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Germany: the government's import strategy for hydrogen and its derivatives

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On 24 July, the German government adopted a strategy regarding the import of hydrogen and hydrogen derivatives (German: *Importstrategie für Wasserstoff und Wasserstoffderivate*). The document estimates that the German economy's demand for hydrogen and hydrogen-based products (such as ammonia, methanol, and synthetic fuels) will reach 95–130 TWh by 2030, and 360–500 TWh of hydrogen and 200 TWh of derivatives by 2045. It concludes that Germany will remain permanently dependent on imports, as it will only be able to cover 30–50% of the forecasted demand from domestic sources and will thus be one of the world's largest importers. Therefore, as stated in the document, "ensuring a stable, secure, and diversified supply of hydrogen and its derivatives is in Germany's strategic interest." It is expected that both green hydrogen and its low-emission variants will be imported in the initial phase.

The federal government pledges to support the parallel development of infrastructure in its strategy for the import of both hydrogen and hydrogen-based products (derivatives). In the case of hydrogen, the primary focus is on importing it via pipelines from European countries or their immediate neighbours (such as North Africa). This method is considered more cost-effective than importing hydrogen in liquid form by sea from other parts of the world.

As outlined in the strategy, the most promising sources of hydrogen imports via pipelines are the countries of the North Sea region: Denmark, the Netherlands, Belgium, Norway, and the United Kingdom (in the latter two cases, subsea pipelines will be used). Other potentially good sources include countries from the Baltic Sea basin (the Baltic Hydrogen Collector and Nordic Baltic Hydrogen Corridor projects are mentioned in the strategy), the Iberian Peninsula (the southwest corridor from Portugal and Spain through France to Germany) and North Africa (the southern corridor from Algeria and Tunisia through Italy and Austria to Germany). Neither Ukraine nor Russia was mentioned.

As regards derivatives, the strategy outlines options for importing them by ship, train, and lorry. The strategy highlights the advantages and disadvantages of a wide range of hydrogen-based products: ammonia, methanol, dimethyl ether, Fischer-Tropsch synthesis products, synthetic methane, and liquid organic hydrogen carriers (LOHC). These products can be used directly in industries or serve merely as carriers of hydrogen for its transport to Germany. However, the document states that, due to losses in subsequent conversions, direct use (for example, of ammonia or methanol in the chemical industry) would be a better solution. German LNG terminals are mentioned as an example of infrastructure for

importing derivatives by sea, given the fact that under current regulations they will have to transition to importing hydrogen or its derivatives by 2044 at the latest.

The strategy also highlights the efforts the federal government has made so far to develop hydrogen cooperation with potential exporting countries. The main tool Germany has used as part of hydrogen diplomacy in non-EU countries is the so-called hydrogen partnerships. These are intergovernmental agreements that provide political frameworks to support individual joint ventures. So far Berlin has concluded partnerships of this kind with 15 countries: Norway, the United Kingdom, Chile, Egypt, Algeria, Morocco, Tunisia, Namibia, Australia, India, Canada, Saudi Arabia, South Africa, Turkey and the United Arab Emirates. Additionally, there are joint projects which have not been formalised politically in dozens of other countries, for example, in Japan, the US, Uruguay, Brazil, Nigeria and Ukraine. Moreover, so-called hydrogen diplomacy (H2-diplo) agencies have been established in many German diplomatic missions in potential hydrogen-exporting countries in order to facilitate the development of business relations between local companies and their German counterparts.

Commentary

- The government's hydrogen import strategy is intended to serve two main purposes. Domestically, it aims to provide guidance to German industry, showing the politically supported directions for companies interested in hydrogen or hydrogen derivative import projects. Externally, it is designed to provide a concept of the anticipated directions and scale of Germany's growing demand for hydrogen and its derivatives to foreign partners who are potential producers and exporters and to encourage them to engage in joint ventures.
- The adopted strategy essentially summarises the initiatives already being implemented or announced, as well as the possibilities discussed in the debate regarding the import of hydrogen and hydrogen-based products. The document does not clearly indicate preferences, such as for the import of derivatives, nor does it envisage the introduction of any new support measures for the construction of the infrastructure necessary to import them or for their production projects abroad. Furthermore, the strategy does not include any promises of additional funding for projects in this area. For these reasons, the document has received a mixed response from interested business and industrial sectors. This technologically neutral approach to hydrogen and derivative imports envisaging support to various projects, not only those involving so-called green hydrogen, was particularly well-received. Most criticised of all, though, is the lack of new support measures.
- Plans to build Germany's so-called 'core hydrogen network' (*Kernnetz*), along with the planned 15 interconnectors, are at a fairly advanced stage; in July, the Association of Gas Transmission System Operators submitted the final version of the project to Federal Network Agency (BNetzA) for approval. The way the import of derivatives will develop remains undecided, though. Developments over the past year or so suggest that Germany's political and business elites view ammonia as possibly the most lucrative option. Ammonia is suitable both for direct use in many applications and as a hydrogen carrier, although this is not yet widely practiced. Plans for ammonia imports are in place for several German ports, including Hamburg, Wilhelmshaven, Brunsbüttel, Stade, and

Rostock. Notably, these plans include the newly designed LNG terminals, which is particularly significant from a political perspective.