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ADIPEC INDUSTRY ROUNDTABLE
INSIGHTS REPORT

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Mitigating Obstacles to Decarbonization in the Energy Sector and Achieving Net Zero in the MENA Region?

The content of this report is based on insights gathered during the SNOC Industry Roundtable discussion with senior industry and subject matter experts, held on the sidelines of ADIPEC 2024.

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FOREWORD

By Hatem Al Mosa, CEO, Sharjah National Oil Corporation (SNOC)

Advancing Toward Net Zero in the MENA Oil and Gas Industry

The journey to net zero once sparked a wave of optimism across the globe, with ambitious targets set for 2030, 2040, and 2050. However, recent global challenges, such as the Ukraine conflict, have underscored the complexity of reaching these targets. When energy security is threatened, priorities can quickly shift, and immediate needs may temporarily outweigh long-term goals. But these challenges have also brought new clarity and resolve, highlighting the need for adaptable strategies that balance energy reliability with sustainability.

Our decarbonization journey at SNOC began over a decade ago, when we were still operating as part of BP. Since then, we've achieved meaningful reductions in flaring and methane emissions, developed systematic tracking of greenhouse gases, and published our first emissions report in 2021. Committed to reaching net zero by 2032, we're launching impactful projects, including a solar plant expected to reduce our emissions by over 50%. Yet, as an industry, we know that success demands more than individual actions. It calls for a united, cross-sector approach, harnessing the power of collaboration, innovation, and shared commitment.

Achieving net zero extends beyond the energy industry. It involves every sector—transportation, heating, aviation, and more—and requires deep partnerships between governments, businesses, and communities. The role of natural gas as a bridge fuel exemplifies this complexity; while a cleaner option, it still emits CO_2, underscoring the importance of pairing it with technologies like carbon capture as we increase renewable capacity. Transitioning to renewables also requires a vastly expanded electricity grid capable of handling the rising demand fueled by data centers, artificial intelligence, and other innovations.

The potential for energy efficiency is enormous. But to unlock it, we must modernize aging infrastructure and embrace policies that encourage efficient energy use. Carbon pricing, while effective in some regions, remains inconsistent globally, leaving a gap in the incentives needed to accelerate decarbonization. Meanwhile, geopolitical events can influence climate priorities, reminding us of the need for resilient and adaptive strategies.

This special report offers an in-depth look at how the oil and gas industry is meeting the call to net zero, exploring the diverse strategies and solutions that are setting a new standard for sustainable energy. With an eye to the future, this report highlights the progress we've made and the challenges ahead. By embracing innovation, fostering partnerships, and maintaining a balanced approach, the oil and gas sector can lead the way toward a low-carbon future, proving that resilience and sustainability can go hand in hand.

Through determination and collaboration, the oil and gas industry is positioned to make a meaningful impact, advancing toward a cleaner, more resilient world for generations to come. ●

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Absence of a Carbon Price is Starting to Impose a High Cost

**By Robin Mills,
CEO, Qamar Energy**

Significant progress is underway, particularly with technology development and ambitious target setting. It's impressive to see oil-producing countries committing to net-zero goals by 2050, or even sooner. However, emissions are still on the rise in many parts of the region, underscoring the need for consistent and sustained reductions.

From a policy perspective, achieving net zero requires specific incentives. For example, a carbon price could be a powerful driver of emissions reduction, as seen in the UK, where it played a major role in phasing out coal. Many companies I speak with have decarbonization projects ready, but they're often held back by the absence of a carbon price.

Policies like carbon trading or subsidies for cleaner energy are essential to motivating action. Major hydrocarbon producers, in particular, must take proactive steps. If they don't invest in decarbonization now, they may find it increasingly difficult to operate in a more carbon-conscious world. Ultimately, this is an issue of long-term competitiveness. Countries and companies that move early toward decarbonization will gain a market advantage, while those that delay may struggle as global standards evolve. ●

Digital Transformation Actively Supports Decarbonization

**By Bassel Abdelwahab,
Global Commercial Director – Digitalization, SLB**

An often-overlooked aspect of decarbonization is how digital transformation actively supports this goal. Digitalization not only plays a role in emissions reduction but also drives innovations like green data centers, which allow major players to use clean energy for data processing, reducing their carbon footprint. As we advance toward net zero, digital technology is essential in establishing a solid foundation through accurate measurement and data collection.

With precise data baselines, we can move from assumptions to actionable insights, enabling informed decision-making. Digitalization supports in-depth analysis, activity monitoring, storage, and even recycling processes. However, as we pursue these efficiencies, we must also make our digital processes greener. Key elements in this endeavor include transparent monitoring, acting on collected data to drive continuous improvements, and integrating these insights into daily operations.

Digital solutions can also help minimize the carbon footprint of broader operations without compromising productivity. High hydrocarbon prices can sometimes eclipse net-zero goals, but producing hydrocarbons with a reduced footprint can help strike a balance. By combining green data practices, fail-safe operations, robotics, and structured action plans, we can create a comprehensive approach that supports the journey to net zero. ●

OVERCOMING DECARBONIZATION OBSTACLES IN MENA'S OIL AND GAS INDUSTRY

– How to Accelerate a Path to a Sustainable Transformation?

The Middle East and North Africa (MENA) region is at a crossroads. Long dependent on the oil and gas sector, these countries face mounting global and domestic pressures to decarbonize. Yet, this transition presents a distinct set of challenges. Fossil fuels are not only central to the region's economic structure but also to its social fabric, providing jobs, public revenue, and affordable energy. However, these obstacles are not insurmountable. With a bold approach that emphasizes economic diversification, green investment, and regional collaboration, the oil and gas industry can lead the MENA region toward a more sustainable future.

Natural gas has long been hailed as a bridge fuel—a cleaner option than oil and coal—offering MENA countries a transitional pathway toward lower emissions. However, it is not a panacea. Methane emissions from natural gas are a major contributor to global greenhouse gas levels, and although there are readily available technologies to curb these emissions, widespread adoption has been slow. Carbon capture, utilization, and storage (CCUS) technologies offer some potential, but they remain costly and need strong regulatory support to drive adoption.

Despite these challenges, natural gas can play a critical role in the Energy Transition if it is effectively integrated into wider strategies that include renewable hydrogen and expanded renewable power. To make natural gas a sustainable part of the energy mix, MENA countries need to adopt stricter methane regulations, incentivize CCUS adoption, and integrate carbon pricing mechanisms. By turning to natural gas thoughtfully, the industry can reduce emissions in the near term while working toward more ambitious renewable goals.

The future of MENA's oil and gas industry lies in economic diversification. Large-scale investments in renewables, such as solar, wind, electric vehicles (EVs), and green hydrogen, can provide viable alternatives to fossil fuels while creating new job opportunities. The MENA region boasts some of the highest potential for solar energy globally, and early projects like the UAE's Noor Abu Dhabi and Saudi Arabia's NEOM green hydrogen initiative exemplify this promise. However, much of this renewable capacity remains untapped due to outdated grid systems, underdeveloped infrastructure, and technical challenges. The pathway forward must include strategic investments in

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"By expanding renewable energy access in remote or politically unstable areas, MENA countries can create a more resilient energy system that is less susceptible to disruptions and enhances energy security."

modernizing electricity grids and establishing frameworks for cross-border energy trade. The region should prioritize projects that integrate renewables at scale and implement supportive policies to encourage private investment. Leveraging MENA's natural advantages, such as abundant sunlight and vast desert landscapes, can catalyze a renewable revolution that bolsters energy security, diversifies economies, and builds resilience against fluctuating oil markets.

Energy efficiency is another critical area where the MENA oil and gas industry can lead. The region has some of the highest per capita energy consumption rates in the world, largely due to subsidized energy prices that encourage wasteful use. Gradual subsidy reforms in Saudi Arabia and the UAE have begun to promote more efficient energy use, but broader restructuring is needed. By phasing out subsidies for fossil fuels and incentivizing efficient energy use, MENA governments can drive down emissions and make more room for renewables in the energy mix. Additional measures, like implementing stricter building codes, retrofitting infrastructure, and promoting energy-efficient appliances, will be key in reducing consumption. Through these steps, the oil and gas industry can support a more sustainable energy future and make MENA a leader in energy efficiency.

One of the greatest obstacles to decarbonization in MENA is fragmented governance and regulatory ambiguity. Without clear, enforceable policies, emissions reduction efforts are likely to fall short. Countries must develop robust regulatory frameworks for industries, targeting areas like carbon emissions, methane leak prevention, and renewable energy adoption. Moreover, these frameworks should align with international climate agreements to encourage global cooperation. Regional collaboration will also play an essential role in overcoming these regulatory challenges. By working together on shared goals, cross-border renewable energy projects, knowledge exchange, and technology transfer, MENA countries can set ambitious, unified targets that foster a supportive environment for decarbonization.

Transitioning to a low-carbon economy is capital-intensive, and the MENA region faces considerable financing gaps, further exacerbated by economic disruptions from COVID-19 and oil price volatility. To close these gaps, MENA countries must seek out diverse funding sources. Green Bonds, for instance, can attract private investment into renewable energy projects and other climate-friendly initiatives. Access to international climate finance mechanisms, such as the Green Climate Fund, can further support this transition. Forming partnerships with international development banks and private investors will be essential to scaling clean energy initiatives across the region. By securing financing for renewable projects, modernizing infrastructure, and funding climate resilience initiatives, MENA countries can drive progress while mitigating the financial risk associated with economic diversification.

Geopolitical instability in the MENA region poses additional challenges to long-term planning and investment in climate initiatives. Localized renewable energy solutions, such as off-grid solar power, can address these obstacles by reducing reliance on centralized fossil fuel infrastructure, which is often vulnerable to geopolitical risks. By expanding renewable energy access in remote or politically unstable areas, MENA countries can create a more resilient energy system that is less susceptible to disruptions and enhances energy security.

The road to decarbonization in the MENA oil and gas industry is complex, but not impossible. Natural gas, green technology investments, energy efficiency, robust governance, access to finance, and geopolitical resilience are all part of a balanced approach to achieving net-zero. By harnessing policy innovation, international collaboration, and technological advancements, MENA's oil and gas industry can drive a transformative shift toward a sustainable energy future. This journey will not only safeguard regional economies but also establish MENA as a global leader in the Energy Transition, proving that the region's oil-rich legacy can pave the way for a cleaner, more resilient tomorrow. ●

What's at Stake the Longer Policy Makers Debate Whether to Accept Gas as a Transition Fuel?

The debate around natural gas as a transition fuel is far from settled. While some regions, particularly Europe, have shown a cautious acceptance of gas under strict conditions—primarily in scenarios where it can act as a stepping stone toward hydrogen-based power—others still question its viability due to concerns about methane emissions and overall carbon intensity. A recent study even suggested that, when accounting for methane leaks, natural gas could be more carbon-intensive than coal, an assertion that has gained traction in European circles.

This cautious stance creates both challenges and opportunities for the energy industry. To reinforce natural gas as a legitimate bridge to net zero, the sector must prioritize mitigating methane emissions through improved upstream practices, including reducing flaring, venting, and leaks. Optimizing supply chains, such as securing tankers against leaks, is also crucial and achievable with current engineering solutions. Addressing these areas could help solidify gas's role as a cleaner alternative, especially in regions where the shift from coal to gas has already improved urban air quality.

In some cities, for example, replacing coal-fired heating systems with gas has led to a visible reduction in pollution—a tangible benefit that underscores natural gas's potential as a cleaner fuel in the short term. This practical improvement in air quality offers a compelling case for gas, even as the debate over its long-term role continues.

From a financing and development perspective, there's a critical need for better coordination across international energy companies, U.S. stakeholders, and governments, especially as global emissions targets become more stringent. Infrastructure investment is a major challenge, not only for natural gas but also for renewable energy systems. As seen with electric vehicle infrastructure, scaling up requires extensive funding from both public and private sectors, underlining the importance of realistic targets and well-planned investments.

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As for scope three emissions – those generated along the supply chain – more companies are beginning to map, digitize, and monitor emissions data across their operations. This trend is particularly notable in the Middle East, where companies are actively pursuing net-zero goals by 2030 and beyond, with substantial investments in digitalization and emissions tracking.

In the MENA region, the expanding integration of renewable and nuclear energy sources into traditional operations shows a serious commitment to sustainable practices. From using modular solar plants in remote areas to electrifying LNG projects, regional players are combining government support and private investment to reduce emissions, often encouraged by green financing opportunities rather than carbon pricing alone.

Ultimately, as global energy demands rise due to rapid digitalization and urbanization, gas remains a necessary part of the energy mix. Renewables, while essential, may not alone suffice for grid stability – a lesson even renewable leaders like Europe are grappling with. The road to net zero is complex and requires meaningful collaboration, significant infrastructure investment, and a commitment to digitalization for precise emissions management. Global alignment on emission standards is progressing, but there is still much work ahead. This transition will demand pragmatic solutions, recognizing the immediate need for diverse energy sources alongside an unwavering commitment to long-term decarbonization.

In conclusion, the continued debate over natural gas as a transition fuel carries substantial stakes. As the world races to decarbonize, ambiguity surrounding natural gas's role could hinder progress toward net-zero goals, particularly in regions where energy security and economic stability are closely tied to hydrocarbon production. Failing to address this debate decisively could lead to stalled investments, delayed infrastructure development, and missed opportunities to reduce emissions through cleaner technologies and practices.

If natural gas remains an unsettled question, countries and companies may struggle to plan effectively, risking both their competitiveness in a carbon-conscious market and their ability to meet global climate commitments. Moreover, the absence of a clear consensus could weaken the momentum for technologies that reduce methane emissions, optimize supply chains, and integrate gas responsibly within the energy transition.

Ultimately, what's at stake is not only the industry's pathway to a sustainable future but also the air quality, health, and economic prospects of communities that would benefit from a cleaner energy mix. Clarifying natural gas's role will provide a stable foundation for advancing decarbonization efforts, supporting both immediate gains in air quality and the long-term objective of a resilient, low-carbon world. ●

ENERGY INDUSTRY MUST DO BETTER WITH TECHNOLOGY ADOPTION

The energy industry's adoption of technology, especially digital tools that can drive decarbonization, has been noticeably slower compared to other sectors with similar complexities. For instance, Internet of Things (IoT) sensor technology, capable of collecting real-time data, has been available for nearly a decade, yet the industry has been slow to adopt it widely. While some companies, such as ADNOC and Saudi Aramco, have embraced comprehensive digitalization, this is not representative of the broader sector, which often lags in data-sharing and collaboration on best practices.

To truly progress, the industry must move from simply digitizing operations to achieving full digital transformation. Technologies like augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) have proven use cases, yet they remain underutilized in the gas sector. Harnessing these tools more effectively could significantly enhance efficiency and reduce emissions, addressing some core challenges on the road to net-zero targets.

It's essential to recognize that technology adoption isn't just about deploying tools focused solely on decarbonization, such as monitoring systems and IoT sensors. True digital transformation involves a holistic shift that includes autonomous operations to reduce diesel vehicle use, minimize field energy waste, and utilize AI-driven safety monitoring. This comprehensive approach to digital adoption is vital and extends beyond decarbonization alone.

While the industry has made strides post-COVID in digital adoption, many companies are still in the pilot or testing phases rather than deploying solutions at scale. This cautious approach holds back improvements in operational efficiency, particularly for scope one emissions. By accelerating digital transformation alongside focused decarbonization efforts, the industry can overcome critical obstacles, yet achieving this will require a shift from experimental pilots to full-scale implementation across operations. ●

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TOP 5 Recommendations for the MENA region's decarbonization journey in the oil and gas industry:

1. **Adopt Regulatory and Technological Support for Natural Gas as a Transition Fuel:** Integrate natural gas more sustainably by implementing strict methane regulations, incentivizing carbon capture, utilization, and storage (CCUS) technologies, and establishing carbon pricing mechanisms. This approach will help reduce emissions in the near term while progressing toward renewable energy goals.
2. **Invest in Renewable Energy Infrastructure and Economic Diversification:** Accelerate investments in large-scale renewable projects, such as solar and wind power, electric vehicles, and green hydrogen. Modernize grid systems, support cross-border energy trade, and encourage private investment to leverage MENA's natural advantages for a renewable energy transition.
3. **Enhance Energy Efficiency Through Policy and Infrastructure Improvements:** Continue energy subsidy reforms to promote efficient energy use, implement stricter building codes, and support retrofitting efforts. Encourage the use of energy-efficient appliances and technologies to reduce per capita energy consumption, positioning MENA as a leader in energy efficiency.
4. **Develop Clear, Enforceable Regulatory Frameworks to Support Decarbonization:** Create robust policies for carbon emissions, methane leak prevention, and renewable energy adoption, aligned with international climate agreements. Strengthen regional collaboration to set unified targets, promote knowledge exchange, and foster cross-border renewable energy projects.
5. **Secure Diverse Financing Sources for Climate Initiatives:** Address financing gaps by seeking out various funding sources, including Green Bonds and international climate finance mechanisms like the Green Climate Fund. Form partnerships with development banks and private investors to support renewable energy projects, grid modernization, and climate resilience initiatives, mitigating economic risks and advancing decarbonization.

These actions can position the MENA region as a global leader in the Energy Transition, securing a sustainable future while maintaining economic stability.

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