CLEAN AIR TASK FORCE

Clean Air Task Force (CATF) recommendations

EU Hydrogen Strategy – revision

Clean Air Task Force (CATF) welcomes the Commission's decision to revise the EU Hydrogen Strategy. We share the concern that hydrogen production and uptake have fallen short of what is needed to meet decarbonisation goals. The update of the strategy is a critical moment to set out a pragmatic roadmap, so that clean hydrogen market can be achieved and sustained across Member States.

If the EU is to reach its climate goals, it needs to adopt a realistic, not aspirational, strategy for clean hydrogen and its specific role in supporting a climate-neutral Union. A revised strategy should carefully outline where clean hydrogen will be most needed, where and how it will be produced, and how hydrogen molecules will be moved from production sites to end use applications, establishing clear and achievable targets and milestones for the EU to meet from now until 2050.

1. Broaden clean hydrogen production options

The debate around clean hydrogen is heavily marked by colour-coding: assigning colours, and therefore value, to different production pathways. EU policy and support mechanisms have tended to favour green hydrogen. But in a world where the effects of climate change are increasingly damaging, we need to leverage all suitable 'tools in the toolbox' to produce low-GHG emissions hydrogen. From a lifecycle perspective, which includes emissions from transportation, hydrogen transported halfway around the world, even if renewable energy-derived, may not be the most effective decarbonisation strategy. In certain cases where high carbon capture rates and strict methane mitigation measures are implemented, emissions from hydrogen produced from natural gas with carbon capture (often known as 'blue' hydrogen) can be as low as those from renewables-based hydrogen production. The EU should therefore determine the merits of production methods based on GHG emissions reduction across hydrogen's full lifecycle. Likewise, the different support schemes should be open to all hydrogen production pathways that can demonstrate sufficient reductions.

2. Prioritise the right hydrogen applications

Policymakers should prioritise hydrogen deployment in priority sectors and applications that need it the most rather than setting hydrogen production targets and leaving it up to the market to decide how the produced hydrogen is used. This requires analysing where and in what quantities clean hydrogen is needed the most and where alternatives exist to decarbonise. Working out robust estimates of how much clean hydrogen the relevant sectors may need, both in the near and longer term, can help guide more realistic clean hydrogen targets and identify priority offtakers for hydrogen producers.

As a matter of priority, existing unabated hydrogen generation in industrial subsectors like ammonia production for fertilisers and refining, which account for over 80% of the EU's current hydrogen consumption, should be replaced by clean hydrogen. Secondly, as hydrogen begins to be used in new applications, it should be directed towards those sectors where it can cut the most carbon emissions in a cost-effective manner, like steel manufacturing, shipping, and aviation. Using hydrogen for residential heating and fuelling ground transportation lacks reasonable justification, therefore it should be discouraged by policy in favour of other options for their decarbonisation. As clean hydrogen will likely remain a scarce resource, it is important to make the best use of it.

3. Trade hydrogen-based products, not hydrogen

The physical realities of hydrogen transport must underpin all import strategies. As hydrogen molecules themselves cannot be easily nor cheaply transported, the EU should move away from the concept of hydrogen imports/exports. Instead, it should focus on the imports of energy-intensive downstream products that use hydrogen as a feedstock and that can be easily transported, such as ammonia, methanol, and hot briquetted iron (HBI). Given that the EU already imports ~2.5Mt of (unabated) ammonia and ~80% of its methanol needs, this would also build on existing trade relationships.

4. Tackle the high cost of clean hydrogen

Several recent project updates have highlighted the challenge of producing clean hydrogen at a cost competitive with 'grey' hydrogen, which significantly hinders market development. The average price for unabated hydrogen in Europe is around €3-4/kg and is highly dependent on the price of natural gas, whereas electrolytic hydrogen tends to be closer to €7-12/kg. Electricity costs are the single largest driver of this gap and make renewable hydrogen production cost prohibitive across most of the EU. Unless intervention is taken, this huge price discrepancy will continue to limit the take-off of a sustained EU clean hydrogen market.

The European Hydrogen Bank has not closed this gap. It supports production without directing hydrogen to the industrial users that need it most, and its price-only auctions selected projects that were not ready to deliver. In the second auction, seven of the fifteen initial winners withdrew, accounting for 1.9 GW of the 2.3 GW awarded, and signed grants now cover 381 MW, or 17% of the capacity originally awarded. The binding constraints on delivery come after selection, when projects must secure a firm grid connection, credible power sourcing, and bankable long-term offtake, and manage project-on-project risk. An auction that ranks bids on price alone tests none of these. For example, the 500 MW Catalina project, selected in the first auction terminated its grant agreement, citing a tight deadline for commercial operation and its reliance on national hydrogen pipeline infrastructure.

Public support should primarily close the cost gap at the point of use. The Industrial Decarbonisation Bank should allocate competitive, technology-neutral carbon contracts for difference ranked on cost per tonne of CO_2 avoided, open only to projects mature enough to be built, with sector safeguards such as a sectoral cap or ring-fenced budget to ensure sectors with

high-cost decarbonisation pathways are not disadvantaged. Additionally, support mechanisms including the Hydrogen Bank, the Industrial Decarbonisation Bank, CEF funding, and national support schemes should be better coordinated.

Supply-side support alone will not build a lasting market without demand. The Industrial Accelerator Act should create lead markets for the products clean hydrogen enables. CATF calls for the Act's low-carbon procurement mandates for steel to be strengthened and for demand-side obligations to be extended to chemicals and fertilisers, which together would create significant demand for clean hydrogen.

The cost of electrolytic hydrogen is dominated by input electricity costs, representing anywhere from 60 to 80% of the levelized cost of production. Consequently, reductions in electrolyser equipment costs alone are unlikely to deliver the substantial declines in hydrogen production costs anticipated in earlier projections. While manufacturing improvements, economies of scale, engineering optimisation, and reductions in project delivery costs can lower the non-electricity component of hydrogen production costs, their overall effect will diminish as electricity accounts for an increasing share of total costs. The widely assumed trajectory of steadily declining electrolytic hydrogen production costs should not therefore be taken for granted. Should the delivered cost of electricity remain high, or even rise, nominal electrolytic hydrogen production costs will not fall.