

LPG REFINING: Unlocking LPG Growth Across the East of Suez and Global South

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From By Product to Strategic Molecule

Liquefied Petroleum Gas (LPG) has evolved from a refinery by product into a critical bridge fuel of the energy transformation. Once treated as residual output from catalytic cracking, LPG now represents a premium molecule that supports both clean cooking goals and petrochemical feedstocks. More than 60 percent of global supply comes from gas processing, while refinery derived output remains below 40 percent.

The United States and the Middle East dominate LPG exports. United States shale growth lifted output to over 80 million tonnes per year in 2024, yet forecasts suggest plateauing by 2028 as shale liquids mature. Asia's dependence on Gulf and African supply will therefore rise, intensifying competition for market access and pricing power.

Refineries must transition from volume driven to molecule driven strategies. Optimizing propane for petrochemical feedstock and butane for household use through catalyst innovation and modular refining can deliver sharper margins. India's refiners are already re engineering Fluidized Catalytic Cracker units to lift yields by up to 15 percent with limited capital reinvestment.

Long term competitiveness, however, lies in integrating LPG into crude to chemicals and propane dehydrogenation projects, converting LPG into propylene, ethylene, and polymers. This integration embeds LPG within the circular economy of advanced materials and shields it from the volatility of liquid fuel markets.

Demand Geography: India's Scale, Africa's Potential

Global LPG demand now exceeds 350 million tonnes and continues to grow 3 to 4 percent annually despite decarbonization pressures. The locus of demand has shifted southward toward India, Southeast Asia, and Sub-Saharan Africa as China gradually electrifies and Japan's mature market contracts.

India remains the anchor of global consumption. It imports 22 to 23 million tonnes yearly, meeting 70 percent of domestic demand. Over 300 million households rely on LPG, compared with just 15 million connected to piped gas. This entrenched dependence ensures durable demand growth even as subsidies are phased out.

Africa represents the next growth frontier. Per capita consumption averages only 4 kilograms annually versus 50 kilograms in India. If usage

reached half of India's level, African demand could surpass 50 million tonnes by 2030. Yet inadequate infrastructure such as ports, storage, bottling, and cylinders constrains expansion.

Gulf producers can unlock this potential through vertical integration by investing directly in African downstream networks, terminals, and distribution systems. The model should be market based, supported by government to government partnerships and blended finance. India's deregulated pricing framework, which maintains targeted support for low income households while enabling market efficiency, offers a replicable template.

Industrial demand is an additional engine. With China moderating refinery runs and United States NGL exports peaking, new LPG to olefins projects in the Middle East, India, and Southeast Asia will create more than 25 million tonnes of PDH capacity over the next decade. This transformation will reposition LPG as an industrial feedstock central to regional manufacturing and exports.

Investment Realities and Policy Alignment

The energy landscape remains defined by a tension between climate ambition and supply realism. Refinery closures in OECD markets coexist with strong demand in the developing world. The IEA projects global oil demand above 105 million barrels per day through 2030, with petrochemicals and LPG as key growth drivers.

For Gulf and Asian producers, project discipline and flexibility are essential. Capital intensive refineries built on 20 year payback cycles no longer fit market volatility or carbon regulations. The next competitive advantage lies in modular, scalable projects integrated across the value chain and located close to end users.

Price will ultimately dictate progress. As global supply tightens toward the late 2020s, LPG prices will rise, incentivizing deferred investments in logistics, upgrading, and processing. Greater adoption of forward hedging and transparent pricing linked to benchmarks like the Argus Far East Index or Saudi Contract Price can enhance stability.

Governments must align policies to sustain market viability, ensuring consistent carbon accounting, fair tariffs, and reformed subsidy systems. Regional energy security will also depend on anticipating geopolitical risks such as sanctions, shipping chokepoints, and the rise of the dark fleet, which now handles nearly a fifth of global product movements.

Fujairah: From Transit Port to Energy Processing Gateway

Fujairah occupies a strategic advantage as the only Gulf port with direct Indian Ocean access outside the Strait of Hormuz. Already a world class bunkering and storage hub, it lacks dedicated LPG infrastructure, a gap that represents opportunity rather than weakness.

Rather than compete with Singapore or Ulsan, Fujairah can differentiate by coupling logistics with value added processing. The roadmap begins with modular storage and blending facilities to optimize propane and butane rich cargoes. This foundation can anchor small scale PDH units or petrochemical plants converting LPG into polypropylene and propylene. Such integration will transform Fujairah from a throughput port to a value creating hub.

Feasibility studies, including the Kinko Project, indicate growing investor interest. Complementary investments in bottling, packaging, and export terminals could link Gulf supply chains with East Africa and South Asia, leveraging Fujairah as the dispatch point for regional clean energy trade.

To attract capital, Fujairah should adopt transparent regulatory frameworks such as competitive tariffs, secure land leases, and customs efficiency. Integration with long term supply from regional NOCs like

ADNOC and ENOC will ensure feedstock stability. Proximity to the world's fastest growing LPG markets India, Pakistan, and East Africa positions Fujairah as the natural bridge between Middle East production and Global South consumption.

Conclusion

LPG's future will hinge not on abundance but on strategic coordination between production, processing, and demand creation. The East of Suez corridor, home to both supply surpluses and demand growth, sits at the heart of this transformation.

To seize the opportunity, energy planners must rethink LPG as an integrated value chain rather than a residual product. The path forward involves optimizing refining capacity, investing in gas-based precision manufacturing, deepening downstream presence in emerging markets, and embedding logistical hubs such as Fujairah into the broader regional ecosystem.

The prize is substantial: a cleaner, more flexible, and commercially resilient energy system that positions LPG as a lasting pillar of global energy transformation rather than a transitional stopgap. ■

Top 5 Recommendations

1. Build and Secure Demand through Downstream Investment in Emerging Markets

Middle Eastern suppliers should invest in LPG logistics and downstream infrastructure including terminals, bottling plants, and inland distribution across India and Africa. Creating demand through infrastructure secures long term offtake, stabilizes cash flows, and positions Gulf producers as partners in expanding clean cooking access and industrial energy use.

2. Develop Regional LPG Trading and Storage Hubs Near Demand Centers

Suppliers should establish regional trading and storage hubs in India or East Africa instead of concentrating infrastructure solely in the Gulf. Proximity to consumers reduces freight exposure, enhances logistical efficiency, and enables arbitrage opportunities that strengthen price discovery and market resilience across domestic and export channels.

3. Upgrade Refinery Yields and Catalysts to Maximize LPG Output

Refineries can raise LPG production by upgrading FCC catalysts and adopting molecular level optimization between propane and butane outputs. Incremental yield gains enhance regional self sufficiency, support industrial integration, and reduce dependency on imported LPG while boosting profitability across existing refinery networks without major capital expenditure.

4. Integrate LPG into Petrochemical Value Chains

Producers should transform LPG from a standalone export commodity into a feedstock for higher value petrochemical chains. Integrating PDH and polypropylene production stabilizes margins, diversifies revenue streams, and strengthens Gulf industrial competitiveness, ensuring LPG remains viable as transport fuel demand plateaus globally.

5. Support Market Creation through G2G Partnerships Instead of Subsidies

Governments and NOCs should promote LPG adoption via long term government to government partnerships rather than subsidies. Agreements covering supply security, technology transfer, and co financed infrastructure will expand access affordably, reduce fiscal exposure, and build enduring economic ties between Gulf exporters and emerging Asian and African markets.

Source: Insights were harvested from a workshop hosted by ENOC at the 13th Fujairah Energy Markets Forum on Oct. 1st, 2025, where 100 LPG market stakeholders participated in a 3-hour curated brainstorming session

