

14th CESA YOUNG PROFESSIONALS SUSTAINABILITY IMBIZO — 2026 — 19–20 AUGUST PREMIER HOTEL MIDRAND

Procurement is Design: How Tender Decisions Shape Infrastructure Outcomes

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About Me

- BTech (cum laude), BSc, MEng (2027), Pr Tech Eng, Cand. CPM, MSAICE
- Office Manager at Sky High Consulting Engineers – Water/Transportation Planning
- CESA YPF Chair: Mpumalanga
- SAICE: Council Member, Lowveld Branch Chair and FLP Rep.
- SAICE Young Technologist of the Year 2025
- I love serving



Drivers of Infrastructure Value

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Team Capability

Procurement defines team composition, skills, and governance structure.

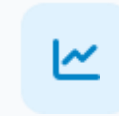
Selecting qualified technical expertise sets the foundational quality ceiling for the entire project lifecycle.



Risk Allocation

Contractual structures assign technical and financial risks.

Misallocating systemic risks to parties unable to manage them guarantees disputes, claims, and schedule slippage.



Whole-Life Performance

Establishing evaluation criteria beyond initial capital cost ensures focus on durability, maintenance effort, energy efficiency, and total operational cost over 30+ years.

Beyond Compliance?

Why project outcomes are decided long before
the first excavator arrives on site.

The Lowest-Cost Tender Paradox

THE LOW-BID TRAP



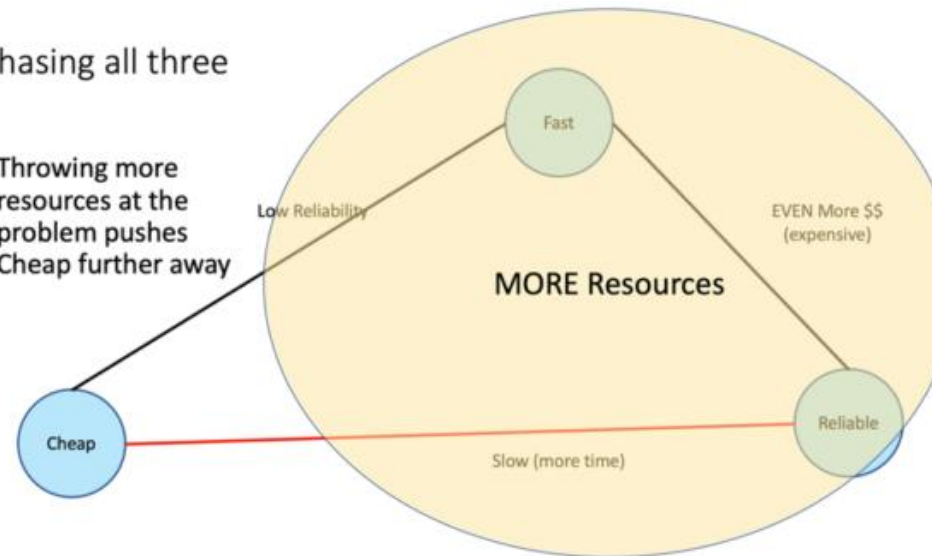
-  **Illusion of Upfront Savings:** Awarding strictly on lowest tender price creates a false sense of economy, routinely wiped out by post-award claims.
-  **Encourages Opportunistic Bidding:** Contractors bid below cost to secure awards, planning to recover margins through adversarial variations and scope disputes.
-  **Suppresses Innovation:** Price-only competition penalizes high-durability materials, sustainable solutions, and advanced construction technologies.
-  **Erodes Quality Standards:** Forces extreme cost-cutting on site management, technical supervision, and critical quality control measures.

The Lowest-Cost Tender Paradox



Chasing all three

- Throwing more resources at the problem pushes Cheap further away



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SA Megaproject Case Studies

Examining contrasting procurement models across South Africa's key national infrastructure programs.

Case Study: Gautrain



- ✓ **Structured PPP Framework:** Concession agreement between Gauteng Province and Bombela provided clear operational and financial boundaries.
- ✓ **Proactive Risk Mitigation:** Enabling works executed prior to main construction reduced early site risk and subterranean delays.
- ✓ **Independent Verification:** Independent certifiers validated milestone achievements before disbursements, protecting public funds.
- ✓ **Socio-Economic Impact:** Delivered operational rapid rail generating R1.72 in Gauteng economic value for every R1 spent.

Case Study: Medupi/Kusile



- ✓ **Unbundling Strategy:** Over 30 separate major packages tendered individually without a central EPCM integrator, leading to severe interface errors.
- ✓ **Incomplete Scope Definitions:** Tenders issued under immature design packages triggered thousands of contract variations and scope additions post-award.
- ✓ **Massive Cost Escalation:** Combined expenditure escalated from initial ~R150bn estimates to over R300bn due to delays and reworks.
- ✓ **Technical Deficiencies:** Boiler design mismatched coal quality, causing frequent unit trips, long operational delays, and national energy insecurity.



Collaborative Procurement

Global lessons in integrated project teams and early contractor involvement.

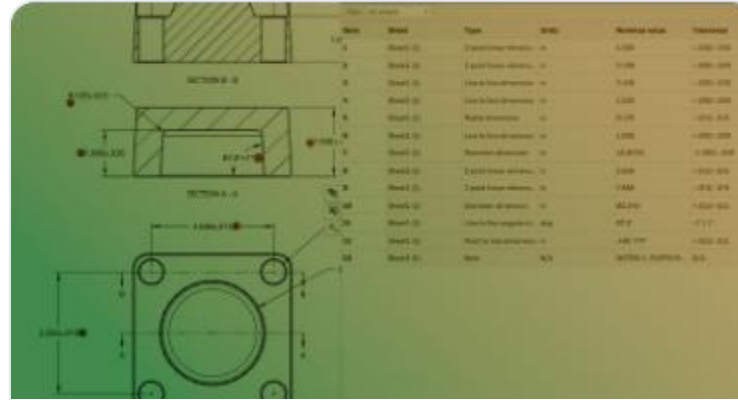
Case Study: London 2012

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NEC3 Contract Model

Open-book accounting with target cost options aligned financial incentives between client and contractors.



Integrated Delivery Partner

CLM delivery consortium acted as an extension of the client, unifying engineering, procurement, and site management.



Flawless Execution

Delivered a complex multi-billion pound venue portfolio under budget and a year ahead of the opening ceremony.

Strategic Procurement Matrix

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Procurement Dimension	Traditional Compliance (Lowest Cost)	Engineering-Led (Value-Based)
Primary Award Criteria	Lowest initial capital expenditure (CapEx)	Whole-life value, technical merit & operational efficiency
Risk Allocation	Dumped entirely onto contractor via penalty clauses	Shared transparently; assigned to party best able to manage
Contractual Relationship	Adversarial, claims-driven, transaction-focused	Collaborative, transparent, shared performance targets
Engineer's Role	Late administrator supervising rigid specifications	Strategic designer shaping risk, scope, and evaluation upfront

The Engineer's Imperative

80% - 90%

Of Whole-Life Infrastructure
Performance & Risk Profile Fixed
During Procurement

-  **Lead Procurement Design:** Engineers must actively configure contract forms, scope packages, and risk structures before market release.
-  **Promote Value-Based Selection:** Champion multi-criteria scoring frameworks in public tenders under SA's Preferential Procurement Policy.
-  **Adopt Collaborative Contracts:** Institutionalise standard FIDIC, NEC, and PPP models that foster early contractor involvement and joint problem-solving.

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So? Procurement is Design

Rethinking tender decisions as strategic engineering levers to guarantee sustainable infrastructure outcomes for South Africa.

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Thank You

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