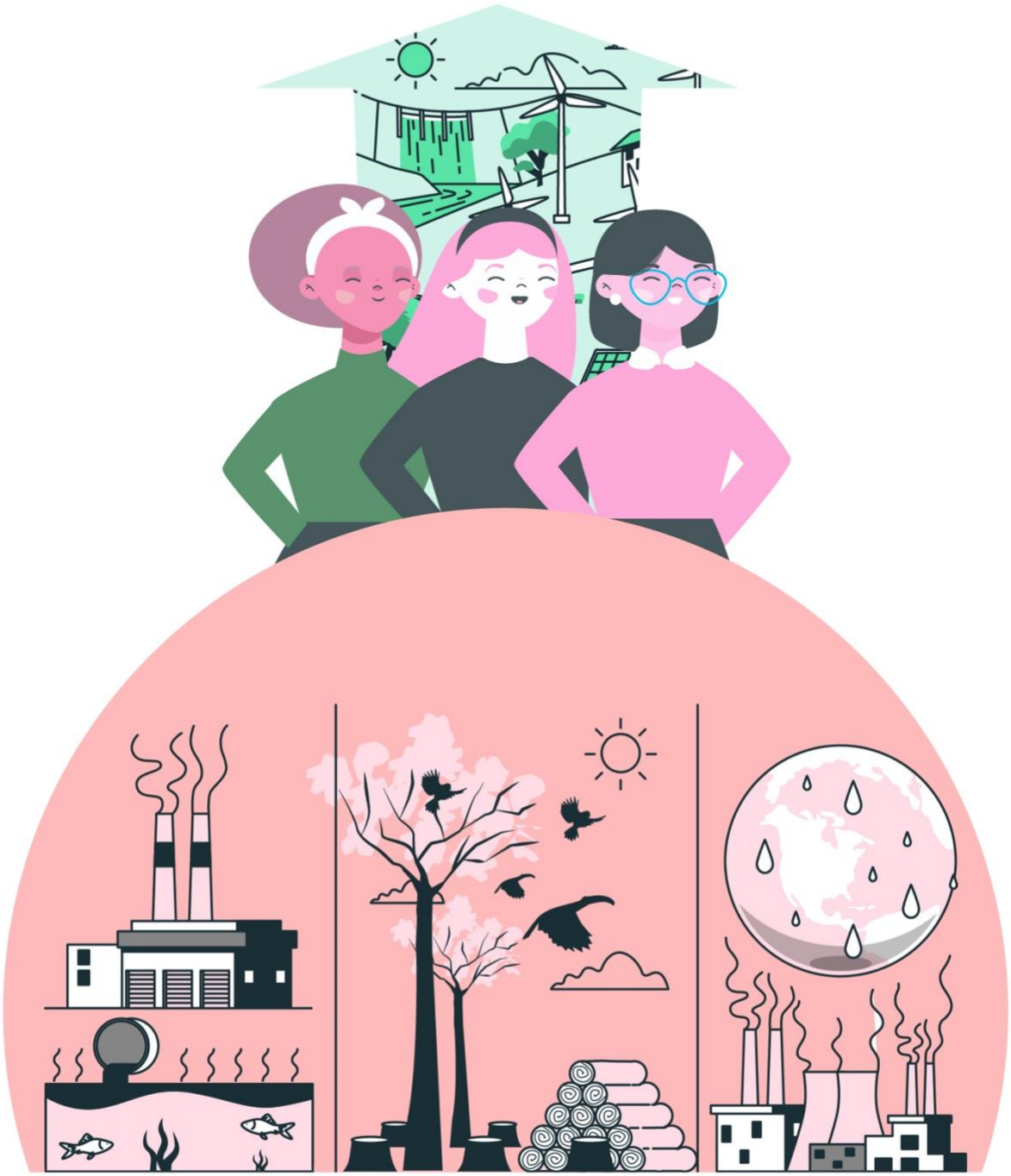
Online Session
May, 9h, 2024

Women Moving
the Decarbonization Industry:

Insights from Developing Countries
and Emerging Markets



THE WORLD BANK
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ESMAP
Energy Sector Management Assistance Program

SPEAKER PANEL ATTENDANCE LIST

- **Dolf Gielen** - Senior Energy Economist and Lead of the Green Hydrogen Support Program, World Bank
- **Carolina Lopez Rocha** – Energy Regulatory Specialist, World Bank
- **Janina Franco** – Senior Energy Specialist, World Bank
- **Surbhi Goyal**– Senior Energy Specialist, World Bank
- **Zou Wei** – Director Assistant, International Hydrogen Fuel Cell Association
- **Margaret Mutschler** – Development Director, CWP
- **Rebeca Oliveira** - Financial vice president, Pecem Complex

EVENT DESCRIPTION

Workshop online video

The transformative power of female leadership in the efforts to decarbonize industrial activities was highlighted in the virtual event, " Women Moving the Decarbonization Industry: Insights from Developing Countries and Emerging Markets." The event showcased the remarkable contributions of women to achieve decarbonization, hydrogen deployment, and achieve sustainability in Developing Countries and Emerging Markets.

Through insightful discussions, attendees gained valuable perspectives on the global decarbonization efforts and the role of hydrogen to decarbonize hard-to-abate sectors, exploring strategies for promoting gender diversity and empowerment. The stories of women driving change and making a meaningful impact in the energy/industrial sectors provided valuable inspiration.

CONTEXT

This webinar session was prepared in collaboration and coordination with CWP Global and the International Hydrogen Fuel Cell Association (IHFCA).

The objective of this panel session was to (i) showcase gender diversity and empowerment in the energy sector; (ii) raise awareness of decarbonization efforts in the EMDCs with its impact on climate change and (iii) inspire collaboration and actions towards a more sustainable present and future.

AGENDA

TIME	ACTIVITY
8: 50 am	Speakers connect and contact moderator
9: 00 am (5 min)	**Webinar Session - Women Moving the Decarbonization Industry: Insights from Developing Countries and Emerging Markets** Opening Remarks: **Dolf Gielen**, Senior Energy Specialist and Lead of the Hydrogen Program, WB Carolina Lopez Rocha, Energy Regulatory Specialist, WB (moderator)
(5min)	Keynote speech • **Janina Franco,** Senior Energy Specialist, WB.
(5min)	Keynote speech • **Surbhi Goyal**, Senior Energy Specialist, WB.
(5 min)	Keynote speech • Zou Wei, Director Assistant, IHFCA.
(5 min)	Keynote speech • **Margaret Mutschler**, Development Director, CWP
(5 min)	Keynote speech • **Rebeca Oliveira**, Financial Vice-President, Pecem Complex
(25 min)	Moderated Q&A session with speakers
(5 min)	**Q&A** from audience
(5 min)	**Closing Remarks** • Dolf Gielen, Senior Energy Specialist and Lead of the Hydrogen Program, WB

SUMMARY

In this workshop, international best practices in EMDCs were presented by leading women of the clean hydrogen industry worldwide.

Traditionally, there has been a significant gender gap in the energy sector. According to IRENA, women represent just one third of the renewable energy workforce worldwide, some of the main causes being: unequal access to education, limited access to technical skills, and training and unfair company policies. Therefore, there is a need to strengthen the role of women in the renewable energy sector. This event supported the role of women in the emerging clean hydrogen industry.

Chile was the first country addressed in the workshop by Janina Franco, Senior Energy Specialist from the World Bank in Chile. The World Bank has been helping Chile on the green hydrogen industry since August 2020 with a technical assistance for the National Green Hydrogen Strategy. Chile is strongly committed to achieving carbon neutrality by 2050 with measures such as updating the NDCs and issuing green bonds, presenting a solid framework for the green hydrogen industry deployment in the country. There is significant potential in the mining industry; however, the major challenge is the cost gap. Some of the goals of the Chilean government are to produce the cheapest green hydrogen globally by 2030 and to be among the top three exporters worldwide by 2040. One of Chile's strongest advantages in the industry is the exceptionally low cost of its renewables, as well as its reputation for good governance The main solution to fulfill all this industry potential was to establish a Green Hydrogen Facility (GHG) to share the significant risks of the emergent industry, and therefore mobilize commercial investment and strengthen the enabling environment, with the final goal of lowering the cost of production. The WB proposed to the government the GHG facility (total $1B) together with an IBRD loan of $150M (other MDBs participated as well: BID, EIB, KfW, CAF).

India's green hydrogen industry deployment case is very interesting, leading the South Asia region. The panelist, Surbhi Goyal, Senior Energy Specialist of the World Bank in India, discussed this in detail. The industrial sector is the main driver for future GHG emissions growth in India, and green hydrogen can help decarbonize it. However, there are significant barriers to green hydrogen, such as high costs, storage and transportation challenges, and access to commercial financing. Given this context, India issued its National Green Hydrogen Mission (NGHM) in January 2023 with a total outlay of $2.4 billion, with specific targets to create hydrogen demand: enabling local demand, promoting exports, and substituting current imports, especially ammonia. The World Bank has been helping India develop the green hydrogen market with a development policy financing (DPO) of $3 billion, one of the largest by the World Bank, to support the development of low-carbon energy in India. The first pillar of the DPO specifically refers to the promotion of green hydrogen in the country. There is engagement with the green hydrogen industry at multiple levels: regional, national, and subnational. The most prominent industries where pilots are being developed are fertilizers, refineries, shipping, steel, and transport.

Wei Zou, from the International Hydrogen Fuel Cell Association (IHFCA), shared with us the status of some projects in **China**. At IHFCA, most of the top and middle management team are female. China is embarking on a journey towards a sustainable future with a vision to develop an integrated hydrogen energy system

for the '30-60' decarbonization goal. Regarding China's hydrogen energy policy, numerous national guidelines and policies have been established since 2020. However, the key milestone is the development of the Medium and Long-Term Plan for the Development of the Hydrogen Industry (2021-2035), released jointly by the NDRC and NEA in March 2022. Unlike other countries, China plans to use hydrogen primarily for the automotive industry, which is one of the largest in the world. The Beijing Winter Olympics was the largest hydrogen demonstration of this industry worldwide. It should also be highlighted that China has established five FCV demonstration city clusters.

The CWP Global Aman project was introduced to us by Margaret Mutschler, Development Director. CWP Global is deploying 190GW of green hydrogen projects in 3 continents and in over 6 projects, with a team of 200 experts working exclusively on hydrogen. One of their flagship projects, is the Aman green hydrogen project in **Mauritania**. Mauritania, apart from its extremely good resources, is very well suited for such a project and its port is close to the European markets. The scale of the project allows for different offtake uses: 1) The plant capacity will deliver about 13 Mt of green hydrogen per year. 2) Green steel. 3) Liquid hydrogen. They have been receiving great support from the government of Mauritania, and they are working on enabling legislation specific to hydrogen projects, which is expected in the second quarter of 2024, making them pioneers on the African continent. The project has a PTX project structure based on a nodal concept. One of the main downsides of the project is that desalination needs to be carried out in addition. Currently, the project is in the feasibility phase, and there is a very detailed project execution framework.

Finally, the Pecém Complex in **Brazil** is the first shared green hydrogen infrastructure project of the World Bank. Rebeca Oliveira, Financial Vice President of the Pecém Complex, guided us through this project. Pecém is not only a port but an industrial complex (30% owned by the Port of Rotterdam; 70% by Ceará) within a free zone in the northeast of Brazil. Pecém has excellent access to wind and solar energy, with a very clean energy grid comprising more than 92% renewable energy. There are more than 30 MOUs in Pecém, 6 advanced projects with pre-contracts signed, and 1 pilot by EDP. Their goal is to become the main green hydrogen hub in Brazil and the primary exporter to Europe via Rotterdam. One of their strengths is that they already have some infrastructure in place, including the port. They plan to use 'shared water'—wastewater, desalination, and raw water—and share storage tanks and ammonia pipelines. As the Port of Rotterdam is a partner in the complex, 25% of all green hydrogen and ammonia arriving at the port is expected to come from Pecém. The Pecém Complex has already secured $135 billion in concessional financing, mostly from MDBs, with $90 billion from the World Bank. There are still ESG issues to address in Pecém, such as the relationship with local indigenous communities or traditional fisherman, and the gender gap.

Regarding the Q&A, some very interesting queries were asked to the panelists about their personal experiences as women in the renewable energy sector, their personal stories, the role of female leadership in the industrial energy transformation, examples of successful strategies led by women, the benefits of promoting women in sustainability, and the challenges women face in the industry, among other topics discussed.

SPEAKERS' BIOGRAPHIES

Dolf Gielen
Senior Energy Economist and Lead of the Green Hydrogen Support Program and Hydrogen for Development Partnership, World Bank

Dolf Gielen is the lead for the Hydrogen Program in ESMAP. Prior to joining the World Bank, he worked for the IEA, IRENA, and UNIDO and has 30 years of experience in energy and climate policy, with an emphasis on innovation, technology, and economics. He was part of the management team that established IRENA as a new intergovernmental agency.

Carolina López Rocha
Energy Regulatory Specialist, World Bank

Carolina Lopez-Rocha is an international lawyer with over 10 years of experience reforming policies and regulations to boost investments in the energy sector. Ms. Lopez-Rocha joined the World Bank in 2016 and has developed instruments to finance green hydrogen, energy efficiency, and renewable power projects. Ms. Lopez-Rocha also collaborated with the OECD and the Inter-American Development Bank to attract private investors in the energy sector to Eastern European and Latin American countries. Before joining the World Bank, she was the Legal Officer at the Mexican-Chinese Chamber of Commerce, where she led negotiations to advance trade and investment, and she also developed Public-Private Partnerships for infrastructure projects. She previously collaborated with the UN Office of Human Rights in Mexico. She received her LLM from NYU Law School.
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Janina Franco
Senior Energy Specialist, World Bank

Janina Franco is a Senior Energy Specialist at the World Bank who has worked in the Latin America and Caribbean Region and in the Europe and Central Asia Region. Janina has worked in 16 countries in both regions, and is currently the energy focal point for Bolivia, Chile, Ecuador, and Peru, leading the preparation and implementation of several lending and technical assistance projects, including regulatory reform, disruptive technology for decarbonization of the economy, energy efficiency and heating issues, and rural electrification. Before joining the Bank, she worked at The Earth Institute as a research associate for the Millennium Cities Initiative. Janina holds two master's degrees in international Affairs and Urban Planning from Columbia University, is an architect from the University of Chile, and has done post-graduate studies in public-private partnerships and electricity sector regulation.

Surbhi Goyal
Senior Energy Specialist, World Bank

Surbhi Goyal is a Senior Energy Specialist working in the World Bank's Energy and Extractives Global Practice in India for over a decade now. She is leading Bank's work in some of the most disruptive technologies in renewable energy sector and been recognized as one of the 'Asia's Most Influential Women in Renewable Energy'. Some such projects/technologies involve large-scale grid-connected solar projects – both ground-mounted and floating solar, solar-wind hybrid, solar in snow, battery energy storage, hydropower as a flexible generation resource in context of variable renewable energy, repurposing of thermal power project sites, deepening of wholesale power markets, and most recently, Green Hydrogen. She has a master's degree in economics from Delhi School of Economics. She believes in sustainable living and loves to do organic gardening and explore new places.

Zou Wei
Head of Events & Membership, IHFC

Zou Wei, driven by a vision to promote hydrogen as a clean energy source for the future, joined the International Hydrogen Fuel Cell Association in June 2022. Her aspiration is to facilitate open collaboration and contribute to the sustainable development of the global hydrogen and fuel cell industry, thereby contributing to the creation of a cleaner and more beautiful world and playing a role in the realization of a shared future for humanity.

Margaret Mutschler
Development Director, CWP

Margaret has vast experience in packaging, negotiating and managing complex infrastructure projects. She provides guidance to development in the infrastructure financing industry, serving on several investments fund boards.

She is a partner in Mutschler Consulting Services (MCS), a Namibia-owned cross-sectoral consultancy providing engineering, management and development solutions on sustainable projects, across different sectors.

Since July 2029, MCS has been supporting CWP H1 Energy in developing PtX projects. She is representing CWP H1 Energy as Country Manager in Namibia and Joined CWO H1 Energy's international Green Hydrogen development team as Development Director for Africa. Margaret also serves as the inaugural chairperson of Namibian Green Hydrogen Association (NamGHA)

Rebeca Oliveira
Financial Vice President, Pecem Complex

Rebeca is the former financial vice president at the Pecem Complex. Graduated in Law from the University of Fortaleza (Unifor), with specialization in International Trade and Market Management from Seneca College, Toronto, Canada. She holds extensive experience in major companies within the port logistics sector, including the German-based Hamburg Süd. In 2017, was selected for the International Visitor Leadership Program, a professional exchange program funded by the U.S. Department of State's Bureau of Educational and Cultural Affairs. Since 2019, holds the position of Director of Institutional Relations at Complexo do Pecém, a joint venture between the Government of the State of Ceará and the Port of Rotterdam, Netherlands. Former President of the Sectoral Chamber of Foreign Trade and Foreign Investment of the State Development Agency of Ceará (Adece). In 2020, she became a member of the Regional Northeast Export Forum and the National Women's Council of Brazil Export.