Why clean hydrogen can be part of the just transition

In an EU that aims to be carbon neutral by 2050, production of green hydrogen can be a new job creating industry, argues Tjisse Stelpstra, Member of the Council of the Province of Drenthe in the Northern Netherlands, providing an economic boost for regions like his and Europe as a whole.

Moving to a low-carbon economy is expected to create more than one million jobs in Europe by 2030

The Corona crisis has put jobs, growth and investment squarely at the top of the agenda for the months and years ahead. The creation of a hydrogen economy must be part and parcel of Europe's economic recovery. It will enable the EU to proceed in earnest with the shift to climate neutrality by 2050 while providing regions and nations with a new source of work, wealth and industrial leadership.

Moving to a low-carbon economy is expected to create more than one million jobs by 2030. The ecological and digital transitions together will generate new jobs that need new skills. In the next five years, 120 million Europeans are expected to need upskilling or reskilling. This was how the European Commission described the jobs challenge in its EU industrial strategy unveiled on March 10, 2020. That was the day before the World Health Organization (WHO) labelled the Corona crisis a global pandemic. The stakes have never been higher.

LIFELINE FOR INDUSTRY

In its industrial strategy, the Commission proposes a "Pact for Skills" including governments, industry and social partners. The focus will be on sectors with high growth potential and those facing the greatest change. Emission-free hydrogen and energy-intensive industries are prime examples of each. Pairing

them up can help deliver a just transition that keeps industry and jobs in Europe.

The decarbonisation of industries such as steel, cement and refining is a "top priority", says the Commission in its industrial strategy. One way to do this is to replace the "grey" hydrogen currently used as feedstock or fuel with emission-free hydrogen. This would ultimately be "green" or "renewable" hydrogen made from renewables-powered electrolysis. En route, it could be "blue" or "decarbonised" hydrogen made from natural gas with carbon capture and storage (CCS).

Trade unions such as IndustriALL, which represents workers in metals, chemicals and energy among others, argue that CCS is an essential part of the just transition because it can help secure a future for energy-intensive industries in Europe.

Emission-free hydrogen offers a low-carbon lifeline to regions such as Drenthe, which has for decades hosted a thriving natural gas industry. It is at least in part because of this legacy — and the infrastructure and know-how it embodies — that the Northern Netherlands has won a €20 million EU grant to build Europe's first "hydrogen valley".

"If the EU gets the industrial strategy and the Green Deal framework right, we will not be talking about lost jobs for gas and phase-outs of industry sectors," said James Watson, Secretary General of Eurogas, a trade association for the European gas industry in early March 2020. "We will be talking about phase-ins and new clean technology industrial leadership." Trade unions and Eurogas will launch a new study next year on how the energy transition could affect the gas sector in terms of jobs and skills.

MILLIONS OF NEW JOBS

The green hydrogen economy could create 1-1.5 million new jobs in the EU by 2050, estimates consultancy Navigant. About a third of those would be direct jobs and half would be in renewable electricity production. Most of the work is expected to require highly qualified personnel. Overall, green hydrogen would account for over half of all the new jobs created by renewable gas, including biomethane from anaerobic digestion and thermal gasification.

The global CEO-led Hydrogen Council imagines a hydrogen economy employing more than 30 million people worldwide. A similar industry-led report for Europe echoes its figures and reasoning. The Hydrogen Europe Roadmap gets to about one million jobs in hydrogen in Europe by 2030 and 5.4

million in 2050. That is roughly three times the number of jobs in the EU chemical industry today.

The Hydrogen Europe Roadmap gets to a much higher figure than Navigant — 5.4 million versus up to 1.5 million new jobs in 2050 — because the two studies have a different scope. The roadmap considers employment opportunities across the value chain, including all end-use-related developments, whereas Navigant focuses on the upstream part, namely electricity and hydrogen production, transport and storage. The roadmap also takes into account export-related revenues.

From the roadmap's perspective, about half the jobs in a European hydrogen economy would be in the manufacture of hydrogen production and distribution equipment, plus infrastructure for end-use. Another third would be associated with fuel cells. Competitive fuel cell electric vehicles could help "retain" the European automotive industry "while a switch to only BEVs [battery electric vehicles] risks delocalisation of value chains overseas".

KEY PARAMETERS

The European figures roughly tally with a Netherlands-focused study carried out by experts for Gasunie, the Dutch gas network operator, in 2018-19. This estimates that green hydrogen could create 50-100,000 new jobs in the Netherlands in 2050. You get to the upper end of that via the roadmap figures, if you assume the Netherlands makes up 3.6% of total EU employment and emission-free hydrogen creates twice as many jobs as the fossil fuel phase-out loses.

The bottom line is that the shift to a low-carbon energy system is expensive, but good for job creation because such a system is more decentralised and labour-intensive.

Professor Catrinus Jepma, lead author of the study for Gasunie, highlights three key parameters that shape job creation estimates for emission-free hydrogen. First, there is no standard multiplier to describe the link between direct and indirect jobs. Jepma and his team used a conservative 1.5, but a range of 2-5 is found in the literature. Second, end-use matters. Jepma et al assume that in 2050, about a third of hydrogen would be used as feedstock and two-thirds as energy (up from virtually all of it being feedstock today). Most of the job creation potential is in the energy part.

Jepma and his colleagues also estimate that about two-thirds of the hydrogen used as energy would go to industry and about 10% to each of transport,

buildings and agriculture. The more that goes to transport and buildings, the more jobs are created, Jepma says. Most of the job creation potential is in end-use and maintenance.

A study by research institute CE Delft in 2018 concluded that the transport sector and vehicle maintenance, in particular, will dominate job creation in the green hydrogen economy. That study estimated about 50,000 additional permanent jobs in the Netherlands in 2050, plus another few thousand short-term opportunities annually along the way. The latter could include building hydrogen production facilities, retrofitting natural gas infrastructure or installing hydrogen boilers. The lasting jobs would be in the production of facilities and fuel cell vehicles, plus their operation and maintenance.

Like Corona, the climate crisis requires investment today for jobs tomorrow. "We will lose jobs in the energy transition, but we will gain many more," sums up Jepma. The green hydrogen economy will become a key factor for local and regional authorities like in my own region, the Province of Drenthe.

Link: https://foresightdk.com/why-clean-hydrogen-is-a-key-part-of-the-just-transition/