1

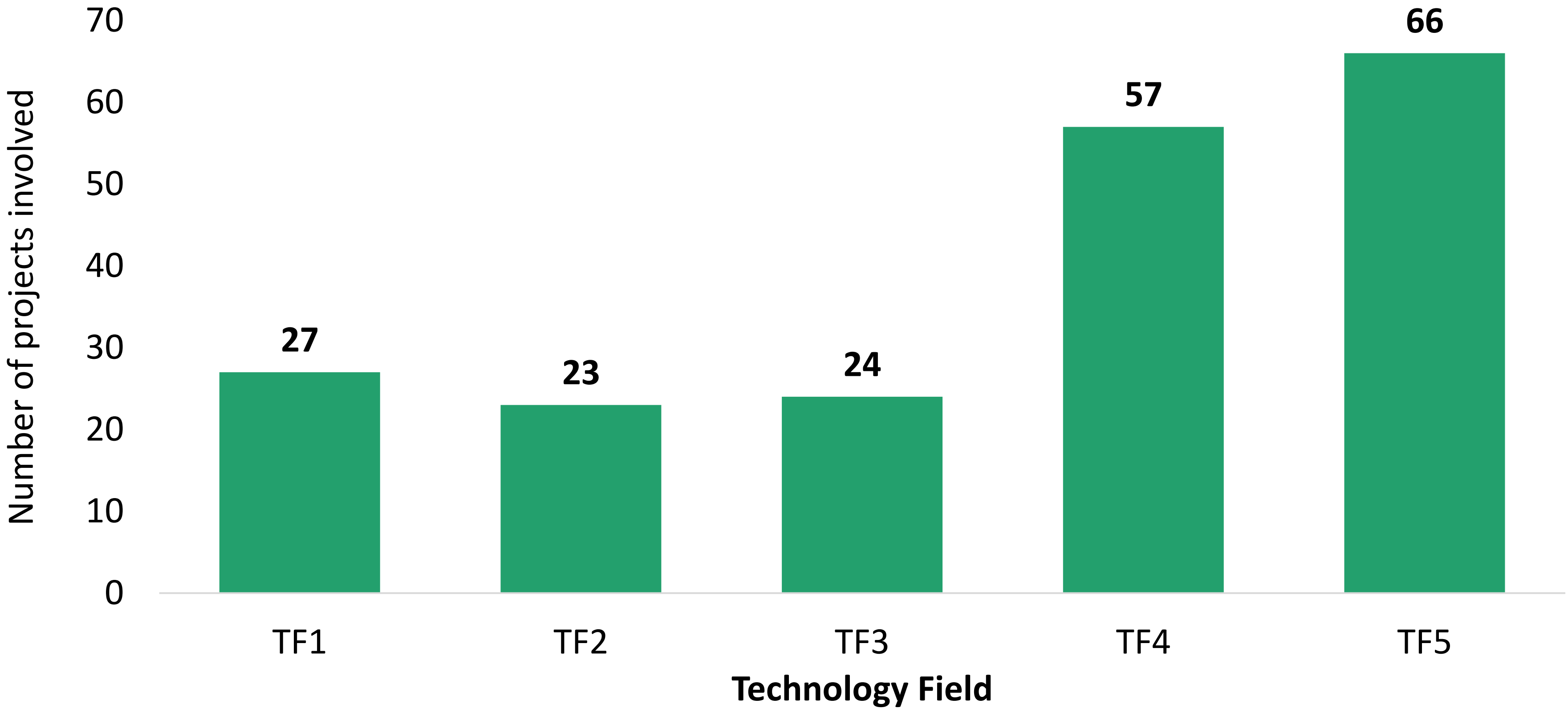
Hydrogen Europe

UN Secretariat of the Economic Commission for Europe

24.03.2022

Policy Highlights – Industrial development (ECH2A/IPCEI)

- There are **126 projects** in total in both the **Technology and Industry Chapeau's** (some projects cover more than one TF)



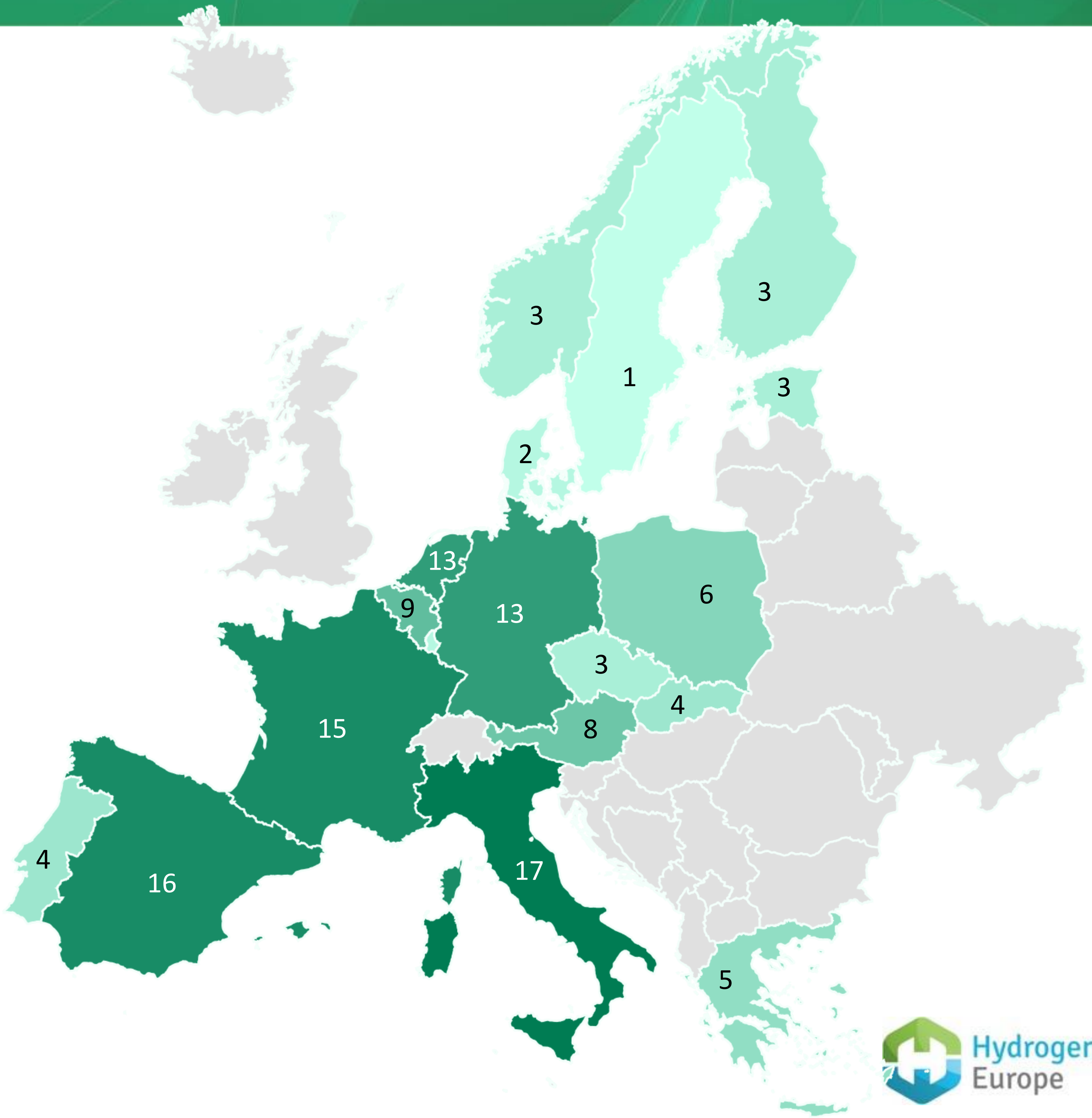
TF 1 - Development and production of H2 generation technology

TF 2 - Development and production of fuel cells

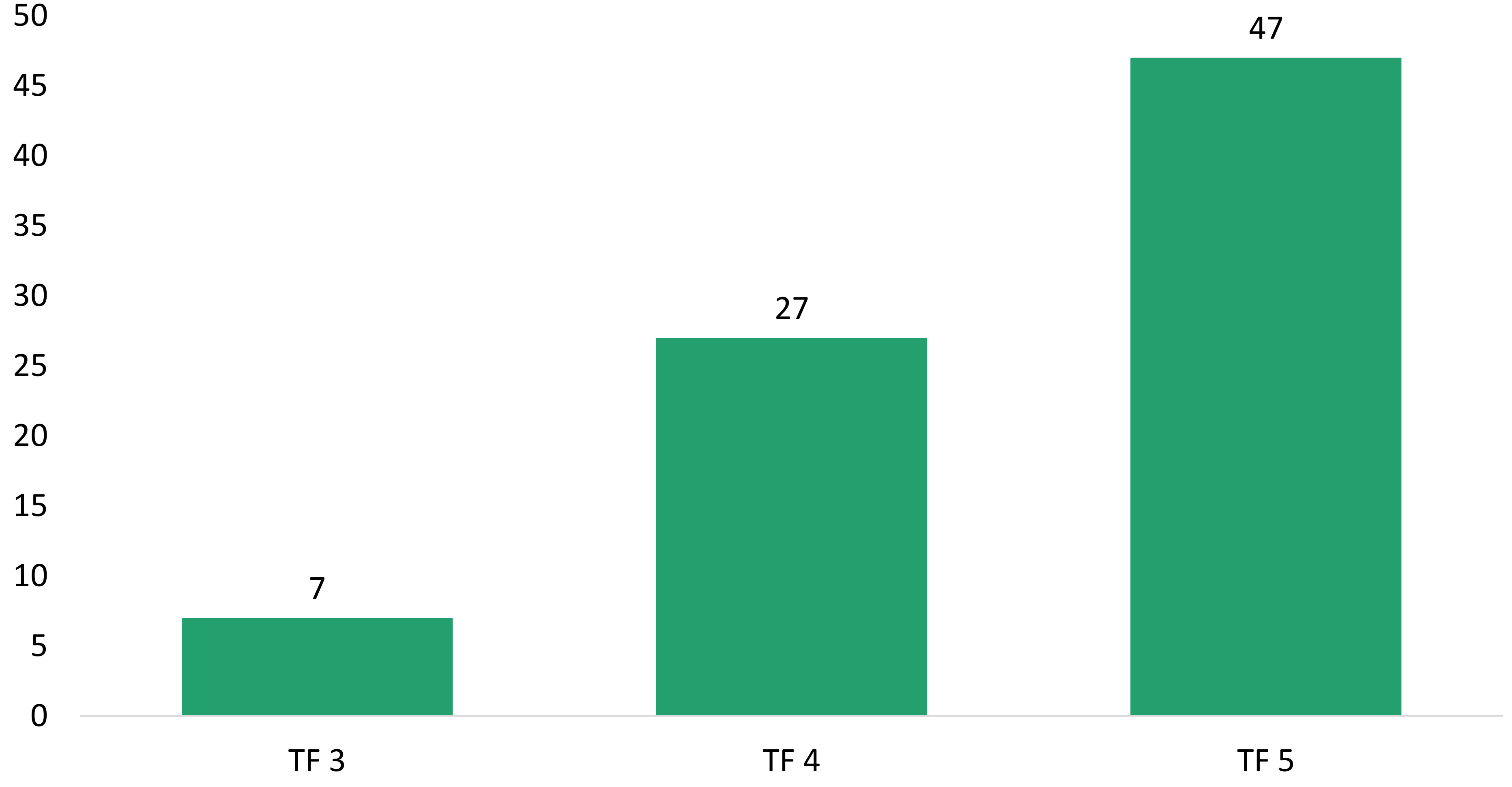
TF 3 - Generation capacity, storage, transportation, distribution

TF 4 - H2 generation and transport Infrastructure

TF 5 - End use, including deployment



End-use is the most common technology field



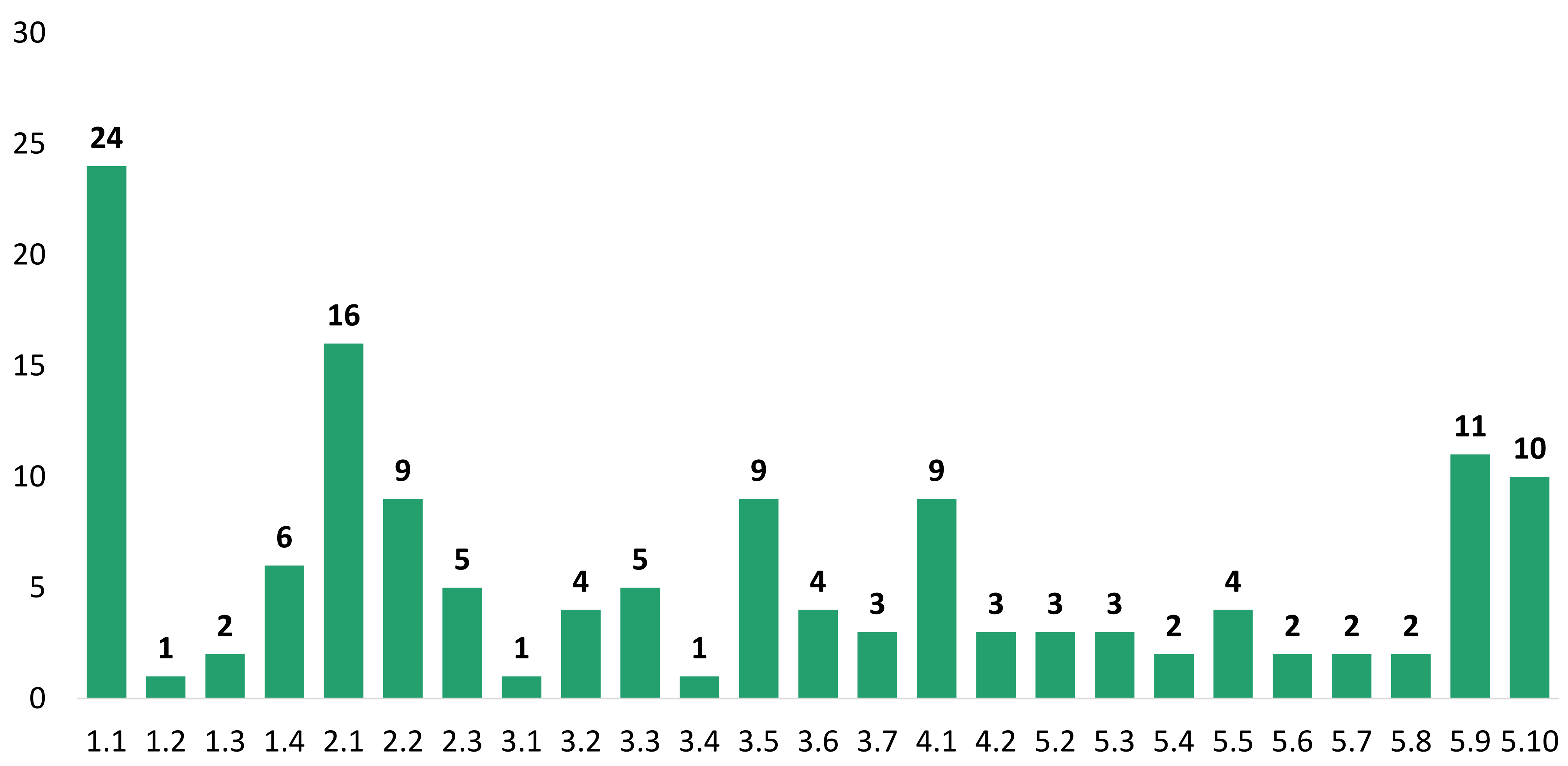
TF 3 - Generation capacity, storage, transportation, distribution

TF 4 - H2 generation and transport Infrastructure

TF 5 - End use, including deployment

- There are **68 projects** in total in the **Industry Chapeau** (some cover more than 1 TF)
- TF 5 - 78% of the projects (47) are involved in end-use projects
- TF 4 - 45% of the projects (27) are involved in installation of generation capacity
- TF 3 - 12% of the projects (7) are involved in technology storage

Electrolyser projects are the most common workstream



- There are **58 projects** in total in the **Technology Chapeau** (some cover more than 1 TF)
- WS 1.1 - 41% of these projects (24) include electrolysers
- WS 2.1 - 28% of these projects (16) include fuel cells for mobility
- WS 5.9 - 19% of these projects (11) include production of means of transportation
- WS 5.10 - 17% of these projects (10) include deployment of mobility solutions
- WS 3.5 - 16% of these projects (9) include technologies related to H2 storage
- WS 4.1 - 16% of these projects (9) include Installation of h2-generation capacity (electrolysis)

Workstream (WS)	Definition
WS 1.1	Electrolysers
WS 1.2	Equipment for Pyrogasification
WS 1.3	All other technologies for H2 production
WS 1.4	Associated materials and technologies
WS 2.1	Fuel Cells for mobility
WS 2.2	Fuel Cells for stationary application (incl. electricity network)
WS 2.3	Associated technologies
WS 3.2	Tanks for mobility (gaseous)
WS 3.3	Tanks for stationary application (gaseous)
WS 3.4	Equipment related to pipe conversion (gaseous H2)
WS 3.5	Technologies related to H2 storage (liquid, solid, LOHC, others...)
WS 3.6	H2 refueling solutions
WS 3.7	Associated materials and technologies
WS 4.1	Installation of h2-generation capacity (electrolysis)
WS 4.2	Transport infrastructures (pipelines, etc)
WS 5.1	Steel making
WS 5.2	Methanol production
WS 5.3	Refinery
WS 5.4	Fertilizer production
WS 5.5	Others
WS 5.6	Injection of h2-based electricity into the electricity grid
WS 5.7	Injection of H2 into the gas grid
WS 5.8	Residential building use
WS 5.9	Production of means of transportation (cars, bus, trains, planes, ships)
WS 5.10	Deployment of mobility solutions

Hydrogen Europe

4x10 million ton green+clean (No-carbon) Hydrogen

Produces 40 million ton = 1575 TWh (HHV).

Russian net gas import in EU27 in 2020 = 1520 TWh

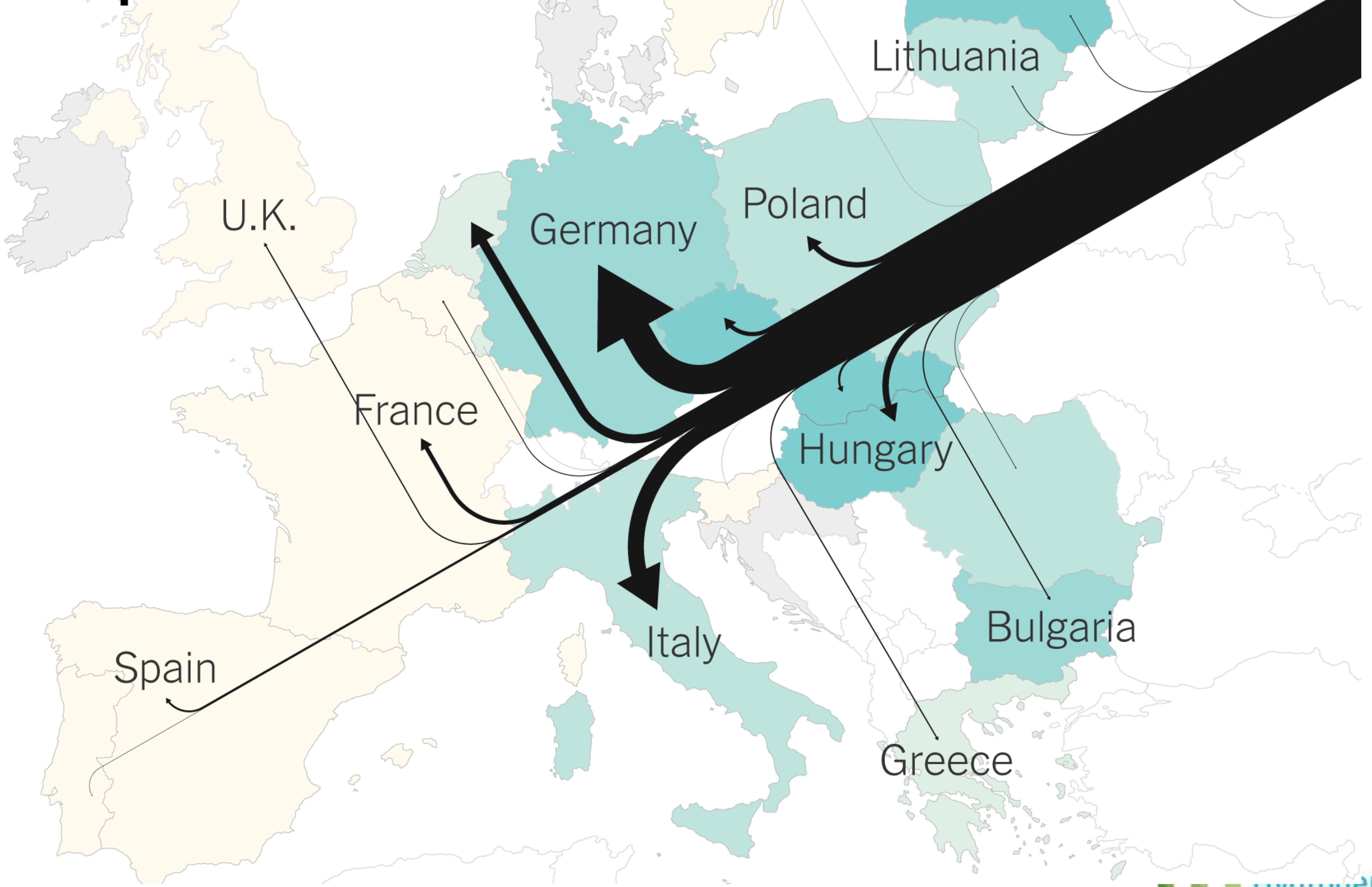
10 million ton from off/onshore wind especially in Northern and Mid European countries and at North + Baltic Sea

10 million ton from Solar PV especially South Europe

10 million ton from Solar PV/wind from North Africa/Middle East

10 million ton turquoise hydrogen from new offshore natural gas production @ North and Eastern Mediterranean sea

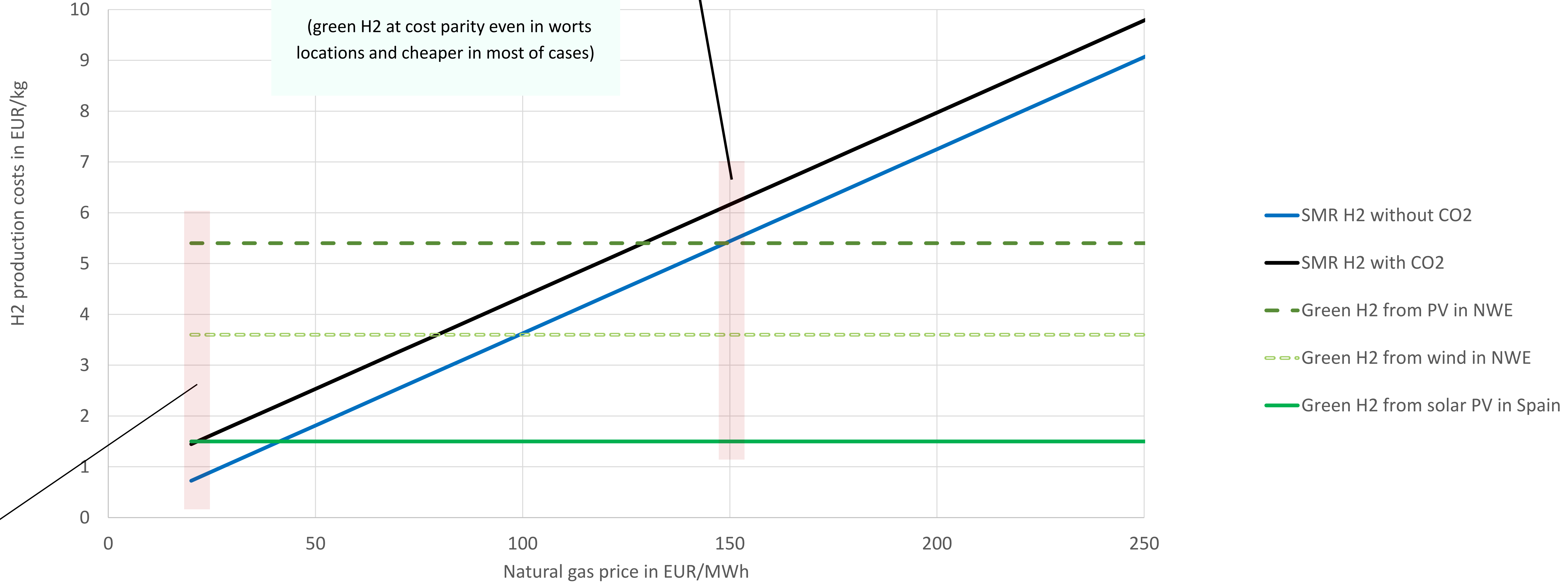
Gas imports from Russia



High natural gas prices are changing perspective

Last week we were here

(green H2 at cost parity even in worts locations and cheaper in most of cases)



Historically we were here

(green H2 at best at cost parity in best locations)

Joint European Action for more affordable, secure and sustainable energy

EUROPEAN COMMISSION

Strasbourg, 8.3.2022
COM(2022) 108 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

REPowerEU: Joint European Action for more affordable, secure and sustainable energy

Hydrogen Europe

Hydrogen Accelerator

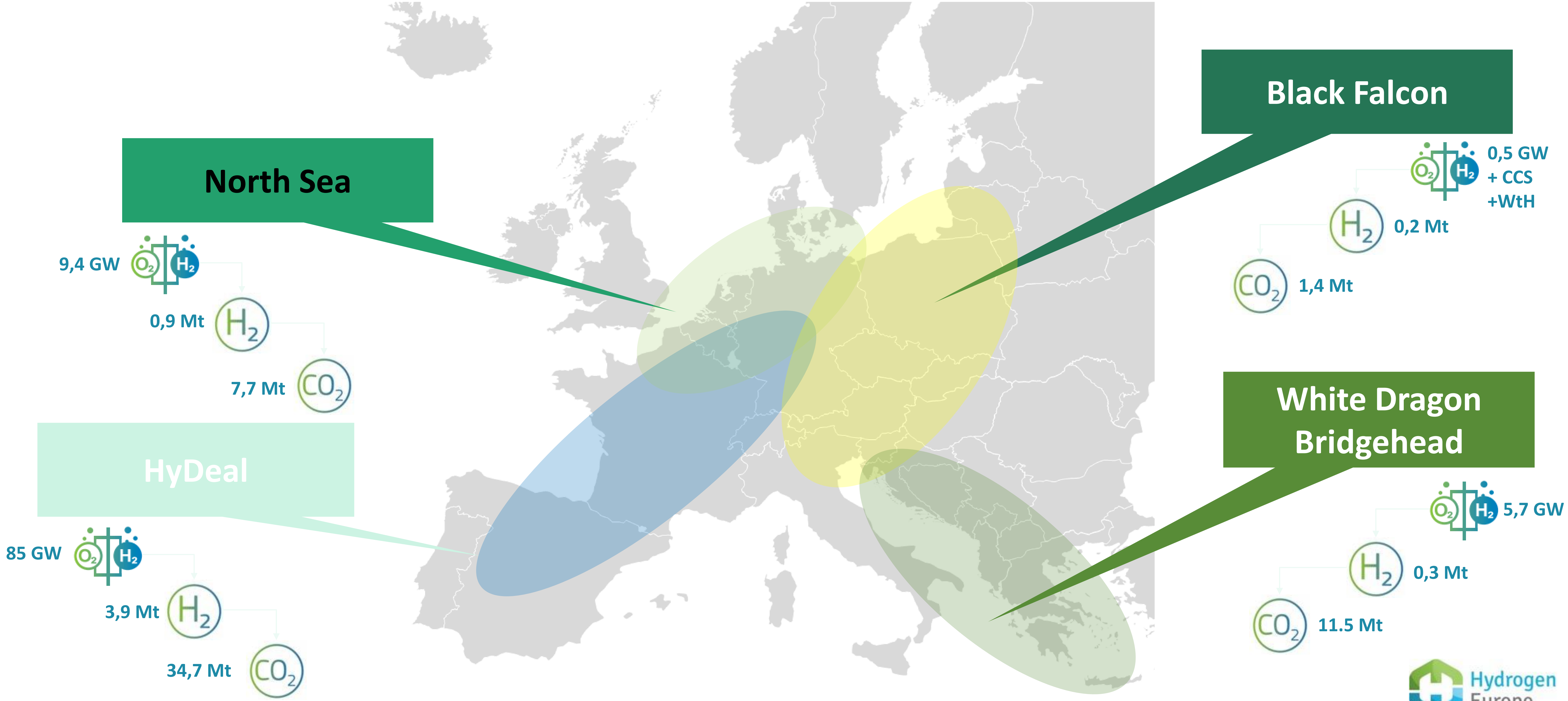
- IPCEI assessment before the end of the first semester, GBER acceleration, State aid approval priority
- EC calls on the EP and Council to swiftly adopt the Hydrogen & Decarbonised Gas Market Package and the revised RED
- 10 million tonnes of green hydrogen will need to be imported by 2030. EC will support pilot in the EU neighbourhood, starting with a Mediterranean Green Hydrogen Partnership
- Establishment of a Global European Hydrogen Facility
- EC to advocate for converting natural gas projects to renewable hydrogen projects
- Priority list of natural gas pipelines that can be refurbished and interconnected in the context of the revised TEN-E policy framework
- EU-wide scheme for carbon contracts for difference

Hydrogen Europe

H2 Accelerator - Production scenario for 2030

2*10 million ton green hydrogen		Renewable Resource			Electrolyser		Hydrogen Production	
	2030	Capacity	full load hours	Electricity Production	Capacity	full load hours		
		GW	hr/yr	TWh	GW	hr/yr	Million ton	TWh_{HHV}
	EU production							
1	Offshore	25	5.000	125	**25**	5.000	2,5	99
2	Onshore wind	35	3.570	125	**25**	5.000	2,5	99
3	Solar PV	150	1.750	263	**100**	2.500	5	197
	Import							
4	Onshore wind	25	4.000	100	**20**	5.000	2	79
5	Solar PV	200	2.100	420	**150**	2.700	8	315
	TOTAL				**320**		**20**	**788**

Key integrated LIGHTHOUSE projects identified



Hydrogen Europe