Our industrial future

Hydrogen insights for a just transition, inclusive of the North

Ahead of the Hydrogen Strategy refresh, researchers from Teesside University collaborated with Energy Voice to convene industry leaders on key risks and opportunities facing the North. This paper captures those insights and community-based data from the Research England Hydrogen Innovation Project (REHIP) at Teesside.

Key background

- The Research England Hydrogen Innovation Project (REHIP) works to advance industrial decarbonisation and hydrogen technologies in the Tees Valley.
- REHIP is part of the Net Zero Industry Innovation Centre (NZIIC), Teesside University.
- The REHIP team partnered with Energy Voice to chair their annual conference and publish independent analysis.
- We thank you for taking the time to read this paper, which includes actionable insights from REHIP, offered in the interest of helping ensure just transition outcomes for communities where hydrogen is vital.

The 2026 annual industry conference hosted by REHIP was a collaborative initiative led by Teesside University in partnership with Energy Voice, a sector news platform serving the UK.

To help inform the forthcoming Hydrogen Strategy refresh, we co-produced this paper to provide policy recommendations based on insights from the conference.

Our partnership is committed to amplifying voices from the North, backed by the experience of national hydrogen leaders and industry-focused REHIP research.

With academia and media being key drivers of knowledge sharing, we are keen to ensure that vital research translates into fair policy, particularly for the benefit of the UK supply chain and communities directly affected by hydrogen development.

This paper focuses on three topics:

- Policy uncertainty: investment
- Limitations of public acceptance
- Operationalising just transition

On behalf of the E-FWD community of energy leaders, in association with Energy Voice and our valued partners from academia, we are honoured to present insights from the 2026 REHIP conference and research.

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In partnership with:

NET ZERO INDUSTRY INNOVATION CENTRE

Teesside University

Durham University

UKRI Research England

ENERGY VOICE The first word.

E-FWD by ENERGY VOICE

Executive Summary

Translating research into inclusive policy outcomes

Hydrogen strategy recommendations

1. **Provide strategic clarity:**
Government must deliver a coherent hydrogen strategy with clear timelines, market sequencing, and demand pathways to unlock investment and reduce uncertainty.

2. **Stabilise demand:**
Market-shaping instruments — such as Contracts for Difference, long-term off-take agreements, and public procurement — are essential to translate policy ambition into bankable projects.

3. **Embed skills as infrastructure:**
Workforce development should be integrated into hydrogen strategy, with early investment to prevent capability erosion and support labour market stability.

4. **Support SMEs and supply chains:**
Targeted interventions for certification, capital upgrading, and skills training are needed to enable SME participation and reduce disproportionate risk exposure.

5. **Adopt a place-based approach:**
Hydrogen policy should combine national coordination with regional implementation, embedding procedural and distributive justice within transition processes.

1. Policy Uncertainty Slowing Investment

Across UK industrial clusters, industry actors and regional policymakers continue to await a clear, credible, and actionable government hydrogen strategy.

The absence of firm direction on timelines, demand signals, and long-term commitment is delaying final investment decisions (FIDs) and constraining long-term planning.

Rather than reflecting a lack of interest in hydrogen, this uncertainty is fostering a risk-averse, "wait-and-see" approach — particularly for capital-intensive projects with long payback periods [1,2].

Evidence from the Research England Hydrogen Innovation Programme (REHIP) shows that the effects of uncertainty extend beyond infrastructure delays. Increasingly, they are shaping labour market outcomes and skills development.

Companies in the Tees Valley report redundancies, paused recruitment, and deferred investment in training pipelines directly linked to delayed or cancelled FIDs.

These findings align with broader evidence that policy uncertainty suppresses innovation and deters private investment in low-carbon technologies, particularly where regulatory dependence and upfront costs are high [3, 4].

Policy ambiguity is also constraining supply chain readiness, especially among small- and medium-sized enterprises (SMEs).

Interview data suggests that uncertainty surrounding large hydrogen projects is cascading down value chains, leading suppliers to defer investment in certification, workforce development, and capital equipment.

As a result, incentives to develop hydrogen-ready capabilities are weakened for both regional firms and prospective investors. This dynamic creates a self-reinforcing feedback loop: constrained supply chains slow project deployment, which in turn reinforces investor caution.

Evidence from REHIP shows that the effects of uncertainty extend beyond infrastructure delays.

Increasingly, they are shaping labour market outcomes and skills development. Companies in the Tees Valley report redundancies, paused recruitment, and deferred investment in training pipelines.

Such patterns are well documented in sociotechnical transitions literature, where supply chains are embedded within institutional environments and depend on coordinated governance and stable expectations [5].

For SMEs, policy uncertainty represents a structural barrier, increasing the risk that local supply-chain capacity and associated economic benefits fail to materialise.

Insights from political economy and energy justice scholarship also highlight the uneven distribution of transition risks. SMEs with limited financial buffers are disproportionately exposed to policy volatility, raising the likelihood that the benefits of hydrogen development may bypass local firms [7, 8].

Consequently, the pace and inclusivity of hydrogen deployment in regions such as Teesside are being directly shaped by the absence of consistent national policy direction.

Without credible long-term commitment, hydrogen development risks reproducing fragmented investment patterns and unrealised regional renewal.

This contrasts with mission-oriented and just transition frameworks, which emphasise the role of government as a market shaper — aligning investment, skills, and regional development through stable and credible policy signals [9,10].

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2. Limited Public Awareness and Acceptance

Even where policy and supply chain barriers are addressed, public understanding of hydrogen remains limited, uneven, and highly context-dependent [11].

Evidence shows that subjective knowledge often predicts support for energy technologies as strongly as factual understanding, highlighting the importance of trust, perception, and lived experience.

REHIP findings indicate that public acceptance also varies significantly across the hydrogen value chain. While attention has focused on production and transport applications, perceptions of infrastructure such as storage, pipelines, and industrial clusters remain underexplored.

Elements that are most likely to generate localised impacts include safety concerns, noise, and traffic.

However, acceptance is shaped not only by anticipated climate benefits, but also by concerns relating to safety, cost distribution, governance, and intergenerational fairness [12, 13].

In regions such as Teesside, these concerns intersect with strong industrial heritage and place-based identity, influencing how hydrogen developments are valued and interpreted [14].

As a result, these dynamics can influence social licence to operate (SLO), which frames legitimacy as an ongoing, relational process rather than a one-off outcome [15].

The contested hydrogen village trials in Redcar and Whitby illustrate these challenges. Opposition did not stem from resistance to decarbonisation itself, but from perceptions of procedural unfairness, limited influence over decision-making, and uncertainty over long-term risks.

Concerns about being treated as “guinea pigs” reflect a broader sense of exclusion from decision-making processes. Public responses are consistent with evidence showing that acceptance declines when engagement is perceived as tokenistic, or when local benefits remain unclear [15,16].

They demonstrate that engagement strategies focused solely on information provision are unlikely to secure durable legitimacy.

Hydrogen acceptance is shaped not only by anticipated climate benefits, but also by concerns relating to safety, cost distribution, governance, and intergenerational fairness.

These concerns influence social licence to operate and legitimacy.

By contrast, engagement approaches aligned with SLO principles that emphasise transparency, fairness, and accountability are more likely to sustain acceptance over time [17, 18].

Acceptance improves where projects are locally meaningful, visibly linked to community priorities, and supported by credible governance arrangements.

Emerging REHIP research highlights the potential of participatory tools such as digital twins, augmented reality, and speculative design to enhance engagement.

These approaches allow communities to visualise hydrogen infrastructure within familiar landscapes and imagine how everyday life may change in a decarbonised industrial future.

This shift from abstract communication to experiential engagement is particularly important in post-industrial regions, where transitions are evaluated in relation to livelihoods, identities, and place.

Overall, societal acceptance of hydrogen should not be treated as a barrier to overcome, but as a dynamic, place-based process shaped by trust, governance, and justice.

Lessons from Redcar and Whitby demonstrate that durable legitimacy depends on moving beyond consent toward co-production and long-term institutional responsiveness.

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3. Operationalising a Just Hydrogen Transition

Translating just transition principles into practice requires aligning decarbonisation ambitions with local material conditions.

Key considerations include:

- embedding justice within institutions, funding mechanisms, and governance frameworks
- designing place-based, participatory, and capability-enhancing transition processes
- delivering visible and equitable benefits early to rebuild trust and credibility

Policy outcomes can be strengthened by the application of six recommendations, as follows.

1. Guarantee equitable access
Move beyond opportunity-led narratives centred on job creation by embedding binding commitments to local benefits, including hiring targets, apprenticeships, and SME participation. Investment should prioritise communities facing socio-economic disadvantage to avoid reproducing existing inequalities.

2. Integrate industrial and social infrastructure
The success of decarbonisation depends on complementary investment in transport, housing, education, and local services.

Improving connectivity and access to training — alongside innovations such as community use of waste heat — ensures that opportunities are both accessible and meaningful.

3. Shift from consultation to co-design
Public engagement must begin early and move toward co-design approaches, enabling communities to shape project design, skills programmes, and benefit-sharing mechanisms. Demonstrating how community input influences decision-making helps strengthen legitimacy.

4. Deliver visible benefits early in the process
Trust in industrial transitions has been undermined by cycles of promise and disappointment.

To address this, social outcomes must be clearly linked to project timelines. Early priorities should include local hiring and training, SME inclusion in supply chains, community benefit funds, and improvements to local services and infrastructure. Commitments should be tracked and publicly reported to ensure accountability and credibility.

> Clear policy direction, meaningful participation, and early delivery of social outcomes: these criteria will help support a just transition.
>
> Without them, hydrogen risks replicating past patterns of uneven regional development.

5. Recognise and integrate local knowledge
While industrial heritage is widely acknowledged, local knowledge remains underutilised in decision-making. Institutional reform is required to ensure meaningful participation by SMEs, community organisations, and trade bodies, alongside reducing barriers within procurement processes. Recognition must translate into material inclusion rather than symbolic acknowledgement.

6. Expand capabilities beyond job creation
A just transition requires enabling individuals to access and sustain opportunities over time. This includes provision of subsidised training pathways, flexible learning, improved transport access, digital inclusion, and financial support such as stipends or transition funding.

Conclusion

Operationalising a just hydrogen transition requires a shift from promissory, opportunity-led narratives toward governance approaches that actively align expectations with enabling conditions.

This involves coordinated policy action, inclusive engagement, and sustained investment in local capabilities. In Teesside and the North, the challenge is not only technological, but institutional and social: ensuring that hydrogen development delivers tangible, equitable, and locally grounded benefits.

Without clear policy direction, meaningful participation, and early delivery of social outcomes, hydrogen risks replicating past patterns of uneven development. With these conditions in place, however, it has the potential to support a genuinely just and regionally embedded transition.

Further Information and Key Contacts

Professor Tony Roskilly, from Durham University, explores hydrogen research at the 2026 REHIP industry conference. Delegates from industry and academia participated.

Professor Nashwan Dawood, from Teesside University, joins Patrice Burnside, from Energy Voice and E-FWD, at the REHIP industry conference. Energy Voice chaired the panels.

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Stay engaged with the UK hydrogen economy

- **For more information about REHIP and the NZIIC, please visit:**
  www.tees.ac.uk/minisites/netzero/rehip.cfm

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- **For more hydrogen news from Energy Voice, please visit:**
  www.energyvoice.com/category/renewables-energy-transition/hydrogen/

  You can also email Patrice Burnside on patrice.burnside@energyvoice.com

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