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Private Investment, Energy Governance, and Macroeconomic Resilience in Africa: The Dangote Refinery Case

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Abstract

This paper examines the political-economy mechanisms through which refined-petroleum import dependence has persisted in Nigeria despite substantial domestic crude-oil production, and how a specific configuration of regulatory reform, market-pricing mechanisms, and public-private coordination may have enabled the emergence of large-scale private domestic refining capacity. Employing a theory-developing case-study design that combines process tracing and comparative plausibility probes, the paper introduces the concept of the downstream resource curse, a self-reinforcing equilibrium in which petroleum-import dependency generates import-licensing, fuel-subsidy, and foreign-exchange rents whose beneficiaries resist domestic refining investment. The Dangote Petroleum Refinery ($19 billion; 650,000 barrels per day) is analysed as an important deviant case. Two external disruption episodes, Strait of Hormuz disruptions and the COVID-19 supply-chain crisis, are used as illustrative stress-tests. Plausibility probes are conducted for Angola, Ghana, and Kenya.

The paper proposes a five-element energy sovereignty policy framework linking theoretical mechanisms to governance prescriptions. The findings suggest that domestic refining capacity may contribute to macroeconomic resilience by reducing foreign-exchange exposure and supply-chain vulnerability, with implications for energy-governance reform across African petroleum economies.

Keywords: downstream resource curse, energy governance, private investment, macroeconomic resilience, energy security, Nigeria.

JEL Classification: L71; L78; O14; Q43; Q48.

Introduction

In 2022, Nigeria, Africa's largest oil producer and an OPEC member since 1971, spent approximately $8.9 billion importing refined petroleum products (CBN, 2022) while its four state-owned refineries operated at an average effective utilisation rate of 8.8% (NNPC, 2022). The country exported crude oil, shipped it to European refineries, and imported the resulting products at prices that consumed a disproportionate share of its foreign-exchange earnings. This paper examines this paradox through the concept of the downstream resource curse and analyses the conditions under which it may be disrupted.

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This paper addresses four research questions:

RQ1: Through which political-economic mechanisms has refined-petroleum import dependence persisted in Nigeria despite substantial domestic crude-oil production?

RQ2: How did regulatory reform, subsidy removal, and public-private coordination enable the emergence of large-scale private refining capacity in Nigeria?

RQ3: Through which channels may domestic refining capacity affect foreign-exchange exposure, supply-chain resilience, and macroeconomic stability?

RQ4: To what extent can the institutional and policy conditions observed in the Dangote case inform energy-governance reforms in other African economies?

The paper makes four contributions. First, it introduces the downstream resource curse as a theoretically distinct concept with a formally specified mechanism. Second, it uses the Dangote Refinery as a deviant case to trace the veto-coalition mechanism and the conditions under which it may have been broken. Third, it proposes a five-element Energy Sovereignty Policy Framework (ESPF) linking theoretical mechanisms to governance prescriptions. Fourth, it assesses supply-chain vulnerability through two exogenous shocks used as illustrative stress-tests.

This paper employs a theory-developing, theory-illustrating case-study design (George & Bennett, 2005; Gerring, 2007) combining three analytic moves. The Dangote Refinery is selected as an important deviant case (Eckstein, 2009; Seawright & Gerring, 2008): the downstream resource curse predicts that large-scale private downstream investment should not occur in the Nigerian rent environment, an instance where it did occur is maximally informative about the mechanism. Process tracing (Beach & Pedersen, 2013; Collier, 2011) is applied within the case. Angola, Ghana, and Kenya serve as plausibility probes in a structured, focused comparison (George & Bennett, 2005). The Hormuz and COVID-19 shocks are treated as illustrative stress-tests, not identified causal estimates. All data are secondary and publicly available: CBN Statistical Bulletins (2018–2025); NNPC Ltd. Monthly Operations Reports (2020–2025); NBS Consumer Price Index; EIA country data; AfDB Statistical Yearbooks; IMF Article IV Reports; and Dangote Group investor communications (treated as indicative pending independent audit).

1. Literature Review and Theoretical Framework

The resource curse, the counterintuitive observation that natural resource abundance is associated with lower long-run economic growth, is one of the most studied phenomena in development economics (Auty, 1993; Sachs & Warner, 1995, 2001; Ross, 1999, 2015; van der Ploeg, 2011). Canonical transmission mechanisms include Dutch disease (Corden & Neary, 1982), revenue volatility, rent-seeking and institutional weakness (Mehlum et al., 2006; Sala-i-Martin & Subramanian, 2013), and patronage politics and oil-related power structures that may weaken state capacity (Ross, 1999; Watts, 2004).

The resource-curse literature has devoted comparatively limited attention to the political-economy mechanisms through which persistent downstream processing deficits may reproduce import dependence. More recent contributions have begun to address this gap. Hache (2018) demonstrates that energy security is tied to domestic processing capacity.

Bazilian et al. (2014) establish that energy governance failures, rather than resource endowments, are the proximate cause of energy poverty in resource-rich states. Akinwande and Dada (2023), in a panel study of 32 sub-Saharan African economies, find that domestic refining capacity is a significant positive predictor of macroeconomic performance.

The downstream resource curse concept must be distinguished from four adjacent literatures. First, the classical resource curse (Sachs & Warner, 1995; Ross, 2015) theorises the macroeconomic consequences of resource abundance, specifically, of exporting crude. The downstream resource curse operates through the inverse mechanism: the absence of domestic processing generating import-dependency rents. Second, rentier-state theory (Beblawi & Luciani, 1987) concerns state-society fiscal contracts and export rents; the downstream resource curse concerns interest-group politics around a specific industrial-policy failure. Third, the fuel-subsidy political economy literature (Victor, 2009; Cheon, Urpelainen & Lackner, 2013) treats subsidies as one rent channel, whereas import-licensing rents and FX-allocation rents operate independently of formal subsidies. Fourth, national oil company behaviour (Victor, Hults & Thurber, 2012) focuses on NOC governance; in the downstream resource curse framework, NOCs are one potential coalition member rather than the primary unit of analysis.

A more defensible formulation of the novelty claim is therefore as follows: the resource-curse literature has devoted comparatively limited attention to the political-economy mechanisms through which persistent downstream processing deficits may reproduce import dependence. This paper seeks to contribute to that gap by specifying the rent structure, the coalition formation logic, and the conditions for equilibrium disruption.

The infant-industry, developmental-state, and ISI literatures (Krueger, 1997; Edwards, 1993; Mkandawire, 2001; Chang, 2002; Rodrik, 2008) debate the role of state intervention, comparative advantage, and industrial policy in structural transformation.

The downstream resource curse is a self-reinforcing political-economy equilibrium in which petroleum import dependency, the absence of domestic refining capacity, generates import-licensing rents, fuel-subsidy arbitrage rents, and foreign-exchange allocation rents whose beneficiaries constitute a coalition that resists domestic refining investment. The equilibrium is self-reinforcing because the rents fund the political relationships through which resistance is exercised.

The feedback mechanism operates in four steps: (1) absence of domestic refining creates structural import dependency; (2) managing those imports generates capturable rents; (3) rent recipients develop political relationships conferring effective resistance to refinery investment; and (4) that resistance sustains import dependency, reproducing Step 1. The veto-coalition mechanism is evidenced through process tracing.

Table 1 presents the process-tracing evidence used to assess the proposed downstream resource curse veto-coalition mechanism. For each mechanism link, the table specifies the expected observable implication, the corresponding empirical evidence, the supporting sources, and an assessment of evidentiary strength. This structure enables a systematic evaluation of whether the observed patterns are consistent with the proposed causal sequence linking import rents, preferential foreign-exchange allocation, and fuel subsidies to vested interests and resistance to downstream reform. It also distinguishes strongly supported mechanism links from those for which causal attribution remains preliminary, particularly in relation to the effects of recent institutional reforms and the expansion of domestic refining capacity.

Table 1: Process-Tracing Evidence for the Downstream Resource Curse Veto-Coalition Mechanism

Proposed mechanism	Observable implication	Evidence	Source	Assessment
Import rents create vested interests	Beneficiaries lobby against domestic refining reforms; oppose subsidy removal	NNPC management resistance to PIA reform (1999–2021); documented importer coalition against subsidy removal (Victor, 2009; IISD, 2021)	NNPC reports; IISD/GSI Nigeria (2021); IMF (2023)	Strong
FX allocation creates rents	Preferential FX access benefits fuel importers; parallel-official spread constitutes implicit subsidy	CBN FX allocation circulars 2016–2023; documented parallel-official spread exceeding 50–100% (2022–2023)	CBN Annual Reports (2016–2023)	Strong
Subsidy system sustains import equilibrium	State expenditure on subsidies crowds out refinery investment; subsidy removal is politically blocked	Peak subsidy expenditure ₦23 trillion 2010–2022; 20 consecutive failed refinery rehabilitation announcements	IMF (2023); NNPC (2022)	Strong
Reform weakens coalition	Policy/institutional change reduces rent channels; private investment becomes viable	PIA 2021 establishes independent regulator; subsidy removal May 2023 eliminates subsidy arbitrage rent; Dangote FX demand reduction observed	NNPC (2023); CBN (2025); Dangote Group (2025)	Moderate, causal attribution pending

Note: Assessment strength reflects the consistency of the evidence with each proposed mechanism. "Strong" indicates support from multiple independent sources; "Moderate" indicates evidence consistent with the mechanism while alternative explanations cannot be fully excluded.

Source: Authors' elaboration based on the sources reported in the table.

2. The Dangote Refinery as a Major Deviant Case

The Dangote Petroleum Refinery is analysed not as a success story but as a deviant case: the downstream resource curse predicts that politically connected veto coalitions should prevent large-scale private downstream investment. That it occurred — despite a decade of resistance documented in Table 1, is maximally informative about the conditions under which the equilibrium may be disrupted (Seawright & Gerring, 2008).

Three policy interventions disrupted the veto coalition sequentially. First, the Petroleum Industry Act of August 2021 converted NNPC into a commercially oriented limited liability company, established independent regulators (NUPRC and NMDPRA), and clarified fiscal terms providing investor certainty. Second, President Tinubu's subsidy removal on 29 May 2023 eliminated ₦4.4 trillion in expenditure in the first five months of 2023 (IMF, 2023), creating the market-priced commercial environment in which private refining could generate cost-covering revenues. Third, NNPC's 7.2 per cent equity stake, too small to affect operational control, served as a political risk signal to international commercial lenders.

Table 2 presents the policy instruments enabling the investment, their mechanisms, and their replicability.

Table 2: Policy Instruments Enabling Investment in the Dangote Refinery

Policy instrument	Mechanism	Economic effect	Risk addressed	Replicability
Free zone designation	Duty exemption on capital goods	Capex reduction ~12–15%	Construction cost overrun	High
NNPC equity (7.2%)	Sovereign political risk signal	Unlocked international debt	Regulatory/ political risk	High
PIA 2021	Independent regulatory agency	Contract security	Institutional uncertainty	Medium
Subsidy removal (2023)	Market-priced revenues	Commercial viability	Revenue adequacy	Medium-high
Export credit support	Multilateral risk guarantee	Reduced debt cost	Sovereign default risk	High
ECOWAS/AfCFTA framework	Regional market access	Scale economics	Demand adequacy	Medium-high

Note: Replicability indicates the assessed potential for each policy instrument to be adapted to other African petroleum economies, subject to country-specific institutional and market conditions.

Source: Authors' elaboration based on Dangote Group (2025), Petroleum Industry Act (2021), and NNPC Ltd. (2023).

Table 3 presents throughput data for Nigeria's four state-owned refineries, illustrating the systematic deterioration in capacity utilisation consistent with the downstream resource curse mechanism. The observed throughput decline overlaps with periods of high subsidy expenditure, particularly during 2010–2018, which is consistent with, although not sufficient to establish, the hypothesis that deterioration reflected political-economy dynamics alongside technical factors.

Table 3: Nigeria's State-Owned Refinery Throughput and Capacity Utilisation, 2000–2022

Refinery	Design cap. (bpd)	2000	2010	2018	2022	Utilisation 2022
Port Harcourt I (1965)	60,000	31,500	22,800	8,400	6,200	10.3%
Warri (1978)	125,000	67,200	38,500	15,800	10,500	8.4%
Kaduna (1980)	110,000	58,300	34,200	12,300	9,800	8.9%
Port Harcourt II (1989)	150,000	82,500	51,200	17,200	12,800	8.5%
TOTAL	445,000	239,500	146,700	53,700	39,300	8.8% (−89%)

Note: Design capacity and throughput are expressed in barrels per day (bpd). Capacity utilisation is calculated as 2022 throughput relative to design capacity. The total percentage change indicates the decline in aggregate throughput between 2000 and 2022.

Source: Authors' compilation based on NNPC (2000–2022), IEA (2022), and AfDB (2021).

3. Macroeconomic Channels: Observed Associations

This section reports observed trends in macroeconomic indicators associated with the progressive commissioning of the Dangote Refinery. Given the early-stage nature of refinery operations and the absence of causal identification, all claims are expressed as associations rather than causal attributions. The three channels examined are foreign-exchange, inflation pass-through, and employment.

CBN data show Nigeria's petroleum product import bill declining from an annualised rate of approximately $9.5 billion in Q4 2022 to an estimated $4.2 billion in Q2 2025. This trend is consistent with the import-substitution mechanism and may have contributed to reduced foreign-exchange demand for fuel imports. Independent econometric attribution of this trend

specifically to refinery supply, as distinct from exchange-rate effects and demand compression, is not yet possible, pending granular customs data not currently in the public domain. All estimates are directional; figures from Dangote Group investor communications are treated as indicative pending independent audit (CBN Statistical Bulletin, 2025; author calculations).

Nigeria's headline inflation rose from 22.4 per cent in May 2023 to a peak of 34.8 per cent in June 2024 following subsidy removal (NBS, 2024). As domestic refinery supply has expanded, Nigeria's exposure to global refined product price movements has declined. This trend is consistent with the proposition that domestic refining capacity may reduce exchange-rate pass-through to pump prices, moderate trucking and agricultural input costs, and introduce competitive pricing in the downstream market. Causal attribution to refinery operations specifically is not established at this stage.

An indicative employment impact was estimated using an input-output multiplier approach. Direct employment associated with the refinery and related activities is estimated at approximately 40,000–50,000 jobs (Dangote Group, 2025). Applying an indicative employment multiplier of approximately 3.5, based on Nigeria's 2021 Social Accounting Matrix (SAM), yields a broader employment effect of approximately 140,000–175,000 jobs across refinery-linked manufacturing, agriculture, logistics, and related activities. The indicative calculation is: Total employment effect = Direct employment × Employment multiplier; thus, 40,000 × 3.5 = 140,000 and 50,000 × 3.5 = 175,000 jobs. The resulting range encompasses direct employment together with broader indirect and induced effects transmitted through supply-chain linkages and household-income effects. Such propagation through interconnected production and supply networks is consistent with the broader literature showing how sector-specific effects can transmit through input-output linkages across the economy (Acemoglu et al., 2012).

Because the available data do not permit a reliable decomposition of the multiplier effect into separate indirect and induced components, these categories are not reported independently. The estimate is sensitive to supply-chain linkage assumptions, has not been independently audited, and should therefore be interpreted as an indicative economy-wide employment effect rather than a precise forecast or a causally identified impact of the refinery.

Table 4: Macroeconomic Indicators Associated with Dangote Refinery Commissioning

Indicator	Baseline (2022)	Observed trend (Q2 2025)
Annual petroleum product import bill	~$9.5bn (annualised)	~$4.2bn (est.), trend consistent with import substitution
Domestic demand met by local supply	<10%	~55–65% (est.; indicative)
FX expenditure trend	-	Declining trend, consistent with import substitution; not causally attributed
Employment (indicative, I-O multiplier)	-	140,000–175,000 (indicative; see methodological note above)

Note: Reported changes represent observed associations and should not be interpreted as causally identified effects of refinery commissioning. Employment figures are indicative estimates based on an input-output multiplier approach. All estimates are subject to revision as independently verified data become available.

Source: Authors' elaboration based on CBN (2025), NBS (2024), NNPC (2025), Dangote Group (2025).

4. Geopolitical Stress Tests: Illustrative Assessment

The two episodes below are used as illustrative stress-tests exposing the latent costs associated with refined-product import dependence, not as identified causal estimates.

The Strait of Hormuz, through which approximately 20–21 million barrels of crude oil and refined petroleum products transited daily in 2023, representing approximately 20 per cent of global petroleum trade (EIA, 2024; Fattouh & Sen, 2015), has been subject to periodic disruption risk from Iranian naval activity and spillover effects from regional conflicts. During 2019, Gulf tanker attacks materially increased marine insurance rates for Gulf-originating cargoes (IEA, 2024).

Sub-Saharan Africa remains substantially dependent on imported refined petroleum products, exposing importing economies to international price movements, freight costs, and supply-chain disruptions. As an illustrative stress test, a USD 10 per barrel increase in the delivered cost of imported refined products would generate a material additional import burden, the magnitude of which would depend on the volume and composition of petroleum-product imports exposed to the disruption. This scenario is not intended as a causal estimate or forecast, but rather illustrates the potential supply-chain resilience premium associated with greater domestic refining capacity (OPEC, 2023).

Between 2020 and 2022, global petroleum logistics chains were severely disrupted: refinery shutdowns in Europe and Asia reduced product availability; container shipping costs increased 400–600 per cent; port congestion created cascading delays reaching African import terminals. Nigeria's petrol import costs are estimated to have surged by approximately 35 per cent in 2021 relative to pre-pandemic baselines (NNPC, 2022; IMF, 2023). The Dangote Refinery's geographic positioning in Lagos, with coastal access to the West African market and reduced dependence on distant refining hubs, is consistent with the proposition that domestic refining capacity may reduce exposure to external supply-chain disruptions. More broadly, resilient supply chains depend on diversification, redundancy, and the capacity to absorb and adapt to external shocks (Sheffi, 2015; OECD, 2021).

5. The Energy Sovereignty Policy Framework

The five-element Energy Sovereignty Policy Framework (ESPF) is presented below. Each element is derived from the theoretical mechanism and case evidence, following the chain: theoretical mechanism → case evidence → ESPF element → expected governance outcome.

Table 5: Five-Element Energy Sovereignty Policy Framework (ESPF)

ESPF element	Theoretical mechanism addressed	Case evidence	Expected governance outcome	Feasibility
1. Rent transparency & disclosure	Information asymmetry protects veto coalition	Import licence economy documented; FX allocation opaque (CBN, 2016–2023)	Exposes rent capture; weakens political protection	High - administrative
2. Conditional private-sector participation & asset divestiture	Rent capture during liberalisation risks replacing public monopoly with private oligopoly	NNPC subsidiaries captured subsidy procurement; PIA 2021 introduced supply obligations	Aligns private incentives with supply; prevents asset stripping	Medium - requires regulatory capacity

ESPF element	Theoretical mechanism addressed	Case evidence	Expected governance outcome	Feasibility
3. Hybrid public-private ownership	Political risk premium blocks private capital	NNPC 7.2% equity as political risk signal unlocked international debt	Reduces investor political risk while preserving commercial incentives	High - standardisable
4. Transition-compatible sequencing	Climate objection used to block refining investment	ESPF Element 4 builds NDC sunset clauses and green hydrogen optionality into licence conditions	Neutralises stranded-asset argument; embeds transition pathway	Medium - requires long-term commitment
5. Regional market integration	Sub-scale economics invoked against single-country refineries	ECOWAS market access supports Dangote scale economics; AfCFTA energy trade provisions	Regional market sizing makes refinery investment commercially compelling	Medium-high - requires AfCFTA implementation

Note: Each ESPF element is derived through the analytical sequence: theoretical mechanism → case evidence → policy element → expected governance outcome. Feasibility assessments are qualitative and reflect institutional and implementation requirements identified from the case evidence.

Source: Authors' elaboration.

6. Comparative Plausibility Probes

Angola, Ghana, and Kenya are used as plausibility probes applying a structured, focused comparison, the same analytical template applied to each case, to assess whether the mechanism and the ESPF prescriptions are consistent with variation in institutional environments (George & Bennett, 2005).

Angola

Angola's Lourenço administration has pursued downstream reform since 2018, including partial privatisation of Sonangol assets and new refinery licences at Cabinda and Soyo. This is consistent with the ESPF's proposition that regulatory architecture reform is a prerequisite for private capital mobilisation. Subsidy removal has proceeded more slowly than in Nigeria, constraining commercial viability, consistent with the framework's prediction that ESPF Elements 1 and 2 must be sequenced (AfDB, 2022). Assessment: partially consistent with framework.

Ghana

Ghana's Tema Oil Refinery maintained below 30 per cent capacity utilisation throughout 2015–2023 because pricing reforms were repeatedly reversed and the hybrid ownership structure was never established. Ghana's 2022–2023 economic crisis, to which petroleum import costs contributed materially, leading to an IMF programme, is consistent with the proposition that the downstream resource curse, left unaddressed, contributes to macroeconomic vulnerability (IMF, 2023; Kolawole, 2022). Assessment: limited consistency with ESPF; consistent with the failure mechanism.

Kenya

Kenya's 2023 announcement of a 60,000-bpd public-private partnership refinery at Mombasa, structured with minority state equity and free-zone incentives, directly mirrors ESPF Elements 1, 2, and 3. Early investor interest from Gulf sovereign wealth funds is consistent with the framework's prediction that hybrid ownership reduces the political risk premium blocking private capital. Kenya is a prospective test case: the ESPF's applicability beyond major oil-producing economies remains to be assessed as implementation proceeds. Assessment: prospective case, consistent with framework design.

Table 6: Structured Four-Case Comparison Using the Energy Sovereignty Policy Framework (ESPF)

Indicator	Nigeria (Dangote)	Angola	Ghana	Kenya
ESPF Element 1 - Regulatory reform	PIA 2021- advanced	Partial (2018–)	Stalled	In progress
ESPF Element 2 - Market pricing	Subsidy removed 2023	Partial - slow	Reversed repeatedly	Market-priced
ESPF Element 3 - Hybrid ownership	NNPC 7.2% equity	Sonangol majority	State-owned only	PPP proposed
Veto coalition status	Substantially weakened	Weakening	Intact	Not yet formed
Framework assessment	Strongly consistent	Partially consistent	Limited consistency	Prospective case

Note: Angola, Ghana, and Kenya are used as comparative plausibility probes rather than full comparative case studies. Assessments indicate the degree of consistency between observed institutional conditions and the ESPF propositions and should not be interpreted as causal tests of the framework.

Source: Authors' elaboration based on AfDB (2022), IMF Article IV Reports, EIA data, and the case evidence discussed in the text.

The findings of this study raise questions about whether restrictions on financing domestic refining infrastructure adequately account for the foreign-exchange and supply-chain resilience costs associated with continued import dependence, particularly in economies that will continue producing crude oil for two to three decades.

7. Discussion and Limitations

The findings speak to three broader debates in development economics. First, the Dangote case suggests that conventional privatisation-centred accounts may not fully capture the institutional conditions under which state-enabled private industrial capacity can emerge. Rather than indicating a simple retreat of the state, the case points to a coordinating role involving regulatory reform, market-pricing mechanisms, selective risk sharing, and the creation of a policy environment in which large-scale private investment becomes commercially viable.

Second, the findings extend the resource-curse debate by highlighting a comparatively underexamined downstream mechanism. Resource-rich economies may remain vulnerable not only through dependence on commodity exports, but also through persistent dependence on imported processed products and the rent structures surrounding those imports. In the Nigerian case, import-licensing, subsidy-related, and foreign-exchange allocation rents appear consistent with a political-economy equilibrium in which interests benefiting from import dependence may resist changes that threaten established rent channels. The Dangote case therefore contributes to the resource-curse literature by shifting attention from extraction and

export dependence toward the institutional and distributional consequences of persistent downstream processing deficits.

Third, the findings have implications for debates on energy security, industrial policy, and transition risk. Concerns regarding stranded-asset risk in African refining investment remain important, particularly in the context of decarbonisation commitments. However, these risks should be assessed alongside the foreign-exchange, price-transmission, and supply-chain resilience costs associated with continued dependence on imported refined petroleum products. The case evidence suggests that energy-security investments may be more appropriately evaluated through a transition-compatible framework that combines domestic processing capacity with regulatory safeguards, regional market integration, and clearly defined long-term decarbonisation pathways.

These interpretations should nevertheless be treated with caution. The Dangote Refinery remains in operational ramp-up, and a definitive assessment of its long-run macroeconomic effects will require a longer post-commissioning observation period. The macroeconomic effects reported in this study are observed associations rather than causally identified estimates, and changes in foreign-exchange expenditure, inflation exposure, and domestic supply may also reflect exchange-rate movements, demand compression, broader policy reforms, and external market conditions. The employment estimate is indicative and based on an input-output multiplier approach; it should not be interpreted as a precise employment forecast. In addition, Angola, Ghana, and Kenya are used as comparative plausibility probes rather than full comparative case studies, and the ESPF should therefore be understood as a theory-developing framework requiring further empirical validation across different institutional and market settings.

Future research should test the proposed downstream resource curse mechanism and the ESPF across a broader sample of African petroleum economies using panel-data, comparative-case, and causal-inference approaches where appropriate. Particular attention should be given to the relationship between domestic refining capacity, foreign-exchange exposure, fuel-price transmission, employment effects, institutional quality, and the evolution of rent structures before and after major downstream reforms.

Conclusion

The Dangote case suggests that large-scale private downstream investment can emerge when regulatory reform, market-pricing mechanisms, risk-sharing arrangements, and state-private coordination are aligned. This paper has introduced the downstream resource curse as a theoretically distinct concept, specified its underlying rent mechanisms through process-tracing evidence, and proposed the ESPF as a replicable governance framework.

The findings suggest that domestic refining strategies in African petroleum economies should incorporate a deliberate transition architecture, built-in sunset clauses, NDC alignment, and technology pathways toward lower-carbon feedstocks, ensuring that industrial infrastructure designed for energy security does not become incompatible with climate commitments. The downstream resource curse and the global energy transition are not contradictory policy challenges; addressing both requires sequenced, evidence-based institutional design of the kind the ESPF is designed to facilitate.

CRediT Authorship Contribution Statement

Mohamed, A. E.: Conceptualization; Supervision; Validation; Writing – review and editing; Resources. Adamu, A: Conceptualization; Data curation; Formal analysis; Investigation; Methodology; Validation; Visualization; Writing – original draft; Writing – review and editing.

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Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Data Availability Statement

All data supporting this study are derived from publicly available sources: the Central Bank of Nigeria Statistical Bulletin (www.cbn.gov.ng); NNPC Ltd. Monthly Operations Reports (www.nnpcgroup.com); National Bureau of Statistics Nigeria (www.nigerianstat.gov.ng); U.S. Energy Information Administration (www.eia.gov); African Development Bank Open Data Portal (www.afdb.org); UN Comtrade (comtradeplus.un.org). Figures drawn from Dangote Group investor communications are treated as indicative pending independent audit, as stated in the text. No proprietary datasets were generated.

Ethical Approval Statement

This study is theoretical and conceptual in nature and did not involve human participants, personal data, or animal subjects. Therefore, ethical approval was not required.

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