**THOUGHT LEADERSHIP ARTICLE**

Mining in Africa can reduce its environmental impact, futureproof its energy needs with natural gas

**By Lindiwe Mekwe, General Manager: Regulatory and Legal Affairs, ROMPCO**

**29 January 2025:** When it comes to reducing its environmental impact and futureproofing its energy needs, natural gas is the best answer for the mining industry. Transitioning to natural gas or renewable energy sources can improve energy efficiency significantly, thereby reducing emissions. Utilising alternative energy resource like natural gas, solar, wind, and hydropower, as well as implementing energy-efficient technologies, are crucial steps.

The role that natural gas can play in the energy transition of African mines is inextricably linked to its ability to help address environmental problems. With concerns about air quality and climate change looming large, natural gas offers many potential benefits if it displaces more polluting fuels. This is especially true given limits to how quickly renewable energy options can be scaled up and the fact that cost-effective zero-carbon options can be harder to find in some parts of the energy system.

Natural is less expensive, cleaner, and more efficient and cost-effective than coal. It emits 50% to 60% less carbon dioxide (CO2) when combusted in a new, efficient natural gas-power plant compared with emissions from a typical new coal plant. Studies have shown that the CO2 produced when burning fuel is a function of the fuel’s carbon content.

The flexibility that natural gas brings to an energy system can also make it a good fit for the rise of variable renewables such as wind and solar power. Natural gas can provide reliable energy in remote mining locations that do not have access to grid power and can also assist mining companies to avoid the financial challenges of volatile diesel and heavy fuel oil prices.

The use of natural gas in mining operations impacts local communities and job creation in Africa. Sustainable development is about meeting locally defined social, environmental, and economic goals of communities over the long term. Interactions between the mine and community should add to the physical, financial, human, and information resources available.

The challenge is to ensure that the effects of such interactions are regarded as positive by those affected locally as well as by the promoters of the project, and that communities develop in ways that are consistent with their own vision. This may be realised through, for example, the provision of social services, income, or skills development.

Communities can receive compensation and substantial flows of revenue when gas-to-power infrastructure is established, which can act as an important catalyst for change and growth. For areas previously peripheral to the cash economy, these monetary flows can transform the economic and social basis of communities.

South Africa is a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and to the Paris Agreement. As an energy and emissions intensive middle-income developing country, the government has recognised the need for the country to contribute its fair share to the global effort to move towards net-zero carbon emissions by 2050.

In the 2023 Integrated Resource Plan (IRP), natural gas emerged as a critical part of South Africa’s future energy mix. With an existing gas infrastructure capable of supporting the mining industry’s energy needs and the possibility to accommodate the expansion of that infrastructure, the mining industry will be guaranteed to secure sufficient energy resources to sustain its future activities.

As South Africa decarbonises its economy, natural gas plays a key role as a transition fuel to replace more emissions-intensive fossil fuels like coal and diesel. Energy demand on the continent threatens to outstrip supply. The advantages of natural gas over traditional energy sources are its domestic availability, established distribution network, relatively low cost, and reduced environmental footprint.

To date, South Africa consumes ~180 Petajoules per annum (PJ/a) of gas, predominantly in the synfuels sector (110 PJ/a) and the industrial sector (70 PJ/a), which supports up to 56 thousand (k) jobs across the value chain, generates up to ZAR215 billion (bn) in taxable revenue, and contributes ~1–2% of GDP. This has been made possible by the constructed a 26-inch 865 km high-pressure cross-border gas transmission pipeline and transport natural gas from the Central Processing Facility (CPF) in Mozambique to gas markets in Mozambique and South Africa.

The high -pressure gas transmission pipeline has been owned and operated by the Republic of Mozambique Pipeline Investments Company ([ROMPCO](https://www.rompco.co.za/)) since 26 October 2000 under the Pipeline Agreement. The Mozambican government granted ROMPCO the exclusive right to occupy the pipeline corridor as a zone of partial protection under the Land Law to conduct its pipeline operations.

In addition, on 27 February 2007, the National Energy Regulator of South Africa (NERSA) issued ROMPCO a licence to operate the 334 km section of the Mozambique Secunda Pipeline (MSP) transmission pipeline in South Africa. The MSP gas network, including the Komatipoort Compressor Station, is a single source of supply of natural gas from CPF in Mozambique to several customers in different industries in the South African economy.

The existence of, and/or additional investment requirements for gas extraction and transportation, is an important determinant of the economic viability of new or extended gas exploitation. The domestic gas utilisation infrastructure, such as gas-to-power plants, could be another investment opportunity for ROMPCO.

The shift to gas infrastructure that is more flexible in application and location – such as floating storage and regasification units (FSRUs) and small, modular and flexible electricity generation plants – offer lower risk profiles and will have longer term economic implications. Availability of finance is key to infrastructure development, for both gas and renewables. In conclusion, natural gas can also support Africa’s industrialisation, which can lead to economic growth and the development of renewable infrastructure.

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**Notes to the editor**

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**About ROMPCO**

The Republic of Mozambique Pipeline Investments Company (ROMPCO) is a joint venture between the government of South Africa (represented by the South African Gas Development Company (iGas), the government of Mozambique (represented by Companhia Moçambicana de Gasoduto (CMG) and Sasol. ROMPCO was formed to transport natural gas from Mozambique’s Pande and Temane gas fields to markets in both Mozambique and South Africa, for the economic benefit of the region.

ROMPCO’s mission is to maximize stakeholder value through the expansion of its footprint in a manner that promotes reliable, safe, and environmentally responsible operations. ROMPCO aims to contribute to a balanced energy economy, gas infrastructure and capabilities development while being a responsible corporate citizen.

**ROMPCO Contact**

Chuma Mxo

Manager: Branding, Communications & CSI

ROMPCO

Tel: +27 11 523 3629

Email: [chuma.mxo@rompco.co.za](mailto:chuma.mxo@rompco.co.za)

Website: <https://www.rompco.co.za/>

**Media Contact**

Thobile Ndlovu

Account Executive  
NGAGE Public Relations   
Phone: (011) 867-7763  
Cell: 073 574 2931  
Email: [thobile@ngage.co.za](mailto:thobile@ngage.co.za)  
Web: [www.ngage.co.za](http://www.ngage.co.za/)

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