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[Dachzeile]

The EU's Hydrogen Vision Is Ambitious. Are Member States on Board?

Key Takeaways from the IASS Workshop & Roundtable on External Dimensions of Hydrogen Policies in Europe

Background information on the event

On 15–16 September 2022, the GET Hydrogen project team at the IASS organised an authors' workshop and roundtable under the title "External Dimensions of Hydrogen Policy in Europe: Towards Greater Coordination and Strong International Partnerships". The workshop brought together representatives of European think tanks and research institutions who are authoring individual country chapters for an IASS study, to be published in late 2022. The countries featured in the study include France, Germany, Italy, the Netherlands, Norway (as a member of the European Economic Area), Poland, Spain, and Sweden. For the roundtable on September 16, the IASS invited German policymakers, practitioners, and industry representatives to discuss the main takeaways and their implications for developing a harmonised European hydrogen policy with a particular focus on questions of international cooperation. The discussion was held under the Chatham House Rule intended to promote openness (i.e., information disclosed during a meeting may be freely reported, but the source must not be identified).

EU Hydrogen Policy: Born in Times of Crisis

The European Union's hydrogen policy has thrived in a crisis environment. The climate emergency is the most evident example, as clean hydrogen is seen as essential for decarbonising hard-to-abate sectors, including the chemical and steel industries, heavy-duty mobility, and aviation. Beyond that, two systemic shocks — the COVID-19 pandemic and the war in Ukraine — stand out as important accelerators. In July 2020, amidst the global pandemic, the EU adopted "A Hydrogen Strategy for a Climate-Neutral Europe", a visionary document assigning clean hydrogen a prominent role in Europe's sustainable growth and global leadership. The EU's Recovery and Resilience Facility (RRF), set up in 2021 to assist

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member states in their recovery plans, has a special focus on the climate dimension. In a number of cases, national recovery and resilience plans, developed to access RRF funds, represented the first major hydrogen-related policy initiatives by member states: Italy, Poland, and Spain are all cases in point.
The second crisis broke out in February 2022, when Russia's shocking invasion of Ukraine ushered in a new geopolitical era for Europe. In addition to imposing far-reaching economic sanctions, the EU swiftly resolved to seek full independence from Russia as its most important energy supplier. The Commission's REPowerEU plan, presented in May 2022, set the goal of phasing out all Russian energy imports by 2027 through demand reduction, the diversification of suppliers, and an accelerated energy transition — including greatly expanded use of clean hydrogen. Suddenly, hydrogen was framed not only in terms of decarbonisation but also energy security. The EU has doubled its target for clean hydrogen use to 20 million tonnes by 2030, with half expected to come from imports. In the Commission's vision, hydrogen imports would flow through three main corridors: the Southern Mediterranean, the North Sea corridor (such as the UK and Norway), and, when possible, Ukraine.
The success of the European hydrogen vision depends on a host of factors. There is a need for a clear — and attractive — regulatory framework for investors, including standards and certification schemes for clean hydrogen. Greater coordination within the EU would be needed to reach ambitious domestic hydrogen production targets and support infrastructure buildout. Enhanced energy partnerships at the EU level would be helpful too, even though this might also be taken forward on a bilateral basis between interested member states and third countries. Finally, there are several bottlenecks to address, including increasing electrolyser-manufacturing capacity and the availability of skilled labour.

A national stocktaking

Stocktaking of national hydrogen policies in selected European countries demonstrated a great variety of approaches and motivations. Granted, competition among member states on hydrogen may bring its own benefits. At the same time, it was sobering to see that REPowerEU's ambitious vision on hydrogen is not yet reflected in national policies. There is little if any coordination taking place at the EU member state level. For a number of countries (such as Poland and Sweden), hydrogen development is viewed primarily as a domestic issue, with little thought given to international engagement. Plans for an integrated European hydrogen pipeline infrastructure — indispensable in connecting the renewables-rich Southern Mediterranean region with the industrial demand centres in northwestern Europe — are in limbo due to France's opposition to cross-border pipelines from the Iberian Peninsula. Norway, a leading gas producer with a decarbonised power grid, has also been viewed as a potential hydrogen supplier to the EU. However, high gas prices are undermining the rationale for blue hydrogen production, and steadily rising electricity prices in the country (in part due to declining electricity generation at Norwegian hydropower plants) have shifted the policy focus away from green (renewable) hydrogen.

The need for a speedy and massive rollout of new renewable energy capacity for green hydrogen production is clearly acknowledged at the EU level, but this is not always the case in member states. In Poland, for example, the government's renewable energy development plans are insufficient to warrant any significant green hydrogen development. In Italy, the speed of renewable energy deployment has slowed in recent years, due to the reduction of financial incentives, as well as administrative hurdles. Sweden, despite having a largely decarbonised power system, is likely to face a lack of generation capacity to meet its own demand in the coming years. Moreover, some national policy frameworks lack the necessary understanding that green hydrogen is the "champagne" of decarbonisation, i.e., a scarce energy carrier to be used only where alternatives such as direct electrification are not an option. A number of strategies (e.g., in Italy and Poland) include a laundry list of potential end uses, without any apparent prioritisation. The EU may have a strong preference for green hydrogen but, again, this is not always self-evident in national policies. While Germany and Spain prioritise green hydrogen, Norway has been considering producing blue hydrogen via carbon capture, utilisation, and storage (CCUS) systems, and Italy's energy company Eni has emphasised its "technological neutrality". Finally, attitudes towards hydrogen imports are often ideologically coloured. Germany remains somewhat of an outlier in explicitly stating the need for significant hydrogen imports, whereas France views this as creating new dependencies and a geopolitical risk. Poland avoids discussing the need for imports altogether.

A coordinated European hydrogen foreign policy?

One of the key issues in the roundtable discussion was the expected benefit of developing a European foreign policy on hydrogen. According to the EU External Energy Strategy (May 2022), *"the European Commission aims to conclude hydrogen partnerships with reliable partner countries to ensure open and undistorted trade and investment relations for renewable and low carbon fuels"*. Given that the EU needs hydrogen for decarbonising its industry and as a partial substitute for Russian natural gas (some 17.4% of the 155 bcm of Russian gas that the EU imported in 2021), the question of engaging with international partners becomes all the more important. On the one hand, having a harmonised European approach and "speaking with one voice" would add weight to the EU's negotiating position as it engages with potential hydrogen suppliers. Including hydrogen in the newly created EU Energy Platform, with its joint energy purchase mechanism (currently developed for natural gas imports), would help aggregate demand and avoid price competition among member states of the kind we have witnessed in 2022, with member states rushing to conclude bilateral deals to fill their natural gas storage facilities. On the other hand, hydrogen imports are more relevant for some member states, like Germany or the Netherlands, which have already launched their own hydrogen diplomacy initiatives. France, on the other hand, opposes the idea of imports altogether. Under these circumstances, developing a coordinated approach becomes increasingly difficult.

Roundtable participants also discussed the perception, common in many member states, that the EU hydrogen policy is skewed towards German interests, featuring a single-minded

focus on green hydrogen and very stringent sustainability standards, as well as an active import policy. Some countries (e.g., France and Poland) currently oppose a German-led policy. Others, like Spain, are in favour of the focus on sustainability and green hydrogen and are closely aligned with EU policies. Yet, as a potential exporter, Spain puts an emphasis on developing a domestic European hydrogen market and has yet to engage more actively with countries outside the European Union. Most member states, however, are adopting a "wait-and-see" approach, wary of overcommitting before a European hydrogen market materialises.
Ultimately, as several participants cautioned, there are more pressing matters to be addressed at the EU level. For a European hydrogen economy to emerge, the EU needs to focus on providing the necessary conditions for investment, namely: a clear regulatory framework and a European hydrogen transport infrastructure.

A hydrogen infrastructure

Today, hydrogen is overwhelmingly produced and consumed on site. The total length of existing hydrogen pipelines — mainly located in the US, Belgium, Germany, and the Netherlands — is a mere 5,000 km, dwarfed by the mind-boggling 1.2 million km of natural gas pipelines. Clearly, a hydrogen infrastructure is a necessary precondition for creating a hydrogen market. Geopolitically, oil and gas pipelines have been known to create dependencies; however, as one of the roundtable participants emphasised, a hydrogen pipeline is qualitatively different in that any producer can feed hydrogen into it (provided the regulatory framework allows open access), whereas natural gas pipelines simply connect large gas fields with gas consumers. The European Hydrogen Backbone initiative by a group of 31 European gas transmission system operators (TSOs) envisions an evolving network of pipelines, both retrofitted gas pipelines and new hydrogen ones, across the European continent.
An alternative to pipelines would be to transport hydrogen or its derivatives (such as ammonia or methanol) by ship. This, for example, is part of Portugal's vision of becoming a green hydrogen exporter, with plans to ship liquefied hydrogen from the Port of Sines to the Port of Rotterdam. Ship transport would greatly increase the geography of hydrogen trade and help overcome pipeline-related bottlenecks, but it is also, at present, a costlier option. It would also necessitate adapting port infrastructure and installing new terminals — something that large ports like Rotterdam or Hamburg are already working on. Avoiding stranded assets and making sure that today's LNG terminals will be able to handle green hydrogen or ammonia in the future is important, although the required technology is not yet available.

Hydrogen as an industrial policy issue

Several roundtable participants emphasised the importance of preparing German — and European — energy-intensive industries for a future climate-neutral economic system and reiterated that hydrogen development in Europe needs to translate into European jobs. This

would require developing hydrogen value chains within the EU (and with immediate neighbours), bringing renewables-rich southeastern member states on board, like Bulgaria, Greece, and Romania. Hydrogen development can also potentially support a just transition in regions dominated by the fossil fuel industry; this is an important element of Poland's and Spain's hydrogen plans. An ever-present concern in Europe is the politically unpalatable scenario in which decarbonisation pressures would lead to the relocation of energy-intensive industries to renewables-rich locations abroad, resulting in job losses and deindustrialisation. Yet the vision of European industry remaining in place and benefiting from cheap green hydrogen imports is not a given either. As several participants were quick to point out, this may be at odds with the ambitions of potential hydrogen suppliers in Africa and the Middle East to move up the hydrogen value chain and develop more manufacturing activities at home. Merely supplying hydrogen to Europe, as has been the case with oil and gas, may not be an attractive proposition for those countries. Some sort of compromise is probably unavoidable; European industry will likely witness parts of its value chain moving abroad, while trying to concentrate on higher-value-added activities.

Corporate players shaping national hydrogen policies

An interesting insight from the discussion was the proactive role played by corporate actors (in many cases, state-owned enterprises) in hydrogen policy-making and the related external engagement. In *Sweden*, it was an industry-dominated body, Fossil Free Sweden, that produced Sweden's first hydrogen strategy in 2021, while the government is yet to follow suit. In *Italy*, the government has not yet adopted a hydrogen strategy and has yet to launch an international hydrogen policy. Instead, leading energy companies — Enel, Eni, and SNAM — are engaging in corporate "hydrogen diplomacy", focusing on the Middle East and North Africa region as a future potential location for hydrogen production. This echoes Eni and SNAM's traditional engagement in the area of oil and gas, while Enel can build on the large international portfolio of renewable energy projects developed by Enel Green Energy.
In *France*, where the government focuses on promoting technology leadership in hydrogen rather than hydrogen imports, the private sector has adopted a different stance. In the absence of active state engagement internationally, new actors have emerged from within the private sector. This includes the Hydrogen Task Force, a private initiative set up by MEDEF International, a branch of the influential French Employers' Union, and France Hydrogène, an industry alliance of all French key players in the hydrogen value chain. One of the goals of the Hydrogen Task Force is to gain an understanding of foreign hydrogen ecosystems and identify opportunities abroad for French companies. Overall, it is clear that corporate players in Europe are keenly aware of the need for cooperation. This stands in contrast to the lack of coordinated hydrogen policies at the member state level, as discussed above.

The global hydrogen competition picking up pace

One more takeaway from the discussion was that the EU's global hydrogen frontrunner status is increasingly challenged by rivals like the US. The US's hydrogen tax credit of up to 3

USD/kg (based on carbon intensity) introduced as part of the Inflation Reduction Act (2022) has been viewed as a potential gamechanger. The fear is that the EU, with its complex regulatory system and slow pace in adopting hydrogen standards, will lose ground to the US as an attractive destination for hydrogen investment. This perception was one of the reasons why, on September 14, the European Parliament (EP) voted to scrap the stringent additionality requirements for green hydrogen from the delegated act draft, earlier proposed by the Commission. Additionality rules were meant to ensure a high sustainability standard for renewable hydrogen but — as Hydrogen Europe, an industry lobby group, continually complained — in their proposed form they would be too difficult to implement and would slow down hydrogen uptake in the EU. In any case, the legislative process is not yet completed, and the EU still lacks a clear definition of what counts as renewable hydrogen, creating uncertainty for investors. In fact, the EP vote has undermined the business case for more sustainable (and higher-priced) hydrogen producers that were ready to comply with the stricter additionality rules.

Final thoughts

A European hydrogen economy is an ambitious vision that has gained even greater prominence in the wake of the war in Ukraine, although the extent to which this vision is shared among EU member states and Norway differs. Many questions remain open: What role will hydrogen trade play, and will hydrogen be transported via pipeline, ship, or both? Who will be the key hydrogen suppliers to the EU? How will European energy-intensive industries fare in a decarbonising global economy? Will the EU preserve its technological edge on electrolysers? Developing a coordinated approach to creating a European hydrogen market has proven difficult; ultimately, it seems likely to be shaped largely by the coalition of the most proactive countries — Germany, the Netherlands, and Spain included. As the global hydrogen race picks up, the EU runs the risk of being overtaken by countries like the US, which offer easily understood incentive schemes for hydrogen investors and developers. Time is running short: if hard-to-abate sectors are to be decarbonised with hydrogen, investment decisions need to be taken now, hydrogen needs to start flowing soon, and at least some level of imports is unavoidable. For this to materialise, the EU needs to make sure, at the very minimum, that there is a clear regulatory framework and a hydrogen transport infrastructure in place. There is much work ahead.