



Battery Consumption & Thermal Status Analysis

June 2026

Agenda

1. The Hidden Side of Mobile Performance: Device Stresses
2. How Low Signal Drains Your Phone
3. Battery Drain: Where is Your Phone Losing Power?
4. Phone Overheating & Automatic Throttling
5. Thermal Status: When Phones Overheat
6. Consumer Empowerment & Regulatory Action

The Hidden Side of Mobile Performance: Device Stresses

The New Perspective: Sometimes, a slow internet connection isn't just caused by heavy network congestion—it can be directly tied to how hard your mobile phone is working physically.

The Study Scope: This review analyzed data collected across Nigeria from June 2025 through May 2026 to track how network signals physically affect two critical everyday factors: Battery Drain and Phone Overheating (Thermal Stress).

The Core Takeaway: When a phone has to struggle to stay connected to a weak signal, it consumes significantly more battery power and generates internal heat. This triggers protective safety settings in your phone that automatically slow down your performance to save your battery and cool the hardware.

Geographic Zone Category	Share of National Tracking Grid (%)	Baseline Operational Meaning
Normal Operational Conditions	84.50%	Phones operate within standard temperature and power boundaries.
Elevated Thermal Stress Zones	9.60%	Areas where environmental or network strains cause phone overheating.
High Battery Consumption Zones	5.90%	Areas where network conditions force rapid phone battery depletion.
Critical Multi-Stress Overlap	0.80%	Severely strained locations where phones overheat and drain battery simultaneously.

How Low Signal Drains Your Phone

What the Data Shows: In specific geographic zones, network conditions force mobile phones into high-power states. This happens because the device is constantly amplified to maintain contact with a distant tower or repeatedly trying to reconnect.

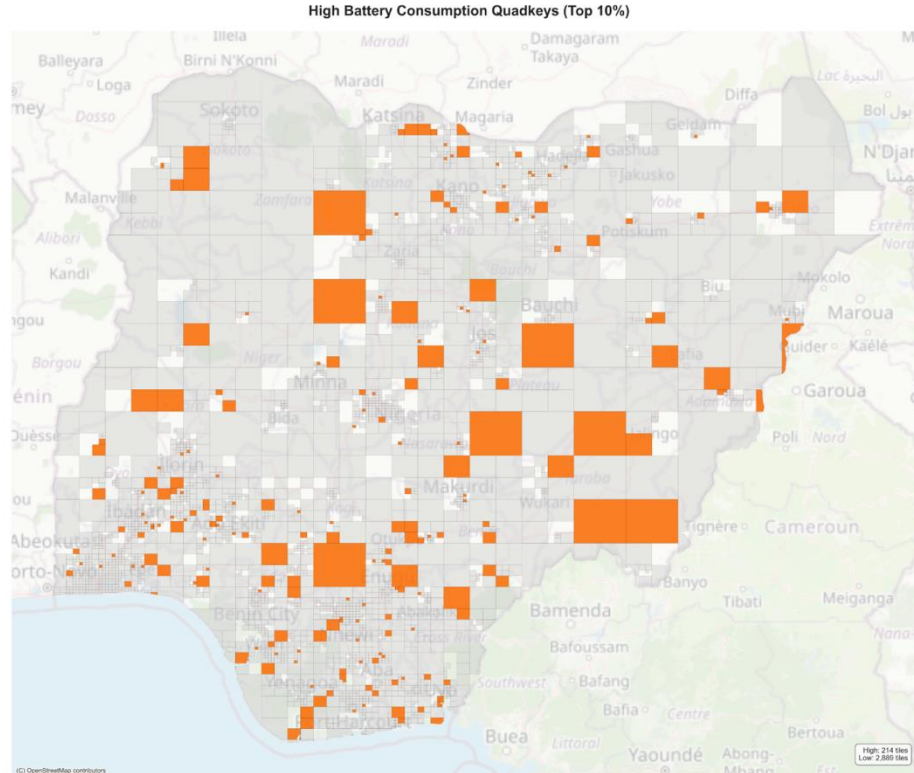
The Strained Reality: When your phone enters this high-consumption state, the efficiency of your digital connection drops sharply across every single metric.

What it means for you: In these specific power-heavy zones, you don't just experience slower downloads—your battery actively drains faster, creating a double penalty for daily mobile users.



Battery Drain: Where is Your Phone Losing Power?

High Drain Zones: The map highlights the top 10% of areas in Nigeria where battery consumption is most intense (shown in orange).



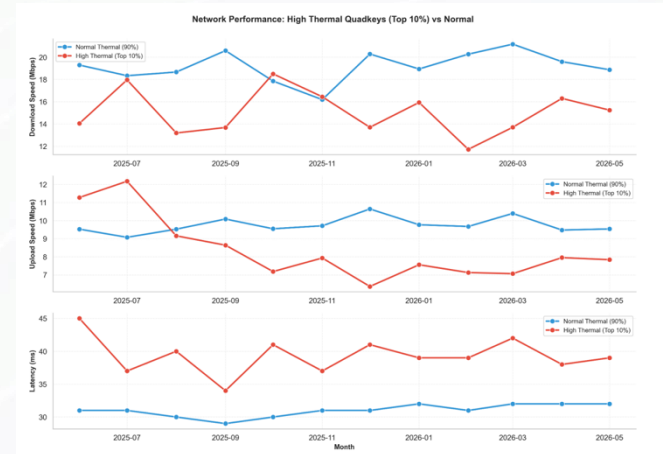
Phone Overheating & Automatic Throttling

We also tracked "Thermal Status"—how hot devices get during use. Overheating usually happens when a device is struggling with heavy data processing or poor signal conditions.

What the Data Shows: Just like a laptop computer, your smartphone features built-in safety mechanisms to prevent hardware damage from getting too hot.

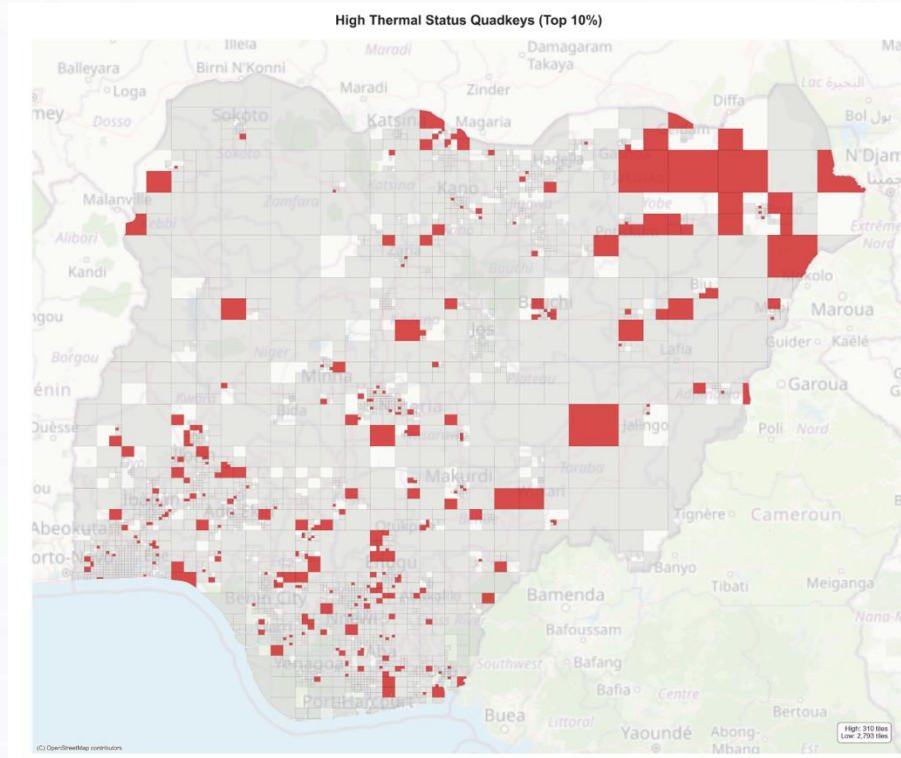
The Automatic Slowdown: When your device detects high thermal stress, it automatically reduces its processor speeds to cool down. This internal "safety brake" directly restricts how fast your phone can decode incoming web data.

What it means for you: If you are using your phone outdoors in high ambient temperatures, in direct sunlight, or under poor signal conditions, your streaming and browsing quality will scale down automatically to allow the hardware to cool.



Thermal Status: When Phones overheat

Hot Zones: The red areas on the map represent the top 10% of regions where devices frequently overheat.



Consumer Empowerment & Regulatory Action

Protecting Your Hardware: Balanced Goals for a Healthier Mobile Space

 **Targeting the Dual Hotspots:** Focusing localized infrastructure upgrades directly on the 25 worst-affected overlapping zones to relieve both network congestion and hardware battery strain.

 **Hardware-Aware Standards:** Integrating device stress indicators into nationwide digital quality monitoring to get an accurate view of user experiences on the ground.

 **Public Awareness Focus:** Informing consumers on how to avoid extreme thermal throttling (e.g., avoiding processor-heavy tasks under direct sunlight, or removing phone cases during intensive data use).

 **Sustainable Infrastructure:** Enhancing regional mobile transmission paths to minimize the connection retry loop that silently exhausts consumer phone batteries.

Thank You