

How hydrogen drives the energy transition

Hydrogen plays an important role in the energy transition. Currently, hydrogen is mostly applied in industry, mobility and the built environment. In this infographic Kiwa's hydrogen experts zoom in on these three applications.

1. Industry

Energy Source



Emissions

Industry is responsible for a third of the emission of greenhouse gases.



Industrial Equipment

In many cases industrial equipment can be adapted to run on pure hydrogen or a hydrogen blend.

Chemical Factories

Steel and chemical plants in Europe use hydrogen for low-carbon production.

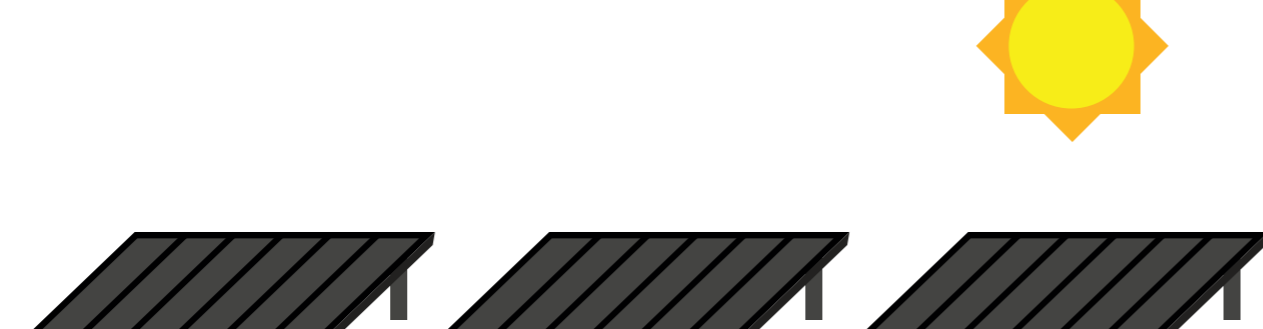


HyDelta

Kiwa is participating in the national research programme HyDelta. HyDelta is aimed at removing barriers towards a large-scale implementation of hydrogen in The Netherlands and in particular the safe integration of hydrogen into the existing gas transport and distribution infrastructure. Discover more on www.hydelta.nl.

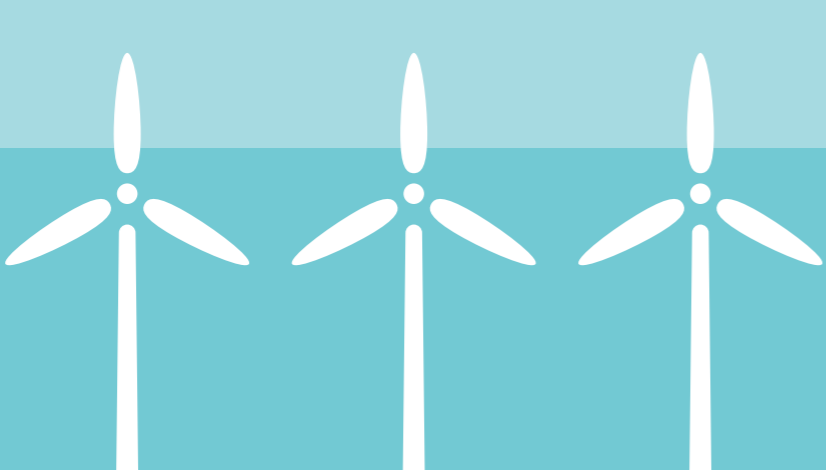
Energy Carrier

Hydrogen can be used as energy storage for the surplus energy of clean energy sources, like wind and solar.

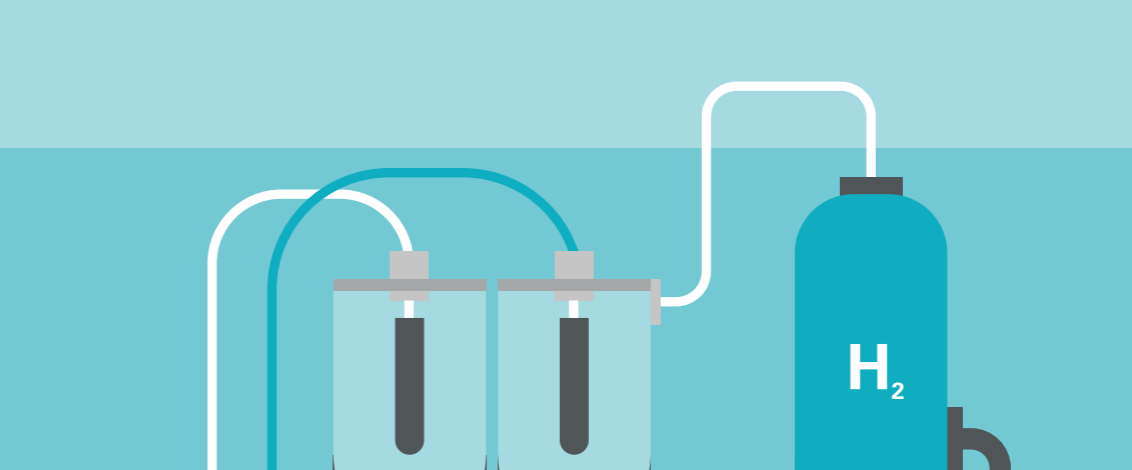


The supply and demand of energy are not always in balance.

A **Power to Gas (P2G)** facility offers the solution!



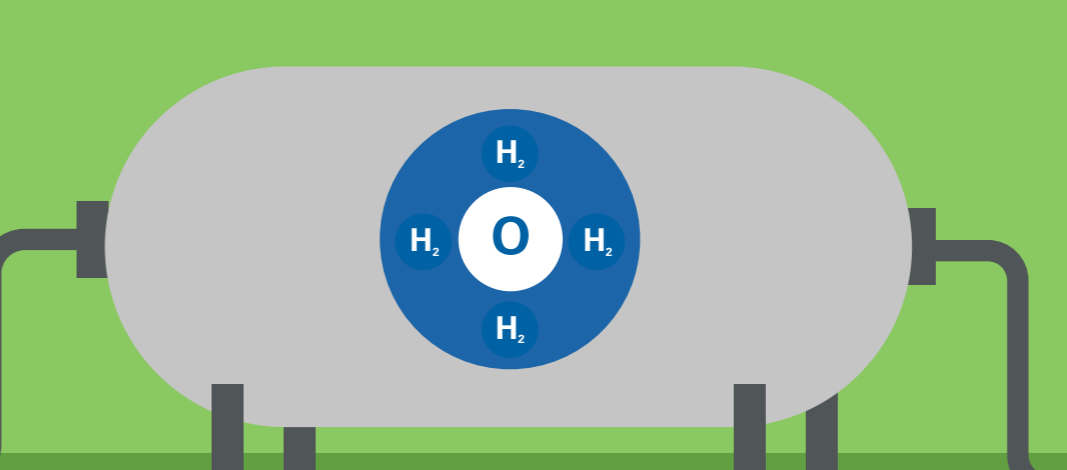
During times of low demand, there is an overproduction of solar and wind energy. This causes surplus energy.



By splitting water into hydrogen and oxygen, using an electrolyser, hydrogen can be used to store this surplus energy during times of low demand.



Renewable energy is effectively stored into hydrogen for later use.



Hydrogen can be blended with natural gas or distributed and used as a pure carbon-neutral energy carrier.

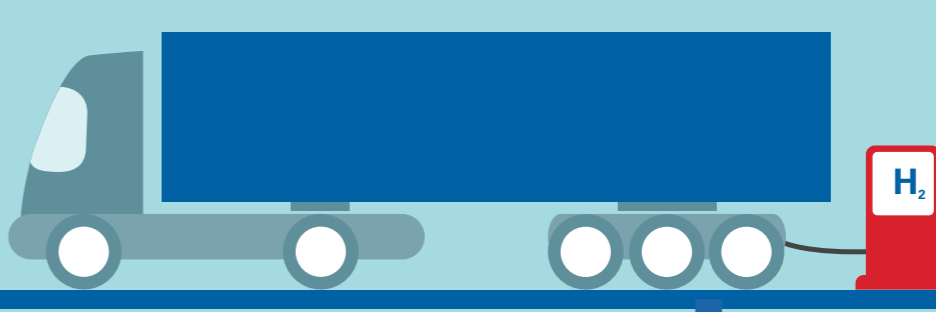
2. Mobility

Hydrogen fueled vehicles deliver extra benefits:

Fast refueling time

Filling up a hydrogen powered vehicle is much faster than charging an EV. So hydrogen refueling infrastructures require less space.

Long range



Port of Amsterdam

Ports are ideal locations to combine production and usage of hydrogen on a large scale due to industrial activity.

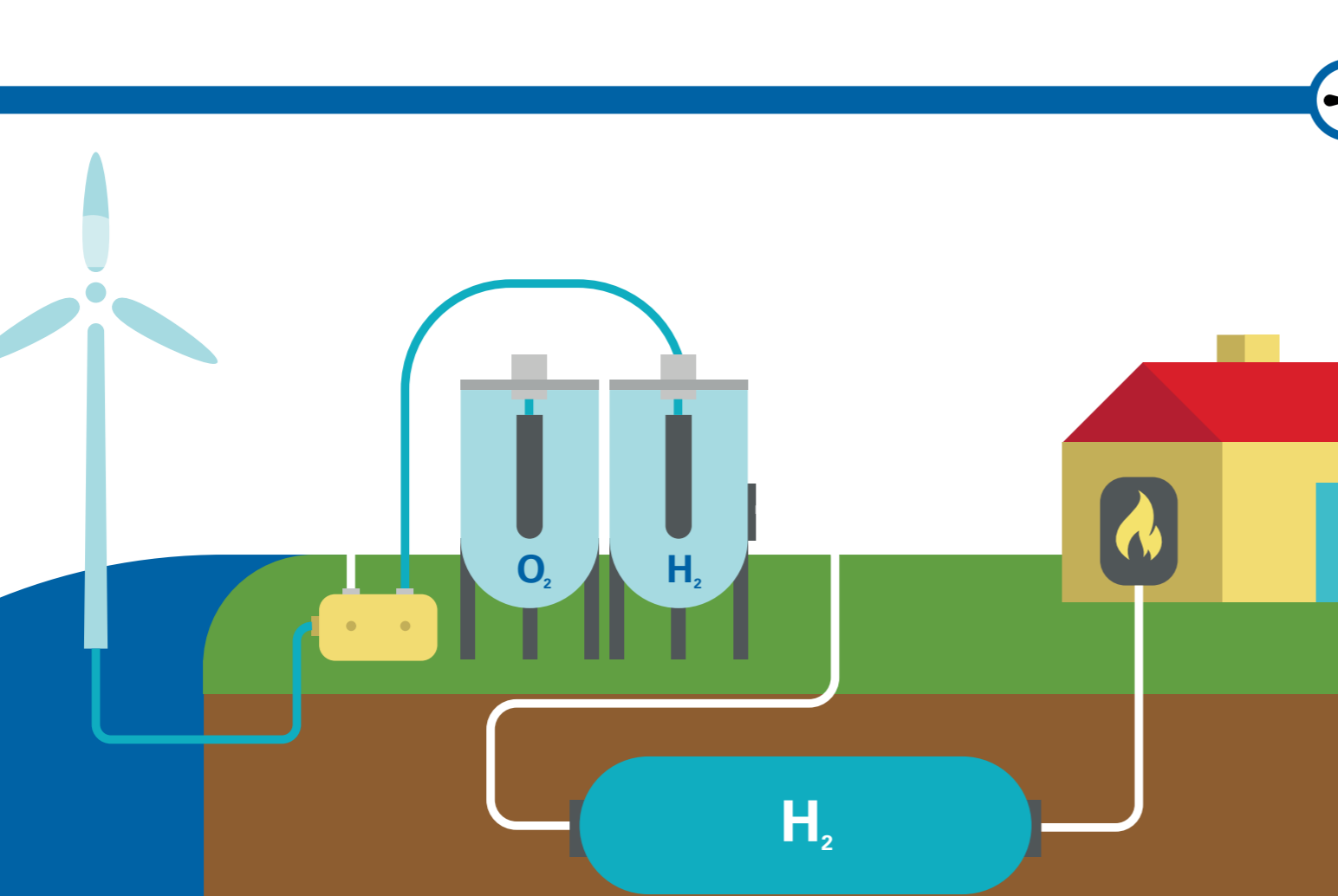
Kiwa was commissioned by the Port of Amsterdam to conduct a study into the feasibility of a hydrogen infrastructure. Such an infrastructure proves to be realistic and realizable.

Kiwa's research concretely shows the potential of accelerating the energy transition and reduce up to 396 kilotons of CO₂ -emissions annually.

3. Built Environment

Decarbonising the natural gas grid

Using the existing natural gas infrastructure, hydrogen can also be used for heating and powering buildings. Hydrogen can be blended with natural gas to synthetic natural gas or natural gas can be completely replaced by hydrogen.



The application of hydrogen as an energy carrier in the built environment is not something for the distant future. In pilot projects, like HyHouse, Stad aan 't Haringvliet and Hy4Heat, Kiwa and partners demonstrated that it is technically feasible and that a significant reduction in CO₂ emissions can be achieved with this.



Hydrogen Experience Centre

In the first Dutch hydrogen demonstration, Kiwa's Hydrogen Experience Centre, both DSO mechanics and indoors installers learn how the current gas infrastructure can be adapted for the use of hydrogen.

Do you want to learn more about hydrogen?
Visit: www.kiwa.nl/hydrogen

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Sources

- www.cbs.nl/nl-nl/dossier/dossier-broeikasgassen/hoofdcategorieen/welke-sectoren-stoten-broeikasgassen-uit
- www.hydrogenexperiencecentre.com

- Kiwa report commissioned by Port of Amsterdam: Blueprint for hydrogen infrastructure to and in the port side of Amsterdam
- <https://www.kiwa.com/nl/en/themes/renewable-energy-transition/hydrogen-house/demo-facility-for-municipalities-and-other-authorities/>