



## Australian-European Union Green Hydrogen Dialogue #2: Summary Paper

### Green Financing of the Hydrogen Economy

The second Dialogue in the series involved presentations from both relevant EU and Australian participants providing an overview of green financing pathways and state of play in their respective jurisdictions, providing insights and perspectives on the themes of unique challenges of financing hydrogen projects, the role of sustainable finance taxonomies, and the need to foster coordination and common goals across the hydrogen value chain. Discussion amongst participants included sharing their own experiences and drawing on lessons in financing in other sectors such as in the renewable energy sector and liquified natural gas for scaling up the green hydrogen economy.

The major focus of discussions was around the following topics:

1. Key financing issues for the de-risking of hydrogen projects and deployment challenges
2. Role of government and subsidies in mitigating such risks and to close the commercialisation cost gap
3. How social license and certification schemes will guide decision making for hydrogen project investments.
4. How do we ensure there is co-ordination and coherence in developing sustainable finance taxonomies between EU and Australia in respect of hydrogen related activities.

The online Dialogue with a small expert group of participants from Australia and the EU, commenced with short presentations on the Australian and European Union policy and industry context as a lead-in to wider discussion of the key issues. Presentations on the EU and Australian context were provided by:

- Johanna Schiele, Innovation Fund, DG Clima, European Commission
- Matt Walden, Partner, Climate and Sustainability, Deloitte
- Marie Espitalier-Noel, Manager, Funding and Financing, Hydrogen Europe

This summary paper provides an overview of the main discussion items, outcomes, participant organisations for dissemination to wider audience through partner channels.





## Discussion Topics

### Supply Side Developments: Deployment Gap and Industry Positioning in Australia

While it is accepted that hydrogen will play a key role in the decarbonization of hard to abate sectors, the question ultimately boils down to “by how much” and “by whom”. Lack of concrete offtakers in certain markets and the price gap between what buyers are willing to pay and the price sellers are able to deliver hydrogen and derivatives is a key issue for the development of the hydrogen industry.

Large-scale production and export would decrease this price gap, although inefficiencies resulting from varying government priorities can arise for instance where governments may emphasise the development of blue hydrogen projects while others may emphasis green. Governments are also making trade-offs as part of overcoming the deployment gap, in deciding between cost optimisation and project diversity and how much support to offer export projects given the limited domestic decarbonisation benefits.

Several announced projects, spanning from small scale to export scale, have progressed to final investment decision (FID) stage due to risk allocation concerns. Early projects often assume risks and then seek grants to mitigate them. The Hydrogen Headstart Initiative, administered by the Australian Renewable Energy Agency (ARENA), stands as a cornerstone of Australian Government funding efforts. The participants noted that whilst challenges in hydrogen project financing are not novel, they however are diverse, mirroring risk allocation issues encountered by other industries such as early investments in solar, which necessitated government support.

Properly navigating these risks was paramount, especially considering the integrated landscape of risks, such as infrastructure, land and the pivotal role that state governments in Australia play in mitigating these risks. Lessons from the development of the Australian renewable electricity sector emphasised the necessity of early stakeholder group identification and engagement, specifically for social license and regulatory compliance.

Co-ordination and integration across complex hydrogen supply chains was required between multiple levels of government, industry, investors and infrastructure providers to develop the required physical and market infrastructure. Hydrogen supply chains were highly differentiated involving multiple site facilities, local planning and approvals, generation and storage technologies, heavy vehicle transport or pipeline transmission, desalination and waste-water treatment, and port and shipping facilities, with the diverse range of stakeholders at each stage needing to be identified early in the development process to bring these along the supply chain development and hydrogen production journey.





## Buyer Side Developments: Funding Mechanisms, Offtakes and Auctions

Scaling up investments in clean hydrogen production was an imperative for the long-term viability of the hydrogen industry. Estimates indicate that Europe will require between EUR 1.2-2.6 trillion for renewable hydrogen (and value chain) projects in Europe by 2050, while globally, the figure could range from EUR 6-30 trillion. Various EU funding mechanisms, from Horizon Europe to the ETS Innovation Fund, support projects from proof of concept to rollout.

New market-making schemes such as the Inflation Reduction Act (IRA) in United States and the SIGHT Program in India, along with initiatives like Hydrogen Headstart in Australia, aim to support both supply and demand.

The H2 Global initiative similarly supports and matches both demand and supply. However, challenges remain in establishing fixed offtake prices amidst fluctuating market conditions, addressed in part by EU taxonomy developments to combat greenwashing and redirect finance to sustainable activities. There is further need to have clear rules of the game for project promoters and developers to reduce regulatory risk, in terms of a definition of renewable hydrogen and harmonized standards.

The European Hydrogen Bank conducted its inaugural pilot auction on August 29th, 2023, allocating funds from the EU Innovation Fund of EUR 800 million to green hydrogen projects. The auction reviewed 132 bids from various hydrogen initiatives. Projects participating in the auction were subject to a price ceiling of EUR 4.5 per kg of hydrogen, with a stipulated development timeframe of 5 years, with project bidders obliged to provide a deposit. Failure to meet these conditions would lead to forfeiture of the bid. The pilot auction scheme sought to streamline administrative processes for member states, including prequalification checks of participants. It was noted that Germany is contributing an additional 300 million euros towards this initiative, demonstrating a blueprint for integrating national and EU funds.

## Sustainable Finance Taxonomy

Globally harmonized standards as part of sustainable finance taxonomies were imperative for further investments into green hydrogen and derivative projects. The Dialogue participants discussed the high degree of alignment between the way hydrogen is treated in the EU and in Singaporean/ASEAN taxonomies and the Australian taxonomy currently being developed. The emerging Australian finance taxonomy will propose technical criteria that cover measures and emission boundaries, including hydrogen in the mining and minerals sector where electrification is not feasible, such as heavy vehicles and in minerals processing.





Activities covering the hydrogen value chain will be addressed under (and dispersed across) a number of industry sectors in the Australian taxonomy, but most prominently in the manufacturing and industry sectors. The Australian sustainable finance taxonomy is being developed by the Australian Government and the Australian Sustainable Finance Institute in close collaboration with the EU Platform on Sustainable Finance and the Climate Bonds Initiative to ensure there is interoperability and credibility between how the EU and Australia taxonomies consider hydrogen related activities.

It was noted that the EU's taxonomy imposes obligations on large companies and member states to ensure that their funded activities adhere to environmental sustainability standards and alignment with the six environmental objectives, which encompass:

1. Climate change mitigation,
2. Climate change adaptation,
3. Sustainable use and protection of water and marine resources,
4. Transition to a circular economy,
5. Pollution prevention and control, and
6. Protection and restoration of biodiversity and ecosystems

### **CBAM: Carbon Border Adjustment Mechanism**

The CBAM scheme prices carbon content in imports based on the weekly EU carbon price, encompassing iron, steel, cement, aluminium, ammonia as fertilizer, electricity, and hydrogen, but excluding hydrogen derivatives. Plans are in place to assess and gradually expand to additional industries, with a phased approach. The CBAM mechanism is expected to trigger a "race to the top" on the international scale.

To remain competitive, nations may need to adopt their own CBAM mechanisms, thus fostering a global movement towards higher environmental standards. The internalisation of the real costs of CO<sub>2</sub> in fossil fuels was a pre-requisite for a sustainable green hydrogen market, as ongoing subsidies were neither politically nor financially sustainable. It was suggested that development of an Asian CBAM scheme to create the international trade price signal leveraging and re-inforcing the EU CBAM, would incentivise further embedding of renewable energy (and hydrogen) within Australian industry and export sectors.

### **Project Finance challenges**

Private finance, particularly equity finance, has seen involvement from entities like Copenhagen Investment Partners (CIP) in Australia, although debt financing has faced challenges according to a 2023 report by the Boston Consulting group (BCG). Challenges include securing long-term offtake agreements, proven technology, clear industry and regulatory standards, and the need for established markets. To unlock asset finance,





additional support for demand (offtake) is necessary, including allowing producers to lock in long-term contracts and providing blended finance support.

While green bonds were effective at a corporate level, diverse sources of finance, including export credit agencies (ECAs), commercial debts, grants, and government support are deemed essential to the management of risk allocation and development of green hydrogen projects. There was a role for more flexible government investment in large scale hydrogen projects eg: such as special investment funds at the federal level that take a cornerstone position in the project finance structure and a larger and longer-term role with more flexible and potentially concessional terms.

Additionally, land use and supply chain risks (such as electrolyser ordering time and electrical connection issues) pose significant challenges to project viability, prompting calls for cross-sectoral and national coordination and a cohesive national strategy. In the face of international competition, collaboration by 'Team Australia' was crucial, with state governments needing to ensure a level playing field for electricity, ideally priced at \$40/MWh.

Greater focus on technological advancement ie: Technology Readiness Level (TRL) progression was imperative, as there is potential for a backlash if technologies are "oversold" and do not meet hydrogen and other industry expectations. With hydrogen demand profiles/distribution strategies being heterogeneous, and global demand still weak, it was a challenge for manufacturers to test at scale for each application/usage/distribution eg: in terms of electrolyser deployment.

In comparison, the LNG industry had not been based on a 'build it and they will come' approach, rather dedicated supply infrastructure was built to deliver on pre-determined contracts between the suppliers and consumers which enabled asset utilization and optimisation across the supply chain in terms of production, storage and shipping. In the case of the hydrogen sector, it was questionable whether offtake agreements adequately underpin the end-to-end build of infrastructure from source to consumption and guarantee low cost and reliability of supply and the optimum utilization of infrastructure.

### **Cross Border Finance: How can this be enhanced?**

There's has been a growing emphasis on the Asian market, given the long freight distance to Europe. In terms of finance, export credit agencies have a role to play, already financing two-thirds of debt for sectors such as iron ore and LNG, an aspect that is occasionally overlooked.

Concerns persist around technology, with hopes for improved process operation data to enhance bankability. Moreover, industry is under mounting pressure to increase onshore processing and manufacturing, especially in the context of green iron and steel production,





indicating a broader shift towards onshore embodiment of sustainable practices. The notion of embedded minerals further raises issues whether the EU might consider relocating segments of its value chain to Australia. Queries were raised around the risk implications of an increased focus in industry policy on sovereign manufacturing capability of critical cleantech technologies including those involved in hydrogen production, storage and use, and whether this placed additional risk on projects and the risk appetite required from governments.

### Key discussion outcomes:

Green hydrogen projects, spanning from small to export scale, face challenges in progressing to commercial decision (i.e. FID) due to risk allocation concerns. Risk factors were multifold and diverse, ranging from technology, offtake agreements, land availability, and supply chain risks. A national approach to co-ordination across supply chains was called for to identify and mitigate these risks and to overcome deployment challenges.

Government support was critical to the commercial viability of hydrogen projects, with new market-making schemes like the US IRA, EU Hydrogen Auction and the SIGHT Program in India, along with initiatives like Hydrogen HeadStart in Australia, required to support and match both the supply and demand side.

Diverse sources of finance were essential to the management of risk allocation and development of green hydrogen projects, including more flexible, larger and longer-term government investment in large scale hydrogen projects eg: such as special investment funds.

Interoperable sustainable finance taxonomies between the EU and Australia were critical to facilitate further investment into hydrogen and derivative projects.

The Carbon Border Adjustment Mechanism (CBAM) introduced in the EU could trigger a "race to the top" on the international scale, as to remain competitive, nations may need to adopt their own CBAM mechanisms, fostering a global movement towards higher environmental standards and creating an international trade price signal leveraging and reinforcing the EU CBAM.

A greater focus on technological advancement ie: Technology Readiness Level (TRL) progression across the supply chain was imperative to meet hydrogen and other industry expectations.







## Presenter bios

**Johanna Schiele,**  
**Innovation Fund**  
**DG Clima, European Commission**



Johanna is an auction design expert and was instrumental in designing and implementing the European Hydrogen Bank, the first EU-wide auctions for renewable hydrogen production, financed via the Innovation Fund. Previous to joining the Commission, Johanna worked in the power sector and as a researcher on auctions and clean tech funding. She holds a BA from Oxford University and an MPA from Harvard University.

**Marie Espitalier-Noël**  
**Manager, Funding and Financing**  
**Hydrogen Europe**



Marie Espitalier-Noël is Manager, Funding and Financing at Hydrogen Europe. She leads the Funding team and coordinates HE's Funding and Financing Working Group, whose role is to improve the financing and bankability of clean hydrogen projects, throughout the value chain. She is in charge of fostering public and private investment in clean hydrogen projects, through data analysis, ecosystem animation and advocacy.

Marie represents Hydrogen Europe at the Board of the African Hydrogen Partnership, sits at the European Commission Investors Dialogue on Energy Working Group and the World Bank Hydrogen for Development (H4D) Partners Group.

Prior to joining HE, Marie launched the subsidiary of a leading European impact fund in Australia, focusing on Energy production for smart cities in partnership with the Clean Energy Finance Corporation. She also worked as Senior Associate for a Venture Capital fund where she oversaw the Renewable energy production and Environment investment portfolio in Africa and France. Marie holds a Master of Auditing & Corporate Finance from Paris School of Business and a Master of International Economics and Market Finance from University of Queensland, Australia. Among other, Marie has been a jury investor at the Google SDG Accelerator, for their energy portfolio, and been involved in the design of Mauritius Renewable Energy Roadmap in partnership with the World Bank.

**Matt Walden**  
**Partner, Climate and Sustainability**  
**Deloitte**



Matthew Walden is a Partner within Deloitte's Energy and Climate Advisory and is a leading provider of commercial advisory and policy services within the clean energy sector. In his time at Deloitte, Matt has led work specialising in hydrogen project structuring and financing, SAF project development (biogenic and PtL) and the exploration of supportive supply- and demand-side policy for renewable fuels. Matt has





over 20 years' experience as a corporate finance and strategy specialist focusing on energy transition and technology commercialisation. Prior to joining Deloitte, Matt spent eight years as an Investment Director at the Australian Renewable Energy Agency (ARENA) with responsibility for delivering large complex first of kind transactions in the areas of hydrogen, bioenergy, energy from waste, remote area power, energy storage and large scale solar. During his time at ARENA, Matt was responsible for ARENA's investment in over \$4 billion of clean energy projects and initiatives.

## Dialogue Participant Organisations

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Australian Gas Infrastructure Group

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Australian Sustainable Finance Institute

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Australian Hydrogen Council

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Clean Energy Finance Corporation

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Climate Energy Finance

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H2Q Hydrogen Queensland

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Norton Rose Fulbright

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Pollination

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Wood PLC

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Yara Ammonia

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Deloitte

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ARC Training Centre for Global Hydrogen Economy (GlobH2E)

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Climate-KIC Australia

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DG Clima, European Commission

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Hydrogen Europe

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Investor Group on Climate Change

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Australia and New Zealand Banking Corporation

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