Hydrogen Energy Association

The State of the Hydrogen Nation Report

2026 EDITION

January 2026

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27 January 2026

The State of the Hydrogen Nation Report is the Hydrogen Energy Association's annual, industry-led assessment of the UK hydrogen economy.

We are grateful for the contributions of the 142 businesses across the UK hydrogen value chain who have made this report possible.

With thanks to our report partners and report launch co-sponsors:

Hydrogen Scotland

Hydrogen Ireland

Chesterfield Special Cylinders

LUXFER GAS CYLINDERS

The insights and data shared in this report reflect industry perspectives and do not necessarily represent the views of individual partners.

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Executive Summary

Dr Emma Guthrie, Chief Executive, Hydrogen Energy Association

I am delighted to present the Hydrogen Energy Association's first State of the Hydrogen Nation report. My sincere thanks go to the 142 organisations from across the UK hydrogen value chain who took the time to complete our survey and share their data, experience and views.

The State of the Hydrogen Nation report is set to become an annual fixture, providing a detailed, industry-led "health check" of the UK's hydrogen economy. It is designed to support evidence-based policy development, combining quantitative survey data with real-world experience from businesses large and small operating in every region of the UK. Above all, it is intended as a practical tool for collaboration between government, regulators and industry - to help us move faster together.

This report comes at a pivotal moment. Hydrogen has moved from concept to concrete projects and investments, but the UK hydrogen economy is now at a crossroads. The Government's ambition for hydrogen is clear, and support to date is recognised across the industry. However, the pace of early project rollout has been slower than expected, and there is growing concern that the UK could fall behind its internation peers if funding, regulation and policy signals are not aligned more effectively.

Our survey results paint a picture of a sector that remains committed and ready to invest, but which is increasingly constrained by uncertainty over demand, policy design and the speed of decision-making.

Our findings can be summarised in three key messages:

1. The UK hydrogen industry is ready to deliver under the right frameworks to support investment. The pipeline of projects, the strength of the UK supply chain and the willingness to invest are all visible in the data. The question is no longer whether hydrogen has a role, but how quickly and confidently the UK will move to deploy it at scale.

2. Demand creation is now the number one constraint on growth. The UK has put in place world-leading policy frameworks to support hydrogen production, but policy support for end-use markets has not kept pace. Businesses report that without credible signals on where hydrogen will be used, projects cannot reach FID, even when production support mechanisms are available.

3. Partnership between government and industry will determine whether the UK takes the high-growth path. Responsibility for hydrogen sits across several government departments, regulators and sectors. Progress is dependent on joined-up action to align revenue support and carbon pricing, simplifying planning for hydrogen projects, supporting hubs, and recognising the role of derivatives such as low-carbon ammonia in the wider hydrogen economy.

To government and Parliamentarians, this report is a call to action from the companies who are building the UK's hydrogen economy. Collaboration and coordinated action at pace are essential to creating the right conditions to enable investment, create high-skilled jobs and to support the UK's net zero and energy security objectives.

To civil servants and regulators, it provides the evidence needed to design policies that are bankable for investors, workable for end-users and effective in driving down emissions.

To investors, it is an encouragement to lead with ambition and work collaboratively with industry and government to ensure investment continues to unlock value and support project development.

To industry, it is a reminder that we must continue to speak with a coherent, data-driven voice, sharing what works and where barriers remain, so that we can help government design solutions that address bottlenecks to progress critical projects.

If we act on the findings of this report - aligning ambition with delivery, and building on the existing partnership between government and industry - the UK can secure a leading position in the global hydrogen market.

The Hydrogen Energy Association, alongside its members and partners, stand ready to work with Ministers, officials, Parliamentarians and the wider UK hydrogen industry to make that happen.

Photo courtesy of HEA

Key Findings

1

The UK's regulatory framework for hydrogen is perceived as strong and investable, however policy and funding delays are at risk of affecting confidence.

84%

of respondents expect their UK **hydrogen investment to increase** over the next 12 months

51%

of respondents expect **demand for hydrogen products and services to increase** over the next year

2

The UK has a strong skills base developed through its oil and gas, automotive, and chemicals industries. Building a competitive hydrogen sector offers a significant opportunity to create new jobs and support workers through a just transition.

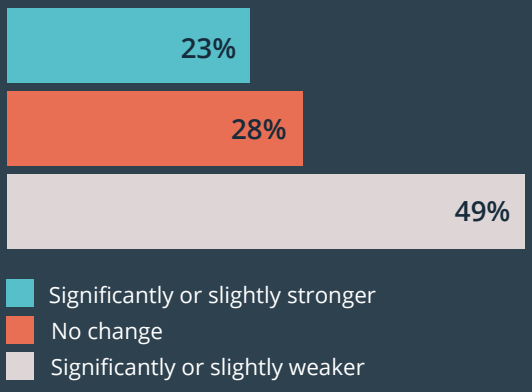
17,000

jobs could be created by survey respondents in the **UK hydrogen sector** by 2030

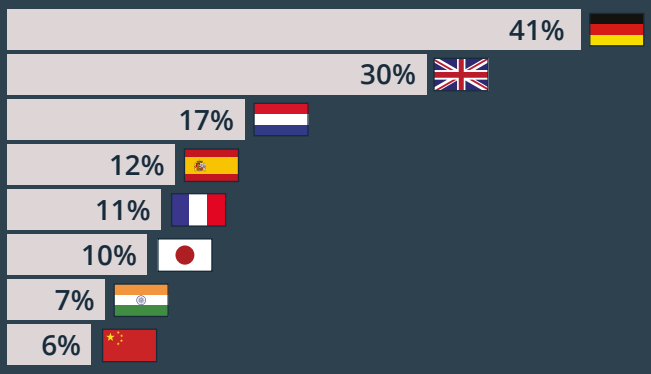
3

While still considered an attractive global destination for hydrogen investment, delays to policy development and funding announcements are beginning to affect industry confidence in the UK Government's commitment to hydrogen.

Perceived UK Government commitment to hydrogen vs 12 months ago:



Countries considered most attractive for hydrogen investment:



4

Demand creation is the most significant constraint on overall UK hydrogen market development.

81%

of organisations seeking offtakers report that agreeing offtaker contracts **is somewhat or very difficult**

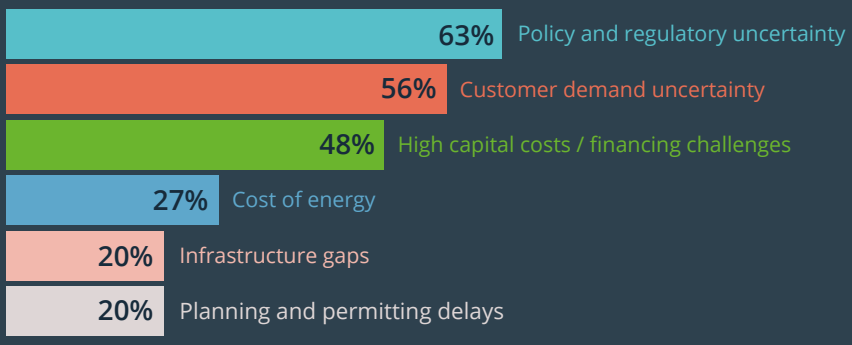
Barriers to integrating hydrogen into end-user operations:

- Lack of suitable infrastructure (e.g. refuelling stations, pipelines) **71%**
- Competing low-carbon energy options **37%**
- High or uncertain hydrogen supply costs **67%**
- Limited availability of hydrogen-compatible equipment or vehicles **29%**
- Lack of long-term policy incentives or support mechanisms **50%**

5

Barriers to growth include policy and regulatory uncertainty and financial and capital barriers. Many of these can be unlocked through the timely delivery of existing / announced schemes and closer cross-departmental collaboration.

Organisations plan to increase investment:



Where organisations plan to increase investment:

- R&D and innovation **52%**
- Capital expenditure (facilities, infrastructure) **38%**
- Workforce and skills training **43%**
- International expansion **27%**

Recommendations

1. Market confidence and investment

- Increase the pace of delivery on upcoming policy and funding commitments, such as HAR2, HAR3, and transport and storage allocation rounds.

2. Jobs, skills and workforce

Work with industry to accelerate the Clean Energy Jobs Plan and development of the Hydrogen and Carbon Capture Skills Accelerator, specifically:

- Expanding the pilot regions to include Scotland and Wales.
- Delivering a comprehensive curriculum and training materials in 2026.

3. Government commitment and international attractiveness

Send clear signals of support for the UK hydrogen industry by:

- Creating more high-profile hydrogen "moments" to regain momentum.
- Developing an updated hydrogen roadmap with clear targets for production and end-use.
- Maintaining a focus on delivery – both across and between departments – against stated timelines.

4. Building demand

Develop mechanisms to support long-term adoption by hydrogen end-users, particularly focused on demand sectors identified in the updated Hydrogen Strategy. Tailor to the end use sector through measures such as:

- Deployment and emissions targets for industry, power, off-road, rail and refuelling infrastructure.
- Mandates to stimulate change.
- CAPEX support for end energy users across industry and transport to transition and install upgrades.

5. Market development

Implement targeted measures to support HAR projects to take FID and accelerate the early development of the hydrogen economy:

- Enhance effectiveness of HAR by increasing flexibility in contracts including shortening contract length and allowing controlled eligibility of Risk-Taking Intermediaries as a HAR offtaker.
- Commit to a strategic role for blending into the gas distribution and transmission network to facilitate early demand and de-risk investment.
- Identify regional hydrogen opportunity areas in renewable energy curtailment hotspots such as Scotland, Northern Ireland and Wales, which are ideally placed to become hydrogen growth engines, creating jobs and driving investment by leveraging them as hydrogen production, storage and industrial offtake clusters.

6. Barriers and enablers

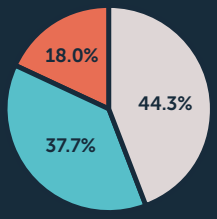
Demonstrate joined up working across departments to deliver funding and policy reforms in a strategic manner by:

- Launch the Clean Industry Bonus for Hydrogen in 2026 and align this with the HAR2 shortlisted project announcement to help realise the ambition to support "shorter and more sustainable supply chains."
- Publish an updated Hydrogen Investment Roadmap, setting out all funding relevant to hydrogen as well as the criteria and allocation for awarding funding from Public Financial Institutions.
- Central government departments to work with Arm's Length Bodies and Devolved Administrations to issue standardised and practical guidance to planning authorities, to help accelerate infrastructure delivery.

Survey respondents

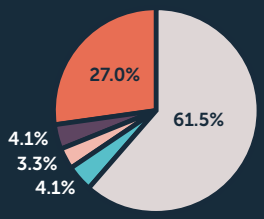
Primary operating region

- Global: 44.3%
- UK only: 37.7%
- UK and Europe: 18.0%



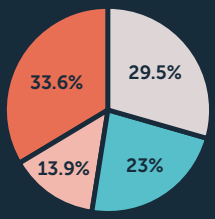
% of UK turnover from hydrogen

- ≤20%: 61.5%
- 21–40%: 4.1%
- 41–60%: 3.3%
- 61–80%: 4.1%
- 81–100%: 27.0%



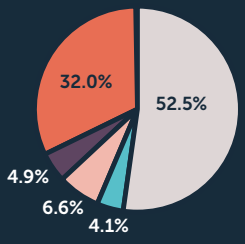
Approximate employee size in the UK

- 1–9 employees: 29.5%
- 10–49 employees: 23.0%
- 50–249 employees: 13.9%
- 250+ employees: 33.6%



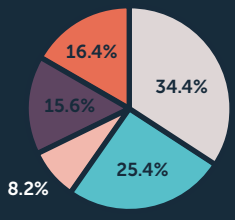
% of UK employees working on hydrogen

- ≤20%: 52.5%
- 21–40%: 4.1%
- 41–60%: 6.6%
- 61–80%: 4.9%
- 81–100%: 32.0%



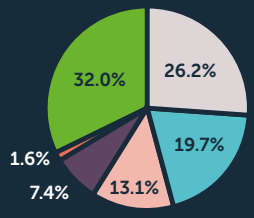
UK annual turnover

- < £1m: 34.4%
- £1m–£10m: 25.4%
- £10m–£50m: 8.2%
- £50m–£250m: 15.6%
- £250m+: 16.4%



Primary role in the UK hydrogen value chain

- Technology, manufacturing and equipment supply: 26.2%
- End-use (e.g. mobility, power generation, industry): 19.7%
- Hydrogen production: 13.1%
- Storage and distribution (transport): 7.4%
- Investment and finance: 1.6%
- In addition, 32.0% provided bespoke "other" descriptions, mostly variations on:
  - Consultancy and advisory services
  - R&D / research / trials
  - System integration and design
  - Skills, training, risk/safety and support services
  - Trade bodies and regional cluster organisations



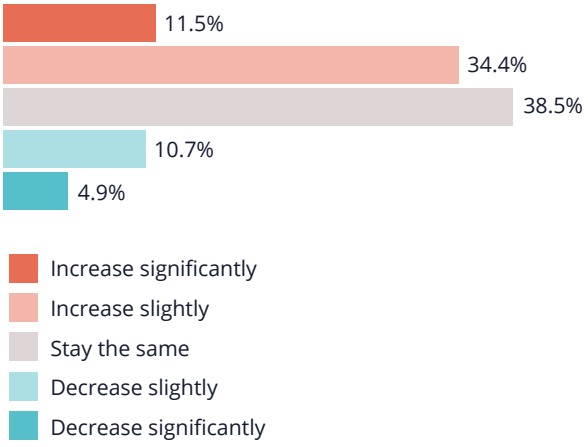
Market confidence and investment sentiment

This section summarises what survey respondents tell us about market confidence in the UK hydrogen sector and how they expect their investment and growth plans to evolve over the next 12 months. Overall, the survey evidences that industry is committed to hydrogen and is broadly increasing investment, while also recognising that confidence has been impacted by policy uncertainty, cost pressures and the need to stimulate demand.

Investment sentiment

Survey responses show that a clear majority of organisations (84.4%) expect their UK hydrogen investment to increase, or at least hold steady, over the next 12 months.

Figure 1. Planned change in UK hydrogen investment over the next 12 months



This suggests two important points:

- Hydrogen remains a strategic priority for many companies, even in a challenging macroeconomic environment.
- Investment is expected to grow steadily – a sign of informed and sustainable optimism.

Case Study: Growing investment in UK hydrogen – Luxfer Gas Cylinders

Luxfer Gas Cylinders is a world leader in designing and manufacturing lightweight, high-capacity alternative fuel storage systems that store fuel for sustainable energy vehicles and tankers. From its European base in Nottingham Luxfer has continued to strengthen its global footprint through targeted investment in the EU and UK, driven by rising demand for clean energy storage solutions and the need for resilient, regionally based manufacturing. As hydrogen vehicles and hydrogen power applications proliferate the demand for lightweight composite technologies accelerate across Europe, Luxfer recognised the importance of expanding operations closer to its customers.

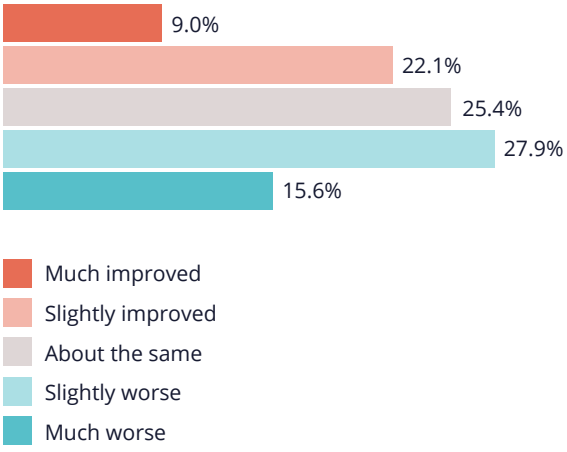
By investing in advanced production capabilities in the UK, Luxfer has reduced lead times, improved supply chain security, and enhanced its ability to collaborate directly with OEMs and integrators. These facilities also support the company's commitment to innovation, enabling faster prototyping, improved testing capacity, and greater flexibility in meeting evolving regulatory standards.

Further expansion will continue to allow Luxfer to serve a rapidly growing market while contributing to regional sustainability goals. Our goal is to consolidate our market leading position through creating a stronger, more agile organisation positioned to support Europe's transition to low carbon mobility and energy systems.

Business confidence

When asked to compare their overall business confidence in the UK hydrogen market to 12 months ago, respondents were split, with 31.1% of organisations stating that their confidence had improved, while 43.5% saying that it had worsened. The largest single group report confidence as "slightly worse", followed by those who see no real change.

Figure 2. Change in business confidence compared with 12 months ago



This indicates that:

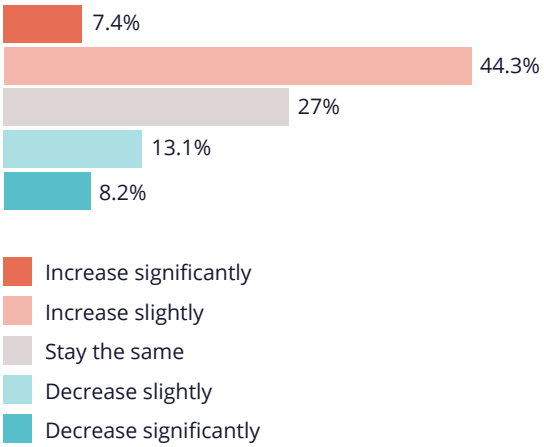
- Confidence has lessened - businesses are more cautious about the UK hydrogen market, with some projects placed on pause or cancelled, but others remain committed to already planned investment.
- This change is driven largely by perceptions of slower-than-expected progress on policy, funding and enabling infrastructure, rather than doubts about hydrogen's long-term role.
- Many organisations believe the UK is on the right track, but is not moving fast enough to give full confidence in long-term investment decisions.

Expectations for growth

Looking ahead, respondents were asked how they expect demand for hydrogen products and services to change, and how confident they are in their own organisation's growth prospects in the UK hydrogen market over the next year.

On demand, 51.7% of respondents expect demand to increase, while 21.3% expect demand to fall.

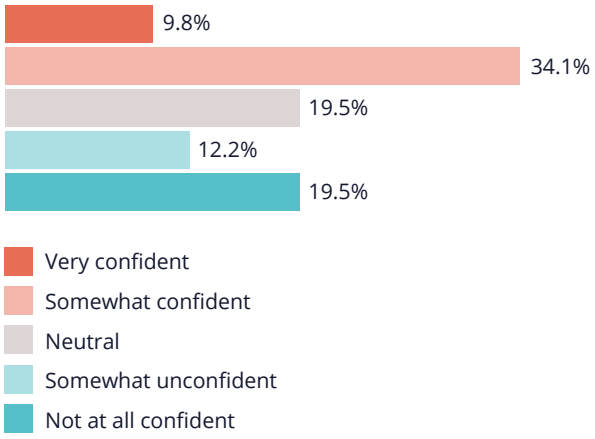
Figure 3. Expected change in demand for hydrogen products & services (next 12 months, UK)



On industry growth prospects, 43.9% of businesses describe themselves as "confident" or "somewhat confident" that their hydrogen business will grow over the next 12 months. A smaller but significant 31.7% are "not at all confident" or "somewhat unconfident".

Photo courtesy of Luxfer Gas Cylinders: The G-Stor® Hydrosphere Multiple Element Gas Container (MEGC)

Figure 4: Confidence that organisation's role in UK hydrogen market will expand (next 12 months)



These results suggest that:

- The sector expects gradual expansion in the hydrogen market in the near-term.
- Growth is dependent on upcoming policy decisions, funding outcomes (e.g. HAR3) and the pace of project approvals.
- Some have cited that they are poised to scale quickly if conditions improve, while others are taking a longer-term view, waiting to see how the UK hydrogen market develops before committing significant capital.

Differences by organisation size

The survey reveals some notable patterns by organisation size.

Figure 5: Investment outlook by organisation size

	Small <50	Medium 50	Large 250+
Expect demand to increase	48%	71%	49%
Avg. confidence in growth prospects (0–10)	5.2	5.6	4.3
Expect hydrogen investment to increase (12-month)	55%	59%	39%
Expect hydrogen investment to stay the same (12-month)	30%	41%	39%
Expect hydrogen investment to decrease (12-month)	16%	0%	22%

Medium-sized organisations (50–249 UK employees) are consistently the most confident group. 71% expect demand for hydrogen products and services to increase, and almost 60% plan to increase their hydrogen investment, with none expecting to cut it. Their average confidence in growth prospects is the highest of any group at 5.6/10.

Smaller firms (>50 UK employees) are also relatively optimistic. Just under half expect demand to rise and around 55% plan to increase their hydrogen investment, with only around one in six expecting to reduce it. Their average confidence in growth prospects is 5.2/10.

Larger organisations (250+ UK employees) are more cautious. 49% expect demand to grow, however only 39% plan to increase hydrogen investment. Their average confidence in growth is 4.3/10, with 22% looking at cutting investment in hydrogen over the next 12 months.

A supportive policy environment needs to work for businesses of all sizes.

Case Study: Growing investment in UK hydrogen – N-GEN

At N-Gen, we recognise the critical role that gas will play in the energy transition, and specifically hydrogen's role in decarbonising certain industrial sectors. As early movers, backed by our shareholders, we've invested substantially in the UK's largest HAR1 project, Bradford Low Carbon Hydrogen (BLCH), building essential technical expertise and strategic partnerships that position us to expand our UK hydrogen portfolio.

We're actively strengthening our pipeline of partnerships and early-stage projects across the gas transition space, aligning growth with our investors' risk appetite. While the UK hydrogen sector offers some compelling fundamentals such as established industrial clusters and growing renewable resources, current market uncertainties around policy frameworks, regulatory mechanisms and demand incentives require a measured approach.

Our phased investment strategy allows us to demonstrate value through BLCH's successful delivery, while maintaining the flexibility to scale as market certainty improves. This positions N-Gen to capture meaningful opportunities in the UK's gas transition space, balancing our commitment to delivering net zero with efficient capital deployment.

Photo courtesy of N-GEN: Bradford Low Carbon Hydrogen Project

Differences by role in the hydrogen value chain

Confidence and investment outlook also varies across the hydrogen value chain:

- **Producers:** 50% of respondents expect to grow in the next 12 months, with an average confidence of 4.9/10.
- **Technology, manufacturing and equipment suppliers:** 56.2% of respondents expect to grow in the next 12 months with an average confidence of 5.4/10.
- **Storage and distribution / infrastructure:** 44% of respondents expect to grow in the next 12 months with an average confidence of 4.9/10.
- **End-users (e.g. transport, industry, power, heat):** 58.3% of respondents expect to grow in the next 12 months with an average confidence of 4.7/10.
- **Investors and finance providers:** 100% of respondents expect to grow in the next 12 months with an average confidence of 7/10.

These statistics highlight that industry broadly expects to grow or maintain investment over the next 12 months although confidence in these projections remains low due to uncertainty in the direction of the broader market. This further highlights the importance of timely policy delivery from Government, which provides industry with the clarity it needs to boost confidence across the sector.

Summary

In summary, the survey results demonstrate that the UK hydrogen sector remains committed to growth, but that significant risks and gaps in policy support are still present. Most organisations expect to maintain or increase investment and anticipate growing demand, yet many also report weaker confidence and highlight key barriers that could see the UK fall behind its peers, ceding jobs and investment overseas.

Jobs, skills and workforce

Hydrogen is already generating skilled employment across the UK, but the survey evidence shows how sensitive the scale and pace of job creation is to the policy environment. This section sets out what respondents expect in terms of jobs to 2030, how those jobs are distributed across the value chain, where skills shortages are emerging, and how this aligns with the Government's Clean Energy Jobs Plan.

Employment potential to 2030: current vs improved policy

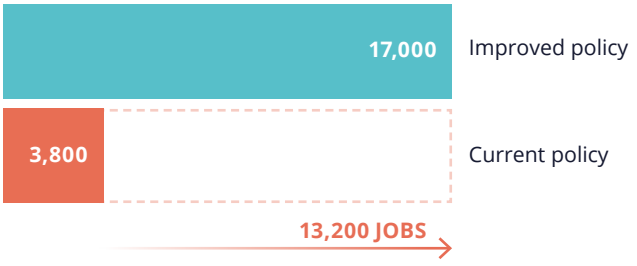
Respondents were asked how many UK jobs in hydrogen they expect their organisation to create over the next five years under two scenarios:

- **Current policy trajectory:** Assuming announced and expected policy is delivered on time.
- **Improved policy environment:** Assuming that respondents' top three policy asks are taken forward by Government, alongside greater clarity, faster decision-making and more effective demand-side support.

Using mid-point estimates for each response band, the survey indicates:

- Under current policy, respondents collectively expect to create around 3,800 UK hydrogen jobs by 2030.
- Under an improved policy environment, the same organisations expect to create around 17,000 jobs over the same period.

Figure 6: Estimated UK hydrogen jobs created by survey respondents by 2030 (current vs improved policy)



This evidence implies there is the potential to create four times more jobs in an improved policy environment. These numbers reflect only those organisations that responded to the survey, and suggests that the true number across the whole industry is likely to be significantly higher. From the survey data, we can infer:

- The hydrogen industry is already creating a significant number of jobs.
- There is a huge opportunity to unlock the full job creation potential of the UK hydrogen industry with targeted policies, especially in the engineering, construction, manufacturing and operations sectors.
- Policy clarity and certainty will play a decisive role in the size and scale of the UK hydrogen industry.

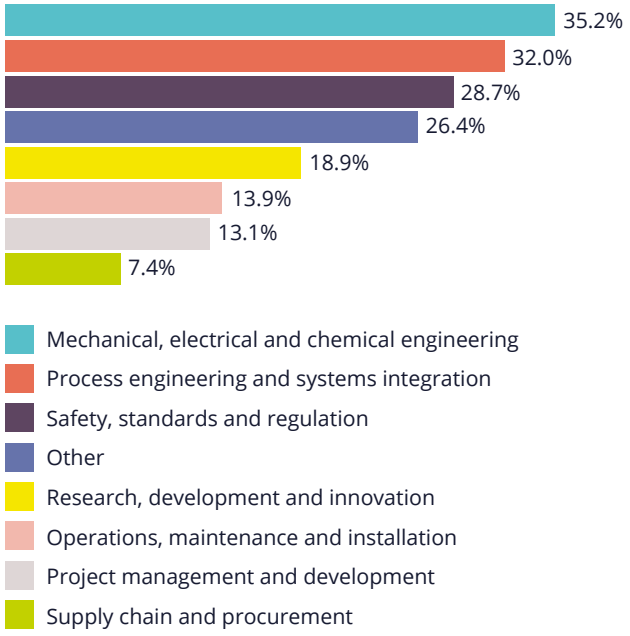
Skills and future workforce needs

Across the survey, a clear theme emerges: businesses are already feeling the effects of skills and capacity constraints, which are expected to become more acute as projects move into delivery.

When asked which hydrogen-related skills are hardest to recruit, respondents most frequently highlight:

- **Mechanical, electrical and chemical engineering:** particularly with experience in process industries or energy.
- **Process engineering and systems integration:** designing, modelling and optimising complex hydrogen systems safely and efficiently.
- **Safety, standards and regulation:** specialists familiar with hydrogen safety, hazardous area classification, and emerging codes and standards.

Figure 7: Hydrogen-related skills most difficult to recruit

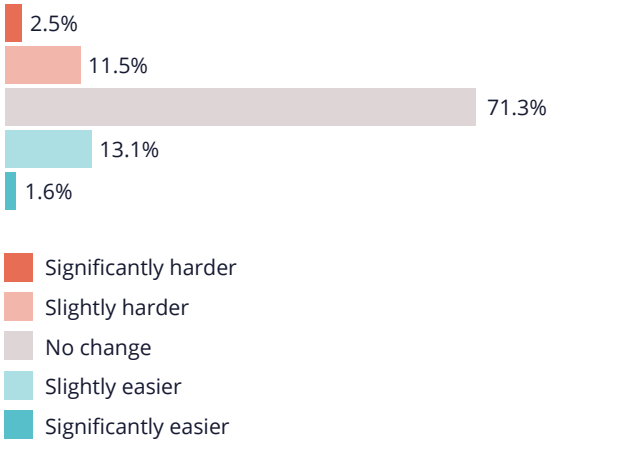


Many organisations note that those with direct hydrogen experience are rare, and that they are recruiting from adjacent sectors (oil and gas, chemicals, power, automotive) and then investing heavily in retraining.

Policy context: alignment with the Clean Energy Jobs Plan

Overall, only 14% of survey respondents found recruitment of personnel with essential hydrogen skills harder over the last 12 months, with around the same finding it easier over the same time period, while the majority saw no significant change.

Figure 8: Change in recruitment for hydrogen skills (past 12 months)



The UK Government's Clean Energy Jobs Plan sets out ambitions to grow the low-carbon workforce, with hydrogen recognised as a key pillar of the net zero economy. The survey responses support the view that jobs will be created at scale only if skills provision keeps pace with deployment.

From an industry perspective, the key points of alignment are:

- **Apprenticeships and technical education:** There is strong support for expanding technical pathways in engineering, process operations and infrastructure that explicitly reference hydrogen and related technologies. Respondents stress the need for courses that are co-designed with industry, so that graduates are work-ready.
- **Transition pathways from high-carbon sectors:** Many companies already recruit from highly skilled sectors such as oil and gas, petrochemicals and thermal power. A more structured approach, with recognised transition programmes and targeted support, would help redeploy experienced workers into hydrogen projects more quickly, enabling the UK to retain their critical expertise while supporting a just and efficient energy transition.
- **Regional skills strategies tied to hydrogen clusters:** Scotland, the North East, the North West and Wales need tailored skills plans that link education providers, local authorities and employers. The survey suggests that regional skills shortages could otherwise become a limiting factor to the growth of these clusters.
- **Support for SMEs in accessing skills funding:** Smaller firms often lack the capacity to navigate multiple schemes or to run extensive in-house training programmes. Respondents highlight the value of simplified, SME-friendly access to skills and training support, in line with broader asks on SME enablement.

The Clean Energy Jobs Plan and hydrogen deployment policy must be closely linked. Decisions on hydrogen funding rounds, infrastructure and demand support will only translate into real jobs if there is a complementary, long-term programme to build and maintain the necessary skills base.

Case Study: The skills challenge for a growing hydrogen SME - ULEMCo

As a growing hydrogen SME, ULEMCo faces a distinct skills challenge shaped by the rapid pace of the sector and the niche expertise our work demands.

Much of our technology sits at the intersection of engineering, hydrogen safety, vehicle integration, and emerging clean-energy solutions - areas where the wider talent pool is still in its early stage. Many applicants bring strong mechanical or automotive backgrounds into which we invest significantly to meet the technical and safety requirements of our projects, such that staff retention measures become an important feature of HR strategy.

As a smaller organisation, we also compete with larger energy companies for specialist talent, which slows recruitment and stretches internal resources. Our experience working across different parts of the UK - for example, navigating the more mature energy-sector skill base in Aberdeen compared with the emerging hydrogen capabilities elsewhere - highlights how uneven regional pipelines can add further complexity to recruitment and workforce planning.

Despite these challenges, our hands-on environment, innovative projects, and close-knit team culture help us attract motivated individuals who want to grow with the business. Strengthening these skills pipelines is essential to supporting ULEMCo's continued expansion and leadership in hydrogen technology.

Summary

The survey results make clear that hydrogen is already a meaningful source of green jobs in the UK and has the potential to become a major employer by 2030, but that this is dependent on critical policy choices that unlock its full potential. The difference between current and an improved policy environment is the creation of tens of thousands of additional skilled roles across engineering, manufacturing, infrastructure and services.

Addressing skills shortages through a combination of the Clean Energy Jobs Plan, regional cluster strategies and targeted support for SMEs will be essential if the UK is to build a workforce capable of delivering a world-leading hydrogen economy.

Photo courtesy of ULEMCo: ULEMCo - HyTANKa® Refill

Government commitment and international attractiveness

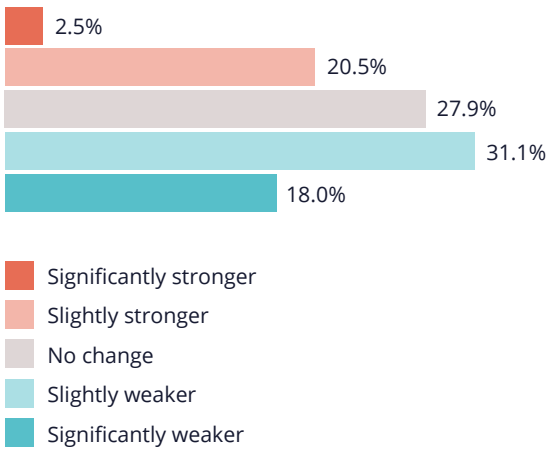
Across the survey, businesses consistently acknowledge the Government's high-level ambition and early support measures for the UK hydrogen economy. That said, they also highlight that commitment has weakened over the last year, that the policy framework feels fragmented, and that demand-side signals remain too weak to unlock the level of investment they believe is possible.

This section explores how respondents judge government commitment over time, their confidence in the future direction of policy, and their feedback on regulatory clarity, funding timeliness and demand creation. It also sets the UK in an international context, comparing its perceived attractiveness for hydrogen investment with key European peers.

Year-on-year change in perceived Government support

When asked how UK Government commitment to hydrogen compares with 12 months ago, around half of respondents say it has weakened, while roughly a quarter say it has strengthened, and the remainder see no significant change. The largest single category is "slightly weaker", followed by "no change"; a smaller but still notable group report "significantly weaker". Only a minority feel that commitment has strengthened, and within that group most describe the change as "slightly stronger".

Figure 9: UK Government commitment to hydrogen vs 12 months ago



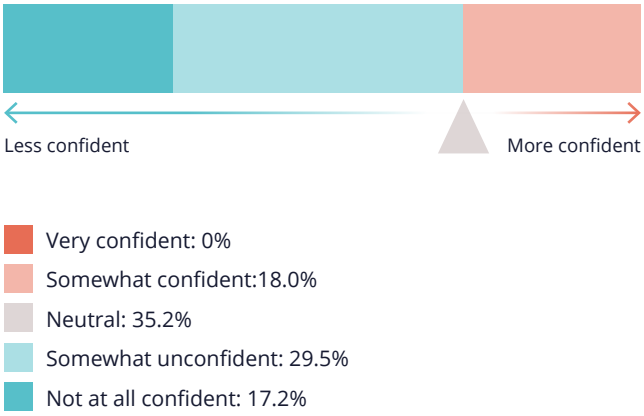
This pattern suggests:

- **Ambition is recognised, but delivery is under scrutiny:** Respondents acknowledge the importance of hydrogen within the Government's energy security and net zero strategies, but they interpret delays as signs of weaker commitment.
- **Confidence is eroded more by inconsistency than by any single decision:** Comments point repeatedly to stop-start funding rounds, long gaps between announcements and implementation, and shifting timelines as key drivers of the "weaker" perception.

Confidence in future government commitment

A second question explored how confident organisations are that government commitment to hydrogen will strengthen over the next 12 months:

Figure 10: Confidence that government commitment will strengthen (next 12 months)



Three themes emerge from written comments:

1. **Policy direction is broadly understood however implementation remains uncertain:** Many respondents say they could support their boards with clearer answers about the "when" and "how" of future support, not just the "what" and "why".

2. **Confidence depends on visible follow-through:** Companies are looking for clear evidence that existing policies such as HAR will be honoured and accelerated, rather than revisited or delayed.

3. **Stability across political cycles matters:** Some respondents express concern that changes in ministerial leadership or wider political priorities could lead to shifts in pace or emphasis, making it harder to commit to 10-20 year investments.

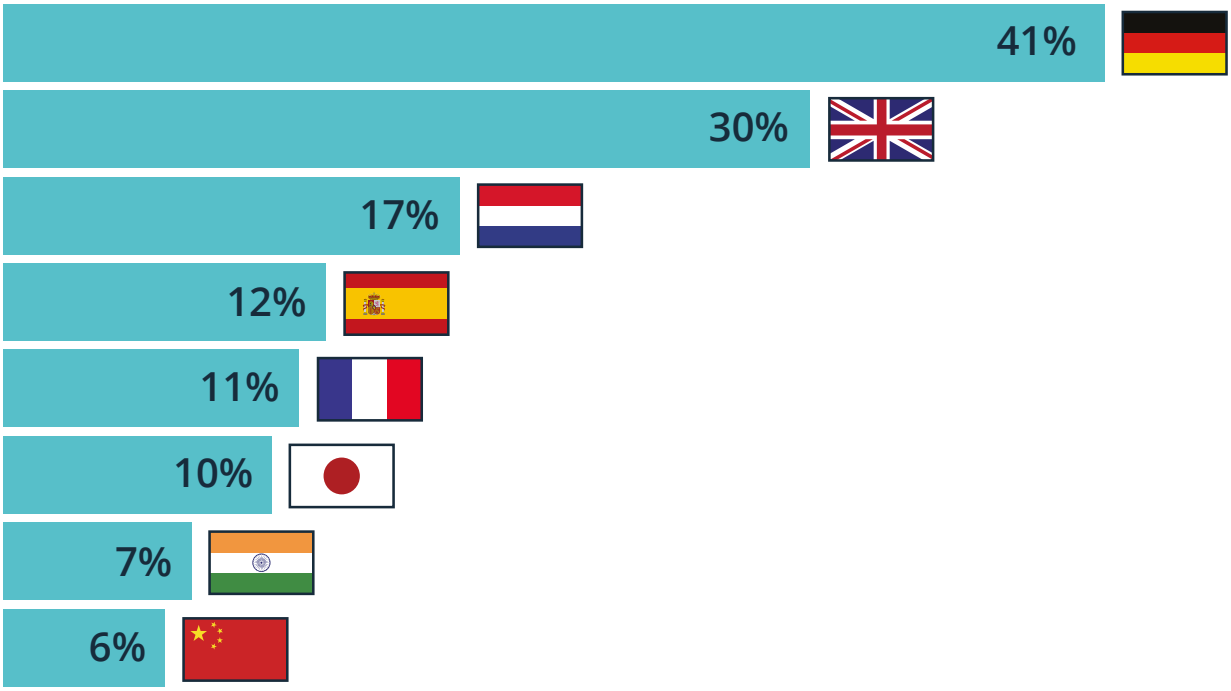
International competitiveness: how the UK compares to EU peers

Respondents were also asked which countries they regard as the most attractive for hydrogen investment over the next three years. Each respondent could list up to three destinations.

The ranking underlines two points:

- The UK is seen as part of the leading group of hydrogen investment destinations, not a marginal player.
- However, competition for projects and capital is intense, and many respondents explicitly compare UK frameworks with German, Dutch and other EU schemes when making internal investment cases.

Figure 11: Countries most frequently viewed as attractive for hydrogen investment (next 3 years)



Summary

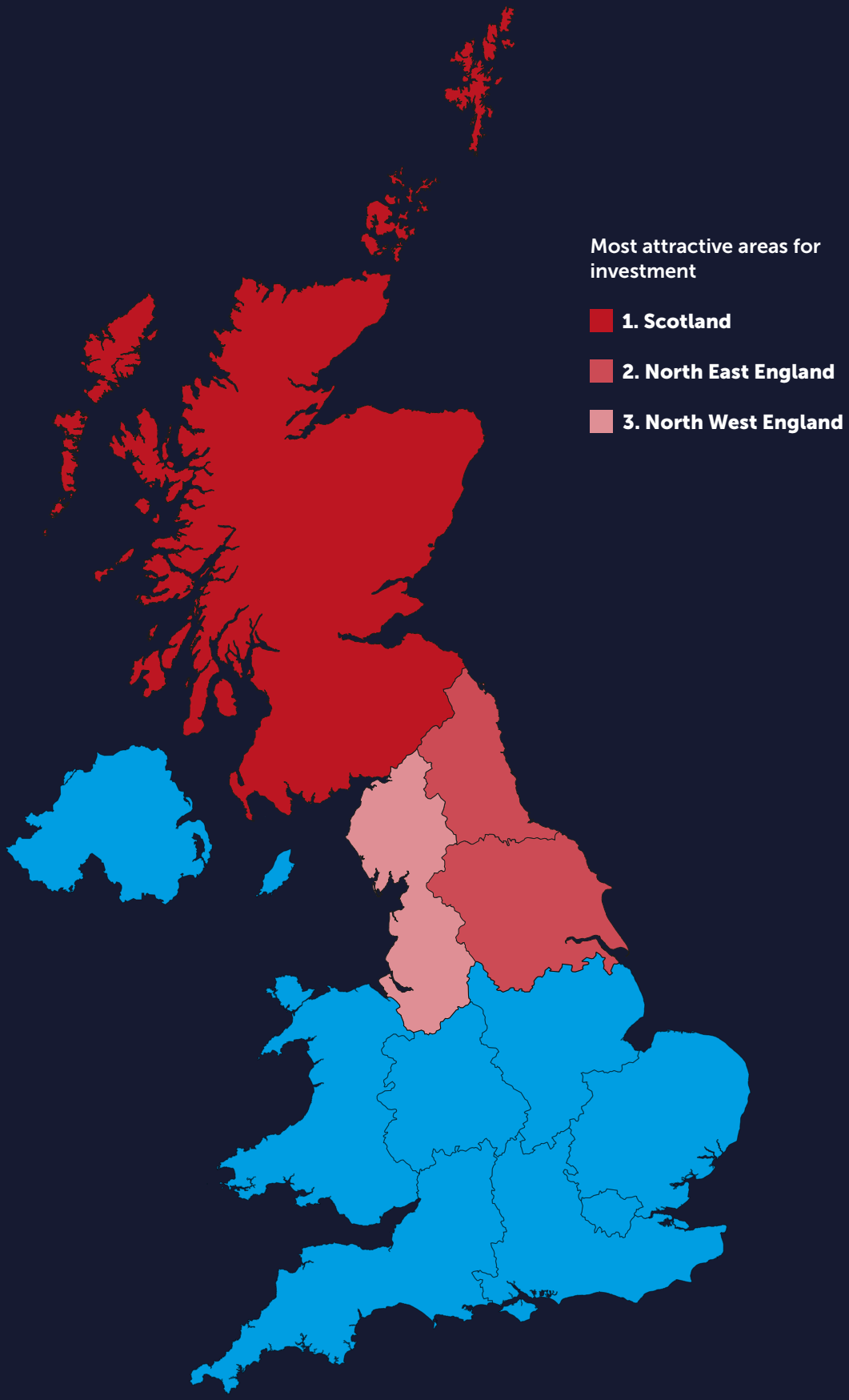
The survey shows that the UK hydrogen industry believes government is a crucial partner and recognises the strategic priority given to hydrogen in national policy. However:

- Perceived commitment has weakened over the past year, with more respondents seeing a loss of momentum than a gain.
- Confidence in future commitment is fragile, sitting around neutrality with a tilt towards concern.
- Businesses are not asking for ever-larger subsidies so much as for clearer, faster and more coherent frameworks, particularly on demand creation and regulatory alignment.
- Internationally, the UK remains in the top tier of attractive hydrogen destinations, but Germany and other European peers are often seen as moving faster from strategy to implementation.

If the UK can convert its ambition into a more predictable, integrated and timely policy environment, it can retain and grow its position as a leading hydrogen market. If not, there is a risk that funding, projects and jobs will increasingly flow to countries where investors perceive lower policy and regulatory risk.

Photo courtesy of Centrica: HiiROC and Centrica – the first UK hydrogen injection trial at Brigg Energy Park

Investment attractiveness across the UK



This heat map illustrates how organisations across the UK hydrogen economy rate the investment attractiveness of the regions and constituent nations of the UK, over the next three years.

Areas on the map coloured in red signify where respondents believe are most attractive to invest in, over the next three years.

The top three regions and nations which respondents showed a clear preference towards were:

1. Scotland

2. North East England

3. North West England

Reasons for success

Scotland

The supportive policy environment created by the Scottish Government makes Scotland an attractive and stable location to invest in hydrogen production and infrastructure.

This is supported by Scotland's significant renewable energy potential, driven by its abundant natural resources, and the existence of an established energy supply chain derived from fossil fuel industries.

North East England

North East England also ranked highly as an attractive location for investment, due to its existing pool of skilled workers, established energy supply chains and a forward-looking stance on renewables production.

The region is also home to the Tees Valley Industrial Cluster, which already produces 50% of the UK's commercially available hydrogen.

North East England also contains hard-to-abate heavy industry, including glass, cement and steelmaking, which can use hydrogen in decarbonising their operations.

North West England

North West England was the third most attractive location identified by respondents for investment, with its own long-established industrial base.

HyNet, the UK's leading industrial decarbonisation project, is located in the region, and will provide low-carbon hydrogen to power for industry and transport in North West England and North Wales. The region will also welcome the UK's first underground hydrogen transport network, supporting industry.

Case Study: The UK as an attractive destination for investment – Statkraft

Statkraft's HAR2-shortlisted Tagdale Green Ammonia project in Shetland will see 50,000 tonnes of green ammonia produced each year once operational. It's one of two such projects being developed by Statkraft in the area that will utilise renewable energy to produce green ammonia for use in fertiliser and industrial processes, while helping to reduce local and national power grid constraints.

The second is a HAR3-ready scheme projected to deliver around 280,000 tonnes annually to be built on a site in Shetland next to a disused airport. Both projects will use the UK's hydrogen production business model to improve the country's energy and food security, and to reinstate an historic British industry, creating skilled jobs and helping to restore critically important UK industrial capability.

Strong government support in an area with excess renewable power and a skilled workforce, makes Scotland particularly competitive for hydrogen derivative production, compared to other countries.

Market development

This section explores how the UK hydrogen market is developing along the value chain - from securing offtake and building infrastructure, through deploying hydrogen in end-use sectors, to financing projects and scaling technology and manufacturing. Across all stages, respondents report that doing business is challenging, but most remain cautiously confident that they will be able to progress projects over the next 12 months, provided demand, policy and infrastructure issues are addressed.

Figure 12: Overview of market development challenges and confidence across the hydrogen value chain.

OFFTAKE	
81%	Very or somewhat difficult to secure offtake agreements
81%	At least somewhat confident in securing offtake agreements in the next 12 months
STORAGE / DISTRIBUTION:	
78%	Very or somewhat difficult to develop storage and distribution infrastructure
78%	At least somewhat confident in developing storage and distribution infrastructure in the next 12 months
END-USE	
58%	Very or somewhat difficult to adopt / integrate hydrogen
58%	At least somewhat confident in expanding hydrogen use in the next 12 months
FINANCE	
50%	Very or somewhat difficult to invest in viable hydrogen projects:
50%	At least somewhat confident that projects will attract sufficient investment
TECHNOLOGY / MANUFACTURING	
84%	Very or somewhat difficult to scale up manufacturing
66%	At least somewhat confident in expanding manufacturing capacity

Offtake and early demand formation

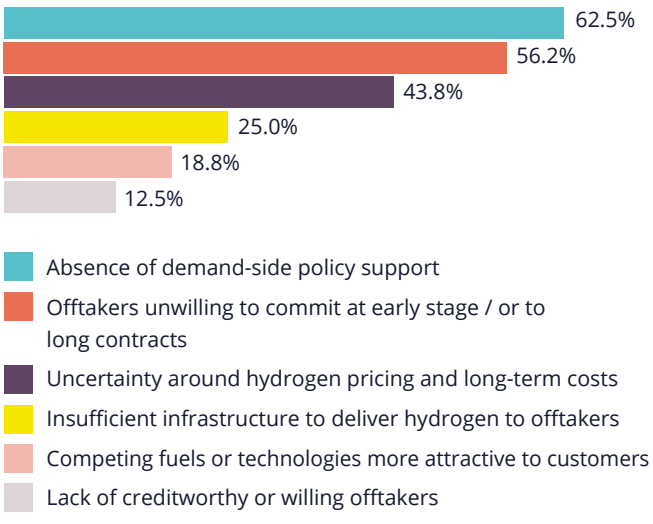
Securing credible offtake is one of the most difficult aspects of developing hydrogen projects in the UK today. Among organisations currently seeking offtakers, just over four in five report that agreeing offtake contracts is somewhat or very difficult. The barrier is not lack of interest but the absence of clear, bankable conditions for long-term demand. [2]

Respondents point to three closely linked challenges:

- **Weak demand-side policy signals:** Many highlight the lack of targeted support mechanisms for end-users and note that production-side schemes are not yet matched by equivalent tools to secure demand.
- **Reluctance of customers to commit early:** Potential offtakers are hesitant to sign long-term contracts while they remain uncertain about the future cost of hydrogen and the trajectory of carbon pricing.
- **Price and cost uncertainty:** Both producers and customers face difficulty forecasting long-term hydrogen pricing relative to fossil fuels and alternative low-carbon options, making internal business cases hard to justify.

Despite these hurdles, most organisations (81.3%) that are active in offtake discussions remain positive about their ability to make progress in the near term, with a large majority expressing at least some confidence that they will secure sufficient offtake over the next 12 months. This combination of high difficulty and relatively strong confidence reflects a dependency on clearer policy and demand frameworks to move to final investment decision.

Figure 13: Main challenges in securing offtake (respondents were asked to select a maximum of three)



Case Study: Overcoming the challenges of securing a credible offtaker – Protium

Protium Green Solutions is at the heart of the UK's green hydrogen transition, making green hydrogen simple through end-to-end solutions that span production, distribution, technical services and commercial development.

Securing a credible, long-term offtaker remains one of the sector's biggest challenges. Green hydrogen projects are capital-intensive, and investors require certainty of demand to commit funding. Yet potential customers often face policy uncertainty, evolving business cases, and dependence on third-party delivery models, making it difficult to turn interest into bankable agreements and slowing project scaling.

Protium overcomes these barriers by acting as producer, supplier and distributor, structuring projects to align with policy frameworks and investor requirements and offering flexible commercial models and third-party delivery where needed. In Wales, Protium is constructing Pioneer 2, the second largest electrolyser and one of the UK's most advanced PEM systems. Building on Pioneer 1, which produces 4 kg/day, Pioneer 2 will generate 25 times more green hydrogen, creating a scalable platform for decarbonising transport, logistics, off-grid power and energy-intensive industries.

Storage and distribution infrastructure

Hydrogen storage and distribution infrastructure is a critical enabler of market development, yet organisations active in this area report that developing or expanding infrastructure in the UK is also challenging. Around eight in ten respondents engaged in storage and distribution describe their experience as somewhat or very difficult.

The main obstacles reported include:

- **Uncertain utilisation and demand:** Investors are wary of committing capital where long-term outcomes are unclear, particularly outside established industrial clusters.
- **High capital and construction costs:** The upfront cost of pipelines, terminals and storage facilities is a significant barrier, especially where risks cannot be shared across multiple users.
- **Financing and standards:** Delays in securing finance, gaps in technical standards and safety regulation, and limited coordination between producers and end-users make it harder to design bankable projects.

Yet again, difficulty does not translate into paralysis. A clear majority of organisations (77.8%) expect to progress storage and distribution projects over the next year and are at least somewhat confident of doing so. This demonstrates that there is a strong development pipeline - but one that is highly sensitive to demand visibility, planning processes and the availability of shared infrastructure models.

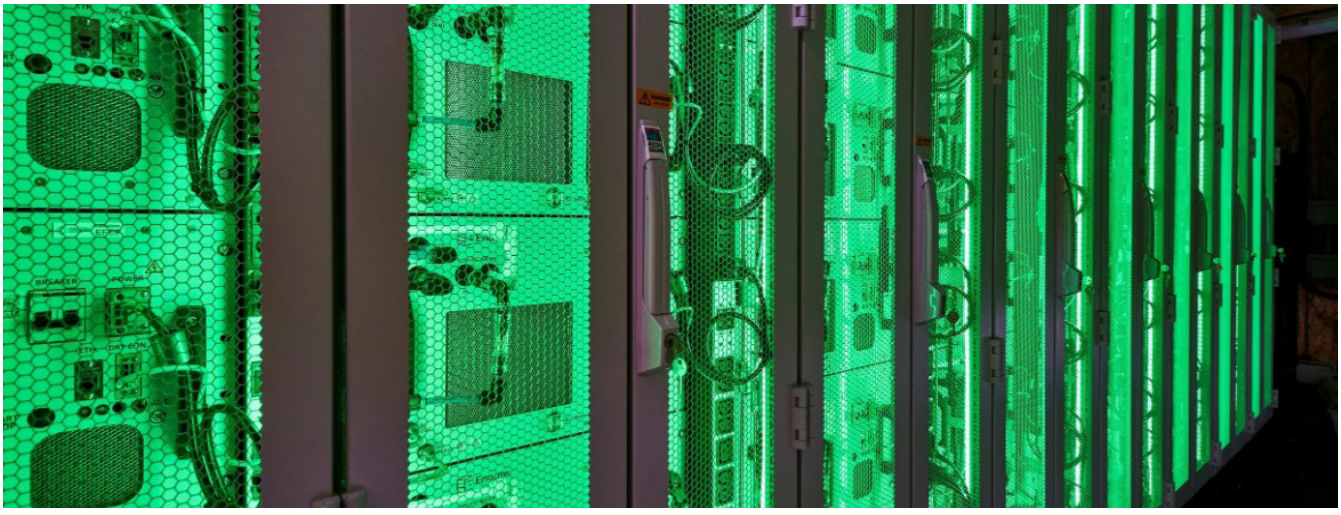
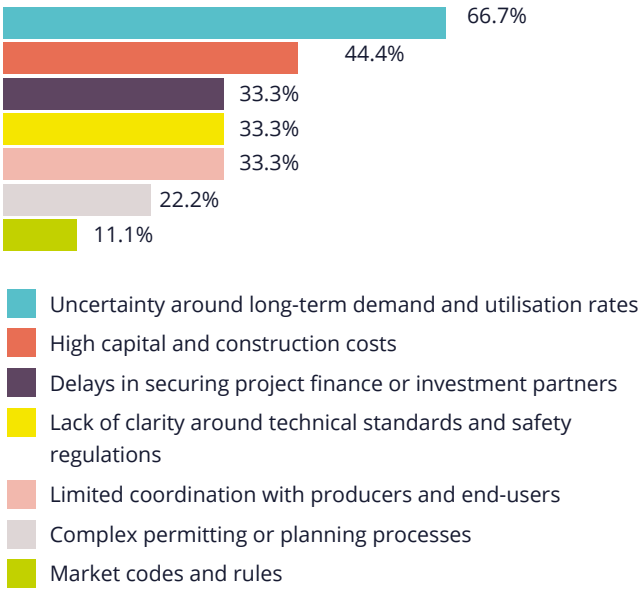


Photo courtesy of Protium: Protium Electrolyser

Figure 14: Main challenges in developing hydrogen storage and distribution infrastructure (respondents were asked to select a maximum of three)



Case Study: Pipeline transport – National Gas

National Gas plays a critical role in enabling the UK hydrogen ecosystem by providing the infrastructure needed for a domestic market.

Through Project Union, we'll deliver Great Britain's core 100% hydrogen network using a phased regional approach to create a network of up to 1,500 miles. We aim to repurpose infrastructure where possible, supporting a cost-effective energy transition, connecting production, strategic storage, hydrogen to power generation and industrial demand.

Following Ofgem's approval, we are advancing engineering design, environmental assessments, and public consultation on over half of the core hydrogen network, starting in the East Coast, St Fergus to Teesside and North West. Our analysis indicates that a core hydrogen network could unlock £8–13bn in additional private investment by 2050 and up to 185,500 jobs.

To support delivery of hydrogen infrastructure at pace, we are working with government and regulators to secure timely regulatory and financing decisions, alongside navigating planning and consenting processes in England and Scotland.

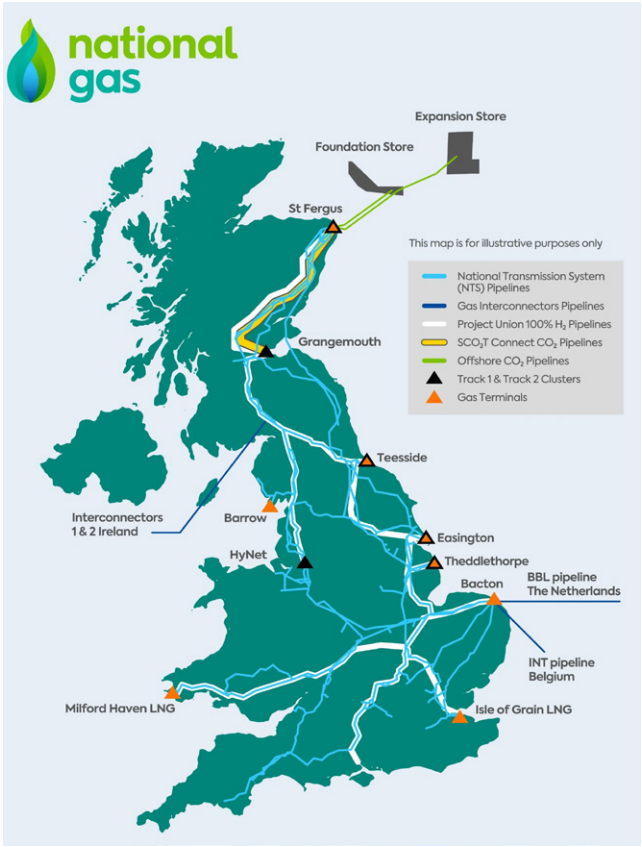


Photo courtesy of National Gas: Project Union

Photo courtesy of GeoPura: HPU powering welfare and EV charging Omexom National Grid

End-use deployment and sector readiness

Survey responses show the diverse nature of hydrogen end-use across sectors. Organisations most frequently report a focus on mobility, followed by power generation, R&D, and specific industrial processes.

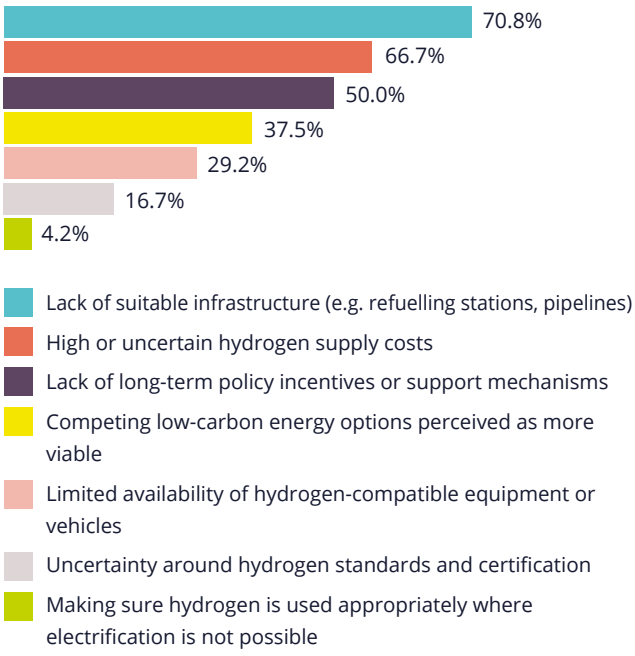
Close to six in ten organisations using or planning to use hydrogen report that integrating hydrogen into their operations is somewhat or very difficult. Only a small minority find it easy, and a significant group are not yet at the stage of operational deployment.

The most frequently cited barriers to end-use deployment are:

- **Insufficient infrastructure:** A large majority highlight the lack of refuelling stations, pipelines and associated logistics as the single biggest obstacle, especially in mobility applications.
- **High or uncertain supply costs:** Many organisations face hydrogen prices that are uncompetitive with incumbent fuels or electricity, and struggle to forecast future prices.
- **Lack of long-term policy incentives:** Adoption is slow due to a lack of long-term support mechanisms, mandates or guarantees.
- **Competition from other low-carbon options:** In some cases, electrification or other alternatives are judged more mature or cost-effective, particularly where hydrogen is not clearly targeted at "hard-to-electrify" uses.

Despite these challenges, most organisations that are already engaged in end-use deployment remain optimistic about expansion in the year ahead, with 58.3% at least somewhat confident they will be able to grow their hydrogen use. Confidence, however, is notably lower here than in production and infrastructure, reflecting the commercial pressures facing end-users.

Figure 15: Main challenges in deploying hydrogen for end-use (respondents were asked to select a maximum of three)



Case Study: Industrial end-use – Mannok

Mannok is a leading supplier of cement & building products based in Northern Ireland. As one of the most carbon intensive businesses in a hard to abate sector we know hydrogen is crucial to enabling decarbonisation at scale in heavy industry.

Mannok is currently developing an innovative 10MW green hydrogen project utilising unused curtailed wind energy to decarbonise its large fleet of trucks and heavy industry on a phased basis. In collaboration with other partners in NI/UK, hydrogen could be supplied to organisations such as Wrightbus, the local council, fleet operators and traders as well as having the potential to be used in e-fuel production.

The biggest challenge in reaching final investment decision is in securing public funding to de-risk the project.

Hydrogen will help to future proof our business and provide Mannok with a competitive advantage in the marketplace, supporting the long-term environmental, social and economic prosperity of the UK.

Finance and investment for hydrogen projects

The survey includes a small but important group of respondents whose primary focus is investment and finance. While the sample size is too limited to draw statistically robust conclusions, their feedback is directionally consistent with wider industry views.

Financial stakeholders emphasise that:

- **Policy and revenue model clarity are decisive:** Unclear or evolving support schemes make it difficult to assess risk-adjusted returns and to structure financeable deals.
- **Demand and supply signals must align:** Investors are looking for projects where production support, offtake arrangements and infrastructure plans are joined up, rather than relying on speculative future demand.
- **Government risk-sharing remains critical in the near term:** Guarantees, revenue-stabilising mechanisms and clear eligibility criteria are seen as essential to unlock institutional capital at scale.

Views on the near-term ability of hydrogen projects to attract sufficient investment are split, reflecting both the opportunity and current uncertainty. Investors are interested, but committing capital is contingent on a more predictable, integrated policy framework.

Case Study: Financing UK hydrogen projects – Close Brothers ESG Lending

Close Brothers ESG Lending has played a key role in helping GeoPura scale its hydrogen-powered generators, a cleaner alternative to diesel. The UK hydrogen sector faces real challenges: unpredictable revenue streams, evolving regulation, and heavy upfront costs.

Our approach is to provide practical funding solutions that give businesses confidence to invest. Asset finance is one way we reduce risk, securing lending against equipment such as Hydrogen Power Units, electrolysers and distribution assets. This creates security for lenders and flexibility for operators, even when hydrogen pricing and offtake agreements are uncertain.

Alongside other tailored facilities, this structure supports GeoPura's plan to deploy over 3,600 HPUs by 2033 and expand fuel production and infrastructure. By combining sector expertise with risk-managed finance, Close Brothers is helping turn hydrogen from an emerging technology into a bankable reality for the UK's net zero transition.

Technology, manufacturing and the UK supply chain

Technology providers and manufacturers are central to the UK's ability to secure the maximum investment and job creation opportunity from the hydrogen transition.

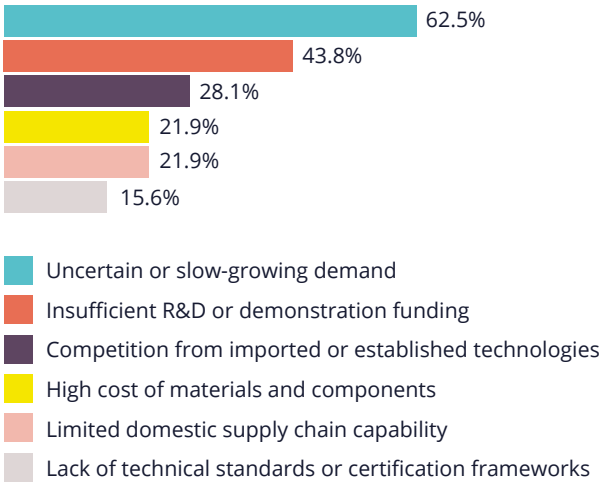
More than four in five organisations involved in supplying or developing hydrogen technologies report that scaling manufacturing or technology deployment in the UK is somewhat or very difficult. The most common challenges include:

- **Uncertain or slow-growing demand:** Over half of technology providers cite demand uncertainty as the primary barrier, making it difficult to justify investment in scaling manufacturing.
- **Insufficient R&D and demonstration funding:** Many highlight the need for larger and more predictable innovation programmes, particularly for SMEs seeking to move from prototypes to commercial scale.
- **Cost and supply chain pressures:** High material and component costs, and limited domestic supply chain depth, increase risk and reduce global competitiveness.
- **Standards and certification:** Gaps or delays in technical standards and certification frameworks can impede product approval and customer confidence.

Despite these challenges, 65.6% of technology and manufacturing respondents are at least somewhat confident that they can expand their capacity in the next

12 months. This suggests UK-suppliers are ready to grow, provided that demand strengthens, and innovation and manufacturing support is effectively targeted.

Figure 16: Main challenges in supplying or deploying hydrogen technologies (respondents were asked to select a maximum of three)



Summary

Taken together, these responses suggest that the UK hydrogen market is facing challenges, but that this has not stopped progress:

- Across every stage of the value chain organisations report that it is difficult to do business in the UK hydrogen market today.
- The main challenges and asks across the sector are consistent (e.g. demand uncertainty, policy clarity, high capital and operating costs, infrastructure gaps, and the need for greater coordination).
- Most respondents who are actively engaged in projects express notably strong confidence that they will be able to move forward over the next year. There is a pipeline of credible projects and a strong supply chain base that are ready to grow at pace once conditions improve.

The UK hydrogen market is clearly at an inflection point. With clearer demand-side signals, faster and more predictable policy delivery, and targeted support for infrastructure and supply chains, many of the challenges highlighted in this section could be converted into growth opportunities in the next phase of market development.

Case Study: Manufacturing hydrogen technologies – Chesterfield Special Cylinders

Chesterfield Special Cylinders plays a critical role in the UK hydrogen ecosystem by manufacturing high pressure containment solutions that enable the safe storage and transportation of hydrogen across mobility, energy and industrial applications. As hydrogen deployment accelerates, scaling production requires greater long term market certainty and clearer visibility of project pipelines to justify capital investment in specialist facilities and equipment.

Key challenges include expanding highly regulated manufacturing capacity, securing and training skilled engineers, and managing long lead times and cost volatility within specialist material supply chains. Access to targeted funding mechanisms to support plant expansion, automation, and skills development would accelerate scale up, alongside consistent and proportionate regulatory frameworks that enable innovation without compromising safety.

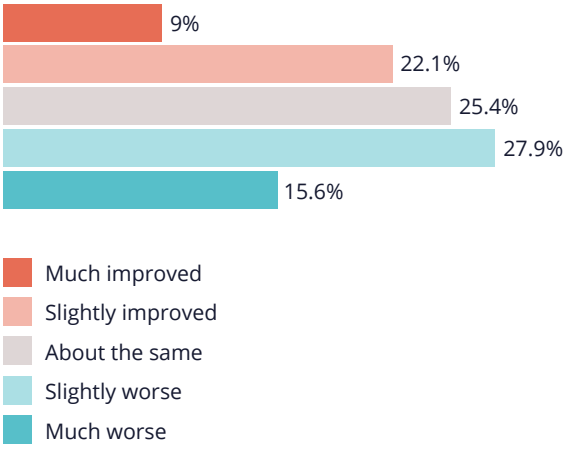
Stronger coordination between government, project developers and UK manufacturers will be essential to align demand with supply readiness. With sustained policy support and investment confidence, Chesterfield Special Cylinders can increase production, shorten lead times, create 50% more high skilled hydrogen jobs and support the UK's ambition to build a resilient domestic hydrogen supply chain.

Photo courtesy of Chesterfield Special Cylinders: Safe, scalable and static storage solutions for long-term hydrogen projects

Barriers, costs and enablers

This section draws together survey responses on the main factors that are slowing progress across the UK hydrogen economy. Overall, respondents convey a strong willingness to invest and deliver, but emphasise that current market conditions are limiting the pace at which projects can reach commercial viability.

Figure 17: Overall business confidence vs a year ago

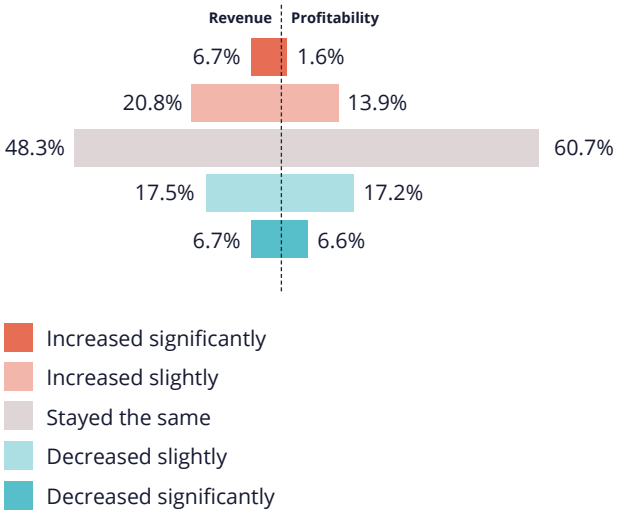


Commercial pressures: revenues, profitability and rising costs

Commercial performance is an important indicator on whether the UK hydrogen market is becoming more attractive for business. Over the past year, most organisations report that hydrogen-related revenues have either stayed the same or changed only modestly.

Profitability tells a similar story. A clear majority of respondents report that margins on their UK hydrogen activities are broadly unchanged compared with a year ago, with smaller groups seeing slight improvement or deterioration.

Figure 18: Revenue vs profitability over the past year

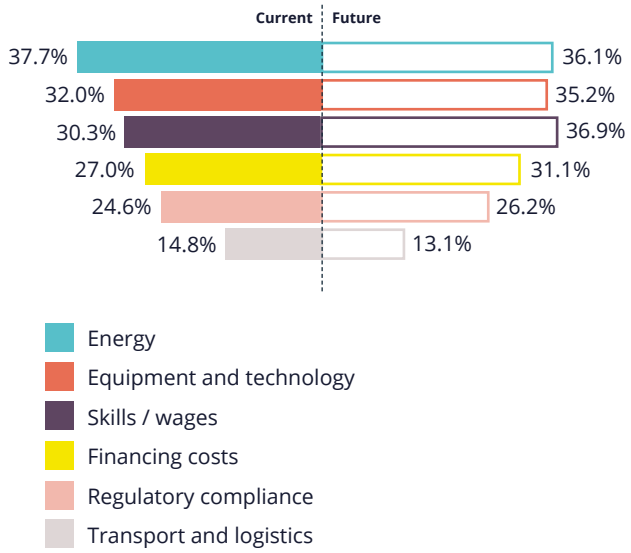


Beneath this headline stability, organisations highlight a range of cost pressures affecting their hydrogen activities:

- **Energy costs:** Many respondents report that high and volatile energy prices remain a challenge, particularly for the production of hydrogen.
- **Equipment and technology costs:** The cost of specialist equipment coupled with limited economies of scale and supply chain bottlenecks can reinforce this.
- **Skills and wage costs:** Securing staff with the right technical, commercial and regulatory expertise.
- **Financing costs:** Higher interest rates and tightening lending conditions for capital-intensive projects.
- **Regulatory compliance and logistics:** Meeting safety, environmental and reporting requirements, and handling transport and logistics.

Looking ahead, respondents expect many of these pressures to intensify rather than ease. Skills and wage costs, energy prices, and the cost of equipment and technology are all expected to rise over the next 12 months. This means that even if revenue grows, margins may remain under pressure unless the right policy support measures are taken to enable scale and efficiency gains.

Figure 19: Current vs future expected cost pressures



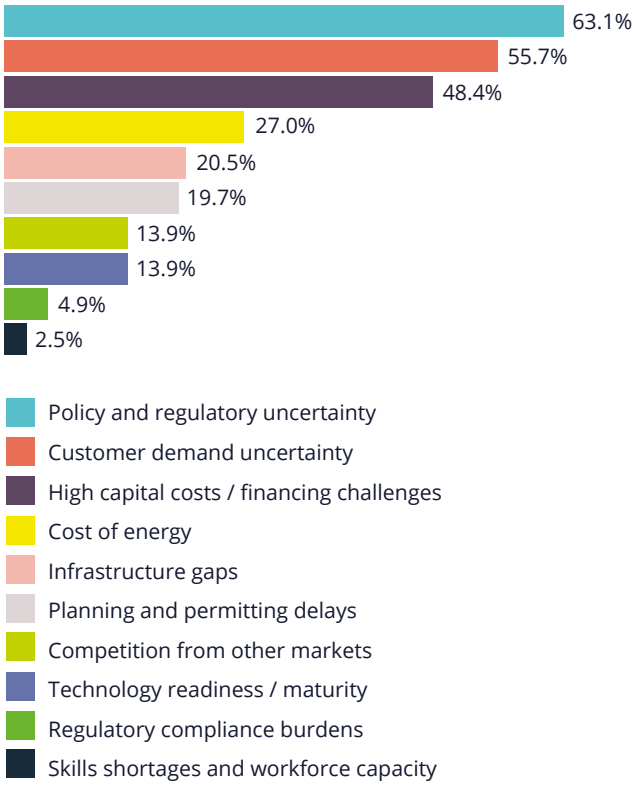
Structural barriers to further investment

When asked directly about the biggest barriers preventing further investment in UK hydrogen, organisations highlight a set of structural issues that cut across technologies and sectors. The most frequently cited are:

- **Policy and regulatory uncertainty:** This is the greatest single factor highlighted by respondents to the survey. Businesses are concerned about shifting or delayed decisions, complexity and lack of long-term visibility on support schemes, and the absence of a clear, stable framework for hydrogen's role in different sectors.
- **Customer demand uncertainty:** Organisations are hesitant to commit further capital without clearer signs of robust, long-term demand from end-users. This includes uncertainty about the pace of decarbonisation in industry, transport and power, willingness to pay for low-carbon hydrogen, and how competing options such as electrification or biofuels will be treated.
- **High capital costs and financing challenges:** For many projects, the combination of high upfront capex, long payback periods and unproven revenue models makes it difficult to attract the level of private investment required.
- **Cost of energy and input prices:** High electricity and gas prices, as well as the cost of other inputs, affect competitiveness and make it harder to produce hydrogen at prices that customers will accept.
- **Infrastructure gaps and planning delays:** A lack of suitable infrastructure alongside concerns about slow and complex planning and permitting processes are consistently highlighted by the sector.
- **Competition from other markets and technologies:** Some respondents point to international competition, particularly from countries with stronger incentives or lower energy costs.

Taken together, these responses suggest that addressing the key barriers to scaling up hydrogen investment requires a joined-up system-wide approach to developing policy, markets and infrastructure.

Figure 20: Biggest barriers to further hydrogen investment



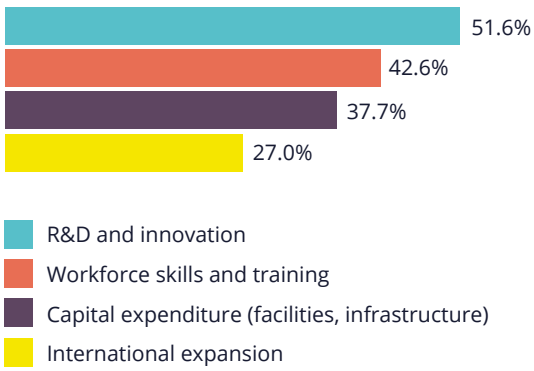
Priority areas for investment

Despite the challenges set out above, the survey shows that organisations are not stepping back from hydrogen. Many intend to increase their investment as evidenced earlier in the report.

When asked where they expect to increase investment within the hydrogen sector, respondents most commonly highlight:

- **Research, development and innovation:** A majority of organisations plan to maintain or increase spending on R&D and demonstration, reflecting the need to improve performance, reduce costs and prove new business models.
- **Workforce skills and training:** Many plan to invest more in skills, from engineering and operations to safety, regulation and commercial capabilities.
- **Capital expenditure on facilities and infrastructure:** A substantial group of organisations expect to invest in new or expanded production facilities, infrastructure and equipment.
- **International expansion:** Some respondents see opportunities to use UK capabilities as a platform for growth into international markets, particularly where other countries offer clearer or more generous support.

Figure 21: Where organisations plan to increase investment



Summary

In summary, responses highlight an industry that is facing significant challenges but remains committed. Businesses are grappling with regulatory complexity, commercial uncertainty, rising costs and infrastructure gaps, all weighing on decisions. However, many still plan to increase their investment in hydrogen, particularly in innovation, skills and capital projects, and are clear about the conditions under which they would do more.

The barriers identified are not insurmountable, but they are systemic. They relate to how policy is set and delivered, how risks are shared between public and private sectors, how infrastructure is planned and funded, and how quickly standards and skills can catch up with ambition. Addressing these issues will be critical to converting ambition into the scale of investment and deployment that will be needed for the UK to secure a leading role in the growing global hydrogen economy.

Photo courtesy of Chris Milner: 1st move of hydrogen via Rail

Conclusion

The UK hydrogen industry has shared its views and experiences to inform the first State of the Hydrogen Nation Report. The findings reveal an industry that is ready to invest and accelerate deployment, and that is keen to work with government to realise its hydrogen ambitions.

Across the hydrogen value chain, the findings indicate that industry remains committed to the sector. Almost half of organisations of all sizes report they are ready to increase investment and create jobs in the next 12 months. More than half expect increased demand for products and services in the year ahead, although as an early-stage sector this optimism is largely dependent on timely policy decisions, funding outcomes and pace of project approvals.

Reflecting the beginning of the move from an early to established market, organisations at every stage of the value chain report that it is difficult to do business in the UK hydrogen market today. Over 80% of hydrogen project developers report that agreeing offtake contracts is difficult. One factor that may contribute to this is a perceived weakening of government commitment to hydrogen over the past 12 months. While the UK Government's high-level ambition and early support signals have helped to develop the market to where it is today, there is a clear call for stronger demand signals, faster delivery and greater cross-departmental consistency and collaboration to unlock further growth.

Despite a dip in confidence, the UK is still considered a leading destination for hydrogen investment, alongside European peers such as Germany, the Netherlands and Spain. This is evidenced by the fact that the UK's favourable policy and funding environment is already generating skilled employment across nations and regions. In an even more ambitious policy and funding environment, survey respondents estimate that by 2030 up to 17,000 new jobs could be created in the hydrogen sector. In filling these roles, government initiatives such as the Clean Energy Jobs Plan provide an important framework for employers and employees. This initiative could support the sector further by expanding to locations likely to play host to increasing numbers of hydrogen production projects, such as Scotland and Wales, and developed further to address key challenges identified in the report such as the hiring of skilled mechanics, engineers, and systems integration experts.

Questions about barriers and opportunities revealed a clear picture: confidence in the UK remains and, with targeted support, can be strengthened further. The most frequently cited challenges to further growth are policy and regulatory uncertainty, demand uncertainty, high capital and operating costs and the infrastructure gaps. These remaining barriers to UK leadership in hydrogen deployment, infrastructure development, and supply chains can be overcome with continued collaboration between government and industry.

Photo courtesy of Benninghoven: MULTI JET - Hydrogen burner

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