

Shell Response to the Roadmap Consultation on the Hydrogen Strategy

Shell Companies EU Transparency Register: 05032108616-26

Shell¹ welcomes the EU's Green Deal and supports the target to achieve climate neutrality in the EU by 2050. For this to happen, industry needs clear goals and an enabling policy framework for investment in key low carbon technologies, such as clean hydrogen². The European Commission's upcoming Hydrogen Strategy provides a unique opportunity to set clear objectives and align the multiple policy mechanisms needed to accelerate demand in key sectors and enable investment in clean hydrogen projects and related infrastructure.

Clean hydrogen, in conjunction with electrification and energy efficiency can play a key role in the transition to climate neutrality. The Shell scenario Sketch: A Climate Neutral EU by 2050³, shows that to achieve Net Zero Emissions (NZE) in the EU energy system by 2050, electrification of final energy demand would need to grow from ~20% today, to more than 60% (with renewables accounting for 75% of power generation). Low carbon gases and liquids will also be needed to decarbonize the rest of the energy system. The use of clean hydrogen would need to rise from negligible levels today to at least 10% of the EU's total final energy consumption by 2050 (equivalent of around 1,000TWh). This requires a massive scale-up of clean hydrogen supply, demand and infrastructure.

Shell wants to play its part. Shell has announced clean hydrogen projects such as the [Rotterdam Electrolyser project](#), aiming to transform offshore-wind energy into green hydrogen⁴ to be used by industry and fuel heavy-duty trucks; [NortH2](#), developing hydrogen using the electricity produced by large-scale offshore wind (3-4GW by 2030 and possibly 10GW by 2040) for use by industrial clusters in Germany and the Netherlands; PORTHOS (Port of Rotterdam Transport Hub and Offshore Storage) and the consortium H-vision to create a clean Hydrogen hub in the Port of Rotterdam. We are also continuing to build the infrastructure needed for hydrogen to grow as a transport fuel in Germany, Scandinavia, the UK and the Netherlands.

We see clean hydrogen playing a key role in decarbonizing hard-to-abate sectors, such as heavy-duty transport and industry, in particular for energy-intensive sectors like chemicals, refining, steel and cement.

We believe that all forms of clean hydrogen are needed for delivering meaningful volumes in the 2030s and for achieving the EU's 2050 climate neutrality target. This will require significant investment in the next decade to commercialise green hydrogen. Blue hydrogen⁵ will help provide the scale and cost-effective approach needed to start decarbonizing hard-to-abate sectors. Relying exclusively on green hydrogen, especially until the 2030s, would divert significant amounts of the available renewable power needed to replace coal-based power generation or electrify other sectors of the economy.

The two substantial challenges for the implementation of clean hydrogen are affordability, requiring cost reduction to be achieved by scale in the supply chain, and a synchronized development of supply and demand, requiring coordination across the value chain.

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² The term "clean hydrogen" is used in the Commission Communication of 11 December 2019 on the European Green Deal, as well as in the Commission Consultation on the roadmap for an EU Hydrogen Strategy. However, the term is not yet defined in EU legislation. For the purposes of this document, Shell considers clean hydrogen to encompass both green and blue hydrogen.

³ [Shell Sketch scenario](#); read disclaimer below

⁴ Hydrogen produced through electrolysis powered by renewable electricity

⁵ Hydrogen produced by steam-methane reforming of natural gas or through other technologies such as pyrolysis and applying carbon capture and storage and or usage (CC(U)S).

The implementation of the Green Deal and the Hydrogen Strategy in particular, provide an opportunity to overcome these challenges. Investing in clean hydrogen at the speed and scale required by the transition to climate neutrality in the EU requires a policy framework that differentiates between the potential for each sector of end use; creates and accelerates demand in key sectors; helps overcome the cost gap between clean and grey hydrogen; and, supports the first large scale industrial demonstration projects and infrastructure. Shell would like to contribute with the following recommendations:

- The strategy should include long-term goals and milestones for clean hydrogen. It should align the policy mechanisms needed to create the conditions for the synchronized scaling up of demand in key sectors, supply and infrastructure. Alongside other policy mechanisms, consideration could be given to demand-side mandates for the use of clean hydrogen in specific hard-to-abate sectors, particularly in the shorter term.
- Support will be needed for the first few industrial scale demonstration projects and associated infrastructure until production levels of clean hydrogen achieve critical levels particularly in key sectors. This can be through the EU Innovation Fund; the EU Investment facility under the EU Recovery Instrument; the Connecting Europe Facility; as well as the implementation of the important project of Important Common European interest (IPCEI) scheme for hydrogen. The combined support of these instruments has the potential to bring clean hydrogen technologies to scale and to reduce costs to enable commercial deployment.
- To help close the cost gap with grey hydrogen⁶, we recommend the swift adoption of the delegated acts of the Renewable Energy Directive on accounting renewable content and additionality, so that they recognize the full value of green hydrogen. Time-limited technology support through national or EU auctions, and/or contracts for difference to bridge the cost gap could also be considered.
- Currently, the decarbonization potential of blue hydrogen is not recognized under EU fuels transport policies. The future revision of these policies should recognize all forms of clean hydrogen as compliance options, either as intermediate in refining processes or as final fuel, provided it meets a minimum greenhouse gas emissions savings threshold.
- The scaling up of a hydrogen economy would further benefit from an EU-wide market for tradeable Guarantees of Origin (GOs) which includes all types of clean hydrogen. This should include developing the existing GOs certification for greenhouse gas intensity as a required information in GOs to ensure disclosure of the environmental impact of different energy sources.
- The review of the Energy Taxation Directive should ensure that double taxation of electricity that is converted into hydrogen during electrolysis and re-sold is avoided.
- The infrastructure networks aimed at providing cross-border transport of clean hydrogen should be included within the scope of Trans-European Networks for Energy and Transport policies (TEN-E and TEN-T). Infrastructure regulations should include support for retrofitting the existing gas grid as well as for the development of a dedicated hydrogen infrastructure, including support for hydrogen infrastructure along core transport network corridors. It should also include support for common infrastructure for CO₂ and hydrogen networks, as well as support for all modes of transportation and storage of CO₂.

Finally, we have taken great interest in the European Commission's intent to establish a Clean Hydrogen Alliance. We look forward to the launch of this alliance so that it can actively contribute to the implementation of the European Hydrogen Strategy.

⁶ Hydrogen produced by steam methane reforming of natural gas with no abatement of GHG emissions.

Disclaimer

On 4 March 2020, the European Commission proposed the European Climate Law that would establish a legally binding target of net-zero greenhouse gas emissions by 2050. Shell strongly supports the proposed European Climate Law and its binding target of net-zero greenhouse gas emissions by 2050. We believe meeting this target will be extremely challenging but possible. This response contains an assessment of what we believe may be needed to decarbonise the energy system in order for the EU to meet the proposed target of net-zero greenhouse gas emissions by 2050. This response is not intended to be prescriptive and there are other pathways for the EU to follow in reaching the target. It is important to note that the suggestions contained in this response are those to be taken by the EU, and not necessarily Shell. While Shell is supportive of the EU target of net-zero greenhouse gas emissions by 2050, our current business plan is not consistent with the proposed EU target. However, as announced on April 16, 2020, Shell aims to be a net-zero emissions energy business by 2050. Accordingly, we expect that over time, our business plan will change as society and our customers move toward meeting the goals of the Paris Agreement. We believe that the proposed European Climate Law is a significant step in this journey.

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