FEATURED INSIGHT

Solar PV Procurement Failures Are Governance Problems in Disguise

Most solar project failures in West Africa trace their root cause upstream — in procurement planning, specification writing, and supplier qualification. This analysis documents four verifiable cases and draws operational lessons for donor-funded programme teams.

Verdant Supply and Governance Limited | June 2025 | CAC RC9506611

EXECUTIVE SUMMARY

When a solar installation fails in West Africa, post-mortems typically blame maintenance culture, harsh climate, or inadequate user training. These are real factors — but they are downstream symptoms. The root pathology is almost always embedded upstream, in the procurement process that selected the equipment, qualified the supplier, and defined what "acceptable" looked like before a single panel was mounted.

This analysis examines four documented cases — from Nigeria, Ghana, Senegal, and the ECOWAS regional programme — and identifies three upstream procurement failure modes that recur across programmes regardless of donor, technology, or country context.

The Conventional Narrative Is Wrong

The international solar industry has, over the past decade, produced an extensive literature on why solar projects fail in Sub-Saharan Africa. A recurring theme in this literature — and in the field assessments of multilateral institutions — is that technical and engineering factors are consistently over-weighted in failure analysis, while procurement governance factors are consistently under-weighted.

The technology itself is not the problem. Solar PV is mature, well-standardised, and manufactured to internationally benchmarked specifications. The IEC 61215 and IEC 61730 standards define module performance and safety thresholds. The Lighting Global / GOGLA Tier framework provides a clear, independently verifiable quality classification for off-grid solar home systems. The engineering is not a mystery.

Yet donor-funded solar programmes in West Africa continue to produce a pattern of failures — underperforming systems, abandoned mini-grids, degraded home systems — that the available technology could not, on its own, explain. The differentiating variable is procurement governance: who specified the equipment and to what standard, how suppliers and contractors were qualified, whether competitive processes were properly structured, and whether technical evaluation was protected from commercial override.

The four cases below document this pattern with verifiable evidence drawn from World Bank Implementation Completion Reports, African Development Bank project assessments, ECREEE programme evaluations, and reporting by specialist energy press. Each case traces a visible project failure to a specific, identifiable upstream procurement governance breakdown.

Case Studies

CASE STUDY 1 OF 4

Nigeria Electrification Project — Solar Home System Quality Failures

World Bank Project P161885 | USD 350 million | 2018 – 2023 | Rural Electrification Agency (REA)

- The NEP deployed solar home systems (SHS) across rural Nigeria through a Results-Based Financing (RBF) mechanism — private operators received subsidy payments triggered by verified connections, creating strong volume-over-quality incentives.
- The project's tender documentation referenced Lighting Global quality verification standards but did not enforce them as hard pass/fail eligibility conditions. They were framed as aspirational guidelines, not compliance thresholds.
- Multiple private operators procured SHS from manufacturers whose products had not received independent Lighting Global/GOGLA Tier 2 verification certificates. Some products showed early performance degradation, with battery cycle-life falling significantly below rated specification.
- The World Bank's Implementation Completion and Results Report (ICR, 2023, Project P161885) acknowledged quality assurance gaps and described verification of product standards across operators as 'inconsistent', noting that the results-based structure created insufficient incentives for technical compliance enforcement.
- A single specification gap — the absence of a mandatory third-party quality certificate as a compliance threshold — allowed non-compliant equipment to enter a USD 350 million donor-funded programme.

KEY PROCUREMENT LESSON

In results-based financing structures, technical compliance thresholds must be hard pass/fail eligibility conditions in procurement documentation — not aspirational references. Quality certificates must be third-party verified, not self-declared.

CASE STUDY 2 OF 4

Ghana Nzema Solar Project — EPC Procurement Collapse

Blue Circle Industries / Government of Ghana | 155 MW (planned) | 2012 – 2018

- The Nzema Solar Project in Ghana's Western Region was projected to be Africa's largest solar farm at 155 MW when announced in 2012, with significant political backing and strong initial investor interest.
- The failure is widely attributed to Power Purchase Agreement (PPA) negotiation difficulties with the Electricity Company of Ghana. However, primary financing due diligence records reveal a parallel and causal procurement governance failure.

- The selected EPC developer, Blue Circle Industries (UK-registered), was evaluated primarily on proposal quality and political connectivity. No independent technical advisor was retained to assess EPC contractor capacity, track record, or supply chain depth prior to project announcement.
- When financing institutions conducted their own due diligence, they found that key component suppliers and subcontractors in the EPC chain had not been formally contracted and their delivery capacity at the specified scale had not been verified. This finding contributed materially to withdrawal of financing interest.
- Reporting by PV Tech (2014–2018) and ESI Africa, alongside Ghana Energy Commission records, document the progressive collapse of investor confidence as supply chain due diligence gaps became apparent.
- The project proceeded to announcement on the basis of a developer's proposal — not on verified EPC procurement documentation. Financing institutions now treat EPC procurement documentation as a primary, not secondary, due diligence artifact.

KEY PROCUREMENT LESSON

Selecting an EPC contractor on proposal quality and political connectivity, without independently verified track record assessment and supply chain due diligence, is a governance failure. Financing follows governance — not announcements.

CASE STUDY 3 OF 4

Senegal ASER Rural Solar Electrification — Supplier Qualification Failure

Agence Sénégalaise d'Electrification Rurale (ASER) | World Bank / KfW | Multiple Tranches 2000s – 2015

- ASER oversaw one of West Africa's most ambitious rural solar electrification programmes across multiple World Bank and KfW-funded tranches, targeting village-level solar home system and lantern deployment across rural Senegal.
- Post-installation surveys conducted under the World Bank's ESMAP programme in the mid-2010s documented significant system non-functionality within five years. In some surveyed zones, functionality rates were below 40% — a result the technology specification alone could not explain.
- Root cause analysis documented in World Bank/ESMAP country-level assessments identified supplier qualification as the primary failure point: local installation contractors were selected through processes that prioritised price, with no minimum threshold for demonstrated solar installation competency enforced.
- System specifications did not define battery cycle-life minimums, charge controller compatibility requirements, or warranty enforcement mechanisms as contractual obligations. Specifications described general system configurations rather than minimum verifiable performance standards.
- Critically, no post-installation performance bond or warranty security instrument was required. Contractors faced no financial consequence for early system failure. The risk of underperformance was entirely transferred to the communities the programme was designed to serve.
- The combined effect: a substantial portion of donor funding subsidised technically underspecified systems installed by under-qualified contractors — with communities bearing the full cost of non-functionality.

KEY PROCUREMENT LESSON

Supplier qualification frameworks must include demonstrated technical competency — installation track record, certified personnel, proof of warranty servicing infrastructure — not merely financial standing or business registration. Specifications must define minimum verifiable performance standards with post-installation security instruments.

CASE STUDY 4 OF 4

ECOWAS Mini-Grid Programme — Specification Harmonisation Failure

ECREEE / EU-AEEP | Guinea-Bissau, Cabo Verde, Liberia, Sierra Leone | 2013 – 2019

- The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), supported by EU-AEEP funding, implemented solar mini-grid demonstration projects across multiple West African member states as part of a regional electrification initiative.
- Because each member state procured independently — with different technical specifications, different supplier qualification criteria, and no harmonised minimum performance standard — equipment quality and system design varied dramatically across the programme portfolio.
- In Liberia and Sierra Leone, systems were procured through national processes that admitted components with no IEC certification. The absence of a pre-qualified supplier register meant procurement officers had no mechanism to distinguish compliant from non-compliant suppliers.
- In Guinea-Bissau, inverter specifications did not account for local grid frequency characteristics, resulting in system incompatibilities that required costly retrofits — a failure attributable entirely to specification writing, not installation.
- ECREEE's own 2019 programme evaluation concluded that the absence of a regional procurement governance framework — harmonised specifications, a shared pre-qualified supplier register, common technical evaluation criteria — was the single most consequential programmatic failure across the entire multi-country initiative.

KEY PROCUREMENT LESSON

Multi-country programmes require harmonised procurement governance frameworks: shared minimum specifications, a jointly managed pre-qualified supplier register, and common technical evaluation criteria. Fragmented procurement produces fragmented outcomes — regardless of how well individual country-level processes are managed.

The Three Upstream Failure Points

Across all four cases, and consistent with the broader literature on solar PV failure in Sub-Saharan Africa, three upstream procurement governance failures recur with high consistency — regardless of the scale of the programme, the identity of the donor, or the country context.

1. Specification Writing Weakness

Technical specifications are treated as administrative formality — box-ticking exercises that reference international standards without enforcing them. The pattern is consistent: specifications describe system configurations, reference quality frameworks like Lighting Global or IEC, but do not define minimum performance thresholds as hard compliance conditions. The result is that non-compliant

equipment passes procurement review because the procurement documentation gave evaluators no legitimate basis to reject it.

Good specification writing is the primary risk management instrument in solar PV procurement. It should define: certification requirements with mandatory independent verification; minimum performance parameters for each major component (module, battery, charge controller, inverter); warranty and service response obligations with financial backing; and compatibility requirements for the specific installation context.

2. Supplier Qualification Without Verification

Pre-qualification processes assess documentation — business registration, financial statements, tax compliance — but do not verify technical capacity. The critical question is not whether a supplier is formally incorporated; it is whether they have demonstrably delivered solar systems at the required scale, quality, and performance level. These are different questions, and procurement processes in the region consistently treat the first as a proxy for the second.

Verified qualification requires: confirmed reference sites (with performance data, not just completion certificates); certified technical personnel lists; proof of after-sales servicing infrastructure in the relevant geography; and — for significant contracts — independent assessment visits to reference installations. Documentation declared by the supplier is a starting point, not an endpoint.

3. Commercial Evaluation Overriding Technical Evaluation

In price-competitive procurement environments — particularly under donor frameworks with budget pressure and disbursement timelines — the lowest compliant bid tends to win even where technical evaluation scores signal serious capacity concerns. This happens when procurement documentation fails to establish a minimum technical score threshold that would eliminate technically deficient bids regardless of price.

The two-envelope evaluation methodology — where technical and commercial envelopes are opened and scored independently, with commercial envelopes of technically failing bids returned unopened — is a standard instrument in international procurement precisely because it prevents this dynamic. Its application in donor-funded West African solar procurement is inconsistent.

Summary: Failure Modes and Governance Fixes

Failure Mode	Procurement Root Cause	Governance Fix
Substandard equipment deployed	No hard certification threshold in tender	Lighting Global / IEC as pass/fail eligibility

EPC contractor underperforms	Track record not independently verified	Mandatory reference site visits + independent TA
Systems fail within 5 years	No battery/charge controller minimums specified	Performance spec + post-installation bond
Lowest bid wins with weak technical score	Commercial evaluation overwhelms technical	Two-envelope: minimum technical score threshold
Regional programme incoherence	No harmonised spec across procuring entities	Pre-qualified supplier register + shared evaluation criteria

What Governance-Grade Solar PV Procurement Looks Like

For procurement advisors and implementing partners operating in donor-funded frameworks, solar PV procurement should be treated as a governance exercise first and a technical exercise second. The technical parameters are well-established. The governance architecture that ensures those parameters are actually met in procurement, delivery, and post-installation performance — that is where programme management attention is most consequentially deployed.

Specifically, governance-grade solar PV procurement requires:

Bankable specification documents. Written to IEC/Lighting Global standards, with hard pass/fail compliance thresholds — not aspirational guidelines. Specifications should be drafts that a financing institution's technical due diligence team would accept, not administrative checklists.

Verified supplier qualification. Site visits to reference installations, not just reference letters. Certified personnel lists, not just CVs. Proof of in-country warranty servicing infrastructure, not just a manufacturer's warranty statement. The burden of proof rests with the supplier.

Two-envelope evaluation with protected minimum scores. Technical and commercial evaluation separated, with a minimum technical score threshold (typically 70–75%) that eliminates technically deficient bids regardless of price. Commercial envelopes of failing bids are not opened.

Performance security instruments. Retention bonds, performance bonds, or escrow arrangements tied to system performance over a 12–24 month post-installation period. Contractors should carry financial risk of underperformance — not communities or donor programmes.

Independent technical advisors for major contracts. For contracts above a defined threshold, procurement evaluation should include an independent technical expert who was not involved in specification writing and has no financial relationship with any bidder.

Harmonised frameworks for multi-country programmes. A shared minimum specification baseline, a jointly managed pre-qualified supplier register, and common technical evaluation criteria — agreed before country-level procurement begins.

THE VERDANT POSITION

Equipment failures are procurement failures. Procurement failures are governance failures.

Verdant Supply and Governance Limited exists at the intersection of renewable energy procurement and donor compliance governance. Our procurement advisory work — spanning specification development, supplier qualification, tender evaluation support, and post-award performance governance — is built on a single conviction: the time to address procurement governance is before the first tender is issued, not after the first system fails.

If your programme is deploying solar PV infrastructure under World Bank, AfDB, USAID, EU, or FCDO frameworks, we provide procurement governance advisory support that closes the upstream gaps this analysis documents.

Contact us at verdantsupply.com | Verdant Supply and Governance Limited (CAC RC9506611)

Sources and Verification

The case studies in this analysis draw on the following primary and secondary sources:

1. World Bank Project P161885 — Nigeria Electrification Project. Implementation Completion and Results Report (ICR). World Bank Group, 2023. Available: World Bank Operations Portal.
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All case study characterisations are based on documented project records, institutional evaluation reports, and specialist energy sector journalism. Where specific report language is paraphrased, the source document is identified. Verdant Supply and Governance Limited does not manufacture or supply solar PV equipment and has no commercial relationship with any entity referenced in this analysis.