

EBN as a partner in the energy transition

Trends in asset management, 2024



ebn

Energising the transition

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This presentation



Introduction to EBN

Our view on the energy transition

EBN's contribution to the transition

1. a brief introduction of EBN



- Founded in 1973 as DSM Aardgas B.V. to represent all the Dutch State's interests in natural gas
- In 1989 the State acquired all shares in DSM Aardgas and the name was changed to Energie Beheer Nederland B.V. (EBN); EBN has a 40% share in (almost) all JV's for oil & gas exploration and production
- In 2019 the Ministry mandates EBN to participate in all geothermal projects and to initiate the SCAN project for the exploration of geothermal heat in the Netherlands
- In 2020 EBN obtains approval to participate in the Porthos project for CCS the project was initiated by Gasunie, Port of Rotterdam and EBN
- In 2022 - during the energy crisis - the Ministry appoints EBN to fill the Bergermeer gas storage

EBN participates for 40% (sometimes up to 50%) in...

E&P Joint Ventures



- 35 Productie Onshore
- 9 Exploratie Onshore
- 20 Productie Offshore
- 104 Exploratie Offshore

5 offshore trunk lines 40% shareholder of GasTerra



4 underground gas storage facilities



Status december 31/12/22



A sustainable gas system

EBN: Highlights 2022

Connecting force in the energy transition



Reduction of CO₂ emissions

'EBN is focused on making the Dutch energy system more sustainable and achieving reductions in emissions of CO₂ (and equivalents). All our activities are geared to making concrete steps towards the future climate-neutral energy system. This is how we and our to the Dutch climate goals.'

Resilient, flexible organisation

Financial

Turnover (€ MLN)



Net profit (€ MLN)



'The rise is caused by historically high gas prices and exceptional revenues.'

Employees

Employee numbers



% of employees are women



'EBN employees have a strong desire to contribute to the energy transition. When recruiting new employees, we use their enthusiasm and stories.'

Stakeholder survey

Reputation score *



Great Place to Work *

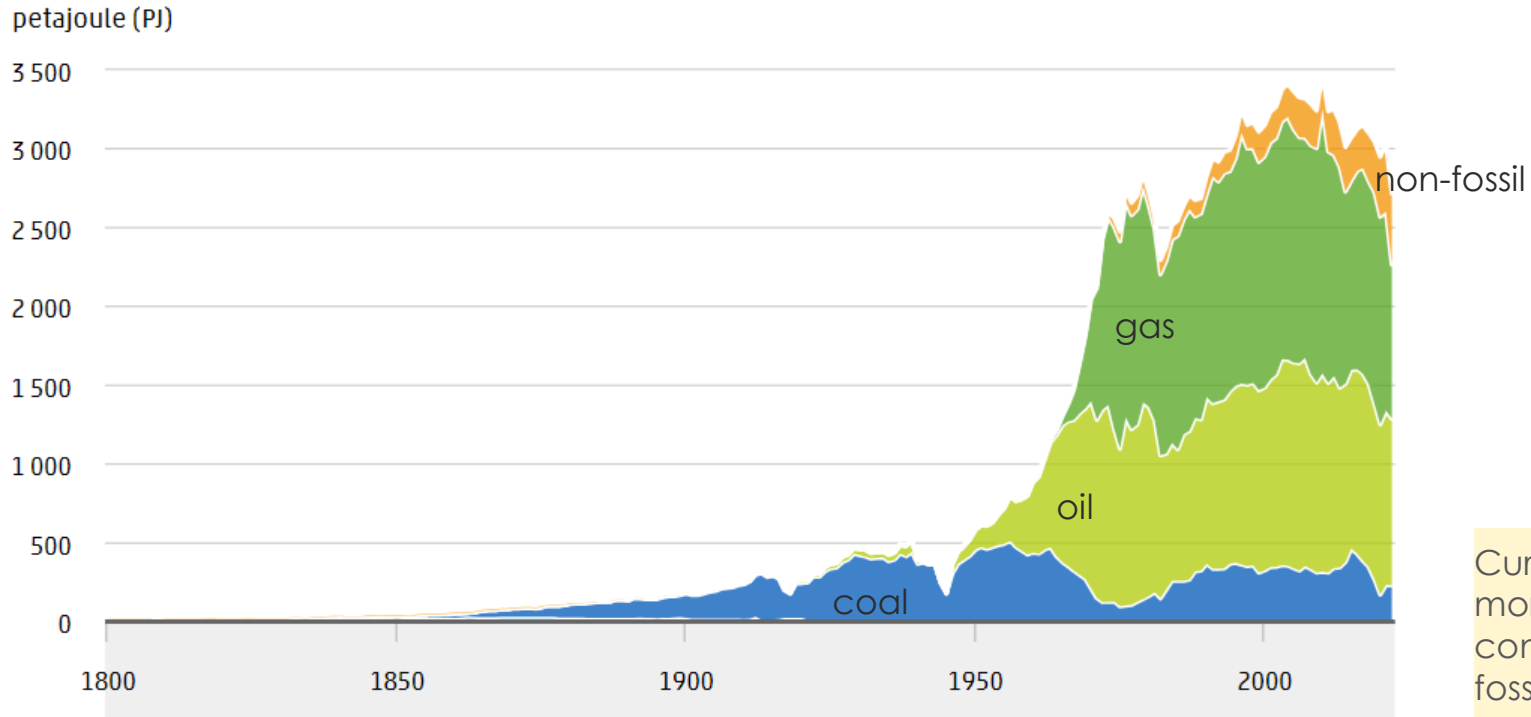


* Stakeholder survey and Great Place to Work are both conducted once every 2 years

2. our view on the energy transition

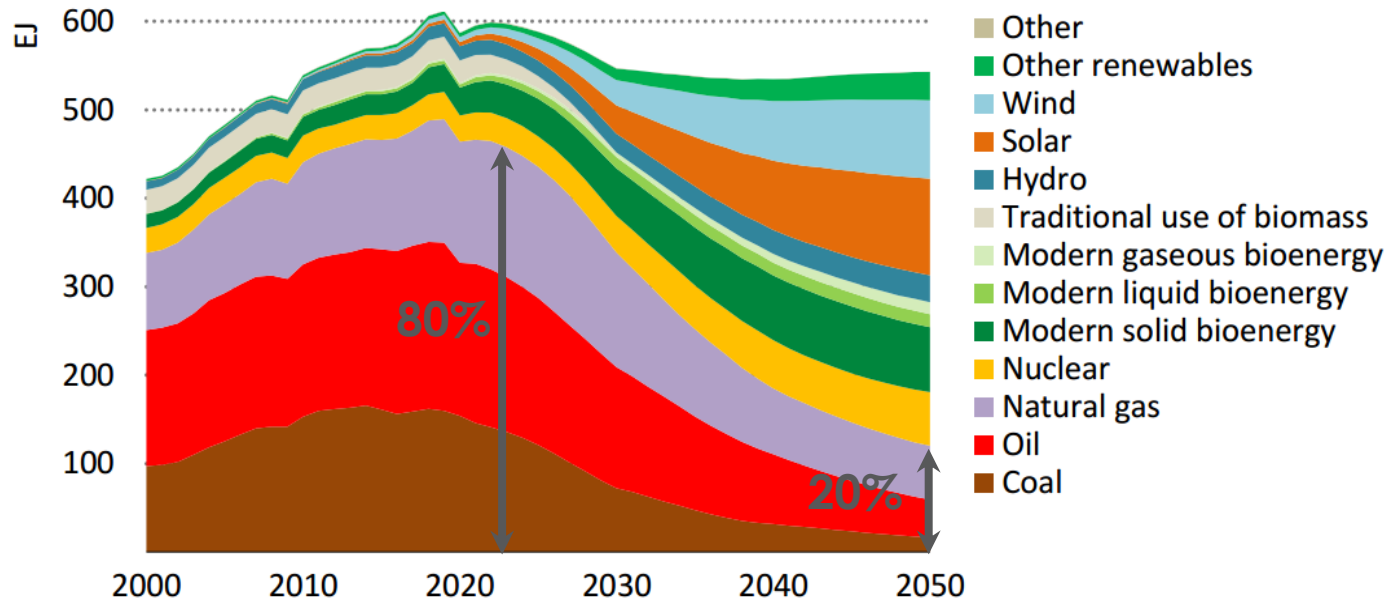


Final energy demand in the Netherlands



The global picture (IEA): (one of the net zero emissions scenarios)

Total global energy supply in IEA's NZE scenario



The global challenge:
From 80% to 20%
fossil in 25 years

IEA. All rights reserved.

Our summary of the energy system



THE ENERGY SYSTEM NOW...

THESE ARE THE SOURCES OF OUR ENERGY (PRIMARY DEMAND)



● Renewable energy 379 PJ ● Nuclear energy 40 PJ ● Natural gas 991 PJ ● Oil 1040 PJ, excl. 615 PJ international shipping and aviation ● Coal 232 PJ ● Other 45 PJ

2712 PJ*



THIS IS HOW ENERGY REACHES THE CONSUMER (FINAL DEMAND)



24% Is lost

648 PJ



● Electricity 374 PJ ● Natural Gas 501 PJ ● Heat 211 PJ ● Transport fuels and residual gases 547 PJ ● Products and feedstock 431 PJ, of which 180 PJ hydrogen

433 PJ through conversion
189 PJ through own use
26 PJ through distribution

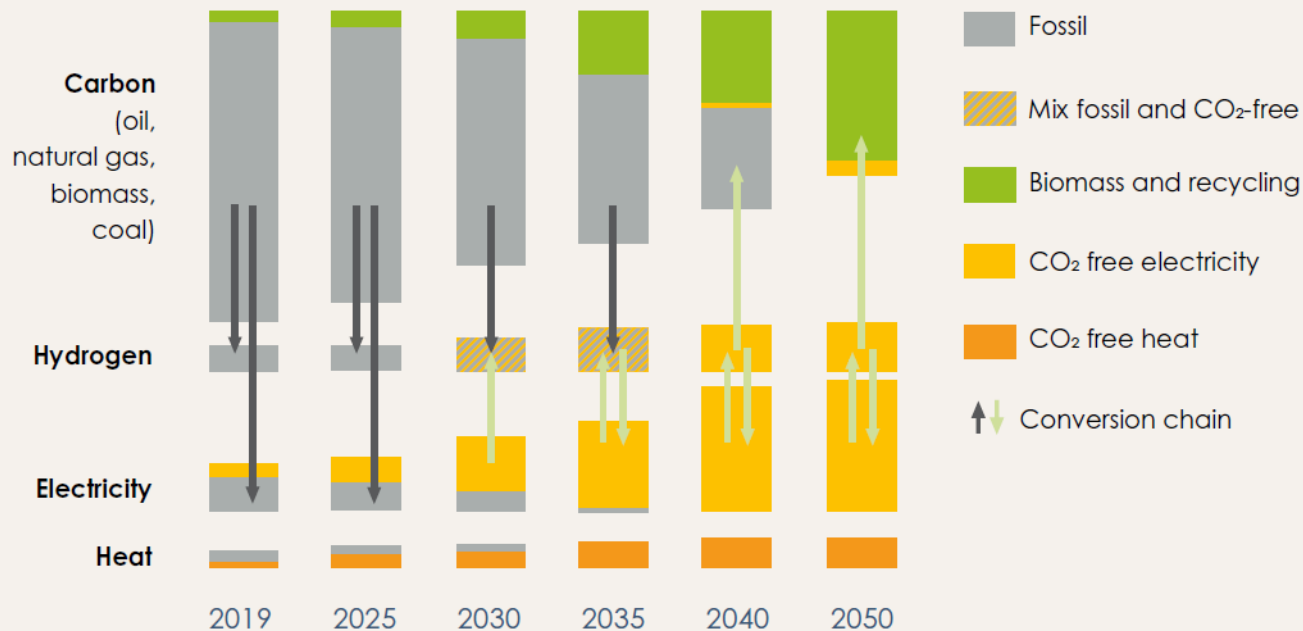
2064 PJ

* excl. 15 PJ export of electricity

NPE worked along four value chains, carbon is an odd one ...

... AND IN THE FUTURE

A SCHEMATIC REPRESENTATION OF THE ENERGY TRANSITION ALONG THE FOUR VALUE CHAINS



Source: NPE 2023 (Ministry EZK)

Electrification of the energy system is crucial

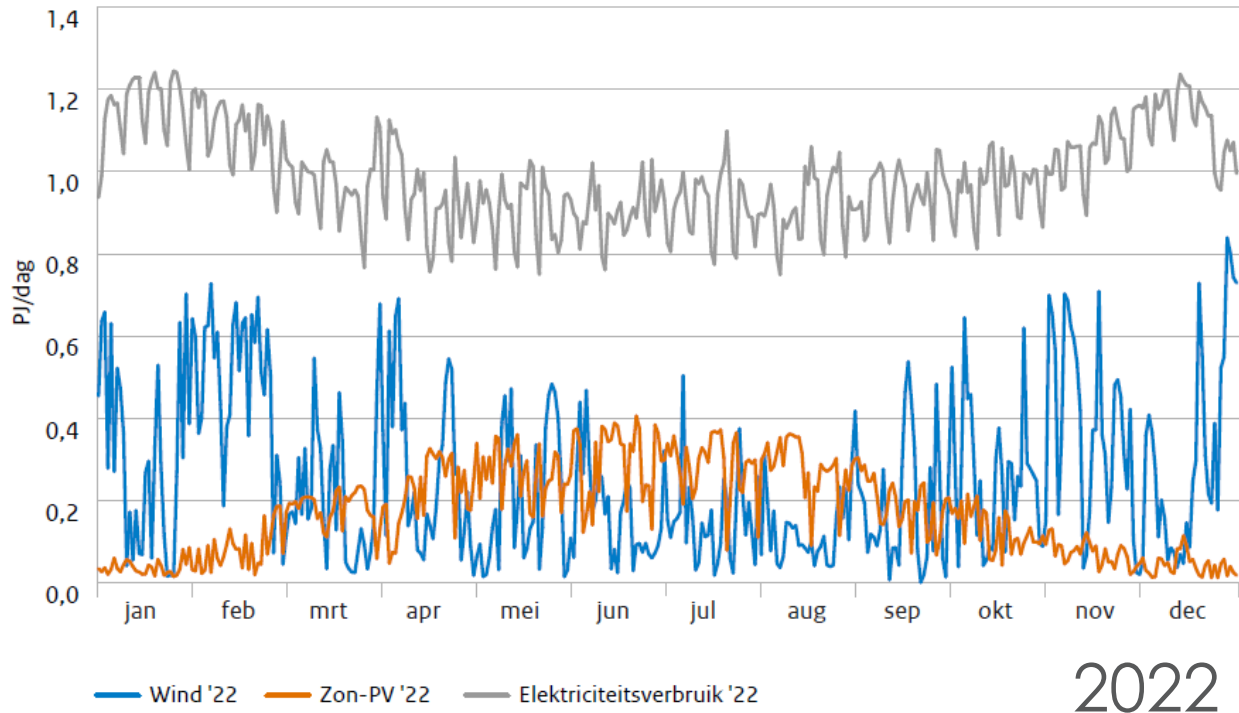
And that power must be carbon-free



The Netherlands is going to rely on:

- offshore wind
- onshore wind
- solar PV
- (new) nuclear power plants

The challenge: mismatches between supply of wind + solar and demand for electricity



← on average 1 PJ per day, equals 277 GWh/d

2022





Renewable power production from wind and solar

Profiles according to the weather pattern of 2022

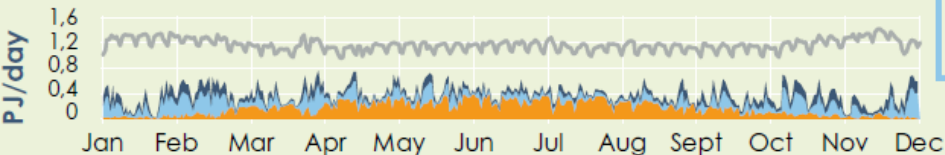
On the right we have taken the weather pattern from 2022 and multiplied the installed capacity for solar PV and wind in accordance with currently known government policies and ambitions

VARIABILITY IN DEMAND AND GENERATION OF SUSTAINABLE ELECTRICITY

Installed solar and wind capacity in 2022

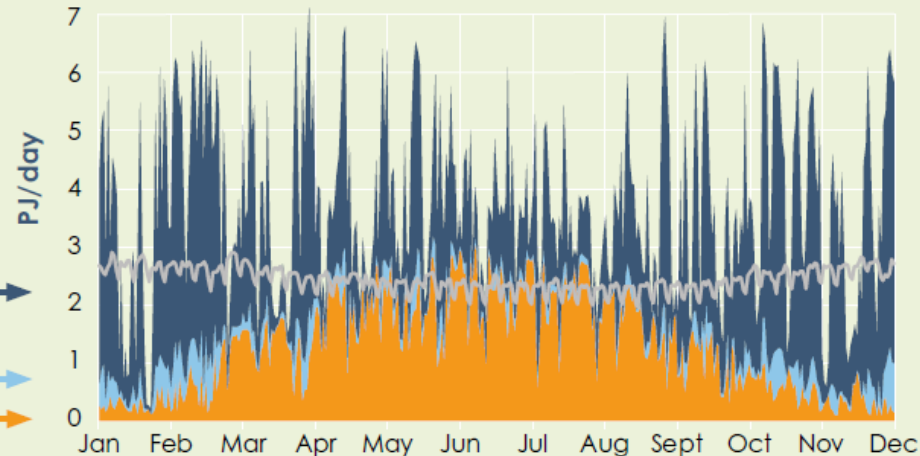
-  Solar: 19.1 GW
-  Onshore wind: 6.3 GW
-  Offshore wind: 2.6 GW
-  Electricity demand (2050 scenario TU Delft)

2022



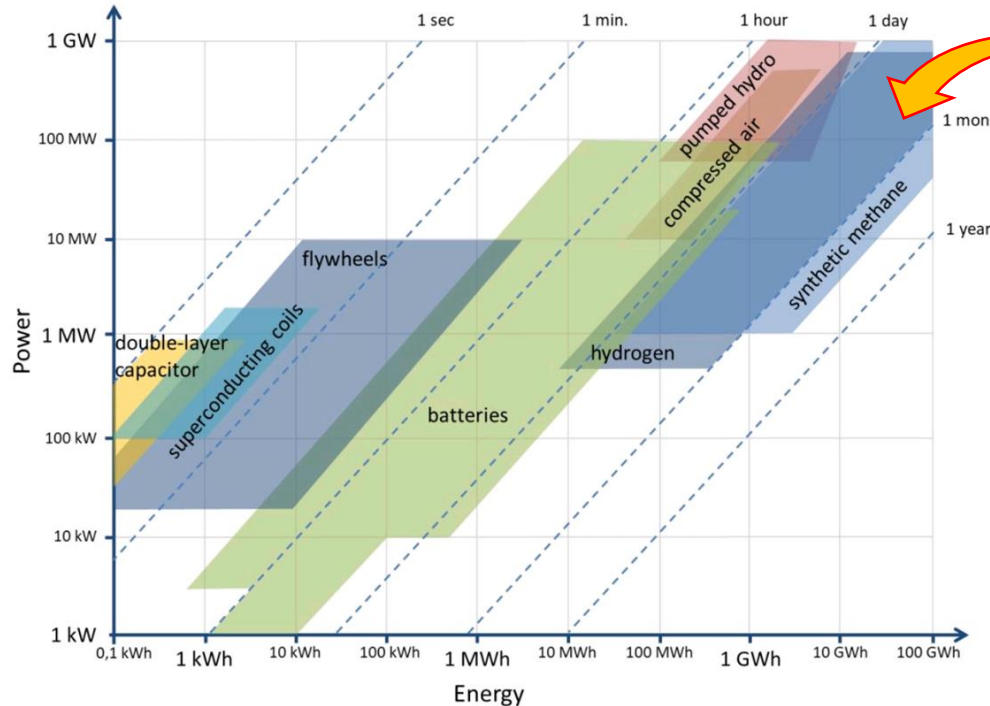
x27 x2 x8

Forecast 2050



Different solutions for energy storage

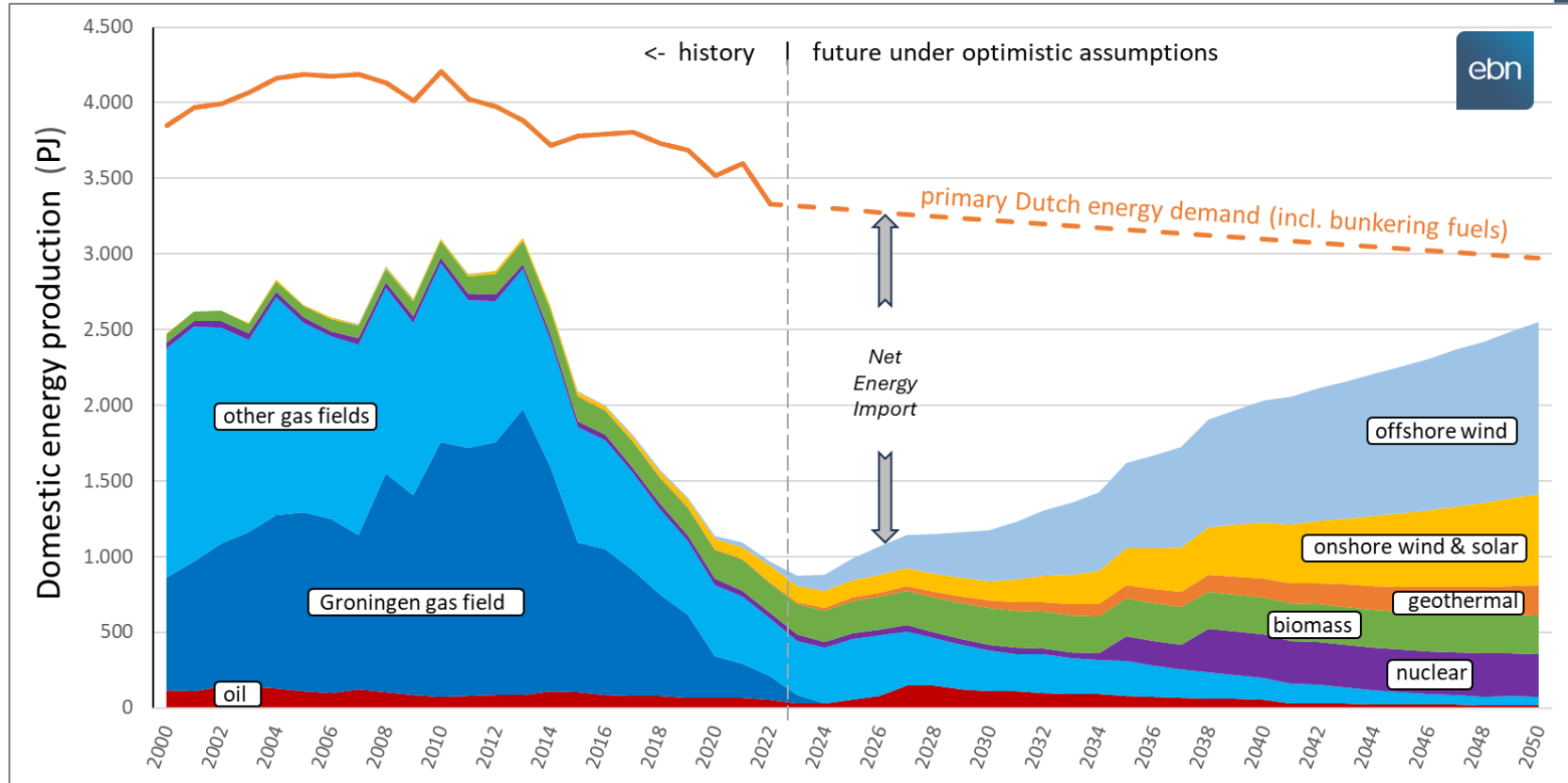
Power and energy ranges of different storage technologies



For energy storage for any period of more than a week we need a gaseous energy carrier

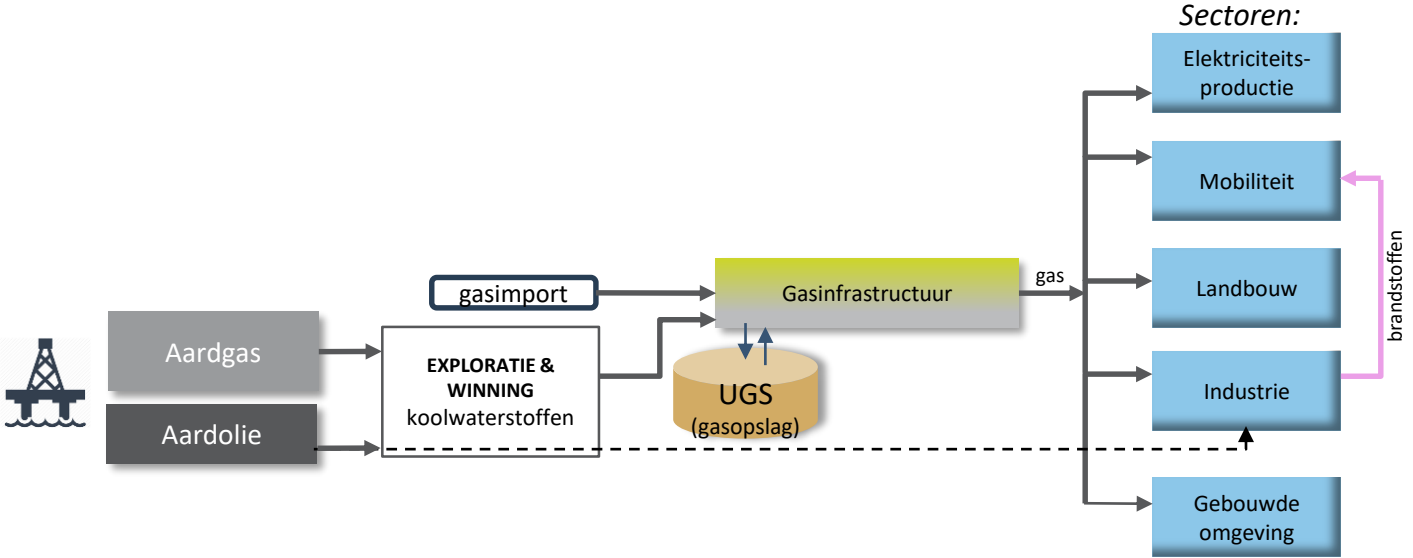
Hydrogen storage is needed

Development of Dutch domestic energy production



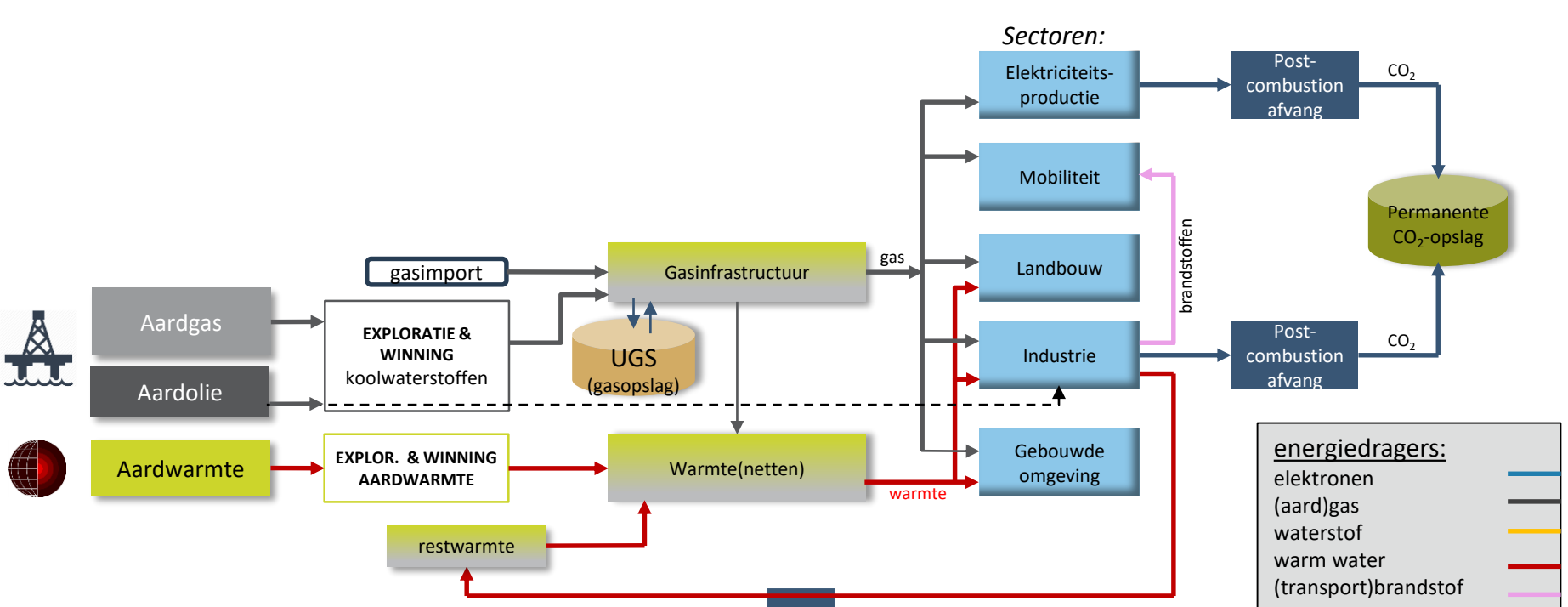
Dutch Energy Value Chain

EBN's contribution, until 2017

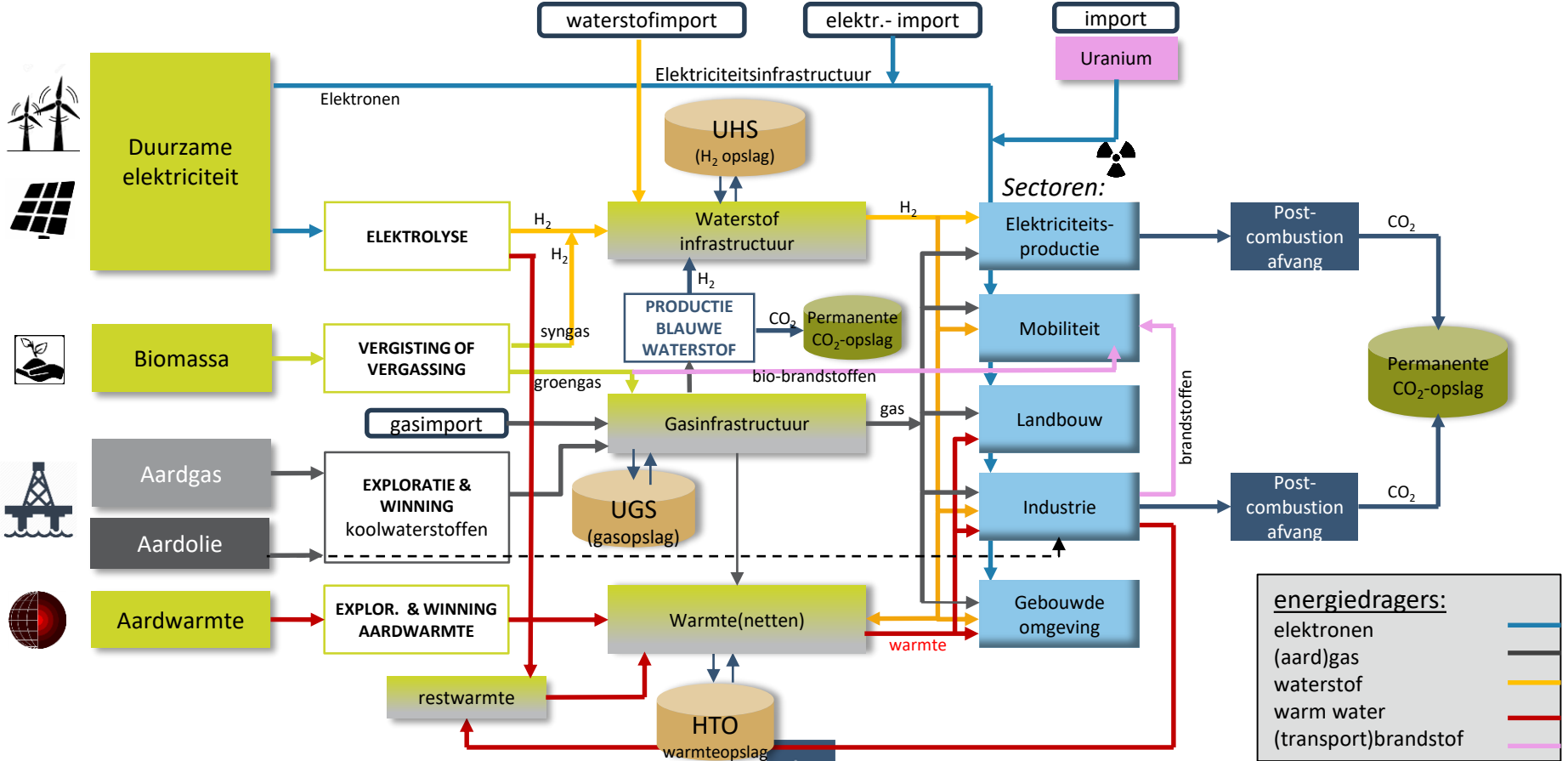


Dutch Energy Value Chain

EBN's contribution, now



Dutch Energy Value Chain , future



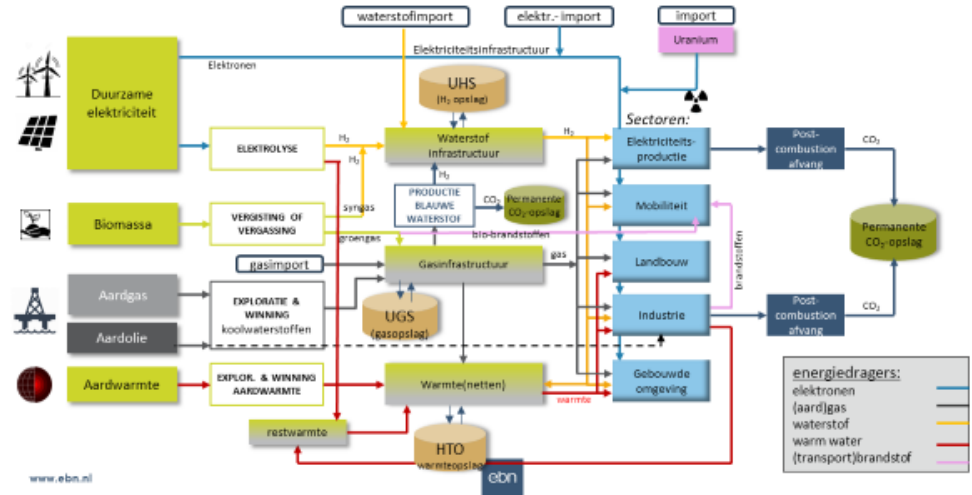
More connectivity

as a result of the increased complexity and system integration

Obviously, this increase of complexity, interactions and dependencies implies

A need for more connectivity between parties and organizations

Dutch Energy Value Chain , future





System development for the public interest

Insight requires overview

Good conversation based on correct facts

Society is characterised by complex changes and an increasing polarisation.

EBN wants to increase knowledge and awareness about energy and the energy system among different target groups, that are at different knowledge levels.

We view it our job to ensure that the discussion is conducted in an informed manner. Based on **facts and figures**.





A sustainable **gas system**

Security of supply & affordability during the energy transition

Gas transition: fulfilling a social responsibility

Our ambition

Realizing value for society by using the (offshore) gas fields in a safe, sustainable and economically responsible manner.

We encourage optimization and focus on innovation and sustainability in the (gas) value chain.

To be achieved by:

- ❑ Never produce more than domestic demand
- ❑ Maintaining the lowest carbon footprint
- ❑ Proceeds to be kept in the Netherlands
- ❑ Completing the North Sea Agreement; among other things, facilitating shared use and cleaning up in time for new use of space
- ❑ Reuse where possible, new construction where necessary
- ❑ Contributing to security of supply through gas extraction and the filling of gas storage facilities





Details bekijken
versnellen en verslechteren
vermalt, had
accelerate and strenghten



A sustainable **heat transition**

Accelerate and strenghten

Heat transition: accelerate and strengthen

Our ambition

Accelerating the heat transition by means of knowledge, innovation and participation in geothermal projects.

Our contribution must increase the quality of projects and reduce the social costs of the heat transition.

To be achieved by:

- ❑ **2030: at least 50 geothermal projects** with 500,000 WEQ in connections
- ❑ An **integrated approach to the heat transition** that focuses on collective networks linked to geothermal heat
- ❑ Focusing on the **development of a knowledge platform** for geothermal heat & HTO
- ❑ **Exploration drilling** in connection with SCAN



The program SCAN

Better insight into the geothermal heat potential of the Dutch subsurface

- ❑ Collaboration EBN & TNO with financing from the Ministry of Economic Affairs and Climate .
- ❑ SCAN fills in the “blank spots” in the knowledge of geothermal heat potential in the Dutch subsurface.
- ❑ SCAN collects data by:
 - Acquiring new seismic data
 - Reprocessing existing (vintage) seismic data
 - Carrying out a number of research drillings.
- ❑ De SCAN data is public and helps municipalities and project developers to better estimate where opportunities lie for (geothermal) heat projects.
- ❑ SCAN only conducts research and does not develop geothermal projects.





Responsible CO₂ storage

Towards a CO₂ neutral future in 2050

CO₂ storage is necessary to combat climate change

The Netherlands is switching to energy from sun, wind and other renewable sources. We focus on saving & reusing materials.

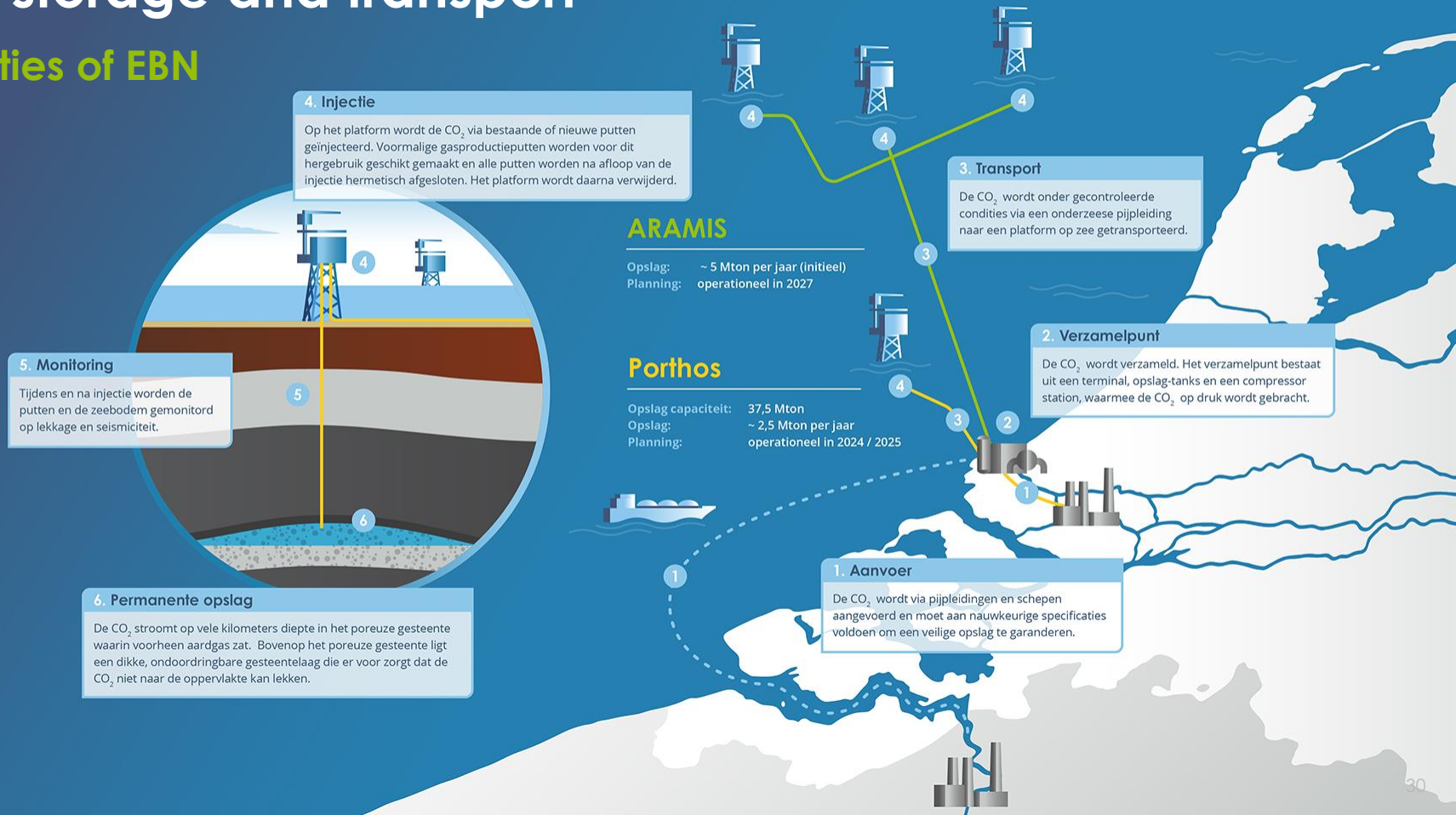
Yet we are not reducing CO₂ emissions sufficiently or quickly enough.

The storage of CO₂ under the seabed is a necessary and efficient way to ensure that the remaining use of fossil energy has a limited impact on the climate during the energy transition



CO₂ storage and transport

Activities of EBN



EBN and hydrogen

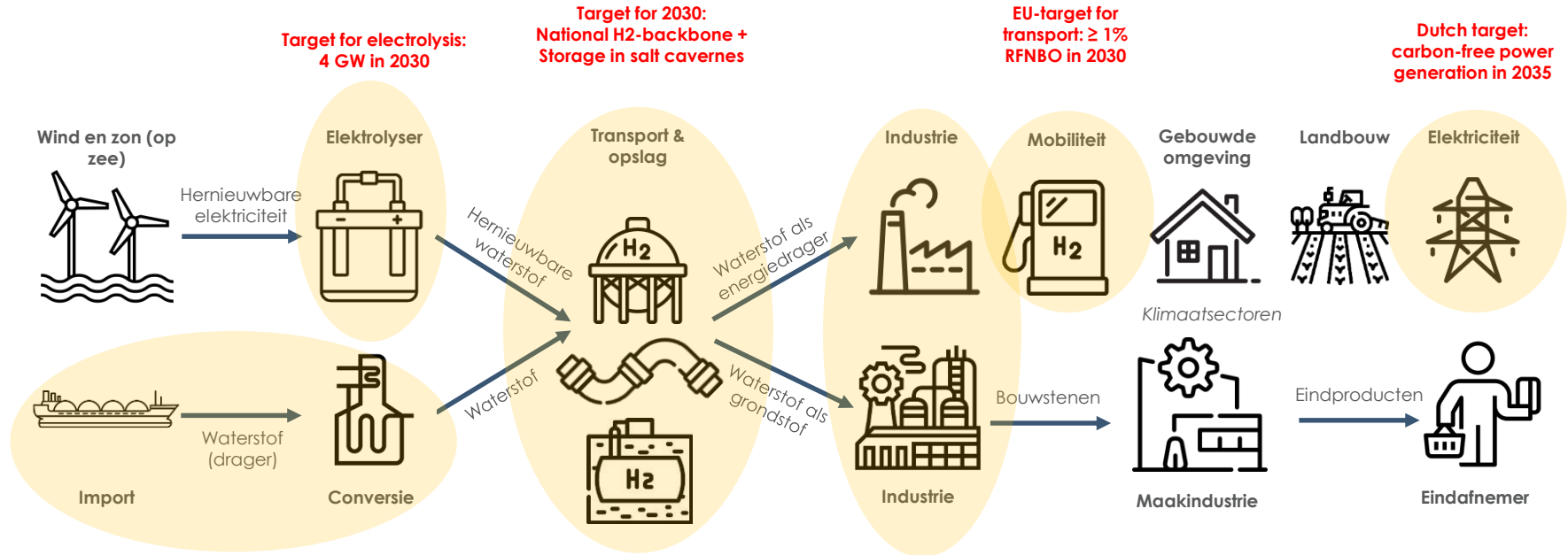
Connectivity is key

- EBN is investigating the option for large-scale subsurface storage of hydrogen (together with partners such as TNO, Shell, NAM and Universities)
- EBN is partner in the PosHydon pilot project for the first offshore hydrogen production



Hydrogen value chain & policy ambitions

Connectivity is key



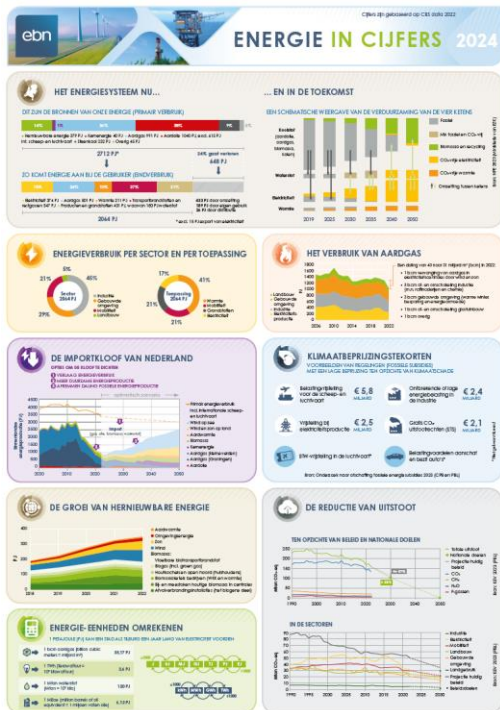
EBN as a partner in the energy transition



Connectivity is key

- Partner in Joint Ventures in energy production (and large-scale energy storage)
Sharing risks with private investors
- EBN as a knowledge partner
- EBN as a 'bridge' between the private sector and the Ministry of Economic Affairs and Climate
- EBN as an advisor to the Ministry of Economic Affairs and Climate

EBN's Infographic 'Energie in Cijfers'



DOWNLOAD THE INFOGRAPHIC AT
WWW.EBN.NL/INFOGRAPHIC



OR SCAN THE QR-CODE