



Ministerie van Economische Zaken
en Klimaat

HyWay27 study on the reuse of natural gas network for a hydrogen backbone in the Netherlands

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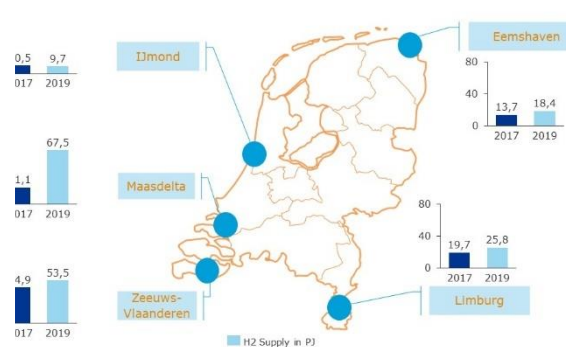
Policy officer hydrogen

Ministry of Economic Affairs and Climate Policy

Presentation for the 35th Madrid Forum



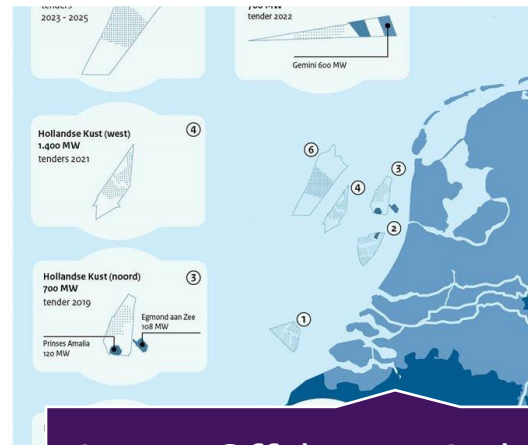
Drivers for Hydrogen in The Netherlands



Hydrogen production and demand

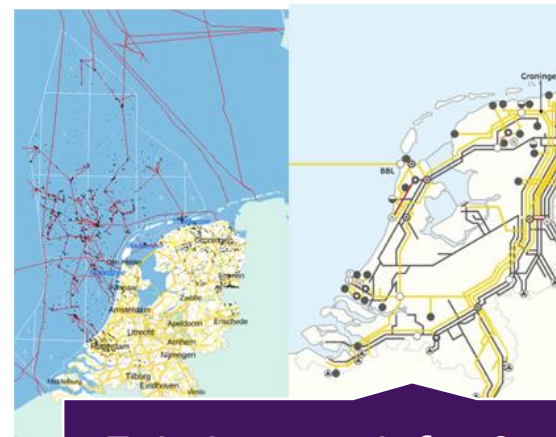
Decarbonization of industrial clusters and harbor areas

Electrolyzer capacity of 500MW in 2025 and 3-4GW in 2030



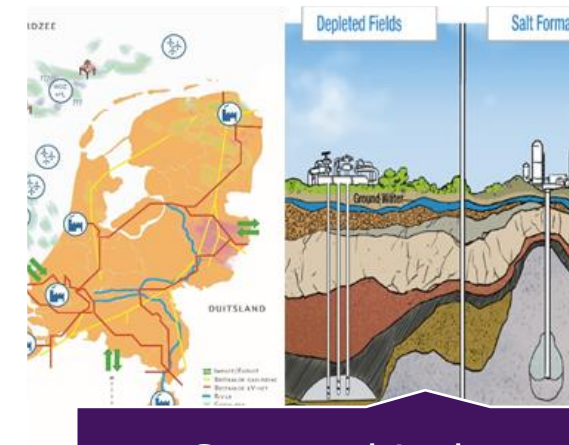
Large Offshore wind potential

Synergies between off-shore electricity production and hydrogen production (through combined tenders)



Existing gas infra & knowledge

Repurposing of natural gas grid for hydrogen
Harbors as hydrogen-hubs for NW-Europe



Geographical conditions

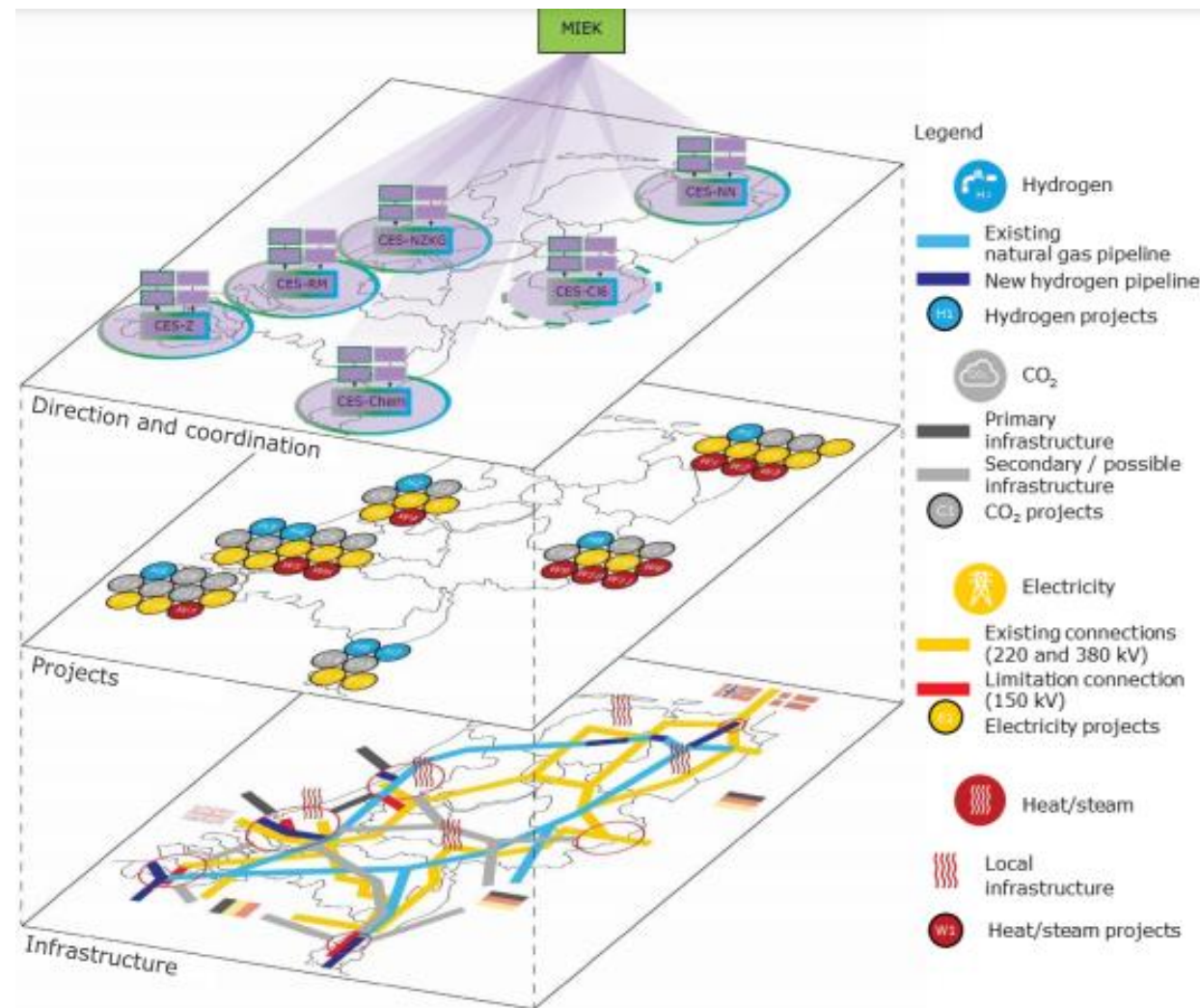
Hydrogen for the underground storage of renewable energy in salt caverns



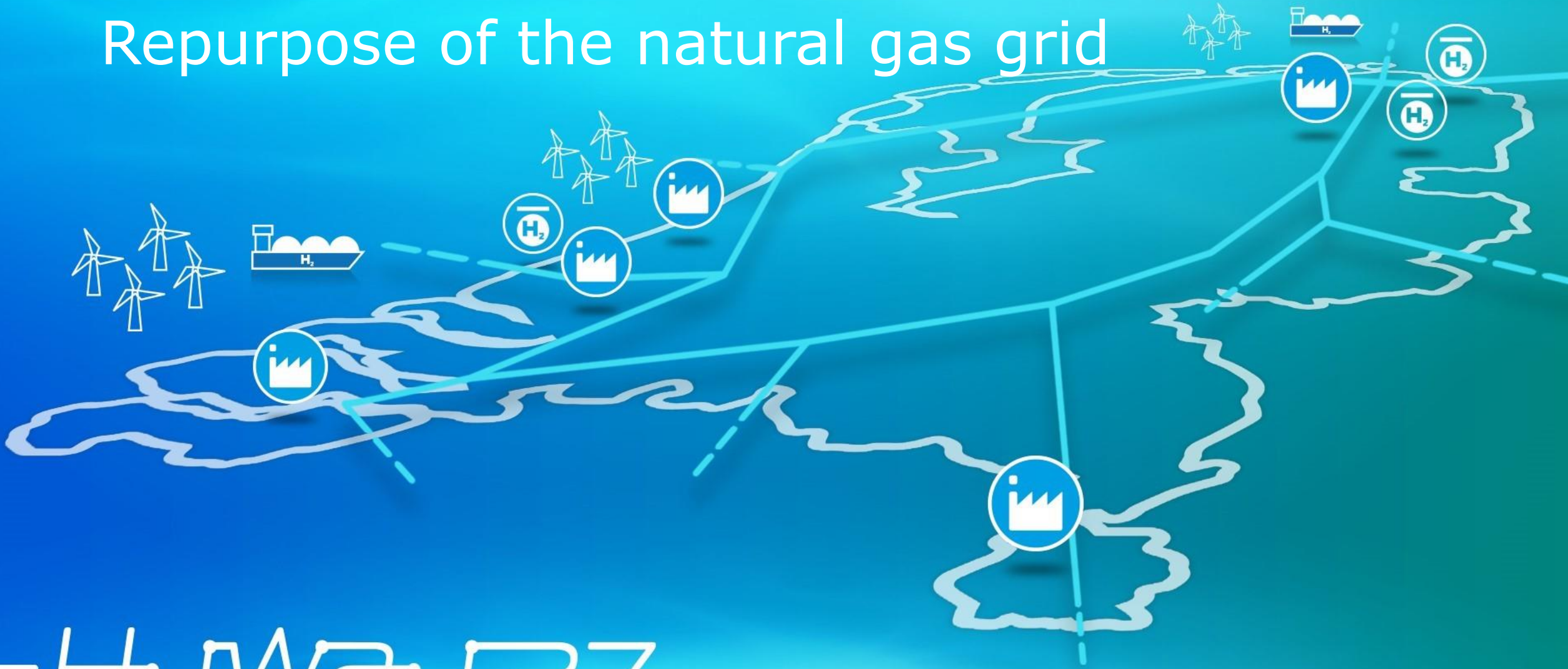
Taskforce Infrastructure Climate Agreement Industry

Recommendations Taskforce

- The planning and rollout of infrastructure for industry is confronted by coordination failures and problems with financing
- Create a vision of main infrastructure and system integration, to be reviewed periodically with industry representatives and infrastructure operators (*Multi-year Programme for Energy and Climate Infrastructure*)
- The expected increase in the production of, and demand for, hydrogen requires a national backbone to facilitate the exchange of hydrogen between clusters



Repurpose of the natural gas grid



—HyWay27—



Scope and questions of the HyWay27 Study

Scope of the study

The 'HyWay27 study' examines if, and under which conditions, parts of the existing natural gas grid can be repurposed for the transportation of hydrogen

Three sub-questions

1. Is a hydrogen network necessary? If so, when?
2. Can parts of the existing gas grid be repurposed for the transportation of hydrogen? Is this preferred?
3. What type of policy intervention is required?

Commissioned by Dutch Ministry of
Economic Affairs and Climate Policy

Main project partners

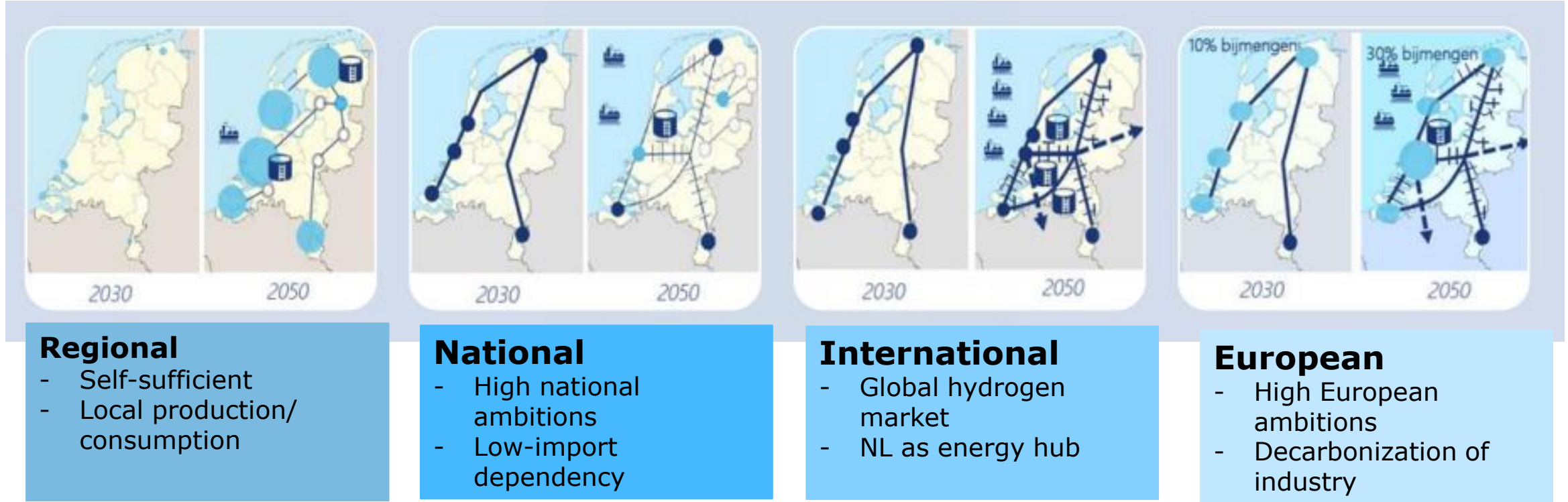
Report drafted by





1) Integrated Infrastructure Model 2030-2050 (II3050)

- II3050 is an integrated approach for the analysis of scenarios and market developments resulting in a long-term perspective for the energy system and required infrastructure



Findings

- Hydrogen will be a 'system molecule' in a decarbonized energy system
- 2050 hydrogen consumption between 239 and 879PJ
- Dealing with regional and temporal imbalances will require transportcapacity already in 2030



2) Repurposing of the natural gas grid



- Parts of L-gas network become available due to decreased demand for transport capacity for L-gas
- In 2030 ~750-1000km available
- Costs repurposing v. new 1:4



Technical and operational measures are required

- Prevent leakages
- Cleaning of pipelines
- Adding compressors
- Monitoring of deficiencies and max. pressure





3) Policy recommendations and regulatory issues



Develop a roll-out plan (*'when and where'*)

- Development of (integrated) network development framework
- Bottom up *and* top down



Develop a framework for market organization (*'who'*) and network regulation

- Private versus public ownership
- Horizontal unbundling
- Vertical unbundling: strict or flexible?
- Access and tariff regime: negotiated versus regulated



Mitigate risk of early underutilization (loading risk) (*'how/how much'*)

- Who should bear the risk of underutilization?
- What type of support is preferred?
- What price should be paid for the transfer of gas pipelines?



Many thanks for your attention

Background sources

[Dutch Hydrogen Strategy](#)
[HyWay27](#) (English summary soon available)