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BRIDGE OR CUL-DE-SAC? THE ROLE OF AFRICA'S NATURAL GAS RESOURCES IN THE GREEN TRANSITION

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Abstract






The push for a global energy transition to arrest climate change has intensified since the 2015 Paris Agreement. However, many countries continue to argue for the continued development of fossil fuel resources to give them more time to navigate a just transition. Recent geopolitical and energy market developments have added further complexity to the just energy transition debate. Africa is rich in energy resources,

including fossil fuels, but has the lowest energy access when compared globally. Many African countries consider their natural gas resources a means to promote energy access and development, while also serving as a source of investment and revenue. This Policy Brief examines the challenges that natural gas poses for African countries and their G20 partners in global, regional, and national development and for a just energy transition.



The Challenge




1

A Just Transition Amidst Energy Poverty and Resource Abundance

Africa plays an important role in the global exploration, export, and supply of gas, with its production at slightly over 8 percent of the global output.¹ African gas reserves have grown substantially over the last decade due to significant discoveries across the continent. Indeed, 40 percent of global gas reserves discovered between 2010 and 2020 were in Africa.² However, there is a disparity among African countries in gas market maturity, their economic development, and geopolitical relations. Most of the continent's gas reserves are concentrated in a few countries, namely, Nigeria (32 percent), Algeria (25 percent), Mozambique (15 percent), Egypt (12 percent), and Libya (8 percent).³ Several African states are planning to substantially increase fossil fuel production in the coming years. In addition, many African countries have plans to expand their existing gas infrastructure or start new projects. Approximately 22,000 km of new gas pipelines are being planned in Africa, most of which are to be built in

Mozambique, Nigeria, and South Africa.⁴ Recent explorations have continued to produce significant results, with large discoveries made in Côte d'Ivoire in 2021 and Algeria in 2022. There are also noteworthy plans to increase the export capacity of liquefied natural gas (LNG). Several LNG projects are currently under development, including in Mozambique and Tanzania.⁵ While five African countries currently account for 90 percent of the continent's known gas reserves, the question of how the continent uses its reserves has much wider relevance for the region. This is not only because ongoing gas explorations across Africa are likely to lead to new discoveries of reserves, but also because gas to power projects, linked to regional power pools,⁶ have implications for the entire region, regardless of whether individual countries possess gas reserves or not.

The position of gas within the global energy transition is a highly contested matter. Although natural gas emits carbon, it is a less carbon-intensive fuel than coal and oil and can therefore contribute to reducing emissions if substituted for these fuels. As countries and industries make their transition to more sustainable energy sources,




natural gas can serve as a ‘bridge’ fuel that helps reduce carbon emissions while renewable energy technologies are developed and scaled up. Natural gas can also be used as a backup for intermittent renewable energy sources like wind and solar, thereby helping to ensure a stable and reliable supply of electricity. In 2022, the European Union (EU) classified nuclear power and natural gas as green energy, and the G7 nations rescinded their earlier pledge to end the financing of gas projects due to the ongoing energy crisis. This was partly motivated by Russia’s invasion of Ukraine and its decision to restrict the supply of natural gas to Europe, which prompted a shift in global sentiments towards natural gas. Therefore, efforts to dissuade Africa from exploiting its natural gas reserves are seen by many as fundamentally unjust.⁷

Despite the changing sentiments, there are still concerns about the credentials of gas as a transition fuel, given the emissions produced along the gas supply chain, including processes such as flaring.⁸ Not only is the production of LNG especially energy intensive, there are also methane leakages that occur throughout the gas supply chain. Methane is a key driver of climate change,

being more than 25 times as potent as carbon dioxide in trapping heat in the atmosphere.⁹ Additionally, gas is being challenged by renewable alternatives, which are becoming increasingly cost-effective and accessible. The argument that natural gas is required as a transition fuel is critiqued based on the increasing competitiveness of renewable energy technology in meeting domestic energy needs.¹⁰ The International Renewable Energy Agency (IRENA), for example, has argued that renewable energy sources provide Africa with a more affordable option in comparison with fossil-fuel-powered alternatives.¹¹

The above notwithstanding, many African countries have been vocal about continuing to develop their fossil fuel resources, arguing that not doing so would drastically impede the continent’s economic development. They argue that the use of transitional energy sources like gas makes it easier for the continent to achieve a just, albeit differentiated, pathway towards universal energy access, energy security, and resilience. Africa currently has the world’s lowest electricity access and faces an increasing demand for energy. Many African stakeholders have therefore argued that natural gas



is a key component in the energy mix for ensuring a secure supply and is therefore a critical transition fuel for Africa.¹²


In the lead up to COP27, the African Union drafted a ‘Common Position on a Just Energy Transition’, which advocates for the development of gas, low-carbon hydrogen, and nuclear energy in the short- to medium-term. This would concurrently go on with the efforts to scale up the deployment of renewable energy.¹³ The Position acknowledges Africa’s differentiated path towards meeting the goal of universal energy access, emphasising the importance of diversifying Africa’s energy mix. The African Union’s Climate Change and Resilient Development Strategy and Action Plan (2022–32) does not specifically deal with the role of gas as a transition fuel, yet, for energy transformation, it emphasises and prioritises renewable energy development.¹⁴

At the Sustainable Energy for All Forum held in Kigali, Rwanda, in May 2022, ten African countries^a issued the Kigali

Communiqué which supports the use of gas as a transition fuel for Africa’s development.¹⁵ At the Gas Exporting Countries Forum (GECF), held in October 2022, Egypt’s Minister of Petroleum and Mineral Resources stated that “gas is the perfect solution to achieving the energy trilemma for security, sustainability and affordability.”¹⁶ GECF member countries—which include Algeria, Egypt, Equatorial Guinea, and Mozambique—agreed that COP28, to be held in the United Arab Emirates later this year, should showcase the role of gas in energy transition and its contribution in meeting global developmental goals.¹⁷

Despite several countries in Africa supporting gas extraction, there has been some criticism and resistance from civil society and other stakeholders. Initiatives such as the ‘Don’t Gas Africa Campaign’ have called on African governments, the global North, fossil fuel companies, and financial institutions to “halt the dash for gas”, arguing that the benefits of gas as a transition energy source are exaggerated and distorted.¹⁸ Civil society groups have


a These are the Democratic Republic of the Congo (DRC), Ghana, Kenya, Malawi, Morocco, Nigeria, Rwanda, Senegal, Uganda, and Zimbabwe.



argued that such expansion plans are inconsistent with the Paris Agreement climate goals.¹⁹

Most gas projects in the continent are oriented towards exports and are operated by multinational companies, which have a disproportionate share in the ownership of these projects.²⁰ Africa's gas markets are relatively underdeveloped, and offtake agreements with major global gas markets are therefore currently necessary to secure


the financing for the development of these resources. While this is a current reality of the African gas market, there is a real risk this will mean that Africa's gas resources will benefit a small group of global energy elites at the expense of African communities whose need for reliable energy access will not be sufficiently met. It is thus important that gas development agreements include commitments to developing local gas markets and infrastructure.



The G20's Role



2




The G20 plays a key role in shaping the global climate action and energy policy environments.

Furthermore, its members are both major producers and consumers of natural gas. Therefore, to secure the necessary investments for the development of Africa's natural gas reserves, offtake agreements with G20 markets have been crucial. These realities mean that the G20 can play an important role in helping Africa pursue its energy security and development plans.

As leaders in energy market technologies, the G20 should support the adoption of technologies in Africa that can reduce the carbon emissions of upstream and downstream gas infrastructure. The natural gas sector has started to look at

ways of reducing emissions, but many of these emerging solutions are not particularly easy to implement from an economic perspective, nor guaranteed to succeed.²¹ Therefore, the G20 can provide financing and technological support to those African countries that have opted for natural gas investments.

Maintaining investments in natural gas can help African countries buy the time they need to put the appropriate policies and financial mechanisms in place to implement the energy transition at an acceptable pace. For example, African countries could work on capitalising the African Continental Free Trade Agreement (AfCFTA) to remove barriers in renewable energy markets and work towards improving the investment environment.



Recommendations to the G20



3



Prioritising Africa's energy security

The debate around economic growth, energy security, and the nature of a just transition in Africa poses a serious dilemma for many African countries.²² While the need to urgently address the negative consequences of climate change grows, renewable energy alone cannot meet the energy demands of Africa. Withdrawal of investments in natural gas may worsen an already fragile energy security context for many African countries. Given that natural gas can help ensure grid reliability of renewable energy-based electricity, a nuanced approach is needed that sees a role for gas as a transition fuel that can be used in conjunction with the accelerated deployment of renewables. As such, it is important for African leaders and development partners, including G20 partners, to find acceptable compromises between the demands of decarbonisation and energy security.

Financial institutions assessing natural gas developments of African countries should not simply go by emissions. Instead, these institutions should

consider various criteria for enhanced energy access in the context of national and regional ambitions for long-term, climate-resilient development. Furthermore, support should be provided to African countries where the development of gas reserves relies on offtake agreements in G20 markets. Such support for the producer countries should also include energy supply and explore possible investment avenues in gas. The development of Africa's gas reserves to exclusively serve foreign markets is untenable given the continent's energy access challenges.

Facilitating investments in blue and turquoise hydrogen

Methane from natural gas can serve as a hydrocarbon feedstock in the production of blue hydrogen and turquoise hydrogen²³ and this can be one of the sustainable options in the future for Africa's gas resources. Utilising natural gas in this way also contributes to reductions in gas flaring, which is a significant contributor to carbon emissions. In countries with plentiful natural gas resources, such as Nigeria and Tanzania, blue hydrogen is already being proposed as part of large upcoming LNG facilities.²⁴ Given

the potential benefits, the G20 can help equip African countries that want to pursue the production, use, and export of blue and turquoise hydrogen. This would also help African countries fulfil their commitments to initiatives such as the World Bank's Zero Routine Flaring by 2030.²⁵


Investing in carbon capture technologies

A critical problem for the future of the gas sector within a low-carbon energy mix is the degree to which carbon capture, storage, and utilisation (CCUS) technologies are taken up. CCUS technologies can help decarbonise the extraction and production of hydrocarbons by capturing CO₂ released from natural gas production and using this CO₂ in other applications or permanently storing it in deep geological formations.²⁶ It must be acknowledged that CCUS technologies are still emerging, with significant work required to establish its technological and financial feasibility in various settings. Nonetheless, the successful deployment of CCUS technologies for both oil and gas could be significant. This technology could ensure the sustainable use of decarbonisation

of Africa's natural gas resources and contribute towards the development of other low-carbon projects in the future.²⁷

Incorporating gas in electricity systems

Identifying the most efficient use of natural gas can support increased penetration of renewable energy in electricity systems. The implementation of renewable energy generation at scale has the potential to create load balancing challenges for a grid without dependable baseload generation and sophisticated forecasting capacity. For this reason, gas infrastructure developed today can provide the backbone for integrating low-carbon and decarbonising technologies. This is because gas can be used as a source of grid flexibility to help anchor intermittent energy supplies and add large-scale renewable energy projects without jeopardising the reliability of the electricity supply.²⁸ For example, Egypt has used its existing gas resources to create surplus electricity supplies as a foundation for the further development of renewable energy infrastructure.²⁹ The G20 can support African countries in integrating their natural gas into their electricity systems the Egyptian way.



This would support the scaling up of renewable energy deployment and aid the wider transition towards low-carbon and climate-resilient economies.

Addressing the potential stranding of gas resources

Increased uncertainty around the pace of the energy transition, its influence on global gas demand, and the availability of finance for gas projects means that risk of stranded gas infrastructure in African countries is significant.³⁰ For example, expected declines in EU gas demand towards 2030 mean that new projects for exports may not become operational in time for adequate returns on these investments.³¹ This is linked with the concept of a ‘presource’ curse, a situation where countries that are planning to begin extraction of a

fossil fuel engage in substantial public investments in expectation of unrealistic future revenue streams.³²

Repurposing of gas and other fossil fuel-based infrastructure will be essential when countries embark on a phase-out of these energy sectors. The G20 can commit to help African countries convert their gas infrastructure for clean energy, a task that requires high technical capacity, regulatory changes, and financial commitments. Among others, gas infrastructure can be repurposed to support carbon capture and storage projects, to transport green hydrogen and renewable natural gas (biogas) through repurposed gas pipelines. In addition, gas storage facilities can be repurposed to store energy as compressed air or hydrogen.³³

Attribution: Joseph Upile Matola et al., “Bridge or Cul-de-Sac? The Role of Africa’s Natural Gas Resources in the Green Transition,” *T20 Policy Brief*, June 2023.

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