Hydrogen Council

UNLOCKING HYDROGEN'S COST COMPETITIVENESS FOR A ZERO-EMISSION ECONOMY

We are on the cusp of a major energy transformation. To limit global temperature increase to 1.5°C and confine the impact of climate change, dramatic changes are needed in the ways we produce, distribute and store energy. Governments, industry and investors must act now to kickstart the transition. A secure and affordable clean energy future is possible – if we place hydrogen at the core.

Hydrogen competitiveness in the fast lane

Until now, the cost of producing hydrogen energy has put it out of reach for everyday use. Today, technological advances and early demonstration projects have significantly lowered the cost of many applications, and the cost dynamics are about to drastically change.

As scale up of hydrogen production, distribution, equipment and component manufacturing continues, cost is projected to decrease by up to 50% by 2030 for a wide range of applications, making hydrogen competitive with other low-carbon alternatives and, in some cases, even conventional options.

This makes hydrogen a potential game changer in several areas including long-distance and heavy-duty transportation, industrial heating, and heavy industry feedstock, which together comprise roughly 15% of global energy consumption.

According to the economics, scaling up the hydrogen value chain will be the biggest driver to unlock further cost reductions in the future.

Investing in the zero-emission economy

Around $70 billion of investment from various sources will be needed to reach scale; and while this is sizable, it accounts for less than 5% of annual global energy spend.

The biggest impact will come from investing in:

1. **Production**: achieving competitive renewable hydrogen from electrolysis and initiating the implementation of low-carbon hydrogen from natural gas reforming with carbon capture and storage (CCS)
2. **Transport**: building refuelling and distribution networks and closing the gap between fuel cell and hydrogen tanks compared with low-carbon alternatives
3. **Heating**: for buildings and industry, closing the gap between hydrogen and natural gas and building or repurposing the first gas pipeline networks for hydrogen

Creating the market for versatile hydrogen solutions

Reducing market uncertainty and stimulating demand and supply towards critical tipping points – after which costs fall sharply and scale up increases – will make the difference. In addition, seeking ways to advance hydrogen solutions that create virtuous cycles which move individual technologies forward; while prioritising utilisation rates in distribution networks and investing in low-carbon and renewable hydrogen production will also contribute to a robust hydrogen market.

An enabling policy framework

Governments hold the key to enabling investment. Eighteen countries, whose economies account for 70% of global GDP, have developed detailed strategies for deploying hydrogen energy solutions. Yet the playing field for hydrogen still needs to be levelled by way of local coordination, regulations to remove existing barriers, standardisation, and incentives such as tax breaks and subsidies to encourage initial acceleration of hydrogen.

If we reassess the risks and returns associated with our energy policies and investments today, investors and industry will have all the tools necessary to successfully realise a clean, safe and affordable energy transition, with a key role for hydrogen.

Read the full report *"The Path to Hydrogen Competitiveness: A Cost Perspective"* on hydrogencouncil.com.