

DECARBONIZING THE GAS SUPPLY CHAIN: STRATEGIES FOR MITIGATION AND ABATEMENT



Introduction

The Gas supply chain is complex and inflexible due to production limitations and intricate transportation methods. This complexity poses challenges in matching supply with demand, risking disruptions. Upstream companies can reduce emissions and emphasize environmental performance, while mid-stream and downstream firms face data challenges and costly emissions reductions, affecting operations differently. Solutions involve financial incentives, capacity building and collaboration, focusing on transparency and accountability.

Nigeria has vast gas reserves but needs to work on underutilization, resulting in shortages and heavy reliance on imports, leading to adverse effects on business, revenue loss, and development setbacks. Nigeria's gas reserve could become the gas powerhouse of Africa with adequate investment in gas exploration, but it needs help extracting and utilizing the resources.

Effectively utilizing Nigeria's abundant gas resources is essential. A comprehensive strategy is required to address supply chain disruptions in the gas sector. This strategy should encompass long-term and short-term measures, including expanding capacity, optimizing inventory management, and diversifying the supplier base. Employing mitigation strategies and technologies plays a crucial role in ensuring the gas supply chain

operates efficiently, smoothly, and flexibly to respond to unforeseen shifts in demand.

Mitigation strategies like contingent sourcing, expediting orders when needed, and flexible routing are vital for addressing disruptions in the supply chain. Maintaining a flexible supply base is crucial to handle fluctuations and enhance resilience. Accurate forecasting, building trust with suppliers, and ensuring transparency in the supply chain are also vital factors. Additionally, leveraging information technology such as Radio-Frequency Identification (RFID) can improve inventory tracking in real-time, thereby maximizing supply chain disruptions.

The Gas supply chain faces complex decarbonization challenges that require balancing short-term costs and long-term benefits like regulatory compliance and global climate alignment. However, a new (LNG) facility aims to address this by stabilizing prices, creating jobs, and reducing environmental impacts. Decarbonization offers various advantages, including reducing global warming, improving health, creating jobs, enhancing engine performance, and optimizing resource use. However, it is complex and requires a balance of regulation, technology, and consumer behaviour. Some industries, like steel and cement,

need help with high heat requirements and carbon emissions.

The LNG industry addresses emissions through two strategies: a comprehensive approach covering all greenhouse gases and a focus on reducing methane leaks. The comprehensive approach involves investments in efficiency, renewable and carbon capture, while the methane-focused strategy requires monitoring and maintenance. Combining both strategies is effective, but success depends on understanding emission profiles, cost-effectiveness and regional regulations, ultimately enhancing competitiveness in the evolving energy market. These efforts collectively reduce emissions, combat climate change, and promote sustainable energy practices.

Policy Recommendations

- 1 Implementing carbon capture and storage (43 per cent reduction), methane abatement (twelve per cent reduction), and efficiency upgrades (5 per cent reduction) can lead to a total emission reduction of 71 per cent in gas-fired power generation.
- 2 Collaboration between the public and private sectors is vital to creating effective strategies for reducing greenhouse gas emissions.
- 3 Achieving consensus on pricing within the Nigerian gas value chain requires alignment among all stakeholders, including government, gas suppliers, transporters, distribution businesses, and the Nigerian people. Establishing a fair gas pricing regime that reflects industry investments and offers attractive returns can unlock Nigeria’s gas sector potential and stimulate increased investment.
- 4 To promote emission reduction, Policy tools like public funding, subsidies, regulations and emissions pricing.
- 5 Comprehensive thinking and digital technology are crucial for fully utilizing decarbonization tools and methods to achieve decarbonization goals.

Conclusion

To achieve net-zero emissions by mid-century, companies must prioritize near-term reductions and set long-term targets, neutralize residual emissions, and invest in climate finance within and outside their value chain. This comprehensive approach intends to limit global temperature rise and address the environmental imperative of achieving net-zero emissions.

Nigeria can reduce emissions by improving energy efficiency, transitioning to cleaner fuels, adopting renewables, and curbing gas flaring.