



Overview on Hydrogen Strategies and Policies in the Netherlands

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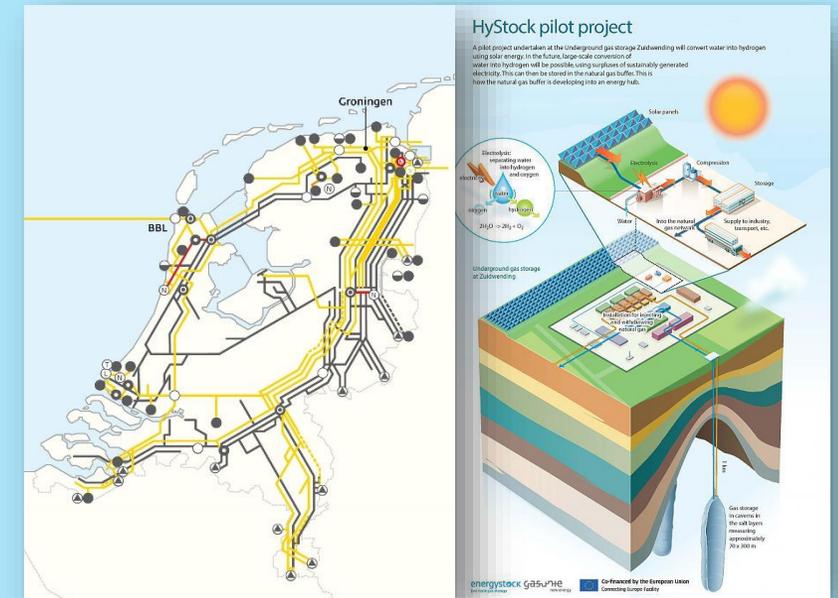
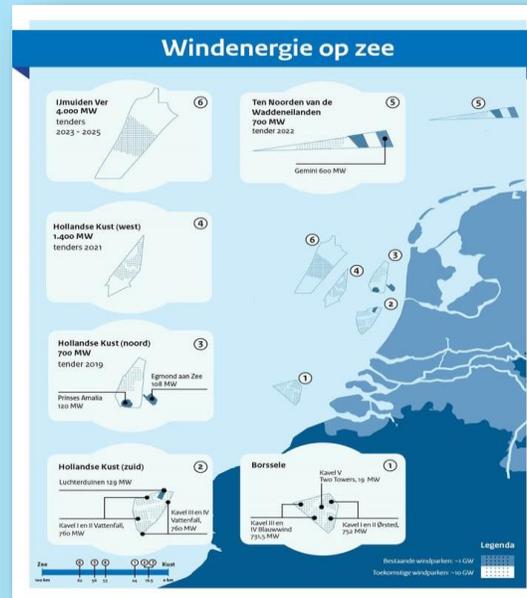
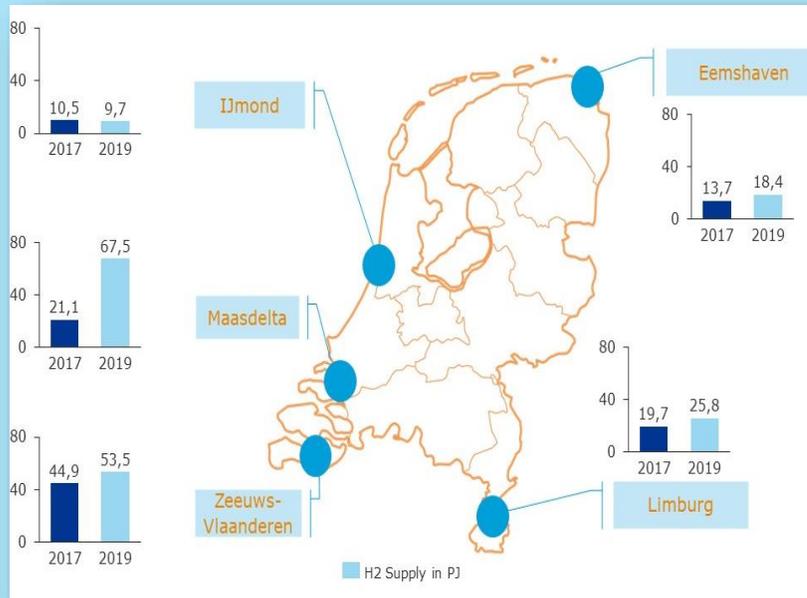
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Drivers in NL: Why Hydrogen?



Replace existing grey hydrogen in industry and develop new applications (mobility, dispatchable power, etc.)

Large potential for offshore wind in the North Sea
Target: approx. 20 GW by 2030; 70 GW by 2050

Shutting down gas production in Groningen. Reuse of existing gas infrastructure and knowledge. Great potential for large-scale storage.

Source: DNVGL (2019) Filling the data gap: an update of the 2019 hydrogen supply in the Netherlands



Dutch Strategy



2019 Climate Agreement

- Hydrogen was a recurring theme
- Ambition 2030: 3-4 GW



2020 Government H2 Strategy

- Systemic role of hydrogen recognized
- Clear policy agenda: focus on ramping up & cost reduction of electrolysis



2020-2022 Implementation

- Expanded funding for R&D and demonstration projects
- Transport infrastructure development plan
- International cooperation and establishment of international supply chains

- > Market development
- > Infrastructure
- > International cooperation & supply chains



Right now: ramping up supply

Both imports and domestic production are necessary

Domestic production

Electrolysis:

- Upscaling instrument: € 250 million for projects < 50
- IPCEI, 2nd wave: € 800 million for projects 100-250 MW
- National Growth Fund: € 600 million for innovative projects

SMR/ATR:

- Operating aid for application of CCS
- Carbon tax for industry

Imports

- MoU's/LoIs with Japan, US, Portugal, Chile, Uruguay, Canada, Namibia, UAE and Oman
- Certification schemes - pilot
- Join H2global
- Financial support via IPCEI - 3rd wave, 3 infra projects - €600 mln



Towards 2030: ramping up demand

EU targets require at least 60 petajoules of renewable hydrogen use by 2030

Sectoral approach

- Renewable hydrogen used mainly in industry (40-80 PJ) and transport including refineries (20-60 PJ), in addition to hydrogen from (waste) gas combined with CCS
- Refurbishing gas power plants by 2030
- Pilots in built environment, agricultural sector

Instruments under development

- Obligations in industry and transport create minimum demand for renewable hydrogen
- Subsidy scheme aimed at industrial offtakers to prevent carbon leakage
- Subsidy scheme for refurbishing gas power plants



Infrastructure



Transport + Storage



Offshore wind + H2

- Development of national transmission grid (in 2030 ~750-1000 km) - subsidy €750 mln - National hydrogen transport operator (HNS)
- ~4 salt caverns for hydrogen storage in 2030
- Development of onshore and offshore (>2030) electrolysis coupled with offshore wind
 - 20.7 GW offshore wind by ~2030; 70 GW offshore wind by 2050



International cooperation and supply chains

Strategy:

- 1) **Creating a European market (RED);** *providing certainty on infrastructure, certification & regulation;*
- 2) **Learning from first import projects** (from 2025): *what is needed in terms of regulations and infrastructure;*
- 3) **Facilitate import-export chains** *by establishing cooperation with exporting countries: Portugal, Chile, Uruguay, Namibia, Canada, UAE, among others;*
- 4) **Shared approach** *with Germany and Belgium (EU policy and bilateral);*
- 5) **EU and international cooperation** *within multilateral organizations.*



Global cooperation

- IPHE
- IEA
- IRENA
- Clean Energy Ministerial (CEM)
- Mission Innovation (MI)



European cooperation

- Direct contact with European Commission
- Pentalaeraal Forum (Benelux, DUI, FRA, OOS, ZWI)
- North Sea Countries (NSEC)
- Bilateral cooperation with neighboring countries
- IPCEI



National cooperation

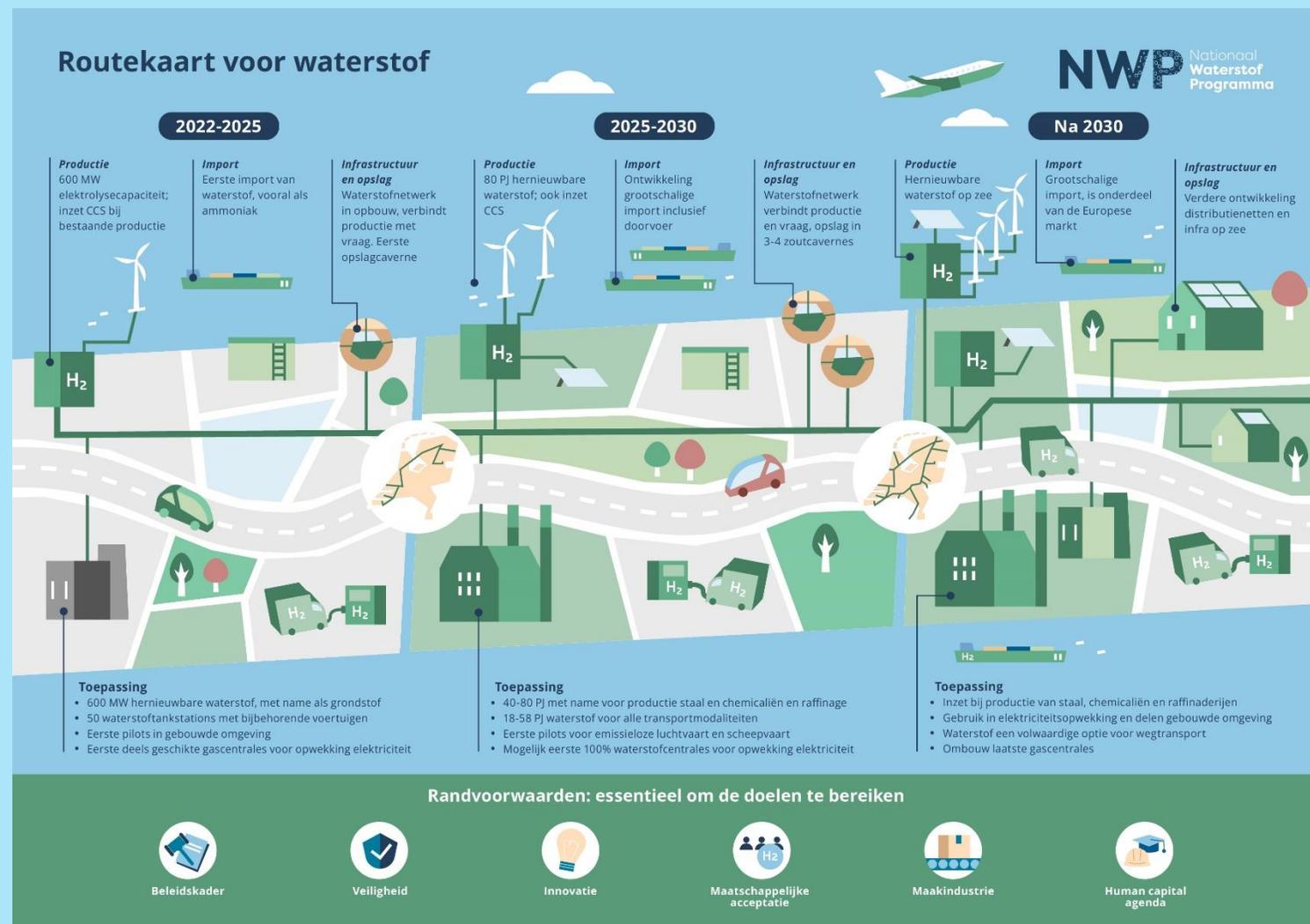
- Promoting cooperation between regions
- Topsector Energy / TKI New Gas
- ECCM
- GroenvermogenNL



National Hydrogen Program

- **Public-private** initiative
- It was agreed to organize the program to **jointly** realize the ambitions and agreements
- **Aim:** connect, facilitate, accelerate and monitor.
- 2021: preparatory phase, establishment of cross-sectoral hydrogen working group (CSWW). Work plan delivered by the CSWW in July 2021.
- Early 2022: Program officially launched, website launched, theme groups installed, gap analysis made.
- 3 November 2022: delivery of **Hydrogen Roadmap**

21-11-2022



Moving towards 2030 and 2050 with hydrogen

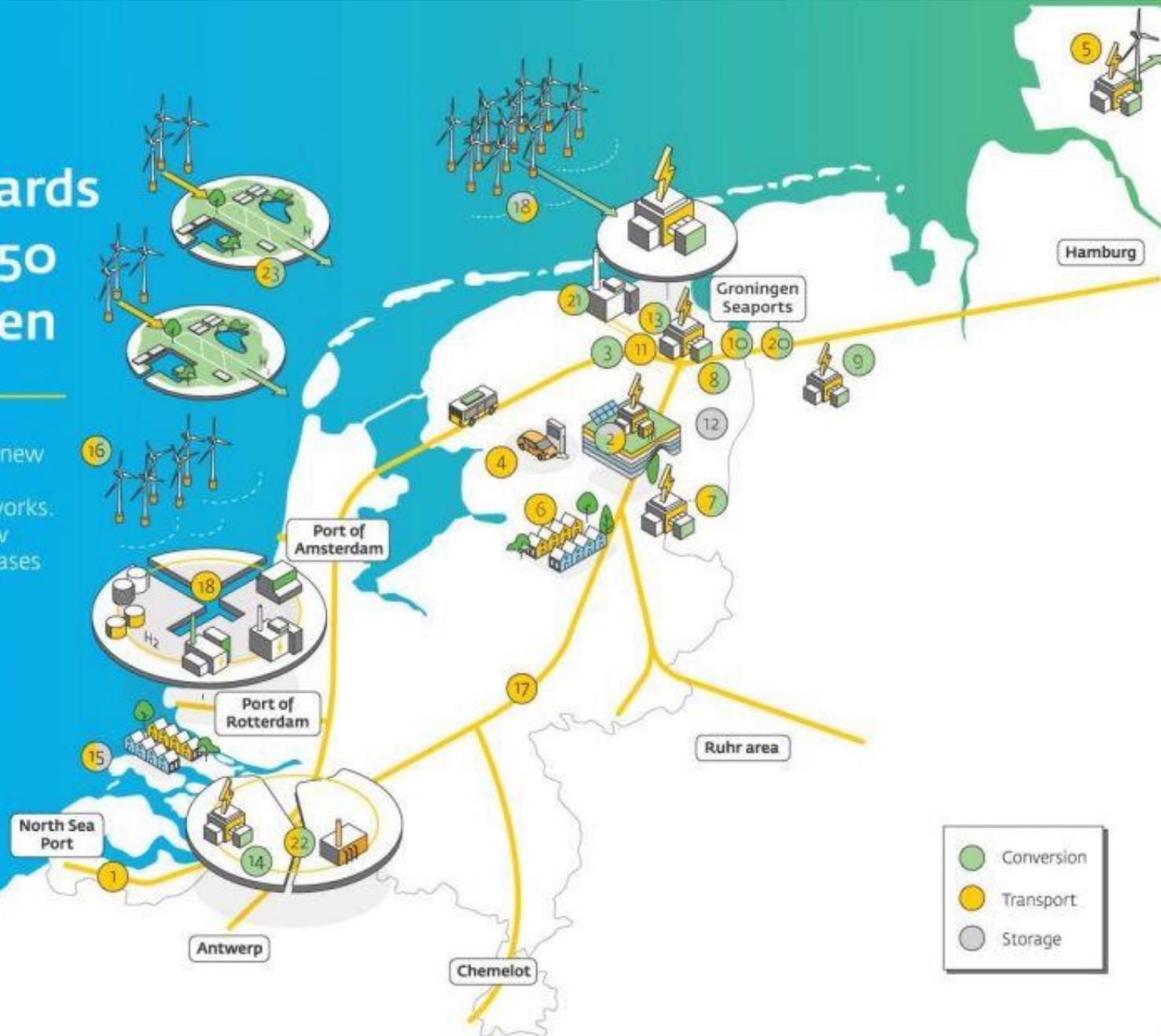
The energy transition requires new forms of infrastructure and intelligent use of existing networks. Gasunie wants to invest in new infrastructure for renewable gases such as hydrogen.

2016 Paris Agreement:

Global warming set at a max. 2°C. This requires CO₂-reduction in the Netherlands of:

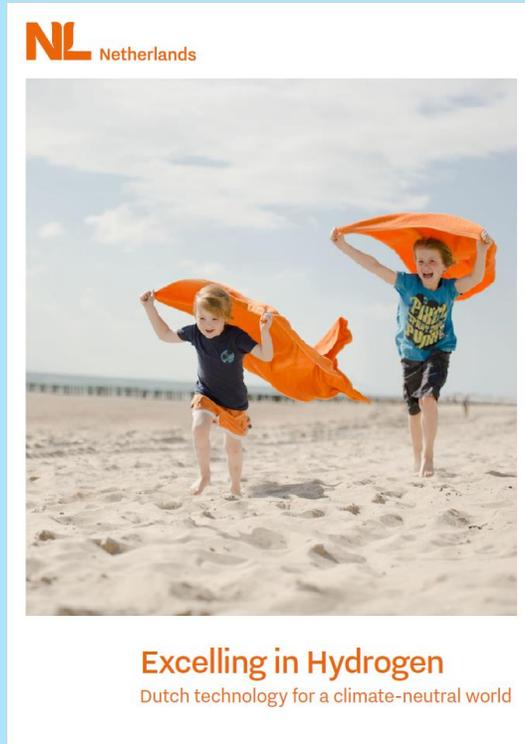
- 40-50% in 2030
- 85-100% in 2050

Hydrogen as a fuel and as a raw material can help to achieve CO₂-reduction targets.





Overview of projects and organisations in The Netherlands working with/on hydrogen



<https://www.fme.nl/hydrogen-guide>

[PowerPoint-presentatie \(topsectorenergie.nl\)](https://www.topsectorenergie.nl)



Thank you very much!