

3<sup>RD</sup> PARTNERS' MEETING  
AND STAKEHOLDERS FORUM

Co-host by



**THE EVENT**

The 3rd Hydrogen for Development Partner's Meeting and Stakeholders' Forum brought together leading representatives from government institutions, the private sector, research institutions, and non-governmental organizations.

At this time the H4D event focused in Colombia. Ongoing clean hydrogen activities of partners were presented and an update on the H4D work program was provided.

Ongoing World Bank activities in support of clean hydrogen projects were discussed, and views on pathways and actions to advance a clean hydrogen economy in client countries were gathered. The 10 GW Hydrogen Lighthouse Initiative was introduced to H4D partners and stakeholders.

A **CLOSER LOOK**  
AT THE  
**3<sup>RD</sup> PARTNERS' MEETING**

The event was held at the **ANH headquarters in Bogota, Colombia**



**Eleven members** of the partnership attended



Attendance of **various Colombian entities and distinguished participants**



Colombian Authorities were **provided with advice** on how to develop clean hydrogen industry



World Bank's elaborated **support to the clean hydrogen industry** in Colombia



The first session was on **financing clean hydrogen value chains in Colombia**



The second session was on **Techno-economic and sustainability assessments**



**Workstreams updates**, deliverables, and case studies



**10GW**  
Lighthouse Initiative

A preview of the **10 GW Lighthouse Initiative** at the World Hydrogen Summit



H4D Partners provided its **best practices and advices** to Colombia

**Partners who attended:**



## HIGHLIGHTS IN THE INTRODUCTION AND WELCOME REMARKS

**Javier Campillo**  
Vice-Minister of Energy,  
Government of  
Colombia

**Orlando Sepulveda**  
President of the  
National Hydrocarbons  
Agency, Colombia

**Demetrios  
Papathanasiou**  
Global Director for  
Energy and Extractives,  
World Bank

**Maria Marcela Silva**  
Regional Director for  
Infrastructure in the  
LAC Region, World Bank

**Manuel Luengo**  
Lead Energy  
Specialist, World Bank



In Colombia, hydrogen is emerging as a key element in the energy transition, targeting sectors such as aviation and transport for decarbonization. With a focus on certification schemes and demand management, Colombia aims to strengthen its national capacity and climate resilience.

Colombia's commitment to equality and respect for the environment guides its journey toward a just energy transition. In the face of climate change and dependence on hydropower, the country seeks to balance water use and reduce dependence on fossil fuels in its clean yet diverse energy mix.

The World Bank is promoting clean hydrogen as the key to net zero, highlighting its crucial role in EMDCs. As electricity costs fall, it urges developed countries to commit to demand, while H4D seeks to align supply with global needs.

Ten LAC countries have adopted hydrogen strategies. The World Bank helps Colombia, Brazil, and Chile with clean hydrogen, improves transportation with SAF in Costa Rica and shipping in Panama, plus Chile's first deployment and Brazil's future infrastructure.

Colombia's CDDR reveals that the benefits of energy transition outweigh the costs: the WB Energy Transition Fund will promote new technologies, including hydrogen, and foster markets and green jobs. The WB support extends to technical assistance for low-carbon energy technologies that are critical to Colombia's sustainable growth.

## SESSION 1 FINANCING CLEAN HYDROGEN VALUE CHAINS IN COLOMBIA

**Rebeca Oliveira**  
Financial Vice President, PECEM Complex



- PECEM aims to become the main green hydrogen hub in Brazil and the main exporter to Europe via Rotterdam.
- The hub will consist of:
  - Port infrastructure.
  - Shared storage tanks and ammonia pipeline.
  - Shared water (including wastewater reuse, desalination, and raw water) is very critical given the local scarcity conditions.
  - Production cluster in the SEZ.
  - 500 kV substations dedicated to the hub.
- PECEM secured \$135 million (\$90 million from the World Bank, \$35 million from the Climate Investment Funds, and \$10 million from its resources).
- Ammonia production is a great option --> supply 25% of all ammonia going to Rotterdam from PECEM.

**Ana Maria Ruz Frias**  
Executive Director of Green Hydrogen Council



- Ambitious hydrogen strategy targeting 5 GW of electrolysis capacity.
- The Green Hydrogen Committee was created to accelerate industry development.
- CORFO supports hydrogen, ammonia, methanol, and green steel industries through R&D and tax exemptions.
- Currently, the total green hydrogen capacity in operational projects in Chile is under 1 MW.

**Alejandro Perez**  
Senior Investment Officer, IFC



- Experience across the hydrogen value chain, working closely with WB on market studies.
- IFC partners with GH2 developers early on, screening criteria including end-use sector, sponsor strength, enabling environment, and supporting infrastructure.

**Susana Moreira**  
Executive Director, H2Global



- Gap between ambition and reality in the hydrogen market (price transparency, liquidity, and legal security rules issues such as certification).
- H2global mechanism was presented to promote the market ramp-up of clean hydrogen.
- Emphasis on financial compensation and setup of
- Hydrogen Intermediary Company (Hintco) for efficient fund use for all exporters and importers.

**Hidaka Yoshitaka**  
Director for Energy Transition Strategy, JBIC



- The gap between target and reality in hydrogen production costs.
- Hydrogen production cost increased 1.5-2 times.
- Challenges in project implementation and lack of demand.
- Many projects were planned, but only 10% reached FID.
- Focus on total value chain investment, deregulation of investment conditions, transparent certification schemes, and the role of government in promoting hydrogen (subsidies).



Chandrasekar Govindarajulu, Practice Manager ESMAP-WB



Download all Session 1 presentations here





## SESSION 2 TECHNO-ECONOMIC AND SUSTAINABILITY ASSESSMENTS OF RENEWABLE HYDROGEN PRODUCTION: LATEST DEVELOPMENTS AND INSIGHTS

### Dolf Gielen

Lead of the Hydrogen Program and H4D Partnership, World Bank



Systems Integration: Critical for operation and cost reduction as electrolyzer costs include some issues:

- RE energy variability: solar and wind variability and regulatory requirements impact production costs.
- Electrolyzer capacity: High capacity (>50%) is required, possible with high wind, solar and wind combination, or hydro.
- Electrolyzer operation: Some cannot operate below 50% load.
- Ammonia and SOEC: SOEC electrolyzers use less electricity but require heat, possibly from ammonia plants.

### Yousra Assaker

Senior Energy Specialist, World Bank



- The World Bank's GROWTH Egypt initiative aims to increase Egypt's resilience and welfare.
- New P2P grid transmission regulation from March 28, 2024, encourages competitive renewable energy procurement and strategic placement of GH2 electrolyzers.
- The World Bank is supporting Morocco to explore GH2 opportunities and integrate into the green hydrogen value chain.
- The World Bank study in Jordan focuses on the legal and regulatory framework for green hydrogen, including market and business model proposals.
- The World Bank is assisting Tunisia in assessing its green hydrogen potential to enhance its competitiveness and socio-economic benefits in the GH2 value chain.

### Cornelius Matthes

Chief Executive Officer, Dii Desert Energy



- 95 green hydrogen projects have been announced in the MENA region.
- Europe is the key target.
- Blue hydrogen in Saudi Arabia, while the UAE, Egypt, and Oman prioritize green hydrogen.
- Since December 2023, 13 new green hydrogen projects (mostly in Egypt and Mauritania).
- The EU will become a central hub for global hydrogen trade.
- The European Hydrogen Backbone is expected to be a major hydrogen transport route.
- Pipelines are the most cost-effective method of hydrogen transport.

### Andrea Mercado Guati Rojo

Stakeholder Relationship Manager, AEA



- 170 million tons of capacity ("new / rebuild" low-carbon ammonia).
- 144.7 million metric tons of renewable ammonia (by 2030).
- Ammonia supply can meet demand.
- AEA is developing a certification system for ammonia to account for GHG emissions.
- AEA does not define colors (green/blue) or labels.

### Claire Hooft Graafland

Senior Advisor Energy, Netherlands Enterprise Agency



- Drivers for hydrogen in NL include replacing existing gray H<sub>2</sub> in industry, targeting offshore wind in the North Sea, and shutting down gas production in Groningen.
- Transport, distribution, and storage play a key role in scaling up H<sub>2</sub>.
- Infrastructure is a key element for the success of H<sub>2</sub>.
- The goal for 2030 is to use the national hydrogen backbone by building 3 to 4 storage caverns, connecting supply and demand areas.

### Jens Burgtorf

Sector Programme Energy -Energy Transition Cooperation and Regulatory Policy, GIZ



- Expect the first use cases to be commercially viable in very good locations by 2030.
- There are four main aspects to evaluate and classify: high solar and wind potential; availability of land; access to financing; and appropriate economic and political framework.
- Brazil and Chile score highest.

**Dolf Gielen, Lead of the Hydrogen Program and H4D Partnership, closed the stakeholders' forum with a few high-level recommendations for Colombia**



- Bringing more projects to FID
- Tackle specific environmental and socioeconomic challenges
- The preview of the 10 GW Lighthouse Initiative was presented

**Dolf Gielen**  
Lead of the Hydrogen Program and H4D Partnership, World Bank



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## WORKSTREAMS' MEETINGS

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



- **A short paper on shared infrastructure** (led by RMI, CORFO, and H2G). White paper on shared infrastructure for Chile to identify international best practices relevant to EMDCs and Chile in particular. **The first draft completed and to be finalized by June 2024.**
- **A short paper on systems' integration** (originally to be led by NREL) - scope to cover topics discussed in session "Techno-economic and sustainability assessments of renewable hydrogen production: latest developments and insights".
- **Study Tour to Sweden** (Co-chaired by CH2ESS) - **TBD after the upcoming elections in India in June** - Initial focus on the visit of the Indian delegation to the Swedish steel plant.
- **Facilitated by:**



Hiroaki Machii-WB



Rafael Ben-WB

### Work Stream 2- Enabling frameworks (policy and regulations)



- **Monthly webinars on certification, financing, and other relevant topics** - **successfully delivered.**
- **Online repository hosted on H4D website** (supported by WB) - **successfully delivered in March 2024.**
- **Guidebook on policies and regulations for hydrogen imports in Europe** (supported by Hydrogen Europe) - **draft expected by June 2024.**
- **Facilitated by:**



Ricardo Gedra-CCEE



Carolina Lopez Rocha-WB

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



- **A short paper on global best practices for defining off-take** (volume, price, duration, quality), conducted by the World Bank and the Green Hydrogen Organisation - to be completed by October 2024
- **Provide comments on the flagship report "Scaling Hydrogen Financing for Development"** - **successfully delivered in January 2024.**

#### On upcoming actions:

- Present the 10 GW Lighthouse Initiative (partners were briefed during the WS session) at the World Hydrogen Summit (Rotterdam) in May 2024.
- Organize a webinar on "offtake" to provide input for the paper.
- Organize monthly calls to coordinate the release of the Offtake paper.
- Organize an online meeting to discuss co-chairs and topics for next year.

#### Facilitated by:



Dolf Gielen-WB

### Work Stream 4- Socioeconomics and sustainability



- **4 case studies on socio-economic benefits** - to be **delivered by June 2024.**
- **4 social acceptance case studies** - to be **delivered by June 2024.**

\*In addition, partners will need to review the shared socio-economic paper.

#### Facilitated by:



Monica Gasca-H2Colombia



Carolina Lopez Rocha-WB



We should not forget the socioeconomic impact of this industry in the surrounding areas and local populations, and mitigate the potential risks, so we can advance all together towards a sustainable clean economy and future.

Demetrios Papathanasiou  
Global Director for the World Bank's Energy and Extractives Global Practice



Take a look at the interview made by El Tiempo.com



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