PROGRESSING ENERGY TRANSITION VIA EFFECTIVE POLICIES AND REGULATION

5-6 MAY, 2025 | MUSCAT OMAN

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#ERRACONFERENCE2025

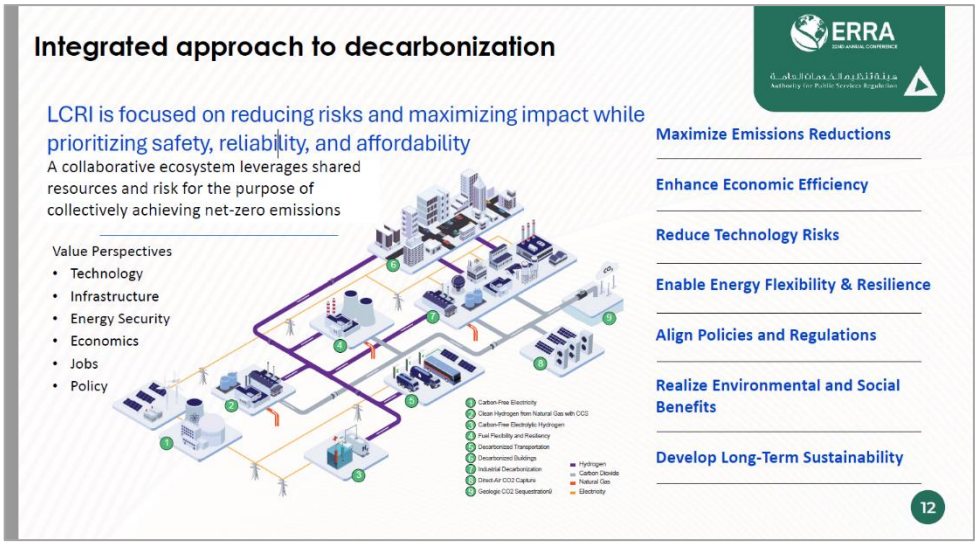
CONFERENCE DAILY NOTES | DAY 2 | TUESDAY, MAY 6, 2025

The 22nd ERRA Annual Conference 2025 continued on Tuesday, May 6, with an opening ceremony comprising a salutation by ERRA Vice-Chair Pál Ságvári and the announcement of the **location of the 23rd Annual Conference** being **Bratislava, Slovakia**. The announcement was given by Mr. Jozef Holjenčík, Chairman of the Regulatory Office for Network Industries (ÚRSO) of Slovakia and was followed by a video prepared by the future hosts of the Conference – the video featured not only the capital of Slovakia that will host the event but also features of the Slovak natural sights as well as the national heritage including folk dances, craftsmanship and other elements of culture.

Session V: THE ROLE OF TRANSITION FUELS IN TRANSFORMING THE SECTOR

The technical program of the conference continued with a session focused on the evolving role of transitional fuels—such as hydrogen and other low-carbon resources—in driving the transformation of the energy sector. Discussions addressed both systemic and regional challenges, emphasizing how infrastructure development and intersectoral coordination are critical to achieving a sustainable, low-carbon future.

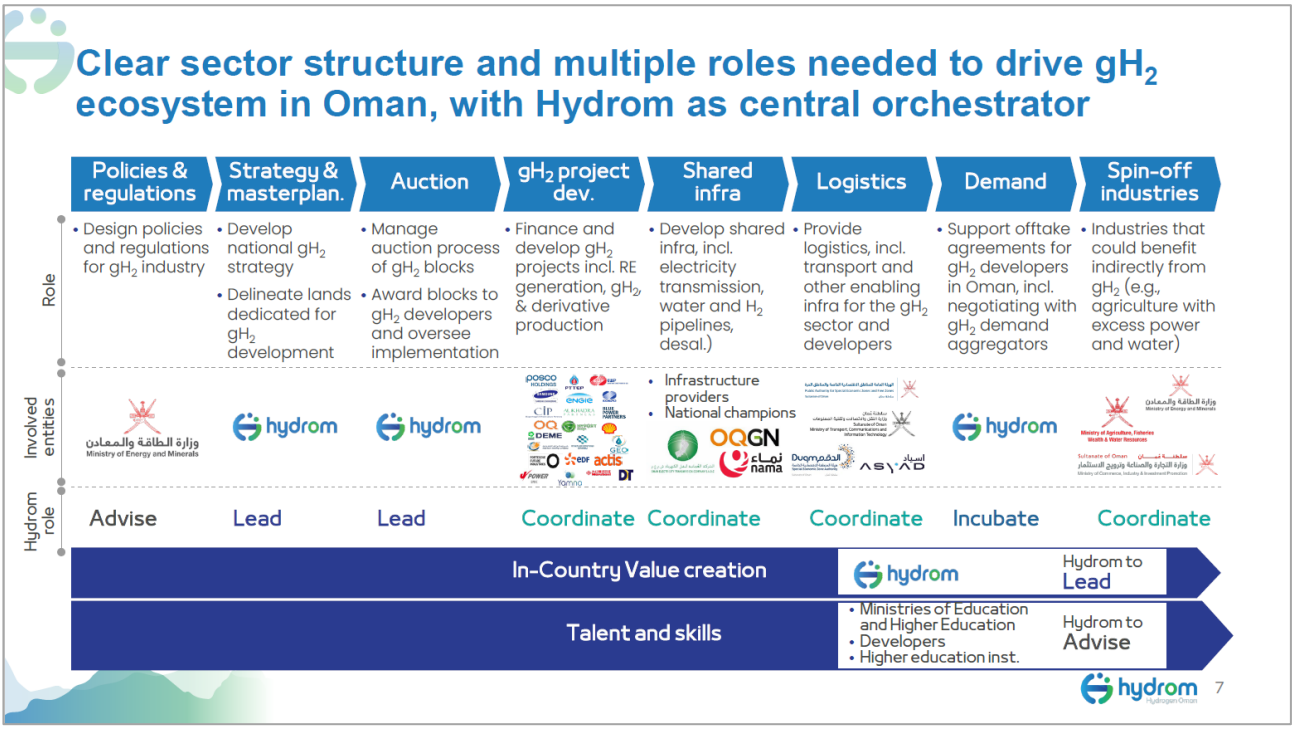
Gergő Varhegyi from EPRI underlined the importance of taking a broad, integrated view of energy system decarbonization. While traditional pathways typically begin with energy efficiency and the introduction of renewables, today's transition requires deeper transformation—across both generation and demand. He drew attention to the unique context of the region, where power generation is often directly linked to seawater desalination due to the scarcity of freshwater resources. This interdependence means that decarbonizing electricity also implicates the sustainability of the water supply. As such, clean energy services and new energy carriers—including hydrogen—must be part of the solution to ensure that both climate goals and essential service continuity are met.



In this context, the transition to a net-zero economy requires a diverse energy mix. While renewable energy sources (RES) are central, Low Carbon Resources (LCRs)—such as hydrogen, biofuels, synthetic gases, ammonia, and carbon capture and sequestration—also play an important role in shaping the future energy landscape.

Emmanouela Angelidaki from DESFA provided a concrete example of this transition in action. She described how Greece has expanded its natural gas network northward into Western Macedonia, where new infrastructure is now being deployed with full hydrogen compatibility. She emphasized that the Western Macedonian pipeline is ready to transport hydrogen, representing a forward-looking approach to infrastructure investment. Additionally, she shared news of a pilot project approved by the Greek regulator: DEPA Infrastructure will blend hydrogen into the natural gas system at a city gate station in the same region. This pilot marks a foundational step in the gradual decarbonization of Greece's gas infrastructure and supports the country's broader energy transition goals. This example highlights the importance of adopting a step-wise, progressive strategy for cost-efficiency and scalability, as it allows for gradual adaptation and avoids overburdening the system.

In Oman, strong emphasis was placed on the ongoing efforts to develop a comprehensive hydrogen strategy and the necessary infrastructure. As Eng. **Reham Al Maimani** from Hydrom shared, there is significant work ahead, particularly in terms of infrastructure development. This includes collaborating with local champions, like ASEA, to ensure the availability of materials and the ability to assess and capture demand—particularly for emerging industrial activities. Oman is committed to prioritizing in-country value creation through investments in local talent, skills development, and workforce upskilling to build long-term capacity.



Looking ahead, Mr. **Ali Mohammadi** from OQGN emphasized that while the transition to a low-carbon energy system is inevitable, the process is complex. As they develop the strategies and frameworks necessary for the energy transition, they are continuously refining their recommendations and engaging with regulatory bodies. Early-phase collaborators are working closely to ensure that policies are aligned and that actionable mandates are created for implementation in the near future. The energy transition in Oman—like in many regions—is a journey that requires collaboration, thoughtful planning, and steadfast commitment to a sustainable future. While challenges remain, Hosni expressed confidence that with the right strategies and partnerships in place, the transition would lead to a more resilient and low-carbon energy system.

This vision for Oman underscores the broader global need for cross-sectoral and collaborative approaches. Linking energy, transport, industry, and buildings, as well as engaging public and private actors, will be essential for successfully navigating the energy transition. The Omani model in particular showcases how hydrogen can serve as a transformative energy carrier, benefiting both the economy and society at large.

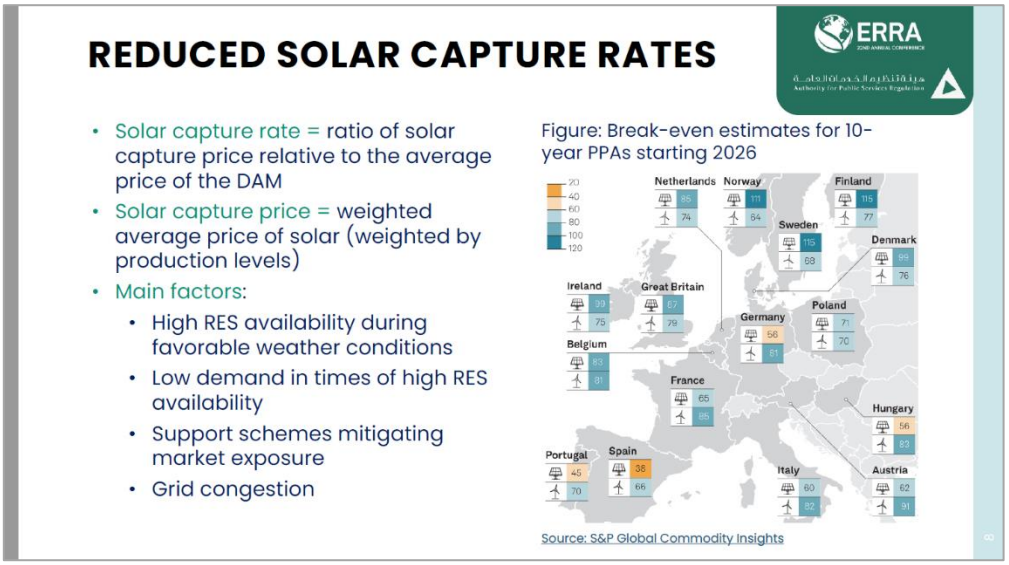
The session also shed light on the broader challenges facing countries as they work to integrate new technologies and energy carriers. Mr. Gergő Várhegyi, discussing the role of hydrogen in the energy transition, emphasized the need to look at the energy system comprehensively, addressing both generation and demand. In regions where water scarcity is a concern—such as in the Middle East—there is a unique interdependence between energy and water production, often tied to thermal power plants that also power desalination processes. As these regions pursue decarbonization, ensuring that desalination technologies can rely on low-carbon energy sources will be crucial. Várhegyi stressed the importance of clean energy services and innovative technologies to support decarbonization without compromising essential services like water supply.

In Greece, Ms. Emmanouela Angelidaki provided insights into DESFA's energy transition strategy, noting the country's commitment to hydrogen readiness. The expansion of the Greek gas network to include Western Macedonia and its preparation for hydrogen transport marks a significant step toward Greece's decarbonization goals. A pilot project, approved by the regulator, to blend natural gas with hydrogen further

supports the gradual decarbonization of the gas infrastructure, aligning with broader energy transition strategies across Europe.

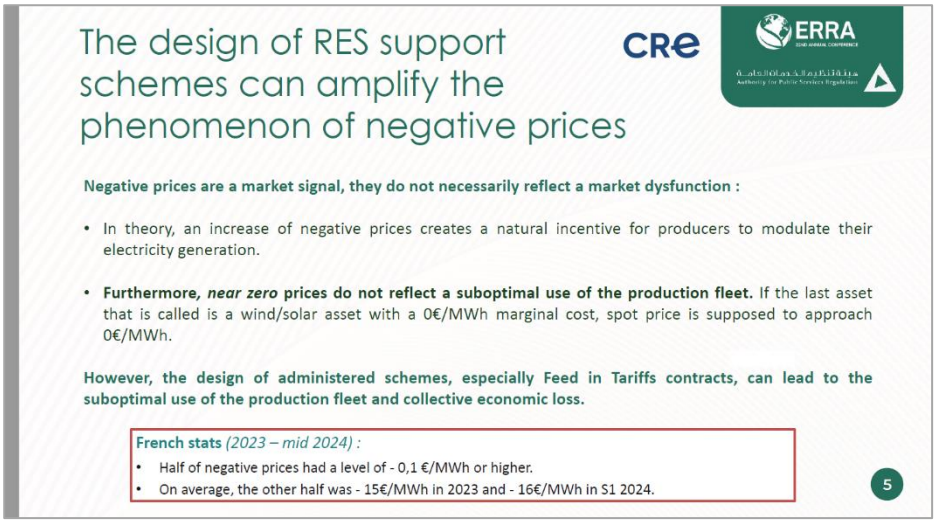
As countries around the world continue to explore and implement hydrogen as part of their energy transition, the importance of collaboration and cross-border cooperation remains clear. With strategic planning, the right policies, and a focus on sustainable, low-carbon technologies, regions can overcome the challenges they face and advance toward a more resilient and integrated energy future.

Session VI: Grid Capture Rates for Solar and Re-Thinking Support Schemes



The session opened with Mr. **Ardian Berisha** from Optima Energy Consulting outlining a growing paradox in the renewable energy landscape: while solar installations are expanding rapidly, financial returns—or capture rates—are declining, particularly during periods of peak generation. He emphasized the importance of designing support schemes that not only incentivize deployment but also ensure long-term integration into the market. Competitive mechanisms like Contracts for Difference (CfDs) continue to play a key role, but must be adapted to respond to new challenges, including saturation effects and price cannibalization.

Mr. **Ivan Faucheux** from CRE followed with a detailed analysis of negative pricing occurrences in France. He highlighted the growing need for market mechanisms that reflect the variability and intermittency of renewables. Flexibility, he argued, is not just about real-time responsiveness—it can be achieved through structural means such as storage, demand-side flexibility, and more dynamic operation of conventional plants. Ivan called for markets that go beyond the classical "perfect market" theory and instead support long-term



investment signals for decarbonized, reliable systems. He stressed the need to improve access to flexibility markets and storage, arguing that these would be key levers for enabling the next phase of the energy transition.

Dr. **Nadia Horstmann** from BNetzA/CEER brought insights from the Council of European Energy Regulators (CEER) and Bundesnetzagentur (German energy regulator), emphasizing how high market prices in recent years tested the resilience and design of existing renewable energy support schemes. She described how some producers sought to leave support schemes during price spikes—and questioned whether they should be allowed to re-enter them later. The CEER report she referenced examined changes of rules across different countries, warning that without clear guardrails, such behavior could lead to market distortions, investor uncertainty, and regulatory challenges. Nadia emphasized that flexibility in scheme design must be carefully managed to maintain fairness and avoid undermining long-term policy goals.

Dr. **Harald Proidl** from E-Control reminded the audience of the broader regulatory responsibilities that underpin market functioning. In addition to evaluating subsidy schemes, regulators must ensure fair and timely access to the grid—a task that increasingly involves resolving disputes from renewable producers facing connection delays. He highlighted Austria's recent 25% increase in network tariffs, driven in part by the need to invest in grid infrastructure amid the rapid growth of PV. While often politically sensitive, tariff setting remains a foundational regulatory tool in enabling a secure and equitable transition.

During the panel discussion, the energy transition was framed as an irreversible and politically driven process, with a clear direction set in Europe. The speakers stressed that the transition is fundamentally a "one-way" journey, driven by the European Green Deal and tools like Contracts for Difference (CfDs), which are reshaping the roles of market actors and consumers alike. The shift toward decentralization—where consumers become prosumers—and the rise of new business models, such as smart homes and electric vehicles (EVs), were highlighted as essential components for the future energy landscape.

However, challenges for regulators were also a major focus. The panelists emphasized that regulators are struggling to balance political goals—like affordability, security, and competition—with their mandates. There is a clear tension between supporting renewable energy and adapting existing regulatory frameworks, such as tariffs and grid access. One panelist pointed out that regulatory flexibility and system fitness are lagging in some areas, using Germany's slow rollout of smart meters as an example.

When it came to market design, the discussion turned to the role of CfDs. While they were praised for providing price stability for investors, the panelists expressed concern that these instruments could reduce exposure to market signals, which are crucial for ensuring efficient system operation. One expert noted that CfDs might

unintentionally suppress innovation, leading to inefficiencies in areas such as maintenance timing, site selection, and grid services. This led to a broader reflection on whether current support schemes are inadvertently distorting markets.

System integration was another key point of discussion. The panelists shared concerns about emerging grid bottlenecks, particularly the north-south imbalance in Germany. One speaker highlighted how the rapid expansion of renewable energy generation is outpacing grid development, causing curtailments and inefficiencies. A solution, as another expert noted, lies in a comprehensive grid investment plan—such as the EU's Action Plan for Grids—which is seen as critical for addressing these growing infrastructure gaps.

The conversation also turned to the issue of market exposure versus long-term signals. While short-term electricity markets are functioning well, the panelists agreed that there is a lack of strong long-term price signals. One speaker pointed out that renewable energy and battery projects require certainty over extended periods, given their capital-intensive nature. This sparked a debate on whether the market should be the primary driver of the transition or whether public policy tools—like subsidies, long-term power purchase agreements (PPAs), and regulated remuneration—are still necessary.

Storage and flexibility markets were another major topic. Batteries, while essential for balancing supply and demand, were described as lacking clear business models. One panelist stressed that access to markets and grids must be non-discriminatory for storage solutions, ensuring they are not treated as second-class participants. The importance of integrating storage into the market as a core asset was a point repeatedly emphasized.

Finally, the issue of balancing responsibility, as mandated by the Clean Energy Package, was raised. While it is a requirement at the EU level, the speakers pointed out that gaps still exist in its implementation at the local level. Some panelists speculated that these gaps may stem from legacy exemptions or specific local bottlenecks, which still present challenges to the seamless integration of renewable energy and flexible assets.

The session closed with a shared recognition: the initial phase of renewable deployment was about volume, but the next phase will be about value—where, when, and how renewable energy is integrated will define the success of the transition. Regulators, markets, and policymakers must now align to ensure that support schemes evolve accordingly.

Closing Remarks

In her closing remarks, ERRA Chair **Andrijana Nelkova-Chuchuk** reflected on the two-day conference, which featured 16 sessions covering the evolving challenges and opportunities in energy regulation and transition. She highlighted the diversity of expert voices—from regulators to industry leaders and academics—and praised the open, solutions-driven dialogue throughout the event.

Nelkova-Chuchuk emphasized that advancing the energy transition requires ongoing coordination, transparency, and public trust. She acknowledged the growing engagement of regulatory authorities from the Middle East, calling it a positive sign for deeper regional collaboration.

Thanking the host organization for its generous hospitality, she urged participants to carry forward the momentum and insights from the conference, continuing to shape a resilient, sustainable energy future.