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Africa's Gas Power Plants Cannot Be the Future Without Tackling Methane

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RETHINKING AFRICA'S ENERGY TRANSITION

Across Africa, governments are grappling with the challenge of meeting surging electricity demand while pursuing climate-responsible growth. The continent's population projected to exceed 2.5 billion by 2050[1] will require more power generation than ever before in history. In this context, natural gas has been marketed as a pragmatic "bridge fuel" between a fossil-fuel past and a clean-energy future.

Proponents argue that natural gas emits less carbon dioxide (CO_2) than coal or oil, provides flexible baseload and peaking power, and can support industrialization in regions where hundreds of millions still lack access to electricity[2].For countries from Nigeria to Mozambique, this logic has shaped national development plans and investment pipelines.

Yet this narrative tells only half the story. While attention has focused on carbon dioxide, another greenhouse gas, methane, has remained dangerously overlooked. Methane is the main component of natural gas and a potent climate forcer. Over a 20-year period, it traps 84 times more heat than CO_2[3], making it a short-term accelerator of global warming. When methane leaks during gas production, processing, transport, or combustion, it undermines the very climate advantage gas is supposed to deliver. Without addressing methane, Africa's gas power plants risk becoming not a bridge, but a trap locking the continent into costly, high-emission infrastructure that could quickly become obsolete.

METHANE: AFRICA'S INVISIBLE CLIMATE AND DEVELOPMENT CHALLENGE

Globally, methane emissions from oil and gas operations are now recognized as one of the fastest and cheapest opportunities to slow climate change. The International Energy Agency (IEA) estimates that up to 75% of these emissions can be reduced with existing technologies, and about half of that at no net cost, since the captured gas can be sold.

For Africa, this represents both a challenge and an opportunity. The continent's gas sector is expanding rapidly, led by Nigeria, Algeria, Egypt, Mozambique, Tanzania, Senegal, and Mauritania. Gas is no longer just for export, it is increasingly used to generate domestic power and fuel industry. However, across these value chains, methane leakage rates remain poorly monitored and largely unregulated.

Every cubic meter of leaked gas represents lost energy, lost revenue, and lost climate credibility. In an era when African nations are seeking international finance for clean energy and adaptation, uncontrolled methane emissions risk eroding investor confidence and the trust of development partners. In this context, OSS, through its regional partnerships, provides platforms for knowledge exchange, policy harmonization, and data-driven monitoring to help member states identify and mitigate methane emissions efficiently.

[1] https://www.un.org/development/desa/pd/content/World-Population-Prospects-2022
[2] https://www.iea.org/reports/africa-energy-outlook-2022
[3] https://www.ipcc.ch/report/ar6/wg1/

THE MYTH OF GAS AS A "CLEAN TRANSITION FUEL"

For decades, gas has been described as the "cleanest fossil fuel." This framing, borrowed from industrialized economies, has influenced Africa's energy policies and diplomatic positions. Many leaders have argued that the continent has a *"right to development"* and should not be denied the chance to exploit its gas resources.

However, gas is only "clean" if methane is kept under tight control. Studies show that when total leakage rates exceed 3% across the supply chain, the climate advantage of switching from coal to gas disappears completely. In some fields around the world, leakage rates have been measured as high as 6–8%. If African countries invest billions in new gas power infrastructure without methane management, they could lock themselves into assets that pollute as much as coal, generate stranded costs, and face growing international pressure for early phase-out. OSS continues to advocate that energy transitions must align with climate commitments while remaining equitable, cost-effective, and responsive to Africa's socio-economic realities.

WHY METHANE MANAGEMENT MATTERS

The case for tackling methane in Africa's gas power sector rests on three interlinked pillars of climate responsibility, economic efficiency, and political credibility.

Climate Responsibility: Africa contributes less than 4% of global greenhouse gas emissions, yet it bears the brunt of climate impacts from prolonged droughts in the Horn of Africa to destructive floods in West Africa and cyclones in the south. These shocks threaten food security, health, and livelihoods. While the continent's historical responsibility is small, its future energy choices matter. By integrating methane management, Africa can ensure its power expansion does not exacerbate the crisis it is already suffering from.

Economic Efficiency: Methane management is not a burden, it is a cost-saving measure. Every ton of methane captured is marketable fuel. For utilities struggling with rising operational costs and unreliable generation, reducing leaks directly improves efficiency and affordability. Technologies such as infrared cameras, continuous leak-detection sensors, and satellite monitoring have become accessible and inexpensive. Implementing them can boost both fiscal revenue and energy security.

Political Credibility: In global climate negotiations, Africa's moral authority is strongest when matched by proactive action. By tackling methane, African nations can demonstrate leadership in low-carbon innovation and responsible resource governance. This credibility attracts concessional finance, enhances green diplomacy, and helps position African projects within the frameworks of the Global Methane Pledge, Paris Agreement Article 6, and the African Energy Transition Framework (AUC, 2023). Conversely, ignoring methane risks casting African gas projects as outdated, irresponsible, and ineligible for future climate finance.

OSS's work through regional projects such as RICOWAS in West Africa helps countries mainstream emission control and resilience-building into their national frameworks.

Lessons from Across the Continent

Nigeria: From Flaring to Reform: Nigeria, the continent's largest oil and gas producer, illustrates both the magnitude of the problem and the promise of reform. Despite long-standing flaring, recent methane-reduction regulations, such as the 2023 Nigerian Upstream Petroleum Environmental Regulations mark progress. The country still loses an estimated 6.6 billion cubic meters of gas annually, enough to power 3 million homes, but stronger enforcement could turn waste into revenue and credibility.

Mozambique and Tanzania: New Entrants, New Choices: In Mozambique and Tanzania, multi-billion-dollar LNG projects are reshaping national economies. As these projects expand, civil society groups are urging transparency in methane monitoring and the adoption of best-practice standards from inception. Building methane management into early operations will prevent the costly retrofits seen elsewhere.

North and West Africa: Old Infrastructure, New Risks: In some north and west African countries, aging gas networks and weak leak-detection regimes raise the risk of invisible emissions. Meanwhile, emerging producers have a unique window to design methane management systems from day one, setting a continental benchmark for clean production.

Key Policy Actions for Africa

Priority Area	Recommended Actions
National Frameworks	Integrate methane reduction targets into national energy and climate policies. Establish measurable standards for gas operators.
Technology Deployment	Require independent monitoring, leak reporting, and penalties for non-compliance. Strengthen environmental authorities and regional oversight bodies.
Fennancing & Incentives	Promote the use of satellite data, drones, and low-cost sensors for real-time detection. Support local manufacturing and service companies in leak-repair technologies
Capacity & Awareness	Invest in training technicians, engineers, and policymakers Launch regional campaigns to raise public awareness about methane's impact on climate and health

A Call for International Partnership

Africa should not be left to face the methane challenge alone. International partners and donors have a critical role to play in bridging the technical and financial gaps. Programs such as the **Clean Air Task Force's Methane Pollution Prevention Program**, with support from **The Lemelson Foundation**, illustrate the potential of targeted collaboration.

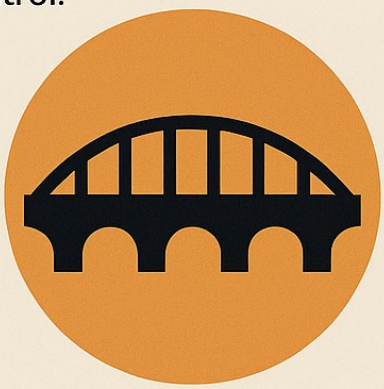
Partnerships between African governments, development banks, and technology providers can accelerate the deployment of leak-detection systems, improve data transparency, and stimulate a new generation of green jobs in the energy services sector. Importantly, methane management complements, not competes with, the renewable-energy transition. Reducing methane emissions today buys time for scaling up solar, wind, and storage solutions tomorrow.

Making Methane Visible

Methane is colorless and odorless but its consequences are not. Droughts, heatwaves, and crop failures remind us daily that the climate system is already under stress. Yet public awareness of methane remains low. African citizens understand the visible costs of unreliable electricity and local pollution, but the invisible gas driving near-term warming rarely features in national debates. Media outlets, academic institutions, and civil-society organizations must help "make methane visible" turning technical jargon into public concern. Only then can democratic pressure complement regulatory reform and corporate responsibility.

AFRICA'S CHOICE: BRIDGE OR TRAP

Africa stands at a defining crossroads. The next two decades will determine whether the continent's power sys tems fuel resilience or repeat the mistakes of industrial economies. Gas may still play a transitional role but only if managed responsibly and paired with rigorous methane control.



Without action, gas power plants risk becoming a costly detour, locking-nations into high-emission pathways that drain public finances and underming global credibility.

With action: methane reduction can transfor Africa's energy story, from a dependency narrativive to one of innovation, efficiency, and leadership.

Methane management is not a technical afterthought; it is the cornerstone of a just and sustainable energy transition.

AFRICA'S GAS POWER PLANTS CANNOT BE FUTURE, UNLESS THEY TACKLE METHANE.