



VENICE HYDROGEN FORUM 2024

18-19th OCTOBER 2024
Venice - Hilton Molino Stucky

FORUM'S REPORT



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PROGRAM

Day 1: Friday, 18th October

9.00	OPENING - New Frontiers: The Mediterranean Forum on Hydrogen – Infrastructure, Offtake, Finance, and Energy Security
	Renato Brunetta , President VSF and President CNEL
	Gilberto Pichetto Fratin , Minister of the Environment and Energy Security, Italy
	<i>Introduced by:</i> Jonas Moberg , CEO, GH2
9.30	Bridging Continents: Green Hydrogen Projects Linking Africa, Europe, and the Middle East Across the Mediterranean
	Francesco La Camera , Director General, International Renewable Energy Agency (IRENA)
	HE Mourad Bourahla , Ambassador of Tunisia in Italy
	Piero Ercoli , Executive Director, Decarbonisation Unit, Snam
	Michael Hilmer , Vice President Gas Supply and Origination, Uniper
	<i>Chair:</i> Jonas Moberg , CEO, GH2
10.15	Latest Market Outlook for Hydrogen in the Mediterranean: “ How realistic is Europe’s 10 MT import target? “
	Martin Tengler , Head of Hydrogen Research, Bloomberg New Energy Finance
	Lord Adair Turner , Presidente della Energy Transition Commission (ETC)
	<i>Chair:</i> Joe Williams , Deputy CEO, GH2
11.00	Financing the Hydrogen Value Chain: Strategies and Solutions - Exploring financing methods and investments required to achieve Europe’s hydrogen goals
	Cristian Carraretto , Head of Energy transition CSD/SBD, European Bank for Reconstruction and Development (EBRD)
	Michelle Hallack , Senior Specialist, Energy Sector Management Assistance Program, World Bank
	Timo Bollerhey , CEO, H2 Global
	Andrew Johnstone , CEO, Climate Fund Manager
	Chada Darwish , Nominee director - Africa FMO, Globaleq
	Alessandra Pasini , Co-founder and President, Zhero
	Willem-Jeroen Stevens , Managing Director, Clear Corporate Finance

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11.00	Financing the Hydrogen Value Chain: Strategies and Solutions - Exploring financing methods and investments required to achieve Europe's hydrogen goals
	Cristian Carraretto , Head of Energy transition CSD/SBD, European Bank for Reconstruction and Development (EBRD)
	<i>Chair:</i> Caroline Biotteau , Policy Manager, GH2
12.05	Energy Security in the Mediterranean: The Role of Hydrogen
	Jorgo Chatzimarkakis , CEO, Hydrogen Europe
	Houda Ben Jannet Allal , Director General, OMEC
	Nikolaus Widmann , VP Strategic Project, TES
	Alexander Struck , Managing Director, Bayernoil
	Dick Benschop , Chair of the board, Mission Possible Partnership
	<i>Chair:</i> Jonas Moberg , CEO, GH2
12.50	How finance industry supports the PtX hydrogen market across sectors — Insight glance of an eSAF project in Denmark and a green ammonia plant in Egypt
	Thomas Engelmann , Head of Energy Transition, KGAL GmbH & Co. KG
	Michelle Hallack , Senior Specialist, Energy Sector Management Assistance Program, World Bank
	Andrew Johnstone , CEO, Climate Fund Manager
	Timo Bollerhey , CEO, H2 Global
	Ghada Darwish , Nominee director - Africa FMO, Globaleq
	Alessandra Pasini , Co-founder and President, Zhero
	Willem-Jeroen Stevens , Managing Director, Clear Corporate Finance
	<i>Chair:</i> Joe Williams , Deputy CEO, GH2
14.00	COUNTRY ROUNDTABLE DISCUSSIONS : Algeria
	Youcef Abbou , Economic Affairs Counselor at the Embassy of Algeria in Italy
14.20	COUNTRY ROUNDTABLE DISCUSSIONS: Tunisia
	HE Mourad Bourahla , Ambassador of Tunisia in Italy
	Alessandra Pasini , Co-founder e President, Zhero
14.40	COUNTRY ROUNDTABLE DISCUSSIONS: Egypt

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	Waleid Gamal El-Dien , President, Suez Canal Economic Zone (SCZONE)
	Chada Darwish , Nominee Director - Africa FMO, Globeleq
	Sumitananda Roy , Head International Project Development, ReNew
15.00	Hydrogen Marketplace for the Mediterranean – Time for a new aggregator?
	Thierry Lepercq , President, HyDeal España
	Matthias Schimmel , Project Lead, Energy Coop with the Gulf Countries, Guidehouse Germany GmbH
	Thibault Villedieu-de-Torcy , Business Development Manager, Prisma Capacity
15.15	The Offtaker perspective: Green Fertiliser
	Aidan Lea , Deputy Editor - Hydrogen and Future Fuels, Argus Media
	Arun Sharma , Advisor to the Chairman, Adani Group
	Sonja Butzengeiger , Managing Partner, Perspectives Climate Group
	John-Patrick Sweny , Partner, Latham & Watkins
	Tarek Hosny , Head of Investments & Projects, Fertiglobe
	<i>Chair:</i> Sam Bartlett , Direttore Green Hydrogen Standard, GH2
16.15	SouthH2 Alliance: Strengthening Green Hydrogen Collaboration Across Germany, Italy, Austria, Algeria, and Tunisia - Partner BMWK, German Energy Agency
	Ellen von Zitzewitz , Deputy Head Division WEW2, Federal Ministry for Economic Affairs and Climate Action (BMWK)
	Sarah Neumann , Policy Advisor, Energy and Hydrogen, Austrian Federal Ministry for Climate Action, and Energy
	Giovanna Pozzi , Director Hydrogen Development Projects, Snam
	Joerg Buck , CEO, German Chamber of Commerce in Italy
	Giuseppe Galata , Chairman of the Board, VNG Italia
	Thomas Jung , Division Manager, ABO Energy
	<i>Chair:</i> Joe Williams , Deputy CEO, GH2
16.30	Securing demand for Germany's hydrogen strategy: the role of infrastructure
	Ellen von Zitzewitz , Deputy Head Division WEW2, Federal Ministry for Economic Affairs and Climate Action (BMWK)
	<i>Chair:</i> Polly Martin , Senior Reporter, Hydrogen Insight

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17.30	H2 in Venice for Regional Value Creation - Sponsor Edison
	Rita Steffanutto , Director of the Energy Research, Innovation and Competitiveness, Region of Veneto
	Massimiliano De Martin , Counsellor for Urban Planning and Environment, City of Venice
	Paolo Menegazzo , Head of strategic planning area , AdSPMAS
	Andrea Bos , President, Hydrogen Park
	Gabriele Lucchesi , Hydrogen Director, Edison Next
	Michela Capoccia , Regulatory & Innovation Manager - Renewable Gases, SAPIO
	Thierry Lepercq , President, HyDeal Ambition
	<i>Chair:</i> Fabio Cancarè , Partner and Associate Director, Energy Transition Leader, BCG

Day 2: Saturday, 19th October

8.45	Towards Green Shipping Fuels: The International Maritime Organization (IMO)
	Sara Edmonson , Special Representative to chairman, Fortescue
	<i>Chair:</i> Jonas Moberg , CEO, GH2

9.05	COUNTRY ROUNDTABLE DISCUSSIONS: Mauritania
	Lehbib Khroumbaly , Advisor in charge of Upstream Hydrocarbons, Ministry of Oil, Energy and Mines, Mauritania
	Dr. Dean Bialek , Chief Officer External Affairs & Govt Relations, CWP Global
	El Hady ould Ely , Director of Studies and Development, Snim

9.20	HyGreen's European Plans
	Benny Wang , CEO, HyGreen Energy Ltd.
	Daniel Fernandez de Salamanca , CEO of HyGreen energy EMEA
	<i>Chair:</i> Jonas Moberg , CEO, GH2

9.45	Trade for the energy transition and the Impact on Collaboration in the Global Hydrogen Economy
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	Prof. Yu Gan , Co-chairman of Board of Trustees, DaxingH2Zone
	<i>Chair:</i> Jonas Moberg , CEO, GH2

10.00	Advancing Low-Carbon Hydrogen: Economic Pathways, Environmental Impacts, and Harmonised Standards for the Mediterranean
	Francesco Giunti , Head of Industrial Transformation Integrated Initiatives & Hydrogen, Eni
	Sam Bartlett , Director for the GH2 Standard, Green Hydrogen Organisation
	Matthias Deutsch , Programme Lead Hydrogen, Agora Energiewende
	Anton Mifsud-Bonnici , Europe Adviser to CEO, Adani Group
	Manuel Villavicencio , Director - Energy Market & Modeling, Deloitte
	Knut Vralstad , Head of Renewable Energy Analysis, Veyt
	<i>Chair:</i> Martin Tengler , Head of Hydrogen Research, Bloomberg New Energy Finance

11.15	The Offtaker Perspective: Accelerating the scale up of near-zero and low-emission steel in the Mediterranean
	Mark Crandall , Founder & Chairman, CWP Global
	Sara Edmonson , Global Advocacy, Fortescue
	Matthias Deutsch , Programme Lead Hydrogen, Agora Energiewende
	Laura Garcia Cancino , Senior Legal Researcher, Columbia Center on Sustainable Investment
	Thomas Koch , Managing Director, RMI Magnesita
	<i>Chair:</i> Sam Bartlett , Director Green Hydrogen Standard, GH2

12.20	Connecting Europe: Ensuring seamless hydrogen transmission among 37 pipeline operators and beyond
	Stefan Kaufmann , member of the German Bundestag and former Green Hydrogen Commissioner
	Raphael Hanoteaux , Senior Policy Advisor, Gas Politics, E3G

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	Abel Enriquez , Head of EU Affairs and Organisations, Enagás
	Mathias Koch , Project Manager German Hydrogen Policy, Agora Energiewende
	<i>Chair:</i> Joe Williams , Deputy CEO, GH2

13.00	Hydrogen infrastructure across the Mediterranean
	Paddy Padmanathan , Co-founder and Vice Chairman, Zhero
	Prof. Dr. Mario Ragwitz , Director, Fraunhofer IEG

13.20	CLOSING ROUNDTABLE DISCUSSION - Achieving Realistic Goals: What Can We Accomplish by 2030?
	Leila Pourarkin , Partner, Kaya Partners
	Arun Sharma , Advisor to the Chairman, Adani Group
	John-Patrick Sweny , Partner, Latham & Watkins LLP
	Alex Hewitt , Co-Founder CWP Global and GH2 Board Member
	Dick Benschop , Chair of the Board, Mission Possible Partnership
	Alessandro Costa , Director General, Venice Sustainability Foundation
	<i>Chair:</i> Jonas Moberg , CEO, GH2

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Introduction

The Venice Hydrogen Forum is an international event dedicated to strategies for the transport, storage and trade of hydrogen and its derivatives in the Mediterranean. The first edition was held on October 18 and 19, 2024 at the Hilton Molino Stucky in Venice.

Organized by the Green Hydrogen Organization and the Venice Sustainability Foundation, the forum brought together ministers, CEOs and executives to discuss hydrogen infrastructure development, financing and energy security in the Mediterranean region.

The event included strategy sessions, panel discussions and plenary discussions on the challenges and opportunities of the hydrogen economy. One prominent session was the panel discussion “H2 in Venice for Regional Value Creation,” organized by the Venice World Capital of Sustainability Foundation with support from Edison, focused on the prospects for developing the hydrogen economy in Venice.

The following report summarizes the topics discussed and conclusions that emerged during the forum, providing an overview of the strategies discussed to promote the hydrogen economy internationally and specific initiatives for the Veneto region.



Day 1: Friday, 18th October 2024

OPENING - New Frontiers: The Mediterranean Forum on Hydrogen – Infrastructure, Offtake, Finance, and Energy Security



The forum opened with remarks by **Jonas Moberg, CEO of the Green Hydrogen Organization**, who introduced the central theme: the strategic role of green hydrogen as a pillar for decarbonization, energy security, and global sustainability.

At the beginning of the forum, **Professor Renato Brunetta, President of the Venice Sustainability Foundation**, highlighted the transformation of Venice thanks to the MOSE, a unique engineering work that has protected the city from high tides since 2020. He described Venice as a “laboratory for the future”, capable of leading the transition toward green hydrogen, a crucial technology for decarbonization and global energy security.

Recalling the city's historical role in European industrialization, Professor Brunetta emphasized the importance of leveraging the coming decades to build a sustainable development model, combining ingenuity, technology, and international cooperation. Venice was presented as a symbol of resilience and innovation, capable of driving global change.



The Italian Minister of Environment and Energy

Security Gilberto Pichetto Fratin, opened his speech at the Venice Hydrogen Forum 2024 by thanking the city of Venice and the President of the Foundation, Renato Brunetta, whom he described as a daily source of inspiration for his reflections and intellectual contributions. He underscored how sustainability has become a central concept in recent years, cautioning against the risk of practices like greenwashing.

The Minister addressed the issue of energy transition, emphasizing the importance of balancing adaptation and mitigation measures to combat climate change. He cited the MOSE as an example of an adaptation intervention and reiterated the need to reduce emissions to tackle global warming. He referred to international agreements such as the COP summits and the Paris Agreement, and discussed the challenge of fossil fuel

dependence, particularly for economically interconnected countries like Italy and Germany.



Minister Pichetto Fratin then focused on renewable energy and hydrogen as a strategic resource for the future. He outlined ongoing efforts to develop technologies like Carbon Capture and Storage (CCS) and to integrate hydrogen into national and European energy systems. He mentioned the European Union's goal to install 50 gigawatts of capacity and produce 10 million tonnes of hydrogen by 2030, with plans to import an additional 10 million tonnes.

Italy has invested €3.6 billion in hydrogen development and is working on transportation solutions, such as ammonia, and strategies to exploit hydrogen produced in North Africa and transport it to Europe. The Minister concluded by emphasizing the need to balance production, market, and pricing to ensure sustainable development, with hydrogen at the core of the energy transition.

He announced the upcoming publication of a national hydrogen strategy, which will be presented in an international context with European and North African partners. Pichetto Fratin highlighted the urgency of reducing dependence on fossil fuels and accelerating the energy transition to achieve climate neutrality by 2050. Green hydrogen plays a strategic role in connecting continents and transforming the Mediterranean into a sustainable energy hub.

Bridging Continents: Green Hydrogen Projects Linking Africa, Europe, and the Middle East Across the Mediterranean

Jonas Moberg, CEO of the Green Hydrogen Organization, opened the discussion by highlighting the importance of developing infrastructure and policies to support the transition to green hydrogen. He emphasized six priorities for accelerating this transition: the definition of standards, the creation of support schemes, infrastructure development, ambitious public procurement, the removal of bureaucratic barriers, and the implementation of “book and claim” systems.

Moberg praised the European Union’s initiatives and bilateral projects, such as HD Global, and reiterated the importance of effective international cooperation, citing the Africa Green Hydrogen Alliance as an example of transcontinental collaboration.

Francesco La Camera, Director General of IRENA, provided a clear and realistic overview of the current state of renewable energy. Although 2022 set a record with the installation of 473 GW of renewable capacity, the current pace is insufficient to meet the targets of the Paris Agreement. To address this challenge, it will be necessary to triple renewable capacity by 2030, increasing from the current 4 TW to 11.2 TW.

La Camera warned against the loss of time, stressing that the “energy transition” requires urgent action and significant investments. With approximately \$570 billion invested annually, the sector needs significantly higher amounts — between \$1.4 and \$1.5 trillion — to support the expansion of renewables and related infrastructure.



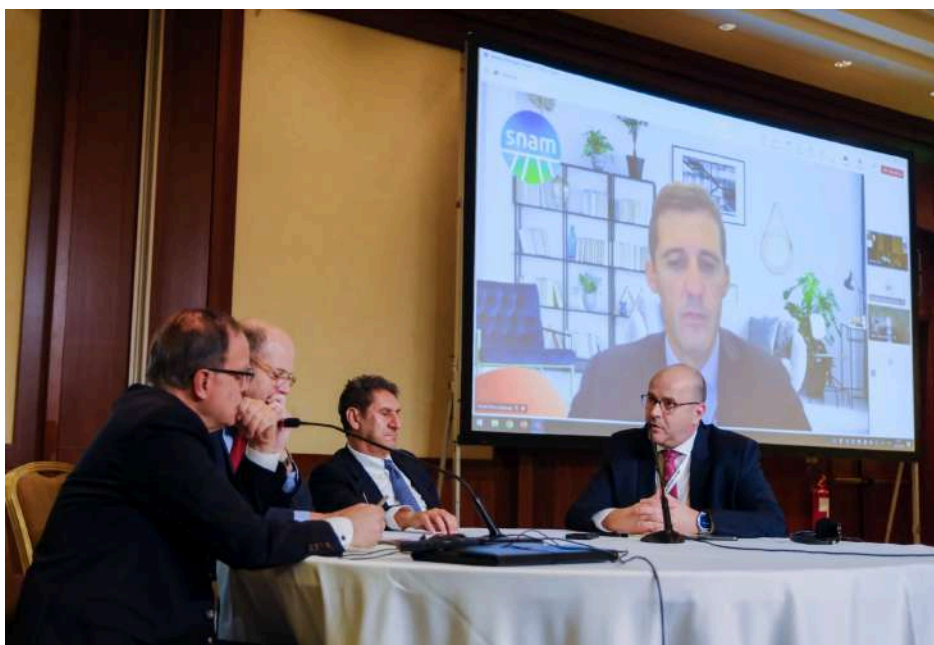
He concluded by reaffirming the strategic role of green hydrogen as a pillar for decarbonization. However, like renewables in the past, green hydrogen requires strong public policies to become competitive.

H.E. Mourad Bourahla, Ambassador of Tunisia to Italy, presented Tunisia’s ambitious green hydrogen strategy, which aims to produce 8.3 million tonnes by 2050. Of this, 2 million tonnes are intended for the local market, while 6.3 million tonnes are designated for export to Europe via pipelines. Thanks to its

strategic location, abundant renewable resources, and extensive solar exposure, Tunisia positions itself as a key partner for Europe.

Bourahla emphasized the economic and social benefits of this model, which extend beyond European energy security. These include job creation, the development of local expertise, and the adoption of sustainable practices, such as the use of desalinated water for hydrogen production.

Finally, he highlighted the need for fair collaboration between Europe and MENA countries to ensure that hydrogen projects contribute to the stability and prosperity of the entire Mediterranean region.



Piero Ercoli, Executive Director of the Decarbonization Unit at Snam, speaking remotely, outlined the progress of the South H2 Corridor, a 3,000 km infrastructure that will connect North Africa and Europe for the transport of green hydrogen. The project, already recognized as a Project of Common Interest (PCI), represents a milestone for energy integration between continents.

Ercoli described the achievements made this year, including the initiation of strategic collaborations with European partners, extending to countries like Algeria and Tunisia. He referenced the recent hydrogen combustion test in industrial furnaces with Tenaris, demonstrating the practical potential of hydrogen.

Looking ahead, he identified the early years of the 2030s as a possible operational date for the corridor, emphasizing the need to maintain steady progress over the next two to three years, which are critical for the project's realization.



Michael Hilmer, Vice President of Gas Supply and Origination at Uniper, shared Uniper's vision for a future energy system dominated by renewables and supported by hydrogen. Despite challenges related to the European energy crisis, Uniper has launched innovative projects.

Significant investments are being made in flexible energy generation and distribution systems designed to support an infrastructure increasingly based on renewable sources. The new energy generation fleet, currently undergoing transformation, is expected to have a capacity between 15 and 20 gigawatts, with the goal of making 80% of it

carbon-free by 2030.

Among the most notable advancements is the opening of the first hydrogen storage facility in northern Germany, currently in the testing phase but already operational with green hydrogen. Additionally, Uniper's strategy includes a green ammonia import terminal in Wilhelmshaven and a hydrogen production plant in the Netherlands, both crucial for accelerating the transition to a sustainable energy system.

Hilmer also highlighted the potential of the European hydrogen backbone, a 9,700 km network that will connect key production and consumption hubs. He noted that Germany, one of the largest markets for green hydrogen, is leading infrastructure and regulatory efforts to make this transition possible.

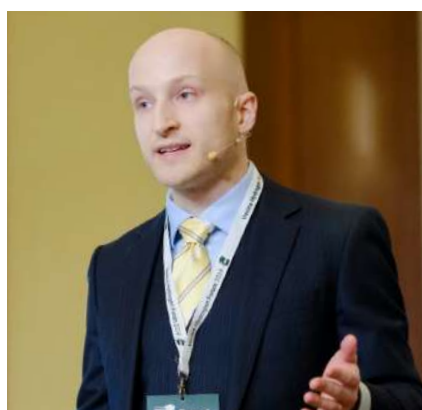
However, he emphasized that high costs remain a significant obstacle, requiring a coordinated effort to make green hydrogen economically viable.

The roundtable concluded with a discussion on the technical and economic feasibility of green hydrogen. Francesco La Camera and Piero Ercoli agreed that investing in "blended" solutions (combining gas and hydrogen) for dedicated corridors is ineffective, preferring pure hydrogen infrastructure. Mourad Bourahla stressed the importance of ensuring that the benefits of these projects are equitably shared between the North and South Mediterranean.

Francesco La Camera closed with a call to action, stating that the coming months will be crucial for releasing new guidelines and defining concrete strategies, reinforcing the link between Europe and North Africa to create a sustainable energy future.

Latest Market Outlook for Hydrogen in the Mediterranean - *“How realistic is Europe’s 10 MT import target?”*

The session, moderated by **Joe Williams, Deputy CEO of the Green Hydrogen Organisation**, offered an in-depth look at the current hydrogen market landscape, focusing on the Mediterranean region and European ambitions. The key speakers, Martin Tengler (Bloomberg NEF) and Lord Adair Turner (Energy Transitions Commission), outlined the challenges and opportunities for the sector.



Martin Tengler, Head of Hydrogen Research at Bloomberg New Energy Finance, discussed ongoing hydrogen market research. Following initial enthusiasm — with record investments of over \$70 billion in Europe in 2021 and \$100 billion in the USA in 2022 — the sector is now experiencing a phase of disillusionment, characterized by project delays and high costs. In 2021, Europe committed over \$70 billion to hydrogen, followed by the USA’s Inflation Reduction Act (IRA), which theoretically allocated another \$100 billion in 2022 and nearly as much in 2023. This enthusiasm resulted in

large-scale projects, with 70 GW of capacity announced in 2022 and 85 GW in 2023, almost enough to cover current grey hydrogen demand.

However, the situation has changed: investments and government commitments have declined, and announcements of new projects have dropped significantly. Discrepancies exist between electrolyzer demand and production capacity, particularly in China, where many factories are not producing electrolyzers. Moreover, key policies, such as IRA tax credits in the US, are not yet operational, while others are facing challenges.

In the Mediterranean, the situation reflects this trend: a recent 60 MW project in Spain, selected for the Hydrogen Bank, was withdrawn. The main challenges remain the high cost of hydrogen and low demand, which discourage developers. Electrolyzer costs, instead of decreasing as expected, have risen by 50% between 2022 and 2024, mainly due to greater project complexity and inflation. Although a 50% cost reduction is expected by 2050, trade barriers could further delay this decrease.

On the operational front, while using on-site renewable electricity is cost-effective, it is often impractical, forcing many developers to connect to the grid and incur higher costs.

Consequently, hydrogen production costs remain high, with limited demand and very low off-take commitments (about 1% of planned projects).

Nevertheless, Europe shows positive signs: it is the leading supporter of clean hydrogen, with over \$130 billion allocated and mandatory quotas for hydrogen consumption in sectors like industry and transport, which could generate demand for 2 million tonnes by 2030. The Mediterranean side also shows potential, with competitive projects in countries like Egypt and Spain.

The carbon pricing system and the CBAM (Carbon Border Adjustment Mechanism) could further incentivize demand, but the challenge remains to reduce free emission allowances to make the market more competitive.



Lord Adair Turner, Chairman of the Energy Transitions Commission (ETC), speaking remotely, delivered a sharp analysis of the evolution of the hydrogen market. He explained that, compared to five years ago when the ETC's hydrogen report was published, projections for hydrogen demand were overly optimistic. Expected growth has been hindered by a lack of real demand in key sectors, with policy primarily pushing to increase supply. This has led to an excess of announced projects relative to actual market needs. According to Turner, public policies should aim to stimulate demand, particularly by covering the additional

costs of green hydrogen.

ETC's forecasts for future demand have now been scaled down: they anticipate growth to 450 million tonnes annually by 2050, compared to the initial estimate of 800 million tonnes. This adjustment is due to the faster advancements in direct electrification technologies, such as electric vehicles for heavy transport and heat pumps, which have proven to be more efficient and competitive than hydrogen.

Turner also highlighted the challenges related to costs: electrolyzers have turned out to be more expensive than anticipated, with price reductions occurring more slowly compared to standardized technologies like solar panels or batteries. To address this challenge, promoting the standardization of electrolyzers is crucial to reduce costs.

Finally, he stressed the importance of offtake agreements to ensure initial demand and support the decarbonization of key sectors like refineries and fertilizer production. Turner also suggested that regions with abundant renewable resources, such as North Africa, could leverage hydrogen not only to export energy but also to attract energy-intensive industries and promote green industrialization, balancing free-market dynamics with geopolitical considerations.

Financing the Hydrogen Value Chain: Strategies and Solutions - *Exploring financing methods and investments required to achieve Europe's hydrogen goals*

The session, moderated by **Caroline Biotteau, Policy Manager at GH2**, featured experts and representatives from international organizations, development banks, and project developers. The discussion focused on overcoming financial challenges in the hydrogen value chain and the importance of innovative tools to accelerate investments.



Cristian Carraretto, Head of Energy Transition CSD/SBD at the European Bank for Reconstruction and Development (EBRD), opened the dialogue by emphasizing how the EBRD is committed to finding shared solutions to address key barriers that hinder hydrogen investments. These barriers include technical, regulatory, and legal obstacles that often complicate project planning and financing.

A key example of the EBRD's work is its collaboration in North Africa, with significant initiatives in the Suez Canal Economic Zone in Egypt and the Port of Aqaba in Jordan. The goal is to develop shared infrastructure that can support mega hydrogen projects. Carraretto reiterated the EBRD's role as a facilitator, helping create pragmatic development plans and avoiding the so-called "valley of death" for projects, where promising ideas risk stalling without concrete actions.

Michelle Hallack, Senior Specialist at the Energy Sector Management Assistance Program of the World Bank, provided an in-depth overview of the 10 Gigawatt Initiative, emphasizing its crucial role in bridging the financial and operational gaps that hinder large-scale green hydrogen projects in emerging economies. The initiative stems from the urgency to accelerate green hydrogen implementation by addressing the sector's structural challenges.

Hallack highlighted that current hydrogen project financing still falls far short of global needs. The World Bank currently manages approximately \$5 billion, a significant milestone but modest compared to the estimated \$100 billion annually needed by 2030 to meet targets. Furthermore, out of the \$148 billion in announced global projects, only \$30 billion have reached the Final Investment Decision (FID) stage, and of these, only 26% pertain to emerging economies.

Hallack described how the World Bank selects high-impact, “lighthouse” projects that serve as examples for scaling up green hydrogen production. These projects are assessed based on four key factors: the presence of strong off-take agreements, robust technical and political sponsors, a favorable regulatory framework, and adequate infrastructure.

A critical point was the call for innovative financial instruments, such as guarantees and concessional funds, to manage the risks associated with projects in developing countries. Hallack also underscored the importance of knowledge sharing to replicate the success of these projects in other parts of the world.



Timo Bollerhey, CEO of H2 Global, discussed the H2 Global model, designed to address the problem of the lack of stable demand for hydrogen. Bollerhey offered a practical and insightful reflection on how to support the development of the green hydrogen market, focusing on three key aspects: the role of multilateral development banks (MDBs), the need to create a functioning market, and the importance of facilitating capital access for projects.

Bollerhey emphasized the crucial role MDBs play in pushing the sector forward during its initial stages. These institutions have a unique capacity to manage risks while maintaining very low default rates. This makes them ideal candidates for financing high-risk projects where private investors hesitate. He spoke about the need for concessional funds, a financial “safety net” to cover early phases, essential for instilling confidence in the market.

Creating a market is not just about increasing supply but also about building a working structure: secure purchase contracts, clear price signals, and financial tools for managing risks. According to Bollerhey, the green hydrogen market needs to reach a “tipping point” — around 5% of the expected global volume — to truly take off. This is where H2 Global

steps in: facilitating the mechanisms needed to make the market work and attract new investors.

A critical issue remains capital access. Many projects stall due to a lack of funds for initial stages, such as feasibility studies or preliminary assessments, which can cost tens of millions of euros. To overcome these hurdles, Bollerhey suggested introducing new tools to improve liquidity and reduce risk, thereby accelerating decision-making and project execution.



Andrew Johnstone, CEO of Climate Fund Managers, described the organization's innovative model, which combines public and private capital through blended finance instruments to support climate transition infrastructure projects, including hydrogen. Currently, Climate Fund Managers actively collaborates with governments such as the Netherlands for non-European hydrogen strategies and those of Namibia and South Africa, supporting them in creating national hydrogen funds.

Johnstone highlighted how hydrogen is closely tied to national interests, emphasizing that the lack of project standardization limits scalability. He reiterated the importance of strategically using public funds to mitigate specific risks and mobilizing private capital to overcome financial barriers.

Standardization and modular approaches are crucial to accelerating the sector's development. Despite challenges, strategic resource management can make projects more attractive to investors, supporting a scalable and effective climate transition.



Ghada Darwish, nominee director for Africa at FMO of Globeleq, provided an overview of Globeleq's project, a British private equity company that selected Egypt as the base for its first green hydrogen project due to favorable government conditions and existing infrastructure. The project benefited from an incentive package for green hydrogen producers and the creation of a dedicated cluster. The allocation of 850 square kilometers for renewable sources and infrastructure support from the EBRD provided a strong incentive to proceed. Additionally, proximity to ports and planned shared infrastructure increases

the project's competitiveness.

Despite progress, Darwish highlighted several challenges. The primary issue is finding reliable off-takers for the produced hydrogen. While Egypt has significant potential for local off-take, current capacity is lacking. European industries represent the closest potential buyers, but they are not yet fully ready. The absence of an adequate energy grid to evacuate renewable energy has led Globeleq to consider relocating the production site near the Suez Canal Economic Zone.

Another critical issue is the European Commission's acceptance of blue hydrogen, which could slow down green hydrogen projects by discouraging investments. Darwish reiterated the importance of a comprehensive regulatory framework and structured support to facilitate the transition to green hydrogen. This includes incentives for off-takers and strengthening local and European capacities to accommodate green hydrogen. Despite uncertainties and risks, investors are determined to advance projects, but a coordinated approach is necessary to meet deadlines and ensure success.



Alessandra Pasini, co-founder and President of Zhero, analyzed the differences in developing green hydrogen projects between markets like the USA and Europe and emerging contexts in the Global South, highlighting specific opportunities and risks in each region.

In the United States, despite promising incentives like the Inflation Reduction Act (IRA), challenges include high production costs, buyers' reluctance to pay a green premium, and the slow market evolution. In contrast, emerging markets offer great opportunities due to natural resources and economic potential but require infrastructure and pre-Final Investment Decision (FID) capital. Pasini stressed the importance of involving multilateral institutions, such as the World Bank, to provide the development funds needed to make projects bankable.

A concrete example is Zhero's project in Namibia, which plans to produce 500,000 tonnes of green ammonia and employ 5,000 people during the construction phase. Pasini highlighted the need for training programs and skills development, supported by governments and multilateral institutions, to ensure tangible local benefits.

Furthermore, she emphasized the importance of public-private collaboration in emerging markets to develop critical infrastructure, such as energy grids and ports, without overburdening developers. She also noted the need for a positive and proactive approach

to overcome obstacles and move projects from pilot to industrial scale, involving local communities to achieve social consent and create shared value.



Willem-Jeroen Stevens, Managing Director of Clear Corporate Finance, shared an optimistic outlook on opportunities within the hydrogen value chain, despite the sector's challenges, particularly in the early stages of project and technology development.

Stevens explained that Clear CF operates on two fronts: helping growth-stage companies find equity partners and supporting hydrogen and renewable projects in securing financing. Both processes, according to Stevens, carry high risks and require significant effort to de-risk investments, often through off-take contracts and government incentives.

On the company side, Stevens highlighted the critical role of technological innovations, such as more efficient electrolyzers, safer transport systems (alternatives to tube trailers), and hydrogen refueling solutions, including for planes and stations. These companies, despite pioneering solutions that could revolutionize energy production, transport, and distribution, need investors willing to accept risks and look beyond immediate returns.

Regarding projects, Stevens pointed out the need for greater clarity and security for investors. Off-take contracts are often limited in duration, leaving long-term returns uncertain. Combined with insufficient equity, this makes it challenging to attract capital, despite support from banks and governments.

However, Stevens sees positive signals: innovations in production, transport, and storage are rapidly lowering costs, creating a promising future. He concluded with an optimistic message, emphasizing that hydrogen represents the future, with tremendous potential ready to be realized once current challenges are overcome.

During the final Q&A session, the urgency of a cohesive approach to addressing risks in emerging markets, particularly in North Africa, emerged. Speakers and attendees agreed on the importance of de-risking through mechanisms such as government guarantees and multilateral financing tools.

A recurring theme was the competition between blue and green hydrogen. Some expressed concerns that support for blue hydrogen could delay green hydrogen

development, while others emphasized that the true goal should be global emissions reduction.

Energy Security in the Mediterranean: The Role of Hydrogen

The roundtable explored the strategic role of hydrogen in ensuring energy security in the Mediterranean. Moderated by Jonas Moberg, CEO of the Green Hydrogen Organization, the session brought together experts from industry, institutions, and international organizations to outline collaborative solutions and strategies to accelerate the energy transition.



Jorgo Chatzimarkakis, CEO of Hydrogen Europe, highlighted how recent crises — from the pandemic to the Russian invasion of Ukraine — have accelerated the need for an energy transition. However, he noted that Europe's goal of importing 10 million tonnes of hydrogen by 2030 is overly ambitious given the current regulatory framework. He provided a strategic outlook on the crucial role of the Mediterranean for the future of green hydrogen and the priorities for accelerating key infrastructure projects like the

South H2 Corridor.

He pointed out that Italy, while not one of the largest hydrogen producers, has the potential to become a central hub for transmission thanks to its geographic position and existing connections with North Africa via pipelines. Unlike Spain, which still faces infrastructure challenges, Italy is already directly connected to Central Europe, offering a strategic advantage.

Chatzimarkakis praised initiatives like H2Med, a key project connecting Spain to France through the Mediterranean, and stressed the importance of focusing on optimizing existing infrastructure. Recent agreements between Algeria, Tunisia, Italy, Austria, and Germany underscore the urgency of connecting hydrogen producers and users, ensuring the involvement of all necessary stakeholders.

Regarding the Eastern Mediterranean, he rejected the notion that the EastMed project has been abandoned. According to Chatzimarkakis, new geopolitical dynamics and US support are revitalizing this initiative, which could effectively link the MENA region to European markets, offering a competitive transport cost of around 30 cents per kilogram per 1,000 kilometers.

Finally, he expressed hope that the new European Commission will prioritize the Mediterranean as a green energy basin, particularly under new leadership focusing on this area. Hydrogen Europe is committed to supporting these efforts, promoting resilience and sustainability for European markets.



Houda Ben Jannet Allal, Director General of the Observatoire Méditerranéen de l'Énergie (OMEC), shared a detailed reflection on the urgency of decarbonizing the Mediterranean region and the need for close collaboration between the two shores. She emphasized that the Mediterranean, due to its climate vulnerability, has no choice but to accelerate the energy transition. However, this challenge manifests differently between the Northern and Southern Mediterranean.

In the North, countries have already embarked on the transition, with the speed of implementation being the primary variable. In the South, countries face more complex difficulties, with economies still heavily reliant on fossil fuels and significant population growth — an increase of over 120 million people by 2050. Without swift intervention, the region's CO₂ emissions could rise, jeopardizing climate goals and energy security, exacerbated by increasing dependence on energy imports.

Despite these challenges, Allal reiterated that there is potential to reverse this trajectory. She emphasized the importance of focusing on renewable energy to reduce emissions while promoting energy efficiency measures essential for accelerating the transition. She also highlighted the role of green hydrogen in the medium term, along with advanced technologies like carbon capture and storage (CCS), all supported by appropriate infrastructure, including energy storage facilities.

Looking ahead, Allal recognized the crucial role of the European Union. Its hydrogen roadmap, which aims to import 10 million tonnes by 2030, has spurred significant responses from Southern Mediterranean countries. These nations have developed ambitious national hydrogen strategies, largely focused on exporting hydrogen to achieve their goals. However, to make this cooperation a reality, it is essential to establish shared regulatory frameworks and policies that ensure a balanced distribution of benefits for both regions.

Nikolaus Widmann, VP of Strategic Projects at TES, shared his vision of the energy transition and the importance of leveraging hydrogen to reduce Europe's dependence on



fossil fuels, which still accounts for 70-75% of energy consumption. He emphasized that despite the progress of electrification, it is crucial to convert fossil molecules into green molecules using existing infrastructure.

TES proposes converting hydrogen into synthetic methane (ENG), which can be used in existing transport infrastructure, thus accelerating the transition to clean fuels.

To support this vision, TES has established an ENG coalition with key partners, aimed at promoting policies such as the introduction of a mandatory green gas quota. Widmann stressed the importance of building investor confidence, starting large-scale electrolyzer production, and developing clear political support from the European Commission.

Regarding Mediterranean projects, Widmann confirmed that TES is working on initiatives in the Iberian Peninsula and North Africa. These projects will utilize the existing pipeline network to inject ENG and distribute it where needed, significantly reducing costs.

In terms of timelines, TES aims to produce 1 million tonnes of ENG by 2030, with large-scale applications operational by 2028. He concluded by emphasizing that success depends on cost competitiveness, a key condition for establishing hydrogen and its derivatives as viable alternatives to fossil fuels.



Alexander Struck, Managing Director of Bayernoil, highlighted the potential of refineries as secure markets for green hydrogen, offering a perspective from the fossil fuel industry on the transition to green hydrogen. Although Bavaria is not a Mediterranean region, Struck noted that the South2Corridor could bring the region closer to the Mediterranean, both physically and economically. According to Struck, refineries and the fossil fuel industry, historically the largest producers and consumers of grey hydrogen, represent a key opportunity to integrate green hydrogen into the existing system.

With appropriate infrastructure and a steady supply of green hydrogen via local electrolyzers or imports through pipelines, refineries could absorb available hydrogen, directly contributing to CO₂ emissions reduction.

Struck emphasized the need to overcome ideological divisions between the old and new economies, advocating for a collaborative approach. He reiterated that the existing industry offers a flexible foundation for balancing supply and demand, contributing to energy system stability and climate transition.



Dick Benschop, Chair of the board at Mission Possible Partnership, emphasized the importance of a collaborative approach between Europe and the Mediterranean, focusing on developing not only energy exports but also local green industries such as steel and ammonia. He proposed regulatory mandates, such as those for green fertilizers, to stimulate hydrogen demand and accelerate the adoption of clean technologies.

Benschop highlighted the significant potential of North Africa and the Middle East in the energy transition. With abundant green energy resources like wind and solar, a new opportunity arises to foster collaboration.

He also addressed the issue of demand, which he considers crucial. According to Benschop, three approaches should be combined: voluntary initiatives, such as buyer alliances; regulations, like mandatory mandates; and commercial innovations, such as market mechanisms developed by organizations like H2 Global.

On the topic of costs, he pointed out that the “green premium” decreases along the production chain. While the initial cost of green steel or ammonia is significantly higher, the impact on final products, such as cars or groceries, is marginal. For Benschop, the issue is not so much economic as it is about coordination among supply chain actors to manage this transition.

Finally, he drew attention to the importance of a mix of policy instruments. According to a study by the Potsdam Institute, successful historical transitions have relied on a balanced combination of carbon pricing, subsidies, and mandates applied consistently. Benschop urged the next European Commission to adopt this approach to accelerate an effective and inclusive energy transition, avoiding reliance on a single policy lever.

Despite the challenges, the Mediterranean stands out as a focal point for clean energy, with the potential to become a strategic hub for green hydrogen and other sustainable technologies.

How finance industry supports the PtX hydrogen market across sectors — Insight glance of an eSAF project in Denmark and a green ammonia plant in Egypt

Sponsor: PtX Development Fund



Thomas Engelmann, Head of Energy Transition at KGAL GmbH & Co. KG, provided a clear and practical perspective on the role of finance in delivering green hydrogen and Power-to-X (PtX) projects. With a hands-on approach, he explained how the PtX Development Fund and KGAL are working to transform innovative ideas into tangible realities, offering concrete examples from Egypt and Denmark.

The PtX Development Fund, supported by the German government, aims to bring a select few projects to financial close, avoiding overly large or unrealistic initiatives. Simultaneously, KGAL acts as an investor, ready to take on the necessary risks to support the energy transition.

Among the selected projects, Engelmann mentioned Egypt Green Hydrogen, a plant that uses an integrated approach to reduce CO₂ emissions and ensure positive social impact, supported by mechanisms like H2 Global. He highlighted the importance of local political support for the success of these initiatives.

Turning to European experience, Engelmann presented the Arcadia E-Fuels project in Denmark, dedicated to producing green synthetic fuels (e-SAF) using renewable electricity. Despite risks associated with integrating complex markets such as electricity and oil and gas, Engelmann emphasized that there are no insurmountable technological obstacles. The project aims to reduce CO₂ emissions by up to 85%, offering a practical solution to comply with future European regulations on sustainable aviation fuel.

In both cases, Engelmann underscored the importance of a pragmatic approach: projects of a manageable scale, with a clear connection between available resources, infrastructure, and market demand.

Country Roundtable Discussion: Algeria

The session dedicated to Algeria featured a presentation by Youcef Abbou, Economic Affairs Advisor at the Embassy of Algeria in Italy. Moderated by Jonas Moberg, the discussion focused on the country's strategic role in the energy transition, initiatives for developing green hydrogen, and international collaborations with Europe and North Africa to promote sustainability and energy security.



Youcef Abbou, Economic Affairs Advisor at the Embassy of Algeria in Italy, spoke about Algeria's role in the energy transition, highlighting how the country, like its neighbors, aspires to be a significant player in the development of green hydrogen.

With a strategic geographic location, Algeria is the largest country in Africa and the tenth-largest in the world by area. This, combined with its extraordinary renewable energy potential, makes Algeria particularly well-suited for the production and export of green hydrogen at competitive costs. Notably, the southern regions of the country benefit from over 300 days of sunshine per year, with more than 3,000 hours of sunlight, providing ideal conditions for sustainable energy projects.

On the infrastructure front, Algeria has one of the most extensive gas pipeline networks, making it naturally equipped to supply hydrogen to European markets. Recently, the government launched a national hydrogen strategy and initiated two pilot projects to promote the sector's development.

A further sign of Algeria's commitment is the agreements signed on October 14 with Italy, Germany, and Austria, along with feasibility studies started with Spain. These partnerships underscore the desire to create mutually beneficial cooperation between Europe and North Africa, enhancing European energy security and supporting the region's sustainable growth.

He concluded by reiterating Algeria's ambition to transform its energy potential into a driver of shared and sustainable development.

Country Roundtable Discussion: Tunisia

The roundtable on Tunisia featured H.E. Mourad Bourahla, Ambassador of Tunisia to Italy, and Alessandra Pasini, President of Zhero. Moderated by Jonas Moberg, the discussion explored Tunisia's energy strategy to enhance energy security and reduce fossil fuel imports, with a focus on the green hydrogen plan and strategic projects like ELMED. Particular attention was given to international collaboration and the training of young talent to promote sustainable development and a shared energy transition between Africa and Europe.



H.E. Mourad Bourahla, Ambassador of Tunisia to Italy, outlined the country's energy strategy, aimed at strengthening energy security, reducing fossil fuel imports, and contributing to climate neutrality by 2050. This strategy includes implementing a green hydrogen plan, targeting the production of 8.3 million tonnes by 2050, with 2.3 million tonnes allocated for the local market and 6 million tonnes for export to Europe. A key project within this context is the ELMED Project, a joint initiative co-financed by Italy, with €600 million in support from the European Union. The project represents a crucial step for

the energy future of Tunisia and the Mediterranean region.

The ambassador emphasized the importance of inclusive collaboration between foreign and local companies, focusing on the training of young Tunisian talent to retain skills within the country. He also mentioned the new code of renewable energies currently in development, which will clarify the regulatory framework and strengthen the role of the private sector.

Alessandra Pasini, co-founder and President of Zhero, described a project complementary to ELMED, which will deliver renewable energy from Tunisia to northern Italy, with 20% of production allocated to the Tunisian market. This green energy will serve local industries, helping them meet European decarbonization requirements, such as the CBAM (Carbon Border Adjustment Mechanism). Pasini highlighted that combining solar and wind power will enable continuous generation, ideal for industrial production.

The discussion underscored Tunisia's strategic importance as an energy bridge between Africa and Europe, not only for green hydrogen but also for renewable electricity, promoting shared and sustainable development.

Country Roundtable Discussion: Egypt

The roundtable on Egypt featured **Waleid Gamal El-Dien, President of the Suez Canal Economic Zone (SCZONE)**, **Ghada Darwish from Globeleq**, and **Sumitananda Roy from ReNew**. Moderated by **Jonas Moberg**, the session delved into the country's strategic plans for green hydrogen development, infrastructure challenges, and opportunities for international collaboration.

Waleid Gamal El-Dien outlined Egypt's journey in developing green fuels, which began over two years ago through collaboration between the Egyptian Sovereign Fund, the SCZONE, and the Ministry of Electricity. Egypt has attracted over thirty investors interested in projects ranging from the production of green methanol and ammonia to hydrogen, aimed at both local use and export, with a particular focus on decarbonizing industries and supplying maritime fleets passing through the Suez Canal.



Among the key achievements, Gamal El-Dien highlighted infrastructure development, the creation of an incentive framework for green hydrogen, and the signing of 15 memorandums of understanding (MOUs), some of which have already become binding agreements. He mentioned the export of green ammonia to India and a contract signed under the H2Global initiative for the supply of 720,000 tonnes annually by 2027. He also emphasized the need to localize industrial production, such as solar panels and electrolyzers, to support the sector.



Despite progress, he acknowledged that global challenges related to certification, offtake agreements, and industrial localization remain, for which international collaboration will be essential.

Ghada Darwish provided an update on Globeleq's projects, emphasizing the decisive support received from the government and the SCZONE. However, she noted that limitations in the

electrical transmission network pose a significant challenge, particularly for connections between West Aswan and the SCZONE, a distance of approximately 800 kilometers. She added that the lack of allocated land has delayed progress, despite completed feasibility studies and the availability of equipment.

Darwish proposed solutions such as developing local networks near the SCZONE and sharing infrastructure costs with other developers to accelerate timelines and reduce overall expenses.



Sumitananda Roy, remotely, highlighted Egypt's high potential due to its high-quality renewable resources and strategic position close to Europe. ReNew is developing projects with an initial production target of 20,000 tonnes of hydrogen or 100,000 tonnes of green ammonia annually, with plans to scale up to 200,000 tonnes of hydrogen or 1 million tonnes of ammonia in a second phase.

Like other developers, Roy emphasized that transmission network limitations are a significant barrier. He welcomed the proposal to move project-dedicated lands closer to the SCZONE, considering it a strategic solution to overcome these challenges.

Hydrogen Marketplace for the Mediterranean – Time for a new aggregator?



Thierry Lepercq, President of HyDeal España, provided a clear vision of the potential for collaborations between Morocco, Spain, and the rest of Europe in energy infrastructure, particularly for green hydrogen. He began by highlighting the existing connections between the two countries, such as the operational electrical grids, with two connections in place and a third under construction. This link could be extended to green hydrogen, for example by adapting the GME pipeline (Maghreb-Europe Gas Pipeline), which connects Morocco to Spain, for hydrogen transport.

Lepercq then pointed out a crucial “missing link” in the current phase of the energy transition: a space where demand, supply, and infrastructure can converge and interact. This space must facilitate market-based agreements that serve customers practically, not just with the goal of “saving the planet.” To this end, he announced the “Marketplace H2” initiative, a project involving four organizations (GH2, HyDeal, Prisma, and GuideHouse), set to be officially launched in Paris on November 6.

Marketplace H2 aims to bridge the gap between producers, infrastructure, and unmet demand. Lepercq described the project as a collaborative platform designed to connect producers and off-takers and facilitate access to transmission infrastructure. He emphasized that green hydrogen producers without off-takers cannot secure financing, and transmission infrastructure cannot be developed without capacity bookings. The initiative seeks to create a network where these stakeholders can interact, thereby accelerating the sector's development.

Finally, he stressed the importance of collaboration between the South and North Mediterranean. The South offers renewable energy resources at competitive costs, while the North represents the primary consumption market. However, Lepercq acknowledged the challenge of meeting the price expectations of European off-takers, a crucial aspect for the initiative's success.

Although the platform's announcement is not yet public, it aims to create a structure that builds on existing models to speed up the transition to green hydrogen. With nearly 30 companies already involved, Marketplace H2 is set to become a cornerstone for the energy future of the Mediterranean and Europe.



Thibault Villedieu-de-Torcy, Business Development Manager at Prisma Capacity, explained the role of the Prisma European Capacity Platform, a key partner in the Marketplace H2 initiative. Founded 12 years ago by gas transmission system operators (TSOs) in response to European regulations, Prisma currently serves 50 infrastructure operators, including transport, storage, and LNG terminals, offering digital access to the capacity market. The platform operates as an association based on neutrality and collaboration, regularly involving users and operators in design processes.

In recent years, Prisma has been involved in the Aggregate EU project, a platform commissioned by the European Union in response to the 2022 energy crisis. Aggregate EU serves as a tool for demand aggregation and joint gas procurement. Through this platform, 200 participants aggregated European demand and managed tenders for global gas suppliers, with six bidding rounds covering up to 80 billion cubic meters of gas.

Villedieu-de-Torcy noted that while hydrogen does not yet have a consolidated market like natural gas, many principles from Aggregate EU can be adapted. The main challenge is addressing the “demand security issue”, that is, creating scalability and significant demand volumes for hydrogen in Europe. By aggregating demand, it would be possible to make infrastructure projects like the H2 corridor economically sustainable.

He also stressed the importance of collaborative governance. Prisma has always operated as a co-designed digital platform, actively involving suppliers, buyers, and infrastructure operators in process design. According to Villedieu-de-Torcy, this approach will be crucial for hydrogen's success, ensuring continuous involvement of key market players.



Matthias Schimmel, Project Lead for Energy Cooperation with the Gulf Countries at Guidehouse Germany GmbH, explained GuideHouse’s role in developing hydrogen infrastructure in Europe. In the past, GuideHouse played a key role in creating the European Hydrogen Backbone, collaborating with 33 TSOs to develop a shared vision for structuring a pan-European hydrogen infrastructure. This vision has been adopted by the European Commission and is currently being implemented.

Within Marketplace H2, GuideHouse will act as the Project Management Office, coordinating activities and facilitating collaboration among key industry players, including suppliers, infrastructure operators, and end users. The project’s official presentation will take place on November 6 in Paris, bringing together the entire supply chain to discuss market needs and the marketplace’s value proposition.

The work will focus on resolving current market challenges, such as the lack of aggregation between demand, supply, and infrastructure. A central element will be the development of a digital platform capable of integrating these components, ensuring a smooth and effective system. Additionally, the project will establish a robust governance

model and a communication strategy to engage new participants and strengthen the existing network.

The project's initial "discovery phase" will run until January, setting the operational and organizational foundations of the marketplace. At the end of this period, an evaluation will determine the next steps. Schimmel highlighted the importance of a practical and collaborative approach, focused on market needs and creating an effective tool to accelerate the transition to a hydrogen economy in Europe.

The Offtaker perspective: Green Fertiliser



The roundtable on off-taker perspectives in the context of green fertilizers, moderated by **Sam Bartlett, Director of Green Hydrogen Standard at GH2**, focused on the strategic importance of green ammonia as a catalyst for the green hydrogen sector. Bartlett highlighted the crucial role fertilizers will play in the transition to a green hydrogen economy, emphasizing the link between energy security and food security.

Aidan Lea from Argus Media provided an analytical overview of the supply and demand outlook for green ammonia. According to Argus, global demand for “clean” ammonia could reach 339 million tonnes by 2050, with the fertilizer sector representing a significant portion, estimated at 22 million tonnes annually. However, current green ammonia production remains limited, with only 1.4 million tonnes classified as likely or certain, highlighting the delay in large-scale development. On the cost front, green ammonia remains non-competitive without public policy intervention, with production costs significantly exceeding those of conventional ammonia.



Arun Sharma, Advisor to the Chairman of Adani Group, offered an Indian perspective that underscored the significant potential of green fertilizers to drive green hydrogen demand. India, currently the world’s third-largest hydrogen producer, has ambitious goals: eliminating ammonia and fertilizer imports by 2035 by promoting domestic production based on renewable energy. Sharma explained how the Indian government is gradually shifting natural gas subsidies towards renewables, noting that the variable cost of fertilizers is closely tied to gas prices. Investing in green hydrogen could stabilize fertilizer costs, enhance energy security, and reduce

energy imports.

Sharma also noted that India's heavily subsidized agricultural sector is a key lever for stimulating green hydrogen demand. The government has already launched pilot programs for local green ammonia production at fertilizer plants to evaluate scalability models.

Sonja Butzengeiger, Managing Partner of Perspectives Climate Group, addressed the difficulty of implementing green premiums in the fertilizer sector, noting that the market is not yet willing to pay a premium for fertilizers produced with green ammonia. This limitation has been confirmed by multiple producers, especially in the Middle East. Some large companies, such as Yara, are exploring



green ammonia and fertilizer solutions to reduce their Scope 3 emissions, but these are early steps.

Butzengeiger suggested that carbon markets could be a significant lever to incentivize investments in green fertilizers. In producer countries like Egypt or Morocco, where a portion of green ammonia is destined for the domestic market rather than being exported to the EU, there is no incentive tied to reducing the CBAM (Carbon Border Adjustment Mechanism) tax. In these cases, both voluntary and regulated carbon markets under Article 6 of the Paris Agreement can offer opportunities to monetize avoided carbon emissions from green ammonia production compared to gray ammonia.

She shared a practical example showing that a plant with a 100-megawatt electrolyzer operating at 90% capacity could generate approximately 150,000 tonnes of carbon credits annually through green ammonia production for fertilizers. Currently, the value of carbon credits in the voluntary market ranges between \$15 and \$40 per tonne of CO₂, translating into additional revenue of \$2 to \$6 million per year, providing significant support to make these projects economically viable.

However, Butzengeiger noted that the development of rules and methodologies for calculating and certifying carbon credits for such projects is still underway. The German government is actively supporting initiatives to create these methodologies, co-sponsoring pilot projects to stimulate the sector.

Finally, she expressed interest in collaborating with fertilizer producers in Egypt, Morocco, and other countries to translate these opportunities into concrete projects, helping create a framework to support the large-scale adoption of green fertilizers.



John Patrick Sweny, Partner at Latham & Watkins, shared insights on structuring and financing green ammonia production projects, emphasizing two main approaches: small-scale projects and large-scale projects.

For smaller projects, he cited the example of Uganda, where green fertilizer projects have been developed using blended financing based on domestic hydropower. These projects demonstrate that, in some jurisdictions, it is already possible to produce green ammonia at competitive costs compared to imported gray ammonia, eliminating

the green premium in specific contexts. This represents an interesting opportunity to meet domestic needs and reduce import dependency.

For large-scale projects aimed at export from North Africa, Sweny emphasized the critical importance of multilateral financing and export credit agency (ECA) guarantees. Building these projects requires significant capital, and their success depends on combining various funding sources. This process, he explained, involves significant coordination to bring together investors and the necessary resources.

The discussion highlighted both the opportunities for agile, targeted projects and the complexities of large-scale initiatives, underscoring the strategic role of structured financing to make global green ammonia ambitions viable.

Tarek Hosny, Head of Investment & Projects at Fertiglobe, outlined the success factors behind their North African project, which has progressed more effectively than many others in the fertilizer sector. Fertiglobe is the largest producer of ammonia and urea in the Middle East and the world's leading seaborne exporter. Traditionally, their products are sold as fertilizers or used in other industries. Recently, they completed pilot shipments of renewable ammonia from Egypt and blue ammonia from the UAE, reflecting a gradual shift toward more sustainable sources.



A key project in Egypt involves constructing a 100-megawatt electrolyzer, capable of producing 60,000 to 70,000 tonnes of ammonia annually. This complements another project in the UAE focused on low-carbon ammonia, with a capacity of 1 million tonnes. These projects reflect growing confidence in the demand for sustainable solutions, though immediate requests still focus on low-carbon products.

Hosny highlighted several key elements for achieving Final Investment Decision (FID). A crucial factor was the support from H2 Global, which secured a long-term offtake contract for the Egyptian project, valid from 2028 to 2033, providing the stability needed to obtain financing. Fertiglobe assumed the residual market risk, confident that demand will grow further, enabling spot sales or new long-term contracts.

Another essential element is access to concessional financing (DFI) and grants to reduce overall costs. Additionally, a clear regulatory framework in Egypt facilitated development.

Existing infrastructure, such as plants, ports, and storage tanks, offered a further advantage by minimizing the need for new construction and improving economies of scale.

SouthH2 Alliance: Strengthening Green Hydrogen Collaboration Across Germany, Italy, Austria, Algeria, and Tunisia

Partner: BMWK, German Energy Agency



Ellen von Zitzewitz, Deputy Head Division WEW2 at the Federal Ministry for Economic Affairs and Climate Action (BMWK) in Germany, began her speech by emphasizing the importance of cooperation between Germany, Italy, and other countries involved in the South H2 Corridor, highlighting a team approach that includes governments, businesses, and think tanks. She noted how this initiative aligns seamlessly with the energy and climate partnerships that the German government has established over the past decade with 11 MENA region countries (Middle East and North Africa), providing tangible support for their energy transition.

A distinctive aspect of the project is its aim to create local value in the participating countries, particularly Algeria and Tunisia, two nations taking their first steps in renewable energy development. Von Zitzewitz explained that once the first gigawatt of renewable energy is installed, scaling up to higher levels becomes easier. She cited Germany's experience of reaching 13 gigawatts of solar energy in 2023 as an example of the potential these initiatives can achieve.

The South H2 Corridor aims to connect North Africa's vast solar and wind potential with hydrogen consumption centers in Italy, Austria, and Germany by converting existing gas pipelines for green hydrogen transport. This project represents an evolution from the DESERTEC initiative, which previously had a more extractive approach, now transitioning to a bidirectional and collaborative model.

Germany's vision supports both electrons (electricity) and molecules (green hydrogen), seeing them as complementary elements of the energy transition. Von Zitzewitz also referenced Germany's growing demand for hydrogen, indicating that future discussions might explore off-take demand to support this transition.



Sarah Neumann, Policy Advisor for Climate Action and Energy at the Austrian Federal Ministry for Economic Affairs and Climate Action, shared Austria's clear and pragmatic vision on the strategic role of hydrogen and its infrastructure. She emphasized both national efforts and collaborative initiatives within the south-to-north corridor. Neumann praised the cooperation between European and North African partners, noting that this collaboration has been strengthening for the past two years, advancing both infrastructure projects and productive partnerships with North African countries.

Austria has developed a well-defined hydrogen infrastructure plan integrated into the European context. This plan connects key national production and demand centers within the south-to-north hydrogen corridor. While Austria is also investing in domestic production, Neumann noted that much of the demand, particularly from industry, will be met through imports starting in 2030. To support this development, Austria is working on implementing the European gas market package, including plans for initial hydrogen transport networks linking production and consumption infrastructure.

Regarding demand, Neumann clarified that hydrogen will be prioritized for sectors where no efficient decarbonization alternatives exist. These include high-temperature industrial processes (such as chemical and steel industries) and hard-to-electrify mobility sectors like aviation and shipping, with particular attention to Danube navigation. Hydrogen will not be used in sectors where electrification is more cost-effective, such as residential heating.

An important aspect is the integration of the existing methane network, with Austria serving as a key transit country. Much of the hydrogen infrastructure, Neumann explained, will involve retrofitting existing facilities, leveraging established expertise to reduce costs and implementation time.

Giovanna Pozzi, Director of Hydrogen Projects at Snam, emphasized that the South H2 Corridor is a fundamental initiative for supporting the European energy transition, highlighting that the project would not be possible without strong collaborations between the involved partners. She acknowledged the crucial role of governments in

supporting the corridor at both national and European levels, noting its recognition as a Project of Common Interest (PCI), underscoring its strategic importance to the European Union.



Pozzi explained that the corridor could significantly contribute to the EU's goal of importing 10 million tonnes of green hydrogen by 2030, potentially covering over one-third of this need. This achievement will be facilitated through partnerships with companies along the value chain. She mentioned the Memorandum of Understanding (MoU) recently signed in Oran, involving Sonatrach (the owner of the Transmed pipeline and potential hydrogen producer in Algeria), Sonelgaz, Verbund and VNG (a potential end-user in Germany). This collaboration serves as a model for integrating various stakeholders to achieve common goals.

Regarding the next steps, Pozzi stated that the current priority is to initiate feasibility studies and engineering activities for both the Italian and extra-European segments of the corridor. The primary objective is to assess the feasibility of converting existing gas pipelines, such as the Transmed, for hydrogen transport. These studies will be critical for determining the optimal routing of infrastructure and providing precise guidance on total investments and capital costs.

In terms of timelines, she noted that while committing to exact deadlines is challenging, the next few years will be crucial. Completing feasibility studies and defining pipeline routes are essential milestones for ensuring the project aligns with long-term goals.



Giuseppe Galata, Chairman of the Board at VNG Italia, introduced his company's crucial role within the South H2 Alliance, highlighting VNG's 65-year history as a gas company, originally founded in former East Germany and now part of the EnBW Group, Germany's third-largest energy group. VNG is determinedly transitioning to hydrogen while continuing operations in the natural gas sector.

One key aspect of his address was the reference to ongoing projects in Germany. VNG is developing an industrial-scale project that includes an operational 50 MW wind farm and a

30 MW electrolyzer under construction, set to be completed within about a year. This project, which also involves the potential conversion of a 50 million cubic meter gas storage facility for hydrogen storage, represents a learning phase for VNG aimed at transferring acquired expertise to larger-scale initiatives.

Another crucial point concerns VNG's long-standing collaboration with Algeria. The company was the first German company to import natural gas from Algeria, building a strong relationship of trust with Sonatrach and other Algerian partners. This relationship has been fundamental in establishing a broader partnership with companies like Sonatrach, Sonalgas, and Snam, creating a network of experts with deep knowledge of the international gas market. Galata emphasized how the gas industry can provide valuable lessons for the hydrogen market due to the similarities in operational models.

Regarding their specific contribution to the South H2 Alliance, VNG will primarily serve as a hydrogen off-taker for the German market, ensuring the necessary demand to support the project. Additionally, VNG will provide technical expertise for converting existing infrastructure, a crucial aspect for the project's feasibility. Their experience studying German pipelines through their affiliate ONTRAS (which manages 7,700 kilometers of pipelines) will be shared with international partners.



Joerg Buck, CEO of the German Chamber of Commerce in Italy, emphasized the critical importance of the Germany-Italy partnership within the context of green energy and hydrogen. He began by addressing the “why” of this discussion, noting that Germany and Italy together account for nearly 30% of Europe's industrial structure. Strategic sectors such as chemicals, pharmaceuticals, automotive, electronics, and steel heavily depend on a competitive and sustainable energy supply.

Buck pointed out how the current uncertainty surrounding energy prices and security is severely impacting European industry. This is evident in the 7% decline in Italy-Germany bilateral trade recorded in the first half of the year. In this scenario, projects like the H2 Corridor represent a strategic opportunity to enhance Europe's industrial competitiveness by ensuring sustainable energy prices and a secure supply of green energy.

A key point of his speech was the call to view the project not merely as a value chain for European off-takers but as a “dual value chain” that also delivers significant benefits to North African countries. Buck stressed the importance of developing production infrastructure and skills in North Africa, suggesting this approach could be a decisive factor in negotiations with regional partners. Collaboration should include investments in local industrialization and training, thereby supporting the region's economic and social development.

Finally, he highlighted the innovative potential of the project, which could play a crucial role in reindustrializing Europe. This aspect is essential for ensuring the Germany-Italy partnership and European industry remain globally competitive, continuing to contribute to the continent's economic and technological progress.



Thomas Jung, Division Head at ABO Energy, described ABO's role in the landscape of renewable energy and hydrogen. Founded 28 years ago, the company has grown from a small team of two to an enterprise with 1,200 employees, with a strong commitment to developing projects in wind energy, solar energy, hydrogen, and batteries. With a pipeline of approximately 45 gigawatts of ongoing projects, ABO Energy positions itself as a key player in the renewable energy sector.

Jung outlined two strategic projects in Tunisia, demonstrating the company's strong interest in the country and the potential of its energy market. The first project, located in northern Tunisia, is a smaller-scale initiative connected to the Trans-Tunisian pipeline. For this project, ABO Energy has already acquired the necessary land and completed a conceptual study, including plans for an electrolyzer and a desalination plant.

The second, more ambitious project is situated in southern Tunisia and involves developing a multi-gigawatt facility. Here too, the company is working to acquire the necessary land and secure key permits such as the “titre bleu.” Jung noted that despite some bureaucratic challenges, the company is already in the process of starting feasibility studies and project conceptualization for this large-scale initiative.

In July, ABO Energy strengthened its commitment to Tunisia by signing a Memorandum of Understanding with the Tunisian government. This step underscores the company's determination to contribute to the region's sustainable energy future, leveraging its

expertise in the renewable sector and positioning itself as a strategic partner for developing green hydrogen and energy infrastructure.

Securing demand for Germany's hydrogen strategy: the role of infrastructure



Ellen von Zitzewitz, Deputy Head of Division WEW2 at the Federal Ministry for Economic Affairs and Climate Action (BMWK), provided a comprehensive overview of Germany's hydrogen strategy, explaining how the country is addressing the challenge of integrating this energy source into its decarbonization plans. Germany was one of the first nations to develop a National Hydrogen Strategy, driven by the need to reduce total energy consumption from approximately 2,500 terawatt-hours to 2,000 through energy efficiency and a significant increase in renewable electricity production.

Hydrogen has been identified as an essential solution for hard-to-decarbonize sectors such as heavy industry and chemical processes. After publishing its first hydrogen strategy in 2020, Germany has recently updated the plan, introducing an import strategy to address the growing demand.

Von Zitzewitz emphasized that while the import of derivatives such as ammonia was initially prioritized, pipelines now represent the most economical and efficient solution for transporting hydrogen. Germany is working on five major corridors, including a connection with Denmark in the north, which, despite delays, remains one of the most promising projects. Other corridors include Northern Europe, the Benelux countries, the Iberian Peninsula, the South Corridor (via Italy and Austria), and a future cooperation with Southeast Europe, including Bulgaria, Romania, and Greece.

One of the main challenges, she explained, is cost, with a significant gap between grey hydrogen and green hydrogen. While tools like H2 Global help reduce investment risks, Germany is developing additional mechanisms to incentivize early large-scale projects. Von Zitzewitz highlighted the importance of European-level support policies and instruments to ensure stable demand, such as climate contracts for difference and support for major industrial projects.

Regarding the future of steel production in Germany, it was acknowledged that macroeconomic difficulties could slow down investments. However, Von Zitzewitz reaffirmed the importance of maintaining a strategic steel production capacity for security reasons.

In anticipation of the upcoming German elections, she noted that hydrogen is not a controversial topic among the major democratic parties, suggesting policy continuity even under a new government. Despite the challenges, she concluded on a positive note, emphasizing Germany's remarkable resilience during the energy crisis caused by Russia's invasion of Ukraine and the innovative potential of the hydrogen sector as a driver for employment and technology.

H2 in Venice for Regional Value Creation

Sponsor: Edison

At the opening of the panel on Venice, **Fabio Cancarè**, the session moderator, read a letter from **Luca Zaia, President of the Veneto Region**. Zaia highlighted the importance of hydrogen as a strategic resource for the future, not only for Veneto but for the entire national system. Due to prior institutional commitments, he was unable to attend the event but expressed his full support for the initiative. Zaia described the transition to renewable energy sources as one of the most urgent challenges of our time, emphasizing the crucial role that hydrogen can play in this process. He hoped the forum would serve as an opportunity for dialogue between professionals and institutions, capable of generating innovative solutions for a greener and more sustainable society.

Furthermore, the president underscored the value of the forum as a "bridge" between the past and the future, guiding participants toward a clear and sustainable direction. In conclusion, Zaia wished success to the session's proceedings, reaffirming that sustainability is the path to progress.



The first speaker was **Rita Steffanutto, Director of the Department of Research, Innovation, and Energy Competitiveness for the Veneto Region**. Veneto is at a crucial stage in redefining its energy system, with hydrogen positioned as a key player in the new energy paradigm. As President Zaia noted in his letter, the 2022 energy crisis, triggered by the

conflict between Russia and Ukraine, has accelerated the need to revise the region's energy strategies and policies, pushing towards a system that is both sustainable and resilient.

The Regional Energy Plan, which is nearing completion and presentation to municipalities, sets ambitious targets: increasing renewable energy capacity by 6 gigawatts by 2030, in line with the Sustainable Development Goals (SDGs). Key priorities include energy security, reducing dependence on imports, and energy efficiency at both national and household levels. Hydrogen plays a crucial role in this strategy, forming part of the planned energy mix.

To this end, the Veneto Region has launched several significant initiatives. €25 million has been allocated for the production and storage of green hydrogen, aimed at helping companies regenerate their models and production sites. Additionally, €31 million has been earmarked for energy efficiency in industries, while €5 million has been dedicated to research and development in the hydrogen supply chain, with a particular focus on scalability and upscaling.

An important initiative conducted in collaboration with the Venice Sustainability Foundation involves skills mapping. Through a survey directed at local businesses, the demand for hydrogen and the skills required to develop the supply chain have been analyzed. This work fits into a broader vision of preparing the region to seize the opportunities offered by hydrogen.

Furthermore, the Veneto Region recently joined the Hydrogen Europe Association, an organization that promotes knowledge and productivity development in the European hydrogen sector. This step offers the region a chance to engage with key European partners and help position Italy as a hydrogen distribution hub.

A current project is SAPIO's initiative in the Marghera area, funded with ministerial resources allocated to the Veneto Region. This project aims to revitalize the area, benefiting not just Venice but the entire region. It serves as a concrete example of how the region is turning its ambitions into real actions with a positive impact on both the local and national levels.

Massimiliano De Martin, Councillor for Urban Planning and Environment of the City of Venice, highlighted the strong commitment of the Venetian administration to developing and implementing hydrogen as a key energy carrier for the future. He

conveyed greetings from Mayor Luigi Brugnaro, emphasizing that Venice is working at the local, national, and international levels to promote the Italian industrial sector.

The councillor noted that, while Italy is striving to catch up with other European countries, especially in the automotive and transport sectors, significant progress is underway. He recalled that the administration has been planning innovative initiatives in this field for over a decade. Thanks to partnerships with companies like Toyota, Venice has opened the first hydrogen refueling station for heavy vehicles and introduced four hydrogen-powered buses for public transportation. This marks the beginning of an ambitious plan, aiming to have 19 hydrogen buses operational by 2026.



To support this transition, Venice has decided to convert part of its oil supply chain and focus on the production of green hydrogen. However, De Martin noted that the city still faces significant challenges, such as organizing energy demand and implementing a coherent infrastructure system.

One major obstacle is the need for faster and more suitable regulations for hydrogen production and storage, which require specific facilities and sites. De Martin stressed the importance of overcoming cultural and informational barriers, highlighting the need for greater civic education to counter ideological opposition to hydrogen and other energy technologies, such as nuclear power.



Paolo Menegazzo, Head of the Strategic Planning Area at the North Adriatic Sea Port Authority (AdSPMAS), addressed the crucial role of hydrogen in the maritime sector and the function of Veneto's ports as hubs for distributing this energy carrier. He began by conveying greetings from the President of the Port Authority, who could not attend but wished to emphasize the importance of the topic for the future of the region's ports.

Menegazzo highlighted that the need for a new energy revolution is now unavoidable and must involve a mix of energy sources. Regarding the shipping sector, he explained that ports need to develop appropriate refueling

infrastructure for ships. However, he noted significant uncertainty remains about which energy carriers are best suited for different types of vessels. Therefore, the Port Authority is evaluating various options to address this challenge.

A significant step was taken with the presentation of a report showing that the maritime sector continues to face energy supply issues. Menegazzo emphasized that the role of the port extends beyond directly supporting shipping. The Port Authority has commissioned a study to estimate the hydrogen-related energy needs not only for the port but also for the hinterland and the entire Veneto region. The data from this study are substantial and require an integrated regional management approach.

In the initial phase, Menegazzo explained, Porto Marghera represents a strategic asset. With its established know-how and existing infrastructure, such as certain pipelines, immediate projects can be launched. Among these, he mentioned the development of the Hydrogen Valley in Marghera, in collaboration with Sapio, demonstrating the port's potential as a hydrogen hub.

However, Menegazzo stressed the importance of looking at the long term. He compared the ongoing transformation to the oil revolution of a century ago, highlighting the need to build structures for receiving and distributing hydrogen effectively. Given the expected volumes, local production alone will not suffice; hydrogen imports will be necessary. This requires a port capable of managing and distributing hydrogen throughout the region. He also mentioned the possibility of developing a logistical system outside the lagoon to meet future needs.



Andrea Bos, President of Hydrogen Park, reflected on the origins of the project, noting that the hydrogen park was established in 2003 as a European platform, supported by Jeremy Rifkin, a consultant to Angela Merkel, before returning to Italy with the backing of the Ministry of Economic Development.

Bos pointed out the differences between Italy and Germany in terms of processes and scale, which led to the development of the first coupling of energy demand and hydrogen production, launching the Hydrogen Valley. Starting in 2021, the Veneto Region accelerated progress by

investing and modifying pathways to improve conditions, also inaugurating the first hydrogen-powered buses.

Since 2016, the development of the park has led to the creation of small distributed facilities that produce a few thousand tons annually, supported by European structural funds. However, Bos noted a critical point: Italy will never be able to produce enough hydrogen on its own to meet demand and achieve energy transition goals.

To address this challenge, it is necessary to integrate the European strategy with an energy hub model that ensures unlimited access to hydrogen molecules for large consumers. This approach would allow industries to plan strategic investments. The example of the Port of Venice, where key projects have been implemented, marks an important step in this direction.

Bos also mentioned the Hydrogen Bank project of the park, which should not be confused with the European Hydrogen Bank. This tool supports standalone projects, ensuring access to the necessary infrastructure, particularly for public transport, such as the 98 hydrogen-powered buses.

Finally, he highlighted how the hub model created in Venice can be replicated in Southern Italy, leveraging the high photovoltaic production capacity of regions like Southern Italy, Southern Spain, and Greece. This would allow the valorization of excess renewable energy, often not utilized, for redistribution or export.



Gabriele Lucchesi, Hydrogen Director at Edison Next, outlined Edison Next's commitment to the hydrogen sector, highlighting that the company has been engaged in this field for four years, leveraging the 2020 European strategy as a catalyst to create synergies with its industrial client portfolio and the mobility sector. With a portfolio of approximately 100,000 industrial clients, Edison Next has identified hydrogen as an important energy vector which in some contexts can represent an ideal solution for decarbonization, in particular if integrated with other solutions to enhance energy efficiency.

Lucchesi shared lessons learned, pointing out a growing gap between the official European and national narrative and practical reality. While goals are highly ambitious, practical challenges remain difficult to overcome. One major issue is the high cost of renewable hydrogen, exacerbated in Italy by higher electricity prices compared to other countries. Lucchesi welcomed the incentives provided by the National Recovery and Resilience Plan (PNRR) but stressed the need for operational incentives (OPEX) to cover management costs, with the relevant decree expected next year, as well as for the possibility for such incentives to be combined.

Another challenge is the lack of structured demand. Adopting hydrogen often involves significant adaptation costs for industries and transportation. As regards mobility, Lucchesi called for greater institutional support to stimulate the market, such as incentives for purchasing hydrogen trucks, which currently cost four to five times more than traditional vehicles, so creating the necessary condition for installing refueling stations on a large scale. He noted that the PNRR allocated overall €3.6 billion for hydrogen development, but estimated that if only €100 million incentives were destined to cover 80% of a hydrogen truck cost, it could be possible to put on the road 200-300 trucks that could allow to effectively kick-start a virtuous cycle.

Finally, Lucchesi addressed the need for vast amounts of renewable energy to produce hydrogen. He criticized the rigid conditions imposed by European delegated acts, which make sourcing sufficient energy for production plans difficult and expensive. He concluded by calling for a paradigm shift, with more realistic policies and incentives to make projects economically feasible and stimulate the transition to hydrogen.



Michela Capoccia, Regulatory & Innovation Manager at Sapio, highlighted the company's pivotal role as a historic hydrogen producer in Italy, with over 100 years of experience. Since its founding, Sapio has focused on low-emission grey hydrogen production but is now committed to developing production methods based on renewable sources. Through a partnership with Air Products, a global leader in industrial gases, Sapio has access to cutting-edge technologies, positioning it as a key player in the transition to renewable hydrogen.

At Porto Marghera, where the company has operated since 1985, Sapio is working on a renewable hydrogen production

project supported by the National Recovery and Resilience Plan (PNRR). The initiative includes building a thermal plant in collaboration with a Veritas group subsidiary and installing a photovoltaic plant to power production. The plant will have a capacity of 750 tons per year of renewable hydrogen, part of a memorandum signed in 2021 with Hydrogen Park and the Port Authority to create a regional renewable hydrogen hub.

Capoccia also emphasized the strategic importance of existing infrastructure, such as the 104 kilometers of hydrogen pipelines in the port area, and the need to further improve distribution efficiency through advanced logistics solutions like cylinder trailer transport.

However, she highlighted several challenges, including the lack of demand incentives and incentives for purchasing hydrogen-powered trucks, which could hinder sector development despite funding for nine refueling stations. Additionally, the high cost of renewable hydrogen remains a significant challenge, especially in a context where energy prices are higher than in other European countries.

Looking ahead, Sapio is exploring the possibility of developing a liquid hydrogen plant at Porto Marghera to support maritime sector decarbonization and improve refueling logistics. This project, contributing to the 2030 climate goals, would also have a positive regional impact by creating new jobs and skills.



Thierry Lepercq, President of HyDeal España, initially conceived the project to create an integrated European supply chain, leveraging Spain's highly competitive solar resources to produce hydrogen for energy-intensive industries like steelmaking and fertilizer production.

The project involved collaboration with stakeholders such as ArcelorMittal, which aimed to build a direct iron reduction plant in Asturias, and Fertiberia in fertilizer production. Hydrogen production would occur in Castilla y León, where renewable resources would lower production costs. A 300-kilometer pipeline was planned to connect production

and consumption sites, with extensive work with financial institutions, technology partners, and companies to detail operations.

Despite efforts, the project stalled due to cost divergences. ArcelorMittal required hydrogen costs of no more than €2.5 per kilogram, independent of operational subsidies,

reflecting a pragmatic view that subsidies might not be guaranteed long-term, while decarbonization investments require 20-year horizons. Suppliers could not meet this condition, leading to project suspension.

Lepercq proposed an alternative “string of pearls” approach, envisioning a network of infrastructure connecting low-cost production sites in North Africa (Mauritania, Morocco, Tunisia) with major European industrial hubs. In this vision, Venice could play a central role, alongside strategic hubs like Tarragona and Marseille, in integrating production, distribution, and consumption of green hydrogen.

He emphasized the need for an integrated infrastructure, citing Marseille as an example where access to clean, affordable hydrogen is essential for local industry survival. Venice, with its strategic position and trade history, could become a leader in innovation and energy transition.

Lepercq concluded with a call to action for Venice to leverage its strategic position and contribute significantly to building a European green hydrogen system that combines environmental sustainability and industrial competitiveness.

The first day of the forum concluded on a high note, with widespread satisfaction regarding the productive discussions that took place. In his closing remarks, Jonas Moberg highlighted that the day’s efforts established a solid groundwork for a clearer and more profound understanding of the evolving dynamics within the hydrogen sector and its potential applications.

Day 2: Saturday, 19 October



Towards Green Shipping Fuels : The International Maritime Organization (IMO)

The day opened with a video message from **Arsenio Dominguez, Secretary-General of the International Maritime Organization (IMO)**. Dominguez highlighted the IMO’s crucial role as the global regulatory body for international maritime shipping in leading the decarbonization of the sector. The IMO 2023 strategy for

reducing greenhouse gas (GHG) emissions from ships has set a clear goal: achieving climate neutrality in international shipping by 2050, with a significant increase in the use of zero or near-zero emission alternative fuels by 2030.

The Secretary-General emphasized that regulation drives innovation, encouraging new ship designs, the adoption of more efficient technologies, cleaner propulsion systems, and operational measures such as just-in-time arrivals and maintaining hulls in optimal condition. However, he noted that true maritime decarbonization requires collective collaboration, where the energy sector plays a pivotal role in ensuring access to zero-emission fuels.

Dominguez also highlighted the opportunities for developing countries to become suppliers of zero-emission fuels for global shipping. While refraining from predicting future fuel markets, he acknowledged that green hydrogen would play a significant role. Finally, he invited participants at the Venice Hydrogen Forum to explore all aspects of producing and supplying these fuels, including safety considerations.



Next, **Sarah Edmonson, Special Representative to the Chairman of Fortescue**, outlined the path that the IMO is charting to reduce GHG emissions in the maritime sector. After years of struggling to align with the Paris Agreement goals, a turning point was reached last July with the approval of a clear decarbonization strategy. Since then, the 175 IMO member states have worked intensively to define mid-term measures aimed at regulating the sector and promoting the adoption of low-emission fuels.

Edmonson explained that these measures will consist of two main components. The first is a technical regulation setting standards for fuel emission intensity. The second, more innovative component is the introduction of a global carbon tax, potentially reaching up to \$150 per ton of CO₂ emitted. This approach represents a groundbreaking development for any industrial sector and could have a significant impact on the green hydrogen-based fuel market.

Support for these measures, Edmonson noted, came not only from the most influential countries but also from island nations and developing countries, which have called for carbon tax revenues to support the most vulnerable communities and fund energy transition projects, such as those involving green hydrogen. This focus on a just transition represents one of the most advanced discussions ever undertaken within the IMO.

Looking ahead, Edmonson indicated April 2024 as a crucial decision-making period for the entire sector. If all goes according to plan, the measures could be implemented by 2027. These interventions offer a unique opportunity for the green fuel sector, potentially yielding visible benefits in a relatively short timeframe, with 2030 as the first milestone. By then, the minimum goal is for 5% of maritime fuels to be green, translating to the production of around 35 million tons of green ammonia.

Despite progress, Edmonson highlighted several challenges the sector still faces, including the insufficient production of dual-fuel ships and the need for clear policies to ensure secure and sustainable investments. However, the presence of a global regulator like the IMO provides an unprecedented opportunity for the green hydrogen sector. The involvement of all stakeholders in the maritime ecosystem—from ports to governments—will be essential to building a more sustainable future.

A central moment of the discussion was the reference to the “Call to Action”, a document promoted by UN High-Level Champions to rally industry-wide support. This call, which will be incorporated into the Hydrogen Declaration at COP28, aims to ensure that IMO government representatives make bold and concrete decisions in April, solidifying hydrogen as a pillar of the global energy transition. Edmonson concluded with a call for unity and commitment, underscoring that these decisions represent not only a challenge but also a historic opportunity for the entire sector.

Country roundtable discussion: Mauritania



Dr. Dean Bialek, Chief Officer for External Affairs & Government Relations at CWP Global, outlined the status and prospects of various green hydrogen projects, focusing particularly on the Amman Project in Mauritania, one of the most advanced and promising initiatives. Currently, CWP Global is engaged in 8-10 actively developing projects worldwide, with a total expected capacity of around 200 gigawatts of renewable energy. These efforts aim to contribute significantly to the decarbonization of hard-to-abate sectors, such as steel and transportation.

The Amman Project stands out for its unique features. Mauritania possesses some of the world's best renewable resources, with a combination of wind and solar energy enabling electrolyzer operation at over 70% capacity. Bialek emphasized that this aspect is crucial for lowering the cost of green hydrogen production. Additionally, the project benefits from its proximity to high-quality iron ore reserves. Currently, the country produces about 13-14 million tons of iron ore annually, but the government aims to increase this significantly to 40 million tons per year over the next 10-15 years.

The combination of renewable resources, green hydrogen, and iron ore makes Mauritania an ideal candidate for producing green iron. CWP Global is applying a model similar to one used in Australia's Renewable Energy Hub, where high-quality wind and solar resources produce green hydrogen for the direct reduction of iron ore, yielding hot briquetted iron (HBI) for export.

The Mauritania project aims to meet the growing demand in Europe, where the EU has expressed strong interest in partnering with the country to secure supplies of green hydrogen and green iron. Additionally, the project envisions producing green ammonia for maritime shipping and, in the future, liquid hydrogen.

In terms of development, the project follows a three-phase process agreed upon with the Mauritanian government. The first phase involved signing a Memorandum of Understanding (MoU) to confirm the area of interest. The second phase established a framework agreement outlining the development timeline. Currently, negotiations are

underway for a final agreement detailing the economic and contractual terms, including managing undeveloped lands.

The project is in the pre-FEED (Front-End Engineering Design) stage, aiming to enter FEED in 2026 and reach a Final Investment Decision (FID) shortly thereafter. The ambition is to begin production by 2030, with a long-term goal of 30 gigawatts of total capacity. The project will be developed in stages, starting with an initial 5-gigawatt module for producing both green ammonia and Direct Reduced Iron (DRI). This modular approach offers flexibility in response to emerging markets, though a specific carrier will need to be chosen during FEED to ensure engineering efficiency.



Lehbib Khroumbaly, Advisor for Upstream Hydrocarbons at the Ministry of Petroleum, Energy, and Mines, Mauritania, discussed the strategies for developing green hydrogen and green iron in Mauritania, emphasizing the government's ambition to promote innovative and sustainable projects. The country has introduced a Green Hydrogen Code, underscoring its commitment to this energy frontier. The government has approved a roadmap and specific legislation developed in collaboration with the private sector to facilitate key projects.

Incentives are designed to attract investors, particularly for the first wave of projects set to begin construction by 2033. These projects will benefit from zero VAT, low custom duties, and a competitive corporate tax rate ranging from 15% to 30%, depending on project profitability. Additionally, there is a 5-7 year period to reach FID for the initial phase, with an extension of up to 10 years for subsequent phases.

Khroumbaly highlighted the need to modernize infrastructure such as roads, ports, and high-voltage lines to support green hydrogen projects. Studies conducted with World Bank support identified the need to improve roads between Nouadhibou and Nouakchott, particularly for transporting heavy equipment. Existing ports also require upgrades to meet the logistical needs of these projects.

A critical aspect involves sharing infrastructure costs, such as hydrogen and ammonia pipelines, between the government and the private sector. Khroumbaly confirmed ongoing discussions with the EU to expedite these infrastructure improvements, ensuring readiness before the FID of initial projects.

El Hady ould Ely, Director of Studies and Development at SNIM (Société Nationale Industrielle et Minière), emphasized the company's goals of decarbonization, growth, and integration. SNIM, 78% state-owned, is one of Mauritania's oldest companies, with over 60 years of operation focused on iron ore extraction and export, producing 14 million tons annually, mainly in the northern regions.

He outlined SNIM's plans to integrate sustainable solutions and reduce emissions across the production chain. Key objectives include adopting renewable energy for operations and potentially transitioning to green iron production using green hydrogen. This aligns with government initiatives and international partnerships aimed at transforming Mauritania into a hub for green hydrogen and decarbonized iron.

SNIM is collaborating with local and global partners to explore innovative technologies that enhance energy efficiency and resource optimization. These changes are essential not only for achieving environmental goals but also for maintaining competitiveness in a global market increasingly focused on sustainability.

HyGreen's European Plans



Benny Wang, CEO and founder of HyGreen Energy, together with Daniel Fernandez de Salamanca, CEO for the EMEA region, presented their company's strategy and activities during a speech. HyGreen Energy, a brand jointly developed by China and Spain, focuses on the production of electrolyzers with technologies such as alkaline, PEM, and EEM. Currently, their production is primarily based in China, but the company is expanding its capacity with a new factory planned in Malaga, Spain, and additional projects in countries such as Chile and the United States.

The planned investment for the Malaga factory amounts to €2.2 billion and represents a crucial step in localizing production, adapting to European standards, and maintaining cost competitiveness. The factory will be operational by 2027 with an initial capacity of one gigawatt per year. Additionally, HyGreen is engaged in developing greenfield projects, such as a collaboration in the Huelva and Algeciras area of Spain, which could reach two gigawatts of solar energy capacity for self-consumption and one gigawatt of electrolysis capacity.

Daniel Fernandez de Salamanca emphasized the importance of integrating the Chinese supply chain with local partners in Europe, such as Cepsa and Abengoa, and developing new technologies, with initial investments of €5 million in research and development. The goal is to maintain cost competitiveness despite regulatory and protectionist challenges, such as new European rules limiting the use of Chinese electrolyzers in subsidized projects.



Fernandez de Salamanca acknowledged that the global electrolyzer market is still far from fully utilizing its production capacity, with many producers operating well below their nominal capacities. Despite this, HyGreen sees significant opportunities in the green hydrogen sector, striving to become a local player in Europe and contribute to the global energy transition.

Benny Wang then addressed the growing competition in China, where over 100 electrolyzer manufacturers have entered the market in recent years. HyGreen, with 17 years of experience in the sector, competes in a dynamic market while focusing on international expansion and collaborating with strategic partners to support ambitious projects and contribute to reducing global emissions.

The company remains committed to bridging the gap between prices and necessary infrastructure, a central issue for the success of the green hydrogen sector. Despite the challenges, HyGreen looks to the future with confidence, pursuing a strategy that integrates innovation, local partnerships, and a global vision to support the transition to a low-carbon economy.

Trade for the energy transition and the Impact on Collaboration in the Global Hydrogen Economy

Prof. Yu Gan, Co-chairman of the Board of Trustees of DaxingH2Zone, presented an insightful overview of the role and challenges of the hydrogen industry in China, particularly through the experience of the Daxing Hydrogen Demonstration Zone located in northern China. This innovative industrial park, which currently hosts 228 companies operating across the entire hydrogen supply chain, stands as an example of an industrial ecosystem aimed at fostering collaboration among suppliers, producers, and distributors.

Yu emphasized that despite significant progress, there are systemic challenges hindering the sector. Among these challenges is the lack of a centralized governmental structure to coordinate hydrogen development, which leads to fragmented management and difficulties in establishing uniform policies. Additionally, he pointed out that market demand is still insufficient to support large-scale production, and the lack of clarity regarding future environmental and sustainability policies creates uncertainty for entrepreneurs.

An important point highlighted was the role of the Chinese government in supporting the industry, both through incentives and policies aimed at encouraging companies to expand internationally. However, Yu acknowledged that product quality remains a crucial challenge for competing in international markets.



Advancing Low-Carbon Hydrogen: Economic Pathways, Environmental Impacts, and Harmonised Standards for the Mediterranean .

Partner: ENI



Francesco Giunti, Head of Industrial Transformation Integrated Initiative and Hydrogen at Eni, provided insights into the role of hydrogen in the energy transition, emphasizing the need for a balanced approach that considers costs, geopolitical security, and European industrial competitiveness. According to Giunti, it is essential not to confuse the means with the goals: hydrogen is a tool to achieve broader objectives such as decarbonization, maintaining economic competitiveness, and energy security, rather than an end in itself.

In the current landscape, cost competitiveness is a crucial factor. Giunti clearly illustrated the economic situation of hydrogen, indicating that the cost of domestic green hydrogen production is around 12-13 euros per kilogram, while

imports seem to offer a more cost-effective solution, at about half that cost. At the same time, blue hydrogen emerges as the most economical alternative, with estimated costs around 3 euros per kilogram, dropping further to 1 euro for non-decarbonized production. This scenario highlights the need for strategic planning to maximize the economic efficiency of the energy transition, avoiding a scenario where decarbonization leads to deindustrialization.

For Giunti, the strategy must integrate different sources of hydrogen. Domestically produced green hydrogen is essential for ensuring geopolitical security and stimulating the local economy, but green hydrogen imports can lower overall costs, offering a valid alternative. At the same time, blue hydrogen represents a financially sustainable short-term solution. Adopting a mix of these solutions is crucial to balance decarbonization, economic sustainability, and technological development.

The issue of imports versus domestic production is another central topic. ENI adopts a technology-neutral approach and emphasizes the importance of minimizing costs and establishing clear market rules. Giunti pointed out that, while sharing some EU goals, more realism is needed in setting targets, avoiding ideological or unrealistic goals like the 20 million tons of hydrogen projected for 2030. A clear and realistic regulatory framework would allow the market and investors to choose the best solutions, considering geopolitical and market conditions.

Giunti expressed appreciation for the EU's delegated act on low-carbon hydrogen but also highlighted some gaps that could hinder investments. Among these are regulatory uncertainty regarding hydrogen produced outside the EU, which may not be resolved until 2027, and the lack of a provision to ensure stability for already initiated investments.



According to Giunti, these uncertainties pose a significant obstacle, especially given the urgency of accelerating regulation to make blue and low-carbon hydrogen more accessible.

Sam Bartlett, Director for the GH2 Standard at the Green Hydrogen Organisation, provided a critical analysis of the regulatory issues related to hydrogen in the European Union, focusing on delegated acts and the need for greater transparency and rigor, particularly concerning blue hydrogen. He noted that while two delegated acts have been introduced to define green or renewable hydrogen in Europe, the

certification process is currently stalled. No voluntary schemes are operational to officially certify green hydrogen projects, despite these acts having been in place for 18 months. Several companies have applied to initiate such schemes, but it is still not possible to certify a project under these regulations.

Bartlett then introduced an additional delegated act, currently under consultation, related to the gas package, which aims to define low-carbon hydrogen. This includes both blue hydrogen, produced through methane reforming with carbon capture and storage (CCS), and electrolytic hydrogen that does not fully meet green hydrogen criteria, such as if produced with nuclear energy or renewable electricity without hourly matching.

He highlighted a fundamental issue with the concept of blue hydrogen: while there are credible projects, such as those in Norway, that ensure low methane leakage and high efficiency in carbon capture and storage, most global blue hydrogen projects do not meet these standards. The lack of rigorous and specific measurement of methane leaks at sites represents a significant obstacle. Without these controls, the risk of "greenwashing" is high, with projects claiming environmental credibility without real commitment to reducing emissions.

Bartlett suggested that if countries like Norway can produce blue hydrogen to high sustainability standards, these solutions should be accepted for sectors such as maritime. However, it is crucial to reject projects that do not guarantee low methane emissions or effective carbon capture and storage. He concluded that it is essential for the Delegated Act and global standards to include specific and rigorous measurements to ensure only high-quality projects are approved and recognized.



Matthias Deutsch, Programme Lead Hydrogen at Agora Energiewende, presented insights from a joint publication by Agora and Deloitte on low-carbon hydrogen, highlighting key issues such as methane emissions, carbon capture rates, and emission intensity thresholds.

Deutsch began by pointing out that the EU's gas package, which forms the legal basis for the delegated act on low-carbon fuels, requires a reduction in emissions of at least 70% compared to a fossil benchmark. However, he stressed that if the goal is to achieve climate neutrality by mid-century, as envisioned by the EU, further emission

reductions are necessary. According to Deutsch, the current limit of 3.4 kilograms of CO₂ equivalent per kilogram of hydrogen is insufficient for maintaining a realistic path to climate neutrality. He proposed introducing regular updates and review mechanisms to gradually lower emission thresholds, citing the International Energy Agency (IEA), which envisions a reduction to one kilogram of CO₂ equivalent per kilogram of hydrogen by 2050.

Another aspect addressed was the need to ensure credibility for blue hydrogen, which heavily depends on upstream emissions, including methane and CO₂, and the carbon capture rate. Deutsch presented a diagram illustrating how upstream emissions and capture rates affect a project's ability to meet emission thresholds. He noted that the current EU benchmark for projects, based on default emissions, is lower than that of the United States and Algeria but higher than levels that Norway can achieve through its emissions control capabilities. This demonstrates the need for country- or site-specific assessments to ensure that default values reflect reality and do not underestimate actual emissions.

In conclusion, Deutsch reiterated the importance of simultaneously addressing upstream methane and CO₂ emissions and adopting a more ambitious approach to push the industry towards stricter standards. He emphasized that these improvements are crucial for enabling Europe to achieve its long-term climate goals, highlighting the need for concrete actions and rigorous monitoring to surpass the current limit of 3.4 kilograms of CO₂ equivalent per kilogram of hydrogen.



Manuel Villavicencio, Director - Energy Market & Modeling at Deloitte, illustrated a crucial point regarding low-carbon hydrogen, emphasizing the need for a dynamic regulatory framework that adapts to technological advances and the increasing use of renewable energy. Reflecting on the current limitations of the delegated act in Europe, he highlighted that current emission thresholds are too static, inadequately incentivizing producers to adopt advanced technologies and failing to reflect the rapid decline in emissions in energy sectors with a growing share of renewables.

Villavicencio underscored that in the early years of developing the hydrogen industry, it is essential to allow the production of larger volumes, even with initially less stringent limits, to stimulate the industry and attract investments. He suggested introducing "grandfathering" rules to protect early investors and give them a competitive advantage. This approach would allow already initiated projects to develop without immediately facing overly rigid regulatory requirements.

However, he also reiterated that emission thresholds should follow a downward trajectory to encourage the adoption of cleaner technologies and push producers to continuously improve their practices. He cited Norway as an example, which, with its rigorous emission controls and use of advanced technologies, serves as a model for blue hydrogen producers.

Regarding electrolytic hydrogen, Villavicencio highlighted a similar issue related to current regulations. Currently, only France and Sweden can produce low-emission hydrogen using electricity from the grid, thanks to their reliance on nuclear and hydroelectric power, respectively. He noted that as EU member states achieve the goals of their National Energy and Climate Plans (NECPs) and implement climate neutrality strategies, the electricity mix will become progressively cleaner. According to estimates presented in their study, by 2035, 90% of European countries will be able to produce low-emission electrolytic hydrogen; by 2040, all countries will surpass this threshold.

Villavicencio concluded by stating that if Europe seriously intends to pursue climate neutrality goals, it must implement a regulatory mechanism that follows this downward emission trajectory while allowing initial flexibility to support sector development. He clarified that the current threshold can be an acceptable starting point, but it is crucial for it to evolve over time to provide clear market signals and promote an increasingly clean hydrogen industry.



Knut Vralstad, Head of Renewable Energy Analysis at Veyt, offered a detailed and realistic overview of the challenges and opportunities for green and blue ammonia, based on an in-depth analysis of over 60 projects worldwide, including a

significant portion in the Mediterranean region. His analysis highlighted several critical aspects.

Regarding Mediterranean projects, Vralstad explained that they are a heterogeneous mix, with highly variable production costs and emission levels. He noted that off-grid projects, which do not depend on the electrical grid, tend to be more competitive, with costs dropping to around \$800 per ton of ammonia produced. However, he observed that grid-connected projects can also be competitive, though they are influenced by the emission factor of the grid itself. For instance, emissions and costs are heavily dependent on geographic context, such as locations in Saudi Arabia, Egypt, Spain, or Morocco.

Another key point is the role of emissions associated with transportation. Vralstad provided a concrete example: transporting ammonia from the NEOM project in Saudi Arabia to Rotterdam can add up to half a kilogram of CO₂ per kilogram of hydrogen produced. This underscores the complexity and importance of considering the entire lifecycle of emissions to determine a project's overall sustainability.

Vralstad also shared his insights on blue hydrogen. Drawing from his experience with Norwegian projects, he explained that while blue hydrogen has the potential to meet European emission standards, it faces stiff competition from the alternative value of natural gas, which can be easily sold through existing pipelines. He emphasized that blue hydrogen in Norway would have required strong political support to be competitive, but with the abandonment of some infrastructure projects, this possibility now seems more remote.

Finally, he reflected on the need for clear standards and regulations to provide certainty to the industry. He recalled his time working with Aker Horizons, when the sector relied heavily on ambitious but unrealistic targets, such as the EU's goal of 20 million tons of hydrogen. According to Vralstad, setting unachievable targets can do more harm than good by creating unsustainable expectations. He concluded by highlighting that the industry is moving towards greater clarity and expressed hope that standards will soon be established to guide the sector's development sustainably.



Anton Mifsud-Bonnici, Europe Advisor to the CEO of Adani Group, brought a clear and decisive perspective to the hydrogen debate, focusing on the importance of rigorous

standards and a long-term vision for the Mediterranean and beyond. He underscored how the real cost of maintaining "blue" solutions is unsustainable, not only economically but also in terms of planetary and human impacts. He likened the situation to a rudderless ship destined to crash on the rocks unless strong and consistent decisions are made towards a green future.

Mifsud-Bonnici highlighted that the costs associated with climate change, such as rising temperatures and sea levels, are far higher than the immediate commitment to developing green hydrogen. He stressed that the social and economic costs for Mediterranean people would be unsustainable if the opportunity to invest in green solutions now is missed, avoiding what he called a "false solution" represented by blue hydrogen.

In response to a question about the cost of green ammonia in the Mediterranean, estimated at around €800 per ton, Mifsud-Bonnici discussed India's role as a leader in green energy production. He praised India's governance system, similar to Europe's, based on solid rules and transparency. This approach, combined with low costs for electrolyzers and low-cost renewable sources, positions India as a potential leader in producing green ammonia at competitive prices, even below the €800 per ton mentioned by Knut Vralstad.

Mifsud-Bonnici reiterated that India's commitment to green energy is not just a market choice but a necessity to improve the quality of life for 1.4 billion people. He emphasized that this transition is non-negotiable, despite pressure from oil-producing countries. He concluded with a strong message: the time for delayed decisions is over, and there is no longer room for compromise when tackling climate change.



The Offtaker Perspective: Accelerating the scale up of near-zero and low-emission steel in the Mediterranean

Matthias Deutsch, Programme Lead Hydrogen at Agora Energiewende, opened the panel on decarbonizing the steel industry with a presentation based on data from the Agora Energiewende tracker, which monitors progress toward low-emission steel production. He highlighted that Direct

Reduced Iron (DRI) technology is dominating new project announcements compared to other technologies, such as those based on carbon capture and storage (CCS). The most common strategy involves initially using natural gas, with a subsequent transition to green hydrogen as it becomes available.

Deutsch emphasized the importance of Europe taking a leading role in investing in DRI technologies, both to demonstrate to the world that this transition is feasible and to prepare for future competition with regions rich in renewable resources, such as Mauritania and other areas of the Mediterranean. He also stressed how these innovations could enhance competitiveness and make the European steel sector more resilient.

Another critical point discussed was the potential economic and employment benefits of a fair partnership between the global north and the global south. Deutsch demonstrated how moving upstream production processes, such as DRI or Hot Briquetted Iron (HBI), to exporting countries could create jobs and add value in those regions. At the same time, importing these semi-finished materials could bolster the competitiveness of the European steel industry, especially in Germany, making its operations more efficient and future-proof.

Finally, Deutsch described the win-win model emerging from this dynamic: exporting countries benefit from increased employment in energy-intensive production, while importing countries strengthen their downstream industries, mitigating uncertainties related to renewable energy grid costs and power purchase agreements. He concluded by emphasizing that Europe must send a strong signal by investing in DRI technology to chart a clear path toward a sustainable steel industry.



Sara Edmonson, Global Advocacy at Fortescue, discussed the challenges and opportunities in promoting green steel, emphasizing that the core issue lies in Scope 3 emissions, which account for 97% of their total emissions. Fortescue's climate transition plan, outlined in their recently published strategy, focuses on decarbonizing existing operations and addressing these downstream emissions, particularly through close collaboration with customers and improved policies.

She highlighted the significant progress in recent years in defining necessary technologies and addressing geopolitical complexities. Fortescue, headquartered in Australia with a primary market in China, has

observed a growing Chinese interest in importing green iron rather than producing it locally, a trend mirrored in Europe. This approach allows carbon-intensive processes to be shifted to regions with abundant renewable resources, optimizing global efficiency.

Edmonson also discussed the economic challenges of the steel sector, characterized by tight margins and aging plants often passed down through generations, forming a crucial part of local communities. Transforming these plants requires massive investments that many companies cannot afford without government support. She noted that the incremental cost to end consumers is minimal, but the real hurdle is the initial financing for infrastructure transformations.

Thus, the role of the government is crucial, not only for providing direct funding, loans, or guarantees but also for facilitating bureaucratic processes such as permits. According to Edmonson, once these barriers are overcome, the steel industry could accelerate rapidly in the coming years, thanks to greater technological clarity and alignment among stakeholders.



Mark Crandall, Founder & Chairman of CWP Global, addressed the challenges and key steps for advancing green steel projects in Mauritania, highlighting both the technical and economic difficulties in moving from planning to concrete implementation.

Crandall explained that Mauritania's iron ore, while partly of DR-grade quality (suitable for direct reduction), requires significant beneficiation and agglomeration to create a consistent supply of high-quality pellets essential for direct reduction. This preliminary work is critical to building a solid foundation for green steel production in the region.

One major challenge is the cost gap between using natural gas and hydrogen for the direct reduction process. Crandall emphasized the economic feasibility of decarbonizing steel production using natural gas as a reducing agent. This approach significantly cuts CO₂ emissions at a relatively low marginal cost, ranging from \$30 to \$60 per ton of steel, depending on natural gas prices. Given current levels of the European ETS carbon tax system, this methodology aligns with market incentives, enabling partial decarbonization, reducing emissions from approximately 2 tons to 600 kilograms per ton of steel.

However, switching to hydrogen as a reducing agent presents a significant economic barrier. Current hydrogen production costs of around \$6 per kilogram lead to an increase in reduction costs to about \$300 per ton of steel, which is ten times higher than using natural gas. This makes full decarbonization financially unsustainable under current market conditions.



Thomas Koch, Managing Director of RMI Magnesita, remotely addressed the opportunities and challenges related to the demand and commercialization of green steel, highlighting ongoing initiatives and the mechanisms needed to accelerate this transition.

Initially, Koch pointed out that green steel projects in Scandinavia, such as those in northern Sweden, are among the most promising in Europe. With 80% of Europe's iron ore production concentrated in this area, the leading mining company's stated goal is to convert all production to Direct Reduced Iron (DRI) processes over the next 25 years. This commitment shows a clear direction, even though many of these projects have yet to reach a Final Investment Decision (FID).

On the demand side, Koch highlighted concrete examples of willingness to pay a premium for green steel. For instance, the STEGRA project (formerly H2 Green Steel) publicly disclosed that it had negotiated a 15% commercial premium for seven years on its contracts. This is in addition to the benefits from the EU's ETS system. However, Koch emphasized that the level of commercial innovation needed to finance these projects is unprecedented for the steel industry. The capital costs required for some projects are equal to or even exceed the market value of the companies themselves, demonstrating the scale of investment needed.

In the United States, RMI has observed significant interest in green steel demand, with an estimated annual demand of over one million tons. However, Koch noted two main operational challenges. The first concerns the definitions of green steel, which are often set at the level of the final product, necessitating alignment between steel product requirements and iron production requirements. The second challenge is related to mechanisms for transferring decarbonization attributes along the supply chain. Without a reliable system, such as a book-and-claim method or a robust mass balance approach, it is difficult for end customers to credibly claim emissions reductions through the purchase of green steel.

In summary, Thomas Koch emphasized that while there are clear market signals of interest and promising projects under development, the success of the transition to green steel requires both transparent and credible mechanisms for certifying decarbonization and unprecedented investments to ensure these projects become a reality.



Laura Garcia Cancino from the Columbia Center for Sustainable Investment presented an innovative proposal to address the challenges of creating a market for green steel. Her intervention highlighted how traditional market mechanisms, such as Renewable Energy Certificates (RECs) and guarantees of origin, have played a significant role in other sectors but are not yet suited to meet the specific needs of the steel industry. The lack of clear and shared standards on what constitutes “green steel” is a critical issue hindering the large-scale adoption of sustainable practices.

According to Garcia Cancino, traditional market mechanisms have several limitations. For example, they often do not guarantee additionality—they certify existing projects without stimulating new investments. Moreover, transparency and traceability along the supply chain are insufficient, leading to issues like double-counting of emission reductions. Additionally, the geographic and temporal misalignment of renewable attributes and the low economic value of certificates have limited their capacity to incentivize significant investments.

Garcia Cancino proposed a market mechanism specifically for the steel industry based on green steel certificates. These certificates should guarantee an enhanced book-and-claim system, where production processes and emissions are rigorously verified by independent third parties. This would be complemented by a requirement to clearly define system boundaries, including all stages of production, from raw materials to the final product.

A central element of the proposal is the introduction of Virtual Offtake Agreements (VOAs), linking green steel certificates to long-term financing mechanisms. These contracts, lasting between 5 to 10 years, would provide producers with a tool to obtain non-dilutive capital, facilitating the financing of new green steel projects. At the same time, VOAs would allow buyers to transparently and credibly claim emissions reductions.

Garcia Cancino concluded by explaining that her model would not only help overcome current market shortcomings but also serve as a powerful tool to stimulate new

investments and accelerate the transition to a more sustainable steel industry. The combination of transparency, additionality, and innovative financing tools could create a robust and credible market for green steel, meeting the growing demand for low-emission products and significantly contributing to global decarbonization goals.

Connecting Europe: Ensuring seamless hydrogen transmission among 37 pipeline operators and beyond



Stefan Kaufmann, Member of the German Bundestag and former Green Hydrogen Commissioner, opened the discussion on hydrogen development in Germany, highlighting a mixed landscape of opportunities and challenges. Despite hydrogen's central role in Germany's energy future, several obstacles are slowing progress. Among the recent setbacks, he cited the cancellation of the pipeline project between Norway and Germany and the failure to complete a connection through Denmark. Additionally, uncertainties regarding end-user commitments, such as plans for direct reduction of steel, could negatively impact demand.

However, Kaufmann emphasized that Germany recognizes the need to import 70% to 80% of its hydrogen requirements. To achieve this goal, various import corridors are being discussed, from the MENA countries (Middle East and North Africa) to Southeastern Europe and Northern Europe. An essential part of the strategy involves transporting hydrogen by ship, likely in the form of ammonia. This approach presents another obstacle: the lack of dedicated infrastructure, such as crackers to convert ammonia back into hydrogen and pipelines to connect ports to the internal network.

On a positive note, there are plans to build a central hydrogen network in Germany. This network is expected to span approximately 10,000 kilometers by 2032, involving 12 companies that will soon receive notifications to start work. This network aims to connect major industrial clusters, such as steel plants and gas power plants that will eventually be powered by hydrogen.

Despite these encouraging developments, Kaufmann pointed out that the slow pace in defining end-user commitments is creating uncertainties. This has led to fewer Final Investment Decisions (FID) in the global ammonia market than expected a year ago. He concluded by stressing the urgency of addressing these delays to ensure Germany positions itself as a leader in developing a hydrogen-based economy.



Abel Enriquez, Head of EU Affairs and Organizations at Enagás, introduced ENNOH, the newly established European entity that will play a crucial role in developing the hydrogen transmission market. ENNOH, an acronym for European Network of Network Operators for Hydrogen, is an organization that will bring together all hydrogen transmission network operators in the European Union member states, creating a strategic structure to coordinate and plan hydrogen infrastructure development across Europe.

Enriquez highlighted that the key regulation behind ENNOH is the "Hydrogen and Decarbonized Gas Package", published this year by the EU. This legislative tool assigns ENNOH specific tasks, including European network transmission planning for hydrogen, defining network codes and technical standards, and producing assessments on supply and demand markets, providing technical recommendations to market participants.

Currently, the work on ENNOH is in a preliminary phase. On August 30, 2024, the first statutes of this new entity were submitted to the European Commission and ACER (Agency for the Cooperation of Energy Regulators). The goal is for ENNOH to be fully operational by October 2025. In the meantime, a temporary structure called "pre-ENNOH" is working to prepare essential documents and deliverables that will be published in the months following its official formation.

Enriquez emphasized the importance of synchronizing supply, demand, and infrastructure. He explained that while infrastructure is crucial for connecting hydrogen producers and consumers, it must not be oversized relative to initial demand. However, he noted that infrastructure development can spur an expansion of production and demand, as historically seen with other strategic networks, such as railroads in the United States.

In closing, Abel Enriquez expressed confidence in the future hydrogen market, noting that despite recent negative news, such as the lack of progress on pipelines from Norway and Denmark, advances in other areas, especially in the Southern Mediterranean, are

accelerating. With the expansion of European hydrogen networks, he concluded, new market opportunities will arise, allowing hydrogen to become a central resource for the European Union's energy transition.

Raphael Hanoteaux, Senior Policy Advisor, Gas Politics at E3G, provided a critical analysis of ENNOH's role in the future of hydrogen infrastructure in Europe, highlighting four key points he considers essential for the success of this new network. During his speech, he emphasized the importance of careful planning to avoid mistakes resulting from incorrect estimates of hydrogen demand and production.

Firstly, Hanoteaux stressed the importance of transparency. ENNOH has opened the process, and it is crucial to maintain this transparency in the long term. This includes incorporating external advice, scientific knowledge, and involvement from organizations. Such an approach should guide infrastructure planning, ensuring it is efficient and sustainable.



Secondly, he highlighted the need to engage diverse perspectives. Hanoteaux pointed out that relying solely on one industrial sector risks providing benefits to only a select group, overlooking collective needs. It is essential that hydrogen producers, consumers, and other stakeholders are included in the decision-making process to ensure infrastructure meets both supply and demand requirements.

The third point focuses on the importance of an accurate assessment of needs. Hanoteaux noted that forecasts made a few years ago, predicting 20 million tonnes of renewable hydrogen by 2030, are now considered excessive and unrealistic. Therefore, regular checks are crucial to adjust infrastructure based on real market needs and avoid resource waste.

Finally, he stressed the need for an integrated approach to energy planning. Traditionally, networks have been built separately for gas, electricity, heat, and now hydrogen. Hanoteaux insisted on unifying these networks to improve cost efficiency and create a more cohesive and sustainable energy system. This approach would reduce costs for end-users and make hydrogen more competitive.

In conclusion, it is essential to strike the right balance between infrastructure development and actual needs, avoiding excesses or shortages. This measured approach is crucial for ensuring the long-term success of hydrogen infrastructure in Europe.

Matthias Koch, Project Manager, German Hydrogen Policy at Agora Energiewende, explained how Germany's energy transition crucially relies on hydrogen but also highlighted the challenges that still need to be overcome to achieve climate goals by 2045. According to Matthias, Germany cannot rely solely on domestic hydrogen production; large quantities will need to be imported via transnational infrastructure connecting peripheral regions of Europe to major demand centers in the northwest of the continent.

The collaboration between Agora Energiewende and Guidehouse has demonstrated that by the mid-2030s, it could be possible to transport significant volumes of hydrogen through these corridors. However, two main obstacles remain: the first is the need to mitigate infrastructure risks, particularly in less-developed corridors like the one between the Iberian Peninsula and Central Europe. The second challenge concerns demand, which requires concrete incentives to encourage industrial sectors to adopt hydrogen.



Despite progress in building domestic hydrogen infrastructure, many uncertainties remain, especially regarding the political support necessary to create stable demand and the ability to maintain economic competitiveness.

Hydrogen infrastructure across the Mediterranean



Paddy Padmanathan, Co-founder and Vice Chairman of Zhero, offered a broad and insightful reflection on the future of green molecules and green electrons, focusing particularly on the Mediterranean context. Despite his commitment to hydrogen, he stressed the importance of not losing sight of electricity, given that the growing electrification of global economies will see electricity usage rise from the current 20% to 50-70% by 2050.

Padmanathan highlighted that it is now possible to produce renewable electricity at increasingly competitive costs, achieving notable efficiency levels for 20-22 hours a day in optimal regions. The production costs, currently around 4-5 cents per kilowatt-hour, are already low enough to make long-distance transport economically viable. Projects like MedLink, connecting North African and Mediterranean countries to Europe, exemplify this. Tunisia and Algeria will be connected to Italy, as will Morocco to the UK, making the numbers and technology behind these initiatives a practical reality.

However, attention then shifted to green hydrogen, which represents a greater challenge. Padmanathan argued that the key to making hydrogen competitive lies in producing it at sustainable costs. He expressed confidence that within the next 24 months, projects would emerge that would surprise the market with much lower prices than current expectations. The bigger issue is not just production, but also transport. While technology for transporting pure hydrogen is still in development, he noted that we can already leverage existing infrastructure, such as North African gas pipelines, to transport a blend of hydrogen and natural gas.

Another solution, according to Padmanathan, is the use of green ammonia. He criticized the current skepticism toward ammonia, stating that in the coming years, green ammonia will start to replace gray ammonia already in use, without the need for new applications. This represents an immediate and practical opportunity to reduce emissions.

Finally, he emphasized the importance of rethinking the geographical location of primary refining industries, moving them closer to sources of green energy. This doesn't mean reducing industrialization in countries like Germany, but rather focusing on higher-value-added sectors, such as the production of precision steel or advanced

components, while leaving primary activities to countries with greater access to low-cost renewable energy. Padmanathan concluded that this strategy can enhance the overall efficiency of the system and contribute to a more sustainable global energy transition.



Professor Mario Ragwitz, Director of Fraunhofer IEG, offered an in-depth reflection on the infrastructure needed to support the energy transition, underscoring the importance of integrated planning for electricity and hydrogen. He began by agreeing with Paddy Padmanathan on the need to balance electrons and molecules, highlighting the critical role of electricity in the transition.

In key decarbonization scenarios for Europe, the final energy consumption is expected to be between 7,000 and 9,000 terawatt-hours, with more than 50% represented by electricity and about 15-20% by hydrogen and its derivatives.

This scenario places significant emphasis on integrated infrastructure planning, not only between EU countries but also with the North Africa (MENA) region, and on integrating hydrogen and electricity networks.

Mario stressed the importance of utilizing existing infrastructure, particularly natural gas networks, for hydrogen transport. For example, for the European Hydrogen Backbone and the German core grid, about two-thirds of the network could be based on repurposed natural gas infrastructure, while one-third would need to be newly built. Converting existing infrastructure is a crucial step, especially for connections between North Africa and Europe.

The Italian corridor was highlighted as a key element. By converting natural gas infrastructure, a capacity of about 0.7 terawatt-hours per day could be achieved, equivalent to 90-150 terawatt-hours per year, depending on pipeline utilization rates and renewable energy production dynamics in North Africa. This capacity would cover a significant portion of Germany's anticipated hydrogen demand for 2030. Similarly, the connection between North Africa and Spain, though weaker, could supply 40-60 terawatt-hours per year with comparable infrastructure utilization.

There is, therefore, a need to significantly extend electrical transmission infrastructure, both within North African countries and between North Africa and Europe. Strengthening these interconnections will not only allow for net electricity exports in the long term but

will also provide immediate benefits in terms of flexibility and cost reduction for the overall energy system. This increased flexibility could lower total energy system costs by 5%, balancing differences between regions with more intense wind and solar resources and various production models.

CLOSING ROUNDTABLE DISCUSSION - Achieving Realistic Goals:

What Can We Accomplish by 2030?



Leila Pourarkin, Partner at Kaya Partners, provided incisive insights into the challenges and opportunities related to climate finance for large-scale projects in North Africa, with a focus on green hydrogen. She noted that while there are public and concessional funding sources available for such projects, the real challenge lies in achieving significant scale. To do so, she emphasized that multilateral development banks (MDBs) need to increase their investments in the region and adopt innovative approaches compared to traditional methods—a shift she likened to the slow movement of a supertanker.

Leila highlighted the importance of technical assistance during the early stages of project development as a crucial tool to accelerate the flow of investments, but currently, this is implemented only to a limited extent. She suggested that MDBs should intensify their support in this area to build robust project pipelines and reach final investment decisions (FID) more quickly.

Regarding the possibility of European and OECD countries financing projects in North Africa as part of their carbon budgets, Leila expressed skepticism. Although mechanisms for this are provided under Article 6 of the Paris Agreement, she explained that many methodological issues remain unresolved. Even if some progress might be made at this year's COP, she does not expect these instruments to become a prominent solution in the short term, especially for green hydrogen.

Finally, she gave direct advice to major project developers in developing countries: actively participate in dialogues with governments and MDBs to influence policy-level vision and strategy. According to Leila, we cannot wait for a perfect vision to be outlined before starting projects; action must be simultaneous, integrating vision and implementation to meet the goals of the Paris Agreement.

Arun Sharma, Advisor to the Chairman of Adani Group, offered a detailed overview of Adani's green hydrogen project in Mundra, emphasizing the importance of large-scale vertical integration to reduce costs and ensure competitiveness. The Adani Group, through Adani New Industries, manages the entire green hydrogen value chain, while other companies in the group, such as Adani Green, Adani Ports, and Adani Transmission, provide the necessary infrastructure support.



Adani Green is already one of the world's largest renewable energy developers, with 22 GW of capacity operational and under construction and plans to reach 50 GW by 2030. Furthermore, Adani New Industries is developing a completely new supply chain, including the production of solar modules, wind turbines, and future electrolyzers.

The Mundra project involves two main phases. The first phase consists of producing 180,000 tons of green hydrogen, using renewable energy generated 200 km away and transmitted to the port via a dedicated line. The hydrogen will then be converted into ammonia and exported globally. The second phase aims to expand to 20 GW of renewable capacity, with a 215 km pipeline transporting hydrogen to the port, where it will be converted into ammonia. This phase aims to produce over 1 million tons of green hydrogen annually, serving both export and domestic markets, such as fertilizers.

The Adani Group's capability to manage complex infrastructure is a key element of the project. Arun highlighted that Adani Transmission, the largest private transmission operator in India, already manages 20,000 km of circuits, and Adani Gas, in partnership with Total, is a leader in city gas distribution.



John-Patrick Sweny, Partner at Latham & Watkins LLP, discussed trends and innovations in off-take agreements, crucial for de-risking and enabling final investment decisions (FID) in green hydrogen and ammonia projects. He noted that the prevailing pricing structure in long-term agreements follows a "cost plus" model. This approach, similar to the one used for LNG in the United States, includes a fixed capacity fee covering financing costs and ensuring

equity returns, plus a variable cost linked to market conditions.

This setup provides financial certainty for projects, allowing them to service debt and deliver returns to investors. However, the equity return rate can be adjusted to manage risk-sharing between buyers and sellers. For instance, if there are uncertainties regarding plant degradation factors or efficiency, the contract can be modified to balance costs accordingly.

Compared to LNG contracts, there are significant differences due to the nature of green hydrogen and ammonia. A unique aspect is the sustainability certification of the product. If the delivered product does not meet declared "green" standards, the impact usually translates into additional costs rather than a buyer's right to reject the shipment. This approach allows for greater flexibility in risk management without compromising contract continuity.



Alex Hewitt, Co-Founder of CWP Global and GH2 Board Member, shared key insights to summarize the direction of the hydrogen and green ammonia sector and outline priorities for the coming months. A recurring theme was the need to de-risk projects to attract capital. While investments are available, capital does not tolerate uncertainty. This is where well-structured policies and solid off-take agreements play a crucial role in giving investors confidence. Hewitt emphasized that many of these developments need to happen soon, such as signing off-take agreements within the next 18 months for projects aiming to reach FID by 2027-2028. Building green

ammonia infrastructure, as noted by Sarah, is a complex process that takes years, making timelines very tight.

He also addressed policy details, describing the current phase as the "trough of disillusionment" (the lowest point in the hype cycle), but expressed optimism that the sector is emerging from this phase. However, he warned that if recovery is too slow or flat, critical years may be lost, hindering progress toward climate goals. This requires meticulous attention to certifications, ISO standards, and emission measurements.

A crucial discussion point was on "true blue" versus "false blue" hydrogen. Hewitt clarified that genuine blue hydrogen—produced with effective carbon capture and storage—can coexist with green hydrogen. However, false blue hydrogen, with significant methane

emissions or inefficient processes, poses a threat to decarbonization progress. To avoid this, rigorous ISO standards and penalties for non-compliance are essential.

Finally, Hewitt stressed that maritime transport represents a significant challenge and opportunity. With a target of moving 30-35 million tons of green ammonia by 2032, collective commitment is needed to achieve these targets. He concluded by stating that the next six months will be crucial in setting the stage for the sector's success over the next five years. The quality of decisions and policies made during this period will determine the future of the energy transition and the achievement of global climate goals.



Dick Benschop, Chair of the Board of Mission Possible Partnership, offered a realistic yet optimistic summary of the current landscape, highlighting the progress made and the challenges ahead. He acknowledged that while there are encouraging signs on the supply side, particularly in North Africa, and advances in infrastructure towards and within Europe, timing remains a central concern. Many projects are targeting 2030 or beyond, which poses a real risk of missing the set goals for that date. However, this does not mean that these projects won't happen; they may simply materialize later than anticipated.

To accelerate the process, Benschop stressed the importance of focusing on a few promising value chains that can act as drivers. Among these, he identified sustainable aviation fuels, which are already in development, ammonia for shipping and fertilizers, and potentially steel. He reiterated that to drive these value chains, it is crucial to work on both demand and policies.

On the demand side, he emphasized the need to go beyond voluntary measures. While recognizing the importance of commercial innovation, he suggested introducing targeted mandates and new regulatory tools, such as a mandate for green fertilizers in Europe. Such measures could generate significant momentum and offer greater market certainty. He also highlighted the excitement surrounding potential developments in the maritime sector, which represents one of the most promising areas.

Regarding policy, he expressed interest in the role the new European Commission will play in shaping the future. He referred to discussions on initiatives like "Green to Clean"

and the need for a strong industrial approach within climate policies. However, he warned against excessive hostility toward China, noting that such an attitude could prove costly for everyone.

In terms of policy tools, Benschop emphasized the need for an integrated approach. For policies to be effective, they must combine elements of pricing, subsidies, and regulations/mandates. This mix must be maintained consistently over time to provide the right support to the sector. He concluded by urging everyone to collaborate in helping the new European Commission implement these strategies effectively and assured his commitment to contributing to this process.



Alessandro Costa, General Director of the Venice Sustainability Foundation (VSF), concluded his speech with an enthusiastic and insightful reflection, emphasizing the event's success and the importance of collaboration with VSF. He highlighted how these two days of work provided not only “food for thought” but, more importantly, “food for action.” This, according to him, serves as motivation to complete the regulatory and policy framework necessary to support the energy transition and the hydrogen sector.

Turning to the Venice Sustainability Foundation, Costa explained how the institution promotes a new model of territorial sustainability, integrating the energy transition and sustainable development. Hydrogen, he noted, plays a central and specific role in the Foundation's vision, representing one of its key thematic areas. Given its relevance, policies and investments in hydrogen deserve particular attention and focus.

In closing, Alessandro expressed his enthusiasm for the event's outcomes and the important exchange of ideas, encouraging continued collaboration to address the challenges of energy transition and sustainability effectively and innovatively.

Arun Sharma concluded by emphasizing the importance of the work done by the Green Hydrogen Organization and VSF, commending the event for creating a space for dialogue and cooperation.

Jonas Moberg wrapped up by warmly thanking all the participants, the organizing staff, and the interpreters, highlighting the importance of collective effort and reiterating the commitment to maintaining dialogue and collaboration to tackle future challenges.



This activity is one of the projects within the Hydrogen (H2) Thematic Area of the Fondazione Venezia Capitale Mondiale della Sostenibilità / Venice Sustainability Foundation (VSF).



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