AFRICA HYDROGEN HUB

Integrated Africa Power

WEBINAR REPORT #2

BURNING BILLIONS OR BUILDING HYDROGEN – TURNING NIGERIA'S WASTED GAS INTO CLEAN HYDROGEN

Date: Wednesday, 11 March 2026

Time: 12:00 PM – 1:00 PM (WAT)

Organized by: Africa Hydrogen Hub (AHH)

1. Overview

Nigeria loses billions of dollars every year to gas flaring and underutilized gas resources – while the rest of the world is rapidly embracing hydrogen as a cornerstone of the clean energy transition.
This AHH Hydrogen Webinar examined a critical question:

Should Nigeria continue to tolerate gas flaring, or can flared gas be harnessed to produce clean hydrogen and create real economic value?

The session brought together industry experts and policymakers who explored how wasted natural gas can be converted into clean hydrogen, the evolving regulatory and investment environment, and the practical actions required from government, industry, and investors to unlock this opportunity.

Convener:

- Dr. Chigozie Nweke-Eze, Founder & Facilitator, Africa Hydrogen Hub

Teaser Presentation:

Mr. Campbell Omuboye (Research Associate, AHH)
Insights from AHH's latest hydrogen publication on gas flaring-to-hydrogen opportunities in Nigeria.

Moderator:

Mr. Ofonama Archibong – Lead Consultant, SunElektrica Limited

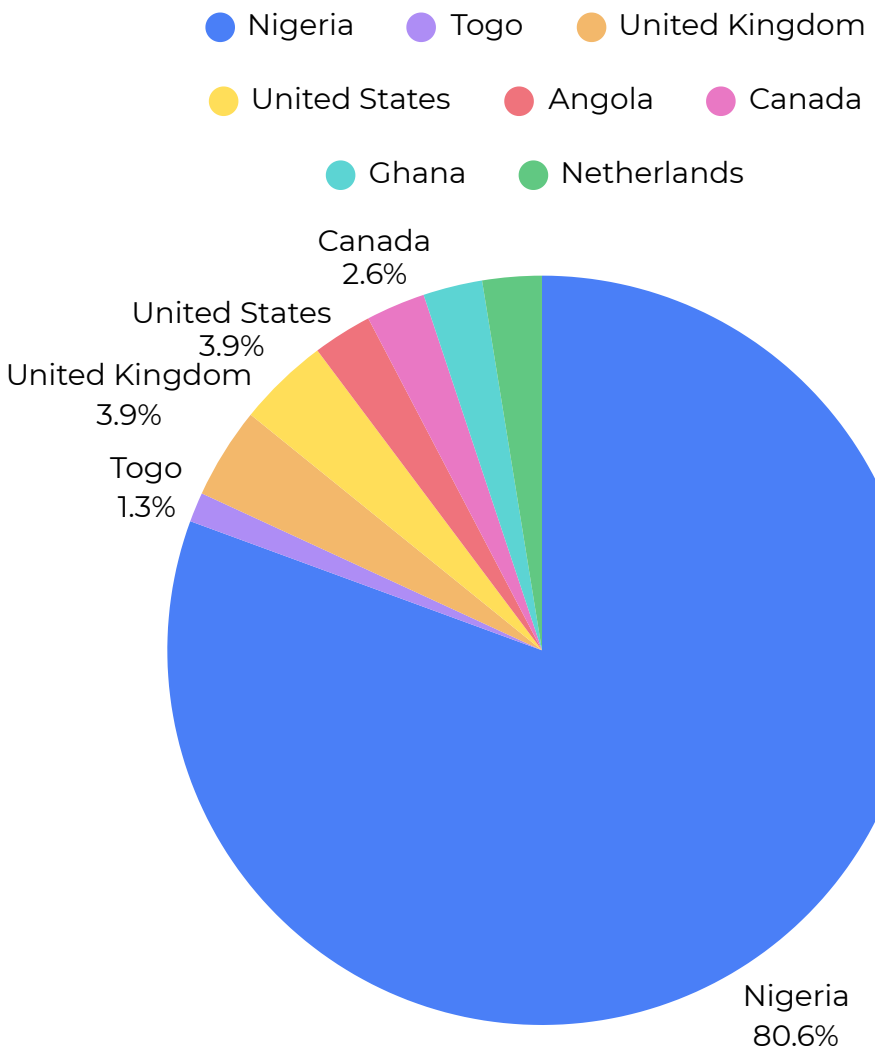
Panelists:

- **Dr. Malah Mohammed** – Principal Regulatory Officer, Nigerian Upstream Petroleum Regulatory Commission (NUPRC)
- **Dr. Chinnan Maclean-Dikwal** – Vice Chair, African Energy Council (AEC)
- **Dr. Ibrahim Muritala** – Global Hydrogen Leader, American Bureau of Shipping (ABS)
- **Mrs. Tayo Rhodes-Vivour** – General Manager, Gas Aggregation Company of Nigeria (GACN)

2. Participant Distribution

The webinar attracted a geographically diverse audience, reflecting both strong local engagement and growing international interest in Nigeria's hydrogen potential.

Distribution of people by country



As illustrated in the chart above, **Nigeria** accounted for the majority of participants, highlighting the strong domestic relevance of the topic. Among international attendees, the **United States, United Kingdom, Angola**, and **Canada** represented the most prominent sources of participation. Attendees also joined from several other countries across **Africa, Europe, Asia, and North America**, further reinforcing the global interest in discussions around gas flaring reduction and hydrogen development in Nigeria.

The participation profile underscores both the national significance of the conversation and its increasing global relevance within the energy transition landscape.

3. Key Discussion Highlights

A. Scale and Implications of Gas Flaring in Nigeria

The moderator opened by asking for a clear quantification of gas flaring in Nigeria and its associated economic and environmental consequences.

Response Summary (Tayo Rhodes-Vivour)

The speaker began by grounding the discussion in a fundamental definition of flaring as the combustion of associated gas that could otherwise be monetized. She emphasized that flaring represents not just inefficiency but the destruction of a valuable national asset.

She expanded the discussion beyond raw volumes to highlight systemic impacts. Economically, flaring represents billions of dollars in lost revenue annually, including missed opportunities for foreign exchange inflows, industrial feedstock utilization, and domestic energy supply. She linked this directly to Nigeria's persistent energy access challenges, particularly power shortages.

Environmentally, she pointed to carbon dioxide emissions and localized impacts in the Niger Delta, including soil degradation, agricultural damage, and atmospheric pollution from sulfur compounds. Importantly, she reframed flaring as a multi-dimensional issue affecting not just macroeconomics and climate, but also livelihoods and quality of life.

Quote:

"Flaring is burning of gas that could have been utilized. It is the burning of an asset to Nigeria, essentially billions of dollars wasted. Flaring for us in Nigeria is an economic issue, is an environmental issue, and also a personal issue."

B. Structural Origins of Gas Flaring in Nigeria

The discussion moved to understanding the historical and structural causes of persistent gas flaring.

Response Summary (Dr Chinnan Maclean Dikwal)

The speaker traced the root cause of flaring to early oil industry decisions in Nigeria, particularly during the 1970s and 1980s. At that time, the industry was structured primarily around crude oil monetization, with little to no economic incentive to capture or utilize associated gas.
He explained that legacy joint venture (JV) contracts did not require gas commercialization, largely because gas markets and infrastructure were underdeveloped. As a result, flaring became an operational norm embedded in field development strategies.

He contrasted this with later production sharing contracts (PSCs), which incorporated gas utilization requirements. However, because a significant portion of Nigeria's production still comes from legacy JV assets, the historical design flaw continues to shape current outcomes.

Quote:

"The problem of flaring in Nigeria is one of those decisions that people took in the 70s and 80s which is still affecting us today. The whole focus was just to monetize crude oil. Most of the flaring that happens in Nigeria today are related to legacy JV contracts."

C. Technical and Infrastructure Constraints Sustaining Flaring

The moderator then explored the technical limitations that perpetuate gas flaring.

Response Summary (Dr.-Ing. Ibrahim K. Muritala)

The speaker described gas flaring as the outcome of systemic infrastructure gaps, particularly the absence of pipelines, processing facilities, and integrated gas value chains.
He introduced the "chicken and egg" dilemma: infrastructure is not built without guaranteed markets, yet markets cannot develop without infrastructure. This creates a structural lock-in where flaring becomes the default option.
He further highlighted operational realities in Nigeria's oil fields, including mature assets with high water cut, energy-intensive gas separation processes, and remote field locations. These factors increase the cost and complexity of gas capture, particularly for marginal fields.

Quote:

"There are significant infrastructural deficits, which introduces a kind of classic chicken and egg problem. You can't process or transport gas without pipelines, but you won't invest without guaranteed markets. Flaring is often the most technically reliable way to dispose this gas."

D. Regulatory and Policy Framework for Gas Flaring Reduction

Question Framing

Attention then shifted to existing policies and regulatory tools addressing gas flaring.

Response Summary (Dr Mohammed Malah)

The speaker outlined Nigeria's evolving regulatory landscape, emphasizing that the Petroleum Industry Act (PIA) 2021 formally mandates the elimination of gas flaring in new developments.

He highlighted supporting instruments such as flare gas regulations, commercialization programs, and increased penalty structures designed to discourage flaring. These policies are also aligned with Nigeria's climate commitments under the Paris Agreement and national energy transition plans.

However, he stressed that the issue is not a lack of regulatory intent but rather implementation challenges, particularly in addressing legacy assets where flaring is still prevalent.

Quote:
"The Petroleum Industry Act of 2021 phases out flaring completely. Nigeria is not short of policies, what we are currently working on is implementation."

E. Alternative Pathways for Gas Utilization

Question Framing
The discussion then examined viable alternatives to flaring.

Response Summary (Tayo Rhodes-Vivour)

The speaker presented gas utilization as a portfolio of opportunities rather than a single pathway. She identified key sectors including power generation, compressed natural gas (CNG) for mobility, LNG exports, fertilizer production, and broader gas-based industries.
She emphasized that Nigeria already has both domestic and export markets capable of absorbing this gas, describing them as "waiting markets." This reframes the issue from lack of demand to lack of supply chain execution.
Her response positioned gas utilization as both an economic opportunity and a pathway to industrialization.

Quote:
"The first simple answer [to alternatives to gas flaring] is a lot. We can use it for power generation, LNG, fertilizer, gas-based industries. There is a waiting market in-country."

F. Hydrogen as an Emerging Utilization Pathway

Question Framing
Hydrogen was introduced as a potential addition to existing gas utilization strategies.

Response Summary (Tayo Rhodes-Vivour)

She framed hydrogen as an emerging but promising market that can complement existing gas monetization pathways. Rather than replacing other uses, hydrogen expands the value chain by converting waste streams into higher-value energy carriers.
Her response emphasized flexibility and optionality, suggesting that flare gas can feed multiple markets depending on economic and technological conditions.

Quote:
"Hydrogen is also an emerging market for Nigeria. If you have a wasted product, the options are quite enormous."

G. Technical and Economic Viability of Hydrogen from Flare Gas

Question Framing
The moderator challenged whether hydrogen production from flare gas is practically and economically viable.

Response Summary (Dr.-Ing. Ibrahim K. Muritala)

The speaker affirmed that flare gas-to-hydrogen pathways are already being implemented globally, particularly using modular and distributed technologies.

He expanded the discussion beyond hydrogen itself to include downstream derivatives such as ammonia and methanol, which offer clearer commercial pathways and established markets.
He also compared hydrogen production routes, noting that flare gas-based hydrogen can be more immediately deployable than green hydrogen due to existing resource availability.
Overall, he framed hydrogen as part of a broader value-addition strategy rather than a standalone solution.

Quote:
"Globally, it makes immense practical sense. Countries are already piloting flare gas to hydrogen. The technology is there and the opportunities are there."

H. Infrastructure and Technology Requirements for Flare-to-Hydrogen Systems

Question Framing
The discussion moved into the technical requirements for implementation.

Response Summary (Dr Chinnan Maclean Dikwal)

The speaker provided a detailed systems-level analysis, highlighting that Nigeria's flare gas is highly fragmented across numerous small, remote sites with variable flow rates.

He explained that these characteristics complicate hydrogen production, which requires steady, pressurized feed gas. Key technical steps include gas aggregation, compression, impurity removal, and conversion via reforming or pyrolysis.

He also emphasized the importance of designing for carbon management from the outset, warning against repeating past mistakes where by-products (e.g., CO_2) were not properly accounted for.

Quote:
"Many of the flare sites are small, remote, and geographically dispersed. Your process system needs a steady flow of gas. Most flare headers are low pressure. You need gas conditioning, then reforming or pyrolysis. We also need to think about how to sequester the CO_2."

I. Regulatory Readiness for Hydrogen Development

Question Framing
The moderator examined whether current policies support hydrogen deployment.

Response Summary (Dr Mohammed Malah)

He stated that existing regulatory frameworks are sufficiently flexible to accommodate hydrogen projects, particularly through existing gas commercialization structures.
He also highlighted ongoing efforts to develop a dedicated national hydrogen policy, which incorporates both natural gas-based and renewable-based hydrogen pathways.
However, he acknowledged the presence of operational and infrastructure challenges that must be addressed for large-scale deployment.

Quote:
"Nothing stops you from doing hydrogen within the existing framework. We still have some teething problems we need to solve."

J. Integration of Hydrogen into Nigeria's Energy Policy

Question Framing
A follow-up question addressed alignment between hydrogen strategy and existing gas frameworks.

Response Summary (Dr Mohammed Malah)

He explained that Nigeria's emerging hydrogen policy integrates multiple resource streams, including flare gas and solar energy.
He highlighted methane pyrolysis as a particularly promising pathway, as it eliminates the need for carbon capture by producing solid carbon instead of CO_2.

This reflects a broader policy direction toward flexible and locally adapted solutions.

Quote:
"The policy considers natural gas, flare gas, and solar potential. Pyrolysis removes the need for carbon capture, making hydrogen more feasible."

K. Audience Discussion: Infrastructure, Green Hydrogen, and Market Drivers

Response Summary

- *Regulatory Sandbox (Dr Mohammed Malah):* Emphasized adaptive regulation through pilot testing rather than rigid frameworks.

- *Green Hydrogen (Dr.-Ing. Ibrahim K. Muritala):* Confirmed feasibility but highlighted implementation, safety, and supply chain challenges.

- *Market Realism (Dr Chinnan Maclean Dikwal):* Stressed that hydrogen must be driven by economic viability, not hype, with gas remaining Nigeria's strongest competitive advantage.

5. Next Steps

The insights from this session will contribute to a policy brief under development by AHH, synthesizing key findings from each monthly webinar.

6. Acknowledgement

AHH extends heartfelt appreciation to all speakers, participants, and partners for their valuable contributions toward shaping Africa's sustainable hydrogen future.

Thank you for joining us

Watch the full replay of the second AHH dialogue series here

REPLAY OF 2ND AHH DIALOGUE SERIES

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