# HYDROGEN ENERGY ASSOCIATION
# AUTUMN BUDGET SUBMISSION 2024

**Summary**

This submission from the Hydrogen Energy Association describes the economic, energy security and decarbonisation benefits of hydrogen - including:

- The UK hydrogen economic opportunity out to 2030 is £11bn, with 12,000 high quality jobs across the UK, and many more in the supply chain.
- Delivery of £46bn per annum and 410,000 jobs to the UK economy via the hydrogen technology market alone in 2050;
- Savings of £38bn if hydrogen is used to store energy to balance offshore wind and solar when the wind isn't blowing and the sun isn't shining; and
- Enabling decarbonisation in sectors where this won't be possible without hydrogen.

To deliver these benefits, the industry needs:

- A Funding envelope for hydrogen production matched to Government Targets;
- Adjustments to the Climate Change Levy
- Adjustments to non-Commodity Cost relief
- Support to enable users to transition to hydrogen.

**What the hydrogen industry needs**

Funding Envelope for hydrogen production Matched to Government Targets

Recognising the immediate need for clean, flexible low carbon technology, the Government has positioned low carbon hydrogen as critical in accelerating the transition to Net Zero and greater energy security and delivering clean growth. Securing sufficient UK production capacity is critical to facilitating a stable and growing supply of low carbon hydrogen.

The UK hydrogen industry is working hard to deliver the new Government's target, which has seen doubling of the previous administration's target on green hydrogen, up to 10 GW by 2030. For green hydrogen, work done and investment into the Hydrogen Allocation Round (HAR) process has been welcome. Following a hiatus during the election period, it will be important that HAR 1 and HAR 2 move forward at pace.

Looking ahead, the HEA stresses the need to maintain an annual funding envelope that will allow HAR3 and 4 to allocate 1.5GW in 2025 and 2026, respectively. This should build on support to date of £2bn for HAR1.

With the global hydrogen market at the start of its growth, the associated UK economic opportunity out to 2030 is £11bn, with 12,000 high quality jobs across the UK, and many more in the supply chain.

To ensure ongoing investor confidence and maintain the UK's appeal in the international arena, it will be critical that Government follows through on commitments in a timely manner and brings forward its work on the Hydrogen Levy as soon as possible to help fully clarify how future support will be funded.

For CCUS enabled hydrogen, valuable progress has been made to establish the first two clusters (in North West England / North Wales and in Teeside / the Humber). Looking ahead, clarification is urgently needed on the revenue support envelopes that will allow the expansion of these clusters and enable the next two clusters selected (in Scotland and the Humber) to move forward with confidence. The HEA is supportive of the CCSA's recommendations in its Spring Budget submission

Following earlier Government consultation, the HEA considers that, in the short to medium term, price-based competition is not the best way forward for low carbon hydrogen production. The hydrogen industry is a long way in its development from that which characterised the offshore wind industry when price competitive allocation was introduced, including low market liquidity. The early hydrogen market is characterised by bilateral agreements between producer and user with no real flexibility - the HAR process itself demands that the user is identified. Liquidity and opportunity for cost reduction will increase in future years when more production projects have been built and there are the first parts of the hydrogen network in operation.

As policy to support hydrogen production evolves, it will be critical to strike the right balance between nurturing the growth of the UK hydrogen industry (and reaping the associated economic benefits in this burgeoning global market) and ensuring the availability of low carbon hydrogen at a price point which will encourage users to switch. Similarly, consideration must be given to how best to transition from the current bilateral agreements between a single renewable generator, electrolyser operator and user, to a portfolio based approach - such as operates in long established markets. There is also benefit in enabling hydrogen production projects at a range of scales to come forward. Small projects lead to large projects, and can help reduce overall risk as the market develops.

Fostering innovation

The HEA is supportive of the Hydrogen Innovation initiative's case for action seeking £100m annual matched public funding to help the UK secure 10% of the global hydrogen market share in 10 years. See below.

Support to enable users to transition to hydrogen

The 'build it and they will come' approach to hydrogen is now recognised as being insufficient to deliver the growth in hydrogen demand needed to ensure that we meet our targets. A holistic approach to funding the production, transportation, storage and use of hydrogen will help accelerate the delivery of the outcomes we need efficiently and effectively.

Alongside rewarding the production and use of low carbon hydrogen with subsidies (as above), parallel measures such as sector specific targets and penalties are needed to develop the UK hydrogen market and eventually make low carbon hydrogen subsidy free. Whilst we support the objectives of the RTFO, there are a range of practical constraints that are limiting its impact. There are useful lessons for the development of the SAF mandate.

The UK is lagging behind other markets. Measures such as high emissions trading prices, road taxes for $CO_2$ emissions and a low carbon hydrogen target for industry are key to closing the price differential between the cost of fossil fuels and low carbon hydrogen. There are valuable lessons to be learnt from the European Union in this context:

- Renewable hydrogen targets: The EU has set targets for increasing the use of renewable hydrogen in industry and transport. The target for industry is 42% renewable hydrogen by 2030 and 60% by 2035. For transport, the target is a 1% share of renewable fuel of non-biological origin (RFNBO) by 2030.

- Hydrogen refuelling stations: The EU has mandated that hydrogen refuelling stations be installed every 200 kilometers on the main EU roads and in all major cities by 2030.

Currently, there are limited requirements for hydrogen users to decarbonise operations to achieve binding targets and / or avoid a penalty. With a developing market for hydrogen, the risk for users to decarbonise with hydrogen and potentially impact operations is perceived as high.

Adjustments to the Climate Change Levy

The Climate Change Levy (CCL) is effectively an environmental tax charged on the energy consumed by end users and is designed to encourage businesses to operate more efficiently and reduce their overall emissions. As of 1st April 2024, the main CCL rate for gas, as well as electricity consumption, will be £7.75/MWh.[1] Certain users are exempt from the main rate, such as businesses that use small amounts of energy, domestic energy users, and road fuel and other oils that are already subject to excise duty.

A reduced rate of CCL is paid by an energy intensive business that has entered into a Climate Change Agreement (CCA) with the Environment Agency, and this can include a 92% reduction of the CCL for electricity input and 86% reduction for gas, coal, and other solid fossil fuels. Such energy intensive businesses are within hard-to-abate industries that are suitable for hydrogen fuel switching solutions. Yet, currently, the requirements for HAR funding mean that a facility switching to electrolytic hydrogen fuel would be subject to CCL charges for input electricity. Essentially, this means that end users switching to burn hydrogen, rather than natural gas, will face an additional charge. The scale at which these facilities operate means that CCL charges becomes a significant OPEX cost, making hydrogen a less feasible solution.

Under the support framework of the HARs, hydrogen is intended to be sold at the natural gas price, yet with the CCL it becomes evident that hydrogen is not at parity with natural gas but rather is £7.75 / MWh more expensive. Allowing energy intensive businesses using hydrogen to remain exempt from CCL charges in order to incentivise fuel switches by reducing electricity charges helps to address this. The HEA strongly recommends that such a change is introduced.

Adjustments to non-Commodity Cost relief

Alongside the cost of consuming the physical energy commodity itself, the non-commodity consumer costs associated with the management and delivery of energy represent an area in which hydrogen demand would benefit from easements.

Non-commodity costs include charges for transmission and distribution, operational costs, system balancing, and environmental levies. As the UK pushes for Net Zero, these costs are rising due to a number of factors including grid infrastructure upgrades, increasing demand fluctuations, increasing number of environmental levies (which are often funded through these charges), and regulatory changes.

[1] https://www.gov.uk/guidance/climate-change-levy-rates

Similar to aforementioned CCL exemption, the Government devised the Energy Intensive Industries (EII) Renewable Levy Exemption to protect large scale UK energy users from overseas competition, carbon leakage, and job loss by shielding businesses from some non-commodity costs. For eligible energy intensive businesses, the EII exemption scheme provides financial relief of up to 85% from the indirect costs the Renewables Obligation (RO), the Contracts for Difference (CfD), and Feed in Tariff (FIT) schemes, which are funded as non-commodity costs in the electricity bills of consumers.[2]

For energy intensive businesses looking to switch to hydrogen as a fuel source, it is crucial that there is no change in their eligibility for the EII exemption scheme - the non-commodity cost associated with the extra electricity needed for a co-located electrolytic hydrogen production would be costly. At the start of 2023, the Government announced the British Industry Supercharger (BIS), under which the available relief available in EII exemption scheme will rise to as much as 100% for eligible businesses, starting from April 2024.[3] To ensure that hydrogen fuel switching is as feasible as possible, intensive energy businesses looking to do so should be prioritized and / or fast-tacked through the eligibility criteria to qualify for 100% relief from non-commodity costs.

The BIS also introduced a further Network Charging Compensation (NCC) Scheme, which offers EIIs 60% compensation on eligible network charging costs. Eligibility for this compensation is contingent upon an EII holding a valid EII Exemption Scheme certificate. As the cost of EII exemptions would be funded by an increase in costs for non-EII businesses, it must be ensured that this does not result in inflated costs for non-qualifying electrolytic hydrogen facilities. The Government should consider introducing a similar exemption mechanism for the non-commodity costs of independent, large scale electrolytic hydrogen facilities. This could further stimulate hydrogen demand by allowing more room for negotiation in the pricing of offtake agreements with hydrogen end users.

Research undertaken by Ofgem found that UK EIIs were subject to electricity prices that were 50% higher than their equivalent competitors in France and Germany between 2016 and 2020, even when accounting for all other support available to UK EIIs their overseas counterparts.[4] Not only does this highlight the scale of the issue facing the UK, but it stresses the need for non-commodity cost relief for any EIIs incorporating electrolytic hydrogen solutions, which may often be vertically integrated and require large electricity inputs.

Our recommendations in this area are:

- Ensure that EIIs incorporating electrolytic hydrogen solutions remain eligible for and are prioritised under the EIIs Renewable Levy Exemption.
- Develop an electrolytic hydrogen specific equivalent of the EIIs exemption and the NCC scheme to shield electrolytic hydrogen producers from non-commodity costs and grid charging costs.

**The benefits of hydrogen**

<u>Hydrogen for jobs and growth</u>

- The global demand for hydrogen technology is expected to increase to £700 billion annually by 2050, and there is an opportunity for the UK to be at the forefront of this new global industry, generating jobs and exports across the UK [5].

[2] https://assets.publishing.service.gov.uk/media/64492698814c66000c8d0709/cfd-ro-fit-exemption-guidance.pdf
[3] https://www.gov.uk/Government/consultations/british-industry-supercharger-network-charging-compensation-scheme/outcome/Government-response-british-industry-supercharger-network-charging-compensation-scheme
[4] https://www.ofgem.gov.uk/sites/default/files/2021-07/Final%20report-%20Research%20into%20GB%20electricity%20prices%20for%20EnergyIntensive%20Industries.pdf
[5] https://hydrogeninnovation.co.uk/wp-content/uploads/2024/04/UK-Hydrogen-Innovation-Opportunity.pdf

- The UK economic opportunity out to 2030 is £11bn, with 12,000 high quality jobs focused in Teesside, across North-West & North Wales, Humber, Scotland and South-West, and many more in the supply chain. These jobs will encompass engineering, construction, manufacturing and service sectors among others.
- A 10% share the hydrogen technology market alone could deliver £46bn per annum to the UK economy by 2050 and 410,000 jobs.
- Existing skills in oil and gas can help us provide global leadership in hydrogen.

Hydrogen for energy resilience

- Hydrogen is pivotal for achieving a decarbonised power system by 2030, ensuring flexibility and complementing high levels of intermittent renewable generation.
- Hydrogen allows us to balance supply and demand as we work towards our 50GW of offshore wind by 2030, with hydrogen storage as a vital buffer.
- In 2022 alone, there were 200 occasions when National Grid ESO had to pay Scottish wind farms to shut off their turbines, adding £800 million to consumer electricity bills and increasing greenhouse gas emissions by 1.3 million tonnes.
- Savings of £38bn have been identified if hydrogen is used to store energy to balance offshore wind and solar when the wind isn't blowing and the sun isn't shining[6].

Hydrogen for net zero

- The UK will not achieve its decarbonisation ambitions without hydrogen.
- Hydrogen's key role is in hard to abate sectors, where electrification is not possible – heavy industry, heavy duty transport (road, shipping, aviation) and power.
- By 2050, hydrogen could account for 35% of final energy demand.

[6] Benefits of long-duration electricity storage (publishing.service.gov.uk)