

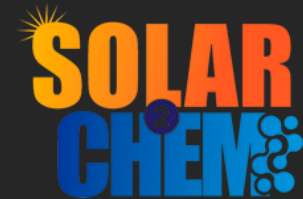
# THE NATIONAL SHAPING OF EUROPE'S EMERGING HYDROGEN STRATEGIES: COOPERATIVE OR COMPETITIVE HYDROGEN POLITICS?

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# THEORISING HYDROGEN TRANSITIONS

- **Multi-level perspective**
  - Dutch school of technology transitions (Smith, 2003, p.128),
    - work of F.W. Geels (2019).
  - niche, regime and landscape - often taken to relate to micro, meso and macro levels of social change.
  - E.g. the production of electricity from renewables is a regime within the wider energy system;
    - national energy policy = regimes.
- ‘Transitions come about when co-evolutionary dynamics at different levels align and link up’ (Geels, 2006, p.1000).



## STATE OF THE ART : EMERGING HYDROGEN STRATEGIES

### ! “Hydrogen strategy for a climate-neutral Europe” in July of 2020

- 40GW electrolyser capacity target for 2030
- **Germany's National Hydrogen Strategy (BMWi 2020) was released in June 2020**
- **United Kingdom National Hydrogen Strategy**
  - Scottish Government Hydrogen Policy Statement (Dec 2020); Aberdeen Hydrogen Strategy (March 2015)
  - Clean Growth Strategy (CCUS at large scale in the 2030s) (October 2017)
  - Ten Point Plan for a Green Industrial Revolution (HM Government, 2020) → Point 2: Driving the Growth of Low Carbon Hydrogen. (November 2020)
- **Portuguese National Hydrogen Plan (PNHS or EN-H2) released in August 2020**

Table 1 – National Hydrogen strategies and targets comparison [National Plans; EUROSTAT; Ten Point Plan; UK Renewable Energy Roadmap; FCH Opportunities for Hydrogen Energy Technologies Considering the National Energy & Climate Plans]

EMERGING HYDROGEN STRATEGIES

GERMANY

Well-structured and advanced hydrogen supply chains  
Hydrogen imports  
Industry and transport as main target sectors  
Reforms on national energy taxes

PORTUGAL

Time to deliver: a fair, green and digital recovery'  
Cross border support mechanism  
Renewable energy sources  
Emphasis on industry and mobility

UNITED KINGDOM

Brexit  
New industrial strategy  
Clean Growth Strategy

Ten Point Plan  
Focus on Industry and Transport

Territories/ Indicators	Germany	Portugal	United Kingdom
Hydrogen Demand (domestic)	55 TWh/a (2020); 90-110 TWh/a (2030)	0 TWh/a (2020); 0,8 to 7,4TWh/a (2030)	90 to 110TWh/a (2030)
Renewable Energy Consumption	20 TWh/a (2020); 40 TWh/a (2030)	47% of total consumption (2030)	30 - 45% of total consumption (2030)
Electrolysis Capacity	5 GW (2030), 10 GW (2040)	2 - 2,5 GW by 2030	5 GW by 2030
H2 Fuelling stations	91	0	16
CO2 Emissions reduction	5.8 - 18.7 Mt CO2 /a by 2030	6-8Mton, 45 % e 55 % by 2030 of 2005 PT emissions	41MtCO2e between 2023 and 2032, 9% of 2018 UK emissions
Direct Job creation	[FCH] 6560 – 25 300 (by 2030)	[FCH] 630 – 5340 (by 2030)	[FCH] 3550 – 13 900 (by 2030).
Export and Import Market	Domestic use; Import	Domestic use (short-term) Export (mid and long- term)	Domestic use; Import
Hydrogen Focus	Green H2	Green H2	Blue H2
Use of Natural Gas pipes	Yes	Yes	Unclear
Overall Share of Energy from Renewable Sources (% of gross final energy consumption) 2019 / EU 2020 targets	17,3% / 18%	30,6% / 31%	12,3% / 15%

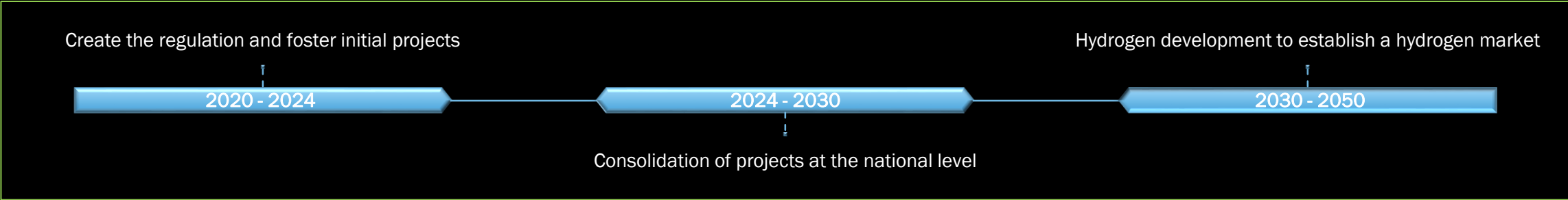
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# CONCLUSIONS – TAKE HOME MESSAGES

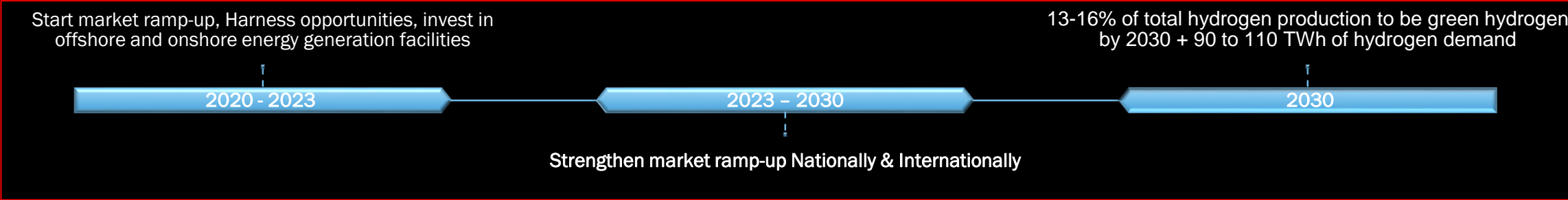
UNITED KINGDOM



PORTUGAL



GERMANY



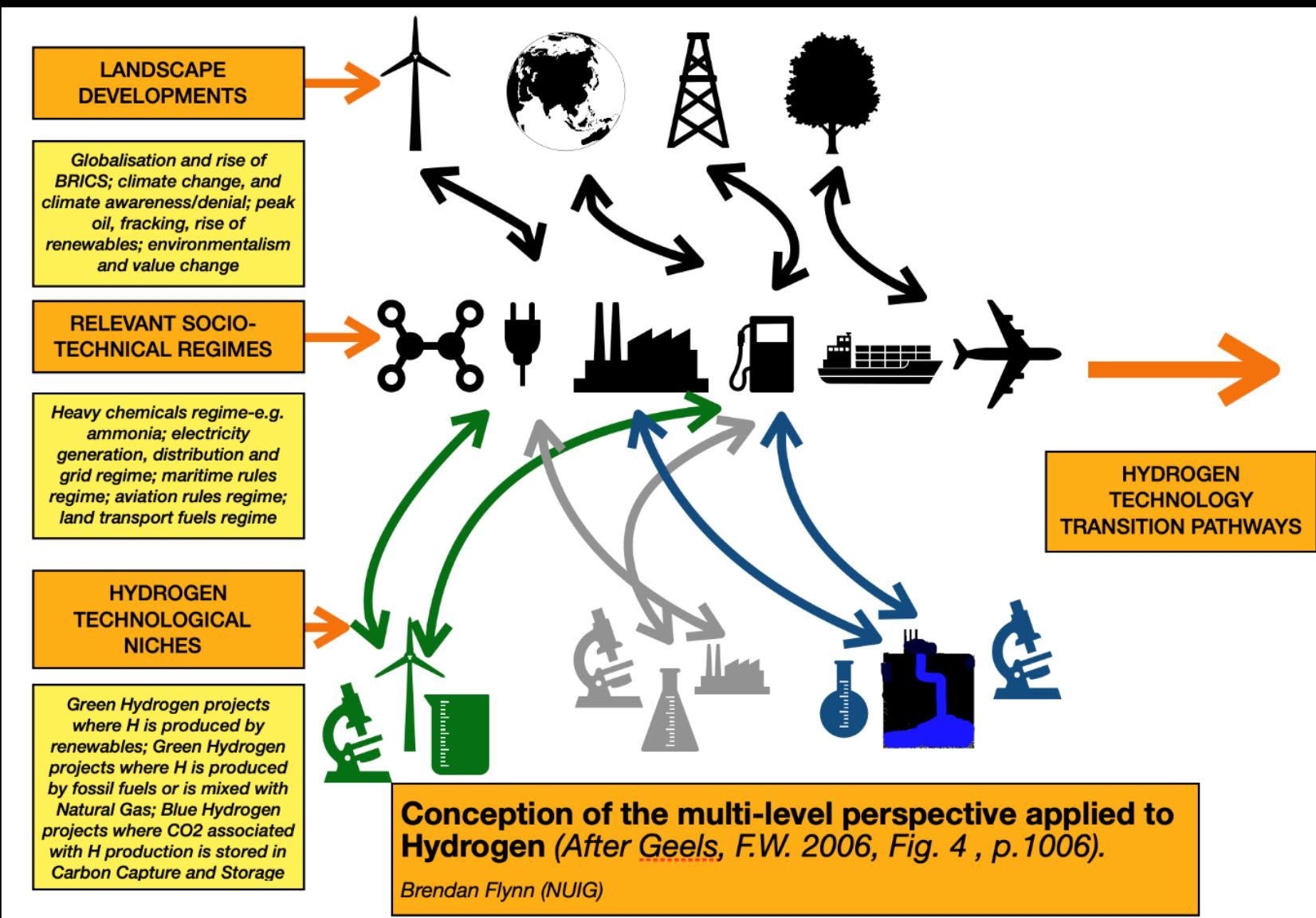
# CONCLUSIONS – TAKE HOME MESSAGES

“we need a strong European framework.  
Key challenges can only be meaningfully  
addressed in the context of the EU” (Ibid.).  
(BMW, 2020: 10-11)

Cooperative approach

Future competition

Transparent and nationalized  
competition



# Thank you for your attention

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