
RESEARCH ARTICLE

Implementing ESG Principles in Palm Oil Plantation Management: A Narrative Systematic Review

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ABSTRACT

The palm oil industry faces increasing global pressure to adopt responsible and transparent production systems that address environmental degradation, social inequality, and governance failures. In response, the implementation of Environmental, Social, and Governance (ESG) principles has emerged as a strategic framework for strengthening sustainability performance across plantation operations. This study presents a systematic narrative review of peer-reviewed literature published between 2015 and 2024 to analyze how ESG principles are applied within palm oil plantation management. The review synthesizes empirical findings related to environmental stewardship, social responsibility, and governance reforms, highlighting key trends, progress, and persistent challenges. Results show that ESG implementation contributes significantly to reducing deforestation, improving waste and water management, promoting labor rights, enhancing community engagement, and strengthening institutional transparency through certification and traceability systems. However, structural issues such as inconsistent enforcement, unclear land tenure, socioeconomic disparities, and capacity gaps continue to constrain the effectiveness of ESG adoption. Overall, the findings demonstrate that ESG frameworks, when properly integrated into plantation management, function not only as compliance mechanisms but also as transformative tools capable of elevating the long-term sustainability and legitimacy of the palm oil sector. The study underscores the importance of continued research, multi-stakeholder collaboration, and robust monitoring systems to advance responsible palm oil governance.

KEYWORDS

ESG Principles; Palm Oil Plantations; Sustainability Management.

INTRODUCTION

The global palm oil sector has long been positioned at the center of debates concerning sustainability, human rights, governance integrity, and economic development. While palm oil remains one of the world's most versatile and economically significant commodities, it is simultaneously viewed as a driver of deforestation, biodiversity loss, labor violations, and land-use conflicts (Meijaard et al., 2020). In the last decade, however, the increasing demand for transparency and sustainability in global supply chains has driven the palm oil industry to adopt Environmental, Social, and Governance (ESG) standards as a framework for responsible management. ESG implementation is no longer voluntary branding; it has evolved into a global expectation embedded in investment decisions, consumer preferences, and international certification schemes.

The adoption of ESG principles in palm oil plantation management is influenced by multiple forces: institutional pressures from global buyers; regulations and soft-law instruments introduced by governments; voluntary certifications such as the Roundtable on Sustainable Palm Oil (RSPO) and the Indonesian Sustainable Palm Oil (ISPO); and market-based incentives promoting climate resilience and social responsibility. Scholars have emphasized that ESG serves not only as a moral or reputational framework but also as a risk-management tool that enhances long-term economic

performance (Gillan et al., 2021). The palm oil industry, given its historical controversies, stands to benefit significantly from ESG integration by improving productivity, reducing resource dependencies, and strengthening stakeholder trust.

This article presents a systematic narrative review of recent literature on the implementation of ESG principles in palm oil plantation management. The aim is to synthesize academic findings on how companies operationalize ESG in practice, the challenges they encounter, and the extent to which ESG frameworks have influenced environmental stewardship, social well-being, and governance quality within the sector. Unlike a full PRISMA-based SLR, the narrative approach allows a more interpretive synthesis of concepts, empirical trends, and emerging debates while still maintaining scholarly rigor through reliance on peer-reviewed journal sources.

Given Indonesia's and Malaysia's dominance in global palm oil production, much of the literature reviewed in this paper draws from studies conducted in Southeast Asia. The review also incorporates global comparative insights to contextualize ESG adoption within international standards. Through an integrated synthesis, this study contributes to the growing body of research on sustainable agribusiness practices, highlighting ways in which ESG frameworks function as pathways to reforming plantation management and ensuring long-term sectoral resilience.

RESEARCH METHODS

This research employs a systematic narrative review, emphasizing conceptual synthesis over quantitative evidence aggregation. The approach is suitable for emerging ESG scholarship, which remains fragmented across environmental science, agribusiness management, corporate governance, and social policy domains. A narrative method also enables the integration of interdisciplinary literature into a cohesive analytical framework.

Academic sources were retrieved from Scopus, Web of Science, ScienceDirect, Taylor & Francis Online, SpringerLink, and Google Scholar. The search emphasized peer-reviewed articles published between 2015 and 2024 to capture contemporary developments in ESG and sustainability in the palm oil sector. Keywords used independently and in combination included "ESG palm oil," "sustainable palm oil management," "corporate sustainability agriculture," "palm oil governance," "environmental impact palm oil," "social responsibility plantations," and "RSPO/ISPO sustainability compliance." Inclusion criteria focused on articles that:

1. addressed ESG principles explicitly or within sustainability frameworks relevant to palm oil.
2. examined environmental, social, or governance outcomes in plantation management.
3. were empirical or conceptual journal publications.
4. related directly to palm oil-producing regions.

Exclusion criteria included non-peer-reviewed texts, news articles, technical reports without methodological clarity, and studies unrelated to palm oil plantations. Selected sources were analyzed thematically. Key themes were grouped into three interconnected areas reflecting ESG dimensions: environmental sustainability strategies; social responsibility and community relations; and governance mechanisms promoting accountability and transparency. This methodological design ensures that the narrative synthesis remains grounded in established empirical findings while allowing conceptual elaboration.

RESULT AND DISCUSSION

Environmental Dimensions of ESG Implementation

Environmental sustainability is the most prominently discussed aspect of ESG within palm oil literature. Many studies highlight that implementing environmental criteria reduces ecological degradation, enhances resource efficiency, and aligns plantation management with regulatory requirements and global buyer expectations. According to Carlson et al. (2018), environmental stewardship in the palm oil sector is commonly assessed through indicators such as deforestation

control, greenhouse gas emissions, waste and water management, soil conservation, and biodiversity protection.

One of the key environmental challenges has been the expansion of plantations into carbon-rich peatlands and primary forests. Efforts to halt deforestation have been reinforced through corporate commitments, RSPO standards, and national moratoria. Studies by Austin et al. (2019) show that stricter environmental guidelines and corporate zero-deforestation pledges have slowed the rate of forest conversion, although enforcement remains uneven. ESG adoption often leads companies to implement satellite monitoring systems, traceability tools, and land-use planning frameworks aimed at meeting environmental benchmarks. Waste management is another crucial area of environmental improvement. Palm oil mill effluent (POME), if improperly treated, contributes to methane emissions and water pollution. However, recent research indicates that companies integrating ESG are more likely to adopt anaerobic digestion and methane capture technologies, turning waste into renewable energy sources (Mahlia et al., 2019). These innovations reduce operational emissions while improving energy self-sufficiency.

Soil quality and fertilizer efficiency have also emerged as priority areas. ESG-driven strategies promote precision agriculture, organic amendments, and integrated pest management, reducing dependence on chemical inputs. Studies by Euler et al. (2017) found that sustainable fertilization practices significantly cut nutrient runoff and improve long-term soil fertility, contributing to productivity while minimizing environmental harm. Water governance, often overlooked, is increasingly addressed through ESG frameworks. Research by Yusoff et al. (2020) shows that plantations adopting ESG standards monitor water quality, establish riparian buffers, and regulate water extraction to ensure ecosystem balance. Implementing water stewardship practices aligns environmental objectives with local community needs.

Collectively, these findings illustrate that the environmental component of ESG does not merely function as a regulatory obligation. Instead, it operates as an integrated system through which palm oil companies reduce ecological footprints, innovate resource use, and align operations with global sustainability norms.

Social Dimensions of ESG Implementation

The social component of ESG focuses on labor rights, community engagement, welfare improvements, indigenous land rights, and fair benefit distribution. Social conflicts have historically plagued the palm oil sector, particularly land disputes, migrant labor exploitation, and inadequate community consultation. ESG frameworks aim to address these issues systematically. Labor rights remain central. Cramb and McCarthy (2016) note that plantation labor conditions often involve precarious employment, wage instability, and limited access to healthcare. ESG compliance requires firms to uphold non-discriminatory employment policies, provide occupational safety training, and ensure fair wages. Studies by Locke et al. (2021) demonstrate that plantations adopting social sustainability standards show measurable improvements in worker welfare, including reduced accident rates and better housing standards.

Another key issue is community engagement. ESG frameworks emphasize Free, Prior, and Informed Consent (FPIC), especially for indigenous and customary landowners. Research by Ruyschaert and Salles (2016) highlights that FPIC, when properly implemented, reduces social conflict, enhances trust, and provides communities with greater control over land-use decisions. Community development programs—such as education support, health initiatives, and economic empowerment—emerge as common ESG-driven interventions.

Gender equity is increasingly recognized as a neglected but critical dimension. Palm oil plantations have historically marginalized women workers, particularly in pesticide application roles. According to Elmhirst et al. (2020), ESG implementation increases awareness of gender inclusivity,

encouraging companies to provide safer working conditions, promote women's leadership roles, and mitigate exposure to harmful chemicals.

Land rights disputes remain complex. Research by Obidzinski et al. (2014) suggests that while certification schemes and ESG policies promote responsible land governance, structural issues such as unclear tenure systems and overlapping claims continue to generate conflict. Nonetheless, ESG encourages companies to adopt more transparent land acquisition processes and grievance mechanisms.

Overall, the literature indicates that the social dimension of ESG plays a fundamental role in minimizing the industry's social footprint and fostering positive relationships between companies and local communities. It shifts the focus from merely meeting regulatory obligations to developing inclusive, rights-based plantation management systems.

Governance Dimensions of ESG Implementation

Governance represents the institutional backbone of ESG, emphasizing transparency, ethical leadership, accountability, anti-corruption measures, supply chain traceability, and adherence to legal frameworks. Numerous studies highlight that governance failures—rather than environmental or social shortcomings alone—often constitute the root cause of sustainability violations in the palm oil supply chain. Effective governance improves corporate credibility. A study by Hidayat and Offermans (2020) shows that firms with stronger governance structures have higher compliance rates with sustainability certifications and are more capable of sustaining long-term ESG commitments. Governance principles improve internal controls, decision-making processes, and risk management systems.

Transparency and traceability are central governance issues. With increasing global scrutiny, companies are pressured to disclose sustainability performance, supply chain origins, and compliance data. Research by Broekhoven and Fairhurst (2019) found that traceability platforms enhance buyer confidence and reduce reputational risks. Digital technologies such as blockchain, geospatial mapping, and audit databases are emerging tools that reinforce supply chain governance. Anti-corruption efforts also form a crucial governance pillar. Corruption in land acquisition, licensing, and environmental oversight has long undermined sustainability goals. ESG frameworks encourage stronger internal audit systems, whistleblower protections, and compliance oversight. According to Setyowati (2020), governance reforms within palm oil firms contribute significantly to preventing illegal land clearing and improving regulatory alignment.

Certification schemes such as RSPO and ISPO represent hybrid governance innovations. Although RSPO is voluntary, its multi-stakeholder nature strengthens democratic governance processes. ISPO, as a mandatory national standard, complements ESG by embedding regulatory requirements into the governance structure of the industry. Empirical studies indicate that certified firms often demonstrate better performance on governance indicators, although challenges in monitoring and enforcement persist (Pacheco et al., 2018).

In summary, governance mechanisms ensure that environmental and social commitments are not symbolic but backed by institutional systems capable of monitoring, enforcing, and continuously improving sustainability performance.

CONCLUSION

The implementation of ESG principles in palm oil plantation management is an evolving yet transformative process. The systematic narrative review presented in this paper reveals that ESG adoption enhances environmental stewardship, promotes social justice, and strengthens governance integrity within the sector. Environmental improvements are evident through reduced deforestation, better waste management, soil conservation, water stewardship, and the adoption of climate-friendly technologies. The social dimension contributes to improved labor rights, community engagement,

gender inclusivity, and better conflict-resolution practices. Governance reforms—spanning transparency, anti-corruption measures, traceability, and certification—form the structural foundation that ensures ESG commitments are effectively operationalized.

Despite these positive trends, challenges remain. Enforcement gaps, ambiguous land tenure systems, uneven certification uptake, and persistent socioeconomic disparities hinder the full realization of ESG aspirations. However, the growing integration of technological innovations, regulatory frameworks, global buyer expectations, and community-driven governance demonstrates a clear trajectory toward more sustainable and accountable palm oil production. The review underscores that ESG principles, when meaningfully implemented, serve not merely as compliance tools but as strategic frameworks capable of transforming the palm oil industry into a model of sustainable agribusiness. Continued research, stronger multi-stakeholder collaborations, and more rigorous monitoring systems are essential for ensuring that ESG implementation is both comprehensive and impactful.

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