



Rijkswaterstaat
*Ministry of Infrastructure
and Water Management*

Hydrogen in the Netherlands

Vision and perspective NL
Government

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Hydrogen – An international perspective:

- Momentum currently behind hydrogen is unprecedented, with more and more policies, projects, and plans by governments and companies in all parts of the world
- Hydrogen can help overcome many difficult energy challenges
 - Integrate more renewables, including by enhancing storage options and tapping their full potential
 - Decarbonise hard-to-abate sectors – steel, chemicals, trucks, ships, and planes
 - Enhance energy security by diversifying the fuel mix and providing flexibility to balance grids
- But there are challenges: costs need to fall; infrastructure needs to be developed; cleaner hydrogen is needed; and regulatory barriers persist.



Hydrogen in the Netherlands



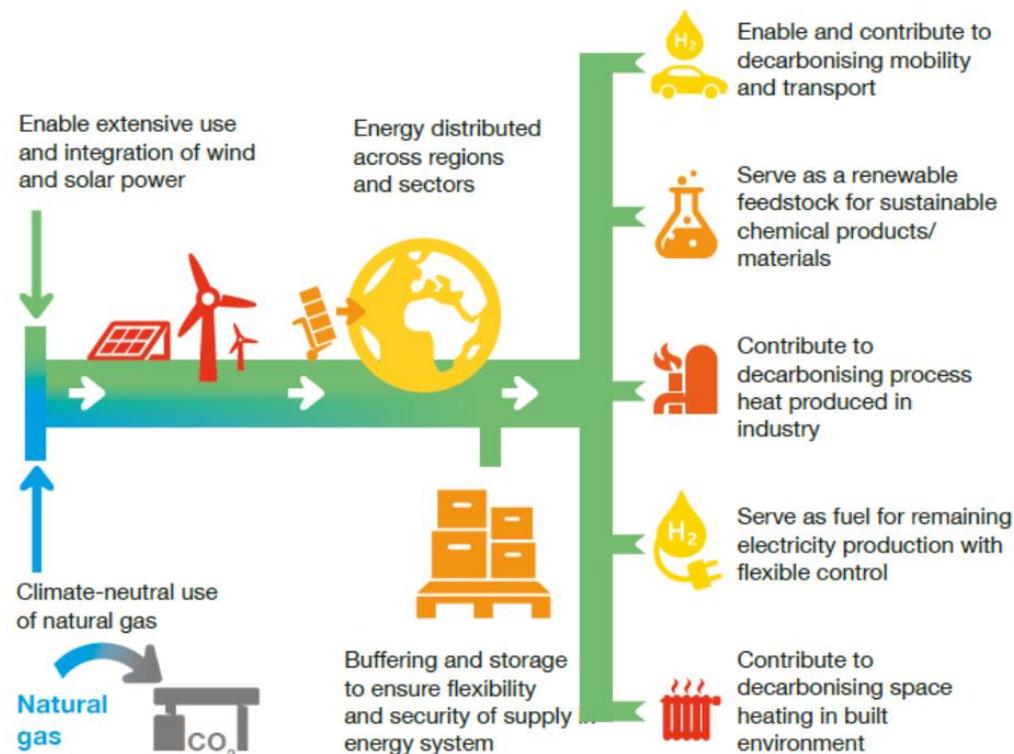
National Climate Agreement of the Netherlands (June 2019):

- General target to meet 'Paris Agreement': minus 49% CO₂-emission by 2030;
- Hydrogen is seen as a robust element in the CO₂-free energy and feedstock system.

Hydrogen:

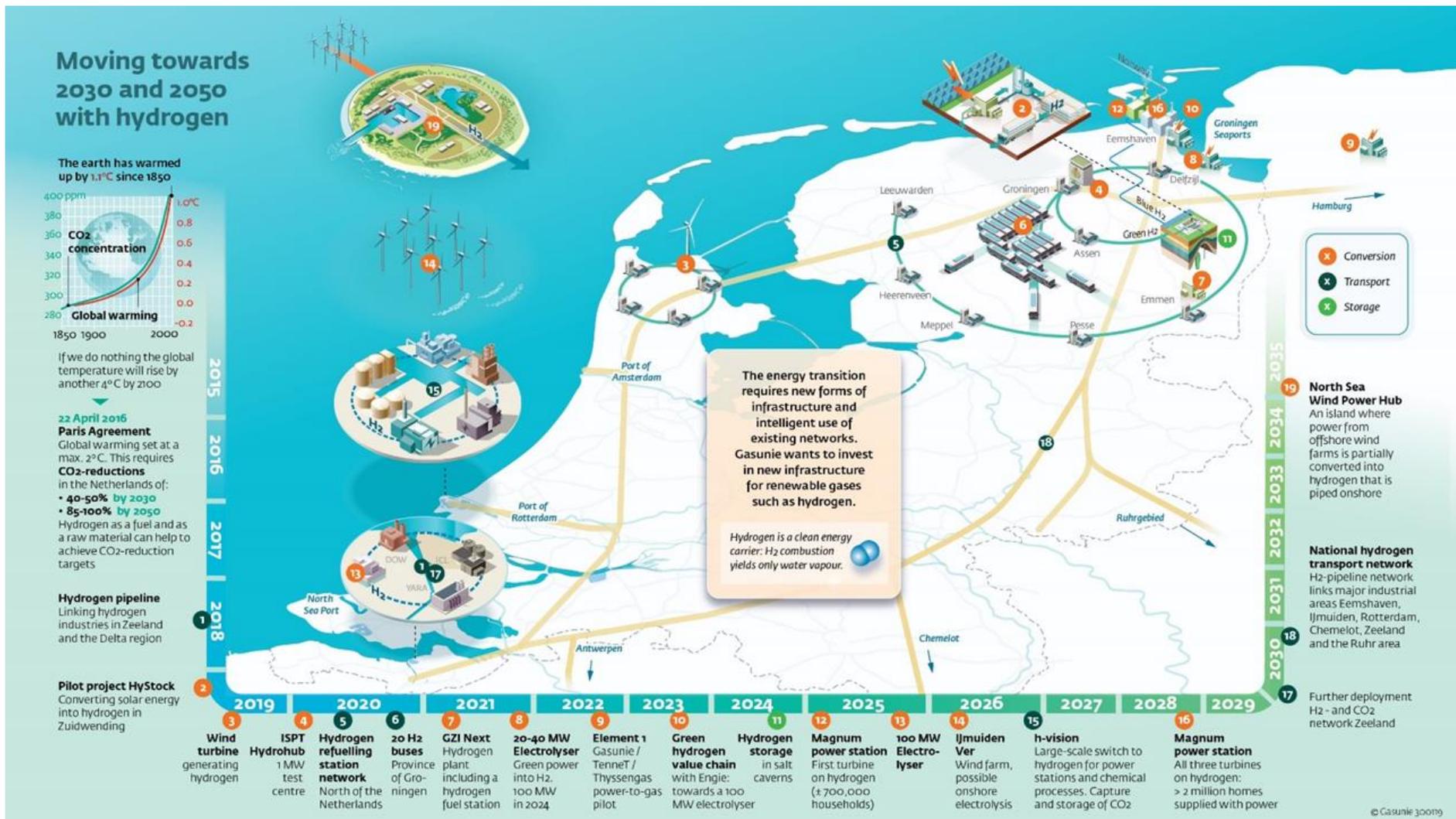
=> Several (renewable) sources

=> Many applications





A lot is going on, especially in the North and Rotterdam Harbour!





Network of HRS is growing in NL, #19 (by end 2020)



Ambitions FCEV in NL Climate Agreement:

	2025	2030
Cars	15.000	300.000
Heavy Duty	3.000	75.000
HRS	50	200+



Highlights in issues and discussions in NL (1)

- **Blue and green hydrogen!**

Focus on green hydrogen as much as possible (based on electrolysis using renewable electricity). An optimal contribution to the development of a broader hydrogen system through the use of blue hydrogen (CCS) must be ensured, without impeding the growth of green hydrogen.

Flagship-project: H-Vision

- **A national approach towards 3 GW**

A substantial hydrogen programme is to be initiated.

And scaling up in three fases.

Target 2030: 3 – 4 GW of established electrolysis capacity, connection to storage sites and expansion of infrastructure, on the condition of additional growth of renewable electricity, among other things.

Flagship-project: HyNetherlands



Hydrogen Symbioses: use of section of natural gas transmission pipeline for transport of hydrogen



Highlights in issues and discussions in NL (2)

- Role of TSO and DSO's, re-using gas infrastructure
Explorative studies on partial conversion of natural gas grid to hydrogen backbone, e.g. to connect main industrial regions.
- Common standards, flexible and hybrid market regulation and guarantees of origin (CertifHy) needed:



- And the BEV vs. the FCEV debate!



Hydrogen Backbone in NL: possible due to phasing out Groningen natural gas field.



the BEV vs. the FCEV debate

Policy in NL: We need both technologies!

(Compare: in fossil fuels also 2 fuels: gasoline and diesel)

FCEV suitable for:

- Long distance;
- Medium and heavy duty vehicles;
- When short refueling time is necessary.



Hyundai Nexo



Rigid truck with FC-range extender

Challenge in FCEV's: getting vehicles produced and delivered!



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Thank you for your
attention!



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