Promoting Innovation in the Natural Gas Sector

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Why Innovation?

- A clear correlation between innovation and success (revenue growth, survival, profitability) across industries
- Gas industry faces continued pressure
  - Need for streamlined and leaner operations
  - Cost reduction
  - Low prices
  - Climate change and the decarbonization agenda
- Nigerian environment with cost issues, security and environmental challenges

Innovation and the Gas Industry

- Gas industry historically been fuelled by Innovation
- Technological Innovation has made it possible to push barriers and produce gas resources that wasn't accessible or expensive to produce years ago
  - Fracking technology to commercially exploit of shale gas resources once considered uneconomic
  - Use of technology to access and extract gas from challenging terrains - ultra deep water fields, high pressure, high temperature environments
  - Horizontal drilling technology to enhance well productivity
  - Use of technology in secondary and tertiary recoveries extending field life of gas reservoirs

Innovation and the Gas Industry

- Innovative solution to commercialize small pockets of stranded gas and enabling access to gas resources beyond the traditional pipeline
  - Small scale LNG
  - Floating LNG
  - Compressed Natural Gas (CNG)
  - Gas to Liquids (GTL)
- Gas distribution via 'Virtual Pipelines'
  - Road & Rail tankers to distribute gas in form of LNG and CNG
  - Expanding and fast tracking access to off grid customers
- Application of technology to increase gas utilization such as in transport sector, industry
  - Natural Gas Vehicles
  - Conversion of petrol/diesel engines to run on gas
  - Developments in gas turbines and boilers efficiencies and design – reducing upfront capital cost and recurring operating expenditures

Innovation and the Gas Industry

- Innovating for Safety
  - New systems for inspection, maintenance and repairs of gas infrastructure & equipment
  - Remote monitoring - SCADA
  - Application of AI to enhance quality assurance, ensure safety and security standards, reduce production and maintenance cost and make better decisions with analytics
- Application of Innovation to the Climate Change Challenge
  - Use of innovative solutions for gas flare capture and commercialization
  - Carbon Capture Utilization & Storage (CCUS) solutions

Key Drivers to Promoting Innovation

- Government policy & incentives
  - Policy consistency
  - Fiscal incentives
  - Government funding support
  - Removing barriers for adoption of new technologies
- Research & Development
  - Technology
  - Business systems and Processes
- Human Capital Development
- Strategic Partnerships/Collaborations
- Corporate Venturing
  - Willingness to take risks and creating the right portfolio and balance
- Strong Leadership
  - Risk tolerance
  - Failure tolerance

Conclusion

- Innovation has been a key enabler to the development of the Gas sector
- Can play a decisive role in solving the century's biggest double challenge; enabling access to cheaper forms of energy required for economic growth and development while also enabling action on climate change.

Thank you for listening