



Energy Security and Sustainable Development in Nigeria: The Way Forward

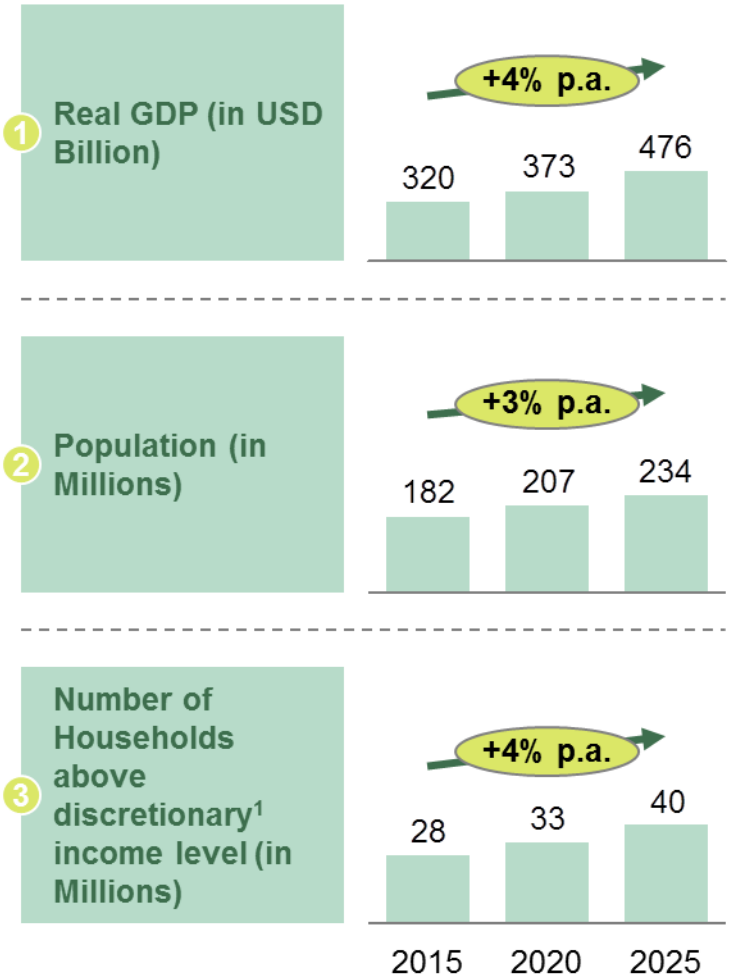
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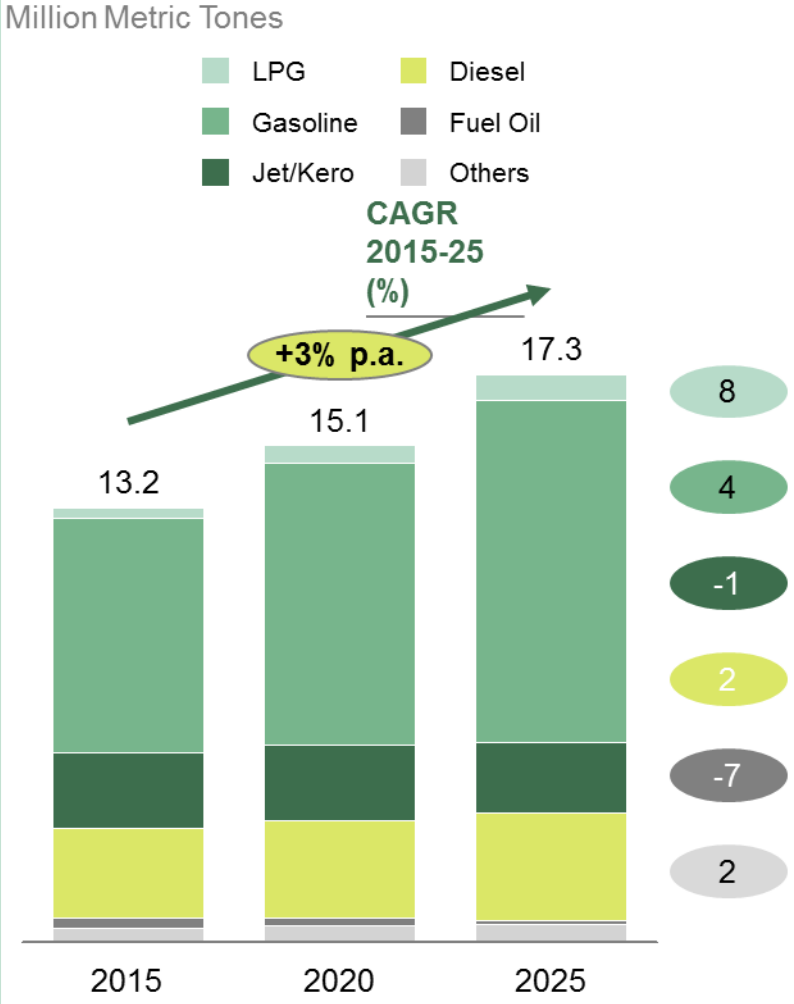


Nigeria: West Africa's largest economy, with increasing energy demands

Macro-Economic Overview



Demand for Petroleum Products

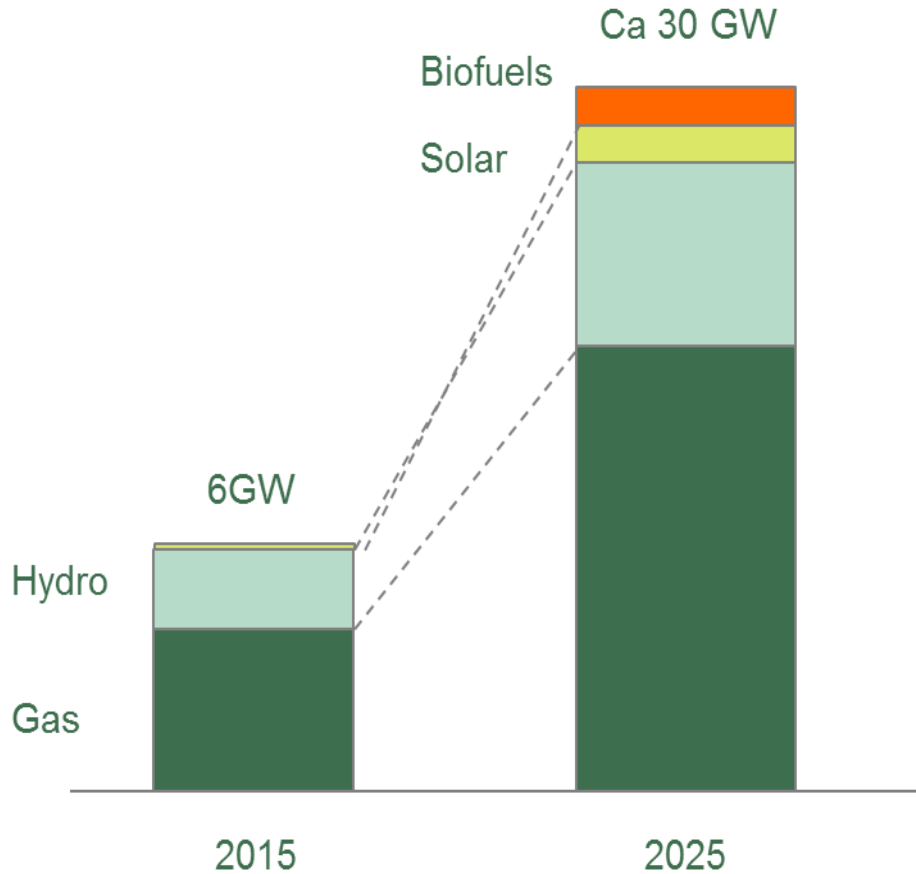


1 money spent on luxury items, vacations and non-essential goods and services in this case population with annual income level >USD5000



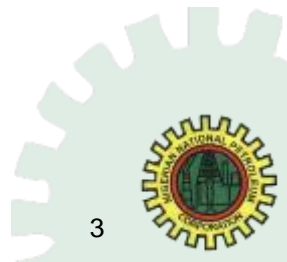
Despite abundant oil & gas reserves, we have shortages in power...

Nigeria Energy Consumption Current & Forecast
(GW)



- Power supply currently based on gas and hydro
- Significant need for new sources of electric power as the country develops:
 - ✓ Low (40%) electrification rates
 - ✓ Population and GDP growth
- New sources of power are planned, particularly hydro and renewables – but gas is the major source

→ *Need for gas and renewables projects to meet demand*

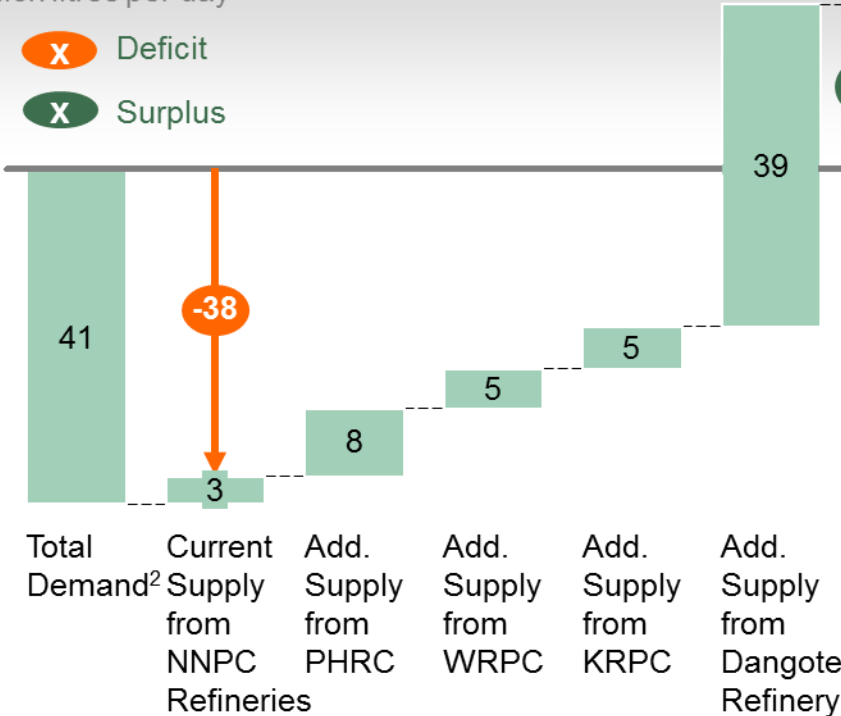


NNPC refineries could contribute ~50% of the PMS demand gap – however, the Dangote refinery will create new competition

Nigerian PMS demand/ supply 2025¹

Million litres per day

X Deficit
X Surplus



Objectives of Refinery Revamp Effort

- 1 Develop Roadmap for revamping refineries and improving process equipment capacity utilization**
 - Definitive Cost & Schedule for rehabilitation
 - Robust EPC and Financing strategy to ensure success
 - Target minimum 90% Capacity Utilization**
- 2 Secure requisite approvals from NNPC Leadership and HMSPR**
 - Clear support for Key Enablers required
 - Financiers to work with ORBs to deliver project(s)
 - Waivers required from BPP, BPE, NCDMB, ICRC**
- 3 Execute the Roadmap**
 - Alignment on Funding / Repayment Mechanism
 - Finalize Project Cost & Schedule
 - Execute Financing agreements / 1st Draw on Funds
 - Spare parts procurement; maintenance and/or replacement of equipment as per schedule
 - Includes program to meet low-sulphur fuels mandate
- 4 Key Enablers are critical for success**
 - Security of crude supply; address pipeline vandalism
 - Effective pricing & products evacuation strategy
 - Robust staffing/succession plan
 - Strong Operations & Maintenance (O&M) Expertise**
- 5 Effective Stakeholder Engagement**
 - NASS / Labour Unions / Communities

Key notes

- Total PMS demand in the country in 2025 shows that there is a deficit of 38M litres which can in part be filled by NNPC refineries, supplying an additional 18M litres, operating at 90% capacity utilisation

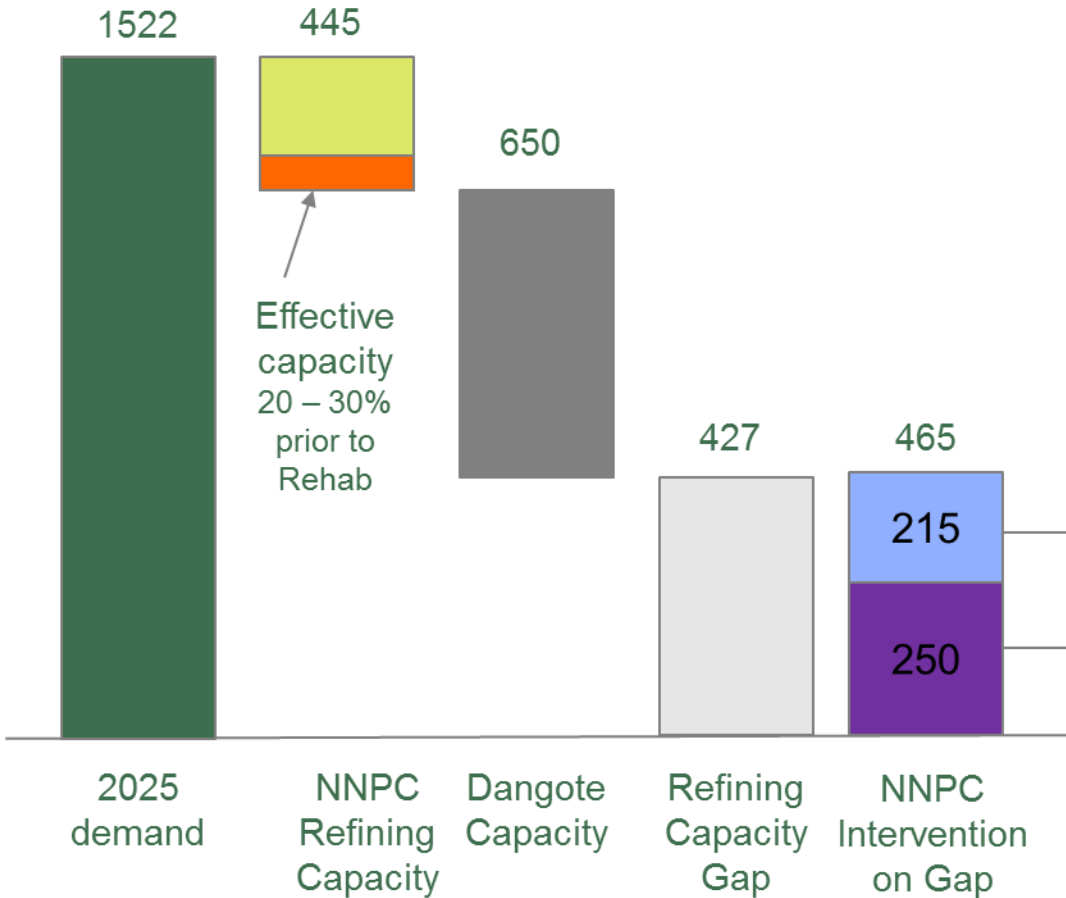
¹ Demand and Supply Computations carried out for gasoline (PMS) only which accounts for approx. 80% of major light products
² Total demand ranges from 38M litres/day in 2025 to 41M litres/ day according to ICIS projections and bottom-up estimates

SOURCE: ICIS Research, Dangote Refinery ESIA, KRPC, WRPC, PHRC, NNPC Project Team Analysis



...and insufficient Refining Capacity leading to shortage in fuels supply

**Nigeria Fuels Demand and Supply by 2025
(kbbbl/day)**



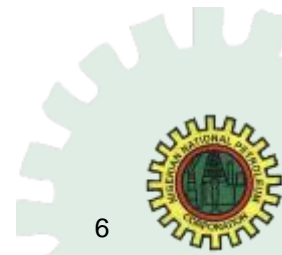
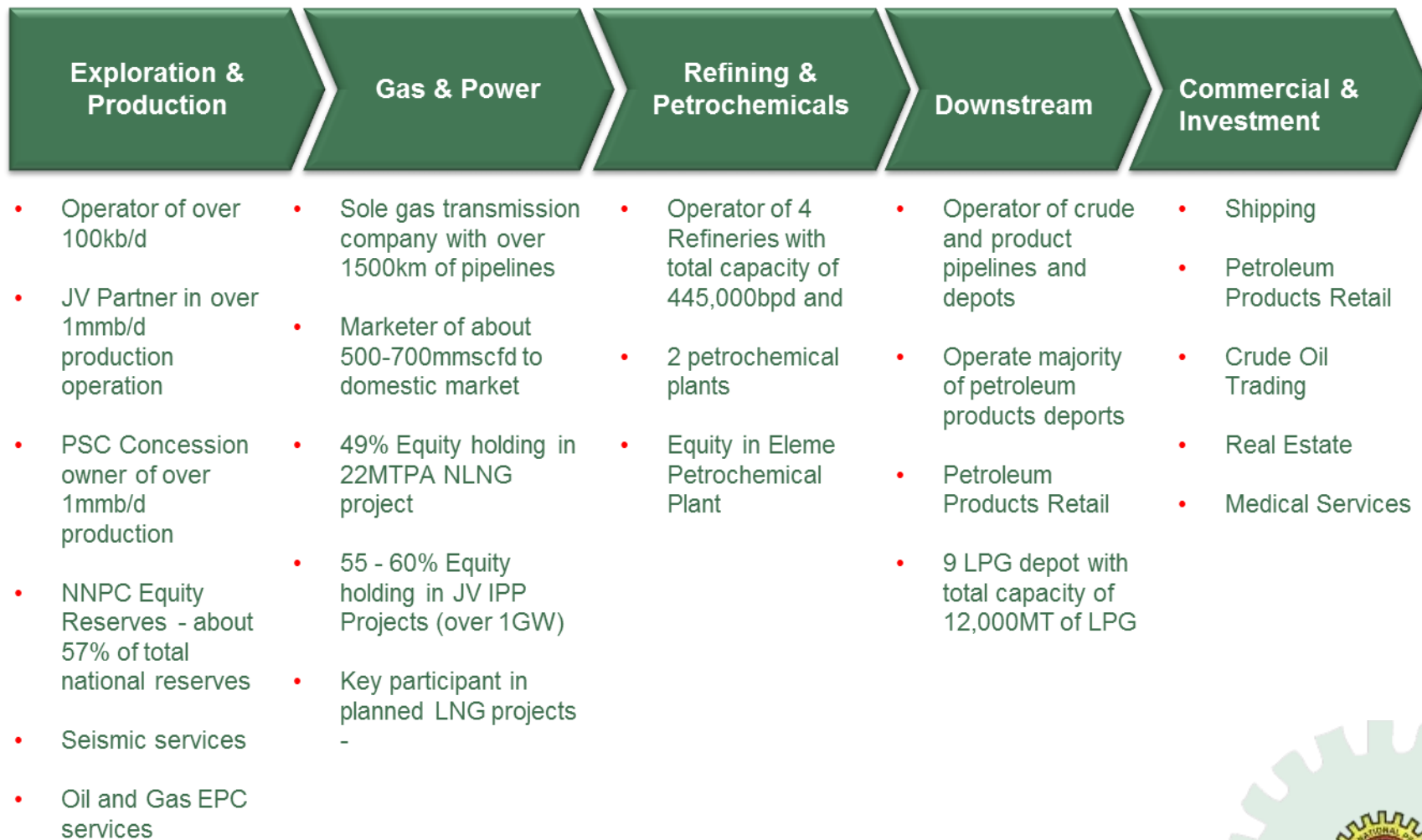
- Fuels demand forecasted to require ~1.5m bbl/day of refining capacity by 2025
- Supply gap currently met by imports, which NNPC co-ordinates
- Exacerbated by current state of refineries, producing well below design capacity
- Future supply gap widens – even with NNPC and Dangote projects
- NNPC Collocation project has reduced the gap (CP)
- NNPC Condensate Refinery programme closes the gap completely (CR)

→ Need to deliver on new refinery projects, and continue with further expansions and supply sources



NNPC is at the forefront of providing services to address these energy challenges

NNPC's operations span entire oil and gas value chain with robust resource base

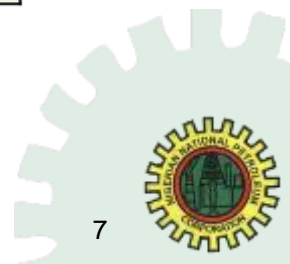


Nigeria has Significant Potential for Renewable Energy Development

- Nigeria enjoys warm tropical climate – relatively high year-round temperatures year and two seasons
- 33 million hectares of arable land available (only 10% is in use) – Enormous opportunity to nurture and grow Renewable Energy feedstock

Energy Source	Potential
Hydropower	14,750MW (<i>High Potential</i>)
Biomass	Very High Potential
Solar Radiation	3.5 – 7.0 kWh/m²/ day
Wind	2 – 4 m/s (annual average)
Geothermal	5 Sources known in Nigeria
Ocean, Tidal and wave	Low prospects in Nigeria

Source: Nigerian National Energy Master Plan





Thank You