

Designing a Robust Compliance and Audit Framework for Sustainable Public Procurement

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Accepted: 09 May 2026 || Published: 25 May 2026

Abstract

Public procurement accounts for a significant share of government expenditure globally, representing roughly 12% of GDP in OECD countries and up to 30% in developing economies (OECD, 2019). As governments increasingly prioritize sustainability objectives, embedding environmental, social, and governance (ESG) criteria into procurement processes has become imperative. However, the effectiveness of sustainable public procurement (SPP) initiatives hinges crucially on strong compliance and audit mechanisms. This article presents a thorough framework for designing compliance and audit systems that ensure accountability, transparency, and continuous improvement in SPP practices. Drawing on institutional theory, principal-agent frameworks, and empirical evidence from multiple jurisdictions, we propose a multi-layered governance approach that addresses the particular challenges of monitoring sustainable procurement outcomes. The framework integrates preventive controls, detective mechanisms, and corrective measures across the procurement lifecycle, while emphasizing the role of independent audit institutions and civil society oversight. We further examine how digital transformation, particularly through e-procurement platforms and blockchain-enabled traceability, can strengthen compliance monitoring and reduce opportunities for greenwashing. By synthesizing comparative insights from both developed and developing country contexts, this study contributes to the emerging literature on SPP governance and offers actionable recommendations for policymakers seeking to institutionalize sustainability in public spending without compromising efficiency or value for money.

Keywords: *Sustainable public procurement, compliance system, audit mechanisms, public accountability, ESG integration, governance*

How to Cite: Adebawale, A. A. (2026). Designing a Robust Compliance and Audit Framework for Sustainable Public Procurement. *Journal of Procurement and Supply Chain*, 6(2), 1-9.

1. Introduction

The worldwide imperative for sustainable development has fundamentally changed how governments handle public procurement. Traditional procurement frameworks, focused primarily on value-for-money considerations, have evolved to incorporate expanded sustainability objectives, including reducing carbon footprints, adopting circular economy principles, upholding equitable labor standards, and enhancing supply chain resilience (Walker & Brammer, 2009). The European Union's Green Public Procurement criteria, the United

Nations Sustainable Development Goal 12.7, and national initiatives such as the U.S. Federal Sustainable Procurement Policy exemplify this paradigm shift (European Commission, 2021; United Nations, 2015).

Despite widespread policy adoption, significant implementation gaps continue. Research shows that while 93% of OECD countries have implemented green public procurement policies at the national level, actual compliance varies substantially, with many jurisdictions reporting rates below 50% (OECD, 2022). These disparities highlight a critical governance challenge: the absence of effective compliance and audit frameworks that translate policy intentions into operational realities.

The complexity of sustainable procurement compliance stems from several factors. First, sustainability criteria are inherently multidimensional, encompassing environmental impacts (e.g., carbon emissions, natural resource depletion), social aspects (e.g., labor standards, community development), and economic objectives (e.g., local content requirements, SME participation) (Grandia, 2016). Second, supply chains have become increasingly globalized and opaque, making it challenging to verify sustainability claims (Carter & Rogers, 2008). Third, procurement officers commonly encounter capacity constraints and conflicting incentives that undermine compliance with sustainability requirements (Rizzi et al., 2017).

This article tackles these challenges by proposing a conceptually based and practically applicable compliance and audit framework for sustainable public procurement. Our contribution is to synthesize insights from the public administration, accounting, and supply chain management literatures to develop an integrated governance model that enhances accountability and supports procurement professionals in achieving sustainability objectives.

2. Conceptual Foundations

2.1 Institutional Theory and Compliance Behavior

Institutional theory provides essential insights into why organizations adopt and comply with sustainable procurement practices. DiMaggio and Powell (1983) identify three institutional isomorphic pressures, coercive, mimetic, and normative, that propel organizational conformity. In the context of public procurement, coercive pressures manifest through legislative mandates and regulatory requirements; mimetic pressures emerge when agencies emulate successful practices of peer organizations; and normative pressures derive from professional criteria and ethical expectations.

Scott (2014) expands this framework by distinguishing between regulative, normative, and cultural-cognitive pillars of institutions. Effective compliance frameworks must address all three pillars: regulatory mechanisms (laws and sanctions), normative systems (professional standards and certification schemes), and cultural-cognitive elements (common beliefs about sustainability). This multi-pillar approach suggests that audit and compliance systems should go beyond legal enforcement to encompass professional development and cultural transformation within procurement organizations.

2.2 Principal-Agent Theory and Audit Design

The principal-agent framework illuminates the information asymmetries inherent in sustainable procurement relationships (Jensen & Meckling, 1976). In this context, citizens and elected officials act as principals, while procurement officers and contractors serve as agents with superior information about procurement procedures and outcomes. Sustainability criteria

worsen these information asymmetries because environmental and social impacts are often difficult to measure and verify (Bovens, 2007).

Audit mechanisms serve as critical governance tools for reducing information asymmetries and aligning agents' behavior with principals' preferences. However, traditional financial audits are inadequate for assessing sustainability compliance, which requires specialized technical expertise and outcome-oriented evaluation approaches (Power, 1997). The concept of "audit society" (Power, 1997) suggests that effective oversight requires moving beyond compliance checking toward systems that promote continuous learning and improvement.

2.3 Stakeholder Theory and Accountability

Freeman's (1984) stakeholder theory emphasizes that organizations bear responsibilities to multiple constituencies beyond shareholders or taxpayers. In sustainable procurement, stakeholders include not only immediate contracting parties but also affected communities, environmental groups, future generations, and workers in the global supply chain. This expanded stakeholder landscape calls for audit systems that represent diverse value standpoints and enable participatory accountability mechanisms (Schaltegger & Burritt, 2018).

3. Challenges in Sustainable Procurement Compliance

3.1 Definitional and Measurement Complexity

A major challenge in SPP compliance lies in defining and measuring sustainability. Unlike price or quality metrics, sustainability encompasses multiple, sometimes conflicting, dimensions. The triple bottom line framework, people, planet, profit, provides a useful heuristic but offers limited operational guidance for procurement practitioners (Elkington, 1997). Furthermore, life-cycle evaluation methodologies, although theoretically sound, often require data and technical capabilities that are beyond the reach of many public agencies (Rebitzer et al., 2004).

Research by Testa et al. (2016) reveals significant variation in how sustainability criteria are operationalized across jurisdictions, leading to inconsistent compliance standards and difficulties with benchmarking. The absence of standard metrics complicates audit processes and creates opportunities for "greenwashing," where suppliers present misleading sustainability credentials (Delmas & Burbano, 2011).

3.2 Capacity and Resource Restrictions

Compliance with SPP requirements demands specialized knowledge spanning environmental science, labor law, supply chain management, and contract administration. Studies consistently identify capacity constraints as primary barriers to SPP implementation (Grandia et al., 2013). Procurement officers commonly lack training in sustainability assessment, while audit functions may be understaffed or lack technical expertise to evaluate complex environmental claims.

Resource limitations go beyond human capital to information systems. Effective compliance monitoring requires a data infrastructure capable of tracking supplier performance, monitoring contract compliance, and analyzing spending patterns against sustainability criteria (Coggburn & Rahm, 2005). Many public agencies operate with legacy procurement systems ill-suited to these requirements.

3.3 Political and Institutional Barriers

Sustainable procurement initiatives frequently confront government opposition, particularly when sustainability premiums appear to increase costs or disadvantage local suppliers (McCrudden, 2004). Short electoral cycles may discourage extended sustainability investments, while dominant interest groups may lobby against stringent compliance requirements. Additionally, fragmented institutional arrangements, where procurement authority is distributed across multiple agencies, create coordination challenges and accountability gaps (Thai, 2001).

4. Framework for Compliance and Audit Design

Based on the conceptual foundations and empirical challenges identified above, we introduce a comprehensive compliance and audit framework consisting of five interrelated components: (1) governance architecture, (2) standard-setting and certification, (3) monitoring and verification systems, (4) enforcement and remedy mechanisms, and (5) continuous improvement processes.

4.1 Governance Architecture

Effective SPP compliance necessitates a clear assignment of responsibilities across multiple governance levels. We advocate for a "distributed governance" model that mediates centralized standard-setting alongside decentralized implementation (Provan & Kenis, 2008).

Central Level Functions:

- Develop national SPP strategies aligned with international commitments (SDGs, Paris Agreement)
- Establish minimum sustainability standards and reporting requirements
- Provide technical assistance and capacity building programs
- Coordinate alongside international bodies to harmonize standards (ISO 20400, EU GPP criteria)

Agency Level Functions:

- Adapt national standards to sector-specific contexts
- Integrate sustainability criteria into procurement procedures and evaluation methodologies
- Maintain supplier registries and performance databases
- Conduct internal compliance monitoring

External Supervision:

- Supreme audit institutions (SAIs) should conduct periodic comprehensive audits of SPP implementation
- Independent environmental and social auditors should verify supplier claims
- Civil society organizations and academia should provide external validation and research support

This multi-level architecture recognizes that sustainable procurement governance is "too complex to be managed by hierarchies alone and too integrated to be left to markets" (Provan & Kenis, 2008, p. 231).

4.2 Standard-Setting and Certification

Standardization reduces compliance costs and audit complexity by ensuring minimum sustainability thresholds. We recommend a tiered approach to standard-setting:

Tier 1: Mandatory Minimum Standards

- Legally binding requirements for high-impact categories (construction, vehicles, food services)
- Based on EU GPP criteria, EPA standards, or equivalent international benchmarks
- Focus on verifiable attributes (energy efficiency ratings, recycled content percentages, certified timber)

Tier 2: Best Practice Standards

- Voluntary standards exceeding minimum requirements
- Recognized through award schemes or preferential treatment in bid evaluation
- Developed through multi-stakeholder consultation to ensure feasibility and relevance

Tier 3: Innovation Partnerships

- Collaborative mechanisms for developing next-generation sustainability solutions
- Pilot programs with relaxed procurement rules to test emerging technologies
- Risk-sharing arrangements between public buyers and innovative suppliers

Certification schemes serve an essential function in reducing verification burdens. Third-party certifications (ISO 14001, SA8000, Fair Trade) provide credible signals of supplier sustainability performance, though auditors must stay vigilant against certification fraud (Gulbrandsen, 2014). Blockchain-based verification systems deliver promising paths for improving supply chain transparency (Saber et al., 2019).

4.3 Monitoring and Verification Systems

Modern SPP audit systems should integrate multiple verification approaches:

Ex-Ante Compliance:

- Sustainability criteria integration in technical specifications
- Pre-qualification requirements for suppliers
- Life-cycle costing methodologies that internalize environmental externalities

Ex-Post Verification:

- Contract performance monitoring against sustainability KPIs
- Random inspections and spot-checks of supplier facilities
- Whistleblower mechanisms for reporting non-compliance

Technology-Enabled Monitoring:

- Big data examination to identify anomalous bidding patterns
- Internet of Things sensors for monitoring contract execution (fuel consumption, waste generation)

- Artificial intelligence for the analysis of supplier documentation and risk profiles

The audit methodology should emphasize "performance auditing" rather than simple compliance checking. As noted by INTOSAI (2019), performance audits assess whether procurement activities are conducted economically, efficiently, and effectively to achieve sustainability objectives. This approach requires auditors to evaluate outcome metrics (carbon reduction, job creation) rather than simply verifying process adherence.

4.4 Enforcement and Remedy Mechanisms

Effective compliance requires credible enforcement mechanisms that create appropriate incentives for sustainability performance:

Administrative Sanctions:

- Debarment of non-compliant suppliers from future contracts
- Financial penalties for failure to meet contractual sustainability requirements
- Mandatory corrective action plans for structural non-compliance

Judicial Remedies:

- Standing for civil society organizations to challenge procurement decisions that violate sustainability requirements
- Specialized procurement tribunals with expertise in sustainability issues
- Public interest litigation to enforce statutory SPP mandates

Reputational Mechanisms:

- Public disclosure of supplier sustainability ratings
- Naming and shaming of persistent non-compliers
- Recognition programs for sustainability leaders

The enforcement framework should incorporate proportionality principles, distinguishing between technical violations and deliberate circumvention of sustainability requirements (Arrowsmith, 2005). Remedial approaches may be more effective than punitive measures for building long-term compliance capacity.

4.5 Continuous Improvement and Learning

Sustainable procurement occurs within dynamic contexts where technology, regulations, and stakeholder expectations constantly evolve. Compliance frameworks have to incorporate learning mechanisms:

Feedback Loops:

- Regular partner consultations to identify implementation barriers
- Post-implementation reviews of major contracts
- Cross-jurisdictional learning networks

Capacity Development:

- Professional certification programs for sustainable procurement officers
- Knowledge repositories and best practice databases

- Mentoring programs linking experienced and novice practitioners

Research and Innovation:

- Partnerships with universities for impact evaluation
- Funding for applied research on SPP effectiveness
- Pilot programs to test innovative compliance mechanisms

5. Implementation Issues

5.1 Sequencing and Phasing

Framework implementation ought to follow a phased approach that builds institutional capacity and political support:

Phase 1 (Foundation): Establish legal mandates, develop basic standards, and initiate capacity building for priority sectors (typically IT, construction, and vehicles).

Phase 2 (Expansion): Extend coverage to additional product categories, establish monitoring systems, and develop supplier certification programs.

Phase 3 (Optimization): Apply advanced technologies, refine standards based on empirical evidence, and achieve full coverage of public spending.

5.2 Risk-Based Audit Prioritization

Given resource restrictions, audit resources should be allocated based on risk assessments, considering:

- Contract value and duration
- Historical compliance performance of suppliers
- Sector-specific sustainability risks (e.g., extractive industries, electronics)
- Geographic risk factors (conflict zones, weak governance environments)

5.3 International Cooperation

Sustainability challenges go beyond national boundaries, necessitating international cooperation in designing compliance structures. Harmonization of standards through multilateral agreements (e.g., the WTO Government Procurement Agreement, EU directives) reduces compliance costs for international suppliers while maintaining the integrity of sustainability (Anderson & Müller, 2015). Mutual recognition agreements between national audit bodies can facilitate cross-border procurement while guaranteeing accountability.

6. Conclusion

The transition to sustainable public procurement represents one of the most significant governance transformations in contemporary public administration. However, policy ambition must be matched by robust compliance and audit frameworks that guarantee accountability, prevent greenwashing, and sustain continuous improvement. This article presents an extensive framework that integrates institutional theory, principal-agent insights, and stakeholder perspectives to address the unique challenges of SPP governance.

The proposed framework stresses distributed governance, tiered standard-setting, technology-enabled monitoring, proportional enforcement, and continuous learning. Implementation

entails sustained political commitment, equitable distribution of funding, and preparedness to adapt based on empirical evidence. Future research needs to focus on evaluating the effectiveness of different compliance mechanisms, developing standardized sustainability metrics, and examining the potential of emerging technologies (blockchain, AI, IoT) to enhance audit capabilities.

As governments encounter mounting pressure to tackle climate change, social inequality, and resource scarcity, sustainable procurement will increasingly act as a critical policy lever. Strong compliance and audit frameworks are essential to ensuring this effective tool delivers on its transformational potential.

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