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Hydrogen imports in Europe: a lever for climate cooperation?

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The European Parliament's vote in mid-September against the European Commission's proposal for a delegated act to set environmental conditions for the production of hydrogen in the European Union and for imported hydrogen has put the issue of hydrogen and, in particular, its imports in the transition of the European energy system back in the spotlight. The EU is now moving towards a strategy of domestic production and import of hydrogen in similar proportions by 2030, 10 million tons in both cases, to achieve its REPowerEU plan objectives. These institutional discussions at the European level on the definition of "green" hydrogen and, in the case of imports, the conditions for international trade partnerships between the EU and third countries to be sustainable and to participate in the global energy transition, are crucial in that they will set the framework for an industry that will be able to deploy and play a role in the deep

decarbonization of the European economy. However, if the European Parliament's ambition is to set insufficiently ambitious conditions, the risk is to develop hydrogen in a way that is counterproductive for decarbonization and to compromise international cooperation for climate action

The European Parliament voted in mid-September against a delegated act proposed by the European Commission on the rules for the production of "green" hydrogen, eligible for European public aid. While it is likely that the final compromises between the Council of the EU, the Parliament and the European Commission will evolve during the triologue discussions on the recast of the Renewable Energy Directive, which should be completed by early 2023, the Parliament's current position relaxes the environmental conditions on hydrogen production in the EU for the time being, and removes the conditions on potential hydrogen imports. However, these criteria are necessary for several reasons.

Hydrogen imports, a potential "win-win" economic opportunity

The European Commission published its [hydrogen strategy for climate neutrality](#) in the summer of 2020, while many Member States were doing the same. The objective is both to ensure the decarbonization of the heavy industry and long-distance transport sectors, but also to guarantee the competitiveness of European industry in the still nascent hydrogen sectors, which are important for achieving the Paris Climate Agreement's goals. In addition to the building of European industrial sectors, many public actors (such as the [European Commission](#), [Germany](#), [Namibia](#), [Australia](#)) and industrial actors (the [European Hydrogen Backbone consortium](#)) are exploring the possibility of building trade routes for hydrogen or by-products to Europe.

In theory, the purpose of developing international exchanges of hydrogen and by-products is to better distribute low-carbon resources in the world: Europe could benefit from cheaper and more abundant electricity from solar or wind power from other regions of the world that are better endowed, while these regions could rely on these partnerships to develop their energy system. In this way, hydrogen could become a pillar of international cooperation for the energy transition. But such partnerships must meet certain conditions.

The first condition is economic. While several [studies](#) indicate that despite higher transport costs compared to local hydrogen, it could be economically profitable to import hydrogen into Europe, technical questions remain as to the transport methods. For distances of a thousand kilometers, it is a priori [less expensive to transport hydrogen by pipe](#), as it is mostly the case for natural gas today, especially if the hydrogen pipes are renovated from those of natural gas. For longer distance transport, it is possible to transport hydrogen in liquefied form or in the form of ammonia, although these two methods are less technologically mature and relatively more expensive, as a [recent IDDRI study](#) shows.

What is the purpose of hydrogen? Uses will determine the need for imported hydrogen

Besides the final cost of imported hydrogen depending on its origin and mode of transport, the opportunity to build such value chains also depends on the final use of hydrogen. While it can technically be used in a large number of applications, it is often more energy efficient and cheaper to use alternatives, and hydrogen would only play a key role in decarbonization in certain priority sectors of heavy industry (refining, chemical industry, steel) and long-distance air and sea transport (see [IDDRI study](#)). It is likely that imported hydrogen will be more or less competitive depending on the use envisaged, which encourages clarification of the objectives in terms of uses by activity segment in order to plan imported hydrogen needs. For example, for steel manufacturing, there are few alternatives

and the cost of hydrogen would have little effect on the cost of the final products, whereas for long-haul trucks, hydrogen is in strong competition with battery-powered trucks.

Finally, other considerations than economic ones must also be taken into account and, in particular, energy security; the risk of creating new import dependencies for key industrial sectors in Europe, such as the steel and chemical industries, may tip the balance towards a greater share of domestic hydrogen production.

The importance of ambitious criteria for imported hydrogen: avoiding a slowdown in decarbonization and unfair competition with European industries

As the hydrogen sectors are still in their infancy, the volumes of consumption and trade of "green" hydrogen by 2030 should remain relatively limited and will represent a fraction of the European energy system. The 10 Mt (330 TWh) of renewable hydrogen imports by 2030 should come primarily from Ukraine, North Africa and the countries around the North Sea according to the European Commission's REPowerEU plan. However, today, Morocco, Algeria, Tunisia and Libya, connected to the EU via natural gas pipelines, produce a total of 150 TWh of electricity, of which only 10 TWh is renewable electricity, the rest being of fossil origin. Increasing renewable electricity production to both cover domestic needs and export hydrogen represents a considerable technical and political challenge for this region.

The priority is therefore to build a clear regulatory and industrial framework to provide for potential investments and cooperation links between countries. A first important issue is the sharing of value between producer and consumer countries. The objective is not to operate a vertical technology transfer, but to build shared prosperity paths for the global transition (see [IDDRI blog](#)). The other issue is additionality, to avoid displacing renewable electricity production capacity that could have been used to decarbonize direct domestic electricity use. In addition to the challenge of decarbonizing local electricity systems, it is important not to disadvantage European industrial sectors that will be subject to additionality criteria.

These criteria could concern emissions from the production of hydrogen for export, but also the allocation of water and renewable electricity resources between local consumption and exports, as electrolysis can create conflicts of use in certain regions, especially when access to these resources is not ensured locally. For a just transition, partnerships between importers and exporters must ensure a fair sharing of value.

If the EU does not formulate strict economic, environmental and social criteria for imports, it risks wasting the opportunity to accelerate the transition at the global level to reduce emissions in high emitting industrialized countries and build low-carbon energy sectors in developing countries.

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