

H-vision status update



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H-vision is preparing for the next development phase: the construction of hydrogen plants in Rotterdam for the production of low-carbon hydrogen. This step will allow industry to reduce carbon emissions rapidly and on a large scale.

The project is currently in the pre-FEED (front-end engineering design) phase. A number of engineering firms were recently asked to come up with a detailed proposal before the end of the year for the design of the hydrogen plants. The planning is to decide on a proposal towards the end of the year or to make a more specific comparison of a select number of proposals.

This means that H-vision is taking increasing shape: the ultimate design of the plant helps to determine where the first one will be located, on the Maasvlakte or the Botlek. By contrast, the goal and importance of H-vision have remained unchanged since the project's start. Partners from the entire value chain are working together on a fundamental change: the production of high-temperature heat for industrial processes with significantly lower carbon emissions.

H-vision hydrogen can be produced in large volumes since it is primarily made by converting industrial process gases. The CO₂ released from production in the hydrogen plant is captured and stored offshore, leaving low-carbon hydrogen that can produce heat for industry or respond to peaks in demand in power plants. This sets H-vision apart from other hydrogen projects and makes a significant contribution to achieving climate goals.

Robust concept with major societal value

The H-vision concept for high-temperature heat processes delivers major societal value because it is widely applicable in a range of industrial sectors in the Netherlands and Europe. Even in the future, when industry is expected to be largely electrified, residual

gases will continue to be generated during production, requiring the reduction of carbon emissions.

The H-vision concept is so robust that it can decarbonise a range of gases from chemical industry and refining processes (including bio-refining). The project can therefore be used flexibly in the future to emit less CO₂. And when the use of biogenic fuels takes off in response to the raw materials transition, negative net emissions will actually be within reach.

The impact of the project goes beyond 2030 because it contributes to the integration of the future energy system, in which hydrogen will be a commodity. The roll-out of H-vision, including the associated infrastructure, will help to ensure that smaller industrial players can also make substantial reductions in carbon emissions from their residual gases.

Strong support

H-vision provides industry with the best option to achieve major and rapid cuts in carbon emissions. The concept can count on strong support, as can be seen in the various hydrogen visions from the municipal and provincial authority, and the present government, but also from the European Commission. And the need to take effective action to meet climate goals is not diminishing, as was emphasised once again by the latest IPCC report.



Coby van der Linde

Director of the Clingendael International Energy Programme

Emphasis on green alone is not realistic for industry

The website www.h-vision.nl presents a number of interviews with insiders from the energy world, focusing on hydrogen.

Coby van der Linde (Director of Clingendael International Energy Programme) has noticed that the emphasis in the public discussion is mainly on green hydrogen, which is produced by electrolysing water with clean electricity from wind farms in particular.

"We have to realise that green hydrogen for industry is not realistic in the short term. H-vision's solution makes a start on circularity and it will soon help with the large-scale introduction of green hydrogen. Unfortunately, there is no consensus about this industrial approach; some people see it as an obstacle to green hydrogen. I see things differently. We need an energy mix to help us fulfil our goals in the years to come."



In Europe, meanwhile, the bar is being raised. The European Commission has set ambitious targets in the Fit for 55 programme to reduce net emissions by at least 55% from 1990 levels by 2030, and to become the first climate-neutral continent by 2050. This is a boost for projects such as H-vision that make substantial contributions to the climate goals.

Financial basis

While the societal business case for H-vision is sound, the financial basis still involves a major challenge. The government's earlier commitment to accommodating a financial contribution to H-vision in the context of the existing regulations, or to delivering tailored arrangements, has not yet resulted in a concrete contribution. The existing regulations do not provide for government support for hydrogen in a fuel role as H-vision intends.

The project team is continuing to engage in discussions with administrators and policy-makers in The Hague and Brussels given the need for support in this area. For now, the opening of the first hydrogen plant in Rotterdam is still scheduled for 2027. That will allow a cut in carbon emissions of 1.3 million tonnes annually. A second plant will then take the total reduction to 2.7 million tonnes a year.

American report

The recent report in which American researchers gave a negative assessment of blue hydrogen cannot go unmentioned in this update. The reactions on social media and on H-vision's website include comments indicating that the researchers were looking exclusively at U.S. figures about natural gas leakage during production using fracking technology.



Michèle Prins
Natuur & Milieu -
Sustainable Energy
Programme Leader



Paulien Herder
Chair of the Energy
Transition Task Force of
the Economic Board of
Zuid-Holland



Challenging puzzle for large-scale projects

Green hydrogen will be used primarily as a commodity in the chemical industry and in refineries to make cleaner fuels. Given the higher purification rate, limited availability and the relatively high price, green hydrogen will not be used as a fuel for heating yet. That will change only after 2030. So there is a need for H-vision's hydrogen, precisely in the shorter term.

Natuur & Milieu has also stated that low-carbon hydrogen can lead to a rapid cut in carbon emissions. *"However, we must ensure that there is still an incentive for industry to reduce its use of fossil fuels," adds programme leader for renewable energy, Michèle Prins.*

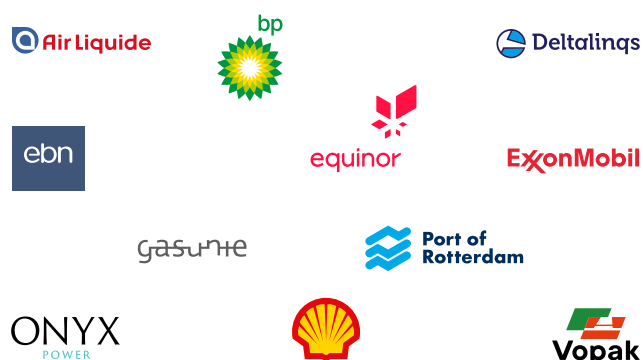
Paulien Herder, the Chair of the Energy Transition Task Force of the Economic Board of Zuid-Holland, who also works for Delft University of Technology, acknowledges on our website that the transition to hydrogen requires large-scale projects that are difficult to piece together at several levels.

"Both funding and implementation are lengthy processes that are also often plagued by legislative and regulatory uncertainties," says Herder. "On the one hand, you want to be at the forefront of developments so that you can later market your knowledge and skills internationally in the field of hydrogen. At the same time, there is still work to be done in terms of cost reduction, the introduction of new technologies and the upscaling of existing technologies. That involves obstacles that can only be tackled with collaboration and ongoing coordination."

Two factors are important here. First of all, TNO has found that the American figures cannot be transposed to the Netherlands. Second, and more importantly, some media outlets incorrectly made a link between this study and H-vision. To be clear: classic blue hydrogen is produced entirely from natural gas. However, H-vision makes 90% of the hydrogen from recycled industrial residual gases, supplemented by electricity and less than 10% natural gas. The H-vision approach delivers low-carbon hydrogen on the basis of a unique process.

Finally, we wish to make an appeal to the new Dutch government. The Netherlands is in a great position to play a major role in the global hydrogen economy. This paves the way to a climate-neutral world and also helps secure our future earning power. The H-vision partners are hoping and expecting that all types of hydrogen will receive the attention they deserve in the energy spectrum.

The organisations involved in the H-vision project are:



For more information, see www.h-vision.nl/en