ERT

Expert Paper

Boosting the EU Hydrogen Economy

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Introduction

In the last two years, the momentum for the deployment of hydrogen (H_2) worldwide has accelerated in an unprecedented manner. Globally, close to 700 projects have been announced, and $250 billion of investments are required to develop the projects announced until 2030. Industrial actors from a wide range of sectors as well as governments have published ambitious hydrogen strategies, but the systemic nature of the energy transition and the role of hydrogen in such a transformation still leave fundamental questions to be resolved.

First of all, hydrogen is an energy vector, and requires a primary energy to be produced. In that regard it is similar to electricity. Primary energies like coal, oil or gas are directly usable for many applications, but most can only be found in a limited number of geographies. The specific nature of hydrogen leads to a set of questions which need to be investigated to guide policy making and industrial decisions.

1. Are hydrogen usages equivalent to natural gas usages?

2. Can hydrogen replace natural gas?

3. Should hydrogen be produced locally and/or be imported?

4. What should the priorities be in terms of investment for hydrogen?

5. What are the main regulatory and financing hurdles to enable hydrogen deployment?

6. How to ensure competitiveness and adequate supply of hydrogen to industrial users?

An open discussion between policy makers and the private sector along the whole value chain of hydrogen would contribute to shed light on those questions and ensure sound decisions are made to contribute to reach the carbon neutrality objective.

1. Create a market for hydrogen

Challenge:

Specific measures are needed to drive both demand and supply for industry and heavy-duty mobility. Offtake is essential to push production and infrastructure projects to Final Investment Decision (FID), but demand requires both realistic targets, clear mechanisms (mandates and/or carbon taxes and/or subsidies) and a reliable supply to shift the economic decision. Neither threshold of 50% nor 75% of renewable hydrogen for any industrial or mobility applications is realistic without competitive supply and strong incentives for end-users, a pragmatic set of conditions for H_2 production and imports, and an opening up to low-carbon hydrogen.

Recommendations:

a) Create incentives for end users to boost demand/off-take, including through Carbon Contracts for Difference (CCfDs) until low-carbon and renewable hydrogen become competitive while recognising the different challenges to be addressed in industry and mobility.

b) Apart from infrastructure, clear funding/support schemes should include production and commercialisation. Once this framework is in place, industrial players will optimise to develop the most economical low-carbon solutions for their customers.

c) Infrastructure and an enabling regulatory framework in Europe should be developed to transport and trade both electricity and hydrogen in a pragmatic and progressive approach, depending on the expected evolution of demand. We must leverage the extensive gas networks and retrofit or repurpose them to take hydrogen when there is a clear prospect of demand from sectors that need hydrogen to lower emissions. New pipelines would also be needed, especially in hydrogen clusters.[1]

d) Co-produced hydrogen contributes to the energy independence of the EU. Therefore it should not be hampered by the target on 50% RFNBO (Renewable Fuels from Non Biological Origin). It should be excluded from that target.

2. Urgency to act

Challenge:

Slow decision-making for regulation, funding and permitting is inconsistent with ambitious 2030 targets, and ignores the industrial challenges of supply chain organisation, industrial deployment, tight markets for trained labour etc. (for hydrogen only, it involves low-carbon/renewable energy sourcing, production, storage and transport). By contrast, other international players (China, South Korea, and now the US through the Inflation Reduction Act, IRA) are moving fast with simpler policy schemes. Note that on 16/08/2022, the IRA has been signed into law with very simple rules fostering the development of the H_2 economy, including a ten-year period of technology-neutral production tax credit (PTC) per facility with credit rates up to a maximum of $3/kg of H_2, based on the carbon intensity of the H_2.

There is thus an urgent need to remove regulatory and funding barriers to the domestic production of low-carbon and renewable H_2 in the EU and to ensure its availability.

Recommendations:

a) Simplify the complex process for subsidy application and labelling processes, and speed up the decision-making process (e.g. IPCEI scheme, long and complex).

b) Reaching the RED decarbonisation objectives and the REpowerEU objectives (10 Mt of hydrogen produced locally, and 10 Mt imported, with 50% of RFNBO (Renewable Fuels from Non Biological Origin) in the industry / 2,6% RFNBO in transport in 2030) requires an appropriate framework (permitting, infrastructure, effective tracing, flexible Delegated Act (DA) for Renewable Energy Directive, RED II) ensuring that hydrogen is available so that the industrial and mobility sectors can reach these decarbonisation and hydrogen penetration targets.

c) Ensure that any target for RFNBO ("green or renewable hydrogen"), such as the 50% RFNBO target for industry, is subject to availability and competitiveness.

1 ERT Paper: Enabling for investing in Hydrogen in Europe (November 2021) (www.ert.eu/wp-content/uploads/2021/11/ERT-Expert-Paper-Enablers-for-investing-in-hydrogen-in-Europe-1.pdf)

3. Carbon intensity

Challenge:

In the short and medium term, low-carbon hydrogen can contribute to faster adoption of industry and mobility. As renewable power becomes more accessible and cost competitive, achievable and progressive low-carbon/renewable hydrogen targets should be put in place while acknowledging the fundamental role of low-carbon hydrogen during a transition period.

Recommendations:

a) Develop a global view of the EU's needs, in terms of demand and production, to increase energy security without increasing gas demand.

b) Develop a common methodology for the calculation of the carbon footprint of hydrogen production which should be based on equivalent principles for all production pathways. It should take into account the complete well-to-gate Life Cycle Assessment of the production and, if applicable, transportation and conversion, until the point of entry in the transport and distribution infrastructure.

c) Ensure that both renewable and low-carbon hydrogen will be incentivised and eligible for tax credits and subsidies.

4. Access to renewable power and related conditions

Challenge:

Quick access to renewable hydrogen is dependent on renewable power availability, for which there will be substantial new demand. The more restrictions and requirements placed on the development of hydrogen production (Delegated Act for additionality, temporal correlation, etc.), the more challenging the economics of hydrogen project development will become. Competitive renewable hydrogen relies primarily on access to sufficient competitive renewable power. A strategy aiming at accelerating the production of low-carbon and renewable electricity is paramount to enable the Hydrogen Strategy implementation and increase EU energy security (e.g. permitting lead time for onshore wind deployment can take several years: in France or Spain it is more than 5 years).

Until the penetration of renewable energy sources in the grid increases, policy priorities should support the rapid ramp up of renewable power installation and the most flexible approach for electrolysers use. As timing is becoming critical, ERT is calling on policy makers to agree as soon as possible on clear rules so as to establish a level playing field for all hydrogen projects in Europe and to drive investment stability.

Recommendations:

a) The EU's first industrial priority should be access to renewable and low-carbon energy in sufficient quantities and at a competitive price, speeding-up permitting and developing electrical connections within and between Member States.[2] This is the key to preserving jobs and allowing companies to achieve the energy transition competitively without leaving the EU.

b) The correlation between the renewable energy sources and hydrogen production should be 'monthly'' to promote proactive use of renewable energy sources and the development of new projects and should not be more restrictive for projects involving State aid remunerating OPEX (e.g. Contracts for Difference, CfD). After a transitional period,[3] requirements would become those that assure hydrogen's effective role in decarbonisation and security of supply.

c) In the same way, ERT also asks that additionality principles be applied to projects that come into operation after 2027 and asks to consider a grandfathering clause to enable RFNBO producers to enter into PPAs with a sufficiently long period (10 years). PPAs could be accompanied by CfDs to secure access to competitive energy. Even if CfDs could lead to a level playing field in the EU, it would not solve the competitiveness and investment gaps internationally, e.g. in comparison to the tax credits made available under the IRA in the USA.

d) The geographical correlation limited to bidding

2 ArcelorMittal estimates that for an average steel plant the power equivalent to 3 new nuclear plants is needed to make hydrogen.

3 Various companies expect this transition period to end by 2030.

zones within a Member State is also a concern as the availability of renewable energy sources in the Member States is far from being equal and would mean a distortion between Member States. It should therefore be possible to buy from other countries to fulfil the set criteria.

5. EU energy independence / international supply chains

Challenge:

Meeting production and sourcing targets and ensuring low-carbon/ renewable hydrogen should be compliant with emission targets without losing competitiveness and conformity within the EU (versus imported hydrogen). Particular attention is required to the definition and framework of what constitutes low-carbon and renewable hydrogen. Guaranteeing the origin/traceability of the hydrogen in the Delegated Act on hydrogen is key. It must be consistent with the EU's climate objectives, REPowerEU's objective and an efficient Energy System Integration.

Recommendations:

a) Ensure a level playing field and technological neutrality between imported and locally produced hydrogen. Improve the flexibility of the RED Delegated Act criteria, taking into account the complete Life Cycle Assessment (LCA) for any type of H_2 production including via ammonia, alignment of ETS and CBAM.

b) REPowerEU calls for an even split between domestic EU and imported non-EU production to meet EU demand, but current policy proposals of the European Commission risk leading to more investment in hydrogen production outside the EU. We need a policy framework that will serve to reduce costs over time – just as with renewables over the last 20 years.

c) Industrial readiness to scale up is waiting for investment to unlock. Large-scale investment barriers should be addressed.

d) A framework for Guarantees of Origin (GoO), LCA and hydrogen traceability should be put in place. This framework should be compatible between EU and non-EU countries to guarantee equal opportunities and avoid unfair competition among different sources.

The European Round Table for Industry (ERT) is a forum that brings together around 60 Chief Executives and Chairmen of major multinational companies of European parentage, covering a wide range of industrial and technological sectors. ERT strives for a strong, open and competitive Europe as a driver for inclusive growth and sustainable prosperity. Companies of ERT Members are situated throughout Europe, with combined revenues exceeding €2 trillion, providing around 5 million direct jobs worldwide - of which half are in Europe - and sustaining millions of indirect jobs. They invest more than €60 billion annually in R&D, largely in Europe.

This Expert Paper has been prepared by the Energy Transition & Climate Change Working Group

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