Ethical Procurement and Green IT Strategy: Integrating Sustainability into Enterprise Technology Management

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ABSTRACT

Enterprise technology has become a material sustainability issue in its own right: data centres and networks draw significant and growing energy; device fleets embody carbon, conflict minerals, and labour risk across opaque supply chains; and accelerating refresh cycles feed one of the world's fastest-growing waste streams. Yet in most organisations, the two functions that could act on this — IT management and procurement — pursue sustainability separately, with IT focused on operational energy efficiency and procurement on supplier codes of conduct, leaving the largest impacts (embodied emissions, lifecycle extension, end-of-life integrity) in the gap between them. This paper develops an integrated framework for ethical and green enterprise technology management structured around the technology lifecycle: demand governance (whether to buy at all), sourcing (what and from whom), operation (how efficiently), lifetime management (how long), and end-of-life (what happens after). For each stage we specify decision principles, management practices, and governance instruments, and we consolidate these into a reference table linking stages to practices and to the maturity conditions under which each becomes feasible. We argue that the pivotal, least-practised interventions are demand governance and lifetime extension — because avoided and deferred purchases dominate lifecycle impact — and that embedding sustainability criteria into procurement scoring, contract clauses, and asset-management policy converts espoused ESG commitments into enforceable operating decisions. Implications are drawn for CIO–CPO collaboration, ESG reporting integrity, and research on green IT maturity.

Keywords: green IT; sustainable procurement; ethical sourcing; e-waste; circular economy; enterprise technology management; ESG; IT asset lifecycle

Introduction

Corporate sustainability programmes have historically treated information technology as part of the solution — the dematerialiser of travel, paper, and physical process. That framing is now only half true. The technology estate is itself a significant environmental and ethical footprint: electricity demand from computing infrastructure is rising with cloud and AI workloads; the manufacture of servers, laptops, and smartphones concentrates most of a device's lifetime emissions before first power-on; upstream supply chains carry documented risks around mineral sourcing and labour conditions; and discarded electronics constitute a rapidly growing, poorly recycled waste stream, much of it exported to informal processing sectors with serious health consequences.

Enterprises acknowledge these issues in ESG reports, but operational responsibility is fragmented. IT organisations optimise what they can see — data-centre power, device power settings — while procurement organisations manage what they can contract — supplier certifications, codes of conduct. Neither owns the decisions with the largest lifecycle consequences: how much technology to buy, how long to keep it, and what verifiably happens to it afterwards. This paper addresses that integration gap. Our question is: how should sustainability and ethical criteria be embedded across the enterprise technology lifecycle so that green IT strategy and ethical procurement operate as one management system rather than two reporting narratives? We contribute a five-stage lifecycle framework with practices and governance instruments per stage (Section 3, Table 1), an argument for re-weighting effort toward demand and lifetime decisions (Section 4), and implications for governance, reporting, and research (Section 5).

2. Background

2.1 Green IT: From Efficiency to Lifecycle

First-generation green IT concentrated on operational energy: data-centre efficiency metrics, virtualisation, consolidation, and power management. These remain necessary, but lifecycle assessment has shifted attention to embodied impact — the emissions, water, and material extraction bound up in manufacturing. For typical end-user devices, the embodied share dominates the use-phase share, which inverts managerial priorities: the greenest device decision is usually the purchase avoided or deferred, not the efficient replacement bought. Cloud migration complicates accounting rather than resolving it, relocating impact into providers' estates and making credible provider disclosure a procurement issue.

2.2 Ethical Procurement: From Codes to Consequences

Sustainable procurement practice has matured from supplier codes of conduct toward standards-based management (exemplified by guidance such as ISO 20400) emphasising risk-based due diligence, lifecycle costing, and integration of sustainability into award criteria rather than side letters. The persistent weakness is verification: codes attest intentions, audits sample moments, and multi-tier electronics supply chains obscure the sites of greatest risk. For technology categories specifically, procurement leverage is real but bounded — most buyers are small relative to global vendors — which argues for standardised industry criteria, ecolabel reliance, and buyer coalitions over bespoke questionnaires.

2.3 The Circular Economy Frame

Circular economy thinking supplies the integrating logic the two traditions lack: value retention through narrowing (buy less), slowing (use longer), and closing (recover materials) resource loops. Applied to enterprise technology, it converts scattered good practices — refurbishment, harvesting, certified recycling — into a coherent strategy with a clear hierarchy: avoid, extend, reuse, recover, dispose. The framework in the next section operationalises this hierarchy across the management lifecycle.

3. An Integrated Lifecycle Framework

Table 1 presents the framework: five lifecycle stages, the governing decision principle for each, representative practices, and the governance instruments that make practices enforceable rather than aspirational. Two design choices deserve note. First, demand governance is elevated to a stage in its own right, because the decision not captured by any procurement process — whether the purchase is needed — has the largest impact leverage. Second, every stage carries both an environmental and an ethical dimension; the framework refuses the common split in which "green" belongs to IT and "ethical" to procurement.

Table 1. Integrated ethical–green framework across the enterprise technology lifecycle

3.1 Making the Framework Bind

The governance instruments column is the framework's point. Sustainability criteria that live in policy documents but not in scoring sheets, contract clauses, and approval gates predictably lose to cost and schedule at decision time. Three bindings matter most. Procurement scoring: sustainability must carry explicit, non-trivial weight in award decisions, with embodied-carbon and repairability data required from bidders so the weight has something to act on. Contractual enforceability: supplier commitments need audit rights, remediation obligations, and consequences, and end-of-life vendors need downstream transparency duties, because the ethical failures of this domain typically occur beyond the first tier. Asset policy: refresh cycles, depreciation schedules, and service-life targets are where lifetime extension is either institutionalised or silently overridden; aligning finance policy with sustainability intent is unglamorous and decisive.

3.2 Maturity Conditions and Sequencing

The five stages are not equally accessible to every organisation, and attempting the full framework at once predictably produces paperwork rather than change. A maturity-graded sequence is more realistic. Foundational maturity requires only two capabilities most organisations already partially possess: a complete technology asset inventory (nothing in the framework can be governed if the estate is unknown) and a certified end-of-life channel with data-sanitisation certificates, which addresses the stage where legal and reputational exposure is most acute. Intermediate maturity adds sourcing integration — sustainability weights in scoring, ecolabel baselines, and standard contract clauses — and operational measurement, including energy KPIs and provider disclosure requirements in cloud agreements; these steps ride on existing procurement and IT service processes and require policy change more than new capability. Advanced maturity tackles the high-leverage, high-friction stages: demand governance gates in architecture review, service-life targets aligned with finance policy, and downstream chain-of-custody transparency from disposal partners. The sequencing logic is deliberate: early stages build the data and organisational credibility on which the politically harder later stages depend, and each stage produces auditable artefacts — inventories, certificates, scoring

records, exception logs — that double as evidence for increasingly stringent sustainability-reporting regimes.
Maturity assessment against the framework can be kept simple: for each lifecycle stage, an organisation asks whether the decision principle is (a) absent, (b) espoused in policy, (c) embedded in a binding instrument, or (d) embedded and audited. The distinction between (b) and (c) is where most programmes currently sit and where most greenwashing risk resides; the framework's contribution is to make that gap visible stage by stage, so that an organisation reporting strong sustainability commitments can be asked, precisely, in which scoring sheets, contract clauses, and asset policies those commitments live.

4. Discussion

The framework's re-weighting claim — that demand governance and lifetime management dominate — has organisational consequences that explain why these stages are under-practised. They are politically harder: challenging demand confronts business units, and extending lifetimes confronts user expectations and vendor incentives, whereas operational efficiency and supplier paperwork confront no one. They are also less visible in ESG reporting, which rewards measurable operational savings over avoided purchases that never generate a data point. Organisations serious about integrity should therefore report avoidance and extension explicitly (average service life by asset class, refurbished share of purchases, avoided-refresh volumes), accepting that the most meaningful metrics are counterfactual and imperfect rather than defaulting to the merely countable. A second discussion point concerns the CIO–CPO interface: the framework is unownable by either function alone, which argues for a joint technology sustainability mandate with shared targets — a governance form still rare in practice. Finally, honesty about tensions is warranted: security patching horizons can genuinely limit lifetime extension; refurbished sourcing can conflict with standardisation; and AI-driven capacity growth is currently overwhelming efficiency gains in many estates. The framework does not dissolve these tensions; it forces them into governed, documented trade-offs instead of untracked defaults.

5. Conclusion and Future Directions

Enterprise technology management and procurement have each developed partial sustainability practices; the impacts that matter most fall between them. This paper proposed an integrated lifecycle framework — demand, sourcing, operation, lifetime, end-of-life — with decision principles, practices, and, critically, governance instruments that convert commitments into binding operating decisions, and argued for redirecting managerial effort toward the avoidance and extension levers that dominate lifecycle impact. Future work should proceed on three fronts: empirical maturity studies testing whether the governance instruments identified here discriminate between reporting-led and operations-led sustainability programmes; methodological work on decision-grade embodied-carbon data for procurement scoring; and sectoral studies of buyer coalitions as a remedy for the leverage problem facing individual enterprises. The direction of travel, however, is already clear: as regulation and scrutiny of ESG claims tighten, the organisations whose green IT strategy lives in their scoring sheets, contracts, and asset policies — not their sustainability reports — will be the ones whose claims survive audit.

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