



**ABU DHABI**  
SUSTAINABILITY WEEK

# CLOSING THE GREEN HYDROGEN INVESTMENT GAP

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Hosted by

Roundtable - Rotterdam

MASDAR 

## INTRODUCTION

Green hydrogen has a critical role to play in the energy transformation but, given that the first wave of projects was subsidy driven, scaling capacity is becoming a stumbling block for the emerging industry. Here are six things we can do to make green hydrogen bankable.



### The Bankability Gap

It's little wonder that green hydrogen is so often described as the fuel of the future. It's the trifecta of clean energy: renewable, zero-carbon, and versatile. Green hydrogen offers the tantalizing promise of decarbonizing some of the trickiest and most carbon-heavy industries, including steelmaking and shipping.

However, the clock is ticking loudly on our time to cut emissions. In order to fulfil its promise, the industry needs to scale, and quickly. Governments are targeting 150 GW of global capacity by 2030, but they will struggle to meet this target with today's sluggish final investment decision (FID) rates.

The question of how to turn proposals into projects was the subject of a recent roundtable convened by Abu Dhabi Sustainability Week in Rotterdam.

This brought together more than 20 stakeholders from all around the world, including developers, offtakers, financial institutions, and policymakers.

They agreed that the primary obstacle to scaling up green hydrogen is the uncertainty across policy, pricing mechanism, and revenue.

**“From an investor perspective, we see that renewable hydrogen projects often fall [between traditional investors and venture capital]. That perception of risk is by far the key impediment to reaching financial closure,”** commented one speaker at the opening of the session.

During the session, participants converged on six actions that could help provide the certainty required to scale green hydrogen capacity this decade, ranging from Contracts-for-Difference (CFD) to modular pilots and pairing mandates.

## Solution 1: Tackling market reluctance with carrots and sticks

Green hydrogen projects often come to a standstill against the barriers of uncertain demand and high perceived risk. Offtakers are not incentivized to sign early contracts, particularly given the relative affordability of fossil-based alternatives like grey hydrogen (approximately \$1-\$2/kg vs. \$4-\$8/kg for green hydrogen in 2024) when they are compared without taking into consideration CO2 abatement costs. There is no lack of demand for green hydrogen, but offtakers do not always know the right price tag for it, especially for long-term contracts, and this undermines investor confidence and makes these projects difficult to finance.

Overcoming this inertia calls for regulatory drivers – both carrots and sticks. The “stick” could take the form of blending mandates with rising non-compliance fees, modeled on those in place for sustainable aviation fuel (SAF). ReFuelEU Aviation mandates the gradual uptake of e-kerosene, blended into jet fuel delivered to airports in the EU, beginning at 1.2% in 2030 and rising to 35% in 2050. This has forced offtakers to act early, guaranteeing demand for e-kerosene and ensuring projects are bankable. Participants at the roundtable noted that the policy is already bearing fruit, with offtakers already willing to cover e-kerosene production costs well ahead of the 2030 deadline. **“There needs to be a clear price tag for non-compliance. If you tell people, ‘By 2030, if you don’t comply, for every single year, every single ton of kerosene, [you will pay]’, it makes a decision completely different,”** a participant said.

As policymakers have learned, those who aren’t deterred by sticks can often be tempted by carrots. In the case of green hydrogen, CFD schemes can be compelling incentives. Guaranteeing a price (or price band) per unit

of hydrogen generated by a project removes uncertainty for the developer and investor, tackling the first mover disadvantage that is still preventing large-scale green hydrogen projects from reaching FID.

Participants emphasized the importance of long-term CFDs, such as those being developed by the governments of Japan and South Korea. They suggested CFDs of approximately 15 to 20 years and a price band that dampens price volatility (which is **“something that will kill your project immediately,”** one participant warned). This model knits a reassuring safety net for lenders. Combined with tightening mandates, it can also be cost neutral for governments – particularly important to ensure these schemes do not risk being rolled back during challenging economic circumstances.



## Solution 2: Activating lead markets to guarantee demand

One of the main benefits of green hydrogen is its versatility. It can be used in applications across sectors, many of which have scarce options for decarbonization. However, not all industries are equally suited to early adoption of green hydrogen, and the current one-size-fits-all approach to subsidies risks failing to generate strong, bankable demand among offtakers in any one of these sectors.

The roundtable's second solution, then, is to cast a smaller net, transitioning from an offer of broad subsidies to a sector-specific approach. These subsidies could be adjusted based on which sectors are best placed to absorb the additional costs of green hydrogen.

**“For the consumer, the price difference between [a loaf of bread] produced conventionally vs. one that was produced using green fertilizers is 0.1 cent,”** one participant said. **“It’s something that can be passed on to the consumer.”** In this case, if farmers are unwilling or unable to take the risk, downstream fast-moving consumer goods (FMCGs) – which can pass a small premium onto the consumer – can shoulder the risk. There is already movement in this industry, with a coalition of some of the largest FMCG brands working together to purchase green fertilizer.



## Solution 3: De-risking the capital stack

Even when a project appears viable on paper, lenders may be daunted by the perception of instability in offtake markets. While a universal phenomenon, this can be a particular challenge in emerging economies with high country risks. A lack of long-term alignment between partners can exacerbate this unwillingness, with lenders rightfully concerned about walkaway risk.

Participants at the roundtable suggested how to approach de-risked the capital stack in the

face of these two complications: export credit agency (ECA) cover and equity from offtakers and developers.

ECA cover for risk associated with an offtake country can be used to secure as much as 80-90% of a project's debt. With the vast majority of debt secured, the possibility of a policy reversal becomes a far less significant threat to lenders.

**“From our perspective, [ECA cover] can de-risk a project,”** said one participant from the finance industry.

Meanwhile, long-term interests can be aligned when offtakers join developers in taking an equity stake in a project and get **“skin in the game.”** This can also improve terms of debt by 100-150 Basis Points, cutting the cost of green hydrogen delivered by around 8%.



## **Solution 4:** Rethinking project structures

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Traditional project structures bundle different categories of risk, including technical risk, commodity risk, and credit risk, into a single special purpose vehicle (SPV). This can be off-putting for lenders, who prefer more streamlined, de-risked cash flows.

A tolling model for SPVs, based on a model widely used in the natural gas sector, separates responsibility for building and maintaining the asset itself from commodity trading. This means that an electrolysis plant may expect to continue earning a fixed conversion fee for the owner while commodity risk is shouldered by energy traders, simplifying credit analysis. “It’s less sexy, but actually you have something that, from a bankability and balanced risk perspective, is much easier to manage,” one speaker commented.

Technical risk can also be minimized by first building pilot projects (with capacity around 5-10 MW) and, only once that concept is proven, moving on to giga-scale projects. This “build-first” approach can help prove reliability, refine operations and maintenance assumptions, and attract lower-cost follow-on funding.

Participants in the roundtable noted that European start-ups have a tendency to present a new electrolysis product and search for someone to take the substantial risk of integrating that technology, while in China: “When you have a new product [...], the manufacturer itself will build the first of its kind to demonstrate the technology,” one participant observed. “And that makes a difference and provides guarantees. Will the rest of the world learn from the Chinese experience and reduce their technology risk?”

## **Solution 5: Closing the “valley of death” before FID**

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Developers raised the challenge of the “**valley of death**” that they must navigate before reaching FID. The hardest-to-raise finance, they said, is not the billions of dollars of CapEx, which can be provided by banks once contracts have been signed, but the final development expenditure (DevEx) they require for the Front-End Engineering Design (FEED) phase, including engineering studies, project documents, and agreements, as well as precise offtake terms.

Redirecting innovation grants toward late-stage DevEx could accelerate project pipelines far more effectively than the current model of spreading small innovation grants across many novel proposals. This could help more promising projects make it through to FID.

**“It’s the last bit before FID, which is the hard part,”** a developer commented. **“[Governments] are subsidizing innovative projects rather than backing winners. If you back winners, you get more benefits.”**

## **Solution 6: Policy continuity beats policy generosity**

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The final solution agreed upon by participants was to prioritize continuity of policy, even above generosity of policy.

Green hydrogen projects have lifetimes of 20 to 25 years, while a government’s industrial, energy, or climate policies are vulnerable to political and geopolitical winds and may have a lifetime of just a few years. This creates a perception of risk among lenders that inflates discount rates and the cost of capital. **“The Inflation Reduction Act is now in the wind. [Inconsistency] slows down progress and creates a question mark,”** one participant commented.

When it comes to blending mandates, CFDs, and carbon prices, locking in their trajectories over 20 years, comparable to the lifetime of a green hydrogen project, lowers the cost of capital and accelerates decarbonization more than headline subsidies do. A different participant commented that while many governments today show a willingness to offer generous CFD terms, **“what is not there is the willingness to commit to 20 years of offtake”**.

## CONCLUSION

Green hydrogen has the potential to play a substantial part in the energy transformation, helping to decarbonize hard-to-abate industries. However, given the urgency with which the world must decarbonize to meet the goals of the Paris Agreement, the young green hydrogen industry cannot be left to market forces alone – it must be nurtured, and nurtured strategically.

At the heart of this is certainty. Certainty lowers the cost of capital, making green hydrogen bankable. By following the six solutions listed in this report, industry and policymakers can take action to create the conditions necessary to scale up green hydrogen quickly enough for it to fulfill its promise.



## Roundtable participants

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Andrew Friedenthal, Global Director of Sales and Marketing, Next Hydrogen

Mohammad Abdelqader El-Ramahi, Chief Green Hydrogen Officer, Masdar

Carlos Álvarez Aguilera, Policy and International Relations at DG Energy, European Commission

Daniel Fraile, Chief Policy and Markets Officer, Hydrogen Europe

Daria Nochevnik, Head of Policy and Advocacy, Hydrogen Council

Denis Krude, President & CEO, Hydrogen Optimized

Jens Berge, CEO, Norwegian Hydrogen

Jonas Moberg, CEO, The Green Hydrogen Organization

Jop van Hattum, Managing Director, Theia Energy Pty Ltd

Jost Ahrens, Managing Director, VERBUND Green Hydrogen

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Michael Whiteley, Global Head of Clean Hydrogen, HSBC

Pierre-Germain Marlier, Director - Head of Northern Europe, Hy24

Raen Hans Olav, CEO, Yara Clean Ammonia

Timo Bollerhey, H2Global Holding CEO and H2Global Lead Strategist, HINT.CO GmbH

Tobias Bischof-Niemz, Member of the Management Board, ENERTRAG SE

Ivo Stoel, Senior Policy Advisor Infrastructure Development, Ministry of Foreign Affairs, Netherlands



Abu Dhabi Sustainability Week (ADSW) is a global platform supported by the UAE and its clean energy leader, Masdar, to address the world's most pressing sustainability challenges through crucial conversations accelerating responsible development and fostering inclusive economic, social and environmental progress.

For more than 15 years, ADSW has convened decision-makers from governments, the private sector and civil society to advance the global sustainability agenda through dialogue, cross-sector collaboration and impactful solutions. Throughout the year, ADSW conversations and initiatives facilitate knowledge sharing and collective action that will ensure a sustainable world for future generations.



Established in 2006, Masdar (Abu Dhabi Future Energy Company) is a global clean energy leader, transforming how the world produces and consumes energy through bold innovation and commercial excellence.

Masdar is a clean energy investor, developer and operator, advancing renewable energy projects across key markets and technologies, with a global project portfolio capacity to date of over 51 gigawatts (GW).

Jointly owned by TAQA, ADNOC and Mubadala, Masdar is driving the scale-up of renewables worldwide, targeting a portfolio capacity of 100GW by 2030.



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