



Forum Outcomes

Tokyo | May 26-28, 2025

4TH Partners' Meeting and Stakeholders Forum



THE EVENT

CO-HOSTED BY:



The Fourth Hydrogen for Development (H4D) Partners' Meeting, held in Tokyo, marked a significant milestone for the initiative—our first convening in a hydrogen-importing country. Japan's increasing demand for clean hydrogen and its derivatives from emerging markets and developing countries set the stage for a dynamic and forward-looking dialogue.

Co-organized by the World Bank–ESMAP, the Clean Fuel Ammonia Association (CFAA), Japan Bank for International Cooperation (JBIC), Japan Hydrogen Association (JH2A), and The Japan Gas Association, the event brought together senior Japanese officials, hydrogen experts, and partners from over 14 countries. Together, we explored pathways to decarbonize industry, create green jobs, and enhance global energy security. The Tokyo meeting reaffirmed the H4D partnership's commitment to building a sustainable and inclusive hydrogen economy.

PARTNERS WHO ATTENDED IN-PERSON



10 KEY TAKEAWAYS

1 Consolidated Project Pipeline and Export Potential from Emerging Markets and Developing Countries (EMDCs). Despite delays, a consolidated pipeline of hydrogen projects is advancing in India, Chile, Colombia, Egypt, Namibia, South Africa, and Morocco. H4D Partners discussed the status of the projects in their respective countries and expressed that Japan's future demand for hydrogen and derivatives could be met with the production of EMDCs.

2 Japan as a Strategic Partner for EMDCs in the Hydrogen Industry. Governmental institutions—including NEDO, NEXI, JBIC, METI, and MoF—are valuable partners for EMDCs and want to deepen their engagement. Partners also acknowledged the valuable support from Japanese business associations, especially the Japan Hydrogen Association and the Clean Fuel Ammonia Association (CFAA). H4D Partners from EMDCs expressed that Japan's technical expertise, financing instruments, and policy leadership can play a critical role in the development of hydrogen ecosystems in developing countries. The World Bank expressed its goal to go forward and deepen the collaboration between Japan and EMDCs.

3 Strategic Role of Green Ammonia and Hydrogen in Japan's Net Zero Objectives. Green hydrogen and green ammonia are poised to play a central role in Japan's decarbonization strategy, particularly in sectors such as power generation, maritime transport, and fertilizer production. According to Japan's Green Growth Strategy, ammonia co-firing in thermal power plants could reduce CO₂ emissions by up to 20% by 2030. However, safety standards for production, storage, and transport must be strengthened, especially for deployment in EMDCs. There was a consensus that the World Bank and other development finance institutions (DFIs) can support regulatory harmonization and infrastructure readiness in EMDCs.

4 Hydrogen Offers an Opportunity for Industrial Decarbonization: The Case of Green Direct Reduced Iron (DRI). H4D Partners concluded that hydrogen and its derivatives play a crucial role in industrial decarbonization, particularly in sectors that are hard to abate. They also expressed that green DRI offers a pathway to decarbonize the steel sector while creating export opportunities for countries like Brazil and South Africa. Moreover, it offers a strategic solution for Japan to reduce emissions in its iron and steel sector. Using green hydrogen instead of coal in DRI processes can reduce emissions by over 90%. Japan's steel industry, a major emitter, could benefit from importing green DRI as part of its decarbonization strategy.

5 Japan is Actively Deploying Hydrogen Support Mechanisms. Japan showcased the policies and actions that have been implemented to support the hydrogen economy in the country and abroad. The Government shared key insights on three key mechanisms introduced to stimulate hydrogen and ammonia markets: (a) a USD 20 billion Contract-for-Difference (CfD) scheme, with 27 applications already received and awards expected from the second half of 2025; (b) a Hydrogen Hub Development Program, accepting applications until June 2025; and (c) the Hydrogen Society Promotion Act, which formalizes national demand creation. These instruments are designed to reduce market risk and accelerate investment in hydrogen supply chains. All these instruments were presented to H4D partners and discussed their relevance for EMDCs.

6 Hydrogen Carriers for Medium- and Long-Term Supply. Japanese stakeholders expressed that they are exploring multiple hydrogen carriers—including liquid hydrogen, liquid ammonia, and liquid organic hydrogen carriers (LOHCs)—to ensure flexible and scalable supply chains. Each carrier presents unique trade-offs in terms of energy density, infrastructure compatibility, and safety. For example, LOHCs offer lower volatility but require dehydrogenation infrastructure. Japanese experts mentioned that these technologies are expected to complement each other in Japan's medium- and long-term hydrogen strategy.

7 Ensuring Compliance with ESG Standards. H4D partners recognized that hydrogen projects must align with international environmental and social frameworks, such as the IFC Performance Standards and World Bank Environmental and Social Framework (ESF), to ensure sustainability and community acceptance. H4D partners expressed that Social License to Operate (SLO) is increasingly recognized as a prerequisite for project success, particularly in regions with complex stakeholder dynamics. There was a general agreement that the World Bank, AfDB, and UNIDO can play a pivotal role in capacity building and technical assistance to help developers meet these standards.

8 Risk Mitigation Instruments and Concessional Finance for Bankability. H4D Partners recognized that achieving Final Investment Decision (FID) for hydrogen projects requires a mix of concessional finance, early-stage equity, and commercial debt. Blended finance structures can reduce the cost of capital and improve project bankability. H4D Partners emphasized that political risk insurance, credit enhancement mechanisms, and guarantees are essential to secure financing for hydrogen projects in EMDCs. The World Bank Group, through MIGA and IBRD, and export credit agencies (ECAs) from both donor and recipient countries, can play a critical role in de-risking investments. Instruments such as partial risk guarantees and liquidity support facilities can help projects reach financial close and attract private capital.

9 Institutional Synergies, International Cooperation, and Global Partnerships are Critical to Support EMDCs in their Ambitions to Deploy Hydrogen. Collaboration among international financial institutions (IFIs) is essential to scale hydrogen deployment. The joint proposal by the African Development Bank (AfDB) and the World Bank under the IKI program exemplifies such synergies. Engagement with multilateral platforms such as the OECD, UNIDO, and GIZ can further harmonize standards and mobilize resources.

10 Green hydrogen is essential for achieving net-zero emissions in several key sectors, particularly in the production of ammonia, methanol, and sustainable aviation fuel (SAF). These compounds are crucial for agriculture (fertilizers), heavy industry, and the decarbonization of aviation and shipping. Currently, most hydrogen is produced from fossil fuels, but transitioning to green hydrogen (produced from renewable energy) is vital for these applications to contribute to a net-zero future.



HIGHLIGHTS IN THE INTRODUCTION AND WELCOME REMARKS

Demetrios Papathanasiou
Global Director for Energy and Extractives, World Bank



- Japan is emerging as a global leader in hydrogen innovation and enablement, underpinned by strengthened national policies and technological leadership.
- Japanese institutions—JBIC, JH2A, and CFAA—are playing a pivotal role in advancing global hydrogen efforts.
- Through the H4D platform and strong Japanese partnership, efforts are focused on fast-tracking high-impact, bankable hydrogen projects and building a robust global hydrogen economy anchored in inclusive and sustainable development.
- With only 4% of hydrogen projects reaching construction, the H4D dialogue—supported by Japan—aims to fast-track high-impact, bankable projects and build a global hydrogen economy rooted in inclusive and sustainable development.

Makoto Uchida
Senior Managing Director, JBIC



- JBIC’s international footprint spans Southeast Asia, the Middle East, Africa, and the Americas, enabling first-mover projects and unlocking new value chains through strategic equity investments and financing initiatives.
- JBIC is deploying de-risking mechanisms such as Contracts for Difference (CfD) and Special Operations to catalyze bankable projects and overcome barriers including high costs, immature technologies, and lack of standardization.
- Japan’s support for HY24—the world’s largest hydrogen fund—underscores its commitment to scaling global hydrogen markets.
- Japan is positioning hydrogen and ammonia as central pillars of the global energy transition, leveraging the JBIC and its Energy Transformation Strategy Office to drive infrastructure development and financing solutions.

Takahiro Tsuda
Director MDB Division, Ministry of Finance Japan



- Government of Japan sees clean hydrogen as a key pillar for energy security, diversification and decarbonization.
- Japan is elevating hydrogen and ammonia as key enablers of the global energy shift, advancing infrastructure and financing solutions through institutions like CFAA, JBIC and JH2A.
- By investing in HY24, Japan signals a strong commitment to catalyzing large-scale capital flows and advancing the global hydrogen economy.
- Aims to close the economic gap between supply cost and demand prices and pay for the learning investments to reach economic viability medium and long term.
- Contract for Difference (CfD):
 - \$20B budget.
 - 27 projects received.

PANEL DISCUSSION 1: INTERNATIONAL COOPERATION FOR HYDROGEN DEPLOYMENT

Key takeaways from Japan International Cooperation Agency



JICA activities to promote the use of hydrogen solutions for decarbonization

Training courses were provided to officials in ministries, public power or oil and gas companies who are promoting hydrogen as an alternative solution for decarbonization.



Global Key Challenges

- Need to stimulate market demand and develop enabling regulatory frameworks.
- It is also necessary to stimulate demand.
- Need to build and strength relationships with countries that import and export hydrogen.



Case Example: Paraguay

- Paraguay’s electricity is 100% renewable. The installed generation capacity in the country is looking forward to increasing in the use for green industrialization and enhanced fertilizer supply security based on hydrogen.
- Exports electricity to neighboring countries.
- Imports oil (diesel and gasoline).
- Project Period: 07/2025~07/2027 (2 years).
- The government is seeking to promote green hydrogen by formulating a strategy.

Support implementation of the strategy by design of financial mechanisms

- Project Purpose: Financial mechanisms for the promotion of green hydrogen are designed after recognition of its necessity.
- Outputs:
 - 1-A: Green hydrogen pilot project(s) are proposed.
 - 1-B: Financial challenges for all the projects in general are identified for their actual and sustainable implementation.
 - 2: Financial mechanisms are proposed to facilitate implementation of public and private green hydrogen projects.
 - 3: Capacity building program about financial mechanisms to the VMME and dissemination program to other ministries and/or relevant organizations are delivered.



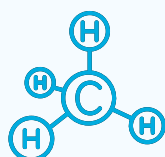
Participants in Panel Discussion 1

Download JICA’s presentation by clicking here.

PANEL DISCUSSION 2: AMMONIA AND SYNTHETIC FUEL TRADE AND USAGE

Key takeaways from

THE JAPAN GAS ASSOCIATION



E-Methane: Promising means of hydrogen utilization

- Synthesized "e-methane" is one of the potential applications of Hydrogen.
- The technology to synthesize hydrogen and CO₂ to produce e-methane is called "Methanation".
- E-methane is not increasing total amount of GHG in the atmosphere:
 - CO₂ emission of e-methane was originally captured from atmosphere or already accounted for GHG.
 - Because it is made from recovered CO₂, combustion does not increase the amount of carbon in the atmosphere.



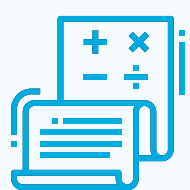
E-methane can utilize most existing infrastructure

- E-methane can be used in most existing natural gas infrastructure, avoiding valuable assets becoming stranded, thus avoiding social costs (investment).



E-methane GHG accounting rules are not yet established

- Common problem for Recycle Carbon Fuels (RCFs) is to which entity is the environmental value attributed that is by displacing fossil fuels with lower carbon intensity fuels, those who captured CO₂ or those who use the RCFs.
- The environmental value should be attributed to the entity who paid for the value. However, commonly accepted GHG accounting rules for RCFs have not yet been developed.
- Major international GHG accounting rules do not have methods for RCFs including e-methane.
- Revisions are expected in IPCC Inventory Guideline and GHG Protocol's Corporate Standards.
- JGA is trying to get involved in the revision process through advocacy activities and making efforts to develop international standards that can serve as one of the references for the revision process.



Effort to develop internationally applicable calculating rules:

- Method of calculating carbon footprint of e-methane, which has become effective as an international standard (ISO 6338-1)
- ISO 6338-1, published in 2024, includes calculation formula which JGA proposed for carbon footprint (CFP) (carbon intensity (CI)) of e-methane in accordance with ISO14067, well known standard of CFP calculation.
- The core concept is that if the CO₂ feedstock (captured carbon) meets certain conditions, it should be minus counted to calculate CFP in the entire boundary.
- Launch of "Clean Gas Certificate" scheme for transferring environmental value attribute of e-methane.
- JGA and gas-related entities have developed a scheme of certifying and transferring the environmental value attributes of e-methane and biomethane produced in Japan.
- Aiming the scheme to be applied to cross-border traded e-methane and biomethane.



CHILE

- Chile has approved a new incentive law for ammonia.
- Ongoing collaboration with the World Bank is underway to assess the levelized cost of ammonia.



SOUTH AFRICA

- Highlighted two ammonia projects currently underway in the region.
- Emphasized the importance of bunkering, fueling, and shared infrastructure.
- Stressed the availability of renewable energy as a critical enabler.



INDIA

- India reaffirmed its strategic reliance on ammonia for fertilizer production, underscoring its role as a major importer.
- Domestic urea production reached approximately 31.2 million tons annually, according to Fertiliser India.
- Urea imports have supplemented domestic supply, ranging between 5 to 10 million tons per year over recent decades.
- India remains a net importer of ammonia, with 2.2 million tons imported in 2023, as reported by the World Bank.



JAPAN

- NYK presented Japan's progress in development of ammonia powered vessels.
- Chile remains commercially viable as a hydrogen partner, despite the geographic distance, due to existing shipping routes for copper and lithium.
- Emphasized that extended timelines in hydrogen development are typical and and delays have limited impact on the ultimate success of projects.



Participants in Panel Discussion 2

PANEL DISCUSSION 3: HYDROGEN AND AMMONIA FINANCE

Key takeaways from



**JAPAN
BANK FOR
INTERNATIONAL
COOPERATION**



Energy Transformation Strategy Office

Created to lead JBIC's efforts in hydrogen, ammonia, and other new energy sources and for intelligence gathering, research, and information dispatch for the selected projects.



Focus Areas

- Hydrogen, ammonia, LNG, biomass development & import.
- Infrastructure (terminals, vessels).
- Strategic government-linked projects
- Intelligence & global value chain creation.

Key Projects & Investments

UAE Ammonia Project

- 1M tons/year by 2027 (via RSC LTD).
- JBIC loan: \$12M.
- From fertilizer to fuel (Japan, Korea).

California Hydrogen Stations

- \$23M equity in FirstElement Fuel Inc.
- Boosts Japanese FCEV market.

HY24 Hydrogen Fund

- JBIC commitment: €100M.
- Total fund: €1.5–1.8B.
- Partners: Air Liquide, TotalEnergies, Plug Power, VINCI.



Global Engagement

Major infrastructure projects identified in 27 countries: Australia; Bangladesh; Benin; Brazil; Canada; Egypt; France; Germany; India; Indonesia; Mexico; Mongolia; Morocco; Palau; Qatar; Saudi Arabia; Senegal; Singapore; Taiwan; Thailand; Türkiye; United Arab Emirates; United Kingdom; United States; Uzbekistan and Vietnam.



JBIC committed up to EUR 100 million

in the world's largest hydrogen fund, managed by HY24 (a Joint Venture between Ardian and FiveT Hydrogen), with a total fund size of up to EUR 1.8 billion.

- The fund invests across the entire hydrogen value chain—upstream to downstream—to accelerate market scale-up and support global decarbonization.



Challenges

- The primary challenge to scaling hydrogen supply chains is the lack of demand and off-takers, driven by the high cost of low-carbon hydrogen.
- Additional barriers include insufficient infrastructure (e.g., pipelines, terminals, storage) and the immaturity of key technologies such as large-scale electrolysis and hydrogen carriers.
- A lack of harmonized international standards for low-carbon hydrogen further complicates market development and cross-border trade.

Contract for Difference: The support focusing on the price gap



- Japan has launched a USD 20 billion, 15-year Contracts for Difference (CfD) scheme to support first-mover hydrogen projects starting supply by 2030, covering the price gap with conventional fuels.
- The scheme addresses key bankability risks, including feedstock price volatility, FX/inflation risks, force majeure delays, and carbon intensity deviations—through a structured consultation process.
- Eligible projects include blue/green hydrogen and related carriers (e.g., ammonia, e-methane, LOHCs), with a defined strike price formula linked to OPEX, CAPEX, and exchange rates.
- Japan offers comprehensive support across the hydrogen value chain, combining CfDs for price gap coverage, hub infrastructure development, and decarbonization auctions to enable hydrogen and ammonia-based power generation.



JBIC's Special Operation

- JBIC launched Special Operations in 2016 to take on higher risks in overseas infrastructure investments.
- Since 2019, the scope has expanded to support Japanese companies undertaking projects with advanced technologies or early-stage business models, aligned with Japan's "quality infrastructure" agenda.
- Eligible projects include both public and private infrastructure, particularly where repayment may be affected by demand fluctuations, government off-takers, or technology/project-formation risks such as hydrogen stations in California and next-gen battery systems.



- The African Development Bank highlighted the roles of their in-house instruments such as the Sustainable Energy Fund for Africa (SEFA), providing both technical assistance and concessional investment, and Africa Legal Support Facility (ALSF) to support upstream hydrogen-related initiatives.
- It was noted that concessional and blended finance remain essential in Africa, given the high capital costs and elevated debt levels.



- The OECD underscored the importance of identifying risk mitigation tools to support hydrogen project development.
- ATOME project was presented as an illustrative example, demonstrating how development expenditure (DEVEX) can be covered through targeted financial mechanisms.



- Progress on 121 hydrogen-related projects in the region was reported by Dii, supported by low credit costs enabled through sovereign funds.
- Power purchase agreement (PPA) rates as low as \$0.03/kWh and the availability of low-cost land were identified as key factors contributing to regional competitiveness.



- NEXI presented financial instruments aimed at reducing the cost of capital, including credit enhancement tools designed to improve borrower ratings. These instruments are available to non-Japanese companies, provided the hydrogen is ultimately exported to Japan.
- Japan's Contracts for Difference (CfD) program was highlighted as a key policy initiative. The program includes a \$20 billion fund, with 27 applications submitted to date, and remained open until July 2025.



Participants in Panel Discussion 3



Download JBIC's presentation by clicking here.



PANEL DISCUSSION 4: PUBLIC-PRIVATE COLLABORATION FOR HYDROGEN DEPLOYMENT

Key takeaways from JAPAN HYDROGEN ASSOCIATION



New Definitions

For Clean Hydrogen and Low Carbon Hydrogen. The definition would be regularly updated to align with international trends, ensuring a stable supply and maintaining market competitiveness.



Japan's Hydrogen Policy

- Japan's national hydrogen strategy (2017, revised 2022) sets a 2050 vision and 2030 roadmap, aiming to cut hydrogen costs from 100 to 30 yen/Nm³ by 2030 and 20 yen/Nm³ in the longer term.
- Focus on low-cost feedstocks (e.g., brown coal, surplus renewables), mass production and transport infrastructure, and hydrogen use across transport, power, and industry sectors.
- Aligned with global benchmarks (~3.4 kg CO₂e/kg H₂, Well-to-Gate), Japan promotes credible certification and will launch a CfD scheme to bridge cost gaps and attract private investment.



Japan's Hydrogen Supply & Demand

- Current supply and demand are both around 1.93 Mt/year, mostly from by-product hydrogen in refineries and steel plants.
- Hydrogen is used in refineries for desulfurization, ammonia synthesis, and as a heat source.
- External sales remain marginal (0.014 Mt/year), indicating limited market penetration.

400
million

Japan Hydrogen Fund

- Launched in 2024 with over USD 400M committed from 8 investors.
- Targets regions: Japan, US, EU, Australia.
- Investment domains: green/blue hydrogen, ammonia, CCUS, transport, industrial use, power generation.



International Collaboration

- MOUs signed with 15+ global hydrogen associations (e.g., H2 Korea, Hydrogen Europe, Australian Hydrogen Council).
- Focus on business matching, standardization, and joint development.



Examples on base development for low-carbon hydrogen supply and utilization

- **Regional Green Hydrogen Supply Chains & Infrastructure:** Key projects include Tomakomai's large-scale supply chain, Ishikari's offshore wind-powered hydrogen, Imizu's decarbonization system, Tokyo's waterfront hydrogen network, and Namie's overhead hydrogen piping demonstration.
- **Carbon-Neutral and Innovative Hydrogen Production:** Mutoran targets carbon neutrality with hydrogen and CCU; Susono produces CO₂-free hydrogen from Woven City; Nagoya converts waste plastics to hydrogen; Namie and Tainai advance BECCS and CO₂-negative hydrogen from biomass; Rokkasho develops hydrogen production/utilization in the Tohoku region.
- **Hydrogen Import, Distribution & Utilization Hubs:** Iwaki is studying a large-scale hydrogen receiving base at Onahama Port; Chita and Yokkaichi serve as import and delivery centers in the Chubu region.



Participants in Panel Discussion 4



Download JH2A's presentation by clicking here.



WORKSTREAMS' MEETINGS

Work Stream 1- Clean hydrogen technologies, infrastructure, and systems integration



- A knowledge note (WB Livewire) on *"Shared Infrastructure for Clean Hydrogen"* to advise on international practices relevant to EMDCs. **Knowledge note to be delivered during Q4 2025.**
- A paper on *"Electrolyzers and the Cost of Renewable Hydrogen"* and its impact on the levelized cost of hydrogen (LCOH). **To be published in January 2026.**
- On systems integration, more analysis is planned on how electrolyzers can be better integrated with renewables. **In-house discussions are ongoing.**
- Technology Knowledge Repository. **In-house discussions are ongoing.**



Herman Jonker
Co-chair
Western Cape Government



Mike Enskat
Co-chair
giz
Deutscher Bundesrat
für Wirtschaft
und Klimaschutz (BZgW)



Hiroaki Machii
THE WORLD BANK
IBRD • IDA



Rafael Ben
THE WORLD BANK
IBRD • IDA

Work Stream 2- Enabling frameworks (policy and regulations)



- Monthly webinars and its one-pagers on certification, financing, and other relevant topics - (supported by 21 partners) **successfully delivered, as of June 2025.**
- Navigator on Policies and Regulations Governing Imports of Hydrogen and Derivatives in the European Union (prepared by WB and Hydrogen Europe, in collaboration with CCEE, GIZ and International PtX Hub) - **successfully delivered, as of November 2024.**
[Click here to download the Navigator.](#)
- (SPA) Navegador de políticas y regulaciones que rigen las importaciones de hidrógeno y derivados en la Unión Europea (in collaboration with H2LAC)- **successfully delivered in presented in May 2025.** [Click here to download the Navigator.](#)
- Navigator on Policies and Regulations Governing Imports of Hydrogen, Ammonia and Other Derivatives in Japan (prepared by WB with the support of CCEE, Hydrogen Task Force-MEDEF International) **preliminary version presented in June 2025, In-house discussions are ongoing.**
- (FR) Navigateur des politiques et réglementations encadrant les importations d'hydrogène et de ses dérivés dans l'Union Européenne (in collaboration with CCEE and Hydrogen Task Force-MEDEF International). **To be delivered in December 2025.**



Mikaa Blugeon-Mered
Co-chair
Hydrogen Task force
by MEDEF International & France Hydrogène



Ricardo Gedra
Co-chair
ccee



Carolina Lopez Rocha
THE WORLD BANK
IBRD • IDA



Carmen Conde Pardavila
THE WORLD BANK
IBRD • IDA

Work Stream 3- Investments, financing, business models and procurement



- Support the flagship report *"Scaling Hydrogen Financing for Development"*- (supported by The World Bank, OECD, and the Hydrogen Council). **Successfully delivered in January 2024.** [Click here to download the report.](#)
- Present the 10 GW Lighthouse Initiative (in collaboration with OECD and RVO) at the World Hydrogen Summit (Rotterdam). **Successfully delivered in May 2024.** [Click here to see the summary Report.](#)
- Joint publication World Bank - OECD: Leveraging de-risking instruments and international coordination to catalyze investment in clean hydrogen. **Successfully delivered and published in Q1 2025.** [Click here to download the Report and see here the Infographic.](#)
- Financing Roundtable (in collaboration with RVO). **Final deliverable to be published in August 2025.**
- Risk mitigation toolkit. **To be delivered during Q4 2025.**
- A short paper on global best practices for defining off-take, focusing on volume, price, duration, and quality. Drafting ongoing. **To be delivered by December 2025.**
- Masterclass at the Global Africa Hydrogen Summit in Windhoek, Namibia – **September 2025 (in-person).**



Deger Saygin
Co-chair
OECD



Dolf Gielen
THE WORLD BANK
IBRD • IDA



Michelle Carvalho Metanias Hallack
THE WORLD BANK
IBRD • IDA

Work Stream 4- Socioeconomics and sustainability



- Key Insights from Social Licensing to Operate (SLO) in Renewable Energy Projects: Applying Lessons to Clean Hydrogen Development. **In-house discussions. To be delivered in Q4 2025.**
- Guidelines for Estimating Employment Opportunities in the Green Hydrogen Economy: Green Ammonia, Methanol, and Steel Sectors. **First draft to be delivered in Q4 2025.**



New
Andrea Guati Rojo
Co-chair
AMMONIA ENERGY ASSOCIATION



Simran Sinha
Co-chair
Green Hydrogen Organisation



Carolina Lopez Rocha
THE WORLD BANK
IBRD • IDA



Ignacio Berreta Sartini
THE WORLD BANK
IBRD • IDA

Work Stream 5- Hydrogen use in industry



- Clean ammonia report: Chile exports to Japan (in collaboration with CFAA and CORFO) – drafting ongoing – **In-house discussions. To be delivered during Q4 2025.**
- A paper to identify countries with the highest potential to scale-up green fertilizers. – (supported by The World Bank and UNIDO). **To be discussed.**
- A deliverable related to scaling-up hydrogen based green steel and bunkering. **In-house discussions.**



New
Ana María Ruz
Co-chair
CORFO



New
Petra Schwager
Co-chair
UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION



Dolf Gielen
THE WORLD BANK
IBRD • IDA



Megan Meyer
THE WORLD BANK
IBRD • IDA

HYDROGEN AND AMMONIA TECHNICAL VISITS

IWATANI-COSMO HYDROGEN STATION

Iwatani-Cosmo Hydrogen Station LLC is a joint venture between Iwatani Corporation and Cosmo Energy focused on expanding Japan's hydrogen refueling infrastructure to support fuel cell mobility and industrial decarbonization. Leveraging Iwatani's leadership in hydrogen supply and Cosmo's energy network, this venture has launched high-capacity stations like Ariake (within a bus depot) and Heiwajima, using liquid hydrogen pumps exceeding 120k kg/h. The venture also aligns with Japan's national hydrogen strategy, contributing to Iwatani's broader goal of increasing hydrogen sales. The partnership also supports shared investment in engineering, grid integration, and hydrogen logistics for long-term energy transition.

“ Iwatani-Cosmo showcases the successful practical operation of complex hydrogen refueling supply chains. **”**

Dolf Gielen
THE WORLD BANK
IBRD • IDA



“ Iwatani-Cosmo illustrates how scale, integration, and strategic investment are shaping the future of hydrogen refueling. **”**

Ana Maria Ruz
CORFO

TOKYO GAS YOKOHAMA METHANATION PLANT

Tokyo Gas's Yokohama Techno Station Methanation Pilot merges CO₂ captured from Yokohama's Tsurumi waste-to-energy plant and biogas with green hydrogen to produce e-methane—synthetic methane compatible with city gas. The CCU demonstration began in July 2023 with the CO₂ capture and transport phase. In August 2024, Tokyo Gas commenced e-methane production using reclaimed water and digester gas. This locally integrated pilot targets regional carbon-neutral fuel systems aligned with the company's 2030 vision.



“ The Yokohama methanation project showcases the technical feasibility of producing synthetic gas that is equivalent to natural gas. **”**

Carolina Lopez Rocha
THE WORLD BANK
IBRD • IDA

“ Tokyo Gas, through Yokohama Techno Station Methanation Pilot, is demonstrating how carbon reuse and green hydrogen can deliver practical, low-carbon gas solutions for cities. **”**

Herman Jonker
Western Cape Government