INTERNATIONAL PARTNERSHIP FOR HYDROGEN AND FUEL CELLS IN THE ECONOMY

IPHE Country Update October 2023: Belgium

Name	Maarten NOENINCKX
Contact Information	maarten.noeninckx@economie.fgov.be +3222779583
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1. New Initiatives, Programs, and Policies on Hydrogen and Fuel Cells

Hydrogen law

The law of 11 July 2023 on the transport of hydrogen by pipelines organises the designation of the hydrogen network operator who will be responsible for planning, developing and managing the hydrogen transport network in Belgium (similar to what the company Elia does for the Belgian high-voltage grid).

The hydrogen law:

- guarantees non-discriminatory access to the hydrogen transport network for all interested parties
- defines i.a. the rules and procedures for preparing the network development plan and for setting regulated network tariffs
- designates the CREG as the regulator for hydrogen transmission

More information about the procedure for the designation of the hydrogen network operator can be found in chapter 6.

MoU Belgium-Oman

Belgium and Oman will cooperate in the green energy sector, especially in terms of the green hydrogen project 'Hyport Duqm'. The agreement will help companies of both countries to build an international consortium for the green hydrogen production calling for the implementation of standards for green certification at the same time. In the first phase of the project, a 250 MW to 500 MW green hydrogen facility will be developed and planned to start operation in 2026.

Strenghtening hydrogen cooperation between Belgium and Germany

Several concrete advances have already been made since the Belgian-German summit of Feb. 14, 2023, such as the construction by Fluxys, in June, of the first section of a 44km gas pipeline compatible with the transport of renewable hydrogen between Desteldonk and Opwijk. A big step forward for the energy transition.

Belgian grid operator Fluxys is the European leader in hydrogen and is working diligently to expand its grid. Belgium and Germany want to further strengthen this cooperation between their hydrogen infrastructures by 2028.

Belgian Hydrogen Council

In March 2023, regional cluster organizations WaterstofNet and Cluster Tweed launched the Belgian Hydrogen Council (BHC) to consolidate and strengthen Belgium's position in Europe and on the global stage as a pioneering hub of excellence for clean hydrogen. WaterstofNet and Tweed have both been coordinating their regional hydrogen clusters in Flanders and Wallonia respectively for several years and are now

jointly establishing a national hydrogen council that aims to transcend the various political levels in our country. The Belgian Hydrogen Council will take on important tasks such as the promotion of the Belgian hydrogen industry at home and abroad, as well as advise policymakers on the rollout of their regional and federal hydrogen strategies.

RegistrHy (certification project)
The RegistrHy project aims to implement a voluntary European certification scheme for the compliance of e-fuels with RED II (Renewable Energy Directive II), as well as a registry for producers and users of e-fuels that will enable the issuance, transfer and use of certificates. During the project, both the scheme and the registry will be piloted in Belgium, representing a major innovation and providing guidelines for e-fuels policies in Belgium and the roll-out of RegistrHy in Europe.

Cooperation with Canada
For a year now, structural consultation moments have been taking place between the Canadian and Belgian energy administrations, in cooperation with the embassies. These contacts focus on cooperation on offshore wind and hydrogen: the ambitions are complementary and mean that there is great potential for a win-win.

A priori it is not yet the intention to strive for an official cooperation agreement, but rather to support as much as possible from a bottom-up approach. This already resulted in two technical workshops with participants from both administrations, the private sector and the European Commission. The first workshop, on hydrogen certification, was held on the 26th of September. The second one will be about offshore wind and will take place on the 12th of October. Besides that, an informal bilateral meeting was held between Minister Van der Straeten and Minister Wilkinson, and a virtual meeting is scheduled between Minister Van der Straeten and Minister Rushton in October.

2. Hydrogen and Fuel Cell R&D Update
No updates

3. Demonstration, Deployments, and Workforce Developments Update
6 current Clean Hydrogen for Clean Industry projects:

1) NextH2Gen

This project involves research and basic implementation of pioneering electrolysis technology for the production of hydrogen, building on nanotechnological innovations in the electrochemical cell - the heart of an electrolysis device - which are being developed by imec and VITO. John Cockerill is investigating for Hyve the implementation in electrolysis devices and Bekaert is investigating scaling up the production process for the electrode. Hyve is responsible for the technoeconomic analysis and development of the business model to introduce this technology into the market by 2026.

2) StormPower2Gas@UmicoreOlen

Storm wants to realize a 0.5 MW electrolyser on the site of Umicore in Olen which produces green hydrogen for use in industrial processes. The electrolyser will be powered by locally produced electricity from wind and solar energy. The project goals are, on the one hand, to build expertise around the alignment between availability of renewable energy, the technical scope of the electrolyser and hydrogen demand; and

on the other hand, to develop know-how on how to fit an electrolyser into an operational industrial context.

3) Comforthybel

Gas pipelines for high-pressure transmission of climate-neutral hydrogen in Belgium will experience more pressure variations than in other countries which can lead to fatigue of steel. Flexible composite pipelines reinforced with steel cord are an appropriate solution for this, as the steel is not directly exposed to the high hydrogen pressure. In this project, we want to build specific hydrogen testing expertise and infrastructure in Belgium, making maximum use of the knowledge and experience of the knowledge and experience with this type of piping in high-pressure gas and liquid transport.

4) GrHynE

The Belgian federal government has announced a hydrogen strategy in line with recent European initiatives (Green Deal, Fit for 55 and REPowerEU). John Cockerill's aim is to create a complete ecosystem to meet the H2 strategies of the EU and Belgium, including (i) manufacturing capacity to produce up to 1 GW/year of electrolyzers by 2030, at an effective cost, (ii) R&D activities to significantly improve equipment performance, (iii) a supply chain and ecosystem in the EU, with numerous public players. The GrHynE project to be carried out in Seraing is based on 2 pillars: (i) R&D& activities; (ii) industrialization phase (electrolyser and mobility pilot platform).

5) HOPE

HOPE is a project that will develop, build and demonstrate the operation of a mobile offshore renewable hydrogen production plant (RH2) in the port of Ostend. The electrolysis of seawater using 100% renewable electricity on a barge converted into a jack-up unit will lead to the world's first mobile RH2 offshore platform, capable of being rapidly deployed, on a temporary basis, in order to meet initial end-customer demand, while awaiting the commissioning of large-scale production plants. The project will also enable us to assess the viability of a 300 MW jack-up concept for offshore mass production.

6) H2PY Seraing

The aim of this project is to demonstrate how plasma pyrolysis technology can become a vector for decarbonizing methane, currently used in industry and power generation, by converting it into emission-free turquoise hydrogen without CO2 emissions. The project partners intend to carry out the studies needed to accelerate the development and industrial-scale commercialization of this technology by 2026 in Belgium. The project aims to assess the technical and commercial feasibility of an industrial pyrolysis plant that will produce carbon-free hydrogen, primarily for a new gas-fired power plant in Seraing, while integrating the necessary interconnections with the various associated transport networks.

BE-HyFE network

BE-HyFE stands for Belgian Hydrogen Fundamental Expertise and reads like ‘beehive’, which is what we want to offer to our research community: an organized structure in which our researchers all work for a common goal, gathering expertise (instead of honey!), cross-pollinate one another with knowledge and - next to the focus on their own research topic - see their role as ambassadors for the Belgian academic hydrogen network as a collective responsibility. The aim of the project is to create a Belgian homebase for academic hydrogen expertise by establishing a core group of 16 broadly

trained and highly networked early-stage researchers who can, together with their extended academic peer-network, support the Belgian industry in finding both technological and societal solutions to essential hydrogen challenges. They will achieve this by pursuing excellence in their fundamental research, obtaining specialized skills through extensive training and exchanging knowledge between peers and within the academic-industrial network.

Belgian Hydrogen Academy
After the success of the past three years, the Academy is entering its fourth edition. During six training evenings from September until November, specialized speakers will tell participants all about existing and future hydrogen applications, policies and regulations surrounding hydrogen.

HyBex (hydrogen pilot hub)
HyBex is an ambitious project of Fluxys, Hinicio and Port of Antwerp-Bruges to enable a hydrogen market in Belgium. The Belgian national hydrogen network is fast developing but requires a non-discriminatory market platform that enables third party access. The HyBEX project will develop such a market platform and test it at pilot scale, based on the following principles: (i) certification for green and blue hydrogen; (ii) a commercial balancing model adapted to the expected physical behaviour of the grid; and (iii) an exchange marketplace for trade of hydrogen (as a commodity) and the corresponding certificates and balancing products."

4. Events and Solicitations

Conference Belgian Hydrogen Cluster 'Joining forces on Hydrogen – Belgium, Benelux and its neighbours' – October 16th 2023
WaterstofNet and Cluster Tweed are organizing this conference under the umbrella of the Belgian Hydrogen Council (BHC). In lively panel discussions prominent speakers of the top of the Belgian Hydrogen industry and research institutes will exchange their views on how to accelerate the hydrogen developments in our region.

International Hydrogen Colloquium - February 16th 2024 in Liège
During its presidency of the Council of the European Union, Belgium will strive towards creating a European and worldwide market for hydrogen. Therefore, the Federal Energy Ministry will organize an International Hydrogen Colloquium aimed at hydrogen experts on Friday 16th February 2024 in Liège. The colloquium will be introduced by high-level speakers and will include three workshops covering the subjects of worldwide hydrogen certification, upscaling of demand for hydrogen and financial tools coordination.

EPHyC 2024 conference
The EPHyC 2024 conference, bringing together EU-based PhD researchers working on a hydrogen related topic, will take place in Ghent, Belgium. This conference is organized by BE-HyFE (Belgium) and Hydrogen Europe Research (EU) and will have its first edition from 20 till 22 March 2024 in Ghent.

5. Investments: Government and Collaborative Hydrogen and Fuel Cell Funding

Project call “Clean Hydrogen for Clean Industry”

With the project call "Clean hydrogen for clean industry", the federal government wants to support innovative hydrogen projects that help shape the federal hydrogen strategy in terms of production, transport and use of (climate neutral) hydrogen. The call focuses on projects in the practical development phase rather than fundamental research.

The call for projects is funded by the European resources of the Belgian National Plan for Recovery and Resilience. The project call took further shape with the royal decree of April 21, 2022. The total budget for the 2022 call was 50 million euros (53 million USD). The support for an individual project was a maximum of 15 million euros (16 million USD). As mentioned above, six projects are underway.

€95 million for the first 100-160km of the hydrogen backbone

The federal government plans to pursue the development of a hydrogen transport infrastructure with an open-access pipeline. A first phase will be started by the commissioning of 100 to 160km of pipelines for H2 transport by 2026, partly supported by a budget of 95 million euros (100 million USD) in the context of the national recovery and resilience plan. By 2030, Belgium has the ambition to connect the import hub to neighbouring countries via the open-access hydrogen network in order to realise its international positioning as an import and transit hub for renewable energy in Europe.

€250 million subsidies for hydrogen network

In April 2022, the Council of Ministers released a budget of 300 million euros (318 million USD) to support the development of hydrogen and CO2 transport infrastructure. In July 2023, the Council of Ministers approved the allocation of 250 million euros (265 million USD) from this budget to build a hydrogen connection from Zeebrugge to Germany and to develop the hydrogen transport network in and between the industrial clusters of Ghent, Antwerp, Mons, Charleroi and Liège.

Two new hydrogen research centers

The federal government has decided to build two new research centers for hydrogen technologies, each with its own specialization. The centers are supported by the federal government's EUR 16.2 million (17.2 million USD) recovery and investment plan. With the establishment of hydrogen test centers, Belgium is strengthening its position as a pioneer in hydrogen technology. The realization of the project was awarded to the von Karman Instituut voor Stromingsdynamika (VKI).

Belgium strengthens import strategy

The Belgian federal government launched a call for projects concerning R&D and demonstrations of infrastructure and R&D. Projects must start after the submission date and be completed before 31 July 2026. Financed under the federal Recovery and Transition Plan equivaling to 10 million euros (10.6 million USD), a minimum of EUR 100 000 (106 000 USD) and maximum of EUR 8 million (8.5 million USD) will be granted in installments. The requested support is a maximum of 70% of the total project budget subject to European state aid rules.

6. Regulations, Codes & Standards, and Safety Update

Hydrogen law and designation of Hydrogen Network Operator

The law of 11 July 2023 on the transport of hydrogen by pipelines organises the designation of the hydrogen network operator who will be responsible for planning, developing and managing the hydrogen transport network in Belgium.

The hydrogen law regulates the designation of the hydrogen network operator according to the following procedure:

- 25 July 2023: publication of the hydrogen law and opening of designation procedure
- 30 November 2023 (90 working days after publication): deadline for submitting applications to the Minister for Energy
- Within 60 working days: delivery of the CREG's advice on the submitted applications
- Within 15 working days: delivery of the advice of the Directorate-General for Energy of the FPS Economy, SMEs, Self-employed and Energy on the submitted applications
- Within 30 working days: designation of the hydrogen network operator by ministerial decree