

Updated German Hydrogen Strategy and the Turkish-German Energy Partnership

12. Turkish Wind Energy Congress, 7-8. November 2023

In which sector should hydrogen be best used for the decarbonisation of domestic energy markets, and what strategies are being pursued in Germany?

In July 2023, the National Hydrogen Strategy (NHS) was updated to accelerate the market ramp-up



June 2020

1st Phase: Start of the market ramp-up



September 2021



May 2022



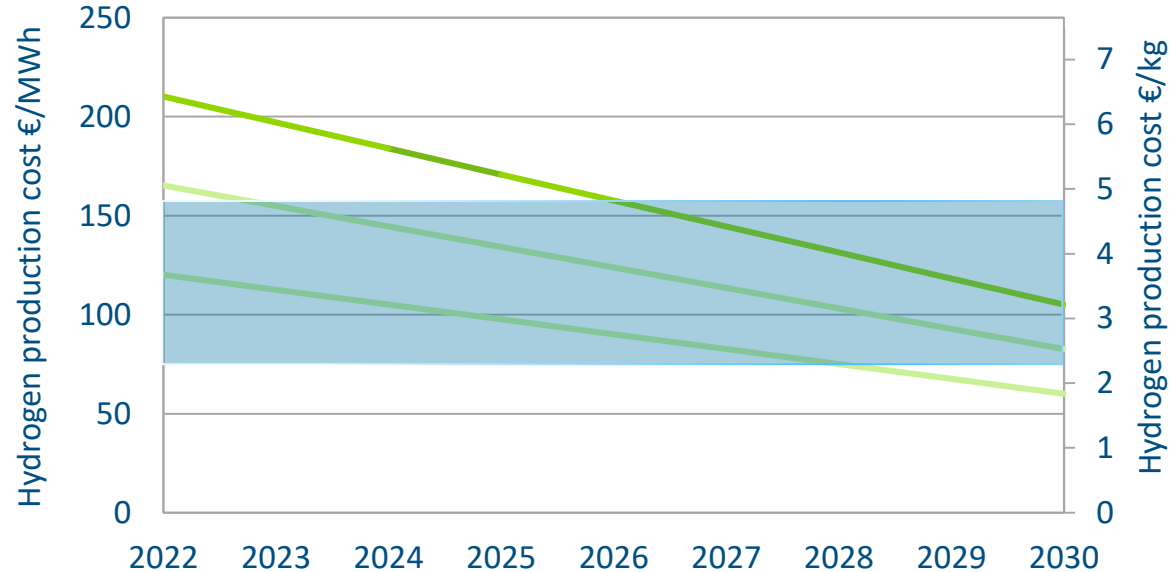
July 2023

2nd Phase: Accelerated market ramp-up

Fields of action of the NHS update

1. Ensure availability of sufficient hydrogen
2. Expand hydrogen infrastructure
3. Establish hydrogen applications (industry, transport, electricity, heat)
4. Create good framework conditions

Green hydrogen will be cheaper than blue hydrogen by the end of the decade at the latest



Key drivers of the cost of green hydrogen are:

- The cost of **renewable electricity**
- **Electrolyser system** costs
- Annual **operating hours** of the electrolyser (ELY) plant

Green H2 – EU min. Green H2 – average Green H2 – max. Blue H2 - range

Germany's hydrogen (H₂) demand in 2030 will be 95-130 TWh



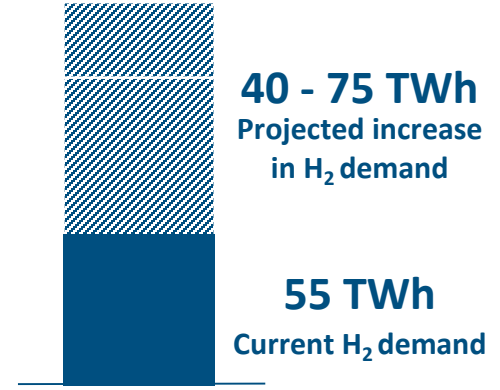
min. 10 GW

**Domestic H₂
generation until 2030**



45-90 TWh

**Projected H₂ imports
until 2030**



95-130 TWh

**Projected total H₂
demand in 2030**

Hydrogen applications are specifically promoted in industry and encouraged in transport

Industry



- Prioritising the replacement of fossil raw materials in applications
- Additional focus: hydrogen use for process heat (primary in steel and chemical industry)
- 2045 demand for H₂ in industry between 290 and 440 TWh

- Promotion within the framework of the IPCEI hydrogen and climate protection treaties
- Decarbonisation in Industry (DDI) funding programme
- Concept for creating demand for climate-friendly basic materials (green lead markets)

Transport



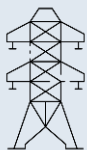
- In addition to e-mobility, H₂ is a central lever for emission reductions in transport
- E-fuels as an alternative (with focus on maritime, aviation)

- Implementing the sub-quotas for RFNBOs (RED III)
- Supporting and promoting IPCEI transport projects
- Establishment of the Hydrogen Innovation and Technology Centre (ITZ)

- Further development of funding programmes, incl. for tank infrastructure (NIP, IPCEI, Hy2Move)
- Overall strategy for the H₂ transformation of shipping

In a climate-neutral electricity system, hydrogen becomes an important energy carrier

Electricity



- 80-100 TWh p.a. H2 demand in the conversion sector by 2045 (long-term scenarios)
- H2-readiness must be ensured for new investments in gas-fired power plants
- New CHP plants must demonstrate H2-readiness at low additional cost (2022 KWKG [Combined Heat and Power Act])

Short-term measures (2023):

- 'H2 Sprinter Power Plants': Implementation of authorisation to issue ordinances according to Section 88f Renewable Energy Act (EEG), between 2023-26 tendering of 4.4 GW
- 'RE-hydrogen hybrid power plants': Implementation of authorisation to issue ordinances according to Section 88e EEG, between 2023-28 tendering of a further 4.4 GW

Medium-term measures (2024/25):

- Examination of refinancing requirements of controllable renewable power plants, e.g. H2 power plants (basis: 'Platform for Climate-Neutral Electricity Market Design')

Heating



- Due to the competition for H2 use, its utilisation in the heating sector is secondary
- Application outside pilot projects only planned for after 2030
- H2 boilers and hydrogen-fuelled CHP plants in existing buildings can be a necessary technical option in individual cases (basis: municipal heat planning)

Short-term measures (2023):

- Heat Planning Act: Establish criteria for the use of H2 in distributed heat generation
- Consideration of the waste heat potential of electrolysers in site selection

The ramp-up of a hydrogen core infrastructure network is crucial

National hydrogen infrastructure



Connecting future consumers with production and import locations, development of network planning beyond IPCEI, setting course for hydrogen storage

Legal basis for hydrogen core infrastructure network

Development of the first gas and hydrogen network development plan

European hydrogen backbone network



First expansion stage with a total of 4,500 km of pipelines (1,500 km new construction, 3,000 km by conversion of natural gas pipelines)

Setting framework conditions for gas market and hydrogen issues in 2023

Cooperation projects and the construction of cross-border infrastructures with MS

Infrastructure for imports from third countries



Accelerated development of convertible hydrogen-ready gas import terminals and sustainable shipping routes

Introduction of measures for the rap-up of import terminals

Further new terminals for hydrogen and hydrogen derivatives are to be built

Effective framework conditions are created for a strong hydrogen economy

Research, Innovation & Training



- Promoting research and technology development
 - Training and further education of skilled workers
 - Continuation and further development of existing support programmes and flagship projects
- Technology and innovation roadmap based on "H2 Compass" results
 - Continuation & further development of real laboratories
 - Increase the attractiveness of hydrogen-related professions

Sustainability standards & Certification



- Establishing ambitious and uniform sustainability standards and certification systems for hydrogen and its derivatives
 - Promoting of international agreement on the mutual recognition of standards and certificates
- Develop clear specifications for hydrogen crediting in demand sectors, e.g., for promotion via Carbon Contracts for Difference
 - Definition of sustainable carbon sources
 - Develop an internationally recognised and methodology for hydrogen GHG footprints
 - Evaluation of sustainability criteria

How does the updated German National Hydrogen Strategy promote investments in H₂ and how can Türkiye benefit to export green H₂ to Germany?

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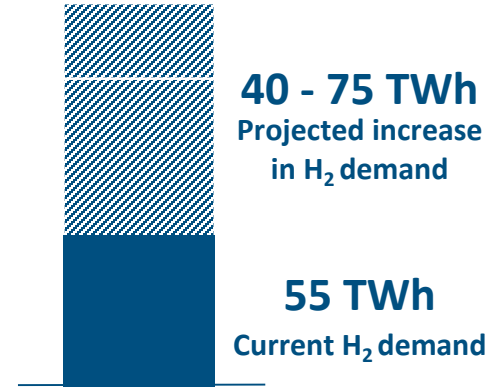
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**Domestic H₂
generation until 2030**



45-90 TWh

**Projected H₂ imports
until 2030**

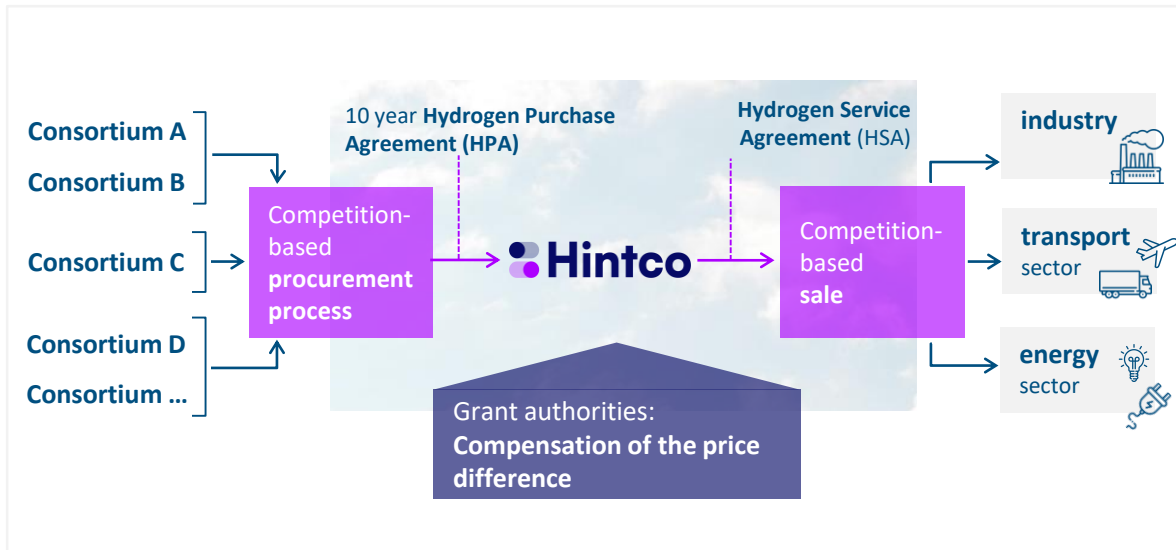


95-130 TWh

**Projected total H₂
demand in 2030**

H2Global will accelerate the timely and effective ramp-up of the PtX market

Long-term offtake agreements will help to actively promote a global hydrogen market



Hintco: Hydrogen Intermediary Network Company; implements auctions

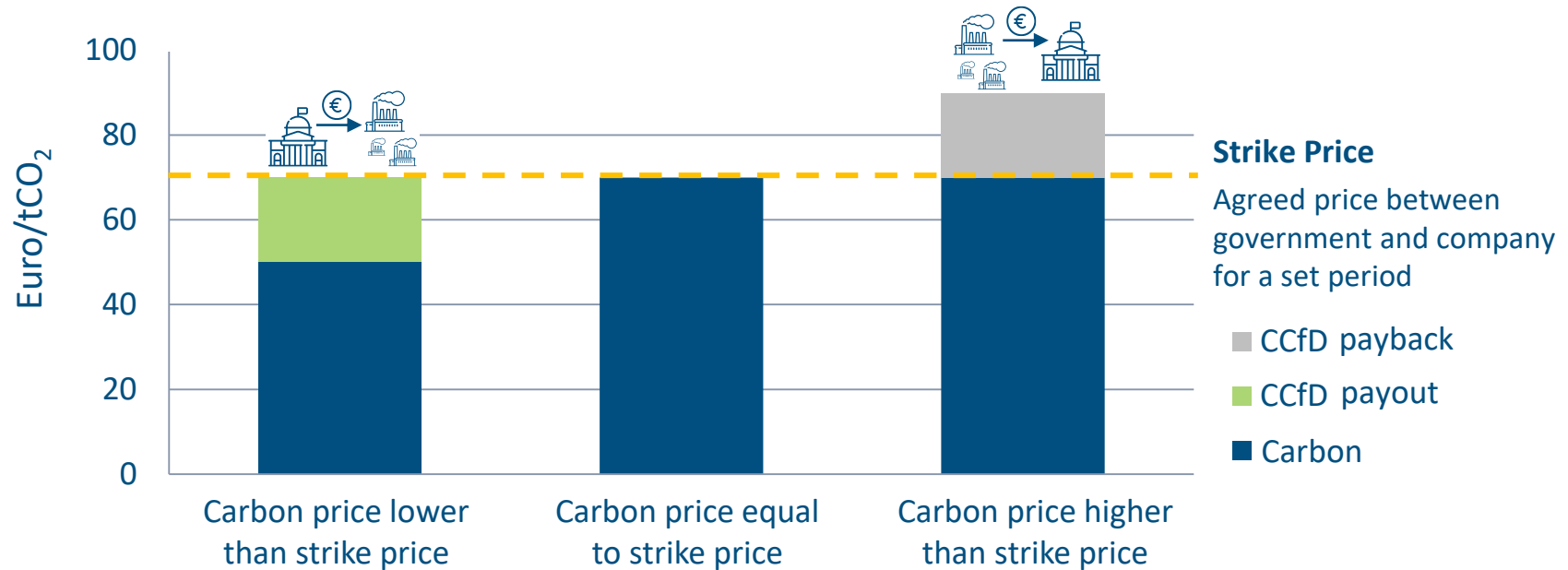
Volume: €4.4bn (2024-2036), €900 million for first phase

Products: Ammonia, methanol power-based sustainable aviation fuels (SAF)

Timeframe: 10 years for HPAs



Germany is launching a pilot programme for Carbon Contracts for Difference (CCfDs)



Energy partnership provides reliable framework for hydrogen imports to Germany

The update of the German national hydrogen strategy defines the following medium-term measures (2024/2025) for the import of hydrogen:

- The existing bilateral hydrogen, energy and climate partnerships serve as a political framework for the development of cross-border hydrogen value chains.
- Within this framework or the strategic hydrogen partnerships, further deepening and consolidation of the hydrogen issue is sought to secure the necessary imports.
- International lighthouse projects are supported and implemented within the framework of the climate, energy and hydrogen partnerships.

Germany and Türkiye are working together on a common energy transition since 2012

The Turkish-German Energy Partnership is:

- A Partnership between **Federal Ministry of Economic Affairs and Climate Action (BMWK) & Ministry of Energy and Natural Resources of Türkiye (MENR)**
- supporting **the exchange of knowledge and ideas** between policymakers, businesses, science and civil society
- bringing together people and ideas to **support the transformation of the energy system.**

Türkiye and Germany are intensifying their cooperation on Green Hydrogen

- Formal basis for cooperation: **Joint Declaration of Intent for Cooperation in the Field of Green Hydrogen** between MENR and BMWK signed in October 2022
- **Objectives of cooperation:**
 - Establishment of a **green hydrogen sector** in both countries
 - **Decarbonization** of the economy, in particular of the **industry sector**, in both countries (esp. hard-to-abate sectors like chemicals, steel)
 - Working towards **Green H2 imports from Türkiye to Germany**
- **Fields of cooperation:**
 - Supporting **exchange and mutual learning**, through high-level dialogue, expert workshops
 - Promoting **cooperation across the whole value chain**, including **joint commercialization projects** for green H2 and its derivatives
 - Inter-ministerial **Green H2 Task Force**



Federal Ministry
for Economic Affairs
and Climate Action

Thank you for your attention!

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