



A Research Project at the Federal Institute for Vocational Education and Training (BIBB)

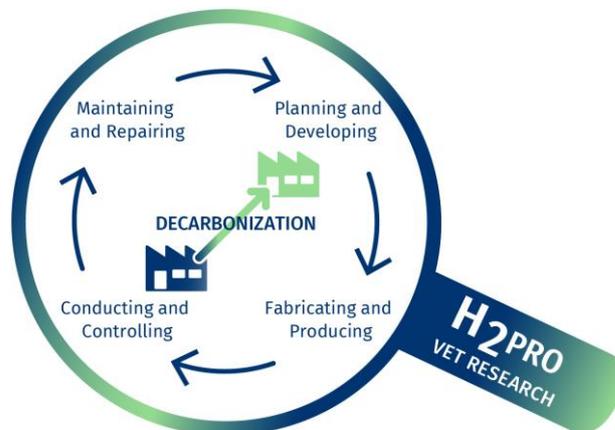
# H2PRO

Hydrogen – a future-oriented topic for vocational education and training with regard to energy transition

## Vocational Education as a Blind Spot in Discourses about Hydrogen

The use of hydrogen as an energy carrier is a crucial element in the energy transition. With its National Hydrogen Strategy, the German government introduced a comprehensive framework for action to foster the development of a domestic hydrogen economy. Pilot projects in various regions as well as research and development activities in scientific institutions and industrial companies are advancing quickly. But too often, hydrogen related discussions neglect questions regarding qualification requirements in skilled occupations - in fact, the focus is first of all on academically trained professions. At the same time, skilled workers are indispensable for putting the hydrogen economy into practice: it is them who ensure the day-to-day operability of hydrogen technologies and who provide crucial impulses for innovation. In each sector, skilled workers have to meet specific challenges in order to enable the green transformation.

Applying an early skills detection approach, the research project H2PRO at the German Federal Institute for Vocational Education and Training (BIBB) examines how skills requirements in German apprenticeship occupations are changing due to hydrogen technologies. By doing so, H2PRO fills a broad research gap, stresses the relevance of vocational education regarding hydrogen technologies and contributes to the further development of a demand-oriented training system. H2PRO is one of two research projects focusing on hydrogen at BIBB, funded by the Federal Ministry for Education and Research (BMBF).



Economy, Technology and Skilled Labour in Transformation

## H2PRO Research Goals

- Identify relevant skilled occupations and further training strategies for the hydrogen economy
- Identify additionally emerging skills requirements and qualification needs due to hydrogen
- Check whether qualification needs are already covered by existing training regulations
- Derive recommendations for action for policy-makers and practitioners in vocational education and training

Sectoral Analysis



Expert Interviews



Case Studies



Validation & Recommendations for Action



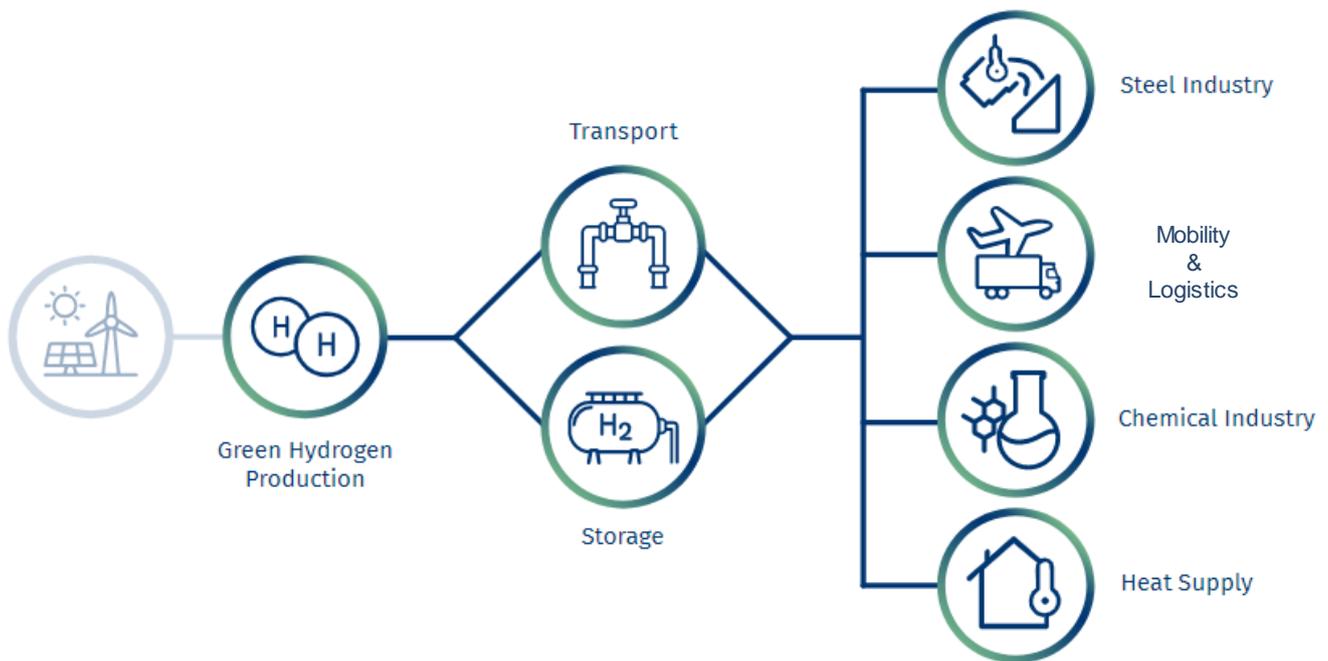
Project Duration:

October 2021 – September 2024

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## Research Field: Skills Requirements along the Hydrogen Value Chain



Responsibilities in skilled occupations along the hydrogen value chain are planning and developing, manufacturing and producing, operating and monitoring as well as repairing and maintenance of products, machines and processes. For each sector, H2PRO examines how work tasks and qualification requirements change due to the application of hydrogen technologies.

 The politically set goal for **green hydrogen production** capacities is 10 GW by 2030. To cover the overall domestic demand, vast amounts of hydrogen will have to be imported.

 **Hydrogen transport** is technically possible through pipelines or by ship and trucks equipped with appropriate storage systems.

 **Hydrogen storage** is possible in pure form or as chemical compounds. Sufficient storage capacities will be essential to ensure constant supply in the different fields of application.

 In the **steel industry**, hydrogen offers an option to replace coal as the reducing agent. Hydrogen reduces iron ore to sponge iron, which is then processed in an electric arc furnace.

 Hydrogen is going to play an important role for decarbonising highway and railroad **traffic**, **aviation** and **shipping**. In the field of heavy-duty transportation, fuel cell trucks are already available and are expected to increase their market share over the coming years.

 Hydrogen can be applied as an energy carrier in **heat supply**. Using hydrogen in the heating sector requires the adaptation of pipelines, measuring devices and heating equipment.



More about H2PRO:  
[www.bibb.de/de/153294.php](http://www.bibb.de/de/153294.php)

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