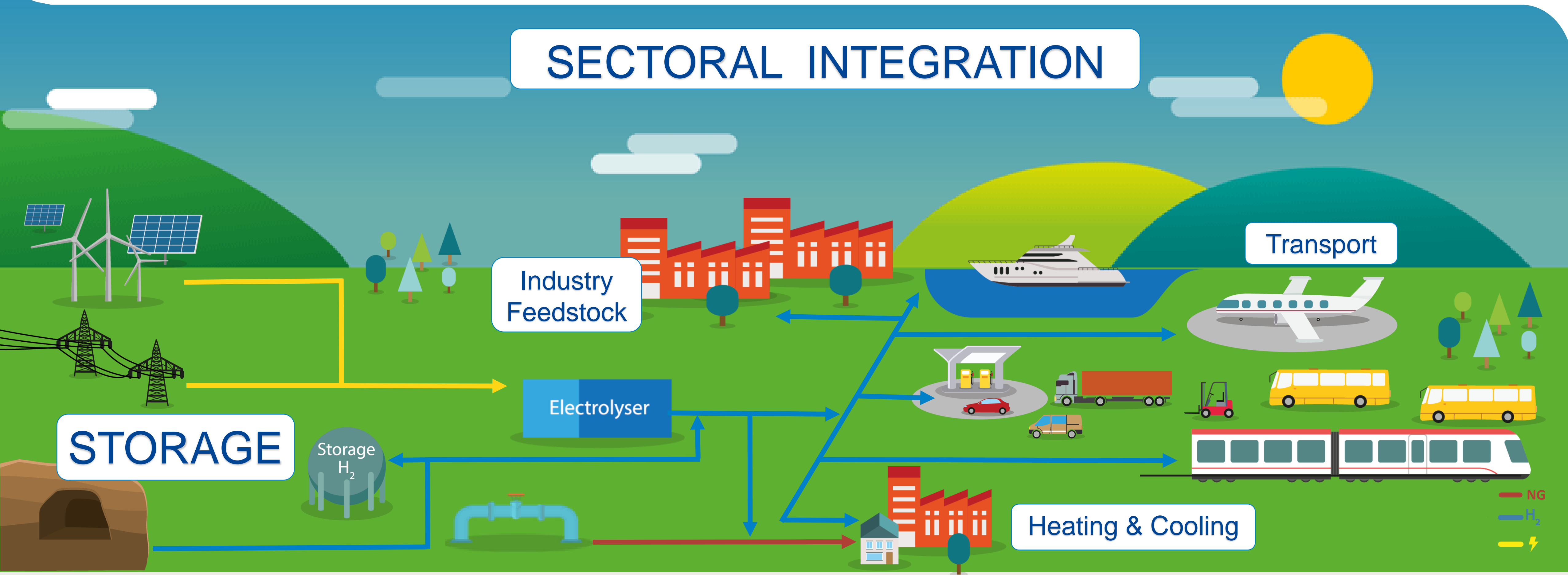
5%

42 million euros  
3 projects

# The hydrogen economy

Hydrogen allows more renewables in the energy system through storage and enables sectoral integration

## SECTORAL INTEGRATION

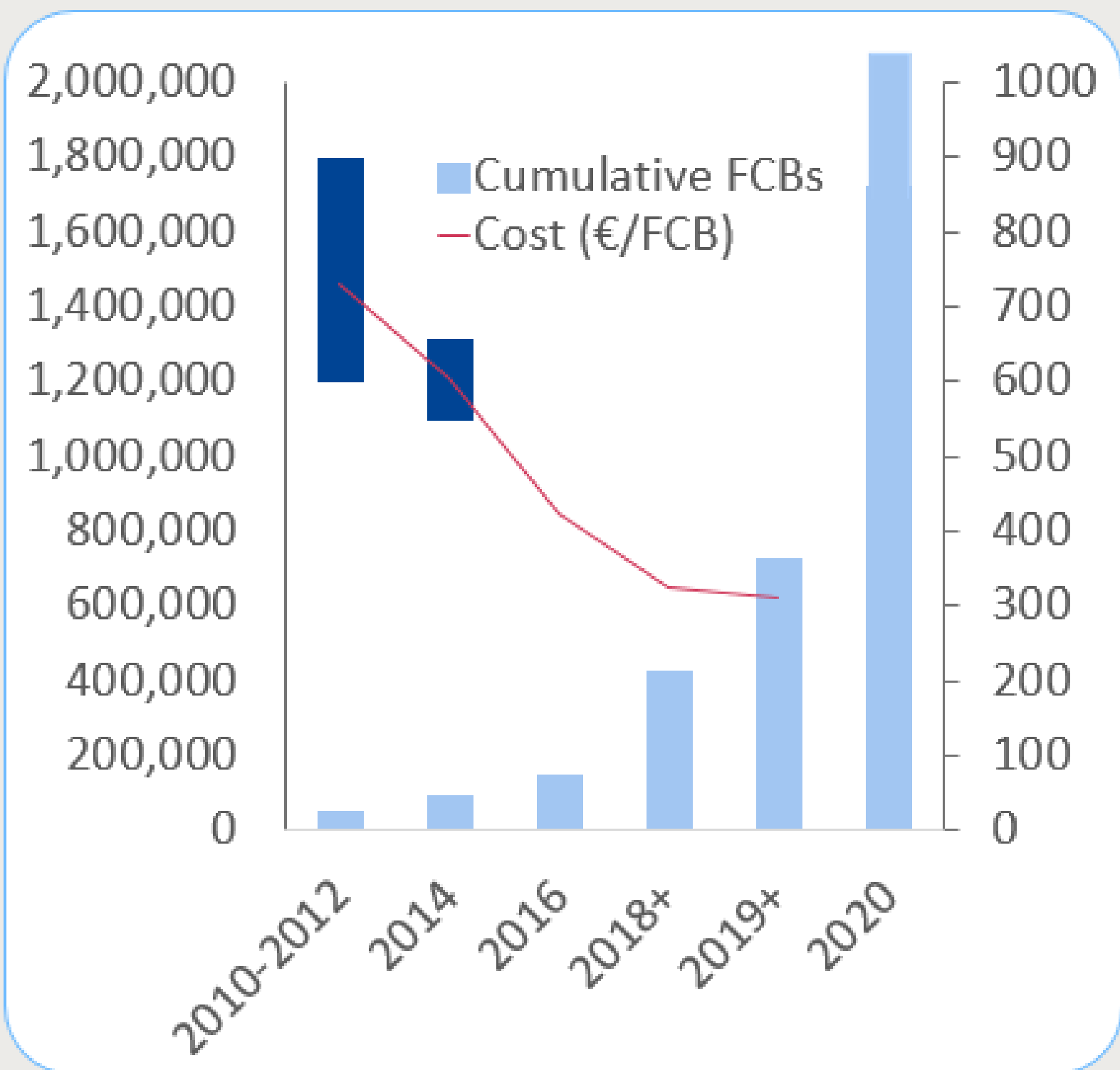




# Buses and Electrolysers ready for commercialization thanks to EU research projects



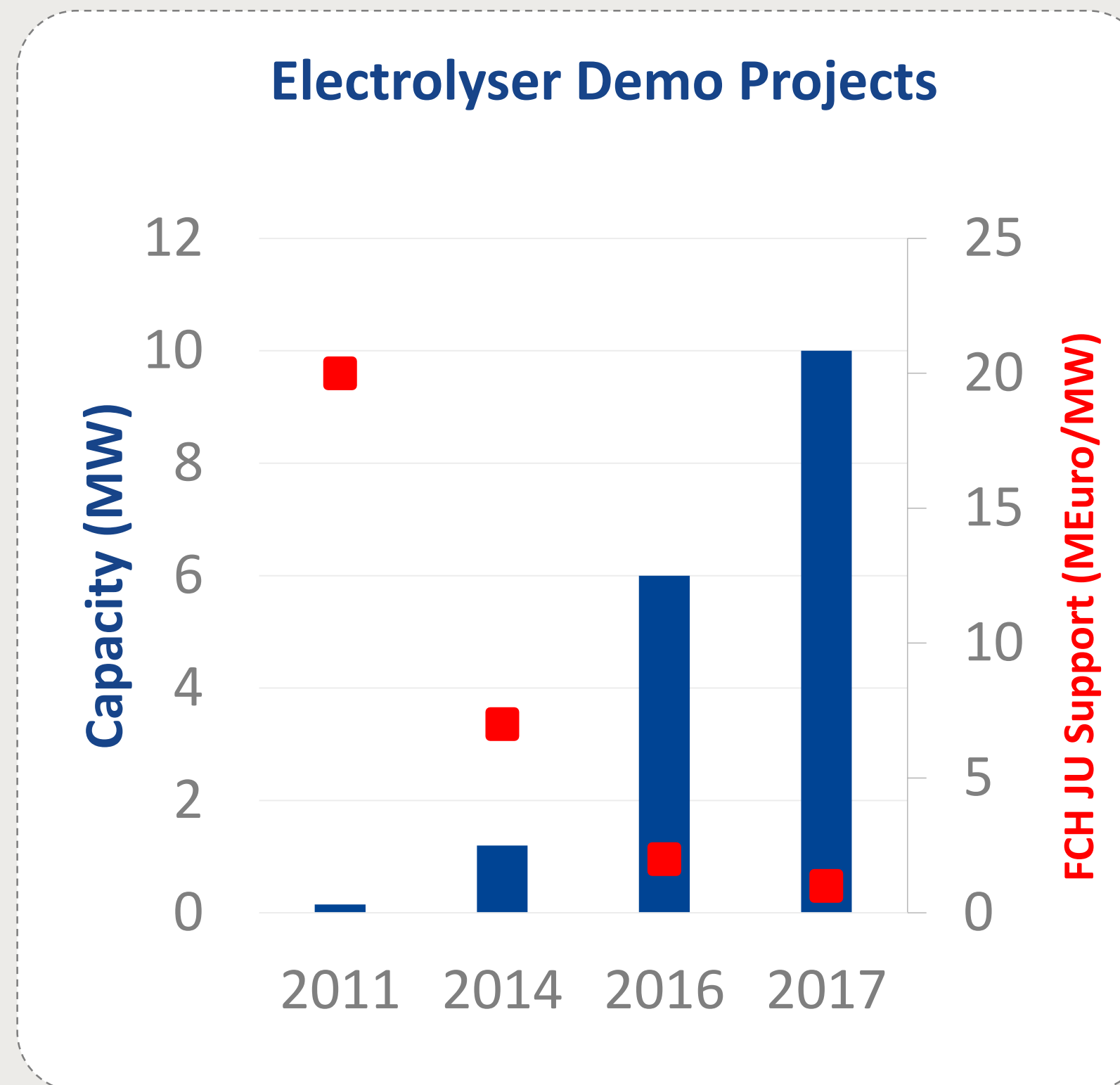
## Buses: A flexible competitive clean solution



### Achieved

- >5,000,000 km driven since project started
- > 300,000 h of operation
- >159 tn of H<sub>2</sub> consumed only in 2016

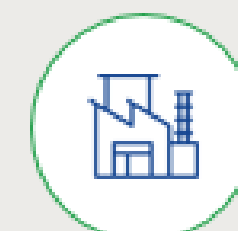
## Electrolysers: scaling up to great capacities



HRS



Steel industry



Refineries



Food industry



**6 MW electrolyser at VOESTALPINE (steel plant) in Austria.**

Green hydrogen from hydro-electricity used to produce CLEAN STEEL



# Roll-out of the required infrastructure in Europe.

Europe is the worldwide leader concerning the number of refuelling stations thanks to European projects (FCH-JU & CEF)



Today 135 Hydrogen refuelling stations are installed in Europe, of which 96 are public. Several National and regional programs are supporting the roll-out of these stations. Central and eastern Europe has no HRS yet installed.

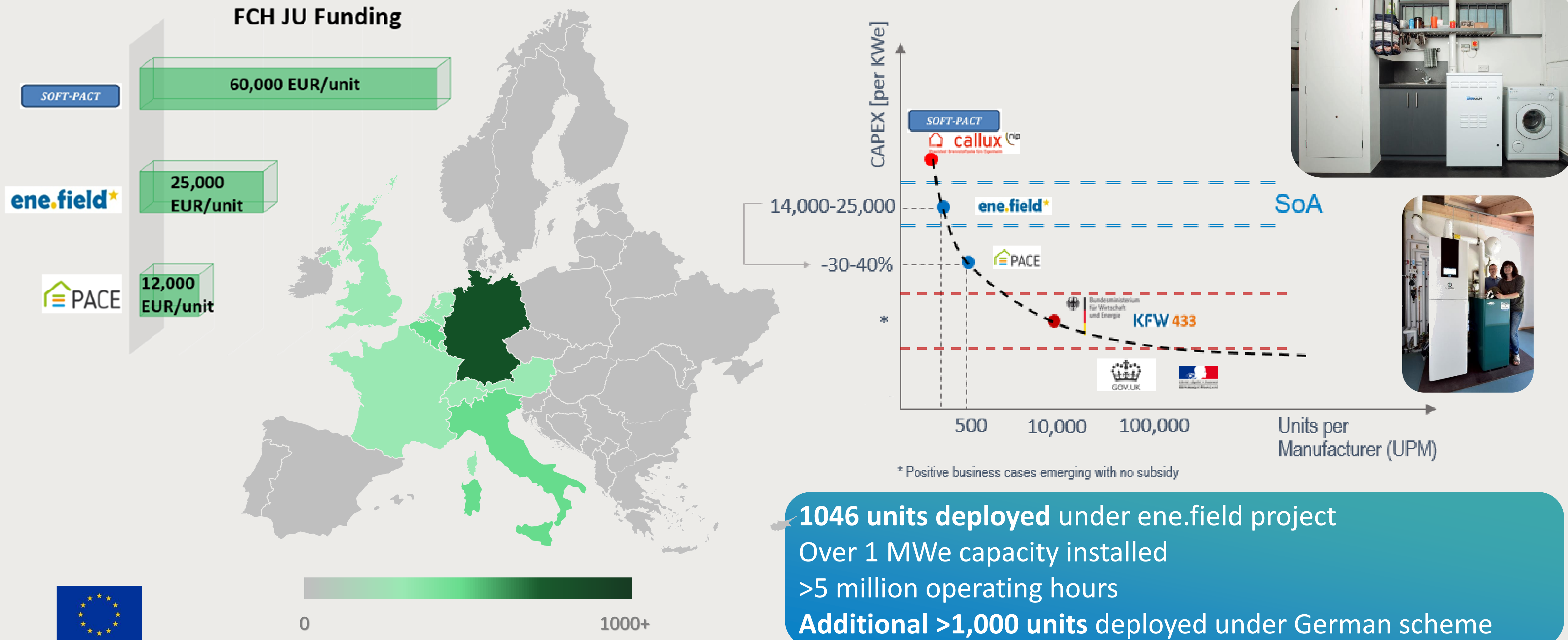
Country	# Hydrogen Refuelling stations by 2025	# Hydrogen cars by 2025
Bulgaria	10	400
Hungary	5	75
Romania	AFI not released; Draft version: H2 in, no #	AFI not released; Draft version: H2 in, no #
Slovenia	AFI not released; Draft version: 4	AFI not released; Draft version: N.A.
Slovak Rep	0	0
Croatia	0	0





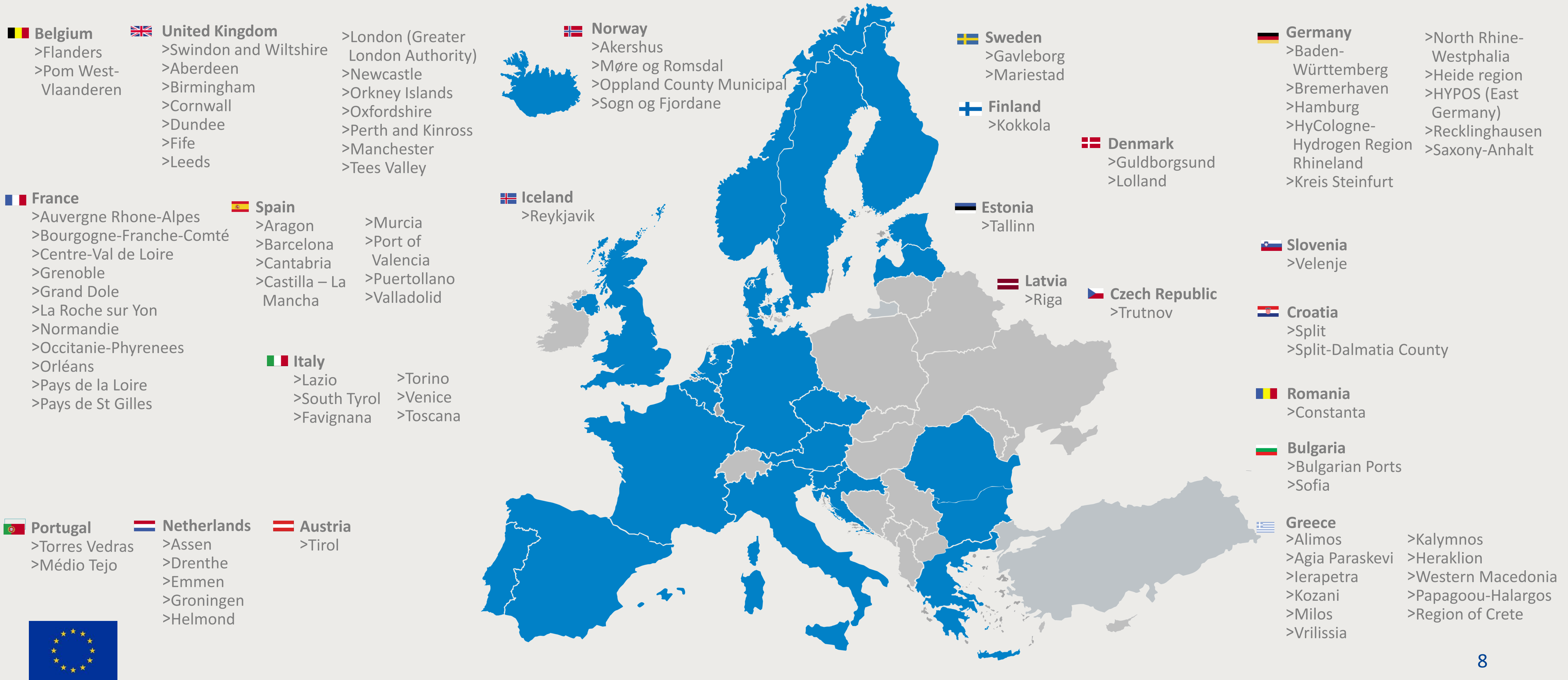
# Over 1000 fuel cell $\mu$ CHP systems installed across EU

Track record of domestic heat and power systems created



# FCH-JU initiative: 88 Regions/Cities from 22 countries (about 25% of EU) study to:

- (1) assess FCH applications,
- (2) identifying financing/funding options
- (3) develop roadmaps,
- (4) engage their stakeholders





# Central and East European Tour



HUNGARY: Budapest  
23 May 2018

3 Beneficiaries  
2 FCH JU projects  
23 k€ contribution

ROMENIA: Timisoara  
25 May 2018

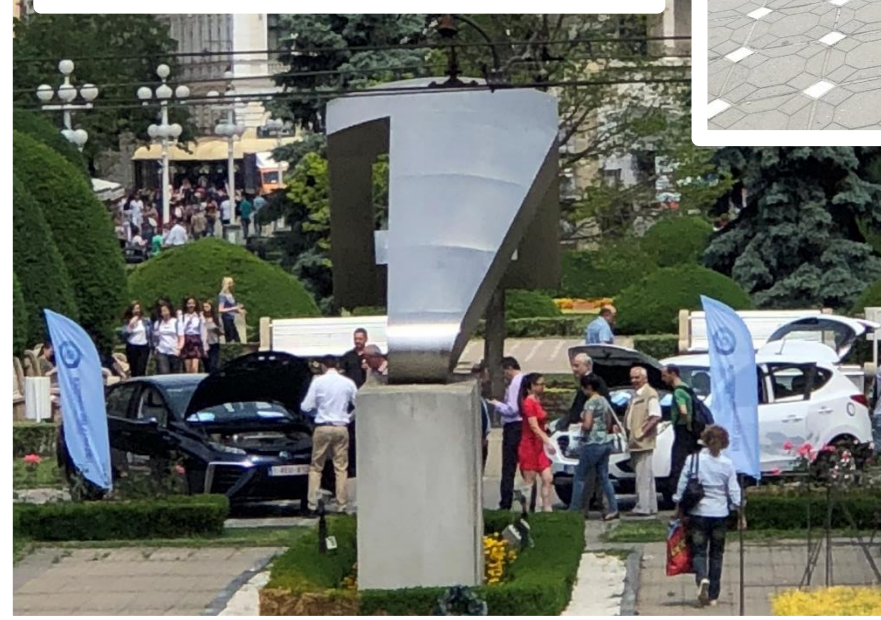
5 Beneficiaries  
6 FCH JU projects  
420 k€ contribution

Romanian  
Association for  
Hydrogen Energy

BULGARIA: Sofia  
27-28 May 2018

1 beneficiary (BAS)  
3 FCH JU projects  
357 k€ contribution

BULGARIAN  
ACADEMY  
of SCIENCES  
1869







**FUEL CELLS AND HYDROGEN**  
JOINT UNDERTAKING

**Bart Biebuyck**

Executive Director

Bart.Biebuyck@fch.europa.eu

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**For further information**

[www.fch.europa.eu](http://www.fch.europa.eu)

[www.hydrogeneurope.eu](http://www.hydrogeneurope.eu)

[www.nerghy.eu](http://www.nerghy.eu)



@fch\_ju



Fch-ju@fch.europa.eu



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