Hydrogen energy storage germany

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Find the 2023 update to the National Hydrogen Strategy here (in German).

Germany first presented its hydrogen strategy in mid-2020 under the government of then-chancellor Angela Merkel. The strategy already stipulated an in-depth evaluation and possible update after three years. In addition, the incoming government coalition after Merkel of the Social Democrats (SPD), the Green Party and the Free Democrats (FDP) agreed to present an "ambitious update" to the strategy to make the country a leading market for hydrogen technologies by 2030.

In July 2023, the government presented this update. While the original strategy "remains valid in principle" (find more information on the original strategy below), the update aims to further speed up the market ramp-up and introduces adjusted targets and new measures.

The update "shows how the hydrogen market ramp-up can be accelerated through concrete and re-sharpened measures to contribute to Germany"s transformation into a climate neutral economy by 2045," says the document. The government argued that against the backdrop of the energy crisis and the war in Ukraine, the supply security goal of the 2020 strategy has gained in importance from a security policy perspective. The update would also send an "important industry policy signal" to the world, strengthening Germany as a business and industry location and helping to create future-proof jobs.

The government said the strategy will be updated in the future as needed.

The strategy says that increasing energy efficiency and speeding up the expansion of renewable energies are indispensable for reaching Germany"s ambitious climate targets. It also emphasises that using renewable electricity directly is preferable in most cases, for example in electric mobility or heat pumps, as it is associated with lower conversion losses compared to the use of hydrogen. It "should be used where possible if it is the most economical option in terms of overall system efficiency and security of supply, as well as from an economic and environmental perspective," says the strategy update.

The 2020 strategy identified green hydrogen made from renewable electricity as the only sustainable form in the long-term. Other forms of hydrogen are produced from fossil gas - currently the main source - sometimes in connection with capturing CO2 and storing it (CCS). [Find more information on the "colours" of hydrogen here.]

The strategy update says that in order to ensure a rapid ramp-up of the hydrogen market and to meet the expected demand, "other colours of hydrogen will also be used, at least until sufficient green hydrogen is available." This would especially be low-carbon hydrogen from waste or natural gas in combination with CCS.

When it comes to state support for hydrogen projects, the government differentiates between the "colours" of hydrogen, and between generation and application:

The strategy update presents a list of measures in four different fields of action for the short (by 2023), medium (2024/2024) and long term (until 2030).

The strategy update assumes total hydrogen demand in 2030 will be 95-130 terawatt hours (TWh), including derivatives like ammonia, methanol or synthetic fuels. Today"s demand is around 55 TWh, supplied using fossil gas. The strategy says that demand will strongly increase after 2030.

The country will have to import 50-70 percent of this by 2030, later an even higher share, the document says. Import until 2030 will largely happen through shipping, for example ammonia. After 2030, the strategy aims for the expansion of pipeline transport from neighbouring countries and possibly adjacent regions. Imports of green methane, synthetic methanol, LOHC (Liquid Organic Hydrogen Carrier) and liquid hydrogen "may play a role in the medium to long term," says the document.