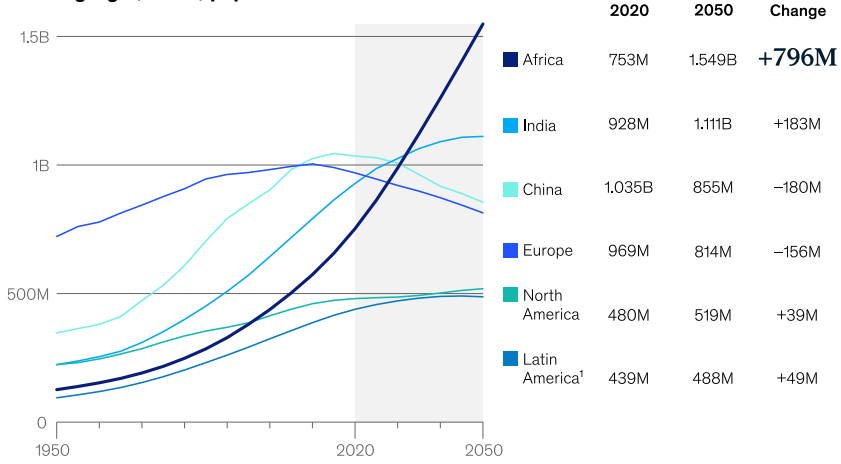
MEETING AFRICA'S GROWING ENERGY DEMAND: OPPORTUNITIES AND CHALLENGES IN REFINING AND CLEAN COOKING

The rapidly changing landscape of Africa's energy sector is driven by a burgeoning population, projected to reach 2.49 billion by 2050[1]. The anticipated growth in the working-age population, which is expected to increase by 796 million by 2050[2], should create a sustained demand for motor fuels including gasoline, diesel, and liquefied petroleum gas (LPG).

Africa will add 796 million people to the global workforce and be home to the largest and youngest population by 2050.

Working-age (15-64) population



	2020	2050	Change
Africa	753M	1.549B	+796M
India	928M	1.111B	+183M
China	1.035B	855M	–180M
Europe	969M	814M	–156M
North America	480M	519M	+39M
Latin America[1]	439M	488M	+49M

[1]Includes the Caribbean.
Note: Data for 2020-50 are projected using medium variant scenario.
Sources: UN Population Prospects 2022; McKinsey Global Institute analysis
McKinsey & Company

With an abundance of natural resources, the continent's refining capacity has often lagged its potential. In 2025 Africa will produce 6.3 million barrels per day (BPD) of crude oil and will export 4.2 million BPD, for a net consumption of 2.1 million BPD. At the same time Africa will import 0.9M BPD of gasoline, and 1.2 million BPD of diesel fuel. Although currently in balance with LPG demand, specific African initiatives, such as Clean Cooking, should result in a long term (post 2032) deficit of 3.5 million metric tons per year of LPG.[3]

THE REFINING CAPACITY CHALLENGE

Despite the increasing demand, Africa's current refining capacity is insufficient to meet the continent's growing energy demands. Africa's refineries are concentrated in the primary oil-producing nations of Nigeria, Egypt, Algeria and South Africa. There is a pressing need to establish grassroots refineries and revamp existing facilities to meet the projected fuel requirements. Significant investments are already planned across multiple countries to upgrade facilities to meet AFRI-4 and AFRI-5 specifications. Additionally, existing refineries must undergo calculated investments to meet the more stringent AFRI-6 standards. New refineries must strategically plan to incorporate the highest grades of AFRI specs while considering environmental impacts.

NAVIGATING ENERGY TRANSITION PRESSURES

As part of the broader energy transition, many customers are exploring solutions that involve co-processing renewable feedstocks and integrating petrochemical processes to meet Environmental, Social, and Governance (ESG) targets. However, to address the widening refining capacity gap, these innovative solutions may need to be developed in tandem with enhanced refining capabilities. Over the long term, Africa's light-duty vehicle fleet is expected to grow significantly. Nevertheless, traditional gasoline and diesel vehicles will remain the predominant growth drivers, as the penetration of electric and alternative-fuel vehicles is likely to be gradual and restricted to a few mature markets.

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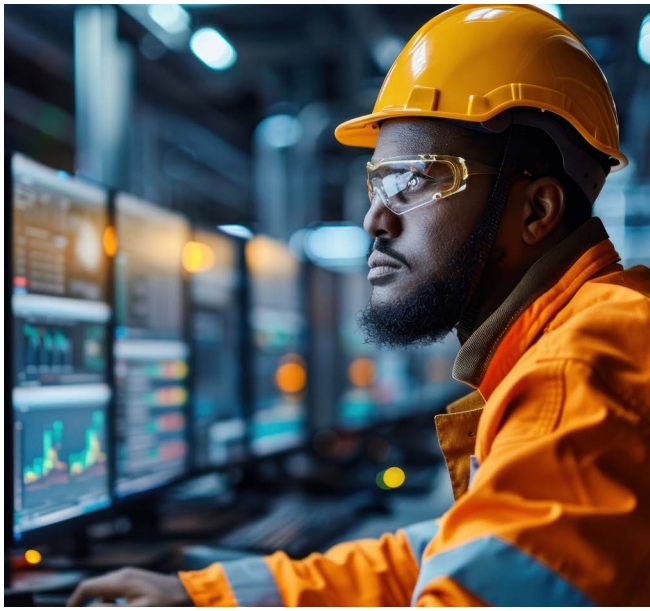
COMPLEXITY IN EXECUTION

The diverse infrastructures across Africa and the financing challenges necessitate modular solutions and staged investment strategies to facilitate prompt final investment decisions (FID). A phased investment approach is critical to minimizing project execution risks while maximizing returns on investment. This complexity further highlights the need for adaptable and scalable refining solutions that can meet the unique needs of the continent.



TECHNOLOGIES AND EXECUTION MODELS TAILORED FOR AFRICA

AFRI Fuel Compliance Technologies:

To comply with AFRI specifications, there is a requirement for ultra-low sulfur fuels, specifically 10 ppm for AFRI-6 gasoline and diesel. Transitioning from current specifications involves a variety of technologies including catalytic reforming, isomerization, benzene management, alkylation, fluid catalytic cracking (FCC), gasoline desulfurization, cracking, hydroprocessing, and mercaptan removal processes.

Modular Refining Solutions:

Modular naphtha complexes and process units offer an effective way to shorten project timelines, particularly in regions facing logistical constraints. Honeywell's modular execution model facilitates phased investments and rapid deployment, providing a practical approach for emerging markets.

Digital Optimization:

The integration of Honeywell Connected Plant solutions can enhance energy efficiency and reliability while improving the skill sets of the local workforce. Collaborating with Africa's emerging refining personnel, Honeywell aims to foster the next generation of operational excellence.

UNDERSTANDING CUSTOMER MOTIVATIONS

Balanced Product Supply:

Many African nations, including Angola and Nigeria, find themselves in a position where they export crude oil while importing refined products. A drive towards self-sufficiency and increased profits motivates investments in local refining capacities.

Employment and Human Capital Development:

The establishment of new refineries and petrochemical plants not only creates direct employment opportunities but can also have a ripple effect on adjacent industries such as logistics, infrastructure, and construction.

HONEYWELL: A TRUSTED PARTNER FOR REFINERY DEVELOPMENT

Compliance Assurance:

Honeywell offers technologies that can help reduce regulatory risks associated with complying with AFRI fuel standards.

Comprehensive Project Support:

Honeywell provides a single point of accountability throughout the entire project lifecycle. This ranges from initial plant configuration and process technology selection to on-site commissioning and ongoing aftermarket support. By offering a seamless, end-to-end experience that integrates various aspects of project execution, Honeywell ensures that customers receive reliable lifecycle support.

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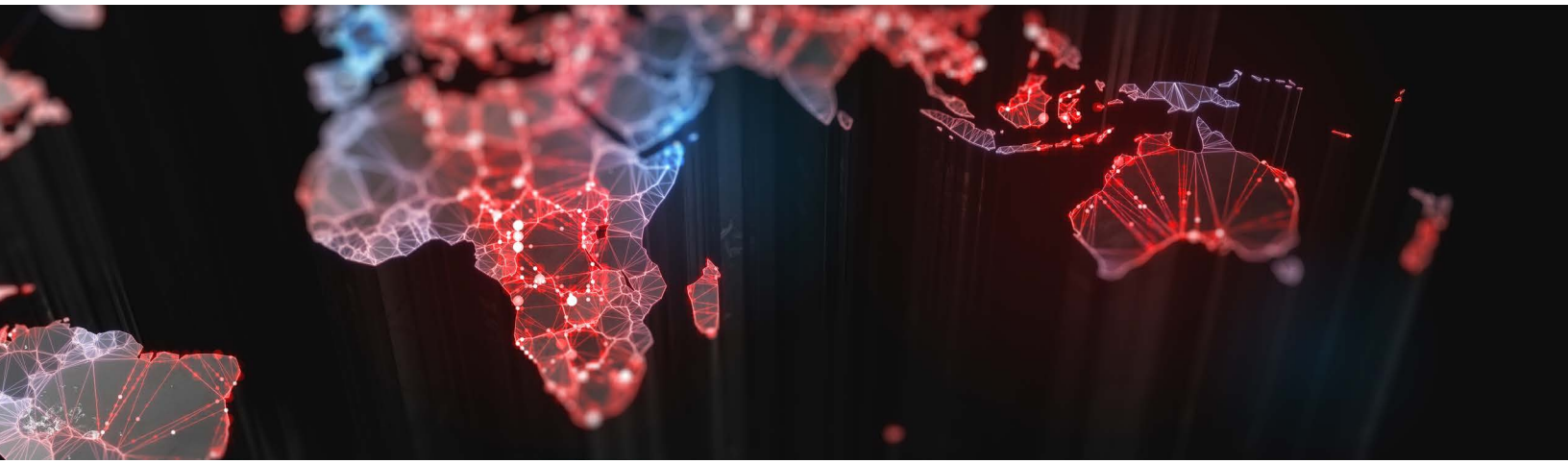
Support for Emerging Refiners:
Honeywell engages with emerging refiners as a project partner, offering insights into AFRI compliance, project execution strategies, and human capital development, along with fostering government relations.

Financing Advocacy:
Support for ExIm financing and government engagement is crucial in unlocking slower projects, aiding in the smooth progression of initiatives.

The Growing Shift Towards Clean Cooking:
In addition to refining, there is an increasing emphasis on clean cooking solutions across Africa. Transitioning from wood charcoal to natural gas not only enhances energy efficiency but also significantly improves public health, particularly benefiting women and children who are often the primary users of household cooking facilities. The health benefits of clean cooking, including reduced indoor air pollution, present an urgent necessity for investment and education in natural gas infrastructure.

CONCLUSION

As Africa's population continues to grow, the demand for energy solutions, refined products, and clean cooking options will shape the future of the continent's energy landscape. With significant investment and innovation in refining capacities, coupled with a commitment to the transition towards cleaner energy sources, Africa stands at the precipice of an energy revolution that promises both economic growth and improved public health outcomes. Honeywell's robust technologies and strategic partnerships position it as a leader in navigating these challenging yet promising opportunities in Africa's energy sector.



References:

1: Statista Research Department, 2024

2: UN Population Prospects, 2022

3: Crude Consumption / Gasoline Flows / Deisel Flows / LPG Imbalance, 2025 S&P Connect

For more information
https://ess.honeywell.com

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