

Elia's Task Force Scenarios

Fluxys Belgium's answer to the public consultation over the draft report

Date: 10 December 2021

Purpose

This document aims to **provide feedback over the Belgian Electricity Scenario Report** (draft) in the context of public consultation requested by Elia.

More specifically, **Fluxys aims to provide inputs to the questions related to the electrolyser's capacities in the future** (see below the extracted trajectories and questions related to electrolyzers in the draft report).

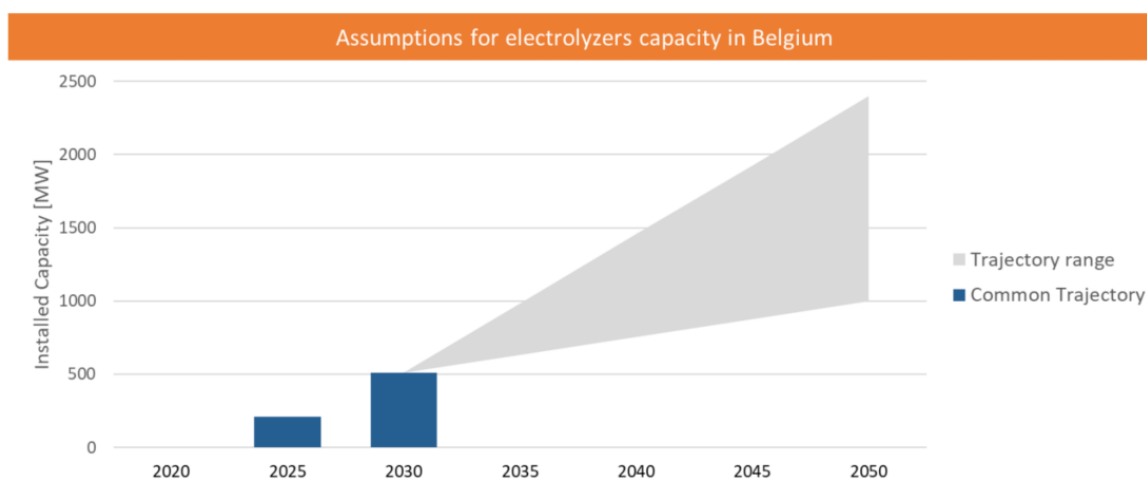


Figure 2.5.15 Overview of potential trajectories foreseen for electrolyzers installed capacities in Belgium

Questions to stakeholders #Q9

Electrolyzers

*Electrolyzers will play a role in the production of green-molecules and hydrogen from renewable electricity production. This will be relevant to decarbonize the hydrogen current consumption itself as well as to decarbonize sectors which cannot be easily electrified and/or which use hydrogen to produce feedstock. Trajectories for the evolution of electrolyzers are provided based on recent sources and estimates. These trajectories serve as a guidance of the possible range that **Electrolyzers** can present in the different scenarios.*

- *Do you consider the ranges provided by these trajectories reasonable, too optimistic or too pessimistic? Why?*

*Notice the actual values of **Electrolyzer capacity** for each of the scenarios will be defined through the modelling exercise in accordance with each storyline set of assumptions.*

- *Do you think that the maximum or minimum ranges provides by the presented trajectories should be used to define a 'maximum' and/or 'minimum' bound for **Electrolyzer** development in each scenario? Why?*

Context and inputs from other studies

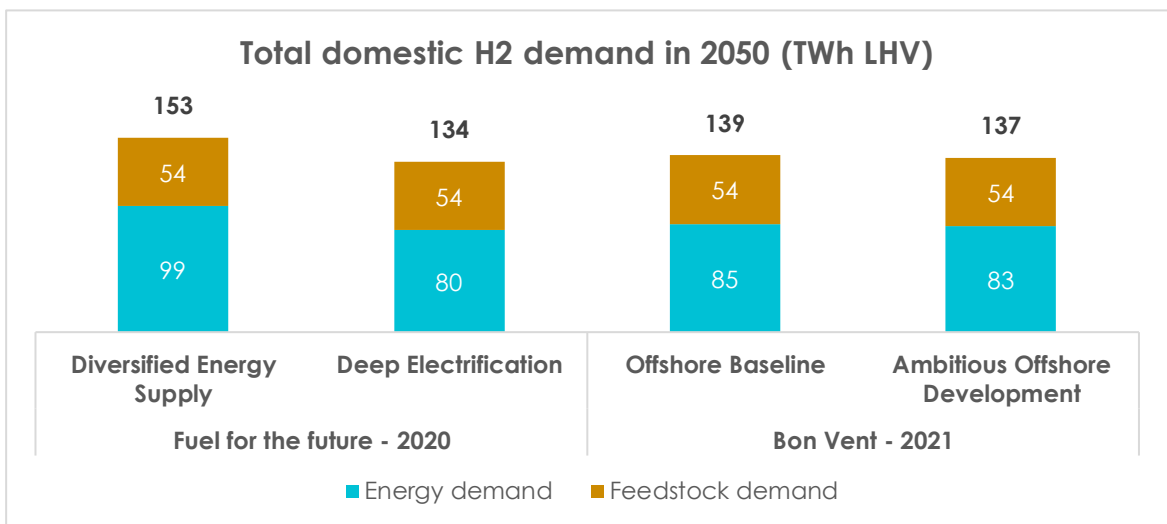
As already highlighted in the draft report and in Fluxys's presentation¹ for the second workshop, green molecules (i.e. H₂ & H₂ based fuels) will be essential to decarbonise sectors hard to electrify and support the power system by flexible means on the short and long term. Furthermore, this statement is supported by the **Federal Hydrogen Strategy**² recently published.

Therefore, as shown below with the **Federal Hydrogen Strategy** and studies from the **Federal Planning Bureau** (i.e. FBP), the domestic hydrogen demand will increase towards 2050.

In its hydrogen strategy, the **Federal Government** presents its projections for the domestic hydrogen demand in 2050 (for hydrogen & its derivatives). The table below summarizes the Federal estimations:

Hydrogen demand in 2050	Low Scenario	High Scenario
Domestic hydrogen demand (TWh LHV)	50	125
Domestic hydrogen demand including demand for international aviation & shipping (TWh LHV)	125	175

Similarly the **Federal Planning Bureau** estimated also in two different studies³ the domestic hydrogen demand for 2050. The graph below summarizes the findings of the two studies (*international aviation & shipping demand not included*):



Due to the limited potential of renewable electricity supply⁴ and the high energy demand in Belgium, a large part of this green molecules will have to be imported².

¹ Attached in appendix of this document

² Federal Government: "Vision et stratégie Hydrogène", 29/10/2021

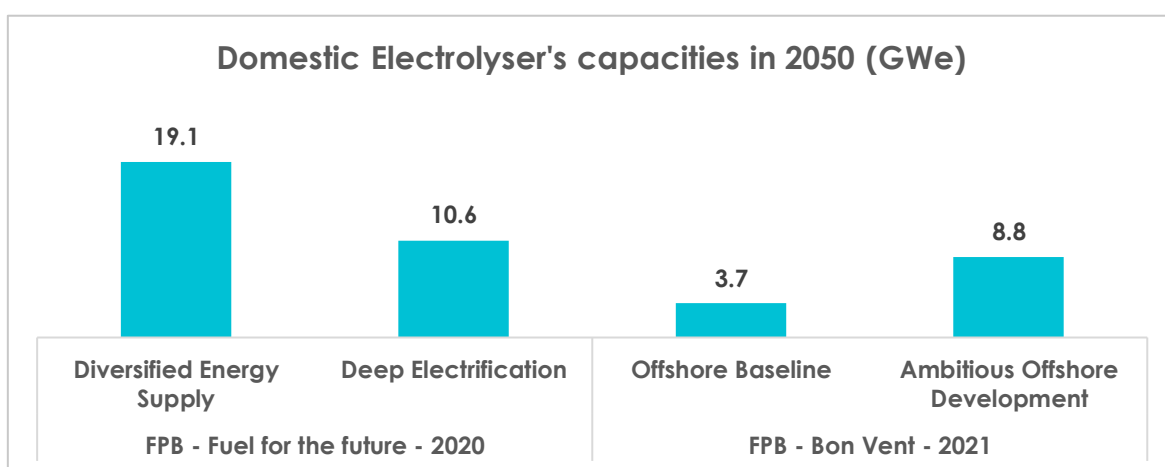
³ Federal Planning Bureau, "Fuel for the Future," 10/2020 & "Bon Vent", 10/2021

⁴ Elia, "Roadmap to net zero", 19/11/2021

However, the **Federal Government** highlights also the need to maintain leadership in the hydrogen technologies by promoting the installation of a minimum of electrolyser capacities in Belgium.

Moreover, having substantial production capacities in Belgium would improve the security of supply for those green molecules and at the same help the power system to integrate more renewables by avoiding congestion and curtailment problems⁵.

Following the **Federal Planning Bureau** studies (cf. graph below), a total electrolyser's capacity between 3.7 GW & 19.1 GW should be present in 2050 to supply part of the domestic hydrogen demand. Depending on the scenario and the import prices for electricity and hydrogen, the share of inland production compared to the total domestic hydrogen demand can vary between 20% and 90%.



Answers for the public consultation

Based on the above-mentioned data, Fluxys suggests to consider a wider range of electrolyser's capacities in 2050 as in FPB studies compared to the current range between 1 GW and 2.4 GW.

Indeed, today it is very complex to estimate how will the electrolyser's capacity installed in Belgium evolve. This evolution will depend on different parameters such as: the cost of the electrolysers, the price of imports (for electricity & hydrogen), the need for flexibility means, etc. Eventually, the market will decide whether or not to build electrolysers in Belgium or to import directly green molecules from outside Belgium.

Therefore, Fluxys recommends at this stage to take into account a wider range of electrolyser's capacities to be considered in the future Elia's scenarios and aligned with the FBP – "Bon Vent" scenarios with a range between 3.7 GW and 8.8 GW.

⁵ See more details in appendix with Fluxys's answer to the call for evidence organised in the context of Elia's Task Force Scenarios.