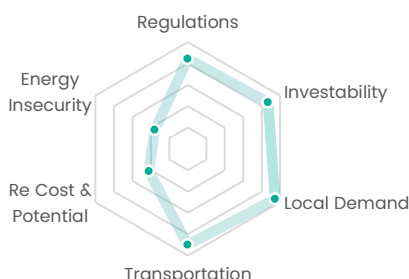


GDP - USD (bn):	912
GDP per capita - USD:	52,304
Land area ('000 km ²):	34
Population density (per km ²):	512
Grid emissions factor (gCO ₂ /kWh):	457

Hydrogen Drivers Matrix



Primary Energy Mix



4.2 Regulatory commitment

- EUR 5bn 2021 SDE++ scheme in November includes hydrogen
- EUR30/tCO₂ carbon tax on industrial GHG, over and beyond EU ETS scope

4.5 Transportation

- Gasunie to make 75% of national pipeline H₂-ready by 2027
- 1,000km H₂ pipelines in operation
- Second largest salt cavern potential in Europe

4.3 "Investability"

- Rated AAA by S&P
- 42nd in WB Ease of Business

2.1 RE cost and potential

- >200GW of offshore wind potential
- Limited land for solar or onshore wind, despite good wind speeds

4.7 Local demand potential

- 12nd busiest container port traffic including Port of Rotterdam
- 18th largest ammonia producer
- 25th largest steel manufacturing

1.8 Energy insecurity

- 35% net energy import
- Closing of Groningen gas field in 2022 adds urgency to diversification

Fast-paced centralised hydrogen transmission rollout; expanded CCfD scheme includes hydrogen

The Netherlands today is Europe's second largest producer of grey hydrogen (after Germany) at 900ktpa and operates more than 1,000km of dedicated hydrogen pipelines. The north of the Netherlands is a confluence of global shipping and aviation routes, heavy industry clusters, offshore wind development and oil and gas transmission infrastructure that positions it exceptionally well to become a European green hydrogen hub. This corridor has been designated by the FCHJU as the first Hydrogen Valley in Europe and a Government roll-out of 10GW of hydrogen transmission infrastructure is underway to connect key industrial clusters. The Netherlands also has the second largest salt cavern hydrogen storage potential in Europe, at 10.4PWh.

The Dutch national hydrogen strategy targets the installation of 4GW of electrolyser capacity by 2030. To further the hydrogen agenda, the Government has committed EUR338m under the National Growth Fund towards accelerating green hydrogen deployment. The imminent shutdown of the Groningen gas field in 2022, by far Netherlands' largest, further provides an energy security impetus.

SDE++ 2021 subsidy

In 2021, the Dutch government for the first time included electrolytic hydrogen in its SDE++ procurement scheme¹. The round is funded by up to EUR5bn, and projects may bid for up to EUR300/ton of CO₂ "saved" vs. the market alternative, equivalent to up to c.EUR3/kgH₂².

Shipping, offshore wind, oil & gas hub

The northern Dutch coast is a densely developed industrial region, hosting the Port of Rotterdam, by far the busiest port in Europe, as well as Netherlands' offshore gas fields, and numerous industrial clusters. NorthH₂, a project launched in 2020 by Gasunie, Groningen Seaports and Shell, looks to massively scale up hydrogen production, powered by 1GW of new offshore wind capacity by 2027 and 4GW by 2030.

HyWay27 centralised transmission & storage rollout

The Government is taking a hands-on approach in the development of the national hydrogen infrastructure. Gas transmission network operator Gasunie has been tasked to deliver 10GW of national hydrogen transmission and storage infrastructure, equivalent to 25% of the total energy consumption of Dutch industries. Scheduled for completion in 2027, the project is estimated to cost EUR1.5bn, and will use 85% recycled natural gas pipelines that are four times cheaper than new pipelines. In addition to its immense on- and offshore salt cavern storage potential, the legacy offshore oil and gas infrastructure network may potentially be repurposed to store and deliver hydrogen.

International partnerships

Netherlands has a collaboration agreement with the US on information sharing on hydrogen production and infrastructure technologies, and a bilateral export-import value chain cooperation agreement with Portugal.