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Alamin Abubakar Nataala

alaminabu00@gmail.com

SEGi University College Kota Damansara: SEGi University Kota Damansara https://orcid.org/0009-0001-9833-0846

Research Article

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Posted Date: August 18th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10711844/v1

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Additional Declarations: The authors declare no competing interests.

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Alamin Abubakar Nataala
ORCID: 0009-0001-9833-0846 | Correspondence: alaminabu00@gmail.com
Manuscript Date: August 15, 2026

Abstract

The telecommunications ecosystem in Nigeria represents an instructive empirical case study in structural vulnerability, physical backhaul exposure, and technological resilience. Despite achieving an advanced readiness score of 82.40 on the Global Cybersecurity Index, Nigeria's systemic Internet Resilience Score is rated at 41% by the Internet Society, constrained by excessive international transit routing, domestic caching deficits, and chronic power grid instability. This study presents a comprehensive evaluation of Nigeria's telecommunications performance, physical layer integrity, and operational economics during 2025–2026. Utilizing empirical telemetry from the Nigerian Communications Commission (NCC) uptime portal, operator performance benchmarks, and macroeconomic energy price indices, we examine the distribution of 577 major network outages and 5,934 micro-level fiber-optic cable cuts recorded in Q1 2026. Findings demonstrate that MTN Nigeria (234 major outages) and Backbone Connectivity Network (166 major outages) accounted for nearly 70% of network-level downtime. Physical failures were overwhelmingly driven by environmental infrastructure degradation (4,756 cuts) and civil road construction works (509 cuts). We model the operational expenditure (OPEX) burden of the "power trap," where 75% of the nation's 50,000+ base stations operate entirely off-grid, with diesel fuel prices escalating by 86.4% year-on-year to N3,277.47 per litre in May 2026. Furthermore, we assess the impact of regulatory frameworks, including the Critical National Information Infrastructure (CNII) Order of 2024 and "He Who Cuts Must Fix" policies, which contributed to an 80.60% reduction in Quality of Service (QoS) complaints. Finally, we evaluate the economic feasibility of solar-hybrid retrofits and passive infrastructure sharing, which present levelized cost of electricity reductions of up to 60% relative to captive diesel generation.

Keywords: Telecommunications Resilience, Critical National Information Infrastructure (CNII), Fiber-Optic Cuts, Diesel OPEX, Infrastructure Sharing, Network Reliability, Quality of Service (QoS), Nigeria.

1. Introduction

Telecommunications infrastructure serves as the essential digital backbone for socioeconomic development, financial inclusion, and sovereign economic productivity across emerging markets. In Nigeria, the telecommunications sector has undergone rapid technological expansion, characterized by accelerated 4G/5G deployment and surging mobile broadband adoption. However, this growth is juxtaposed against deep physical vulnerabilities, acute power supply deficits, and heavy market consolidation (Internet Society, 2026; Vanguard News, 2026).

According to the Internet Society's Pulse Internet Resilience Index, Nigeria maintains an overall Internet Resilience Score of 41%, categorizing the national infrastructure as possessing medium capacity to withstand unexpected technical disruptions, security threats, or operational shocks (Internet Society, 2026). Although Nigeria demonstrates strong cybersecurity governance reaching a score of 82.40 on the Global Cybersecurity Index its digital resilience is constrained by structural connectivity bottlenecks. Most notably, only 23% of the 1,000 most-visited websites in Nigeria are accessible via in-country servers or localized edge caches, falling markedly short of the 50% target established by the Internet Society (2026). This domestic caching deficit forces substantial traffic onto international transit links, inflating cross-border transport expenses, elevating round-trip latency, and compounding national vulnerability during submarine cable severances.

Furthermore, retail broadband choice remains restricted by high market concentration, resulting in a market competitiveness index characterized as very poor (Internet Society, 2026; Ken Research, 2026). This paper synthesizes empirical telemetry, regulatory audits, and economic cost models from 2025 through 2026 to analyze outage mechanics, physical security vulnerabilities, operator performance, and the operational economics of power provision across Nigeria's telecommunications landscape.

2. Macro-Level Outage Telemetry and Temporal Distribution

During the first quarter of 2026, the Nigerian telecommunications sector recorded a cumulative total of 577 major network outages across 11 active licensed entities, encompassing Tier-1 Mobile Network Operators (MNOs), Infrastructure Internet Service Providers (ISPs), and enterprise broadband carriers (Technext, 2026a). Real-time telemetry compiled from the Nigerian Communications Commission (NCC) uptime portal indicates heavy concentration among market leaders.

Telecom Operator / Provider	Outages Recorded (Q1 2026)	Market Classification
MTN Nigeria	**234**	Tier-1 Mobile Network Operator
Backbone Connectivity Network (BCN)	**166**	Infrastructure Internet Service Provider
T2 Mobile (formerly 9mobile)	63	Tier-2 Mobile Network Operator
Airtel Nigeria	42	Tier-1 Mobile Network Operator
Layer3	33	Enterprise Internet Service Provider
IPNX	17	Fiber-to-the-Home (FTTH) ISP
FibreOne	8	Fixed Broadband Fiber Provider
Tizeti	5	Fixed Wireless Internet Service Provider
Suburban	4	Metropolitan Infrastructure Provider
Smile Communications	4	4G LTE Fixed Wireless Provider
SpaceX Starlink	1	Satellite Broadband Provider

MTN Nigeria and BCN together accounted for 400 outages (~69.3% of the industry total). A temporal breakdown reveals significant monthly variation across Q1 2026:

- **January 2026:** Recorded the highest quarterly downtime with 238 major outages, representing a 101.7% surge over December 2025 (118 cases). BCN accounted for 188 cases and MTN logged 75 (Technext, 2026a).
- **February 2026:** Outages decreased by 20.5% month-on-month to 189 cases, with MTN logging 87 and T2 Mobile registering 24 (Technext, 2026a).
- **March 2026:** Outages declined an additional 20.6% to 150 cases, with MTN recording 72 and BCN recording 48 (Technext, 2026a).

To mitigate commercial friction impacting digital financial services during physical downtime, the sector transitioned to the End-User Billing (EUB) framework on June 18, 2025 (The Guardian Nigeria, 2026b). This resolved the multi-year N300 billion Unstructured Supplementary Service Data (USSD) debt dispute between commercial banking institutions and telecom operators by allowing direct billing of subscribers, stabilizing the financial architecture of digital banking channels (The Guardian Nigeria, 2026b).

3. Physical Layer Vulnerabilities and Root-Cause Analysis

Systemic network disruptions in Nigeria stem primarily from the intersection of electrical grid instability and physical backhaul vulnerability (The Guardian Nigeria, 2026a; Technext, 2026b). Analysis of root causes across Q1 2026 outages demonstrates that fiber-optic cuts accounted for 62.56% of total network downtime, followed by electrical power grid failures at 24.96%, other operational causes at 5.37%, equipment hardware failure at 3.47%, agricultural bush burning at 2.08%, and deliberate vandalism at 1.56% (Technext, 2026a).

Primary Root Cause of Outage	Percentage Share (%)
Physical Fiber-Optic Cuts	**62.56%**
Power Grid Failures & Energy Loss	**24.96%**
Other Miscellaneous Operational Agents	5.37%
Hardware & Equipment Failure	3.47%
Agricultural Bush Burning	2.08%
Deliberate Vandalism & Sabotage	1.56%

3.1 Micro-Level Fiber Cut Dynamics

Beyond the 361 major network-wide outages logged on the NCC portal, operators documented 5,934 micro-level physical fiber-optic cuts in Q1 2026, averaging approximately 500 weekly incidents across the initial 12 weeks of the year (Technext, 2026b). March recorded the highest volume with 3,855 incidents, compared to 1,599 in January and 480 in February (Technext, 2026b).

Granular classification of these 5,934 incidents identifies environmental and infrastructural degradation (soil erosion, chemical runoff, industrial waste) as the primary catalyst, responsible for 4,756 cuts (80.15%) (Technext, 2026b). Road construction and public civil works accounted for 509 cuts (8.58%), cable material defects caused 221 cuts (3.72%), deliberate vandalism was responsible for 196 cuts (3.30%), surface cable exposure caused 153 cuts (2.58%), and minor environmental factors contributed 99 cuts (1.67%) (Technext, 2026b). While ring topologies and dynamic routing protocols prevent most micro-cuts from triggering complete service loss, they induce severe capacity degradation, packet loss, and latency spikes across transport paths.

3.2 Critical National Information Infrastructure (CNII) Legal Enforcement

To mitigate chronic backhaul destruction, the Federal Government enacted the Designation and Protection of Critical National Information Infrastructure (CNII) Order of 2024, institutionalizing the "He Who Cuts Must Fix" enforcement doctrine (The Guardian Nigeria, 2026b, 2026c). This framework reclassified telecommunications infrastructure as protected national assets, making physical destruction a criminal offense (The Guardian Nigeria, 2026c). In partnership with the Nigeria Security and Civil Defence Corps (NSCDC), the NCC mandated that construction contractors verify utility corridors prior to excavation, enforcing work-stoppage orders and full civil restitution for damages (The Guardian Nigeria, 2026b).

Empirical compliance tracking demonstrates that negligent contractor cuts declined by approximately 30% following implementation, with total physical cuts dropping to 1,883 incidents in Q1 2026 (The Guardian Nigeria, 2026c). This marks a notable improvement compared to 2025, when the industry averaged over 2,400 monthly cuts (>19,000 cuts over an eight-month span). Nonetheless, financial restoration remains substantial: operators incurred over N14 billion in direct infrastructure repairs between 2022 and 2023 alone (The Guardian Nigeria, 2026c).

4. Geopolitical Vulnerability Matrix and Regional Disparities

Nigeria's digital divide is characterized by substantial geopolitical asymmetry. While rural northern regions experience low broadband penetration and security-related access limitations, primary economic centers Lagos, Abuja, and Port Harcourt exhibit an "urbanization paradox" (NigeriaPolls, 2026; Technext, 2026c). These metropolitan corridors feature high concentrations of 5G nodes and dense fiber backhaul, yet report high outage volumes driven by uncoordinated utility trenching and intensive civil road construction (NigeriaPolls, 2026). Furthermore, the ecosystem faces a talent deficit exceeding 225,000 professionals, constraining the deployment of modern security and Zero-Trust architectures.

Physical asset theft demonstrates distinct geographic clustering. In 2025, Imo State recorded the highest theft volume nationally with 391 incidents, followed by Abia (319), Enugu (306), and Edo (291) (Technext, 2026c). Nationally, Q1 2026 saw 1,118 physical theft incidents, including 469 stolen cables, 346 diesel siphoning events, 106 stolen backup battery banks, and 36 stolen generator units (Technext, 2026b).

Geopolitical Zone	Broadband Penetration	Dominant Operators	Physical & Security Threats	Regional Infrastructure Dynamics
South-West	65% – 75%	MTN, Globacom	Dense utility overlaps; moderate physical threats	Submarine landing hub (Lagos); highest 5G node density; frequent construction cuts
South-South	50% – 60%	MTN, Airtel	Marshy delta terrain; diesel siphoning; equipment theft	High maintenance OPEX; challenging river crossing backhaul logistics
South-East	45% – 55%	MTN	Organized theft syndicates; localized civil unrest	High asset loss rates (Imo, Abia); security risks constrain capital investment
North-Central	40% – 50%	MTN, Airtel	Broad rural expanse; localized civil works cuts	Anchored by Federal Capital Territory (Abuja); severe rural digital desert corridors
North-West	35% – 45%	Airtel, MTN	Regional banditry; restricted technician physical access	Elevated Mean Time to Repair (MTTR); highest average diesel prices (N3,313.60/L)
North-East	25% – 35%	MTN	Insurgency; active sabotage of cell sites	Lowest broadband penetration; widespread destruction of transmission towers

5. Comparative Operator Performance and Market Structure

The Nigerian telecommunications market has consolidated into a functional duopoly, with MTN Nigeria and Airtel Nigeria controlling 85.9% of active telephone subscriptions (Brands.ng, 2026; NigeriaPolls, 2026). This market concentration has marginalized Globacom and T2 Mobile (formerly 9mobile).

Performance Metric	MTN Nigeria	Airtel Nigeria	Globacom (Glo)	T2 Mobile
National Market Share (%)	**51.60%**	34.30%	12.20%	1.90%
Active Subscribers	95.7 Million	63.6 Million	22.6 Million	3.5 Million
Avg Download Speed (nPerf)	**18.65 Mbps**	10.57 Mbps	7.46 Mbps	~9.00 Mbps
Peak 4G / LTE Speed	**36.50 Mbps**	17.20 – 25.77 Mbps	8.57 Mbps	9.55 Mbps
Average Latency (ms)	**96.46 ms**	141.12 ms	121.81 ms	~130.00 ms
Reliability Score (/1000)	**730**	~700	~650	~600
Active 5G Deployments	**190+ Sites**	150+ Sites	None	Stalled / None
Monthly Data / User	**13.1 GB**	8.4 GB	~6.0 GB	~4.5 GB

MTN Nigeria maintains operational dominance with 95.7 million subscribers and leads across speed benchmarks, supported by 190+ 5G sites delivering median download throughput of 235 Mbps in metropolitan business districts (NigeriaPolls, 2026; Technext, 2026d). Airtel Nigeria holds second place with 63.6 million subscribers, having upgraded 99% of its footprint to 4G LTE and securing top awards for video streaming quality (Brands.ng, 2026). Globacom maintains 22.6 million subscribers via aggressive price discounting (offering 30%–40% more data per Naira) but exhibits slower average throughput (7.46 Mbps) and lacks active 5G infrastructure (NigeriaPolls, 2026). T2 Mobile holds 1.9% market share, actively piloting network-sharing agreements with MTN to maintain operational viability (NigeriaPolls, 2026). Concurrently, SpaceX Starlink has captured a 3% market share in the premium fixed-broadband segment, delivering download speeds of 100–250 Mbps at approximately N75,000 monthly (Internet Society, 2026; NaijaSabi, 2026).

6. Economic Modeling of Power Instability and Off-Grid Operations

Nigeria's centralized electrical grid operates with chronic instability, with national generation fluctuating between 3,500 MW and 5,000 MW for a population exceeding 220 million (The Guardian Nigeria, 2026a). Telecom infrastructure incurs an average of 4,600 minutes of annual grid outages (Mordor Intelligence, 2026). Consequently, approximately 75% of the nation's 50,000+ base transceiver stations (BTS) operate fully off-grid, reliant on captive diesel generator sets (The Guardian Nigeria, 2026a). Power provisioning represents 45% to 50% of total operating expenditures (OPEX), severely constraining capital allocation for 5G densification.

6.1 Diesel Fuel Cost Mechanics

According to the National Bureau of Statistics (NBS), the average retail price of Automotive Gas Oil (diesel) experienced an 86.4% year-on-year increase, rising from N1,758.26 per litre in May 2025 to N3,277.47 per litre in May 2026, including a 32.44% month-on-month surge from April 2026 (Channels TV, 2026; Realnews Magazine, 2026).

A standard off-grid telecom tower consumes approximately 13,000 litres of diesel fuel annually (VENDOR.Energy, 2026). At the May 2026 benchmark price of N3,277.47 per litre, the direct baseline fuel cost per site is modeled as:

$$\textit{Annual Base Fuel Cost} = 13{,}000\ L \times N3{,}277.47 = N42{,}607{,}110\ \textit{per site}$$

When incorporating routine generator maintenance (escalating at ~8.8% of acquisition cost annually), regional transport surcharges (+15% to 30% for inland/northern transit), and fuel siphoning losses, the annualized power OPEX per site exceeds N53,000,000 (~$33,000 USD) (NNEPIE, 2026; ResearchGate, 2017). For major infrastructure operators such as IHS Towers, managing ~16,000 sites with 70% of operational resources dedicated to power logistics, diesel expenditure represents a critical financial headwind (IHS Towers, 2025; NNEPIE, 2026).

6.2 Levelized Cost Analysis: Solar Hybrid Retrofits and Infrastructure Sharing

The Levelized Cost of Electricity (LCOE) for captive diesel generation ranges between $0.28/kWh and $0.33/kWh, compared to the industrial grid tariff of ~$0.12/kWh (ResearchGate, 2017). Transitioning to grid-tied power yields a 60% reduction in unit energy expenditure, lowering total site OPEX by up to 35% (The Guardian Nigeria, 2026a).

Power Source / Technology Model	LCOE ($/kWh)	Capital Cost (CAPEX)	Payback Period
Captive Diesel Generation (Off-Grid)	**$0.28 – $0.33**	N0.5M – N1.5M	N/A (Continuous OPEX)
Industrial Central Grid Supply	**~$0.12**	Grid Drop Fees	Immediate OPEX

Power Source / Technology Model	LCOE ($/kWh)	Capital Cost (CAPEX)	Payback Period
			Drop
Solar PV + Li-Ion Hybrid Retrofit	**$0.14 – $0.18**	N2.5M – N5.0M	**2 – 4 Years**

In response to prolonged grid unreliability, tower operators are deploying solar PV arrays paired with lithium-ion storage under "Project Green" (Mordor Intelligence, 2026; NNEPIE, 2026). While upfront capital costs for solar hybrid systems (N2.5M–N5.0M) exceed diesel generator acquisition (N0.5M–N1.5M), fuel displacement enables full capital payback within 2 to 4 years (NNEPIE, 2026). In parallel, multi-tenant passive infrastructure sharing enables operators to co-locate active RF equipment on shared physical masts, reducing CAPEX requirements by up to 30% (Ken Research, 2026; The Guardian Nigeria, 2026a).

7. Consumer Complaint Trajectories and Quality of Service Gains

Despite structural headwinds, substantial capital injection including over $1 billion invested by a Tier-1 operator in network modernization during 2025 has accelerated infrastructure upgrades (The Guardian Nigeria, 2026c; Vanguard News, 2026). Over 3,000 cell sites were upgraded in 2025, with an additional 12,000 scheduled for completion in 2026 (>2,800 completed as of April 2026) (The Guardian Nigeria, 2026c). These upgrades migrated 52% of the national subscriber base to 4G LTE, driving a 170% surge in aggregate data traffic (The Guardian Nigeria, 2026c).

Consequently, consumer complaints recorded by the NCC exhibited a marked downward trajectory. Total consumer complaints decreased from 351,000 in January 2025 to 76,000 in January 2026, representing a 78.35% year-on-year reduction that stabilized through March 2026 (76,000 cases) (Lagos Television, 2026; The Guardian Nigeria, 2026c; Vanguard News, 2026).

Complaint Tracking Category	Baseline (Jan/Mar 2025)	Reported (Jan/Mar 2026)	Net Reduction (%)
Total National Consumer Complaints	351,000 (Jan 2025)	76,000 (Jan/Mar 2026)	**-78.35%**
Specific Quality of Service (QoS) Issues	129,000 (Mar 2025)	24,000 (Mar 2026)	**-80.62%**
Complaints to QoS Advisory Boards	47,000 (Jan 2025)	21,000 (Mar 2026)	**-55.32%**

Specific Quality of Service (QoS) complaints declined by 80.62% from 129,000 in March 2025 to 24,000 in March 2026, while complaints escalated to QoS advisory panels fell by 55.32% from

47,000 to 21,000 over the same period (Lagos Television, 2026; Vanguard News, 2026).

8. Policy Recommendations and Resilience Roadmap

To achieve sustainable infrastructure resilience and overcome systemic deficits, the following strategic interventions are recommended for regulatory bodies and industry stakeholders:

- **Expansion of In-Country Content Caching and Peering:** Enforce regulatory incentives for global content providers and domestic operators to peer via the Internet Exchange Point of Nigeria (IXPN), raising localized website routing from 23% toward the 50% resilience benchmark.
- **Accelerated Deployment of Renewable Energy Alternatives:** Formulate tariff incentives and duty exemptions on lithium-ion energy storage systems to accelerate off-grid tower retrofits, decoupling network availability from volatile diesel markets.
- **Strengthened Enforcement of CNII Legal Mandates:** Deepen operational collaboration between the NCC, NSCDC, and the judiciary to maintain rapid-response verification of utility corridors and ensure mandatory prosecution of asset vandalism.
- **Mandatory Infrastructure Sharing and Co-Location:** Expand active and passive network sharing frameworks across sub-urban and rural corridors to lower market entry barriers and improve capital efficiency.

9. Conclusion

Nigeria's telecommunications sector in 2026 exhibits substantial operational recovery alongside persistent physical and macroeconomic vulnerabilities. While an overall Internet Resilience Score of 41% highlights underlying structural deficits, the enforcement of the CNII Order of 2024 has successfully curtailed civil contractor damage by ~30%, and massive network modernisation has reduced consumer QoS complaints by >80%. However, the diesel OPEX burden, exacerbated by fuel prices reaching N3,277.47 per litre, remains an acute impediment to network densification. Decoupling network reliability from fossil fuel dependencies through solar hybrid retrofits, scaling domestic traffic caching, and enforcing critical infrastructure protections represent vital imperatives for securing Nigeria's digital economy.

Statements and Declarations

Funding: The author declares that no external funding was received for conducting this study.

Competing Interests: The author has no competing financial or non-financial interests to declare.

Author Contributions: Alamin Abubakar Nataala was responsible for data acquisition, statistical synthesis, macroeconomic modeling, analytical interpretation, and authorship of the manuscript.

Data Availability: Data utilized in this study are derived from publicly accessible regulatory portals of the Nigerian Communications Commission (NCC), the National Bureau of Statistics (NBS), and cited empirical telemetry sources.

References

Brands.ng. (2026). *Nigeria mobile network performance report 2026: MTN, Airtel, Glo and T2 Mobile*. Brands Intelligence. https://brands.ng/intelligence/nigeria-mobile-network-performance-report-2026/

Channels TV. (2026, June 30). *Petrol climbs 55%, kerosene up 37%, diesel soars 86% in one year*. Channels Television News. https://www.channelstv.com/2026/06/30/petrol-climbs-55-kerosene-up-37-diesel-soars-86-in-one-year/

IHS Towers. (2025). *2025 Sustainability report: Powering connectivity across Africa*. IHS Holding Limited. https://www.ihstowers.com/content/dam/ihs/corporate/documents/sustainability/Sustainability-reports/2025-Sustainability-Report.pdf

Internet Society. (2026). *Country report for Nigeria: Pulse internet resilience index*. ISOC Pulse. https://pulse.internetsociety.org/en/reports/ng/

Ken Research. (2026). *Nigeria telecom infrastructure sharing market: Market size, trends, and growth opportunities to 2030*. Ken Research Reports. https://www.kenresearch.com/nigeria-telecom-infrastructure-sharing-market

Lagos Television. (2026, April 27). *Telecom complaints drop 80% as service quality improves NCC*. LTV News. https://lagostelevision.com/2026/04/27/telecom-complaints-drop-80-as-service-quality-improves-ncc/

Mordor Intelligence. (2026). *Nigeria telecom towers and data center power market analysis:*

Growth, trends, and forecasts (2026–2031). Mordor Intelligence Industry Reports. https://www.mordorintelligence.com/industry-reports/nigeria-telecom-tower-market

NaijaSabi. (2026). *Best internet service providers in Nigeria 2026: MTN vs Airtel vs Glo vs 9mobile Plus fibre and Starlink*. NaijaSabi Tech Intelligence. https://naijasabi.com.ng/best-internet-service-providers-nigeria-2026/

NigeriaPolls. (2026). *Nigeria telecom sector tracker 2026: Market share, ARPU, and speed benchmarks*. NigeriaPolls Research. https://nigeriapolls.com/research/telecom-sector

NNEPIE. (2026). *The $15 trillion diesel bill: What Nigeria's self-generation economy tells you about the real addressable market*. Nigeria National Energy & Infrastructure Economics. https://www.nnepie.com/the-15-trillion-diesel-bill-what-nigerias-self-generation-economy-tells-you-about-the-real-addressable-market/

Punch Newspapers. (2026). *FG spends N29bn to repair damaged power towers – Report*. The Punch. https://punchng.com/fg-spends-n29bn-to-repair-damaged-power-towers-report/

Realnews Magazine. (2026, June 18). *Diesel price stands at N3,277.47 in May — NBS*. Realnews Magazine Online. https://realnewsmagazine.net/diesel-price-stands-at-n3277-47-in-may-nbs/

ResearchGate. (2017). *Telecom infrastructure sharing: A panacea for sustainability, cost and network performance optimization in Nigeria telecom industry*. ResearchGate Publications. https://www.researchgate.net/publication/316643565

Technext. (2026a, April 15). *Nigerian telcos recorded 577 network outages, 361 fibre cuts in Q1 2026*. Technext24. https://technext24.com/reviews/nigerian-telcos-577-network-outages-q1/

Technext. (2026b, April 20). *MTN, Airtel, Glo, others recorded 500 weekly fibre cuts in Q1 2026*. Technext24. https://technext24.com/news/mtn-airtel-glo-record-500-fibre-cuts/

Technext. (2026c, April 10). *Rivers, Imo, Abia, emerge as telecom theft hotspots in 2025*. Technext24. https://technext24.com/2026/04/10/rivers-imo-abia-emerge-as-telecom-theft-hotspots-in-2025/

Technext. (2026d, January 16). *MTN Nigeria edges Airtel and Glo as best mobile internet provider in 2025 – report*. Technext24. https://technext24.com/2026/01/16/mtn-best-mobile-internet-provider-2025/

The Guardian Nigeria. (2026a, May 12). *How grid inefficiency is stifling digital economy agenda*. The Guardian. https://guardian.ng/technology/tech/how-grid-inefficiency-is-stifling-digital-economy-agenda/

The Guardian Nigeria. (2026b, May 20). *NCC reads riot act to construction firms over fibre cuts*. The Guardian. https://guardian.ng/business-services/ncc-reads-riot-act-to-construction-firms-over-fibre-cuts/

The Guardian Nigeria. (2026c, May 28). *Nigeria records 1,883 fibre cuts in Q1 as complaints drop by 78%*. The Guardian.

https://guardian.ng/news/nigeria-records-1883-fibre-cuts-in-q1-as-complaints-drop-by-78/

Vanguard News. (2026, April 25). *Telecom complaints plunge 80% as service improves NCC*. Vanguard Media. https://www.vanguardngr.com/2026/04/telecom-complaints-plunge-80-as-service-improves-ncc/

VENDOR.Energy. (2026). *Economics of availability: Diesel, solar, EV in African telecom markets*. VENDOR Energy Analytics. https://vendor.energy/economics/