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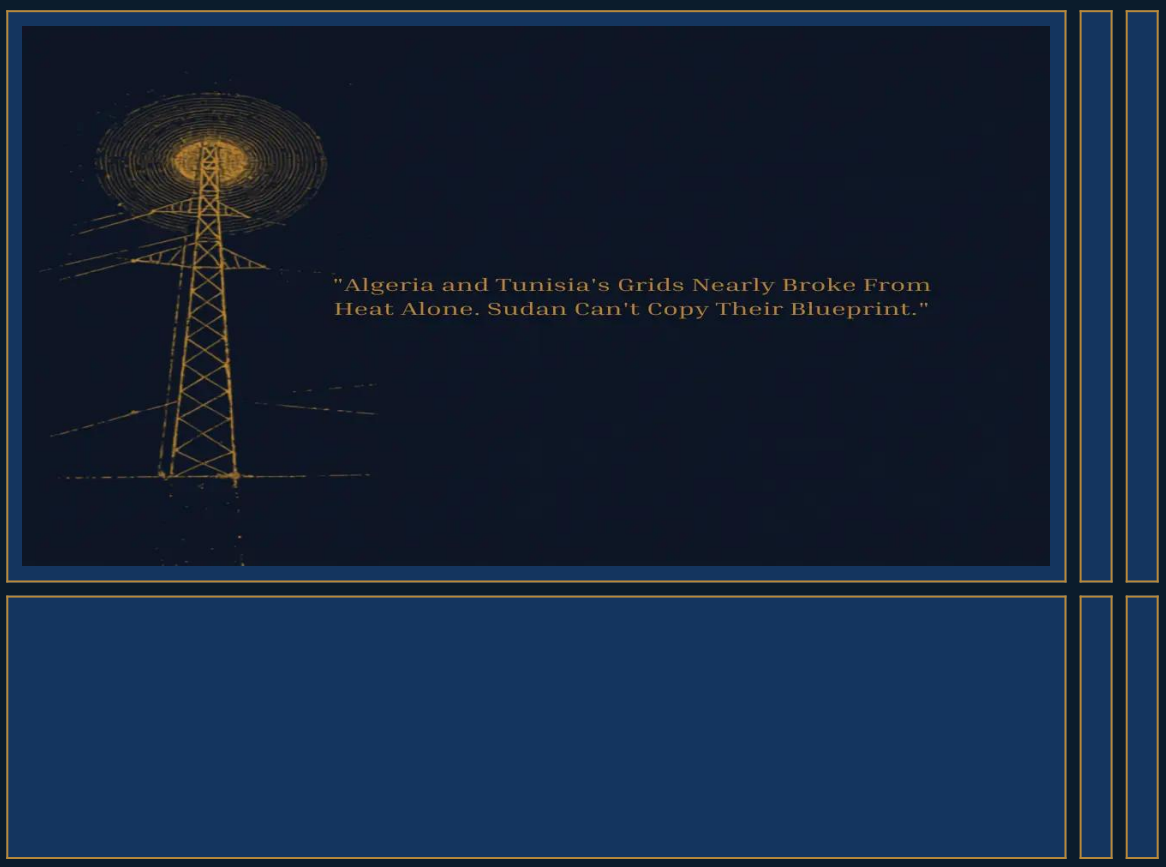

Algeria and Tunisia's Grids Nearly Broke From Heat Alone This Summer. Sudan Is Rebuilding From Scratch — It Can't Copy Their Blueprint.

Heat alone nearly broke Algeria's and Tunisia's grids this summer. Sudan's solar reconstruction must design for climate resilience now.

Research Team

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Heat alone nearly broke Algeria's and Tunisia's power grids this summer. As Sudan rebuilds its war-damaged grid around distributed solar, it must design for climate resilience now — not retrofit it later.

On 15 July 2026, a single "exceptional" fault at an electrical facility in Sidi Okba, in Algeria's Biskra province, cut power across 16 provinces — Algiers, Constantine, Tizi Ouzou, and Ghardaïa among them — hours after the country recorded its highest electricity demand ever, 21,870 megawatts, in a heatwave that pushed desert temperatures to 49°C (Moroccan World News, 22 July 2026; Algérie Presse Service, 16 July 2026). Two weeks later, next door in Tunisia, the state utility STEG began enforcing rolling blackouts of up to 18 hours in Bizerte governorate as demand hit a record 6 gigawatts and heat climbed past 49°C; the country's Order of Young Doctors put the heatwave's death toll at 150 to 200 people (France 24, 31 July 2026; The New Arab, 3 August 2026).

Neither country is at war. Both have functioning national utilities, foreign reserves, and — in Algeria's case — one of Africa's largest gas-fired generation fleets. Heat and fire broke them anyway, for days at a time. Sudan, whose grid has already absorbed up to \$3 billion in war damage since April 2023 and is being rebuilt this year largely around distributed solar, is about to make the design decisions that will determine whether it inherits the same vulnerability — or engineers around it from the start (UNDP Sudan, Solar Energy Value Chain Study, May 2026).

The Argument

First, heat alone is now enough to break a well-run grid — no war, no sabotage required. Algeria's outage was not caused by a fire. A facility at Sidi Okba failed under record air-conditioning demand as a heatwave combined with high humidity, and the fault cascaded across 16 provinces before engineers restored power through load-balancing at 4am (Horizons, July 2026; Algérie Presse Service, 16 July 2026). Tunisia's blackouts were the same story stretched over weeks: STEG cut power on a rolling schedule specifically to keep the demand spike from taking down the whole network (France 24, 31 July 2026). Both cases are, in the plainest sense, a preview of what is becoming normal: as attaqa.net's 14 August 2026 analysis of the summer's fires and heatwaves reported, the International Energy Agency now estimates that 18% of the world's electricity grid is exposed annually to more than 200 days of "fire weather" — conditions under which ignition and rapid spread become close to inevitable (attaqa.net, 14 August 2026, citing the International Energy Agency).

Second, the fire-climate-energy relationship runs in both directions, and it specifically threatens solar — the technology Sudan's recovery is being built around. Power infrastructure is not only a victim of this cycle; it is one of its causes. Ten of the twenty most destructive wildfires in California's history were started by electrical equipment failures (attaqa.net, 14 August 2026). And when fires do burn, the smoke they produce measurably degrades solar output nearby: Colorado State University research published in Nature Communications found that during major fire

events, global horizontal irradiance — the baseline resource conventional solar panels rely on — fell 11–17% near active fires, while direct normal irradiance, used by concentrating solar systems, dropped 32–42%. Sudan is not Algeria or Tunisia; it is not currently a wildfire-prone country in the same way. But it shares the other half of the equation — extreme, rising heat that drives demand spikes exactly like the ones that broke both neighbors' grids this summer — and it is building its recovery disproportionately around the one generation technology this pattern is shown to degrade under stress.

Third, Sudan is making its grid-design decisions now, while Algeria and Tunisia made theirs decades ago. That is the opening. Sudan's war has destroyed an estimated 40% of prior national generation capacity, including the Merowe Dam and the El-Obeid thermal plant, and donors — UNDP, UNFPA, and GEF among them — are actively financing distributed solar mini-grids and solar-powered clinics as the interim, and in places permanent, replacement (UNDP Sudan, 26 May 2026 press release). Every one of those projects currently being designed and financed is a chance to specify climate resilience as a baseline requirement — siting that avoids known heat-island risk, battery storage sized to absorb demand spikes rather than just bridge outages, and procurement standards that account for thermal derating of panels and inverters in Sudan's climate — rather than retrofitting it in five years, once the kind of cascading failure that hit Sidi Okba happens to a mini-grid serving a hospital in El-Fasher or Kassala.

Why It Matters to the Reader

If you are a donor or implementing partner financing solar in Sudan right now, this is not a hypothetical risk to flag in an annex — it is a design specification you can write into this year's procurement documents at close to zero marginal cost. Retrofitting resilience later, after a mini-grid is already installed and a clinic or a water pump already depends on it, costs far more, and usually happens only after a failure has already cost lives. If you work inside Sudan's Ministry of Energy and Petroleum or a state-level utility, the lesson from Biskra and Bizerte is that heat-driven demand spikes do not require your grid to be large or centralized to hurt you — a single overloaded node can take down service across a wide area, which is exactly the failure mode a poorly planned mini-grid network can also produce if storage and load management are treated as optional extras rather than core design.

Close

Algeria and Tunisia will spend the coming years hardening grids they built for a climate that no longer exists. Sudan has the rarer, harder position: it is building a grid for the first time in a generation, at the exact moment the climate that will strain it is already visible in a neighboring country's blackout data. That is not a burden. It is the only real advantage a reconstruction has over a retrofit — and it closes the moment the procurement decisions now underway are

finalized without it.

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