

Human Capital Agenda GroenvermogenNL

Labour market survey for the hydrogen transition



Innovation engine for the
green hydrogen economy

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More information on the study can be obtained from project leader
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Summary

The fossil-based economy needs to be transformed, and the Netherlands is deploying green hydrogen to drive this change. GroenvermogenNL (GVNL) was established to achieve the required transition. The organisation aims to develop and accelerate the market for green hydrogen and green chemistry in the period up to 2028.

At the request of GVNL and Platform Talent for Technology, CE Delft and SEO Economic Research conducted a labour market study. This study provides insight into the demand and supply of jobs in the hydrogen supply chain between 2024 and 2030, with an outlook for the years beyond.

The study examines the up-, mid-, and downstream phases of the hydrogen supply chain. It identifies the required education levels, occupations, and skills of employees required in the hydrogen supply chain over the next six years. We also take a closer look at the potential of the education institutions, lateral entries and the foreign labour market to deliver the employees for these hydrogen jobs.

For the 2024-2030 period, the hydrogen transition requires an additional 3% of employees compared to the currently available total

- In this study, we follow the scenarios developed in the network operators' Integrated Infrastructure Exploratory Study (I13050). The upper limit of the total direct labour demand is about 38,000 FTEs in the period 2024–2030. This can be broken down into some 31,000 FTEs of temporary jobs and 7,000 cumulative permanent jobs (about 1,000 FTEs annually).
- The occupations, training levels and corresponding numbers of employees required differ per segment of the supply chain (up-, mid- and downstream) and per phase (R&D, production, transport & installation, and operation & maintenance).
- The labour demand focuses on technically skilled employees.
- Key knowledge themes that drive the labour demand are electrochemistry, electrical engineering, process technology, chemistry, combustion technology, the role of hydrogen in system integration, and biology and microbiology. Specific knowledge themes may be particularly relevant to a specific region, for example grid congestion in the eastern Netherlands, and the freight transport sector in the southern and eastern Netherlands.
- In this analysis, we have only taken into account the increase in direct labour demand following from investments in the hydrogen sector. The reduction in the production of conventional energy, the decrease in consumption due to investment in other goods or services ('crowding out'), and the increase in consumption and investment in response to energy savings ('rebound') are not taken into account.

Currently, 1.2 million FTEs are employed in relevant sectors for the hydrogen transition, and the annual intake is 135,000 FTEs

- To build a picture of the current labour supply, we looked at the historical trends. Currently, 1.2 million FTEs are employed in sectors relevant to the hydrogen transition (industry, construction, production, distribution and trade of electricity, gas, steam and refrigerated air, etc.). This demand will increase to 1.3 million FTEs by 2030.
- The annual intake of employees into these sectors from education programmes and through lateral entry and labour migration has remained at around

135,000 FTEs in recent years. This involved approximately 28,000 FTEs from education institutions, 35,000 FTEs from other sectors, and 72,000 FTEs through labour migration.

- The intake from the education programmes is expected to increase only slightly in the coming years, as the number of young people entering the labour market has decreased. The number of lateral entrants mainly responds to economic cycles. A weak economy affects the demand for fossil energy, potentially making employees from that sector available for the hydrogen transition. According to current CPB economic estimates (MEV-2024), the result of these two factors is that the economy is cooling, with possibly a lower demand for fossil energy. The intake of labour migrants will therefore remain relevant.
- The available labour supply is deployed in and by many sectors, not just the hydrogen sector. The scarcity of technically skilled employees is currently a major constraint to the energy transition.

Matching supply and demand: significant labour market shortages in the short term

- There will be significant labour market shortages in the period up to 2026, particularly of technically skilled employees. This limits the speed at which the hydrogen economy can be achieved. There is a high demand for the knowledge and skills required to achieve the various transitions, while the available supply is limited.
- The economy will cool after 2026. As a result, more electrical engineers, machine engineers, electricians, electrical installers and production managers will become available for the industry and construction sector, but the market will remain tight. Continued labour shortages will depress the growth of production and sales of green hydrogen. There may also be delays in both investments and implementation schedules. These delays will spread the demand for labour over time and reduce the pressure on the labour market, but will mean that hydrogen economy targets are also delayed.

Recommendations

More lateral entrants

- a. With 1.2 million FTEs, this group constitutes a significant part of the potential supply that, with targeted support, can be retrained (or upskilled) for the hydrogen transition and so reduce the shortage of technical employees.
- b. The Human Capital Agenda for this group can be made concrete relatively easily. These programmes could focus, among others, on developing electrochemical expertise and safety regulations for new hydrogen production systems and applications.
- c. By developing curriculums with modular designs, the education and refresher training programme can be accelerated, with private training providers also able to meet some of the requirement.

Increase the output of graduates through collaboration and systems thinking

- d. Collaboration between training institutions and businesses in the value chain should aim to identify what qualifications will be needed in the coming years and how the curriculum can respond to this. An overall picture is currently lacking.

Make it easier to get involved in the Dutch hydrogen sector

- e. Standardise guidelines and training requirements in NW Europe, e.g. with France, Belgium and Germany. NW European countries could cooperate more effectively to better align the curriculums of the training programmes, facilitating exchanges of both skilled employees and graduates.

Respond to regional differences

- f. Some of these industry clusters are located on the periphery of the Netherlands



(including Eemshaven, Zeeland and Chemelot). The attractiveness of residential areas and the availability of cultural facilities near them are important factors in the transition. It is also important to revitalise the labour supply in these regions.

Factor possible supply constraints into policies and projects

- g. The government must accept that education programmes take time, and that qualified employees are not trained overnight. This should be taken into account when setting and implementing targets.
- h. This means that policy goals and instruments need to take more account of the time it takes to build up labour market capacity.





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