

30/03/2021

# HYDROGEN EUROPE

Hydrogen's role in the green deal & decarbonisation

# Hydrogen Europe: Who we are

## Our Vision

Hydrogen enabling a zero emission society

## Our Mission

We bring together diverse industry players, large companies and SMEs, who support the delivery of hydrogen and fuel cells technologies. We do this to **enable the adoption of an abundant and reliable energy which efficiently fuels Europe's net-zero carbon economy.**







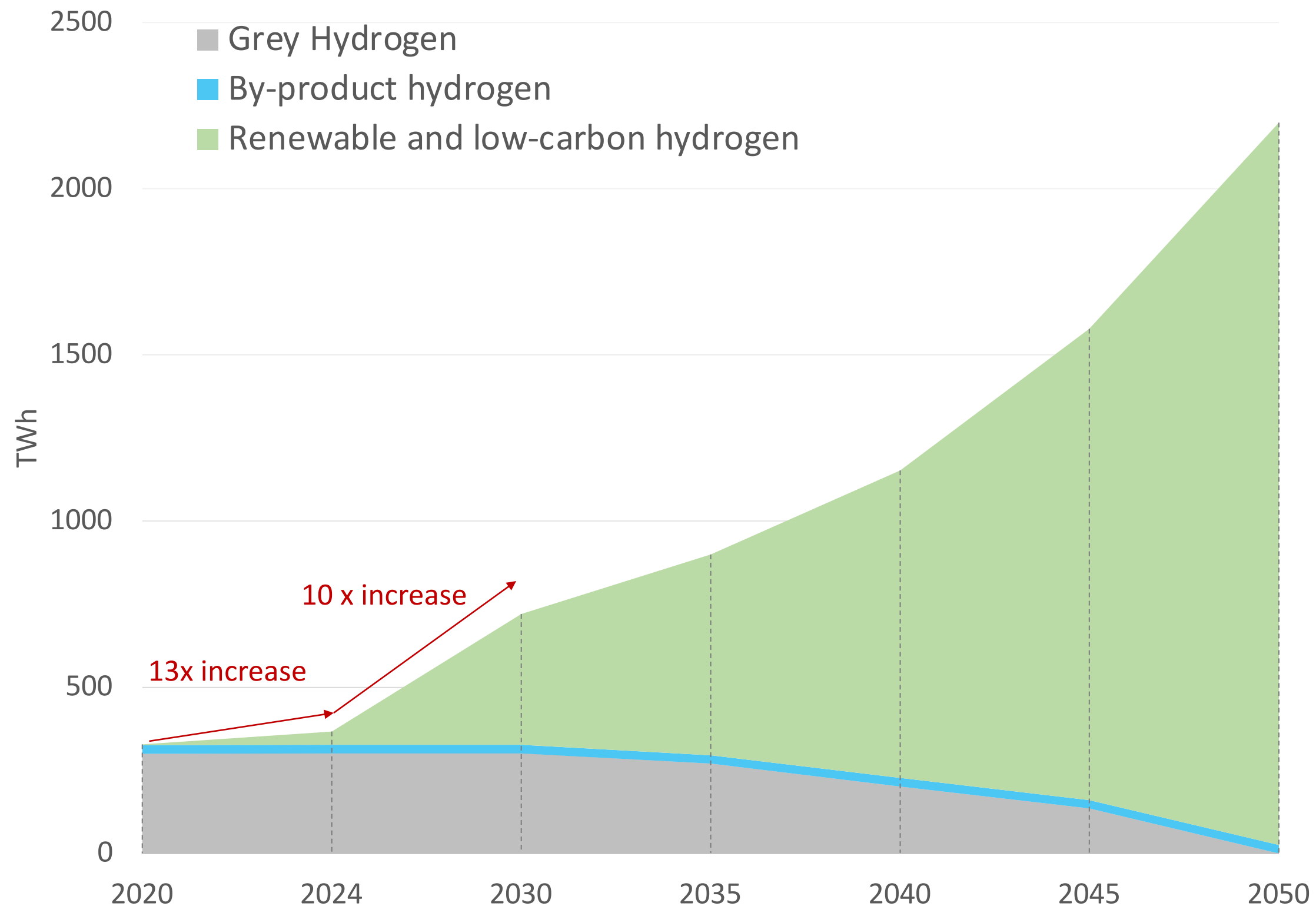


# What we want

Enable clean hydrogen to:

- replace all unabated fossil hydrogen consumption,
- replace fossil fuels and feedstocks in other sectors where hydrogen can play a role.

By 2024 Clean Hydrogen Production should be 13x times that of today and by 2030, it should be 130 times larger.



Source: Hydrogen Europe

# Why hydrogen?

Enable the renewable energy system

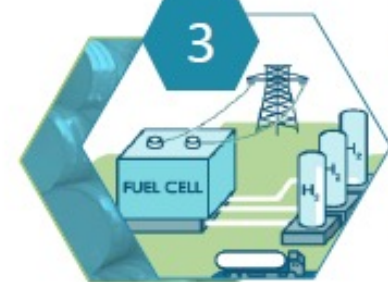
Decarbonize end uses

Enable **large-scale renewables integration** and **power generation**



SOURCE: Hydrogen Council

**Distribute** energy across sectors and regions



Act as a **buffer** to increase system resilience



Decarbonize **transportation**



Decarbonize **industrial energy use**

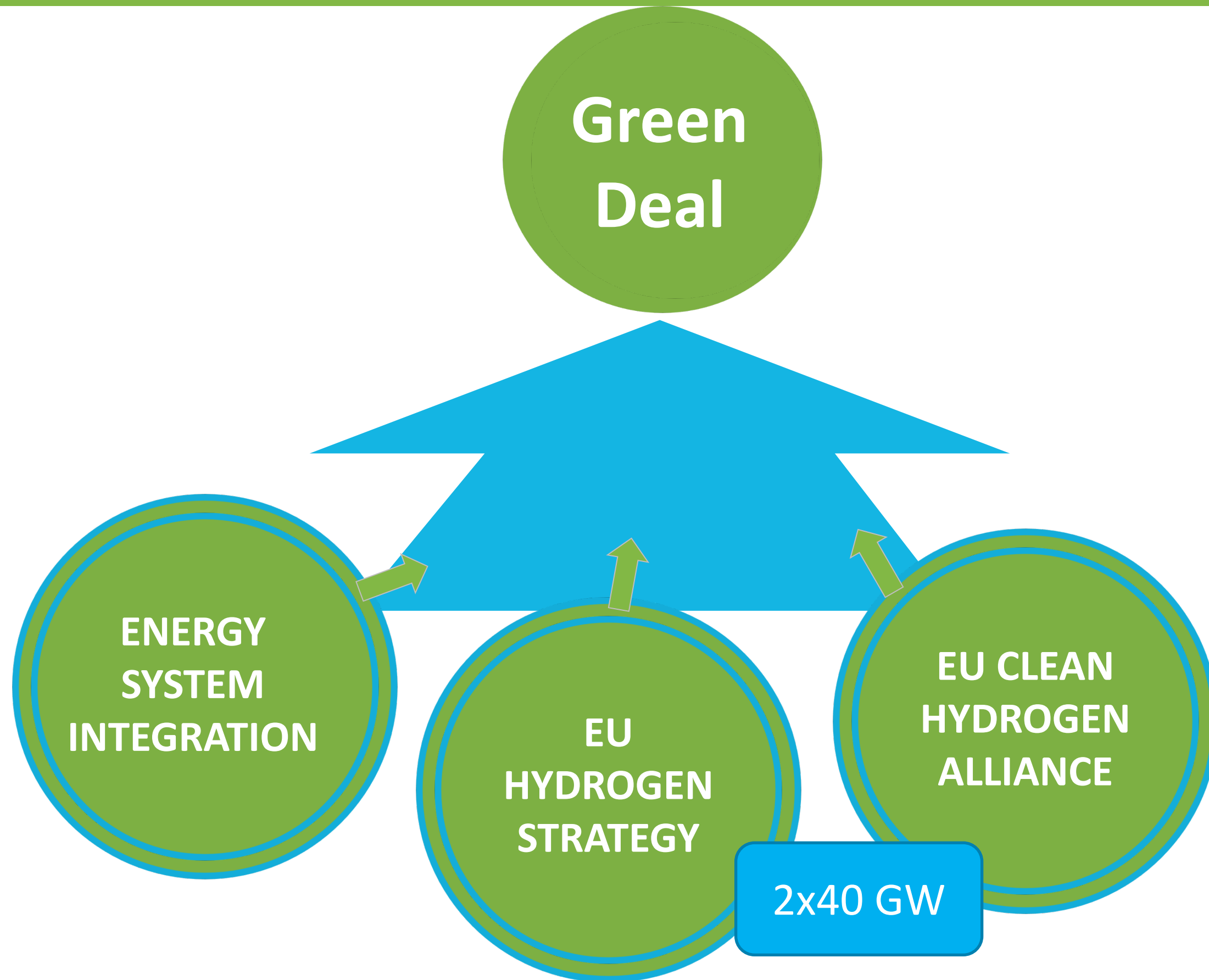


Help decarbonize **building heat and power**



Serve as renewable **feedstock**

# What does the EU want?



European Clean Hydrogen Alliance





# At EU level



*“Next Generation EU should invest in Hydrogen.”*

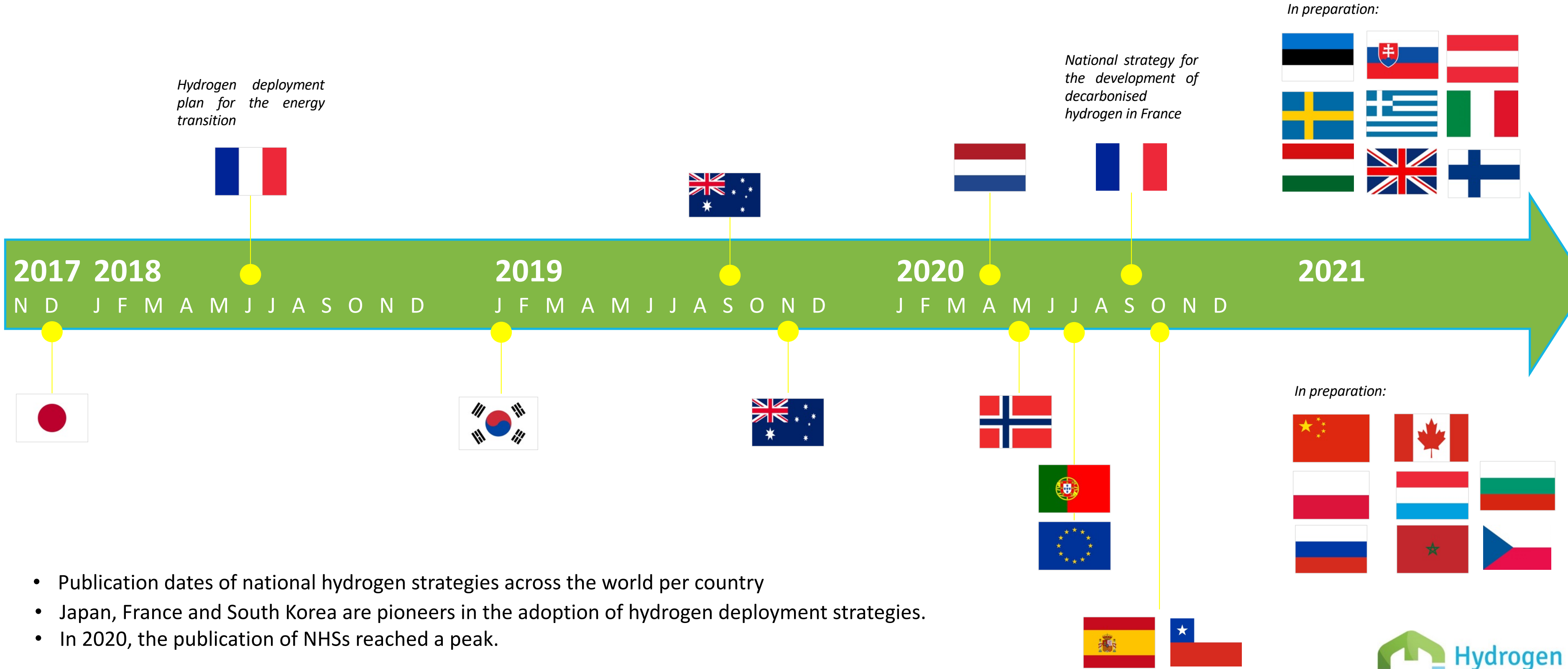
Ursula von der Leyen @State of Union speech, September 2020

*“H2 rocks, and I am committed to making it a success!”*

Frans Timmermans- Executive Vice-President for the European Green Deal



# National Hydrogen Strategies – Reaching a momentum



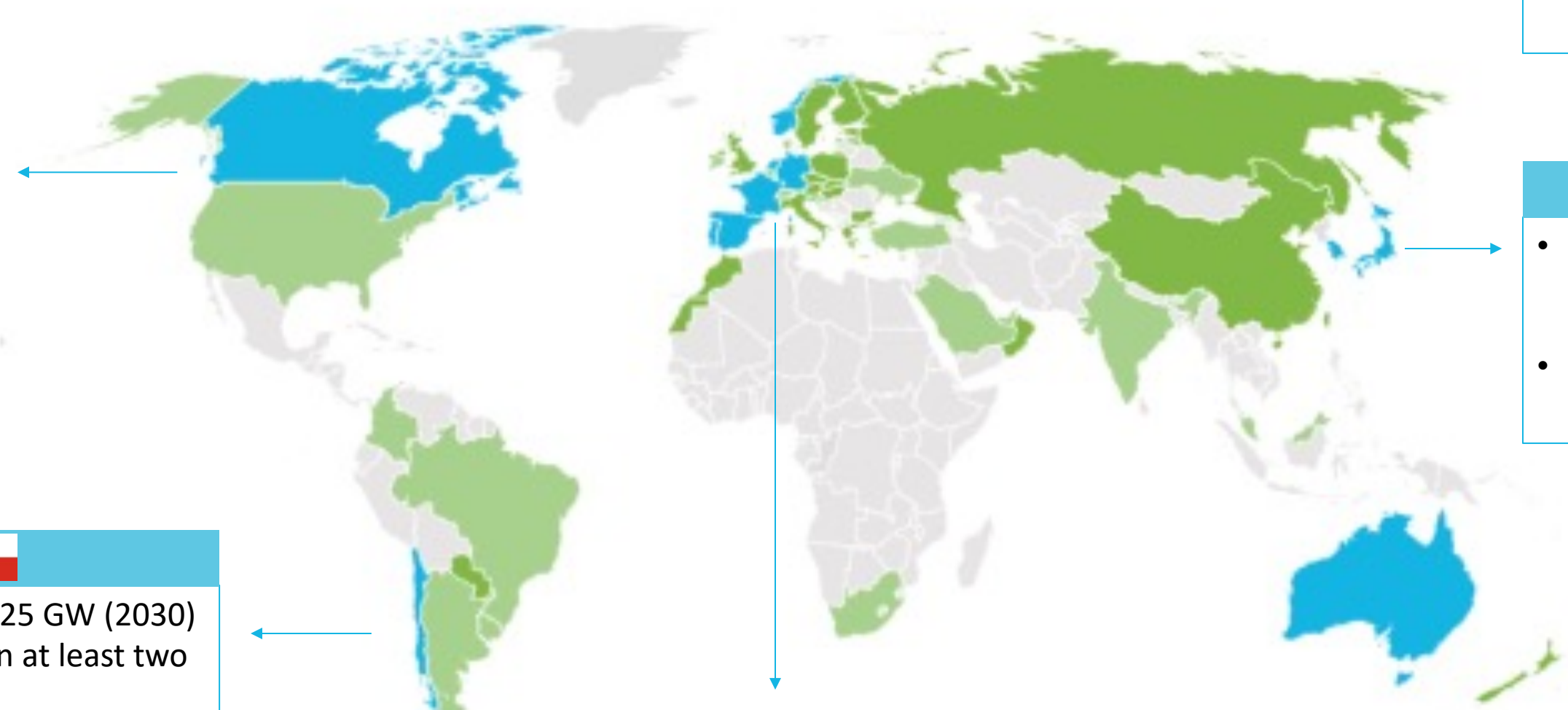
- Publication dates of national hydrogen strategies across the world per country
- Japan, France and South Korea are pioneers in the adoption of hydrogen deployment strategies.
- In 2020, the publication of NHSs reached a peak.



# National Hydrogen Strategies (World Map)

## National Hydrogen Strategies (as of 12/2020)

■ Not assessed  
 ■ Initial policy discussion  
 ■ Adopted H2 strategy  
 ■ Planned H2 strategy



### The World

- Over **20 countries** have adopted a national H2 strategy
- By 2025, national strategies will cover **>80% of world's GDP**

### Canada

- **Hydrogen:** 3 Mt (2025) 4 Mt (2030) 20 MT (2050) of low-carbon H2
- **Investment needed:** \$C5-7bn
- **H2 share of total energy demand:** 6% (2030) 30% (2050)
- **Emission reduction:** 45 MT-CO2e (2030) 190 MT-CO2e (2050)

### Japan

- **Hydrogen consumption:** 3Mt (2030) 20 Mt (2050) [Green Growth Strategy figures, 2020]
- **Mobility targets (2030):** 800,000 FCEV, 1200 FC-Buses, 900 HRS

### Chile

- **Electrolysis:** 5 GW (2025) 25 GW (2030)
- **Hydrogen:** 200 kt (2025) in at least two hydrogen valleys
- **Investment needed:** \$8M (2025) \$45M (2030) \$330M (2050)

### European Union

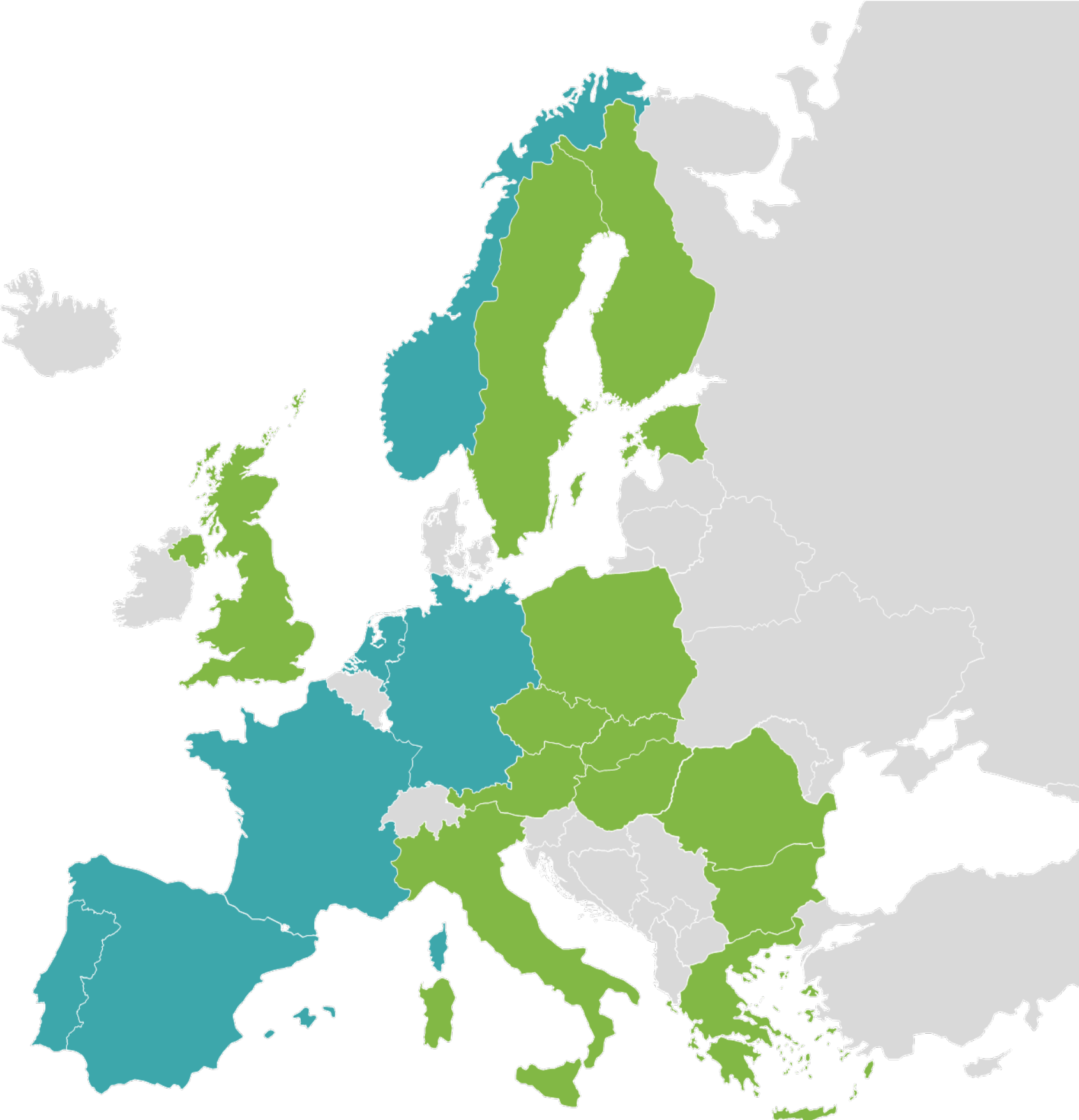
- **Electrolysis:** 6 GW (2024) 40 GW (2030)
- **Hydrogen:** 1 Mt (2024) 10 Mt (2030)
- **Investment needed:** €180-470bn (2050)
- **H2 share of total energy demand:** 24% (2050)

National electrolysis targets (2030)	
<input type="checkbox"/>	France: 6,5 GW
<input type="checkbox"/>	Germany: 5 GW
<input type="checkbox"/>	Spain: 4 GW
<input type="checkbox"/>	Netherlands: 3 - 4 GW
<input type="checkbox"/>	Portugal: 2 - 2,5 GW
<input type="checkbox"/>	Poland: 2 GW (draft)



# EU National Hydrogen Strategies

- 11 nations worldwide adopted national hydrogen strategies
- 6 of those are EU / EEA countries
- These include Netherlands, Germany, France, Spain, Portugal, and Norway
- 13 EU countries are currently working on their national H2 strategies



■ Adopted H2 strategy

■ Planned H2 strategy



# Plans by National Governments

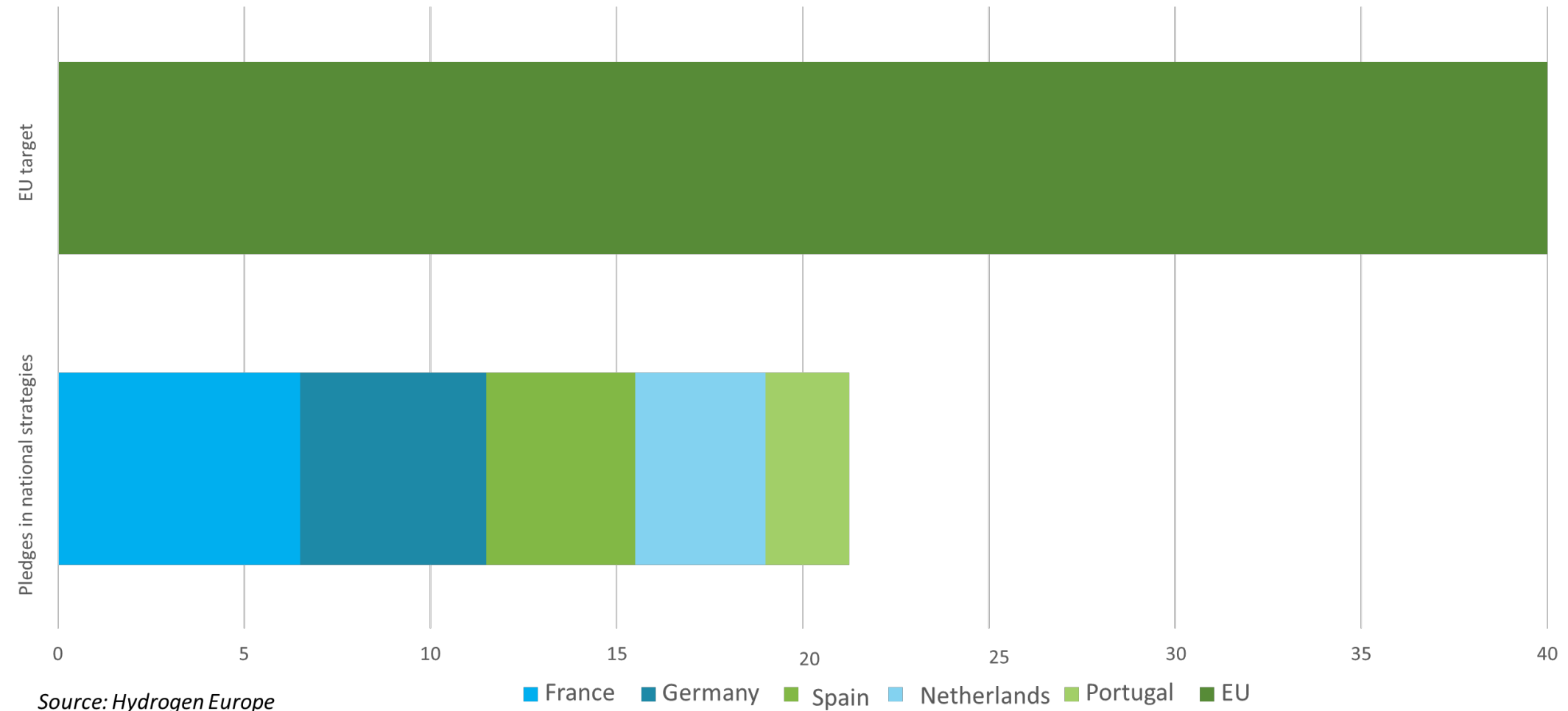
## National hydrogen strategies - electrolysis capacity targets<sup>1</sup>

- Adopted hydrogen strategy
- Hydrogen strategy in development



21.3 GW, 53% of the 2030 EU Hydrogen Strategy's objective of 40 GW.

How far are we from the 2030 EU target for electrolyser capacity (GW)?

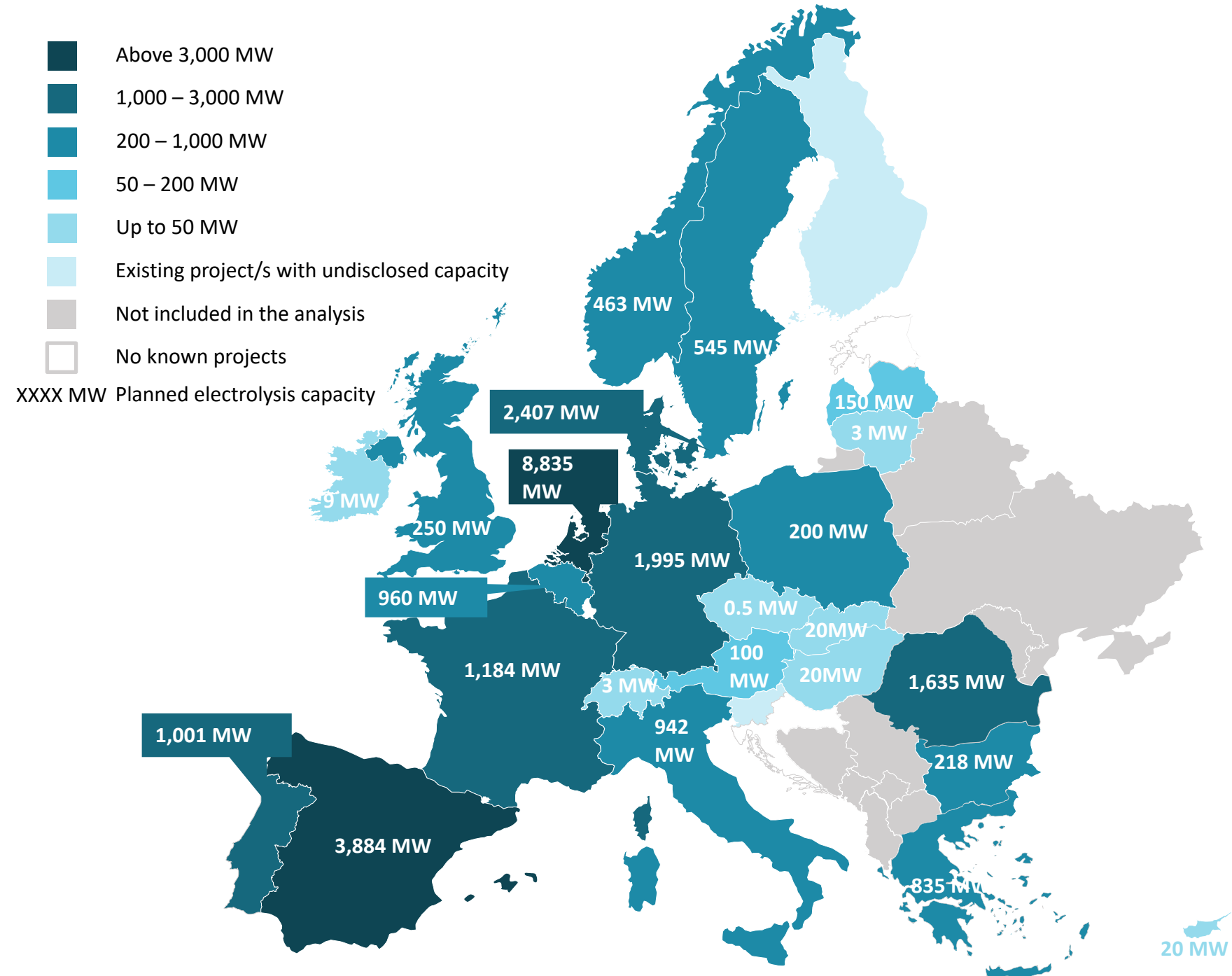


Notes: 1. Spain, Italian, and Portuguese figures refer to mobilised investments while German and French figures refer to spent public funds 2. According to National Hydrogen Strategy Preliminary Guidelines 3. Portuguese NHS specifies between 2 and 2.5 GW and 7-9 billion of mobilised investment 4. Dutch NHS specifies between 3 and 4 GW  
 11 Source: Hydrogen Europe, Reuters

# Planned PtH projects amount to 53 % of EU's 2024 6 GW goal

Data as of 22/02/2021

## Planned electrolyzer capacity by 2030 (MW)



### Comments

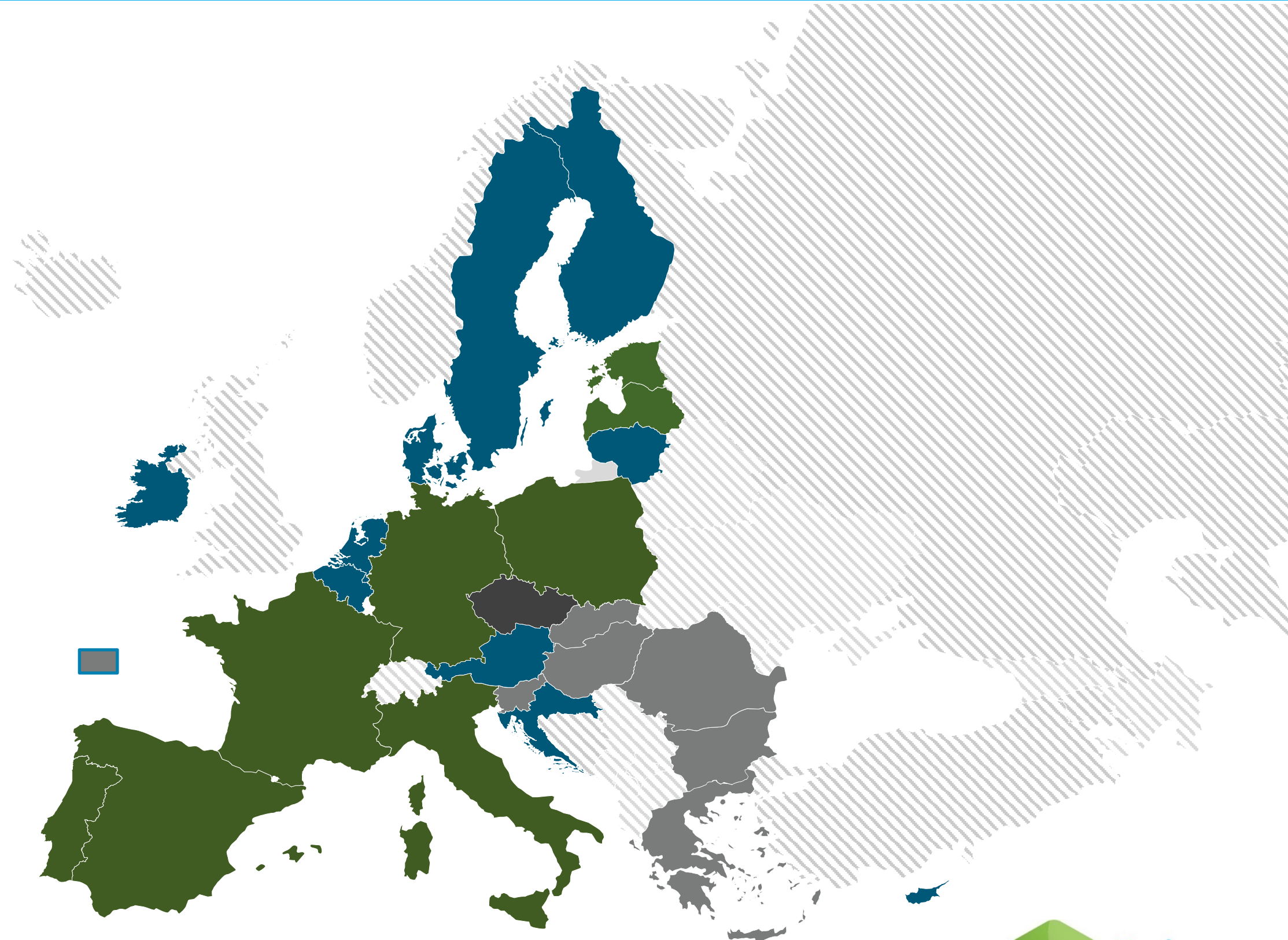
- **25 GW announced capacity by 2030\***
  - 153 projects
  - 63% of EU's 40 GW target
- Annual capacity growth rate **80%**
- 3.1 GW by 2024
  - **53%** compared to 6 GW EU target
- New PtH facilities are being announced regularly across Europe
- **~€ 12.5 billion worth of investments in electrolyzer technology by 2030**

12 Notes: Displayed electrolyser capacities reflect projects that have an official starting date by 2030. There are numerous other projects with unknown starting dates that could be finished by 2030, but are not included in this analysis. These numbers also don't reflect the HyDeal project that aims for 67 GW of electrolysis by 2030 alone.  
Source: Hydrogen Europe



# Hydrogen and the RRP (drafts): *heatmap*

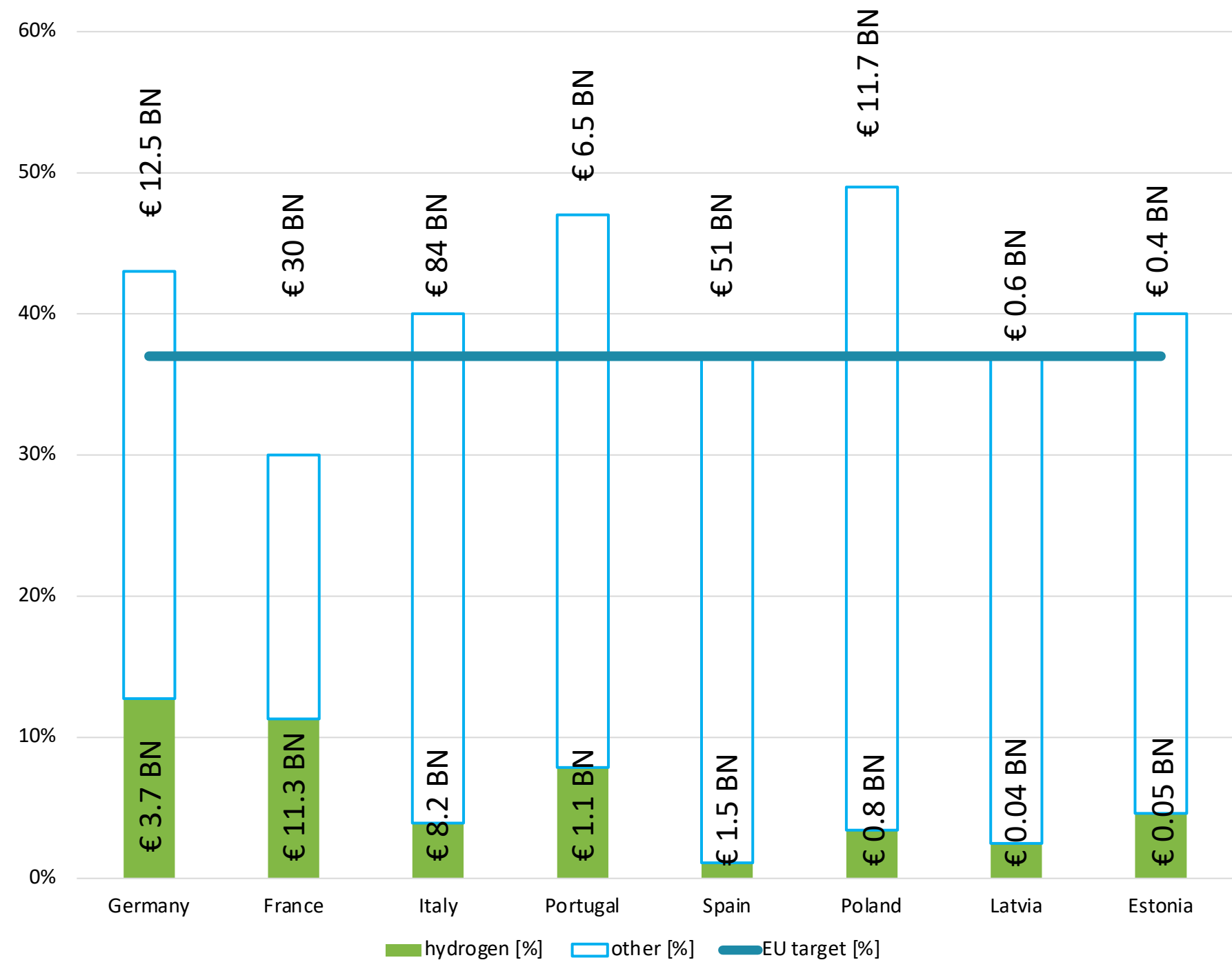
- The word «hydrogen» was never mentioned in their RRP
- The word «hydrogen» was mentioned in their RRP but no qualitative or quantitative data have been added
- Countries not yet analysed (RRP not found)
- Countries not part of the EU RRP scheme
- Analysed countries with hydrogen as part of their RRP



- *The analysis will focus on the RRP of the MSs that mention hydrogen*

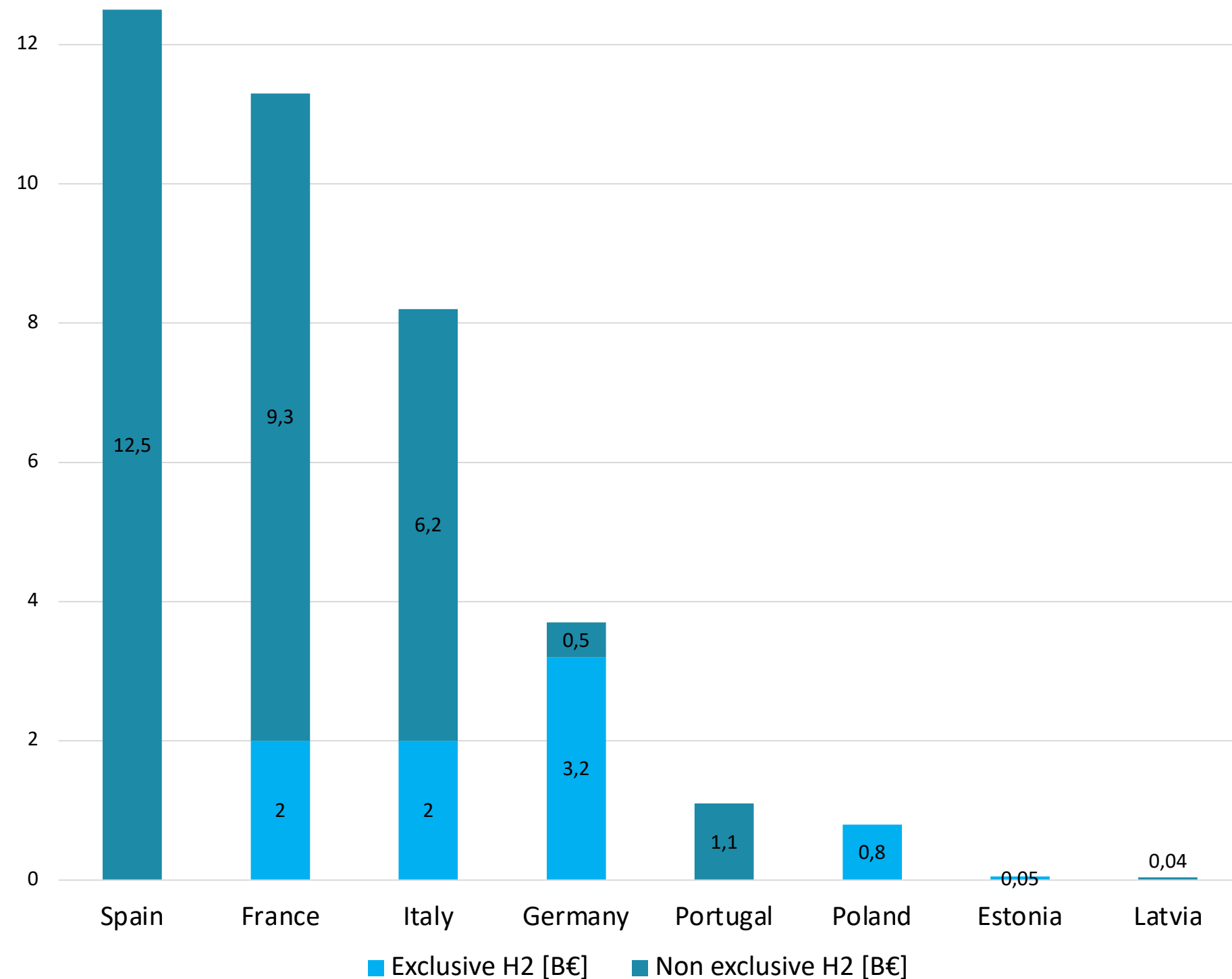
# \*Climate spending: how much is dedicated to H2?

- The majority of MSs already reach or surpass, in their RRP drafts, the EU mandatory target of **37%** spending on **climate**
- **Hydrogen commitments**, both exclusive and non-exclusive, are quantitatively present in **8** RRP drafts (out of 14 analysed)
- **Germany, Portugal and France** have the most ambitious hydrogen strategy within their RRP





# Fund allocation according to the RRP (2/2)

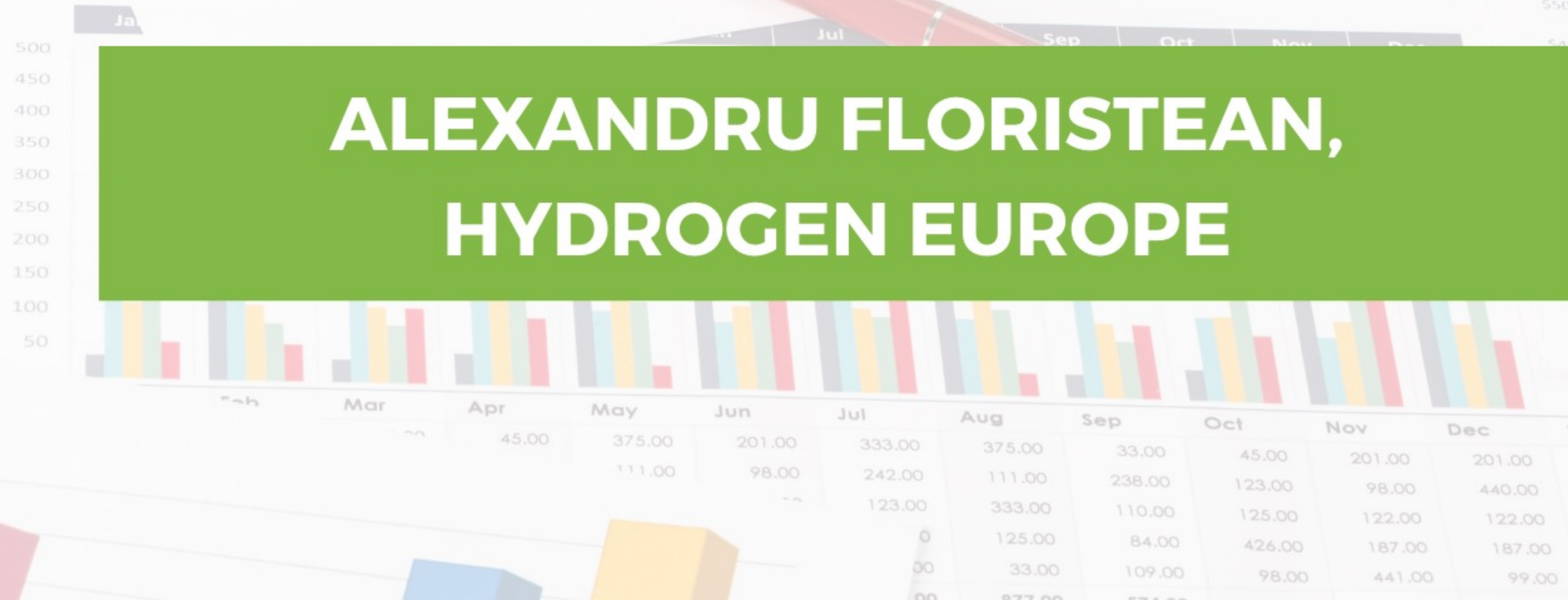


- **Germany** has the largest exclusive commitment to H2 investments. Its non-exclusive H2 component is smaller, vis a vis the other MSs, due to the detailed purpose mentioned on the fund's allocation.
  - Non exclusive H2 targets: Rails and Mobility
- **Spain** includes H2 on its RRP, under the “just transition” section, but it doesn't specify any further on its allocation
- **Portugal** includes H2 in its RRP, but its detail investments include always other targets or sectors (i.e., renewable gases for production, EV for mobility)
  - Non exclusive H2 targets: Mobility, industry, Public transport
- **Latvia**
  - Non exclusive H2 targets: Inclusion of H2 into biomethane scheme
- **Italy**
  - Non exclusive H2 targets: Mobility, R&D
- **France**
  - Non exclusive H2 targets : R&D (PIA), Mobility, Maritime & Aviation

**THANK YOU FOR YOUR ATTENTION!**



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# Thank you for your attention!

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